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WOODS HOLE OCEANOGRAPHIC INSTITUTION

ORAL HISTORY OF EDMOND WATSON

Interview by Frank Taylor and Garfield Arthur

Telephone Interview November 1, 2000

Transcribed by Arel Lucas June 2005

- 1 IAN WATSON: Hello.
- 2 TAYLOR: Hi, is this Dr. Watson?
- 3 IAN WATSON: No, it's Ian Watson.
- 4 TAYLOR: Oh, hi, Ian. This is Frank Taylor.
- 5 IAN WATSON: Frank, we're just getting set up here. We're down in the basement. I came
- 6 along with the wrong extension cord, and the only three-pronged plug, of course, is down in the
- 7 basement, so I got a telephone wire strung halfway across the basement, and I'm running around
- 8 frantically. So how does the microphone sound from your end?
- 9 TAYLOR: It's a little hollow sounding, but it's OK.
- 10 IAN WATSON: Is it going to record OK?
- 11 TAYLOR: I think so.
- 12 IAN WATSON: It's just easier for Dad. He can use the headset if you think it's . . . .
- 13 TAYLOR: OK, now you're using the speakerphone now.
- 14 IAN WATSON: I'm using the speakerphone now. This is a test.
- 15 TAYLOR: Yeah, OK, well, it's being recorded, so we'll see how it is.
- 16 IAN WATSON: OK, well, uh . . . .
- 17 TAYLOR: Now, should I give you like 15 minutes?
- 18 IAN WATSON: No, I'm just doing a final setup. I'm getting the volume on the speaker here at
- 19 a slightly higher level. Dad's here and he's sitting down now in front of his old workbench.

20 [Laughs. Sounds on Watson end, as of clearing.] You want to talk, Dad? You might want to . .  
21 . . Here, I'm just getting there, try to adjust . . . .

22 WATSON: Where's the speaker?

23 IAN WATSON: Right here, so just start talking so Frank can check the volume. [More sounds.]

24 WATSON: Hello, hello. How is this for volume?

25 TAYLOR: Hi, Dr. Watson, how are you?

26 WATSON: Oh, well, I could be better. [They laugh.] Doing my best.

27 TAYLOR: You're doing your best, huh?

28 WATSON: Yeah.

29 TAYLOR: OK. My technician says that the volume is coming through just fine, . . .

30 WATSON: Right.

31 TAYLOR: . . . so we should be in pretty good shape here.

32 WATSON: OK.

33 TAYLOR: Well, are we all set to get going?

34 WATSON: Now, your list of questions: I'll try to answer them, but a lot of them are  
35 intertwined, you know.

36 TAYLOR: Oh, of course, of course. That happens, and from time to time you'll say something  
37 that will key some other thought in my mind . . .

38 WATSON: Yes.

39 TAYLOR: . . . and I will ask something that may not have been down on the list.

40 WATSON: So what I'm saying to you doesn't correspond exactly to your numbers.

41 TAYLOR: Oh, that's quite all right.

42 WATSON: That's all right.

43 TAYLOR: That's quite all right.

44 WATSON: I'll follow the questions as well as I can.

45 TAYLOR: Yeah, and that's just a general outline. There're certain things there, like for  
46 example, when and where you were born and all that kind of thing, that just kind of sets the  
47 stage, and it's general information. And then if the other gets mixed up a little bit, that's fine.  
48 That's no problem.

49 WATSON: Oh, well.

50 TAYLOR: OK?

51 WATSON: OK.

52 TAYLOR: OK, now let me . . . . Hang on just a second.

53 IAN WATSON: Now, do you want Frank to ask the questions and you . . . ?

54 WATSON: No, no.

55 IAN WATSON: OK. Start off with the first question was about siblings.

56 TAYLOR: Actually, the first question, Dr. Watson, is when and where you were born.

57 WATSON: Oh, all right: Montserrat, in the Leeward Islands, West Indies.

58 TAYLOR: Oh, that's interesting. Your parents . . . . When was that?

59 WATSON: That was 1902.

60 TAYLOR: 1902.

61 WATSON: Yes, and . . . .

62 IAN WATSON: December 24.

63 WATSON: December 24.

64 TAYLOR: Oh, a Christmas baby.

65 WATSON: Yeah. [Laughs.]

66 TAYLOR: Now how about your parents?

67 WATSON: My father was a planter, and the Earl of Dudley in England was interested in  
68 growing cotton in his estates. He had three estates in Jamaica, so he wanted my father to go to  
69 Jamaica and live on one of these estates and be his attorney for the other two, so we moved to  
70 Jamaica, and that was at my age 4.

71 TAYLOR: Oh, now he moved from . . . .

72 WATSON: Montserrat to Jamaica.

73 TAYLOR: OK, OK, and your dad was a planter there.

74 WATSON: Yes.

75 TAYLOR: Exactly what does a planter do?

76 WATSON: Well, it's much to what you'd call a farmer in this country, but the things we grew--  
77 the crops we grew--were specifically cotton, sugar cane, and bananas. There was a certain  
78 amount of wild, uncultivated country, which was fine for me, because I could go riding, and I  
79 could shoot game birds and so on. So it was a good place for a boy.

80 TAYLOR: Great. What was your dad's name?

81 WATSON: Full name?

82 TAYLOR: Yeah.

83 WATSON: George Conrad Plageman[SP?] Watson. [They laugh.]

84 TAYLOR: OK, and how about mom?

85 WATSON: Well, she was a Rawlins[SP?], and she had several relatives in Brooklyn. Her  
86 brother was some kind of a doctor there, and she had two aunts as well.

87 TAYLOR: I see, I see. Now, did you have any brothers and sisters?

88 WATSON: Yes, now there were three siblings. The oldest one, his name is Hugh, and  
89 Marjorie[SP?], and Conrad. And Hugh went to Syracuse University, and he was a lecturer in  
90 English there, and he got scarlet fever and died in three days, and then my sister, Marjorie: we  
91 married her off when we left Montserrat, married her off to the superintendent of the Montserrat  
92 land-use company. As you may recall, Montserrat Land Use was a supporter of the British Navy  
93 to keep them from one of the standard diseases, and . . . .

94 TAYLOR: And you say there was one more?

95 WATSON: Conrad: he came up to McGill, went through McGill. He was in the war, First  
96 World War. And then he became a vice president of Bell.

97 TAYLOR: OK, now where did you fit in with all this? Were you the first, the last, the middle?

98 WATSON: I was the last.

99 TAYLOR: You were the last. You were the baby of the family.

100 WATSON: I was the baby, yes.

101 TAYLOR: How about your wife and children?

102 WATSON: Now my wife was . . . . Her name was Madeline Deblois[SP?]. She was the  
103 daughter of a mining engineer, and she was a junior when I was a senior at McGill. I came up to  
104 McGill after school in Jamaica, and I came up to McGill in 1921.

105 TAYLOR: What did you study there?

106 WATSON: Physics, actually engineering physics, which was a course at McGill, and she was a  
107 year behind me, you see, and she was a junior when I was a senior. In 1926 I got my M.Sc. from  
108 McGill, and a traveling fellowship, which took me to Cambridge, in England, and I was there for  
109 three years, and then came back to Canada. I spent a year at McGill again, just killing time while  
110 I finished up my thesis, and as soon as that was done I came into McGill. I was offered . . . .

111 There were three of us fresh from Cambridge, all together, all from the department of physics.

112 IAN WATSON: At that moment you had your Ph.D. then?

113 WATSON: Yes, I had my Ph.D. then.

114 TAYLOR: OK, so that you had started on an academic career then?

115 WATSON: Yes.

116 TAYLOR: Let me ask you a question about that. I do want to get the names of your children  
117 and what they ended up doing, but first, let me ask you: what caused you to choose an academic  
118 career over a straight research career?

119 WATSON: Oh, the offer of a job, I would say. [They laugh.]

120 TAYLOR: They had the money, so that's where you were going, huh?

121 WATSON: Yes. [Laughs.]

122 TAYLOR: OK. We may come back to that a little bit later. How about your children? Tell me  
123 about them--their names and what they ended up doing.

124 WATSON: Well, as I said, my children . . . . I had two children. The oldest one went through  
125 McGill in commerce, and then took his Master's degree . . . . What were the initials of that?

126 IAN WATSON: M.B.A.

127 WATSON: M.B.A. from Queens.

128 TAYLOR: Frank's the one that knows me.

129 WATSON: OK, and which one is that?

130 IAN WATSON: Ian.

131 WATSON: That's the one you know, Ian.

132 TAYLOR: OK, that's Ian.

133 WATSON: And his younger brother, Eric: he was a bush pilot in Newfoundland, and he had a  
134 bad accident. He got caught in a whiteout and crashed into one of these ice heaves, in the St.  
135 Lawrence, near the Magdalene Islands there.

136 TAYLOR: Ooo. Did he survive that?

137 WATSON: [??] his career.

138 IAN WATSON: 1963.

139 WATSON: In '63.

140 TAYLOR: Now, was that a common interest, the air with both Ian and Eric?

141 IAN WATSON: That's a fair assumption, yeah.

142 WATSON: To a good extent.

143 TAYLOR: OK. What schools did you attend, Dr. Watson?

144 WATSON: Well, in Jamaica, of course, I went to . . . . It was a private school called Munro  
145 College, up in the mountains. Took me a day to get there from home. Incidentally, where we  
146 lived, the nearest white children to me were eight miles away, and when I wanted to visit them I  
147 got on my bicycle and trudged along, forded a river, which had varying depths according to the  
148 season. You never knew whether you were going to get your feet wet or not. [They laugh.]

149 TAYLOR: But you thrived in this kind of environment.

150 WATSON: Well, [laughs] you learned to stand on your own two feet and not to rely on other  
151 people.

152 TAYLOR: I'll bet. Where else did you go to school?

153 WATSON: Well, that was the only place in Jamaica, and then I came up to McGill, following  
154 my brother. He had just come back from the wars, and had just finished up his engineering  
155 course at McGill, my older brother Conrad.

156 TAYLOR: Did you have any subjects that were favorites of yours?

157 WATSON: Oh, well, the sciences in general, and I had a lot of puttering in my home. I  
158 practically had a little laboratory. It started out mainly because I could get passed-off equipment  
159 from the telephone line, which was a part of the irrigation system, for which one of my neighbors  
160 was the superintendent. I used to pillage anything that he didn't know what to do with. He  
161 didn't know a thing about it, you see, so I got a lot of good equipment for nothing.

162 TAYLOR: And you liked to tinker?

163 IAN WATSON: This was McGill?

164 WATSON: This was at home.

165 TAYLOR: Yeah, and you liked to tinker with all that kind of thing, hum?

166 WATSON: I made my own gasometer using acetylene gas from carbide, and other things like  
167 that. [Laughs.] I pretty well puttered on my own the, but that's how I got along the scientific  
168 line.

169 TAYLOR: Uh-huh. Now, were there any teachers that were particularly inspiring to you in any  
170 way, or anyone at all?

171 WATSON: I wouldn't pick out any one in particular, no. You see, our schools were on the  
172 British system, and in fact most of our teachers were Brits, and all our examinations were  
173 Cambridge examinations. They were marked in Cambridge, so there was no favoritism or

174 anything like that for one particular school, and then the final examination for the Jamaica  
175 scholarship, which I won in '21.

176 TAYLOR: Now, tell me what the Jamaica scholarship was all about.

177 WATSON: Well, it was competed by all the best students in the several schools in Jamaica.  
178 There were about three or four top-notch schools, and all the best students competed for that, and  
179 again all these exams were marked in Cambridge. It was called the higher-school certificate at  
180 that time, which was above the senior. There was a series of examinations: the very first one  
181 was the preliminary; and then junior; and then senior, and then the higher-school certificate.  
182 And the winner there got this Jamaica scholarship, which was a traveling, which gave me enough  
183 money for three years at McGill. In fact, ah, yes, my family helped out a little bit for the fourth  
184 year. So I had four years at McGill there. I took my Master's degree at McGill and got the  
185 traveling fellowship for a year, which took me to Cambridge, and while I was at Cambridge, my  
186 professors back at McGill, who seemed to think fairly highly of me, persuaded the Quebec  
187 government to give me a Quebec scholarship for another three years. So my way was nicely  
188 paved by that.

189 TAYLOR: That's wonderful.

190 WATSON: I came up to McGill. Sorry, I'm getting lost.

191 TAYLOR: It's OK, no problem.

192 WATSON: I took my Master's. I guess we've gone over that.

193 TAYLOR: OK, now let me ask you this. What other interests did you have as a young man?  
194 Obviously you were very academically inclined. What other kinds of things did you like to do--  
195 any kinds of hobbies or sports or anything like that?

196 WATSON: Well, there wasn't very . . . . I played tennis, and my father and I both belonged to  
197 the local tennis club, which you drove about six miles to every Saturday, and various people who  
198 belonged to it were in this club. That was the only local sport. With the school, of course, there  
199 were all the usual seasonal sports. There was rugga--not rugga but what do you call it?

200 IAN WATSON: Rugby?

201 WATSON: No, the . . .

202 TAYLOR: Soccer?

203 WATSON: . . . ball.

204 TAYLOR: Soccer?

205 WATSON: Soccer, yes. There was soccer one season, and then there was cricket for another  
206 season, and then there were field sports for the third season, with holidays in between, you see.

207 TAYLOR: Yeah, yeah. And you liked to tinker.

208 WATSON: Yes. That's essentially it.

209 IAN WATSON: Dad's just taking a sip of water, Frank.

210 TAYLOR: OK.

211 IAN WATSON: OK, there, that's done. Here, do you want this back again?

212 TAYLOR: OK, Dr. Watson, I know you've had your association with the Canadian universities.  
213 How is it you came to be at the Woods Hole Oceanographic?

214 WATSON: Well, that joins up to the other story. When I came back to Canada and did my year  
215 at McGill, worked on my thesis, previously to that in the summer times I had worked at the  
216 Atlantic Biological Station in St. Andrews, New Brunswick, just as an assistant. I was called a  
217 hydrographer, and I did titrations for [??] and so on, and when I wasn't worked at that I'd go out  
218 on the Bay of Fundy and make various observations and so on, and this drew the attention of the  
219 director, Dr. Huntsman, to me, and therefore when the International Passamaquoddy  
220 Commission was started, I was the only person in Canada that had the slightest information  
221 about oceanography, and I'd learned it first hand. Now, I don't know whether that brings us to  
222 the start with IPFC that you asked about.

223 TAYLOR: Well, it certainly does, because that seems to be a really fundamental thing in kind of  
224 the formation of what I might think of as modern oceanography.

225 WATSON: Yeah.

226 TAYLOR: It seems like an awful lot of very highly respected, early people in the field came  
227 from that particular commission.

228 WATSON: Well, what happened was that an engineer by the name of Dexter P. Cooper  
229 developed a very sensible scheme for tidal power. Now both the State of Maine and the  
230 Province of New Brunswick were very anxious to have a source of power nearby, for two  
231 reasons: both for the power itself and the secondary, of course, as a source of labor. And his  
232 project was unique, because most tidal-power schemes suffer from the fundamental difficulty  
233 that the tide, of course, is reversing, and there's a period in which there's no flow at all in the  
234 water. And his project, which was dependent on the exact geography of this particular region,  
235 consisted of having two basins--one kept at high water, and the other kept at low water. These

236 were two bays: Passamaquoddy Bay, which was mainly in New Brunswick, but on one side was  
237 the State of Maine, that made it international; and Cobscook Bay, which was right next to it,  
238 separated by a very thin strip of land. And both these bays were practically landlocked. They  
239 had access to the Bay of Fundy through channels between a few islands, and the project was  
240 simply to block these channels so that they could be controlled, and that Passamaquoddy Bay  
241 would be kept full at high tide, and Cobscook Bay could be lowered or emptied at low tide. So  
242 one was always higher than the other, provided you didn't draw too much water between them.

243 TAYLOR: So in a sense you were impounding water.

244 WATSON: Yes. The power dam was in the little thin strip of land which separated  
245 Passamaquoddy from Cobscook. This of course was ideal for the whole setup. In addition to  
246 that, there was an extra lake, up a little bit behind these two bays, which could be used for a  
247 reservoir, into which you could pump water at spring tides, when you had an excess, and use it  
248 when you had neap tides as low things, so that you could supplement the normal rise and fall of  
249 the tides by this reservoir.

250 TAYLOR: So that became your kind of strategic reserve.

251 WATSON: Yes. That was just a bonus. [They laugh.] So that was the mechanism of these  
252 things. Now, the black side of it, of course, was that it was very expensive to build the necessary  
253 dams to complete the enclosure of each of these two bays. And I think this is pretty well the  
254 reason it failed eventually, because they figured that they could build an ordinary coal-fired plant  
255 cheaper than building the dams, so that was really the end, but the other thing was that this  
256 particular region is the place where all the herring spawn, both on the coasts of Maine and New  
257 Brunswick. They all start life there. All their food and early processes originate there, so that  
258 the whole fishing industry was very much concerned that the construction of these dams would  
259 alter the conditions which were favorable to the growth of the herring population. That was the  
260 reason for the formation of this fisheries commission, to look into the possible effect of these  
261 dams on the herring fishery, and it was international, of course. It became the International  
262 Passamaquoddy Fisheries Commission. Now the Commission consisted really of--as I  
263 understand it--the Commission really referred to the political people at the top, not to the people  
264 doing the actual work, although you can use it [laughingly] both ways.

265 TAYLOR: [Laughs.] Well, it's really interesting that essentially this is one of the first times  
266 that science and fishermen sort of came up against each other, if you will.

267 WATSON: As far as I know.

268 TAYLOR: So I understand more now. My next question had been . . . .

269 WATSON: This was the point where Dr. Bigelow, who had, of course, just recently started the  
270 Oceanographic Institution the year previously.

271 TAYLOR: Aha. Now, as a physicist, you were brought onto this because of the idea of  
272 damming water and . . . ?

273 WATSON: The other commissioner was Dr. Huntsman, who was the director of the biological  
274 station at St. Andrews, and I had worked for him in the summers previously, and he'd taken a  
275 liking to the work that I'd done then, and I was probably the only person in Canada that had the  
276 slightest familiarity with oceanographic problems.

277 TAYLOR: OK. How old were you at this time?

278 WATSON: Oh, uh let me see. Um I've forgotten now. I would have been . . . . I'd be about 29,  
279 I think.

280 TAYLOR: So you were really in something very interesting when you were quite young?

281 WATSON: Yes.

282 TAYLOR: OK. Now, besides Dr. Huntsman and Dr. Bigelow, do you remember any of the  
283 other people that were involved in that commission?

284 WATSON: I don't think there were any others. I was trying to remember, and I certainly can't  
285 remember any others being at the meetings that they had occasionally. [Laughs.]

286 TAYLOR: Uh-huh. Tell me about Dr. Bigelow. What was he like when you met him?

287 WATSON: He was very nice. Now, in 1932 I had gotten leave of absence from Queens for a  
288 year to work up the results that we had done in the field the previous year, and he offered the  
289 space in the Oceanographic, which of course was rattling empty. There were only a few people  
290 there.

291 TAYLOR: Had you kept in touch with him, or corresponded, or . . . ?

292 WATSON: Well, yes, yes, of course, because as I say he was the U.S. commissioner, you see,  
293 for this thing, and he offered us this space for the group working on this project, to come to  
294 Woods Hole in 1932 and do their work there. He got in touch and then after that year Dr.  
295 Bigelow liked my work, and he offered me a position there as a research associate.

296 TAYLOR: I believe you were the very first Ph.D. in physics that the Oceanographic Institution  
297 ever had.

298 WATSON: Well, I hadn't realized that, but it could be so.

299 TAYLOR: Yeah, I think you were the Number One on that. Could you reminisce a little bit as  
300 to what the Institution was like when you first showed up in 1932?

301 WATSON: Well, it was pretty empty. [Laughs.] That was the main feature of it. We had two  
302 ships. One was the seagoing ship, the *Atlantis*, which you're no doubt familiar with. [Laughs.]  
303 And right at the moment I've forgotten the name of the smaller boat, which was confined to  
304 shore.

305 TAYLOR: Was that the *Asterias*?

306 WATSON: The *Asterias*, yes, right. And I worked on *Atlantis*, *Asterias*, and occasionally we  
307 had the *Bear* also.

308 TAYLOR: Uh-huh. Believe it or not, we still have *Asterias*.

309 WATSON: Yes, I know. [They laugh.] Yes, she's a real workhorse.

310 TAYLOR: Oh, yeah, she sure was, or is I should say.

311 IAN WATSON: *Asterias* the Third, though.

312 TAYLOR: Yeah, it is.

313 WATSON: Oh.

314 TAYLOR: Were you going to work with anyone else at Woods Hole, or were you just on your  
315 own?

316 WATSON: Well, I had a way of bringing an assistant with me down from Canada, [laughs] just  
317 undergraduate students, and sometimes even Woods Hole paid for them when they came back to  
318 Canada, doing calculation work, that kind of thing.

319 TAYLOR: Now, I'm curious. When you first came to the Village in 1932, what kind of living  
320 accommodations were available to you?

321 WATSON: Well, when we first went down, we were billeted in the Bureau of Fisheries  
322 building, and we only stayed there a very short time. I think we objected to the cockroaches or  
323 something. So we got out of there as fast as we could, and we rented a cottage, and I can't  
324 remember the name of the street, but it's very close to where the Clarkes used to live, on the  
325 Buzzards Bay side.

326 TAYLOR: Yeah, across Eel Pond and on the Buzzards Bay side?

327 WATSON: Yes, yes.

328 TAYLOR: Sure. Do you remember what the rent was back then?

329 WATSON: No, I was looking at that question, and I haven't the faintest idea what it was.  
330 [Laughs.] I've gone through so many variations in prices over the years.

331 TAYLOR: Oh, I'm sure. It's always interesting to me. I look at what they rent things for now  
332 down this way, which may be up to \$2,000 a week, [laughs] and it's interesting to talk to you  
333 people that were originals like yourself: Dean Bumpus, Al Woodcock, people like that. And  
334 they tell me they were paying \$36 a month or something like that.

335 WATSON: Yes.

336 TAYLOR: Was there any kind of shopping facilities or anything like that in the Village in those  
337 days.

338 WATSON: The A&P had a store directly opposite, across the street from the Oceanographic,  
339 which was a great help. Otherwise you went to Falmouth. Oh, well, of course, there was a fish  
340 market, and we always got our ice there as well as fish. And there was the railway station, which  
341 always had brought in . . . with a restaurant just opposite it always.

342 TAYLOR: OK, now were you married at this time?

343 WATSON: Yes.

344 TAYLOR: OK, and you brought your wife with you?

345 WATSON: Yes, that's right.

346 TAYLOR: OK, how did she like it?

347 WATSON: Oh, she took to it quite well. [Laughs.]

348 TAYLOR: Liked the community, eh?

349 WATSON: And we made a lot of friends. Most of the names that you listed in your  
350 questionnaire were all personal friends, I mean socially. We used to meet, especially on the  
351 beach, Nobska Beach, and especially the ones that had children, like the Clarkes and one or two  
352 of the others, the Stetsons, Wells.

353 TAYLOR: I love it when you talk about these things, because you're talking--including  
354 yourself--about the pioneers of modern-day oceanography.

355 WATSON: [Laughs.]

356 TAYLOR: It's wonderful to hear these stories directly from the horse's mouth, if you will.

357 IAN WATSON: For the record, Frank, I arrived in the world in March 1932, and my brother  
358 Eric in April 1936.

359 TAYLOR: Oh, OK. So you guys were down in around this too.

360 IAN WATSON: Oh, yeah, very much so.

361 WATSON: It's interesting that that generation still go down to Woods Hole in the summertime  
362 for visits.

363 TAYLOR: Well, are you familiar with the story of how this particular oral history all came  
364 about?

365 WATSON: No.

366 TAYLOR: One of the things I do here is take people that are interested through the Institution  
367 and show them around, and I took a group of tourists through the Institution a couple of years  
368 ago. One of the people came up to me and said, "My name is Ian Watson, and my dad used to  
369 work here."

370 WATSON: [Laughs.]

371 TAYLOR: And we got talking about that, then. I said, "Well, it's interesting, because I also do  
372 the oral histories at the Institution." So that's when we started working out this plan here to get  
373 this done. So it was a strictly by-chance thing. Was it exciting for you? I mean gee, you were  
374 basically still just a kid, and was it exciting for you to be working down here and running  
375 research?

376 WATSON: Oh, it was very interesting, because of course all these people working with me were  
377 all U.S. citizens, and they all had slightly different points of view on many things, as you  
378 probably know. And as I say, we were really very close friends with several of them, in fact,  
379 most of them.

380 IAN WATSON: It was a great social thing. I mean I can remember, as a young kid, parties at  
381 the house on Friday and Saturday nights and so on.

382 WATSON: We used to have the director up to lunch with us in our cottage.

383 TAYLOR: Really!

384 WATSON: Yeah, both Bigelow and Iselin used to come up regularly for lunch with us.

385 TAYLOR: Uh-huh. What was Columbus like?

386 WATSON: Well, he was a little bit stiff, but he was all right. He lived over on Martha's  
387 Vineyard and came across on his boat every day.

388 TAYLOR: I know of some famous stories about that.

389 WATSON: And that boat was used to tow the bow of the *Atlantis* out from the dock when she  
390 was leaving port, to get started, because, of course, she didn't have any ways to steer her by.

391 IAN WATSON: No bow thruster.

392 TAYLOR: No, not like the new ones.

393 WATSON: No fancy gadgets like that. [Laughs.]

394 TAYLOR: What kind of research, specifically, were you doing at Woods Hole?

395 WATSON: Well, to begin with, I did a lot of work on data that Iselin had compiled himself on  
396 the Gulf of Maine. I did more or less for the Gulf of Maine what I had been doing in the Bay of  
397 Fundy, trying to deduce the currents and so on from the distribution of density. It's got a lot of  
398 figuring that comes into it, but my main interest was the development. That led, of course, to an  
399 interest in currents, and the only current meter in sort of general use at that time was known as  
400 the Eckmann meter. This was a propeller-driven device, and you simply sent it down so many  
401 minutes, and you counted how much water had gone through it in those minutes, and deduced  
402 the current from that, and I was very interested in developing a current meter, starting out with  
403 the Eckmann meter, but something which would give you a better record of the current, without  
404 having to just take five-minute records and pulling up the instrument each time. So I developed  
405 an instrument, in which the instrument was sent down on an insulated cable, insulated with the  
406 same kind of tough rubber that tires are made of, not just fancy house insulation, and a stainless-  
407 steel core, and this could be strong enough that you could send an instrument down on it to 500  
408 meters or any depth like that.

409 TAYLOR: Ship have to be stationary?

410 WATSON: You had to anchor the ship, and that was one thing too that I did quite a bit of work  
411 on, the whole technique of anchoring a ship in deep water. And of course where you're  
412 anchoring it might be a thousand meters. So I studied a lot about that, technique of anchoring.

413 TAYLOR: Now, this is interesting, when you talk about technique of anchoring, are you talking  
414 about the way the hook was placed, or are you talking about the kinds of materials--the cable or  
415 rope or whatever?

416 WATSON: Everything. You started with a Danforth anchor, which was fairly new at this time,  
417 and then you had ten meters of fairly heavy chain, and then you had a wire cable, a fairly robust  
418 cable going up to the ship. The purpose of the 10 meters lying on the bottom was to keep the  
419 pull on the anchor horizontal so that it didn't get lifted. That enabled you to use a relatively short  
420 line down to the anchor without tipping up the stem of the anchor, you see.

421 TAYLOR: So, in order to get a reliable reading from the kind of current meter you were  
422 developing, it was also necessary to have the ship in a really stationary position.

423 WATSON: Well, that of course was the big catch. The readings of current were all relatively to  
424 the ship's motion, and to complete the picture you had to have a picture of the ship's motion.  
425 Until LORAN came in, you didn't care just where it was but where it was moving around in. In  
426 other words, had it gone 10 meters this way or that way on you. You wanted to know the  
427 movements of the ship. The LORAN as it is today would have been quite sufficient, but just at  
428 that time it hadn't been developed quite well enough so that the corrected profiles of current  
429 were not as good as I would like them to have been. And that was done when the war was  
430 getting pretty well over, and I think nowadays they use Doppler methods, which I don't know  
431 anything about, but I think they have replaced current measurements in the oceans.

432 TAYLOR: Believe me, it's all black magic now. I'm curious, when you deployed an instrument  
433 like a current meter on a cable, you're going to get an angle between the cable and the vessel,  
434 and that gives slight alterations in terms of what your true depth is and all that. Did you have a  
435 mathematical formula or something you worked out to account for something like that?

436 WATSON: Well, you knew pretty well what depth you'd put it down to. You simply measured  
437 your length of them. And the currents were so strong that the cable formed a quaternary of a [??]  
438 so your depth was in [??] The instrument that I developed . . . .

439 IAN WATSON: [??]

440 WATSON: The instrument that I developed was fairly unique because with a single cable, just  
441 this insulated cable, which posts [??] out to support the instrument and do all the recording, could  
442 measure the direction of the current and the speed of the current both, continuously, between the  
443 deck and the ship while it was going on.

444 TAYLOR: OK. Now did you have a name for your instrument?

445 WATSON: Well, it was just referred to as the Watson current meter. [Laughs.]

446 TAYLOR: OK, Watson current meter. All right. I'm just writing that down.

447 WATSON: Yeah.

448 TAYLOR: Now you worked with a group of people at Woods Hole. Were you at all impressed  
449 with the level of competence?

450 WATSON: You have several questions of that sort in here, and they're the ones that I can't  
451 really answer for the simple reason that we had a group of different disciplines working there.

452 Each one had his own little kingdom, and there was nothing to judge them by in another  
453 kingdom, you see. There were no two or three people working in the same field.

454 TAYLOR: No big departments then.

455 WATSON: No. We were interested in what each other was doing, mark you. That was a good  
456 thing. In fact, one of Dr. Bigelow's main tenets was you maintained an open-door laboratory. In  
457 other words, anybody could come in from any other part of the building and visit you at any time  
458 and be interested in what you were doing and tell you what they were doing, because he wanted  
459 to regard it as a cooperative work, not as the work of individuals.

460 TAYLOR: Right. Was there, even then, a sense of the interdisciplinary nature of ocean  
461 sciences?

462 WATSON: I don't know. I suppose in the periodicals there would be, to some extent, but  
463 somebody had to judge the quality of papers that were offered. [Laughs.]

464 TAYLOR: Yeah, yeah, I know. The whole discipline of oceanography is so enormously  
465 complex that now everyone tends to . . . . If they're a geologist they've got a biologist hanging  
466 over their shoulder and a physicist hanging over the other shoulder, to try and make some kind of  
467 sense of what all of these areas they're studying are. Was Mary Sears around while you were  
468 there?

469 WATSON: Oh, yes, right from the very beginning, and she was our greatest friend down there.

470 TAYLOR: Could you tell me something about her, what she was like on a day-to-day basis kind  
471 of thing, kind of a character sketch, if you will?

472 WATSON: [Laughs.] I don't know here to begin. She was extremely able, as you know. She  
473 had her finger in so many pies. If you went into Falmouth with her, you had to run the gantlet of  
474 people saying, "Hello, Mary," "Hello, Mary." She'd be an educational counselor at maybe a  
475 fisheries group or something. Everybody knew her, and everybody liked her, as far as I could  
476 tell.

477 TAYLOR: So she was an outgoing kind of personality? Hail, well met, that kind of thing?

478 WATSON: No, no, she was more receptive than outgoing. [Laughs.]

479 TAYLOR: OK. Kind, then.

480 WATSON: Yes, oh, yes, and more or less adopted the Denton family, and was like a godmother  
481 to all to the Meers[?] children so much so that in later years some of them lived with her down  
482 on Denton Road. Now they've got her house.

483 TAYLOR: Yeah. She was a planktonologist, right? Do you recall?

484 WATSON: I think so. Yes.

485 TAYLOR: OK. How about--you mentioned--George Clarke?

486 WATSON: By the way, I meant, at some stage, to tell you the people that were working on the  
487 group in St. Andrews. There was, from Norway, there was Dr. Grand[SP?] and Trygve Braarud.  
488 They were the phytoplanktonologists. There was Charles J. Fish from the Buffalo Museum. He  
489 was our executive secretary. That is, he had to look after the bills and so on, as well as being a  
490 zooplanktonist. He had his assistant, a fellow by the name of Johnson[SP?]. Then there was  
491 myself. I was the hydrographer.

492 TAYLOR: That was your official title?

493 WATSON: Yes. Hydrographer is not really quite . . . . It really should be “oceanographer” [??]  
494 etiquette what the duties are. “Hydrographer” belongs to a previous era. And I mentioned . . . .  
495 Yeah.

496 IAN WATSON: Fish.

497 TAYLOR: OK, you mentioned Charles Fish, a gentleman named Johnson.

498 WATSON: Yes.

499 TAYLOR: Then you mentioned yourself as hydrographer.

500 IAN WATSON: And the other Norwegian.

501 WATSON: Trygve Braarud was the . . . . Yes, Fish was the zooplankton and Trygve Braarud  
502 was the phytoplankton.

503 TAYLOR: OK, now these people were . . . .

504 WATSON: The other one was a fellow from England who was the fisheries expert on herring. I  
505 can't just think of his name right at the moment.

506 TAYLOR: OK, that's OK. It may come to you. These were the people that were on the . . . .

507 WATSON: These were the people that were actually doing the work in the Bay of Fundy and  
508 studying the problem. Dr. Grand[??] didn't . . . . He was more or less an off-the-scene advisor.  
509 Braarud was his student, really. He was with us all the time and went down to Woods Hole with  
510 us, too. Fish and Johnson also went down to Woods Hole with us in 1932.

511 TAYLOR: OK, now how about some of these others, like you say you were very friendly with  
512 George Clarke?

513 WATSON: Oh, yes, yes.

514 TAYLOR: I had heard of him before in that Dean Bumpus worked for him, and what was Dr.  
515 Clarke like?

516 WATSON: He was . . . [Laughs.]

517 IAN WATSON: Well, no, no, there's your cue. [Laughs.]

518 WATSON: I know, but you might have a perspective from the next generation. Ian's still a  
519 good friend of David Clarke, his eldest son.

520 TAYLOR: OK, well, let me ask it this way, then. What made you two so comfortable with each  
521 other that you saw a lot of each other?

522 WATSON: I don't know. [Laughs.] Well, of course, the fact that we both had young families  
523 was one thing. We spent time at the beach and so on. We knew each other's quirks and so on.

524 TAYLOR: A common interest in science.

525 IAN WATSON: David and I are the same age, and Peter and Eric were the same age, so there  
526 was quite a coincidence on the children there.

527 TAYLOR: Do you think this was one of the main reasons why the friendship developed?

528 IAN WATSON: I don't know.

529 WATSON: General compatibility. [Laughs.]

530 TAYLOR: OK, OK, because you see one of the reasons for this whole project that we have with  
531 the oral histories is to try and get a picture. We think institutions like Woods Hole are very  
532 unique, and we think they're unique because of the people that have worked there. And so what  
533 we're trying to do is to get a real picture of what the people were like, what kinds of things did  
534 they like to do? What attracted them to the field? What attracted them to each other, in terms of  
535 friendships and things like that? So that's why I ask those questions. How about some of the  
536 others, like did you know Norris Rakestraw?

537 WATSON: Yes, yes.

538 TAYLOR: Now, was it his son that became a Nobel laureate?

539 WATSON: I don't know. I didn't know his family connections. In fact, I didn't even know he  
540 had a son.

541 TAYLOR: How about Alfred Redfield?

542 WATSON: Yes. I have a bone to pick with him. One of his published papers has a map. He  
543 was a senior biologist, let's say. One of his papers on the distribution of I don't know what the  
544 zooplankton, what it was, has a map in it, which was a map that I had drawn on the Gulf of

545 Maine, one of the ones using Iselin's original observations. I had done all the working up of it,  
546 plotting the currents and so on.

547 TAYLOR: And was suitable credit given?

548 WATSON: No, I don't think so. [Laughs.] So I had a bone to pick with him.

549 TAYLOR: Oho. I can understand. How about Henry Stetson?

550 WATSON: Yes, we knew the Stetsons quite closely, too, and again one of the sons, more or less  
551 your age group was the . . . .

552 IAN WATSON: Well, Mrs. Stetson and Mum were quite close, too . . .

553 WATSON: Yes.

554 IAN WATSON: . . . and Mary and Clarkes. I'd say on the female side they're all pretty close,  
555 too. I mean they all survived in Woods Hole while the men were down having fun at WHOI.

556 WATSON: [Laughs.]

557 TAYLOR: Let me add something here so that any academic that listens to this won't be  
558 confused. Occasionally you hear another voice come in besides Dr. Watson, and that's Ian.  
559 That's his son. I encourage him to add what he can, simply because of the fact he was there  
560 during all this and has a slightly different perspective, perhaps, than his dad, as he was a kid  
561 growing up in this community, and so this is quite OK. And I just want to make sure that any  
562 researcher that listens to this will be able to identify the other voice, OK?

563 IAN WATSON: Fair enough.

564 TAYLOR: OK, good deal. Were the families of the researchers at Woods Hole fairly close? I  
565 mean did they do things overall socially together?

566 WATSON: Oh, yes, we made trips to different beaches together, things like that, and I wouldn't  
567 say that Woods Hole was famous for its social events.

568 TAYLOR: It still isn't. [They laugh.] While you were working there, at the Institution, did you  
569 ever have contact with people from other institutions, like the Marine Biological Lab?

570 WATSON: That was one of your questions, and I've got it in my mind that we had no contact  
571 whatsoever. I think Mary somehow had contact with Revelle at La Jolla, and of course later on  
572 he was down at the neighbor headquarters during the war. In fact, he was the top man on our  
573 SOFAR project.

574 TAYLOR: Um-hum, yeah, that's right. That's where their connection came in, when she went  
575 into the women's navy and worked with Roger Revelle, as a matter of fact. But in the  
576 community itself, there wasn't much going on between Woods Hole and MBL and the Fisheries.  
577 WATSON: Well, of course the MBL and Woods Hole had a common library. That was a  
578 contact. We all knew the good lady who ran the library, name now . . . . We all referred to her  
579 as "Lady Something."

580 TAYLOR: Well, it's interesting, because I've asked that question of several other people from  
581 your particular time period, and they all talk about, no, there was no contact between MBL or the  
582 Fisheries and Woods Hole, the Oceanographic Institution. I always found that kind of  
583 interesting. I guess in my ignorance I thought that there would be contact between the scientists.

584 WATSON: I don't think the MBL people were as much regulars as the people at Woods Hole  
585 were.

586 TAYLOR: Yeah, that's true, and that remains pretty much true to this day. They come down  
587 during the summertime for . . . .

588 WATSON: Just . . . . They have a room, and they do their field work, and then they go away.

589 TAYLOR: Now, when you were teaching, was your teaching and your summer work  
590 compatible, and by that I mean, did you do the same kinds of work in both?

591 WATSON: No relation whatever.

592 TAYLOR: OK, explain that to me.

593 WATSON: [Laughs.] Well, I taught physics, and I was many, many years chairman of  
594 undergraduate studies in physics in the department.

595 TAYLOR: Was that at McGill?

596 WATSON: No, at Queens.

597 TAYLOR: Queens, OK.

598 IAN WATSON: Dad, you came to Queens and also about the same time you went to Woods  
599 Hole, right, far as '31 to Queens?

600 WATSON: Yes, right. Queens started in '33. I was on their payroll for 59 years. For my final  
601 what do you call it?

602 IAN WATSON: Retirement?

603 WATSON: Retirement, yes. I wasn't lecturing at the last part. I was still running the standard  
604 lab for them.

605 [END OF SIDE 1]

606 WATSON: . . . last few years. Long period.

607 TAYLOR: So you had undergraduate classes in physics.

608 WATSON: Yes. We taught physics in all the departments, even medicine. In fact my first year  
609 at Queens, very first year, I got landed with the medical group, the reason being that the  
610 professor who normally gave that course was on leave of absence that year, so I was just coming  
611 in, and was fitted in nicely to just take over his work, you see. I had a bunch of nonbelievers  
612 [laughs] who couldn't understand why a medical student would have to study physics. [Laughs.]  
613 Nowadays, how different it is!

614 TAYLOR: Oh, boy, is it ever! The physics, then followed by chemistry, of course, the  
615 mathematics. That's the basis of all of the sciences now. I would almost tell a kid now, if they  
616 wanted to be an oceanographer, and I don't care what kind it was, whether it was biological or  
617 what-have-you, get the strong background in mathematics and the strong background in physics.  
618 Then you can start to look at your specialty. But you certainly need that background now.  
619 Dalhousie is up in Canada. Do you know, if, at the time you were coming first to Woods Hole,  
620 did they have a marine program at that time?

621 WATSON: I don't know. We knew nothing about Dalhousie, except that one of the people that  
622 I knew at St. Andrews, before we went down to Woods Hole, Ron Hayes[SP?], was a Dalhousie  
623 graduate. That was the only thing I knew. I didn't even know they had an oceanography  
624 department or anything.

625 TAYLOR: It's quite renowned today, but no, I was just curious about that. When you were here  
626 at the Institution, did you have the opportunity to go to sea?

627 WATSON: Oh, yes. I was out in the *Atlantis* quite a bit.

628 TAYLOR: OK, so you were on *Atlantis*

629 WATSON: That's what I did most of my work on, with the current measurements in the deep  
630 water. Then on good old *Asterias*

631 IAN WATSON: For shallow water.

632 WATSON: For shallow water, yes.

633 TAYLOR: And did you say you were on the *Bear* from time to time?

634 WATSON: Pardon?

635 TAYLOR: Did you say you were on the *Bear* from time to time?

636 WATSON: Yes, just one or two trips.

637 TAYLOR: OK, OK. Could you describe for me what a typical day at sea was like for you?

638 WATSON: No. [Laughs.]

639 TAYLOR: One of the things, when someone goes out to sea for the first time, one of the things  
640 they discover is that oceanographers work very hard, that it's really a 24-hour-a-day time  
641 schedule rather than an 8-to-5 schedule. So I'm always curious as to what it was like during the  
642 early years.

643 WATSON: You didn't have very much help from the ship's crew, other than the people that you  
644 took with you from the Oceanographic itself. You might have an assistant from there, but the  
645 crew didn't think it was part of their seamanship to help with these scientific projects. They had  
646 no idea what it was all about to begin with. Yet it required a lot of handling of equipment and so  
647 on, for which seagoing experience was necessary. Putting things down into the water and so on  
648 requires a certain amount of dexterity, getting them out without wrecking them. [Laughs.]

649 TAYLOR: Particularly when the weather's up a bit.

650 WATSON: Yes.

651 TAYLOR: Now, how was food onboard the ships in those days?

652 WATSON: Ah, as far as I remember it was fairly good. Our dining table was one of these  
653 things that rocks, so they stay at level. You came and went. You made a pass at your food  
654 [laughs] and it went away from you.

655 TAYLOR: Did you ever get seasick when you were out?

656 WATSON: Oh, a little bit, the first day or two. That was the trouble. Most of us, of course,  
657 went out on two-week stints, so that everybody got a chance, you see, of going to sea, and very  
658 often in the first couple of days one felt nausea, but then Dramamine came in, and what's the  
659 name in the States? Gravol: that helped a great deal to work on this sort of thing.

660 TAYLOR: Did you know Al Woodcock?

661 WATSON: Oh, yes. [??] a permanent. Well, he was . . . . I don't know whether you would call  
662 him a scientist or not. I don't think he had a very high standing academically, but he was always  
663 on the ship. He did all the "Joe"[?] work connected with looking after apparatus and looking  
664 after water bottles and things like that. No matter who was going on the expedition, he'd be one  
665 of the [??] aboard.

666 TAYLOR: Well, it was interesting. I visited him about three weeks ago in his home in Hawaii,  
667 and he said that it took him years to get over getting seasick when he went to sea.

668 WATSON: Yes.

669 TAYLOR: He said he got a little less each time, but he finally conquered the whole thing. You  
670 mentioned that he didn't have much of an academic standing. Actually, he was a high-school  
671 dropout.

672 WATSON: [Laughs.]

673 TAYLOR: But he ended up with an honorary Ph.D. for some of his published papers, and all  
674 that, so he did pretty well.

675 WATSON: Where did he get that from?

676 TAYLOR: Ah, C. W. Post on Long Island.

677 WATSON: Is that the university?

678 TAYLOR: Well, no, it's not State University of New York. It's a private institution.

679 WATSON: Um-hum.

680 TAYLOR: But yeah, he's 95 and still going strong. He's kind of like yourself. What was your  
681 typical day ashore like when you were . . . ? You'd come back from sea. I assume you'd be  
682 loaded with data. So what would you do when you got back into port?

683 WATSON: [Laughs.] That's a good question. Usually you had to straighten out most of the  
684 gear that got into a mess onboard the ship. If you had any thing that involved experimental [??]  
685 onboard, get that straightened out, put back in your lab and so on.

686 TAYLOR: OK, now what would you do with all the data you collected?

687 WATSON: Well, most of it had to be analyzed and worked up.

688 TAYLOR: OK, now, "analyzed" is a kind of general word. When you say "analyzed," exactly  
689 what were you doing? What kind of things were you looking for?

690 WATSON: Well, if you can build a map of all the currents in a certain region, the data for that  
691 consisted of measurements of salinity and temperature. You have to get from salinity and  
692 temperature to currents. It's a big jump. You had to craft a distribution of the density and work  
693 up from this density what the current pattern was of the . . . .

694 TAYLOR: OK, now would you physically, yourself, do that kind of work, or would one of your  
695 research assistants do it?

696 WATSON: Both.

697 TAYLOR: And then you would take that data and make some decisions with it?

698 WATSON: Yes. Because there were people that were interested in the comings and goings of  
699 the plankton, you see. That affected the distribution of the fish, which is a long chain up.

700 TAYLOR: True, true. Did you ever consider research as a full-time occupation, as opposed to  
701 doing the academic thing during the winter?

702 WATSON: Well, of course, in physics, a lot of your work is of an experimental nature anyway.  
703 It's hard to separate out research as if it didn't exist when you're teaching. Even the experiments  
704 that you do in laboratories continually get modified and improved and so on.

705 TAYLOR: OK, so you really see academic and research basically as kind of a single entity.

706 WATSON: On the other hand, the salaries of the academic staff very often depend a great deal  
707 on how many papers you've published. [Laughs.] That's a bone of contention, because there are  
708 good teachers and there are good research people, not necessarily not the same. Back to the  
709 conditions on the *Atlantis*, I remember there was one cabin we used to call the "Jesus bunk." It  
710 was right behind the deck laboratory. There was an opening from that looking into the  
711 laboratory, and I can remember one time lying in bed there and watching Maurice Ewing pack  
712 dynamite into little bags of things that he was going to drop down for some of his seismic work.  
713 This was not very encouraging to go to sleep with that going on under your nose.

714 TAYLOR: What was Maurice Ewing like? Just to kind of preface that question a little bit, they  
715 tell me when you were at sea with Ewing that if you could find a lifeboat that you could crawl  
716 into you might get a couple of hours' sleep. Otherwise you were going to be working 24 straight  
717 hours. Is there any validity to that?

718 WATSON: He was a very energetic person. He came up at the beginning of the war from the  
719 Lamont Geological Observatory down on the banks of the Hudson, and he brought two of this  
720 students with him, Al Vine and Worzel. Al Vine you certainly know from . . . . He gave his  
721 name to the submersible, so well known.

722 TAYLOR: That's right. Well, it's interesting. He was another one like Al Woodcock and Dean  
723 Bumpus and people. They wouldn't get through the front door today, because they didn't have  
724 the academic credentials.

725 WATSON: [Laughs.] Yeah.

726 TAYLOR: But yet you assign them some kind of tasks, or they'd have an interest, and they  
727 could do most anything.

728 WATSON: Yes.

729 TAYLOR: Now, as World War II approached, did you notice any changes in the way the  
730 Institution operated, or did things go along the same as they had before?

731 WATSON: No, the feeling of hush-hush came in gradually. Then, of course, that separate  
732 building that was entirely hush-hush with research projects. There were all sorts of things going  
733 on, like there were projects on explosives going on in the harbor and people used to refer to them  
734 as the “Bang Boys, “ because they did their explosions. They did all these explosive tests right  
735 close into Woods Hole, not way out in the ocean.

736 TAYLOR: I know. Do you remember someone named Arnold Arons?

737 WATSON: Not really.

738 TAYLOR: OK. He came to the Institution during the Second World War. I guess he was in his  
739 late 20s and had either just received or was in the process of getting his doctorate, and he was  
740 part of that “Bang Boy” group and talked about setting off explosives out in that area. Was there  
741 sort of an influx of new people into the Institution during that period?

742 WATSON: Well, another project [??] during the war, was the development of the  
743 bathythermograph. This was developed by a fellow from South Africa.

744 TAYLOR: Athelstan Spilhaus?

745 WATSON: No. It was Spilhaus.

746 IAN WATSON: Athelstan Spilhaus?

747 WATSON: Yes. Right, the point being that previously temperature determination was taken by  
748 lowering a thermometer and bringing it up and reading it and lowering it and taking another  
749 reading. It was a very tedious process. You had to stop the ship while you were doing this.

750 TAYLOR: [??]

751 WATSON: [??] consuming. He developed . . .

752 TAYLOR: Is he coming through OK? [Microphone noise.]

753 TECHNICIAN: Too low.

754 WATSON: [??] method. It was much more effective, and the process of sinking it and raising it  
755 up using an electrical winch. It was very light, strong wire, and it could be lowered without  
756 stopping the ship. That was the big thing, you see.

757 TAYLOR: Oh, that was huge.

758 WATSON: [??] so fast that it would sink even though the ship was going ahead, and you could  
759 pull it up again so the extra speed of adding the weight of retrieval to the velocity of the ship, and  
760 this made the bathythermograph a much more usable tool, and then of course this was used  
761 entirely for the detection, along with the study of sound distribution in the ocean.

762 IAN WATSON: I'll just move the chair just a little closer.

763 WATSON: It was us . . . . Sorry. [Sound of chair.] It won't slide. [Loud sounds of chair.]

764 IAN WATSON: Just adjusting the chair here. There we are. Now you're closer to the  
765 microphone.

766 WATSON: Yeah.

767 TAYLOR: OK, now . . .

768 WATSON: I was saying, now it was . . .

769 TAYLOR: Did your work on currents and things like that change during the war? You did  
770 some work with the SOFAR Channel, didn't you?

771 WATSON: I got shifted onto it soon after. Maurice Ewing came up. He was the father of the  
772 SOFAR project, and, of course, the SOFAR Project . . .

773 IAN WATSON: A sip of water. There we are.

774 WATSON: . . . basically designed an air-sea rescue of downed planes so that you could have a  
775 little 5-lb TNT bomb on the wing of the plane, and this could be exploded, either by a hydrostatic  
776 switch, or by remote control, and if a plane went down you could set this bomb off, and of course  
777 radio was no good, because it could be picked up by the enemy just as quickly as your own  
778 people. So what you needed was some other thing. Well, the sound . . . . I think Maurice Ewing  
779 was the one that brought into emphasis these sound channels. Incidentally, the sound channels  
780 had been important in connection with the bathythermograph, because it was shown that  
781 submarines could hide in an acoustic shadow, or could be in a place where the sound was  
782 channeled to stay in one level, because the density distribution was such that if a sound wave  
783 started to go up it would be bent down. If it started to go down, it would be bent up. It was  
784 channeled to a particular depth, you see. Five hundred meters was the case that was important.  
785 The deep sea . . . . This channel exists right across the oceans, not just locally. In the case of the  
786 bathythermograph, it could be quite local, because of fresh water from rivers and so on, but the  
787 SOFAR Project: that was way below the mixing level that would be affected by freshwater input  
788 and so on. You need two things: one, a place where you could set a signal off at the right depth,

789 and the other one where you could receive it at the same depth. You need to have listening  
790 stations, and you need to be able to set it off. Now the trouble is that at the time when this was  
791 most important was when the Japanese were in the war, and their islands were surrounded by  
792 reefs just like the Bahamas, so this project developed methods of putting a hydrophone down at  
793 500 meters on the shore of an island where other sounds heard[?] nothing at all, but you had to  
794 go over kilometers of reefs. What would happen to your cable? Of course the first thing we did  
795 was ask the cable companies. Their answer was simple. They didn't put cable over reefs. So it  
796 was up to us to discover some way of getting our hydrophone down, our listening device, down  
797 to 500 meters. No problem about setting off a bomb. You didn't have to be on a reef or  
798 anything. You could drop it anywhere, and as long as it had a proper switching device it would  
799 go off when it reached 500 meters depth, and then that sound would travel along horizontally. If  
800 you had a hydrophone at the same depth at the other side of the ocean, then you would get your  
801 signal.

802 WATSON: Well it's gone on to be a really kind of special place, that SOFAR channel, and  
803 there's been a lot of controversy over the years in terms of, oh, environmental groups not  
804 wanting certain kinds of mechanical features to be used in the SOFAR channel because it will  
805 affect whale communications and . . . .

806 WATSON: Studying whales now, I think. [Laughs.]

807 TAYLOR: Sure. So you were in on the start of something that really has gotten to be a big deal.  
808 How did you happen to get involved in this? How did they put you into this?

809 WATSON: I don't know. It was just that I had had a lot of experience with handling gear. You  
810 see, the problem was how do you get your stuff across this damn coral reef? How do you do  
811 things in water that depth? These are the same problem that I'd been dealing with in my current  
812 meters and current measurements.

813 TAYLOR: So it really wasn't any problem for you to gear up to work on this, then?

814 WATSON: No, and we chose Eleuthera because it was so similar to the Japanese islands, this  
815 reef around it.

816 IAN WATSON: That was '44, '45. That was the year we stayed down all year.

817 WATSON: Yeah, that's right.

818 IAN WATSON: Eleuthera, the winter of '44-'45. I was in grade eight down at Henry W. Hall  
819 School.

820 WATSON: I'd forgotten that. We were very fortunate in that we had [??] we had some rich  
821 merchant in the Bahamas offered us his summer home there as a place to work from, what was  
822 Governor's Harbor, and near to it was this place. We tried this out, and I've forgotten just what  
823 the difficulties were. One of them was the no-see-ums that came in right through mosquito  
824 netting and everything and made life miserable.

825 TAYLOR: They really are miserable things.

826 WATSON: And we moved to Three Bay Farms, which was owned by Mr. Davis, President of  
827 Alcoa (Aluminum Company of America). He had a plantation over in Eleuthera, and his project.  
828 He had those things going to grow a lot of things, and he tried plowing up the coral and making  
829 it into fertile soil somehow. That was the main thing. He was growing various crops and  
830 experimenting with them, and he had a number of houses there, which were guesthouses, and he  
831 had an office building with a regular office staff where paperwork of various sorts could be done.  
832 He offered us a . . . . And then he had a bay called Half Sound in which a small boat . . . . And  
833 he'd blasted a channel through the coral for his yacht to come into this Half Sound. So this was  
834 just exactly what we wanted for facilities for our buoy boat, on which we could carry out the  
835 rolls of cable and that sort of thing across the reef. So we had accommodation. We had a  
836 suitable place for research work, and we built our lab right there on the spot.

837 TAYLOR: Now about how long were you there?

838 WATSON: I don't know how long. [Laughs.]

839 IAN WATSON: Well, it was just that one winter. I think you were back by the summertime.

840 WATSON: Yeah, I guess so.

841 IAN WATSON: Because I went to camp that summer. So . . . you left in the fall and were back  
842 in the springtime.

843 WATSON: I don't remember exactly.

844 IAN WATSON: I can clearly recall. I mean I was a . . .

845 WATSON: You were in school then.

846 IAN WATSON: Well, yeah, I was about 14 by then. I went to school there. So I remember  
847 Dad going and coming back.

848 TAYLOR: So he had a winter in the Bahamas, then.

849 WATSON: Yes.

850 IAN WATSON: Yeah.

851 TAYLOR: That's a good deal.

852 WATSON: That was all right. [They laugh.]

853 TAYLOR: Did you see any peacetime applications for the SOFAR channel when you were  
854 working on this?

855 WATSON: No, it was pretty well, as far as we were concerned, were finished just about the  
856 same time that the war was finished.

857 TAYLOR: So you had done with the SOFAR what you had planned on doing, so . . .

858 WATSON: Yes.

859 TAYLOR: . . . you stopped working with it after that, huh?

860 WATSON: Went home.

861 TAYLOR: Were there any problems you faced as a Canadian national working in the U.S.  
862 during the war years?

863 WATSON: Oh, Dr. Bigelow fixed it. He had a special permit at the border. I think they have a  
864 little black book in which they have the names of people who weren't to be allowed into the  
865 States, and as a special entry they had my name down that I was one that should be allowed. I  
866 have a work permit, of course.

867 TAYLOR: And did you have a security clearance?

868 WATSON: Yes, but you see at that time we were quite good friends with um, what's his name,  
869 the captain now of the Coast Guard ship that was based at Woods Hole?

870 TAYLOR: Dinsmore?

871 WATSON: No.

872 TAYLOR: Not Smith?

873 WATSON: No. A tall, slim fellow. Anyway, we were socially OK with him, and he was one of  
874 the ones that put in a recommendation for us, you see. This went through faster than the  
875 American people who were applying for similar things.

876 TAYLOR: Uh-huh. Now, after the Second World War the Cold War came along. Did this  
877 affect you in any way in terms of your research or your funding or anything like that?

878 WATSON: No, not really. It became more academic. After I left . . . . Well, I finished up at  
879 Woods Hole around 1954. I was invited to the [coughs] Pacific Naval Laboratory at Esquimault,  
880 which is in B.C., the headquarters of the Canadian Navy on the Pacific Coast. They have a  
881 research laboratory there, oceanographic research, and they were interested in my current

882 measurements, and so on. I went there for two summers, and by that time I was getting fed up  
883 with straining my back putting instruments into the water. I was getting a bit old for the job, and  
884 decided just [laughs] to drop the oceanographic and stick to teaching.

885 TAYLOR: Oh, OK. How were you funded in those earlier years?

886 WATSON: Well, I got a salary from Woods Hole, and I had my regular Queens salary, put  
887 together we survived. [Laughs.]

888 TAYLOR: Did you do any work for the U.S. Navy that would be classified?

889 WATSON: Well, one of my current-measurements device, specifically for harbor work, it has  
890 problems. I developed a system--wouldn't call it an instrument; it was a collection of  
891 instruments [laughs]--a system for determining current profiles in bays and harbors, particularly  
892 shallow water. You could send an instrument down and bring it up, and you'd have a record of  
893 the current at every depth from bottom to top.

894 IAN WATSON: And that was funded by the U.S. Navy?

895 WATSON: Yes. I have all the patent descriptions of it there. The patent was put through by the  
896 U.S. Navy in my name. I didn't get anything out of it, but . . . . [Laughs.]

897 TAYLOR: Well, now I'm curious about this. You've done an awful lot of work on  
898 instrumentation, and that's not usual for a researcher.

899 WATSON: That's due to my tinkering as a boy.

900 TAYLOR: [Laughs.] Well, it made for kind of a unique combination, and I'm curious as to  
901 what the genesis of it was. Did the development of instrumentation come because you had a  
902 desire for greater accuracy in your research, or was it really two kind of separate things--that you  
903 enjoyed both the research, and you enjoyed developing new instruments?

904 WATSON: I think it's just a natural interest in beating natural difficulties. [Laughs.]

905 TAYLOR: Uh-huh, well certainly instrumentation is one of them. That's one of the more  
906 difficult parts of this field. Besides your original current meters, what else did you do of this  
907 nature--instrumentation--or was it just the original current meters?

908 WATSON: Uh, I think in later years I was pretty well preoccupied with academic work, looking  
909 after students and having them weep on my shoulders and offering a comforting arm and so on.  
910 [Laughs.] I'd have . . . . Especially girls would come in, and they'd be weeping because they  
911 had done brilliantly in school, and they'd come to university, and their grades had just flopped  
912 right down to nothing.

913 TAYLOR: Oh, tell me. I taught marine sciences for 36 years, and I know exactly what you're  
914 talking about.

915 WATSON: The parents . . . . It's not that the children themselves were upset, but their parents  
916 were so upset, and then the kids were upset because their parents were upset. [Laughs.] I had a  
917 lot of cases like that. [Laughs.]

918 TAYLOR: Yeah, I can believe it. Who were the directors that you worked under at Woods  
919 Hole? There was Henry Bigelow.

920 WATSON: Yeah, then Iselin, and then uh who was it?

921 TAYLOR: "Iceberg" Smith?

922 WATSON: "Iceberg" Smith.

923 TAYLOR: OK, you worked under him.

924 WATSON: "Iceberg" Smith didn't have too much use for me.

925 TAYLOR: Oh, really?

926 WATSON: I was a Canadian, and I don't think he approved of the work that I was doing. He  
927 didn't approve of me because I was a Canadian working in the United States. I think he felt that  
928 I was out of place. So that was one reason why I went up north to Esquimaux.

929 TAYLOR: Oh, I see. I see. Was there anyone at the Institution that you really thought  
930 particularly highly of over the years that you were here?

931 WATSON: Well, there were a number of people that we mentioned previously who had their  
932 own fields, and they were alone in their own fields. It's difficult to give them any priority.

933 TAYLOR: Uh-huh, sure. Now, would you go over again, just to kind of end off, what caused  
934 you to finally stop coming to WHOI?

935 WATSON: Age. [Laughs.] Age and Admiral Smith, Admiral "Iceberg" Smith. [Laughs.]

936 TAYLOR: [Laughs.] Well, that's interesting.

937 WATSON: I didn't have the warmth from him that I had from the previous directors.

938 TAYLOR: Uh-huh, well, the Institution had also grown considerably by then, hadn't it?

939 WATSON: Yes.

940 TAYLOR: And do you think in that growing that it lost some of the family feeling that  
941 everybody had for everybody else.

942 WATSON: Oh, I think so.

943 TAYLOR: Because I know many people that come from your time period lament the passing of  
944 that familial kind of thing that existed at Woods Hole then. Well, OK, that's wonderful. Is there  
945 anything you would like to add to this oral history that I haven't covered?

946 WATSON: Uh, no, I don't think so. I emphasize again that that group of people that you  
947 mentioned being there. But then nearly everyone--I forgot actually just how many there were  
948 you mentioned, but--I think out of about eight or nine names, we were on very close  
949 relationships with about seven. [Laughs.]

950 TAYLOR: Yeah, yeah. That must have been a wonderful time in your life.

951 WATSON: Yes, yes.

952 TAYLOR: I mean you had your science. You had the closeness of the people here.

953 WATSON: And it was a nice change, every year going down. We'd . . . . I got a trailer for my  
954 car, and load up the trailer with our trunks and our box of charts and whatnot, and roar down to  
955 Woods Hole and then come back again in the fall.

956 IAN WATSON: You had the same place for how many years down there?

957 WATSON: Oh, yes, we had a cottage that we bought every year and gave it back to the owner.  
958 [Laughs.]

959 IAN WATSON: On Leslie Street.

960 WATSON: Leslie Street, yeah.

961 TAYLOR: Well, this has been terrific, and I'd like to thank you very much for taking this  
962 amount of time with us.

963 IAN WATSON: After editing or anything, Frank, if you want to fill in any gaps or holes, I'm  
964 sure Dad's . . . . We can do it again, if that's what you . . . .

965 TAYLOR: OK, now, Ian, let me ask you a question. Do you think there's anything we're  
966 leaving out here of the WHOI years?

967 IAN WATSON: Oh, I don't know. I can't think of anything. I mean I have my own stories. I  
968 think what Dad brought out about the closeness of the families. My generation it was David  
969 Clarke, Tom Stetson and then some others outside the WHOI connection--people like Peter  
970 Spalding[SP?] and so on, that we . . .

971 WATSON: Oh, yes, the Spaldings[SP?].

972 IAN WATSON: . . . literally grew up together from when we could start talking to each other,  
973 age whenever that is, four or five, right up until . . . . For instance, David Clarke was my best

974 man at my wedding in 1958, so that sort of next-generation strong connection, and, as Dad said,  
975 then my children--I guess you haven't met any of them yet, but--they go down there now more  
976 frequently than I tend to, and in fact my ex-wife rents a house halfway to Quissett and sort of  
977 rents it out to my children throughout the summer. [Laughs.] So that's getting off story a bit,  
978 but just to say that sort of that genesis of what happened in '31 or '32 and then through the '30s  
979 hasn't really stopped.

980 TAYLOR: Yeah, well give me a few paragraphs here. What was it like growing up as the son  
981 of one of the original scientists in the Oceanographic community?

982 IAN WATSON: Well, my own personal bent wasn't particularly science. For instance, Tom  
983 Stetson, for instance, grew up on the *Asterias* and other boats, and he was very oriented to  
984 working round the Oceanographic. And you know he had a subsequent career there. But David  
985 Clarke and I, for instance, probably spent more time--well, beaches, yes, but also--sailing. I  
986 think they still had *Kingfisher III*, *Cape Cod Knockabout*, and I used to race. When I went to  
987 university, it was about the last full-time summers there. Well, I went to McGill in '51 and  
988 graduated in '56, so just about the time Dad was finishing there was . . . . Well, in a sense I  
989 finished sooner, because I spent my summers in the Canadian Air Force, for summer  
990 employment. So that my full time down there kind of ended in a sense a couple of years before,  
991 in the early '50s, but it was that closeness of my generation too, the fact that the Clarkes lived  
992 across the golf course from where we did on Leslie Street and back and forth on our bikes across  
993 the golf course and downtown and around. It was quite a tight-knit sort of place, and oriented, I  
994 think, to sailing and the beaches.

995 TAYLOR: OK, but it's leaving you with all kinds of warm feelings. I can tell just listening to  
996 you talk about it.

997 IAN WATSON: Oh yeah, yeah. I worked, as a teenager before University, I worked for at least  
998 two summers at the Oceanographic, once counting nuts and bolts in the supply department there.  
999 I went to sea briefly, but I was so seasick. They chartered the dragger for some of it. I guess I'm  
1000 talking, oh, probably 1946 or '47 when they were doing some of the underwater stuff off  
1001 Georges Bank, and I was on one of the ships quite briefly as cook. I don't forget that. I got quite  
1002 seasick. What cured me of seasickness was later, during those Air Force summers, was going up  
1003 with instructors in Harvard Aircraft and being put through the full aerobatic paces.

1004 TAYLOR: That would certainly do it.

1005 IAN WATSON: I don't get seasick any more. I haven't, from the '50s on, [laughs] and that  
1006 includes a recent uh exciting crossing of the Gulf Stream in a 32-foot sailboat two winters ago  
1007 [laughs] over to the Bahamas, [laughs] in which the storms increased instead of decreased, and I  
1008 was the only one that didn't get sick. So there's some footnotes for you.

1009 TAYLOR: OK, good enough. Well, I think we've kept everybody talking long enough here. So  
1010 thank you again, and we'll be in touch along about this whole thing

1011 IAN WATSON: Any things you want to fill in, we can set it up again.

1012 TAYLOR: OK, great.

1013 IAN WATSON: Nice talking to you.

1014 TAYLOR: Nice talking to you.

1015 IAN WATSON: Bye.

1016 TAYLOR: Bye-bye.

1017 WATSON: You asked for a photo. I don't know if I have anything that's available.

1018 TAYLOR: For the what?

1019 WATSON: I say you asked for a photo on your list.

1020 IAN WATSON: Oh, Margo was suggesting that as you put all this together you might want to  
1021 put it together with a photograph or something.

1022 TAYLOR: Yeah, we'll need a photograph, and one of the other things we'll have to send you is  
1023 a release form so that other academics can use this oral history.

1024 IAN WATSON: We'll work out a photograph.

1025 TAYLOR: OK, great.

1026 WATSON: That's Maureen.

1027 IAN WATSON: Bye-bye.

1028 TAYLOR: Bye-bye.

1029 IAN WATSON: Somebody's at the front door.

1030 TAYLOR: OK, bye-bye.

1031 [Hang ups, END OF TAPE]