

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY

NEW BRUNSWICK

AN INTERVIEW WITH HENRY RAYMOND IRONS

FOR THE

RUTGERS ORAL HISTORY ARCHIVES

WORLD WAR II * KOREAN WAR * VIETNAM WAR * COLD WAR

INTERVIEW CONDUCTED BY

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and

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TRANSCRIPT BY

DOMINGO DUARTE

Shaun Illingworth: This begins an interview with Henry Raymond Irons in New Brunswick, New Jersey, on May 16, 2008, with Shaun Illingworth and ...

Gregory Flynn: ... Greg Flynn ...

SI: Also in attendance is ...

Anne Irons: Anne Irons.

SI: Thank you very much. Now, the transcriber will know who everybody is.

Henry Raymond Irons: She's my wife. [laughter]

SI: Thank you very much for sitting down with us. To begin, can you tell us when and where you were born?

HI: Lakewood, New Jersey, January 19, 1921. ...

SI: What were your parents' names?

HI: My dad's name was Raymond Irons, my mom's name was Alice Irons. ... She was born in Paris and she came to this country about 1913, I think, just before the war. ... It was she who gave me the most incentive for going to college, really. ... It was right in the middle of the Depression when I went to college and it was [then the prevailing attitude that], "Eh, are you going to get a job after you go or not?" It didn't seem like anybody's going to get a job. [laughter] So, that was the way things started, and she wanted me to go and I went to college here.

SI: How old was your mother when she came over from France?

HI: She was probably ... about twenty-one, I think, yes.

SI: Did she ever explain why she came to the United States?

HI: ... Well, I guess men were in short supply ... after the World War, in France in particular, and then, she wanted a better life. ... Her sister, half-sister, had come over previously. So, she had someone to meet her when she got to Ellis Island here. [laughter] When she got to Ellis Island, ... her sister was waiting there for her and ... the [immigration] agent said to her, "Where is your sister over here?" and she says, "Well, I haven't seen her in twenty years." [laughter] So, she didn't recognize who her sister was, of course, yes, but, then, later, she worked ... as a housekeeper and cook ... [for] a doctor near [her home, in] North Jersey someplace. I've forgotten exactly where. Then, she met my father. My father ... operated a taxi service out of Lakewood, New Jersey. ... Lakewood was then a resort town for people from New York, and so, they got married up there, then, settled down, and I have two older sisters and a younger brother. ... Like I said, in the middle of the Depression, people were uncertain about [the future]. She, my mom, urged me ... to go to the University, because, like I say, ... jobs were so

scarce. Whether you went to a university or not didn't matter much, either. There just weren't any jobs, yes, but she [insisted], like, I went, and I enjoyed the life here very much and ... I did very well. ... I applied myself very well. So, I was a good student, yes, I guess. Let's see, I got Phi Beta Kappa in my junior year, I guess, and [I was] what you call a "nerd," nowadays. [laughter]

SI: When had you gotten interested in the sciences?

HI: Well, let's see, ... I had a very good physics professor, teacher, ... in high school. He got me into it. I was interested in it from him, I think, probably, yes, and his name was (Leffingwell?). ... I haven't seen him, oh, in many years. He surely must be dead by now, yes. So, that was why I got started in [the sciences], you know. Then, when I ... came to Rutgers, I started in the engineering program, ... to get an engineering degree, and I was lucky there, had some good teachers, too, and it was very nice. ... Like I said, I always applied myself very well. ... I studied a lot. ... Academically, I always did very well, yes.

SI: You talked about the Great Depression earlier. Did it heavily impact your family?

HI: Pretty much, yes, yes. Well, my dad, ... he had an automobile and ... a taxi service. So, they made out pretty well. ... Lakewood is a resort town. There are a fair number of well-off people. My mom worked as a cook, you know. She was from France. She was born in Paris. They had a French cook; that was very, very elite. [laughter] ... That worked out well, ... but I guess a lot of the people you interview ... my age must comment on the Depression, because things were really, really tough in those days. ...

SI: Do you remember some of the things you had to do to make ends meet?

HI: Well, I had a newspaper route from the time I was five, I think, a very small one. ... I was the only one in the family [who] had money. [laughter] I've forgotten, well, I think you made a penny on each paper and I sold about; well, I had a regular route. I didn't sell them on a corner or anything like that, but I was the only one that had spending money, really. ...

SI: Whenever I interview somebody who was a paperboy during the Great Depression, they often talk about how they had to basically wring the money out of people.

HI: Well, ... I didn't have too much [trouble]. ... I did have some places it was hard to collect, yes, but, ... well, like I said, [in the] Depression, people didn't have the money. [laughter] ... They weren't ... trying to cheat you, but ... it wasn't available, but it worked out fine. I was lucky that I had this paper route. It was an easy route, ... about twenty-five people, eventually, did it on my bike. It was the *Lakewood Daily Times*, was the paper. ... It's only an afternoon paper. ...

SI: You said Lakewood was a resort town. Was it empty for most of the year?

HI: Yes, ... it was a winter resort, essentially. It was a winter resort for people from [the] New York area, yes, and it developed into ... mostly a Jewish ... clientele. I don't know exactly why,

but that's the way it worked out, and, see, my dad operated a taxi service and he took people to New York. He always complained that he'd have them within a block of their house, [but] they didn't know where they were. [laughter]

AI: [Were] they having a few drinks before they got in the taxi?

HI: No, I don't think so, honey. ... I don't know, they just had never been out, away from their home, before then, but he always got them there. He never brought any back. ... I had my two sisters, and then, my brother, my brother, Jim.

SI: Among the people who lived there year round, what was the neighborhood like and what was that community like?

HI: Well, ... the Depression didn't hit as hard in that area as it did in other places, I don't think. ... Well, my dad had this taxi service. ... Actually, that was just in the wintertime. [In] the summertime, ... he sold vegetables along the shore ... from a truck. ... I went with him, getting up [at] five o'clock in the morning. Well, we got up four or five o'clock to go to the market in Neptune, New Jersey. ... You buy the produce, to start with. Then, we always said, "It's off our farm," of course, [laughter] but, anyway, we're principally in Avon-[by-the-sea]. That's a very nice town. It's a small town. You know where it is, Avon? It's just below Asbury Park. It's always been [nice]. Well, at that time, in the (isle?), it was kind of distinctive. Belmar was a little bit lower grade. [laughter] We went there in the afternoon. ... Well, like many, most people really, really were in tough straits for that Depression. ... I imagine, in many countries, there'd [have] been a revolution, really; it was that bad, I think, yes.

SI: What did your family think of President Roosevelt and his New Deal program?

HI: Well, my mom liked him very much. ... They both liked FDR, yes, and especially my mom. ... [I] can't remember a time when my mom didn't work. She was a seamstress in a coat factory. She belonged to the, let's see, the ladies working [union for] the garment industry, but there's a name for their union. I can't think of it right now.

SI: Garment workers.

HI: Yes, ... International Ladies' Garment Workers' [Union], that's it, yes. ... So, I can never remember a time when she didn't work, really, but, eventually, she retired, of course. ... We moved into a new house when I was about five, ... right on River Avenue in Lakewood, on the main route. ... At that time, it was the main route between New York and Atlantic City. So, it was a very well-traveled route. ... Now, there's a bypass for that, and then, I had my paper route.

SI: Was the community somewhat rural?

HI: No, it's kind of specialized. It's a resort. It's a resort community, really. That was our main source of income and, of course, it was a winter resort. In the summertime, there wasn't too much there, really. ... So, in the summertime, ... my dad, we sold vegetables along the seashore, well, Avon and Belmar, that area.

SI: Did you have any other jobs, besides selling the vegetables and the newspaper route?

HI: Well, let's see, no, I didn't, no. ... Well, as I remember, I started with ten newspapers, I think it was ten, but, in those days, ten cents a day was a pretty great thing. [laughter] ... No, I raised chickens, too. I built a chicken coop in the back. I raised chickens, had eggs and chickens for awhile. It was mostly eggs. ...

AI: Tell him what your brother did with those chickens.

HI: Well, I've forgot; oh, yes. [laughter] ... At that time, I was going with my dad to sell vegetables along the shore and, one day, we came back and my brother, Jim, had left the pen open. ... The chickens, or half of them, ended up ... in the little fish pond we had then. [laughter] So, that was an unhappy thing, but, ... like I say, ... we survived the Depression pretty well, but it left a mark on half ... the people in the country, I think, yes. ... That was one reason that FDR was quite popular, ... whether [it would have] happened or not, but he's known ... as the person that got us out of the Depression, really, yes.

GF: Do you remember any of the Fireside Chats?

HI: Let's see. ... Of course, we didn't have a TV then, we had a radio, and, let's see, I built the first television set we had, right after the war. ... That was when I was working in Washington by then. ... Another fellow and I, we bought ... the main vacuum tube and the parts and built television sets and used those. ... I remember, my grandmother saw that ... television for the first time, it's the first one she'd ever seen; man, she'd probably never ... heard of a [television set]. She said, "My goodness, what's that?" [laughter] ... Well, like I said, ... without my mother's urging, I don't think I would have gone ... to [Rutgers] University, I don't think.

SI: Did your mother keep up any aspects of French culture or heritage in your home?

HI: Well, she never spoke French in the house. She said she wanted us to be Americans, not [French]. [laughter] So, she never spoke French in the house. ... Well, in high school, I took French and, at Rutgers, I took one semester of French. I was in engineering, so, ... that was an elective, and we still, Anne and I both, speak French, because she was a stewardess for American Airlines ... and one of the routes was Paris, and so, that's a theme. So, we still struggle with French. ... I still have cousins in France and we visit them. They come here and visit us, sometimes, and that's been, actually, ... a fairly important imprint on my life, I think, my French mother, yes.

SI: What about food?

HI: Yes. Well, you see, everybody'd say, "Oh, your mom's a French cook, oh."

AI: Chef.

HI: We thought, "Well, it's not [that] great." Well, we never knew anything else but that, so, we thought it was pretty ordinary. [laughter] ... Actually, you know, those days, well, the impression left on me, oh, a terrible imprint on that whole generation, really, yes; you've probably heard that before, yes.

SI: Do you remember anything else, such as having to collect firewood to heat your home, things like that?

HI: ... No, we were fortunate enough to have enough money to get [heating fuel]. We used coal, I guess, yes. I remember, you used coal and, sometimes, ... when you banked it, it was only partly burning. ... I guess it was carbon monoxide was given off. [laughter] ... We survived.

SI: Did you see the Depression hit the town very hard? Did fewer people come down in the winter?

HI: Yes, yes, it was [not as bad], because it was a fairly prosperous [resort]. This resort town was quite prosperous. You know, J. Rockefeller had an estate there, for instance, and [George] Jay Gould had an estate there, some of the big [business tycoons], and they're still there, they say. Well, one of them turned [into a college]. The Jay Gould Estate was taken over by a ladies college, yes, and [the] Rockefeller Estate is still there. ... You can drive through and see what they have there, ... but, you see, we had those, that unusual influence. We had these millionaires [who] were living there, too, [laughter] and, I mean, important millionaires. Jay Gould and Rockefeller are known worldwide, yes. [laughter] ... [Editor's Note: The Golf House Estate, home to both John D. Rockefeller, Sr., and John D. Rockefeller, Jr., eventually became Ocean County Park. The George Jay Gould Estate became the campus of Georgian Court University after his death.]

SI: Absolutely.

HI: So, that was a big part of it. ...

SI: How would you characterize your education in the area?

HI: Well, ... the high school education was very good. We had a very good teacher for physics and chemistry, and so, when I was ready to come to Rutgers, I had ... an excellent background in chemistry and physics, more so than most of the other students, it seemed like, yes. ... Then, of course, I was always a very studious one, like I say. ... I didn't belong to one of the fraternities or anything. I just studied. That was it, you know.

SI: In the 1930s, were you and your family following the news of what was happening in Europe with Hitler and Mussolini?

HI: Yes. Of course, we were, especially so, since my mother was born in Paris, ... and she still had cousins there, and she also had a sister there. So, we were following that very closely, of course, yes, [due to that] personal connection, yes.

AI: Henry, you might tell them about Gustav.

HI: Oh, well, let's see, ... he would have been my aunt's husband. ... He was in the First World War, [at] Verdun, and he came back with half a face, really, and so, that was always a deep impression. ...

AI: ... Having lost his eye.

HI: Yes, he lost an eye, of course, with that, ... losing half his face, yes.

AI: And he never covered it.

HI: Oh, yes, and then, the first time I saw him, ... well, he had this hole where his eye used to be. [laughter] I said, "My God, why doesn't he cover that up?" but the family and all, ... that was the way they knew him. It didn't bother them. Eventually, it didn't bother me, but the first time I saw him, it was terrible, yes.

AI: And then, he was a prisoner during the Second World War, or was that (Marcel?)? ...

HI: ... His sons were prisoners ... [in] the Second World War, yes.

AI: Yes, his sons, correct, and they ... had to leave Paris and go somewhere, Belgium? and work in a factory.

HI: Yes, that's right, he ended up as a factory worker in Belgium, yes, one of my first cousins did, yes. ... So, those are the sad parts. There were some good parts. [laughter] ... For instance, for the newspaper, my paper [route], I always had money ... to spend, not big spending money, but it came out, I think I started at ten cents a day. [laughter] Eventually, I had a bigger route of about thirty cents, thirty paper route customers. ... Well, I'm sure people that talk to you, ... my age, talk about the Great Depression.

GF: Can you remember a particular low point, or perhaps a particular high point, when things seemed like they were going to turn around?

HI: ... I think that one of the high points [was] when ... I went to Rutgers, you know. ... If it wasn't for my mom, I wouldn't have gone, because, ... well, like I say, many people said, "What's the point in going to college? There are no jobs anyhow. You're not going to get a job. Get out there and find something else," ... but because she wanted me to go, [I did]. ... I don't know what would've happened if she hadn't encouraged me, because ... people figured your ... job chances aren't much greater if you go to college or not. There just aren't any jobs there that are worth anything. ... Things were really rough then, and, of course, Roosevelt, either in fact or in fiction, got us out of the Depression, yes.

SI: Why did you choose Rutgers?

HI: ... Well, I got a; no, I didn't have a scholarship the first year, actually. The first either six months or a year, I didn't have a scholarship. I guess, we just figured ... things were pretty tight financially, but we'd be able to make it, and then, a fellow from our class, a very nice fellow, he moved to California. That left an opening there, so, I got, essentially got, his scholarship, I think [was] what it amounted to. ... Of course, in those times, if your family had any political connections, that helped [you] to get ... a scholarship at Rutgers. Now, you may not realize that. ... Apparently, it was true, I think. So, I didn't have one for the first year, half year, I've forgotten which it was, first year, yes, maybe, but how is it now? ... How do people get scholarships nowadays?

SI: It is based on need and merit.

HI: I hope so, yes. Of course, it was then. Supposedly, it was then, but, ... if your local state political person gave you a recommendation, that meant a great deal, apparently.

AI: But, you know, yours wasn't political. Yours was just because the one became available because the other boy left.

HI: Yes, that's true, that's true, yes. ...

SI: Do you think the guy that left had political connections?

HI: May not be. He was the president of our class and all that kind of thing, which helps. ... I don't think his was political, ... that I know of, yes.

SI: What were your first days and weeks like on the Rutgers campus?

HI: Well, I lived off campus on Easton Avenue. ... I don't know why I didn't live on campus, to tell you the truth, but I think maybe it was cheaper, I don't know, and I had a room on Easton Avenue with a lady, that I lived upstairs. ... It was comfortable and all. ... For some reason, I didn't have a very good background in math, in algebra, so, I really struggled for the first semester. All these other kids seemed to be just swishing through this and I was ... breaking my head against the wall, almost like.

AI: Was it algebra?

HI: It's algebra, yes, Algebra I, yes. ... For some reason, we didn't seem to have a very good [background], we didn't have the same background other kids had, ... as far as algebra [is concerned], and so, I struggled, but I finally got through. I always did very well. Eventually, I got, I think I got, "As" all the way through ... most all the courses, yes, but it was a struggle to start with, yes.

SI: Your first semester at Rutgers was when World War II started in Europe. Then, France fell at the end of your freshman year.

HI: Yes, yes.

SI: What was your reaction to these world events?

HI: Well, of course, since my mom was born in Paris, ... I followed it more closely than most people did. ... My aunt's husband, ... when the Germans came to Paris, ... he rode his bicycle ... about fifty miles south just to get away from them, yes. ...

SI: Was your mother concerned about her family over there?

HI: Oh, yes, yes, very much so, yes.

SI: Did she try to get anybody to come over to the United States or try to send aid to them?

HI: Well, we did send [assistance]. We sent clothes, in particular, I remember. ... That was the most convenient way to send things, clothes, not new clothes, particularly, just clothes.

SI: Did you find that most of your classmates at Rutgers were concerned about what was happening in Europe or did they ignore it?

HI: ... Well, most of the people I knew were engineers and they were struggling so hard to keep going, keep getting good grades, ... because most of them were people that knew ... they couldn't be playing around. ... Of course, there were some ... that weren't quite that way, but most of them were very, very studious, being kids, yes.

SI: Did you enroll directly in the College of Engineering or did you decide to go into engineering once you were here?

HI: ... Well, let's see, now, I remember, I enlisted for chemistry, actually. ... No, I'll tell you the story. I was going to start ... and go for chemistry. When I got to the registration ... table there, they said, "Well, ... there's no jobs in chemistry. It's engineering where ... you're going to find a job." So, that's why I changed. [laughter] That's when I decided, "I'm going to be in engineering." Yes, I'd kind of forgotten that part of it.

SI: Engineering is a very demanding curriculum.

HI: It is, yes. A lot of people find it hard. ... You can't fool [around]. ... You've got to be willing to put in a lot of time, yes, especially if you come from a school where they [did not teach you], for instance, the algebra. You know, I was very ill-prepared for algebra. I don't know exactly why, but I was, and that strikes me.

SI: Do any of your engineering professors stand out in your memory?

HI: Oh, yes, let's see, I had it written down, some of their names. ... I forget a lot of things, obviously, [laughter] but I think some of the professors are written down there.

SI: [Reading] "Mr. Potter?"

HI: Yes.

SI: Who was Mr. Potter?

HI: Well, he was an electrical engineer. He was in electrical engineering, yes, Professor [James L.] Potter. Yes, he was very good. ... Freshman year, I don't remember. I guess I was struggling, so, really struggling with them.

SI: When you came to Rutgers, they still had freshman initiations. Do you remember that?

HI: Yes, wearing your donkey or hat. What'd they call it, a dink?

SI: A dink.

HI: Yes. ... Aside from that, there wasn't [much else]. See, ... I lived off campus on Easton Avenue, yes, okay. Oh, yes, the professors I liked were [Stanley E.] Brasefield, he was the math [professor]. He was the calculus teacher. Professor [James J.] Slade, [Jr.], he was in engineering. ... At that time, ... the kids in engineering really, really put in a lot of time studying and there wasn't much playing around with them. ... We had ... some of the students in the fraternity houses, but most of them were [not]; well, we had a fair number of commuters, too, actually. Eventually, before I finished up, I commuted from home, too, ... a couple of years, yes.

SI: Did you find time to get involved in anything other than academics?

HI: Not too much. I learned to swim. [laughter] Even though I come from a place that's only ten miles from the shore, I never learned to swim, with a lake nearby, too. ... So, I learned to swim at Rutgers, actually. We swim a lot now in Puerto Rico, in the wintertime. So, we swim about three or four days a week, yes.

GF: Where did you learn to swim?

HI: Let's see, I learned to swim ... right here at the college, at the pool there, yes.

SI: Why did you choose mechanical engineering as a field?

HI: That's where the jobs were, essentially, yes. Now, eventually, I took all my electives in electrical engineering. So, actually, I'm an electrical [engineer]. I've never worked as a mechanical engineer. It's always been as an electrical engineer. ... So, when I went on my first job, I went to the Naval Research Laboratory in Washington, DC, and I was an electronic engineer there, yes. We didn't even have the word "electronic" then; just electrical engineer, yes.

SI: Pearl Harbor was attacked when you were a sophomore. Do you remember that day?

HI: Yes, I do, I think. ... Let's see, yes, I think actually it was a weekend. ... It turned out to be a weekend and I was at home, actually, when that happened, for the weekend, yes.

SI: Do you remember how you got the news?

HI: Well, ... when I got home, well, I remember, someone, my brother-in-law, telling me about it. He'd heard it on the radio, yes. ...

SI: Was it a surprise? Had you been expecting America to get involved in the war?

HI: Oh, yes. No, that was a big surprise, yes.

SI: Did that immediately change your plans?

HI: No, let's see, no, it didn't. ... Well, I guess it might have. ... When I wanted to get a job after I graduated, I went to Washington to get a job, in the Navy Department, yes, the Naval Research Lab, I mean, particularly.

SI: Was there anything at Rutgers that prepared you for what you would do with the Navy Research Lab?

HI: Oh, yes. We had a good engineering school here and we had good professors, you know, and the work ethic. [laughter]

SI: Was the faculty conducting research in the same vein? Did they have connections there?

HI: Let's see, not too much. ... I'm confused about undergraduate and graduate, because I got a master's degree here, too, in engineering. So, I sometimes can't [keep] them all separate, ... sometimes.

SI: You received your master's degree in 1946.

HI: Yes, right after the war, yes.

SI: Was it a one-year program or more than a year?

HI: Yes, a little more than a year. Let's see, actually, during the war, ... I'd gotten part of my master's program at George Washington University. ... When I was working there, I went to school. I went nights there at George Washington, got started. Then, I finished it up here after the war, yes.

GF: You talked about your interest in science and how you put the television set together. Did you continue to tinker around with other things like that as well?

HI: Well, ... during the war, another fellow and I, because, see, television arrived after the war, ... right after the war, we bought, let's see, I've forgotten the company that sells parts, or we bought the vacuum tubes and other tubes. ... We made our own chassis and stuff and, essentially, built the whole thing from scratch. ... That was the first television we had, yes.

SI: Earlier, had you made radios and other things?

HI: Not too much, no. ... A lot of kids were into ham, what they call hams, nowadays, yes, built their own equipment, transmitters, and so on. I ... never got into that. ...

SI: Did you work at all while you were at Rutgers?

HI: Just in [the] summertime I did, yes. I worked. Well, essentially, I worked with my dad. We sold vegetables along the shore and that was pretty much it, you know.

SI: Going back to the shore, during the war, did you notice things like rationing and blackouts?

HI: Well, I don't remember any blackouts, but I remember that we had a local power station right in town there that provided our power there, a coal plant, ... but we didn't have any problem there, apparently. ...

SI: I meant having to maintain blackout conditions for air raid drills and things like that.

HI: ... Yes, let's see, I don't remember that, really. Actually, see, by then, I was working in Washington, at the Naval Research Lab, yes.

SI: Were you concerned that you would be drafted before you were able to graduate or did you have a deferment?

HI: Yes, let's see, I had a deferment, but, eventually, I was working at the Naval Research Laboratory by then. Eventually, they had so much trouble with draft boards, ... I was taken into the Navy as [an enlisted man]. ... If I had [good] eyesight, it would have been a first lieutenant, but, since I couldn't pass the eye test, I was what they called a chief petty officer, yes. So, that was another kind of funny thing, but, you know, the chief petty officers are the, really, guts of the Navy, as far as running it. Usually, they're older fellows, older people. I remember, ... another fellow was with me, ... he looked like a real kid of sixteen or fifteen, we were down waiting for a bus downtown in Washington. This old chief was looking at us. He said, ... "What the hell's he doing being a chief petty officer?" [laughter]

SI: How did you find out about the Naval Research Lab?

HI: They had a recruiter that came up here, yes.

SI: Were you the only one from Rutgers who went?

HI: No, there was one other fellow, I can't remember right now who it was, but there was one other fellow at least, yes.

SI: Was there a lot of recruiting done on campus?

HI: Not too much, no. ... I can't recall whether any of the commercial companies came to interview us or not. They probably did, but I don't recall.

SI: Was it important to you to get in the service after you graduated, in the middle of the war?

HI: Well, you see, I didn't have any urge to go, but, eventually, like I said, ... they originally had so much trouble with the draft boards, they finally put us in the service. I was a chief petty officer, yes.

SI: Did you have to go for any formal naval training or did they just put you right in there?

HI: No, no, they figured out right away ... we didn't [know] what's left from right, [laughter] as far as marching and all that kind of stuff. They tried, but it was pitiful, [laughter] because there are some guys even worse than me. ... No, they didn't do much along that line.

AI: Was that because you were in the laboratory? ...

HI: I was in the Naval Research Lab, yes. ... Like I said, ... when I first went there, they were civilian employees mostly, but, eventually, they had so much trouble with draft boards, ... most people, they put in the service, yes.

SI: You were not in the service when you started working there.

HI: No. I was a civilian, yes.

SI: You wrote that you enlisted in 1944. You were working there for about a year as a civilian.

HI: Yes.

SI: What was it like living in Washington during World War II?

HI: Well, I lived in a private house, it wasn't near the laboratory, where there was bus service and, eventually, moved to a different place. You could walk to work, actually. ... Well, it was nice. ... I enjoyed it. Washington is a very nice town.

SI: From what I have read, it was very packed and just grew and grew during the war.

HI: Well, yes, that's true. Yes, it expanded outside the Washington area, but I enjoyed it very much there. ... One of the hotels, the Shoreham, in particular, I guess, had a weekly dance for anybody that could come. Oh, they were mostly service people that came, or government workers, yes. I used to go there, [on] weekends, maybe, just for these dances. They called them "the state dances." The state societies would sponsor a dance on a particular weekend, yes; met a very nice lady there ... from Montana. [laughter]

AI: I wish you would tell them the story about Jeanne with the blue eyes.

HI: Oh, well, that's another story. [laughter]

AI: That's my favorite story.

HI: Yes, that's a different girl. That's a different one. ... I don't know, was I undergraduate then? I was an undergraduate then, ... met a very nice young lady from Metuchen. She was in the ladies college, yes.

SI: At NJC [New Jersey College for Women, now Douglass Residential College]?

HI: NJC, yes. ... I lost track of her now, yes. I did try to get in touch with her several years ago.

AI: Don't you want to tell them about the mix-up?

HI: What mix-up?

AI: With your friend, Jeanne?

HI: Well, that's another story.

AI: Henry, tell Shaun how you tried to find Jeanne.

HI: Later, I tried to get in touch with Jeanne Tomkins and it turned out there were two Jeanne Tomkins in the same class. [laughter] So, I came up here to see a Jeanne Tomkins and it turned out to be not the same lady I dated in college, yes. [laughter] I had been able to find a telephone number for a Jeanne Tomkins through the Rutgers alumni records department. I called and Jeanne and her husband invited me to their home. As this Jeanne T. was coming down the stairs, I said, "I've never forgotten those sky blue eyes!" Well, this Jeanne Tomkins has lovely brown eyes. We spent a pleasant evening together, talking about our college days, but Jeanne and I realized we had never met.

SI: Once you started working at the lab, what did they have you initially working on?

HI: Well, they worked on radar systems, mostly, and then, we also worked on communications systems. ... Also, there's a dispute [over] who invented radar, for instance. [laughter] The British said they did, these people in the Naval Research Laboratory said, "Nope ... we had it before them," [laughter] but I enjoyed my working there, yes, worked [with some] very sharp people, yes.

SI: What was the work like in the lab? What did you do on an average day?

HI: Well, in an average day, ... somebody, ... he'd want to tell you, "This is our new radar system," on a different frequency or something like that. ... Well, it's largely working at a bench with your (delta gear?), ... your equipment, yes, oscilloscopes and frequency generators and things like that. ... Actually, a lot of it's right at the workbench, trying different things. Some of

it's on pencil and paper, too, ... designing something in advance, but a lot of it's spent ... at the workbench, trying things and see ... how you [could have] adjusted this way or that to make it better, yes. ...

SI: Was this all new stuff that you had never seen before?

HI: Yes, pretty much, yes. ... It was on the leading edge of the technology, essentially, yes.

SI: How quickly were you able to come up to speed on, say, how radar worked?

HI: Well, probably [in a matter of] ... a month or so, I could get into what the current state of the art was, essentially, yes.

SI: You worked there as a civilian.

HI: Yes.

SI: Did it change at all after you were in the service, or was it the same?

HI: No, no, ... same buildings, everything the same, yes, same place. It didn't change hardly at all, no.

SI: Did you have to wear a uniform?

HI: Yes, we wore uniforms, yes, and ... [it led to some] resentment, because the ones who could see were officers and the ones who couldn't see were chief petty officers and other enlisted grades, yes. ...

SI: In the Navy, there is a strict hierarchy between officers and enlisted men. Did that affect you?

HI: Not really, no. ... The chief petty officer [is] definitely enlisted. ... He's not an officer rate, yes.

SI: Between the guys who could see and the guys who could not see, did you resent the fact that you, say, would have to call them sir? Did you have to call them sir?

HI: No, no. ... [We had] very little contact with the real Navy. It was just a research laboratory there.

SI: Were you and your colleagues working on theoretical issues or were you building devices that were actually going to be used?

HI: Mostly devices, really, at that time, yes, but the radar had been developed, ... pretty much so, yes.

SI: Are there any major problems that you worked on solving that stand out in your memory?

HI: Let's see; well, that came later, I guess, after the war, when I worked on magnetometers ... for measuring the intensity and direction of the Earth's magnetic field. ... The big problem in that is knowing which way is up, essentially. [laughter] In other words, you're supposed to acquire the direction of the magnetic field as well as the intensity and, to know that, you have to know ... where true north is, of course, ... using navigation aids and navigation with the stars, essentially, yes. Then, also, you need to know what the true vertical is. ... The Earth's magnetic field varies. Well, at the Equator, it's horizontal. ... In the poles, it's vertical. ... The one part (to learn?) is, [at] any particular location, ... how close to vertical it is, in addition to ... how close it points to true north, ... and so, I got involved in that. The one thing we found was that, even though, well, you're flying [in] the airplane, you go along, you see that, ... well, the direction of the field is pretty much constant, but your airplane is moving up and sideways. So, it was oscillating from side to side and up and down and that's why it's so hard to tell exactly which way is vertical exactly. You want to know it precisely, and so, we found out that by averaging the data over a couple of minutes, you can get a pretty good idea what the true part is. ... Well, [in] airplanes, they called it, it's got a name, ... fluid oscillation. The plane, let's say, goes like this and it goes like this, and, if you average out those positions, ... [with] everything you can do, ... you don't have to know exactly what's at vertical, just average it. ... You'll find out where the vertical is, yes.

SI: This is jumping ahead, but when did your work on the magnetometer begin?

HI: ... Well, it really began after the war, ... I got involved in magnetometers, yes, and then, I worked as a consultant for a fellow that was in business for himself. I was his electrical engineer, essentially, and he was a mechanical engineer, actually, and [I] developed the instruments for measuring ... the magnetic fields, and so on. [Editor's Note: In 1950, while working at the Naval Ordnance Laboratory at White Oak, Maryland, Mr. Irons and his colleague, Erick O. Schonstedt, developed the *Vector Airborne Magnetometer 2A* (donated to the Smithsonian's Museum of History and Technology, now the National Museum of American History, in 1979). As the US Navy's first aerial vector magnetometer, it was used to map the Earth's magnetic fields on air missions flown by the Naval Hydrographic Office (now the Naval Oceanographic Office) from the early 1950s to the 1970s under a program called Project MAGNET.]

GF: Was there communication between the different fields, say, people developing technology such as radar and people developing sonar?

HI: Yes, pretty much so. For instance, the Naval Research Laboratory's involved in both radar and sonar. ... It was different divisions, different buildings, actually, and different divisions for pursuing that, and I was mostly involved in the radar. ... Eventually, I got involved in some of the other stuff. ... Actually, the more important things, ... yes, the first satellite they used for measuring the magnetic fields, I did the electronics for that. ... That's in the Air and Space Museum in Washington, actually, and then, I also did the electronics for the worldwide surveys of the magnetic fields. The Navy did that. ... [Whether there is] any water there or not, the Navy does it, yes.

SI: Can you tell us a little bit about those satellite programs?

HI: Well, ... that was after the war and I was working ... as a consultant for a fellow that built the magnetometers, that I was his electronic engineer. ... Eventually, we started making magnetometers for satellites and stuff like that and I was the electronic engineer for that.

SI: Did the Navy bring the idea to your firm?

HI: ... Well, this fellow was an entrepreneur and he saw that ... the Navy would like to have this stuff. Then, he built it. ... I worked for him as an electronic engineer, yes.

SI: It was a private firm.

HI: Yes, it was private. ... There's just two or three people, actually. ... At that time, I was working full-time for the Naval Ordnance Laboratory. ... [I would work for him] after work and ... my wife would be calling, "When are you coming home?" So, it got to be about nine o'clock, I'd finally quit, yes. [laughter]

SI: Was working for the Navy as a civilian after the war different? Did you have the same kind of working relationship?

HI: ... Well, it was different when I worked for this [firm]. Well, in the evening, I worked for this fellow in the private industry. In the daytime, I worked in the Naval Ordnance Laboratory as part of their government operation, yes.

SI: You were a civilian at the Naval Ordnance Laboratory.

HI: Yes, right.

SI: What were you doing there? Did it dovetail with your work for the entrepreneur or was it something else?

HI: Yes, it was pretty much the same thing, actually. It's the magnetometers, measuring the Earth's magnetic field. ... Yes, it was pretty much the same thing. That part was the same, yes.

GF: Were you following the developments in atomic weapons coming out of the Manhattan Project after the bombs were dropped on Hiroshima and Nagasaki? What kind of ripples did that send through the scientific community?

HI: Well, ... it was a big surprise to me, of course. That was quite a closely-held secret ... about that. ... So, then, no, I didn't have any connection with that, any more so than anyone else would, yes.

SI: Did you have to go through a lot of security background checks?

HI: Yes, that's true. We did have security clearances, yes. Some of the stuff we did, well, some of the stuff we either handled or [were] aware of, was classified, oh, yes. ... Actually, that was before the war. After the war, there wasn't too much, wasn't any classification around the work I did, actually.

SI: During the war, how big was the Naval Research Lab. How many people did you work with?

HI: Well, the research lab itself was probably about fifteen hundred people, I would guess, but I worked with just two or three other people, essentially, yes.

SI: Did they all have similar backgrounds?

HI: They were mostly physicists, mostly physicists, and more physicists than engineers. I'm an engineer, supposedly, but most of them were people in physics, yes.

SI: How did the physicists and the engineers work together?

HI: Well, ... that worked out fine. ... You eventually know each other's job, essentially, yes. So, it's a pretty close working relationship, no conflicts or anything like that, really.

SI: Did you ever have to leave the lab to go out and work with people implementing what you were working on in the field, such as go to a factory or a ship where they were installing it?

HI: ... No, mostly. Sometimes, I went with the people ... that were making these magnetic surveys, Earth's magnetic surveys, the worldwide surveys. It was the Naval Oceanographic Office that did that. ...

SI: This is after the war.

HI: ... Yes. This is after the war, yes. During the war, I was just pretty much in the laboratory, working by myself, pretty much, yes.

SI: What do you remember about when the war ended?

HI: ... I remember, ... I'd been canoeing that day, [laughter] up the Potomac River. ... When I came back, there were whistles blowing and all that kind of thing and the war was over, yes. I did ask people, yes. So, I found out a little bit later. Most people knew it before, several hours before, I did. [laughter]

SI: Was there any kind of big celebration in Washington, DC?

HI: Yes, there was, somewhat pretty wild, actually. [laughter] ... I don't remember anything special, too much special, about it, yes.

SI: How quickly were you discharged from the service?

HI: I think it was a matter of just about a month after the war was over that I left the [Navy] and came back to Rutgers, actually, for a master's degree, yes, shortly afterwards, yes.

SI: Let us take a quick break.

[TAPE PAUSED]

HI: Well, ... I guess the most [important], publicity-wise, things, ... two of my better things, are there in [the] Space Museum in Washington, yes. One's this satellite with a magnetometer in it. ... I've forgotten exactly where it is, but ... it's pretty easy to see it, find it, and then, the other thing is this equipment we had for measuring the Earth's magnetic field, the navigation purpose. ... They have that in one of their storage places, ... as I remember, in Washington, I think, yes.

SI: How long would a project like that take?

HI: ... For the magnetic surveys, that took quite awhile. It took ... about a year, I would guess, yes, going through different improvements, modifications, and so on.

SI: When did the magnetic survey take place?

HI: That was after the war.

SI: In the 1960s or 1970s?

HI: Well, that would have been about [the] '60s, yes.

SI: Is there anything else you would like to add about your career that we have not covered?

HI: No, ... I think we've covered the most important points, yes. The lasting things ... are the magnetometers for the satellites, and then, the worldwide surveys of the magnetic field, yes.

SI: Do you think your experience during World War II in the Naval Research Lab had a major impact on your two greatest achievements?

HI: Yes. ... When I went to the Naval Research Lab, it's the first time I had a chance to practice, ... put in practice, what I'd studied at Rutgers, yes.

SI: Had you done much work with magnetic fields at Rutgers?

HI: No; let's see, not at Rutgers, no, actually.

SI: What was it that particularly interested you in studying the magnetic fields and how to measure them?

HI: Well, it was an application that has worldwide use, okay, ... extensive use, other than stuff like you do ... at a bench at the laboratory, or something like that, yes.

GF: Can you recall any of the experiments that you did while working in the lab?

HI: Well, let's see, I should, but I don't know that I can or not, yes. ... Well, one of the things, that is, ... in the application of this worldwide survey, ... there are two things you need to know: ... which way is up and down and the other is which way is north. ... As far as the up and down goes, ... you really don't have to know exactly ... where vertical is all the time, just so [that] you can get an average. In other words, the airplane flies like this all the time.

SI: Up and down.

HI: ... Well, a way of averaging that out, so [that] you don't need to know exactly ... where the vertical is, just so [that] you know where the average is there. So, you average out the airplane's manipulations, yes. ... That was very helpful, yes.

SI: Thank you very much. We appreciate your time.

HI: Okay, well, yes, it's pretty dull stuff, I know. [laughter]

SI: No, it was very interesting. We appreciate you and your wife taking time out of your busy schedule this weekend.

HI: ... That's very nice that you could take time to come around and talk to us, yes.

SI: We appreciate it.

HI: And Anne's had a very nice career. She flew for American Airlines for thirty years or so. Well, she actually started with Pan Am before they [went] out of business, of course, and she's flown all over the world. [laughter]

SI: How did you meet?

HI: I was on a flight from Paris to Boston when I met her. I was flying. My first wife had worked for American Airlines, too, as a secretary for one of their presidents. She was a very capable gal. ... So, I always had free transportation, as they say. [laughter] So, I was flying from Paris, and I have cousins in France. So, I'd been visiting them. I'd been in an elder hostel, too, there, that year, I think, and I was flying back to America, and Anne was the flight attendant. I met her at that time, that way.

SI: Thank you both very much.

HI: Well, thank you very much for coming.

SI: Thank you very much.

HI: ... Thanks for coming. I'm sorry, I hope you'll find a more exciting person to interview next time. I'm kidding. [laughter]

SI: It was very interesting.

-----END OF INTERVIEW-----

Reviewed by Jonathan Conlin 12/1/10

Reviewed by Shaun Illingworth 12/15/10

Reviewed by Henry Raymond Irons 12/20/10