

**ORAL HISTORY INTERVIEWS**

**THADDEUS (TED) W.  
MERMEL**

Interviewed in 1995 in Washington, D.C.



**STATUS OF INTERVIEWS:  
OPEN FOR RESEARCH**



Interviews Conducted by:  
Brit Allan Storey  
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Bureau of Reclamation



Oral History Program  
Bureau of Reclamation  
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July 15, 1965, Thaddeus (Ted) Mermel (far left) and  
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**STATEMENT OF DONATION  
OF ORAL HISTORY INTERVIEWS OF  
THADDEUS WALTER MERMEL**

1. In accordance with the provisions of Chapter 21 of Title 44, United States Code, and subject to the terms, conditions, and restrictions set forth in this instrument, I, Thaddeus Walter Mermel, (hereinafter referred to as "the Donor"), of Washington, D.C., do hereby give, donate, and convey to the National Archives and Records Administration (hereinafter referred to as "the National Archives"), acting for and on behalf of the United States of America, all of my rights and title to, and interest in the information and responses (hereinafter referred to as "the Donated Materials") provided during the interviews conducted on January 26, April 2, August 30, and September 8, 1995, at my home in the District of Columbia, and prepared for deposit with the National Archives and Records Administration in the following format: cassette tapes and transcripts. This donation includes, but is not limited to, all copyright interests I now possess in the Donated Materials.
2. Title to the Donated Materials remains with the Donor until acceptance of the Donated Materials by the Archivist of the United States. The Archivist shall accept by signing below.
3.
  - a. It is the intention of the Archivist to make Donated Materials available for display and research as soon as possible, and the Donor places no restrictions upon their use.
  - b. The Archivist may, subject only to restrictions placed upon him by law or regulation, provide for the preservation, arrangement, repair, and rehabilitation, duplication, and reproduction, description, exhibition, display, and servicing of the Donated Materials as may be needful and appropriate.
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4. Copies of the Donated Materials that do not have Donor restrictions on their use, may be deposited in or loaned to institutions other than the National Archives, including the Bureau of Reclamation. Copies of unrestricted Donated Materials may also may be provided to researchers. The Bureau of Reclamation may retain copies of tapes, transcripts, and other materials if there are no Donor restrictions on their use, and Reclamation may obtain copies of tapes, transcripts, and other materials at the time that Donor restrictions on the use of the materials ends.
5. The Archivist may dispose of Donated Materials at any time after title passes to the National Archives.

Date: 7/8/95

Signed:   
Thaddeus Walter Mermel

INTERVIEWER: \_\_\_\_\_  
Brit Allan Storey

Having determined that the materials donated above by Thaddeus Walter Mermel are appropriate for preservation as evidence of the United States Government's organization, functions, policies, decisions, procedures, and transactions, and considering it to be in the public interest to accept these materials for deposit with the National Archives and Records Administration, I accept this gift on behalf of the United States of America, subject to the terms, conditions, and restrictions set forth in the above instrument.

Date: \_\_\_\_\_

Signed: \_\_\_\_\_  
Archivist of the United States



Portrait: Thaddeus (Ted) W. Mermel, 1944





Portrait: Thaddeus (Ted) W. Mermel, July 1965

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**Oral history of Thaddeus (Ted) W. Mermel**



Programming conference attendees January 28-February 2, 1946

Personnel 691 Program Staff Conference, Washington, D. C., January 6-10, 1947. Each of the Regional Offices was represented by the Regional Director, the progress control officer, and the regional engineer or a representative of the regional engineer. This conference was held primarily to plan the Bureau program for the balance of fiscal year 1947 and for fiscal year 1948. This photo was taken at the second session of the conference at 2 p.m., January 6 1947, in the Secretarys conference room. Peart, Photo.



Thaddeus (Ted) W. Mermel on very far right in 1947



July 15, 1965, Thaddeus (Ted) Mermel (far left) and others received the Department of the Interior's Distinguished Service Award

## Introduction

In 1988, Reclamation began to create a history program. While headquartered in Denver, the history program was developed as a bureau-wide program.

One component of Reclamation's history program is its oral history activity. The primary objectives of Reclamation's oral history activities are: preservation of historical data not normally available through Reclamation records (supplementing already available data on the whole range of Reclamation's history); making the preserved data available to researchers inside and outside Reclamation.

The senior historian of the Bureau of Reclamation developed and directs the oral history program. Questions, comments, and suggestions may be addressed to the senior historian.

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**Bureau of Reclamation History Program**

## **Oral History Interviews of Thaddeus (Ted) W. Mermel**

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Ted [Thaddeus W.] Mermel<sup>1</sup> at his home in Washington, D.C., on the evening of January 26, 1995. This is tape one.

### **Distinguished Service Award**

This is a Citation for Distinguished Service to Thaddeus W. Mermel, signed by Stuart Udall in July of 1965.

In recognition of eminent service as an Engineer Administrator with the Bureau of Reclamation, Department of the Interior. Mr. Mermel has established an enviable record of accomplishments during his thirty years with the Bureau of Reclamation, which began in 1933

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1. Note that information in parentheses, ( ), is actually on the tape. Information in brackets, [ ], has been added to the tape either by the editor to clarify meaning or at the request of the interviewee in order to correct, enlarge, or clarify the interview as it was originally spoken. Words have sometimes been struck out by editor or interviewee in order to clarify meaning or eliminate repetition.

The transcriber and editor have removed some extraneous words such as false starts and repetitions without indicating their removal. The meaning of the interview has not been changed by this editing.

as an electrical engineer engaged in designing and testing complex hydroelectric power system facilities. Early in his career, he demonstrated diligence, perception, and skill during negotiations related to the refinancing arrangements for Boulder Canyon Project and to the securing of scarce materials essential to increased power generation required for the World War II production.

He played a major role in the Bureau's international activities involving design and construction, the exchange of technicians, and the interchange of data relating to water resources development, efforts which have enhanced the prestige of the nation, the Department, and the Bureau. He has encouraged and vigorously sought recognition of individuals and groups making scientific and technological contributions to water resource development.

Mr. Mermel has been a leader in developing the Bureau's interest in, and use of, new and improved scientific and engineering techniques. His contributions to the field of construction contracting and to the



documentation of engineering achievements are exceptional.

For demonstrated excellence and technical knowledge, in advancement of engineering techniques and research, and in administrative leadership, the Department of the Interior confers on Mr. Mermel its Distinguished Service Award.

End of quotation.

### **Higher Ranking Staff of Reclamation**

Mermel: The branch of design and construction was Chief Engineer Harper, branch of operation and maintenance was J. [John] Moore, and Kubach was the financial man. Regional directors, you will find, Banks got into Region One. He was then Construction Engineer of Grand Coulee, so he was a very prominent and eminent engineer. There was no question about it.

[Charles E.] Carey was brought in from the outside to be Regional Director in California in Sacramento, and then later, [Richard I.] Boke got in there. Moritz, E. A. Moritz, was an old engineer that worked down on the Hoover Dam. And Salt Lake City—oh, I'll recall his name [E. O. Larson], who got in there. In Amarillo and Region Six, there's Comstock and Bill Sloan.

Storey: This was the reorganization--

**Regionalization in 1943-1944**

Mermel: These were the regions, an idea it was that the regions were reporting directly to the Commissioner, and these other branches were also reporting to the Commissioner. Now, here they had the Economics and Engineering Assistants through the Commissioner, and that's the box I was in. Then they had a liaison staff. Later, this liaison staff expanded, and a representative of each one of these--

Storey: Each one of the branches?

Mermel: Yeah, of the branches was put in there.

Storey: So this was the reorganization in '43-'44 that created the regions?

Mermel: Yeah. This was the 1944, 1943-'44 reorganization.

Storey: I see it's signed by Abe Fortas as Acting Secretary of the Interior.

Mermel: Udall. No, [Harold] Ickes was Secretary of the Interior.

Storey: Yeah. But it was signed by Fortas up there as the Acting Secretary.

**Why Secretary Harold Ickes Wanted Reorganization in 1943-1944**

Mermel: Yeah. Yeah. But Ickes was the Secretary, and he was the motivating *force* behind it in the Bureau of Reclamation reorganization business.

Storey: Why was that?

Mermel: What?

Storey: Why was Ickes the motivating force behind the reorganization?

Mermel: Well, Ickes was a politician, and Ickes was a proponent of public power because [Franklin D.] Roosevelt was a proponent of public power. Roosevelt created REA,<sup>2</sup> and REA was a thorn in the side of public utilities. Roosevelt was appealing to the farmers that they need power, they need radio, they need milk machines, they need refrigerators, and so forth. So they need electricity. And the utilities were unwilling, at that time, to extend lines because they were too costly.

### **REA and Public Power vs. Private Power**

So REA was created for the purpose of getting [low cost] power [into rural areas]. At that time, I doubt if it was 60 percent of the farms had electricity. I think that's an exaggerated number.

---

2. Rural Electrification Administration.

Maybe 40. But today we have about 99 percent of the farmers have electricity, and that would not have been possible without Roosevelt.

Now, to make power cheap, the REAs had to buy or create their own generating facilities at very low interest rates, lower than the utilities could get. So this was a tug-of-war between public power and private power. In the Denver office, the old Denver office was predominately Republican. I'm not ashamed to say that I'm quite sure [L. N.] McClellan was a Republican. He was a dignified, statured man, and he carried out what the instructions were from Washington to contract out power from the Bureau of Reclamation power facilities *but* have conditions of *withdrawal* of the power from the utilities [for REA needs].

When we built the dam and the powerplant, there was no one to buy the power, so you sold it to the closest public [or private] utility. But Ickes said, "Sell it to them but insert contract clauses in there that say that you will withdraw as the REAs got expanded." Now, this was not necessarily a good clause for the utilities, and they always fought it back. And a lot of the contracts that were made in the Denver office at that time allowed the utilities to have the power for ten or fifteen years before the withdrawal would take effect.

This bothered Ickes. In one of his interviews and in one of the reports, it said that, "I told Page what to do, but when he instructed the Denver office, they did not carry out my instructions. So I want power back into Washington where I can have my way," you see. And this is in one of the reports. So that was the motivating force for the reorganization – take the power away from the Chief Engineer, because the Chief Engineer was *really* the Bureau of Reclamation. The Commissioner had a very small office and he was just the – well, I don't want to use a derogatory word, but he was the messenger between Congress and the Chief Engineer. He went and got the appropriations and told the Chief Engineer, "You've got so much for the project," and the Chief Engineer would plan it and spend it, and contract for it, and so forth. So that changed, and that was really a big shock.

Storey: That changed in '43-'44 with the reorganization?

**Raymond F. Walter**

Mermel: Yeah. And that was R. F. Walter, a big husky engineer. Really, the engineering organization was a solid engineering organization outside of politics. It was an engineering organization. But when Roosevelt came in, politics started coming in. And when you had to get

appropriations from Congress to build more projects, you had to have politics and not engineers.

**Wilbur Dexheimer**

This is why [Wilbur] Dexheimer wasn't a successful Commissioner, because he was an [straight forward] engineer. Now, Mike Straus was quite a politician. He would go up there and he'd tell the congressmen that were on the right side of the aisle that they would get money for their appropriation for their [needed] projects, and they would get it.

**John C. Page**

Senator [Carl] Hayden was a prime example. Senator Hayden, I personally was at a hearing when John Page was asking for appropriations, and Senator Hayden says, "Well, John, couldn't you use another 10 million dollars?" And John said, "No. We're fully booked. We can't handle it." In other words, we weren't politicians. But when Mike Straus got there, the appropriations grew, and our projects grew, and the Bureau was an expanding organization. But the difference is that [certain] people objected to Mike Straus, that he was a newspaperman, he wasn't an engineer, but he was an [excellent] administrator.

**Michael Straus**

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Storey: So Straus didn't come from Reclamation, then?

Mermel: Straus?

Storey: He didn't come up through the ranks in Reclamation?

Mermel: No, no, no. Mike Straus was a newspaperman who was an Information Division Chief under Secretary Ickes, and then he became an Assistant Secretary, and from the Assistant Secretaryship, when the Bureau of Reclamation [needed a commissioner] was – he, as I say, stepped down to become a Commissioner.

Storey: Let's back up, though. Let's talk about where you were born and raised and educated and how you ended up at the Bureau of Reclamation.

Mermel: Well, I don't think it's that important. I pulled [these copies] out of *Who's Who in Engineering* and *Who's Who in America* my biography, and my biography will speak for itself.

Storey: Yes, but I want you to speak it for me. Have a seat and talk.

### **Born in Chicago**

Mermel: I'm not ashamed of the fact that I'm eighty-seven years old. I was born in Chicago.

Went to the University of Illinois.

Storey: You were born in Chicago when?

**Went to the University of Illinois**

Mermel: September 12, 1907. Went to the University of Illinois. Graduated in 1930 in electrical engineering.

Storey: That would have been Urbana-Champaign?

**Took Civil Service Examination for "Junior Engineer"**

Mermel: Yes, in Urbana-Champaign. In the spring of that year, for kicks – I was going to graduate – I took a civil service examination for "junior engineer."

Storey: You said 1911.

Mermel: 1930.

Storey: '30. Okay.

Mermel: Yeah, 1930. I graduated in '30. It was in the spring of '30 I took, for kicks, the exam, because I didn't intend to work for the government. The government was not necessarily the prime thing. I was going to work for General Electric. General Electric sent their representatives and picked out who they wanted, and I was actually going to work for General Electric Company come September.



### **Lost General Electric Job Offer When Graduated**

In the meantime, the Depression became aggravated, and General Electric said, "We're not taking on any people because of the Depression." So my job disappeared. So I took my things and went to an attic room in Urbana, and I was going to take graduate work. My father says, "Better go back to school. There are no jobs. Go and get your master's and get your Ph.D. or go ahead and keep on going to school."

Storey: How was your father able to support you like that during the Depression?

Mermel: Well, in those days, education was not very expensive. My whole college education cost \$4,000. Now, surely, money was different. In those days, you could go and get a choice steak in a butcher shop for twenty-five cents a pound. Butter was twenty-five cents a pound. Rent – you can rent an apartment for \$35. A person earning \$35 a week was pretty good money.

### **Father Ran a Furniture Store**

So my father was in business, he was a businessman. He was [running] ~~renting~~ a furniture store, selling furniture. That's where I learned how to repair sewing machines [and furniture]. And

today and for the whole of my life I was the "sewing" person in the family. I did the drapes, I did the slipcovers, I did the things instead of my wife. But she enjoyed that just as much as I did.

### **Offered Permanent Civil Service Job**

But, anyway, I graduated. When that time came, I said I was going to go back to school. Well, June comes, or July. I get a telegram from the United States Civil Service Commission saying, "You are hereby offered a 'permanent' civil service job." Permanent civil service job in the middle of the Depression was quite a event. So I said, "Sure, I'll take it."

At that time – this is personal – I got engaged to my gal. I told her, "I'm going to Washington. I'll come back for you when I make some money and so forth." So I came to Washington on August 20th.

Storey: 1930.

### **Began Work for the Interstate Commerce Commission in Washington, D.C., Doing Depreciation Studies**

Mermel: 1930. And started the first job with the Interstate Commerce Commission as engineering, junior engineer, and we were working on depreciation studies of railroads, because in those days railroad rates were controlled by the Interstate

Commerce Commission and you had to have the evaluation of the railroad, you had to have depreciation studies, inventories, and so forth. So I knew quite a lot or learned quite a lot about depreciation, which I later used in the Bureau.

The nice or the interesting part about it is that I came to Washington on August 20. I told my gal, "I'll come back." But between August 20th and September 10th, correspondence was so thick, we got married on September 10<sup>th</sup>.

### **Married in 1930**

Storey: Where did you get married?

Mermel: Here in Washington. She came to Washington. We got married in St. Matthew's Cathedral. The government [at that time] cut salaries 15 percent. The salary was \$1,800 a year. I rented an apartment on the corner of Nineteenth and F, right next to World Bank today, and paid \$67 a month rent, which was out of proportion of our budget, but we intentionally said, "We're going to live in a good quarter even if we have to eat hot dogs and hamburgers." And we lived there three years.

[Franklin D.] Roosevelt got elected.  
[Herbert] Hoover was in power in 1930.  
Roosevelt got elected in 1933, and he said

that he would squeeze all of the Federal Government into the new Commerce Building that was just being built. So he started abolishing agencies, and he abolished the Interstate Commerce Commission, and we were told that we would be out of a job by June 30th, and we'd have to look for a job.

### **Went to Work Installing Telephones on the Navajo Reservation**

So I went to every agency in Washington and applied. I found that one of the Indian programs that Ickes started was to put telephones in every hogan on the Navajo Indian Reservation, and on all the Indian reservations, and to build roads [for them] ~~in there~~. So they start hiring engineers for those jobs. But you had to show up in Fort Defiance, Arizona, for the job.

Storey: Near Window Rock.

Mermel: Yes. And I went. I took the job for \$150 [a month] and told my wife to live with her parents during that time. And I climbed poles[, installing telephones].

Storey: It was \$150 a month?

Mermel: A month. Because there was a 15 percent pay cut in engineer salaries.

Storey: So that would be \$1,800 a year.

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### **Bureau of Reclamation History Program**

**Offered Job with Bureau of Reclamation**

Mermel: Yeah. So my wife was in Chicago and stayed with her parents while I was climbing poles for three months. I got a telegram from the Bureau of Reclamation saying, "You got a job." As I said, I slid down the pole, and gave them the hooks, and said, "I'm off."

Storey: That was in '33 then?

**Moved to the Denver Office of Reclamation**

Mermel: In '33. I arrived in the Denver office sometime in August of 1933. Naturally, I brought my wife back and we got an apartment in Denver. Later we got a house, and we rented a house for \$35 a month.

Storey: Do you remember where the house was?

**Worked for Sam Judd and Then Max Kight**

Mermel: Nice place. Well, prices were cheap. We were able to survive. The idea was that Denver was a nice place. And I started working. I started working at first for Sam Judd designing a retaining wall at Hoover Dam. Since he found out I was electrical, he turned me over to Max Kight, and Max Kight started giving me electrical design work. I've got to say, Max Kight was one of the greatest administrators I've ever

known. He actually gave me a start or a spark. He gave me assignments that he got from McClellan, the Chief Electrical Engineer, and he, himself, would have me go up to McClellan with him and say, "Ted came up with this idea. I think it's good."

### **Work Supported Before Leslie McClellan**

Storey: That's very supportive.

Mermel: And I'm telling you, I've told this to Max many times. He opened the door for me. Well, he was a different person.

### **Began Special Assignments for Leslie McClellan**

Well, this continued and I became quite closely associated with McClellan's special assignments. McClellan took me under his wing for special studies, special requests, and so forth, and pretty soon I started traveling with him – to Washington, to Los Angeles, to other places. So McClellan and I were very close friends. I have very many personal letters from McClellan, and we kept in touch even after McClellan retired. He visited with me on many occasion when I came to Denver. I admire McClellan, and I admire Max Kight. *These* were the people in my life.

Storey: What kind of managers were they?

Mermel: Well, they were very good managers. They reviewed your work. They were

critical of what they thought was not appropriate. They gave you hints or suggestions as to how to change. They didn't make the point that although you're – a reprimand or anything else, but they would encourage you to pursue the work [with their ideas].

### **Assigned to Test the Hoover Dam Generators**

One of the events was McClellan requested Max Kight for solving a problem, which was [to] testing the Hoover Dam generators when there were no transmission lines to Los Angeles to load the machine to be able to test it. So, the idea was to create a [an electric] load, and the idea was that a [an oversize] water rheostat could be built that would test it.

### **Developed a Large Rheostat**

So Max Kight gave me the assignment saying, "Okay, scour the literature, scour everything, scour anything you can find. See what you can come up with." And I came up with a triangular-shaped, *large* gadget which had [16.5 kv] electrodes protruding into the water that you could lower with a crane. And as you lowered the electrodes into the water, it would increase the load. Now, mind you, the voltage of the generator was 16,500 volts. You had to have cables to come to these terminals hanging with a crane.

They had to have 16.5 kv] insulation, insulators, to hold these rods. The rods turned out to be eight-inch-diameter copper pipes. All the theory that we could come up with showed that we could do it, and McClellan approved it and said, "Okay, let's [build] ~~buy~~ the gadget and try it."

Storey: This would have been while they were constructing Hoover Dam?

Mermel: Yeah. [Actually when the generating units were being installed.]

Storey: And installing the powerplants?

Mermel: Yeah. And I was sent to Hoover Dam to assemble this thing and to supervise the operation in accordance with what we thought would happen.

Storey: How did you get down there?

Mermel: Down where? Hoover?

Storey: Down to Hoover.

Mermel: Well, I mean, go by train. From Denver, you mean?

Storey: Yes.

### **Goes to Hoover Dam to Test the First Generating Unit**

Mermel: I came to Boulder City and I took a room with one of the employees – the name slips



my mind right now – and I stayed there about six months during these tests.

Now, the unusual part about it, electrically everything worked out. We connected to the generator. We lowered it. But as we lowered the terminals into the water, the water started boiling around the terminals, and the electrical current flowing between the [three terminals] ~~thing~~ killed all the fish in the [area] ~~whole thing~~. As soon as we put the voltage on, there were thousands of fish belly up. Naturally, the environmentalists today would shoot us. But we found out later that when the voltage was turned off, they revived, except those that touched a terminal either got boiled or burned or something.

But, anyway, this [ingenious] water rheostat worked. I wrote an article for *Electrical Engineering*, and I wrote an article for a Colorado [engineering] magazine. I got them someplace in there. I was quite proud of the fact that it worked. I think Max Kight gave me the chance and McClellan gave me the chance [to use my potential].

Storey: Why did it take you six months to test a generator?

Mermel: Because there were four of them. There were four of the generators, and there were a lot of things that had to be done,

connecting and scheduling and all the other kind of things. So it was fitted in when we were going to test it. There were other things that had to be done. [Bear in mind these were 16.5 kv generator windings, a high voltage at that time..]

### **Standing by to Ensure President Roosevelt Could Start the First Generator**

But, incidentally, another little story in one of the trips while at Hoover, Roosevelt announced that he was going to press the button and start the first generator at Hoover Dam. It was on radio, a big speech that here is the dam being built, power is being generated, and the President is going to press the button to start the first generator in there.

Well, there were three fellows – Newmeyer, myself, and another fellow. We sat behind the switchboard with a radio, listening to the speech, ready that when he pressed the button, if that relay didn't close, we were going to close it, because, after all, he said, "I hereby press the button," and the thing clicked and the generator started, and naturally we had a microphone there, and the generator didn't make too much noise, so we had an electric fan blowing against the microphone to make a lot of noise and so forth. Anyway, it was a very interesting episode.

Storey:           How did they arrange that? How did they

connect the button?

END OF SIDE 1, TAPE 1. JANUARY 26, 1995.

BEGINNING OF SIDE 2, TAPE 1. JANUARY 26, 1995.

Storey: It was done through a telephone wire?

Mermel: Well, yeah. Roosevelt pressed a button, and it sent a signal by telephone wire to the relay that made the switch close. In those days, we had radio, but most of the communications were hard-wire telephone, telephone on microwave, and radio came in later. This was 1937. It was quite an event. [Today it would be considered primitive.]

My wife spent quite some time with me at Boulder City. I had two youngsters at that time. They went to school for a couple of months in Boulder City while I was there, and that was one of the, let's say, interesting events of my life.

### **Hoover Dam and its Importance**

But, anyway, Hoover Dam was the greatest dam in the world, the largest reservoir in the world, the highest transmission-line voltage in the world, the largest generator in the world.

Storey: At that time.

Mermel: Today, Hoover is, as far as dam is

concerned, is in eighth place, and as far as reservoir is concerned, it's almost in the thirtieth place. And as far as voltage is concerned, we're up to 758,800 kv when it was only 287 kv [at Hoover]. So a lot has happened since.

Hoover Dam started the large dam era, and from then on, the large dam start appearing elsewhere. In France there was a famous engineer, [André] Coyne. In Switzerland, another famous engineer. In Italy Marcello was another famous engineer. And they started building dams that were larger [and higher] than Hoover. The dam technology spread all over the world because of Hoover.

### **The Rheostat Developed for Hoover Dam Generator Testing**

Storey: When you say that this device that you made had pipes for the electrodes, do you mean hollow pipes or do you mean rods?

Mermel: They were hollow [copper pipes. The concentration of amperes per square inch was a critical factor so the pipes were large in diameter]. They were hollow –

Storey: Pipe.

Mermel: – copper pipes. We had caps on the bottom, with the idea that we didn't want water inside, because we wanted the current only to flow from the outside of

surface. Because it was the current density on the surface of the copper that would permit – if you had too much current, it would start arcing. So the diameter of the pipe was so that you wouldn't exceed the [critical] density of amperes per square centimeter so it wouldn't arc. And [the terminals] they had to be apart [because of the 16.5 kv voltage. I think they were about twenty feet apart, these terminals, because it was 16.5 kv voltage, and that's a hell of a lot of volts [to play with in water]. They were on an insulator which was on a triangular steel frame insulating it from the ground. Then the cables were connected to the rods to provide the power, and the cables were insulated cables. But they were 16,000 volt cables. 16,000 volt cables were in – let's say the technology was there.

Storey: When you were there, was the dam done? Had they finished construction?

Mermel: Well, this was for the generators ~~voltage~~ alone. Now, later, when the generators were connected to the transmission lines, the water rheostat was not needed because you'd connect the loads in the city and you could test the machine by loading up the lights in Los Angeles. So the water rheostat was later junked because it wasn't necessary. This was needed because [Hoover was isolated in the desert, and] no load was available to test, and we wanted

to test them then.

Storey: Why did you have to test them?

Mermel: Well, one, to test contract acceptance. One, you had to test the machine to see that they met efficiency, they met heating requirements, and all that. So you had to run the machine under load to test them. But, anyway, it was one of the events, [also, these were the 'world's largest' at the time].

### **Developing the Copper Bus for Hoover Dam**

Now, another part of the experience [at Hoover] ~~in Denver~~ was [that] the connections between the generators had to be done by some kind of a [copper] bus, and there was no bus that had the capacity to carry 4,000 amperes at 16,500 volts. So again Max Kight said, "Mermel, here's the problem. What are we going to do? The [magnetic] stresses between the bars are terrific when there's [would be] a short circuit, because magnetically they would be pulled together. So you have to have them on [special strong] insulators, and the span [between them] has to be theoretically strong enough."

So we made six-inch copper [channels] ~~angles~~ that were, oh, about half-inch thick, and that carried the [4,000 amps] ~~thing~~. And this was an *unusual* bus. Since that time, there have been buses

designed by others because technology advanced. And this was enclosed in a copper shield in order to be sure that nobody could touch it and get electrocuted, because there was 16,000 volts. So there [had to be invented an] is-a unusual bus connection at Hoover Dam.

Storey: Those are those huge banks of copper cabinets?

Mermel: Yes.

Storey: Why copper?

Mermel: Well, because copper would carry electricity easier. And if you ever had an arc, it would carry the current without melting. Now, aluminum would not be considered, because aluminum would, one, melt very easy and, two, at high temperature aluminum will burn. Steel is magnetically not usable.

Storey: But, now, I'm talking about the cabinets.

Mermel: The cabinets, yeah, were copper to provide ground. Ground [connection].

Storey: I'm with you. Okay.

Mermel: And if there ever was a contact with that and somebody was touching it, the shield – it's a shield and a grounding shield for that. Later, the industry developed circular

tubes, and a lot of buses today are in circular tubes. We've seen them abroad a lot. And a lot of them have been done [following our idea] in flat bar. Unusual requirements was that they had two generators tied into one transmission line, and if there was a short circuit, you'd have two generators feeding into that short. And the stresses on the bars would be terrific, because then the current would rush through it. They would magnetically attract each other and they would try to bend towards each other. So you had to have them stiff and supported between insulators.

Storey: And then around them you put these cabinets as ground shields.

Mermel: *Later*, they put them in round [shape]. We thought that putting them in square things were easier to manufacture and easier to assemble, because you just put the sheets in there and you put these sheets here, and it was the simplest thing. Now, the round [ones] you have to fabricate [as] ~~the~~ pipe. In the assembly you'd have to thread the pipe into the pipe. Or you could make it in halves, and then now probably they make it as shells in two halves. But at that time we thought that a square plate between buses, between phases, and then the other. But that's a minor, minor story.

Storey: No. That's the kind of thing I want to hear from you. Were there any other special



things at Hoover?

### **Private Power Companies Running the Generators at Hoover Dam**

Mermel: Well, the special things about Hoover is that because the battle of public power versus [private] power, public power, when the contracts were written, they said that the powerhouse had to be operated by the [private] public utility. Naturally, the public power people, including one of our famous engineers, McPhail, who was a proponent of public power, wanted to get the operation of the powerhouse back into the hands of the government. So they had to have a separate switch room or control room for Los Angeles, a separate one for Southern California Edison Company, a separate control room for Metropolitan Water District, and another one for Southern Nevada Power Company. See, those were the entities that underwrote the contracts for power.

So Metropolitan Water District had four units, Los Angeles had six, and Southern California Edison Company, I think, had three, Southern Nevada had two. Each one of them had to operate independently to their own transmission lines, and each one had their own operator. Now, each one of those had to build their camps for their operators, and you had Boulder City growing into originally a

government camp. Then later the City of Los Angeles had to build houses, Southern California had to build houses, and the city grew. As time went on, the pressure was to make the city a municipality and have it become an independent city, which it is now. But it was a government city before.

### **Naming Page, Arizona**

That makes me think of a story of Glen Canyon. When we were designing Glen Canyon, we had to build a city, also. When that city was being built, Dexheimer was Commissioner at the time, and he called me in and he says, "Ted, we've got to name that city. Come up with some ideas." Personally, with all humility, I would say I consider myself an idea man. I'm quite imaginative. My dad was the imaginative person in the family. So I get stimulated with ideas. Well, anyway, Dexheimer says, "Well, come up with some ideas."

Well, we thought Senator Hayden was a good guy. Why not name it after Hayden? But I looked up in the postal directory. There was a Hayden City already in Arizona. So we came up with whether we should name it R. F. Walter or whether we should name it by some congressman. But the rules were it had to be a dead person, that it couldn't be a living person. So we wanted to bring out some geographical names and so forth, and we

had all kinds of names.

And then finally I wrote a memorandum, and I have that memorandum in my files, saying, "Why don't we call it Page?" Dexheimer was a very close friend of Page's, because they worked together at Hoover Dam. And he said, "Great." He sent the memorandum back to me. He says, "Keep this." And I have it. So it was named Page, Arizona, after John C. Page. I feel that, well, there was a spark.

Storey: Going back to Hoover, you were in the Denver office. The Denver office was designing the electrical systems, is that right?

Mermel: Denver office had electrical, yes, designed all the electrical installation at Hoover Dam. Naturally, at that time, we were beginning to expand. We had Shasta coming in. We had Grand Coulee coming in. After all, the Roosevelt Administration was funding a lot of these Western projects. Colorado-Big Thompson was beginning to grow. The power from these units became a public power issue.

### **Public Vs. Private Power at Shasta**

And when we started building Shasta, naturally the only customer was Pacific Gas and Electric Company. So

Ickes said, "I want power to be made available to municipalities." So PG&E was wanting to take all of it. But he said, "Well, sell them all they can, but [be able to] withdraw it [when municipalities are ready to use it." Naturally government power was made cheaper than private power.]

Sacramento came in. The small cities were encouraged to have their own municipals [power systems]. Like Redding and a couple of others in that area created their own municipal city [power systems] and they got power from the Bureau of Reclamation at very cheap rates, rates that were standard, but hydropower was very cheap compared to what utilities were charging.

### **Federal Grid Proposed in the West**

So the municipalities went in there, and this was a constant battle of public power versus – and PG&E was one of the big battlers on the Hill. They were always opposing our appropriations for transmission lines, because they said they will build the transmission lines. They wanted to keep us at the dam so that we couldn't pick up customers along the line. [Harvey] McPhail said, "Well, we'll build the transmission lines." There's in archives – McPhail prepared a report showing that he was going to have a national grid that would be a Federal grid in the West and

show where there would be actually coal powerplants built to feed into the systems [all over the West], and that report was considered on the Hill, but it came too late. Public power was disappearing. Anyway, the utilities didn't want us to get appropriations for transmission lines. They wanted us to keep grounded at the powerplant.

Storey: And then they would build the transmission lines.

Mermel: They'd build the transmission lines and control who their customers were.

Storey: What was McPhail's first name?

Mermel: Harvey. Harvey.

Storey: And what was his position?

Mermel: He was the Chief of what we called Power Utilization. ~~He was the assistant.~~ Before the reorganization, he was the Assistant Chief Electrical Engineer.

Storey: Under McClellan.

### **Effects of Depression on Staffing at Reclamation**

Mermel: Under McClellan. And then there was another man by the name of Henry Plum, who was another Assistant Electrical, but his specialty was in controls and other

things, while McPhail was in heavy machinery. Then there was a man by the name of Bill Beaty, who was mechanical. And these were *very smart* people. They came from various places that were shutting down [during the Depression], like Stone & Webster, Southern California Edison Company.

Not long ago, one of my old associates, ninety-three, George Fleming, who was from Southern California Edison Company, was at the Bureau during that time, just died recently at ninety-three. A brilliant man.

### **TVA and Reclamation**

So there was a wonderful organization in the Denver office, recognized worldwide. As they started building, people would knock at our door. Now, when TVA [Tennessee Valley Authority] started, they didn't have the engineers, so they asked the Bureau to help them. Some of the Bureau people went to TVA, but some of them just did the work in the Denver office for TVA until TVA got started. TVA was building a lot of dams, and they were building a lot of transmission lines. There again, the public power issue came up. So this was an era.

I have a book downstairs on the life of Harold Ickes. I read it. You should read it. I also have a book that was written

by him, *The Old Curmudgeon*, and he autographed it. I gave it to my daughter and I said, "I want you to save that. That is a memoir."

Storey: He autographed it to you?

Mermel: I don't know what's going to happen with those pictures [on my office wall] when I kick the bucket, but as long as I'm here, they're going to be here. [Laughter]

Storey: Well, maybe they ought to go to the University of Wyoming with your other things.

**Materials to Be Sent to the American Heritage Center,  
University of Wyoming**

Mermel: Well, talking about University of Wyoming, I have – I'd be glad to show you – thirty-five boxes already boxed, ready to go, and labels are on them for the University of Wyoming, and my heirs are supposed to ship them to the University of Wyoming. If we were going to talk, material from those boxes would be very, very useful.

I don't know whether you really have a copy of this reorganization chart.

Storey: I've never seen that, but I haven't been through all the records either, so I don't know.

Mermel: Well, no doubt it must be in the archives. But probably this would be a easy way of acquiring one, if you wanted this.

Storey: You'd be willing to let it go?

Mermel: Well, [unclear].

Storey: I would love it.

Mermel: I only have thirteen years to go.

Storey: Only thirteen?

Mermel: Yeah.

Storey: Well, I would love it, yes.

Mermel: Yeah. I'd be glad to give it to you, because I know it'll be [thrown away] – otherwise I can't tell. When my heirs go through these files, there will be a lot of wastebaskets, a lot of wastebaskets.

Storey: Yeah, that's always a problem. What other kinds of things did you all design in the Denver office for Hoover and Shasta and Coulee?

[Looking Through Files and Photographs]

Mermel: This is what I looked like in 1956.

Storey: Uh-huh.

Mermel: I inherited these from the Bureau files.



Storey: This is with Floyd Dominy. With Ellis Armstrong. Another one with Floyd Dominy. That's a very nice picture of you. What other kinds of things did you do with Hoover Dam?

Mermel: By the way, here are some files I got. If you're interested in some of the people in the Bureau, their biographies, their CVs, I don't know how you could use it, but you'll run across names and you might – well, I imagine you could get that from personnel files, too.

Storey: Actually, we can't get into personnel files. Did you know that?

Mermel: What?

Storey: Personnel files are considered confidential information. We can't get into them until they're ninety years old.

Mermel: Well, you can get a lot of information from *Who's Who*.

When I retired, I got a lot of letters. This one I'm showing is similar to the one that you saw there, but this one was addressed by Lawrence Rockefeller to Stuart Udall, and he says, "I want to tell you of the fine contribution Dudley Feiss and Ted Mermel made to the success of the White House Conference on Natural Beauty." And Stuart Udall saying, "My

congratulations, too, men. Stuart."

Storey: That was in 1965.

Mermel: 1965. And it was a Major General Cassidy that also went to Russia with us. When [Gilbert G.] Stamm was named in '64<sup>3</sup> Commissioner of Reclamation, Mermel, in addition, was made a newly created post, Assistant to the Commissioner, Research. That title was changing from 1944 to 1973 about twenty times. But that was the last title in there. [Telephone interruption. Tape recorder turned off.]

Storey: What else did you have to do with Hoover or Grand Coulee or Shasta while you were in Denver?

### **Third Powerhouse and its Generators**

Mermel: Well, Grand Coulee is the next one. As time went on, they recognized that Bonneville needed a lot more power, and Grand Coulee, if they had the kilowatts – not necessarily the energy, but the kilowatts – it would be helpful to their system. So there was a plan, an authorization, to add 3,600 megawatts to Grand Coulee.

The studies were made by the

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3. Gilbert Stamm became Commissioner of Reclamation in 1973.

Denver office that they would build a third powerhouse, and the plan was submitted by the Chief Engineer putting in line 300-megawatt machines, 3,600 would mean it was twelve machines would have to be in the long powerhouse, almost a half a mile long, and you'd have to add penstocks and so forth to them. This was actually the recommended [Denver office] proposal.

At that particular time, the Russians were building 500-megawatt machines. I took up Russian, you know, and I studied Russian and I read Russian. That's why I got interested in the Russian literature. I called to the attention of Dominy – I was Assistant Commissioner for Engineering – so I said, "Dominy, the Russians are building 500. Why shouldn't we consider 500?"

### **The Struggle for 500 Mw Generators in the Third Powerhouse**

He said, "Well, ask the Chief Engineer."

So a letter went to the Chief Engineer saying, "How about considering 500?" And the Chief Engineer says, "Five hundred would create so much trouble, and I have a reputation to maintain, and I don't want to recommend anything that probably wouldn't work. Three hundred is as high as I'll go."

- Storey: Which Chief Engineer was this?
- Mermel: This was [B. P.] Bellport.
- Storey: Barney Bellport.
- Mermel: Barney Bellport. A very nice guy. And numerous conferences were held and discussions about this. Dominy pegged me, I would say, "Get me some more information." Well, I would scour around, make more information, and it looked like it was a reality that they were building. He says, "Well, where else are there any big machines?"

Well, I've traveled a lot to the International Commission on Large Dams, and every place I went, I would study what they had in the machines. Furnace in Brazil had 200 megawatts [then the largest]. I went down there and asked them, well, why didn't they go to bigger machines and so forth. Well, they say that was the technology.

I traveled to English Electric. I went to Hitachi in Japan. I went to Asea<sup>4</sup> in Sweden and so forth. This is in connection with other meetings, not just

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4. In 1883 investors created Asea AB in Sweden to manufacture equipment for generation and application of electric power. In the 1980s Asea began to expand outside Sweden acquiring other companies. In 1987 Asea merged with Brown Boveri to create ABB.

this mission. It wasn't the purpose of this mission. This was gathering information from all sources. And Hitachi was interested [in building larger units]. They say there's a possibility.

Finally, Dominy said, "Let's see what the industry will tell us." Dominy instructed me to prepare a letter for the Secretary's signature to General Electric and Westinghouse and Allis-Chalmers and Newport News. Newport News was at that time building turbines and Allis-Chalmers was quite a big company at that time, and asked them whether they would consider [furnishing] ~~putting~~ 500-megawatt machines at Grand Coulee. Would they bid on the machines? Would they design them? Because, after all, all we would do is ask performance and they would have to design them.

When GE and Westinghouse both came back saying we would not do it unless you gave us a million dollars for research before we could [consider being interested in such large machines.]

END OF SIDE 2, TAPE 1. JANUARY 26, 1995.

BEGINNING OF SIDE 1, TAPE 2. JANUARY 26, 1995.

Storey: This is tape two of an interview by Brit Storey with Ted Mermel on January 26th, 1995.

Westinghouse and General Electric had turned you down.

Mermel: Yeah. They gave a negative answer, and this is in the record.

Storey: Yeah. Unless you would provide up-front research money for them.

Mermel: Yeah. Without research money, they wouldn't do it. We got an encouraging letter from Hitachi, and we got an encouraging letter from Asea and English Electric that there's a possibility, but we'd have to talk about it yet. We'd have to do a little more thinking or something like that. But they weren't negative.

So at that time, Udall, in his bravado, said, "Well, we'll ask the Russians to furnish them." (Chuckle) Then that got into the newspapers, and it was in the papers, the Washington papers, that the Russians may bid on the Grand Coulee units. Naturally, the industry didn't like that and, at that time, mind you, Russia was not our ally at all. So this was rather offensive.

Storey: This would have been when?

Mermel: This must have been about '66, '67, something in that era. So Dominy was continuing to press the Chief Engineer, saying, "Why don't you make some studies? Here Hitachi says they'll go for it."

Asea will go for it."

So during that time, Udall was interested in this subject, too, you know, and he says, "Well, maybe what we ought to do is *see* these units, see them."

### **Arranges for Secretary and Commissioner to Tour Russian Hydroelectric Facilities**

Dominy called me in and says, "Mermel, pull something together." All right, I pulled something together. So Dominy and I, he took me along to Udall, and he says, "Well, Mermel says that this dam has such units and this dam has such units and this dam is *going to have* such units according to his research," because I was doing the Russian literature research, see. Krasnoyarsk was going to get the 500s. They were under process of manufacture.

Udall says, "Well, why don't we go and see them?"

And Dominy says, "Mermel, prepare an itinerary as to what we could do in about ten days."

Udall was close friends with

Ambassador Dobrynin,<sup>5</sup> "close" meaning that they were on speaking terms, you know, and so forth. Now, in those days, the State Department was very, very meticulous about correspondence with the Russians and contact with the Russians. When the Russians wanted to come and go and see a unit at TVA, the State Department would say, "We'll let you see one dam if you let us see one dam. If you want to see our university or so, we've got to see your university." It was a *quid pro quo* exchange that the State Department was playing.

But here Udall evidently runs into Dobrynin at lunch or someplace, says that he wants to visit, and Dobrynin says, "Sure, we'll invite you."

So Udall goes to the State Department and says that they want to go to Russia and that Dobrynin says that they will—the State Department was mad that Udall had arranged this before they were involved. But, anyway, they had to endorse it. So we made an itinerary and he said, "Well, I want a big delegation." The delegation must have been ten.

By the way, there's a report on it that I prepared, Udall signed, and it was

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5. Anatoly Dobrynin served as Soviet Ambassador to the United States from 1962 until 1986.



widely distributed to congressional committees, of our trip. In there, there's a lot of information that was very good. Anyway, I'm proud of it. I'm telling you. It was a high mark in my career.

Then Udall says, "Mermel, since you prepared the itinerary, come with us." Naturally, I was Assistant to the Commissioner [for engineering]. He wanted [Joseph] Swidler, the Chairman of the Federal Power Commission. He wanted a fellow—his name slips my mind [Lee White]—from the White House. He wanted Baggy, the chairman of the oil and gas organization. And he invited a guy from Sacramento Municipal Water District and another guy from Arizona Power Authority or something. Then he said that he was a close friend of Frost and he would take Robert Frost, too. Naturally, Robert Frost wasn't going to go on our tour, but Robert Frost arranged with the State Department to read poetry in Moscow at that time. But he went on the same plane with us, you see.

So we went. And Dominy was on that delegation, and Secretary Udall's right-hand man, [Oren Beatty,] office deputy assistant, whatever you want to call him. His name slips my mind. Anyway, he went along also. We went to dams that were previously prohibited – nobody went to. They showed us 250-megawatt

machines running, and they actually said, "We'll show you that they don't vibrate." See, because our engineers would say that the machines vibrate and all that other things and that they're not going to work well.

So the Russians stopped one of the machines, told us to stand on the platform of the machine, and then they put the machine on [from stand-still], and the machine came up to speed and so forth. There was a lot of noise, but there was no vibration and whatnot. It was impressive.

### **Russian Shaft Manufacturing Technology**

We went to the factory where they were making these units. One of the things that the Russians had – [was] an advanced technology. A big machine like these have to have shafts that are very, very large. In the United States, the shafts are made by forgings, because gun barrels are made by forgings, and ship shafts are made by forgings, and the industry has a limitation as to what size they can make in forges.

Now, the Russians also don't have as good an industry as we have, so they can't make these forgings that big. So they have invented that they would take plate, six, eight inches thick, roll it [in U shape] like this and weld [the] two pieces together and make a [round] shaft. That was called a hollow shaft. We picked up their

literature and showed our industry that they can make these hollow shafts.

We sent it to Bethlehem Steel – I saw the letter, because I wrote it – and they said they're not interested in this technology because they'd never need that kind of technology.

### **Electroslag Welding**

Now, one of the problems of taking six-inch plate and welding it, you can weld, you know, on the surface, but you have to get into the depth of the metal. So the Russians have invented what is called electroslag welding, and they gave us a book on it to tell us how they did it. What they did is put molten metal in and fill that gap with molten metal and it welds and it works. So the Russians had advanced technology and electroslag welding that the United States had not yet had. Now, the United States has since adopted it, and the United States has electroslag welding. They won't admit that it came from Russia or that they were inspired by Russia.

But these generators had to have that kind of shaft. So that was one of the specifications provided, that we would accept hollow shafts *or* forgings so that the Bethlehem Steel, if they wanted to make a forging, they could make it. But we would accept it. And the machines are hollow

shafts at Grand Coulee.

### **Contractors for Third Powerplant Generating Units**

Now, with Willamette, the shipbuilding outfit, took on the job of making them, and Dominion of Canada took on the job of making the generators, and the second pair, either Hitachi or – not Mitsubishi – anyway, Japan has a piece of the contract in there. The machines were made at Grand Coulee.

### **Barney Bellport, Chief Engineer, Finally Recommends 500 mW Units at Grand Coulee**

Now, I skipped the point that the pressure was on the Chief Engineer to come up and agree to have 500 [megawatt] machines. So Udall decided he was going to have a conference in his office, and he scheduled a date, we were going to have a meeting on this decision whether we're going to 500 megawatt machine or 300 megawatt [as argued by Bellport's staff]. And the Chief Engineer was supposed to bring his entourage to justify his position.

Lo and behold, the day arrives, we walk into the Secretary's office. The Chief Engineer lays a report on the desk saying, "Our economist found that 500 megawatt machines were economical and physically possible."

Storey: Quite a surprise.

Mermel: So everybody was surprised and they felt that that was a waste of time of the Secretary and everybody else. But, nevertheless, the record [now] shows that the Chief Engineer of the Bureau of Reclamation recommended 500 megawatt machines and nobody else. [Laughter]

Storey: How long did this process take?

### **Morgan Dubrow**

Mermel: A year or more, maybe more. Now, incidentally, I must give credit to this. There was in the Secretary's office a representative of the Bonneville Power Administration by the name of Morgan Dubrow . He was a representative of Bonneville, and then from that job he became an assistant to Holum.<sup>6</sup>

Storey: Ken Holum.

Mermel: As a technical assistant to him. And I was very friendly with him. He's in Washington. He's alive. You can talk to him today and he'll repeat the story. I talked to him. I showed him this drawing

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6. Kenneth Holum was the Assistant Secretary of the Interior for Water and Power under John F. Kennedy and Lyndon B. Johnson's administrations 1961-1969.

that the powerhouse would have to be almost a half a mile long with twelve units. Now, he was interested from the Bonneville Power Administration angle, see. But he was an engineer, so he made a study and he also knew about this Russian literature. So he got Holum's ear and Holum was also interested in it. And from Holum's ear we got to Udall's ear.

I want to give credit to Morgan Dubrow that he also was instrumental to keep that subject alive at the secretarial level. Without his help, I don't think *I* would have succeeded, and I say *I* because I feel that I instigated the thing, and it was with Morgan's help that we got this departmental interest in this thing. And this is why we have 500 megawatt machines.

Now, I talked with manufacturers and so forth. By the way, there's a picture of that machine. Allis-Chalmers framed that and gave it to me, knowing that I was a proponent of big units. But I just have it there because it's so close to my heart. It won't be on my tombstone, I'm sure. But I feel satisfied.

Now, there are other people who are aware of this, because in the Denver office the engineers knew that Mermel was pushing big units, and the hydraulic engineers didn't want them. The electrical engineers were saying, "It's no use taking

the risks. We don't know what we would get into." So they were not that enthusiastic in the Denver office. Max Kight was aware of the fact that I was a pusher for the big units, and there are a lot of other people that know that, too.

### **Generating Units Larger than Reclamation's Third Powerhouse**

Now, since that time, the Guri [Venezuela] and Itaipu [Brazil/Paraguay] in South America have bigger units. Because of the Grand Coulee, they got interested in bigger units. Now, when they were building the units, they asked the American industry to bid, and they didn't want to bid. So the big units were built in Europe by a Swiss outfit – Asea and some other consortiums built the big units. Now, we bought a second set at 700 megawatts. But they're updated, I think, now to 800.

Now, the big argument was that we don't know how they'll work. Well, it's true. We had an accident. A laborer left a monkey wrench in the machine, and when they got started, they wiped out the whole damn [windings of the] machine, and they had to spend about more than a million dollars to fix. But that is not the technology. That was an accident. But that is part of the reason why we have the big units.

Now, I presented a paper in writing and so forth about big units, to the American Society of Mechanical Engineers. It was a published paper, and in that paper I concluded that for the far future, 1,000 megawatt machines are possible. Naturally, the audience laughed. [Laughter]

### **Russians Are Studying 1,000 mW Units**

But the Russians *have* been studying 1,000 megawatt machine units. They were planning a dam for the Lena River. The Lena River up in Siberia is a very large river, and they *could use* 1,000 megawatt machines. Now, remember when Russia was together as a union, Lena River was part of the country. Now with the country split, I don't think that Lena River will be developed in the next fifty years or more, a hundred years. Some of the big dams that are being built in Russia are being stopped or being deferred because the independent republics are not in a position to finance them. Now, Russia is trying to keep the central grid as a central grid and make contracts with the republics, because you have to have a national grid. You cannot split it up. I talked to the Russians in Durban when I was [there] ~~in~~ about that, and they said that they are maintaining the central dispatching office in Moscow for the national grid.



Storey: That's when you went to Durban, South Africa, for the ICOLD<sup>7</sup> meeting?

Mermel: Yeah.

Storey: Let's go back to the thirties, though. In the thirties, did you have any involvement with Grand Coulee then?

### **Hydropower for World War II**

Mermel: Not too much except routine work. Mind you, I got transferred to the Washington office in 1943, which is ten years of Denver tenure. I got involved in this, that during the war, the power of the Northwest for shipbuilding was so short they were pushing us for more units at Grand Coulee.

### **Sam Judd Proposes Moving Shasta Generating Units to Grand Coulee**

Now, we had some empty bays, and the units would take several years to put in. We had Shasta going and we had units at Shasta installed and under manufacture, but they needed the power up there. So we transferred the units from Shasta and put them [temporarily] up in Grand Coulee, two units, which was a hybrid fixed idea. But it got power on the line very fast [for

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7. International Commission on Large Dams.

shipbuilding], because the units were all finished, and they got installed there. This is a big contribution to the war by getting those Shasta units up there. Then later, after the war, they took those units out and brought them back to Shasta. [The idea came from Sam Judd of the Denver office.]

Storey: How were you involved in the transfer?

### **Working on War Priorities During World War II**

Mermel: Well, I was involved in it, because I was here in Washington taking care of the war priorities, and the push for power came to the Bureau of Reclamation. I was the leg guy, the liaison, if you want to call it, as Assistant to the Commissioner, to handle the relationship with Denver. What's the possibility? Denver would have to make the study and so forth. [When the idea was presented,] ~~Where the initiation came from, I think came from~~ the War Production Board itself [endorsed it], that they needed the power so badly, what could the Bureau do? And someone came up with the idea to take the Shasta the units up there. I think that that idea could have come – someone gave credit to Sam Judd, and Sam Judd said, "Well, take the units up there."

Sam Judd was a civil engineer. He was in charge of powerhouse design. Very, very brilliant guy. His son became a professor at the University of Purdue, also

a brilliant person. I consider him one of our top men, at that time, in that organization.

Storey: My understanding of generator units is that they're individually designed for specific powerplants.

Mermel: Well, they have to be designed to be *installed* in specific powerplants, but the theory, the theory of the electricity and so forth, is a standard thing. But you select the size and then you have to design from scratch, and each casting has to be cast separately. So it is custom-built, if that's what you're –

#### **Adapting the Grand Coulee Bays to the Shasta Generating Units**

Storey: What kind of problem did Reclamation have picking up units from Shasta, where they'd been designed to be put in, and moving them to Grand Coulee?

Mermel: Well, the problem was that you had to make the *bays* at Grand Coulee *fit*. The bays at Grand Coulee were *bigger*, so you just filled the hole with concrete and put the units in that place without any change. There was no change.

Storey: The units weren't changed, but the bays that received them were.

Mermel: Had to be filled with concrete, the excess. And the penstocks were different, so they had to make the penstocks smaller to reduce to the Shasta units, because the Coulee units had bigger penstocks. The Shasta units are a little smaller. So that means they just fit the collars. But as far as the machine is concerned, it's just like taking this machine and putting it over here, except I have to rearrange the table. So you had to rearrange the thing. But it did provide the power that was so desperately needed in the shipbuilding industry in the Pacific Northwest at that time.

### **War Production Board**

The War Production Board controlled *every* item. Making ketchup bottles had to be allocated. You had to allocate the steel for the steel caps on ketchup bottles. If Bureau of Reclamation wanted some reinforcing steel, it had to justify what it was for, and then you would find a steel mill, somewhere, that had rolling capacity, and you put it in the schedule, because they were running full blast all the time. The industry was loaded. So you had to put it in the schedule if you had a priority. If you didn't have priority, you got back to the end of the line. [That was part of my job in Washington.]

The bureaucracy of the War

Production Board was *tremendous*. They built wooden buildings all over the mall. Today they're all ruined. They've taken them down. But they were wooden buildings all up and down the Ellipse, as you call it, all the way from the Capitol down. There were quarters for living even around the Lincoln Memorial, and they were there a long time. Actually, there were still some buildings from the First World War. The First World War, the Navy Munitions Building, as they called it, along Constitution Avenue, was still there from World War I, and that is torn down and isn't there. But they were all wooden buildings, and they just built them overnight.

### **Travel Between Denver and Washington to Work with the War Production Board**

I traveled between Denver and here about twice a month, back and forth, by train. Naturally, finding sleeping quarters in Washington was a problem. All of these little apartment buildings converted themselves into small hotels, and you could get a room about half the size of this one with a bed and a wash basin for two dollars a night.

### **Accommodations in Washington, D.C., During World War II**

Storey:            Maybe something ten-by-six or eight feet?

Mermel: And you were lucky if you could get it. I made friends with a little hotel on F Street with the guy. When I would arrive, I'd generally give him a carton of cigarettes. I was able to pick one up in Denver or something like that. And I was always assured a room. Otherwise you'd have to sleep in the park. The book *Washington Goes to War* is something that I recommend that you read if you're interested in that era, and the book on the life of Harold Ickes is another one you ought to read, because it puts you in the feeling of where the Bureau was a small cog.

### **Michael Straus as Commissioner and Bob Blanks as Head of the Labs**

But one of the big things about the Bureau is Straus was a newspaperman, but he was a wonderful administrator, and he was visionary and he was a pusher for research and everything. When the reorganization was coming on<sup>8</sup> in the Bureau, Straus was named Commissioner. The congressional committees held hearings, and somehow or other – and I don't know the detail – Bob Blanks, the head of our laboratories, was called to Washington to testify before the

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8. n.b. – Michael Straus became Commissioner of Reclamation in 1945, a full year after the reorganization of Reclamation into its regional structure.

committee, either because he was supporting an appropriation for research or something like that. And he, Bob Blanks, made a derogatory statement about Mike Straus, saying that the Bureau of Reclamation ought to be run by an engineer, not by a newspaperman. And that fired him. [Laughter]

Storey: Who actually fired him?

Mermel: Well, I mean, Straus saw to it that he [disappeared] ~~got fired~~. I don't think he got fired; he was asked to resign by the Chief Engineer at that time, that his usefulness was no longer of value. But he was a brilliant guy and he ran a very good laboratory. He was, let's say, responsible for the concrete research on Hoover Dam. Now, Jack Savage was the imaginary designer in the Denver office.

### **John L. Savage**

Storey: You mean the imaginative designer?

### **Calculating Stresses During Dam Design**

Mermel: Imaginative, yes. He knew what stresses had to be calculated. He had probably about 400 engineers using Monroe hand-cranked calculators figuring out stresses over each section of the dam, and that took a long time to do it. Today the computer would have solved a lot of those problems.

But just think of all of those engineers that did that tedious work. I used to run one of these hand-cranked Marchants and Monroes. Later, when you got up into status, you got an electric Monroe. That was a status symbol. Computers didn't come in until quite late. And I would say that the Bureau was slow in picking up computers, probably from where I sit.

END OF SIDE 1, TAPE 2. January 26, 1995.

BEGINNING OF SIDE 2, TAPE 2. January 26, 1995.

### **Computerization at Reclamation and World Bank**

Mermel: I don't know how the Bureau compares, but the World Bank is, boy, computer [updated] crazy.

Storey: And you're saying Reclamation seems to have caught up with computer use now. What else did you do when you were still in the *Denver* office?

### **Traveling with Leslie N. McClellan Working on the Hoover Dam Readjustment Act**

Mermel: Well, toward the end, I spent a lot of time traveling with McClellan on the Hoover Dam Readjustment Act, because when I traveled with him and he got into discussions and they made assumptions, he would want a study made by the next morning. I would run the study during the night and have it ready in the morning.



McClellan liked to live at the Hay-Adams Hotel here in Washington, and the Hay-Adams was really the hangout for that group. In that group, though, I wasn't the only one. There was Moran, who was the Finance Officer out of the Denver office, and then Raines was the Finance Officer out of Region Three, out of Boulder City. The Finance Officer in Washington here was Bill Kubach. He was the finance man. There was a brilliant guy. He had, in his mind, every number you can think of. When he went with Page to the Appropriations Committee, he had all the numbers in his head.

#### **Tensions with Barney Bellport over His Job**

When I came into Washington, my real function in the office was liaison between Denver, and I was actually representing the Chief Engineer. I was the go-between. Naturally, [Bernard (Bernie) P.] Bellport *resented* the idea that he couldn't, or found it unnecessary. ~~calling the Commissioner, but he~~ [The Commissioner] would call me to ask what the status of certain [engineering] things were. [Bellport] He wanted to talk to God directly, and he didn't want Mermel, particularly, to interpret engineering problems to Dominy.

We had a staff meeting one time, and we got into a technical discussion. I

presented some kind of a problem and Bellport presented a [similar] ~~varying~~ problem. Bellport sort of scolded me for taking that position, and Dominy said, "God Damn it, Mermel, if you agree with the Chief Engineer and knuckle down *to him, I'm going to fire you.*" [Laughter] "I want you to give me *your* advice, and I don't want you to knuckle down just because the Chief wants it that way." Dominy supported me, I would say. I was not afraid, let's say, that Bellport would get me fired.

#### **Floyd E. Dominy and Wilbur A. Dexheimer as Commissioners**

But Dominy was a good Commissioner. There's no question about it. He did a lot of good for the Bureau. Dexheimer was in an era where politically the Bureau was vulnerable. If it wasn't for Dexheimer – and this is for the record – I'd say the Bureau would have been decimated by Tudor, who was Under Secretary. Dexheimer and Tudor were friends during the war on the Burma Road, and Dexheimer was able to argue with him and not to decimate the Bureau of Reclamation.

Storey: This was in the [Dwight D.] Eisenhower Administration?

Mermel: This was during the Eisenhower Administration, yeah. Now, it's also for the record, Dexheimer, as an engineer,

probably was a very good engineer, but as a politician on the [Capitol] Hill, he didn't get the kind of response or he didn't feed the congressmen what they wanted to hear.

There developed a contact between the Hill and a guy by the name of Floyd Dominy, who was the Chief of Operation and Maintenance Division, and they would contact him for information. Pretty soon, Dominy also got the ear of the Secretary, and pretty soon he got appointed as Assistant Commissioner, and with a little more time, Dexheimer decided to retire or to leave. I wouldn't say he was fired. I think he was probably eased out. But Dominy was the cause, and he became the Commissioner. But Dominy had a very good relationship with Congress.

The Bureau was rejuvenated, *even* under a Republican. Now, Dominy was appointed by a Republican President as well as by a Democratic President. There was a change of administration there. So Dominy had support both on the Republican and on the Democratic side, or he knew how to get support on both sides.

### **Ellis L. Armstrong**

Then [Ellis L.] Armstrong came in. Armstrong, a good engineer. He had fairly good rapport with the Hill. But we were in

a declining era, and when Stamm came in, the era was further going down, down, down, until now.

### **Rewriting the Contracts for Power Charges at Hoover**

Storey: You mentioned that you were traveling with McClellan for something to do with the Hoover Dam?

Mermel: Yeah. The power allottees, when they signed a contract in 1930, signed it on a basis of paying for the energy equivalent to what it cost to make it by steam. In other words, they were required to pay for power from Hoover on a comparable basis, competitive basis, see. In other words, they didn't have to build powerplants and so forth. So it was the value of the power.

So when 1937 and '38 came around, they said that that's not fair because government would make a lot of money. Within fifty years, the government would have made something like \$30 million or \$40 million. So they asked Congress to change the law to say that they should pay only an amount equal to repayment of the debt.

Storey: Over what kind of period of time?

Mermel: Over a fifty-year period. So this changed the philosophy, and Congress had hearings. They said that they agreed in principle, and then had to determine how this was going

to be done. So the Secretary of the Interior appointed a chairman by the name of Harvey L. Wright, who was supposed to run a panel to determine the terms of the contracts.

During that period, which was almost two years, I traveled with McClellan, because we had to sit down in conferences with all the power companies in Los Angeles, with the lawyers and so forth, and figure out how much do we really have to have in order to pay for the dam. So we had to get the cost of the dam, the depreciation, the replacement reserve, all of that kind of thing.

This is where I was involved, in making these studies. The finance people would feed me the information, I would make the depreciation studies, and we would make the computations as to what the sale of power would be. We assumed growth. Metropolitan Water District wasn't developed at that time, so we assumed a growth that Metropolitan Water District, gave them a chance. The states were growing. So the power consumption varied during the early years, and you had to come up with a rate on a basis of assumptions that the committee was able to agree on. So every night somebody made a different assumption. You had to make a different study, see? And then when the thing was decided that everything was –

the allottees were not satisfied.

### **Meeting of Power Companies with Secretary of the Interior Harold L. Ickes over Renegotiation of the Contracts for Hoover Power**

There's a nice little story with that. So they wanted to have a hearing directly with the Secretary of Interior Ickes, and they wanted to present their disagreement with some of the things that the panel chairman, Harvey L. Wright, had determined that was supposed to be done. Well, we had a great big meeting. Oh, damn it – I have a picture of that someplace. During that meeting in the Secretary's room, everybody sat down.

All the allottees had their lawyers and everybody else, and the room was full. I was in one of the chairs. The Secretary walked in, took out his watch, put it on the table and said, "Gentlemen, I have one hour I can give you for your presentation. Mr. so-and-so, you have ten minutes. Proceed."

And this lawyer got up and said, "Why, Mr. Secretary, this is such a complex matter that ten minutes is not enough. We have to have a discussion on all of that."

The Secretary interrupted. He said, "You have taken five minutes. You have five minutes left." Naturally, they were

rather shocked. So he made his presentation in five minutes, and then the Secretary said, "Now, you have your ten minutes. You have your ten minutes." When the hour was up, he picked up his watch, and he said, "Thank you, gentlemen," and left. That is Harold Ickes.

Storey: And what did he decide?

Mermel: Honest Harold. I'm telling you. Now, really, you've got to read the book. He was really an honest Secretary, and Roosevelt was very fortunate to have him, and he designated him as the Administrator of Public Works. Public Works were expanding tremendously, and he put in Harold Ickes's hands the power of signature, and Harold Ickes was the signature of the –

Storey: President?

Mermel: – of that. Well, it was a dramatic, let's say, meeting.

Storey: Well, I'd like to go on, but, you know, it's eight o'clock [P.M.].

Mermel: I have the reorganization of the Bureau in 1980. I'm sure you have that.

Storey: Well, I haven't seen that one, no. I haven't seen that one either. But I'm sure it's in our records.

- Mermel: I'll donate that to you for your archives.
- Storey: Thank you. Do you know what time it is?
- Mermel: What?
- Storey: It's eight.
- Mermel: Well, I'm telling you, I think we ought to quit.
- Storey: Okay.
- Mermel: I'll give you, let's say, an opportunity, let's say, to climax this.
- Storey: Well, just let me just ask you if you're willing for researchers inside Reclamation and outside Reclamation to use these cassette tapes and any resulting transcripts for research purposes.
- Mermel: Say that again.
- Storey: Are you willing to let people from within Reclamation and from outside Reclamation do research using your tapes and your transcripts from this interview?
- Mermel: I don't think the purpose of this interview was for getting into a debate of whether there are slight emphasis or de-emphasis or interpretations as they appeared to me. I'm sincere in what I say. I may have put more emphasis on what my vision saw. And while I may say that this man was brilliant,



someone else can differ. And if I said, sorry, Dexheimer was a wonderful engineer, but he was not politically astute. I don't think I would like someone from Dexheimer's heirs to say, "That's your opinion." Well, maybe it is my opinion, but there are differences of opinion.

Storey: And that's always the case, and historians know that when they do their research. So they take that into account as they interpret what's going on.

### **Kenneth Markwell**

Mermel: The thing is, it's a delicate subject. I would rather that you use the background to research your own confirmation of what – it's just like [Kenneth] Markwell. Well, Markwell was a remarkable administrator. He came from the South. He was Construction Engineer on Sandy Cooper Dam. He came in the Bureau because he had some political backing, *but* he had a alcohol problem. *But* he was able to perform when needed, and he did a wonderful job and he was a good administrator. He supported the Denver office very well. He made good decisions that were never influenced by his alcohol problem. The only thing somebody could say is that he didn't show up at a meeting. That's all. But I traveled with him, and I have high respect for him that he was very capable, more capable than some people

that held similar jobs.

Storey: So is it all right then for researchers to use this to develop the background you're talking about?

Mermel: Well, you don't know. It's just like this recent incident of the Speaker of the House's [Newt Gingrich] mother being asked by a gal [Katie Couric] saying, "Just between us, what do you think of Mrs. Clinton?" And she, being an older person, probably spoke freely, when probably she should have guarded herself.

Storey: And you know what? You haven't said a single derogatory thing about anyone tonight.

Mermel: Oh, I don't know. Some people can interpret it. Well, the fact that Bellport resisted [technological] advances. I used to stand up and say, "If you want to be a leader, you've got to [be] up in front and you're going to get shot at." That was my position, and I still think that it was a good cause. I believe that I performed for Dominy what he expected me to do, and I think I would have been wrong if I had knuckled down and said, "Yes, smaller units are better." And I respect Bellport very much. He came from Central Valley. He wasn't necessarily a politician or he wasn't very much of a scientist. He was a good construction engineer.

Here's a roster of personnel when I retired. Fairchild, Warren was an Assistant Commissioner. By the way, he went to the World Bank and he's still around.

Storey: Yeah. Warren Fairchild, he lives over in Alexandria, I believe.

Mermel: Keating. Bill Keating, was the Assistant Commissioner for Development. He went to Florida. He's dead. He was probably a difficult administrator to work for, but he did his job. Wilbur Kane was a finance man. Mermel was GS-16. I was about number five man in the –

Storey: In the organization.

Mermel: Yes.

Storey: That would have been in '73. But you still haven't told me whether or not we can use this material. Would you be more comfortable if we didn't release the material until after you had died?

Mermel: [There is no need to delay any of this material.]<sup>9</sup> ~~Oh, after I died, I think it wouldn't make any difference.~~

Storey: So you would give permission to [use it

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9. The changes in this and the subsequent paragraph were made by Ted Mermel.

freely] do that?

Mermel: Yeah.

Storey: Okay.

Mermel: I've only got thirteen years to go.  
[Laughter]

Storey: Wow. We look forward to that. Thank you. I really appreciate your time. [Tape Interruption]

Storey: . . . about Bill Warne. W-A-R-N-E.

Mermel: Bill Warne was the information man, but he had a hell of a lot of capability. He was imaginative and aggressive and progressive. As time went on, he rose to the rank of Assistant Secretary, and he did a splendid job.

Now, here's a picture of a group of conference people, which shows – there's Mike Straus, there's Bill Warne, there's [Walker R.] Brig Young. That's [Goodrich] Lineweaver. Lineweaver was an agricultural man, also a very capable guy. There's Markwell. This is the organization man. His name [was Ellsworth] ~~slips my mind~~. There's Jack Dixon. Here's the personnel officer. This is Ken Vernon. This guy is Larson from Salt Lake City. This guy is Boke, the one from – Regional Director in there. This was – not Nelson. What was his name?

Anyway, from Boise.

Storey: H. T. Nelson.

Mermel: There's Babb and there is Mermel. So as far as that goes, I felt I was in the hierarchy. And here is another picture of people with their names here. There's Bill Kubach. Oh, here's Tebow, even. This was a regional meeting. Now, here is the organizational meeting with Harold Ickes. Here's Harold Ickes. Here's Mike Straus. Here's Bill Warne. Here's Lineweaver. Here's W. R. Nelson. By the way, W. R. Nelson is in his nineties, and last year – not this year – I got a Christmas card from him. He was office engineer at Hoover Dam when Page was construction engineer. Later he became an Assistant Commissioner.

Storey: Where is he living now?

Mermel: In Alexandria. Well, if he's alive. W. R. Nelson. Here are names of these people on this thing, and here are some photostats of it. But you should have these in your files. You have these in your files.

Storey: They probably are in the files somewhere, yes.

Mermel: The thing is this, that, you know, I hold onto these things for very silly reasons. Purely sentimental.

- Storey: No. It's for sentiment. That's not a silly reason, though.
- Mermel: This is my life.
- Storey: Yeah. It's not silly at all.
- Mermel: When I look at this picture, I get something out of it. If I give it to you, I don't have the picture to look at.
- Storey: That's right.
- Mermel: And that little instant of pleasure that I get from thumbing through these things are the reason why I hold on to them.
- Storey: Sure.
- Mermel: So the thing is, that's why I'm not shipping the boxes to Wyoming.
- Storey: Yeah. I would like to borrow this one, if I could, and duplicate it and send it back to you.
- Mermel: Any particular – what do you mean? This?
- Storey: This photo. I'd like to duplicate that and send you back the original, if you're willing to do that. This is a portrait of you done in '65, I think it was.
- Mermel: Yeah.
- Storey: Well, actually that's the time you received

your award, probably.

Mermel: Yes.

Storey: If you're willing to let me do that, I'd sure appreciate it.

Mermel: Well, sure, sure. What about any of the others? Do you want to do the same thing?

Storey: Well, I would like to do the others, but this is really the important one, because we want it to go in your file.

Mermel: By the way, I've got a big picture of this down in the basement, enlarged. This was a ceremony of giving out some awards to these people at the time. This was Bill Palmer. Glover was a *brilliant* mathematician. Maybe that's the wrong word. Scientific computer. In the day before computers were invented, he was able to make computations by use of the old mathematical formulas, differential calculus and all the other kind of things, and he was the brains that today we would use on a computer.

Storey: What's his first name?

Mermel: Glover. [Bob] Glover.

Storey: It's on the back, I'll bet.

Mermel: Glover. I would know very well. Robert

E. Glover. He was the head of the mathematical section, and he performed all of the things.

I have a high regard for Armstrong. I think he was very sincere. He was very meticulous in being proper. Honest, as honesty goes. He wouldn't tell a lie or exaggerate or anything. He was really remarkable.

Here's –

- Storey: Floyd Dominy.
- Mermel: Here's part of the office staff of – well – this one I like, being the young engineer in 1944.
- Storey: Would you like me to duplicate that one, too?
- Mermel: I don't know whether that is a –
- Storey: That's a nice one.
- Mermel: Well, I mean, there's a big change between that and now.
- Storey: Well, that's '44. This other one was '65.
- Mermel: Here was the staff of *my* group. Babb was retiring. He's died. He came from TVA, really. Babb was retiring, and I had a little party. Blout was an engineer in my division. He came after the war. He



married in London and came here. He was a brilliant worker, hard worker, and very dependable, reliable. K. K. Young was my assistant immediately, and he's still alive. He's in Columbia, Missouri. My age. Schwennecker is in Washington. He's alive. Freaub is somewhere in Alexandria. There I don't know. He's lost. Lucas, I keep in touch with him. He's in Florida. And, oh, I forget his name. Avery. Avery. He was a scientist from the laboratory in Denver. That was the retirement party. '56. I'll give you that for your archives.

Storey: Does this have the –

Mermel: I'll give you this for your archives. Here is this one with Secretary [Julius A.] Krug. No, the names aren't on here. See, there's Straus, there's Krug, and there's Bill Warne. There's McPhail over here, and that's me over here. I think you ought to take these for your files. See, this is the same as the other one. So there's two of them, see. You want it on the cardboard or do you want this?

Storey: No, this is fine just like this.

Mermel: Okay. I don't know. You can have it. I think the only people that will be interested in my [activities is to confirm some claims or views of the times – "Times were different and we did our best."]

END SIDE 2, TAPE 2. JANUARY 26, 1995.  
BEGIN SIDE 1, TAPE 1. APRIL 2, 1995

### **People with Whom I Worked**

Storey: This is Brit Allan Storey interviewing Ted Mermel on April 2, 1995, at about three o'clock in the afternoon at his home in Washington, D.C. [We were looking at some photos of Bureau people gathered for a group picture. We met in his home where he has set aside one room called his "office." One wall was covered with photos of "men in my life" which had pictures of all Commissioners of the Bureau since Page and the Secretaries since Ickes to 1973.]<sup>10</sup>

### **Harvey McPhail and Harold Ickes Advocated Public Power**

We're talking about Harvey McPhail, who was the head of the Branch of Power Utilization in Washington, D.C., when Michael Straus was commissioner. Right?

Mermel: Yeah. Well, he was head of power utilization, and he actually was a genuine public power advocate, and he was carrying out the policy of the administration where public power was to be developed. Secretary of the Interior

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10. Addition by Ted Mermel.

Ickes was really a proponent of public power, and he actually felt that the Denver office did not carry out his public power policies, because they gave contracts to public utilities with escape clauses that were not appropriate and so forth. So that is actually why the reorganization happened.<sup>11</sup>

There is a report that was prepared by some independent outfit, probably some eastern college or university, whether it was Massachusetts or [Princeton] ~~someplace~~. Anyway, in that [report] ~~thing~~, there is a definite statement where Ickes [states] ~~says~~ that the Denver office did not carry out his policies. John Page was Commissioner of Reclamation at that time. He said, "John Page, when I communicated with him, he would carry out what [it should] ~~could~~ be, but when it was relayed to the Denver office, they didn't carry it out," that they were a bunch of Republicans there. And perhaps Denver was Republican.

### **Public Power from Shasta Dam**

Now, the head electrical engineer was McClellan, and he was really ~~the~~ [a business] leader carrying out policies on

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11. This is a reference to the reorganization of Reclamation into regions in 1943-1944.

negotiating contracts for sale of power. But McPhail had a little bit more leaning towards public power. We had battles in the open. The President of Pacific Gas and Electric Company was one of the proponents of trying to abolish the Bureau, because the Bureau was building transmission lines in California and the Bureau of Reclamation was making [low cost] power available to municipalities [directly] from its transmission lines and taking away customers from PG&E.

Roseville is an example. Sacramento municipal outfit is a public power outfit,<sup>12</sup> and it was quite a strong nucleus. But there were [other] small towns all along, from Shasta all the way down to San Francisco, that were tapped and were given power from the transmission line at much cheaper rates, and PG&E opposed this. The PG&E President used to come down and testify before Congress against the Bureau of Reclamation appropriations for power activities. And McPhail was really the strong hand in the Bureau carrying the torch of public power. [Mind you, the Roosevelt Administration was public power minded.]

Storey: This was Harvey McPhail.

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12. Sacramento Metropolitan Utility District (SMUD).

Mermel: Yeah.

**Richard L. Boke, Regional Director in Sacramento  
1947-1953**

Storey: And sitting next to him in this picture is Mr. [Richard L.] Boke. What was his first name?

Mermel: Boke was a Regional Director. Now, he came from the outside. [He was nominated from above.] When the reorganization was [in progress] heavy, he showed up [with] ~~from~~ somebody['s endorsement]. I don't know whose nominee he was, but he was from the outside, made a Regional Director.

Storey: His first name?

Mermel: What?

Storey: Boke's first name?

Mermel: Boke? I don't know where he came from. I don't think he was an engineer.

Storey: But you don't remember his first name?

Mermel: Could be Dick Boke.

Storey: What was his nickname?

Mermel: I don't [remember that he had one] – probably not. But, anyway, there's

Vernon. Well, some of these fellows [are still around.]

**Kenneth Vernon and Wesley R. Nelson**

Storey: Ken Vernon.

Mermel: Down here is Wesley R. Nelson. Wesley R. Nelson is still alive [about 93] and he lives here in Arlington [Virginia]. I heard that he was still alive a few months ago. I even sent him the speech that the [present] Commissioner of Reclamation made in South Africa [in 1994], which portrayed the future of the Bureau of Reclamation as *not* being an engineering organization and that dams are no longer its thing. But, anyway, that's Wesley R. Nelson. He was Office Engineer at Hoover Dam with Page when Page was down there. He was Office Engineer in there. This is regional director from Boise.

Storey: H. T. Nelson.

Mermel: He had a son who [was killed in an accident on a project].

Storey: Not Nelson?

**Erdman B. Debler, Al Golzé, Morris Langley**

Mermel: No, no. Oh, there's a hydrologist, the one that begins with a D. [Erdman B.] Debler. That's Debler. This one. He was the hydrologist, and he was a regional director

in one of the regions [in Denver,] ~~someplace, probably~~ in Region Seven. This here is Al Golzé. Al Golzé, he was an Assistant Regional Director and then he transferred to the state of California [to head the Water Resources Department]. You know, all these guys are dead now. Oh, that guy over there is Langley, Morris Langley. He's still alive. He's a consultant [in Washington, D.C.]. He was head of operation and maintenance, what we call 400. Morris Langley.

Let's see who else we can identify in here. No. I know him, but I can't think. Oh, that fellow was the administrative person in charge of doing the reorganization [Ellsworth]. Anyway, programming and reorganization was his job, and he is the one that created all the charts and so forth for that.

There's Mermel right there.

Storey: You're right here on the corner.

Mermel: Yeah. That was a long, long time ago [about 1943]. I'd have to refresh my memory. Now, Harold Nelson is another guy, came after him. This is before Harold Nelson.

Storey: So that's the Boise Regional Director?

Mermel: Well, he was a Regional Director in Boise before H. T. Nelson came in there.

Storey: Okay. What about in this picture instead? Now, didn't you tell me Boke was known as the ballet dancer because he had a –

Mermel: Well, he was known in that, but that's not necessarily something that ought to be recorded [of held against him]. Among the engineers, they had a lower, let's say, image of him because he wasn't an engineer, and one of his background credentials was being in ballet [dancer—a petty, negative remark].

Storey: Oh, okay.

Mermel: There's Harold Ickes.

Storey: Did you ever meet him?

Mermel: See that autograph [pointing to an autographed picture of Ickes on Mermel's office wall], "to Ted Mermel". Yes, on many occasions.

### **Harold L. Ickes**

Storey: What was he like? What was he like?

Mermel: Well, he wrote a book, *The Curmudgeon*, and I got an autographed copy [which] I gave it to my daughter to save it as a souvenir. And then he also had that big book that I have downstairs, *The Life of*



*Harold Ickes.* He was really "Honest" Harold. Roosevelt trusted him. Well, he actually was a newspaperman. He ran the newspaper campaign for Roosevelt. When Roosevelt was riding the campaign trail, Harold Ickes was [with him] ~~on there~~. And then as a reward, he was asked which department he would want, and he took the Department of Interior, because his wife loved the Indians and she talked him into [taking the Department of the Interior] ~~being it~~.

Now, [in the public works programs and] when the war came on later, Roosevelt trusted him very, very much and gave him signatory power for all of the public works contracts. He was the one that had, really, jurisdiction on where the millions and millions of public works money went, and he was very, very trusted and everybody knew him as "Honest Harold." Honest Harold.

Storey: This one is Julius Krug, right? Was he Assistant Secretary?

Mermel: That's Bill Warne.

Storey: Oh, that is?

**William E. Warne**

Mermel: Yeah. But he wasn't an Assistant Secretary [at first]. But he first started out, at that

time [when I joined the Bureau in 1933], he was information man in the Bureau of Reclamation when I got there, and he was head of information. From information, he became an Assistant Secretary. A very capable guy. He's still alive.<sup>13</sup> You ought to have an interview with him. You should have an interview with him.

Storey: Well, I've talked to Ken Vernon, and evidently he doesn't track very well.

Mermel: Well, he evidently is in a nursing [home]. This is Lineweaver. Goodrich Lineweaver was head of operation and maintenance, and he was really a water user's man. Now, he must have been an economist, probably also a newspaperman, but he was a very, very good proponent for water users. That's W. R. Nelson again.

Storey: W. R. Nelson?

Mermel: Yeah. W. R. Nelson. Wesley R. Nelson.

Storey: Oh. I've got you.

### **Kenneth Markwell**

Mermel: This guy's the same guy as that one there. I haven't got a name. That I can't see very well anymore. Oh, this is Ken Markwell. Again, Ken Markwell, there's a photograph

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13. William Warne died in 1996.

of him up there. Now, he was an Assistant Commissioner for Engineering in the Washington office, and I was [his] immediate – call it "office boy" to him. I was his immediate right-hand man. I used to travel with him a lot. He was a capable administrator. He knew how to delegate. He was an engineer. He had experience from building Sandy Cooper Dam here down in South Carolina. When he came to the Bureau, he brought a lot of good, sound engineering theories [and practices].

Only one problem was, that he was an alcoholic. The people knew about it. The Commissioner knew about [it] and everything else. But evidently, he was valuable. It was only those unpredictable days that he would overdo and not show up for the meeting. I used to travel with him, and sometimes we stayed in the same hotel and we would be picked up to go to a meeting he [didn't show and] wasn't available. So we just let him stay in the hotel for the day, and either I would run whatever the subject was at the time.

Storey: Who's this?

Mermel: I don't see it, but it looks like Boke. It looks like Boke. Yeah. Now, there was a strip showing [names]. I thought there were names there, too.

Storey: No, I don't think so on these.

Mermel: Now, there was a picture with them on the steps of the Interior Building and there were a lot of names there. You could identify a lot of those there.

Storey: Yeah. I've got that one.

Mermel: Yeah. Yeah.

Storey: Now, when was it you left Denver to come to Washington?

Mermel: By the way, I'll give you one of these as a souvenir. Have you seen one of these?

Storey: No. Thank you. When was it you came from Denver to here?

**Mermel Moves to Washington, D.C., from Denver in 1943**

Mermel: Well, I came from Denver here in 1943, because my job was liaison with the War Production Board, and my primary responsibility was to get priorities [for materials for Reclamation projects], because we were building at that time Shasta and Grand Coulee. We were adding units at Hoover for the [Henderson] magnesium plant [outside Las Vegas], and [we needed power to make magnesium to bomb Tokyo. That was the project.] so forth.

**War Production Board**

Storey: That was the War Production Board?

[Tape Interruption]

### **Called into the Army from the Inactive Reserve**

Mermel: [It allocated critical materials, steel, cement, copper, etc. I was sent to Washington] to take care of War Production Board [requirements]. I was in the ROTC Reserve. When I went to University of Illinois, I got a commission and I was [in] inactive [reserve]. But when the war came, why, they sent me a letter saying that they want me to come in. Well, when I told the Commissioner, Page at that time, he says, "Well, go and find out where's your post and what are you going to do."

### **Commissioner John C. Page and Ickes Arrange Deferment**

I came back and found out that they were going to put me in one of these procurement – contract administration [offices] and so forth. And he says, "Well, that's just what you're doing here." So he wrote a memorandum[, saying that I was doing essential war work,] to Ickes, which Ickes signed asking Selective Service to defer me for two years, and I was deferred for two years.

Well, in the meantime, the war was going on, and then later they didn't want to call me, so I didn't go. But I have a certificate signed by Ickes in which he gave me a meritorious thing for providing war service. That and a dime will get you a cup of coffee. But, anyway, at that time, psychologically it was something.

### **Active in the National Academy of Sciences**

Now, this was my retirement book [from 1973], and all I wanted is to refresh your memory that there were some pretty outstanding people who made some nice remarks about me. Naturally, psychologically this is a valuable memoir. Here's one from Dexheimer and a lot of [good words]—well, also from the National Research Council. I was quite active in the National Academy of Sciences and was on the committee for tunneling, on a committee for underground transmission, on a committee for common rights-of-way. I was very active [professionally representing the Bureau on these committees].

### **Proponent of Professionalism among Reclamation Engineers**

I was a proponent for professionalism in the Bureau, and I would generally get the Commissioner to write letters to Denver encouraging participation in professional societies. There are office

memoranda and so forth[, which I wrote,] that were signed by the Commissioner in which he says that you've got to associate with your profession so that you get recognition from your peers, and the Bureau of Reclamation should be made up of professionally recognized people. And I felt very proud of the fact that the Bureau of Reclamation was recognized as being a very outstanding internationally known engineering organization. [The Bureau was active in many international organizations as a result. It was known worldwide for its engineering accomplishments and research work.]

The peak of [this] ~~our—thing~~ probably was during the Mike Straus era. Dominy supported the engineers [too]. As a matter of fact, he's the one that got the Engineering Center built, and that building should really be called the "Dominy Building" because that building—I probably mentioned it to you—was supposed to be built by the General Service Administration, and Dominy got [Senator] Hayden [of Arizona] to write in [the appropriation bill] ~~there~~ that the building shall be designed, contracted for, and built by the Bureau of Reclamation. Naturally, GSA was mad because they are the [designated] ~~really~~ government agency for public buildings. So really that is a Dominy [accomplishment] ~~thing~~.

Storey: How did Commissioner Page come to know you?

**John C. Page**

Mermel: How did Commissioner Page know me?

Storey: Yes.

Mermel: Well, he was Commissioner when I was in the Bureau, and when I came [from Denver traveling] into the Washington office quite often, I [got to know] ~~knew~~ him. Page, Mr. Kubach, and I, we'd have breakfast down in the cafeteria every morning at seven o'clock [so we got to know each other very well]. When [Elwood] Mead died, Page was designated the Commissioner, and Page was really—he wasn't construction engineer, he was Office Engineer at Hoover Dam, because Brig Young was the Construction Engineer, and he was transferred to Washington.

Being in the Washington office, I was Assistant to the Commissioner, so I had quite close relationships [with all the Commissioners since Page], and I feel, my conscience feels, very proud. I had *very* good support from all of the commissioners that I worked for, and they bought the idea that the Bureau should [recognized as] be professionalists. Even though Straus was not a professional



engineer, he was supporting professionalism.

Markwell also was a engineer and he belonged to [professional] societies and he'd present papers. Then when Dominy came in, I was instrumental to talk him into joining ASCE, the American Society of Civil Engineers. They accepted him as an associate member [because he was head of such a large engineering organization]. Well, we didn't make much of his title, but the fact is that he was a member of ASCE. I've mentioned this to you before. I arranged that he make one of the dinner addresses [at the] in Phoenix [convention]. It was in Phoenix. And Dominy opened up his remarks, "Gentlemen, I wouldn't have been here because your organization recommended to the President that I not be appointed." (laughter) He was just that nery.

Dominy was a great leader. There's no question about it. He had very good political acumen, and he did a lot for the Bureau. His mannerism is something else. Everybody was a "son of a bitch." If you weren't sensitive, you'd just let it roll off. But he would swear and use harsh words. Well, he came from Wyoming, anyway. But he was a leader, and I think he's done a great job for the Bureau. After Dominy, naturally, Dexheimer came in.

- Storey: Dexheimer was before him.
- Mermel: Before him.
- Storey: Yes. [Dominy] He replaced Dexheimer. After him was Ellis Armstrong.

### **Commissioner Dexheimer and Under Secretary Ralph Tudor**

- Mermel: Well, yeah, after Dominy, Ellis Armstrong came in. Wait a while. Oh, Dexheimer came in during the Eisenhower Administration. And again I say Dexheimer saved the Bureau of Reclamation, because the Under Secretary—his name slips my mind, but I'll think of it in there—and Dexheimer flew on the Burma Road [during the war], and they were pals. When he wanted to get the Bureau of Reclamation to quit doing engineering and do more farming out design, he was head of—Tudor was his name. T-U-D-O-R. He was the head of an engineering consulting firm, and he was actually advocating that the Bureau of Reclamation *farm out* engineering design. Dexheimer saved the Bureau, because it would have been dismembered if it wasn't for Dexheimer at that time. After Dexheimer, Dominy came in.

### **Dominy and Dexheimer**

Well, the inside story is that Dominy dislodged Dexheimer. Dexheimer

was a great engineer, but his political acumen was not as good as Dominy's. Probably when he was on the Hill, he was factual and straightforward and was not able to maneuver or be as flexible as the politicians wanted him [to be], and he probably didn't say the things the politicians wanted him to say, so he wasn't the most popular Commissioner on the Hill.

Dominy, on the other hand, *knew* what to say, *knew* what the congressmen wanted, and he was able to get most anything, especially the great support from [Senator] Hayden. There was quite a lot of these western congressmen that Dominy had very good relations with. So Dominy has a lot of things [going] for him. He's got [He should get] a lot of credit [for his tenure as Commissioner].

#### **Ellis L. Armstrong**

After Dominy came Armstrong. Armstrong, again, was an engineer. He was straightforward and so forth. His political ~~probably~~ thing was not as good, but he had good relations on the Hill. There were no problems at all.

#### **Gilbert Stamm**

But then the administration changed and Stamm came in. Now,

Stamm was a non-engineer, [an agriculturalist]. He came from water operation and maintenance. It was about that time that he told me, saying, "Ted, I'm not going to be pushing this professionalism like you've been. We're not going to be traveling all over the world, and we're not going to have that." Well, it disappointed me. But, nevertheless, that was his position.

### **Decides to Retire**

Just about that time, I was eligible for retirement. But this was not a factor. I was eligible and then they gave us 10 percent increase to encourage us to retire. So I retired in [1973 (age 66)] there.

By the way, there are some—"Armstrong to Attend Energy Conference in New Zealand." Well, I was instrumental to get him active in the World Energy Conference. [I traveled with the Commissioner to these professional meetings.] World Energy Conference was headed by Walker Cisler, who was the [former] CEO at Detroit Edison Company. Then later when he retired, he became President of the World Energy Conference. I was active in [representing the Bureau in] it. I pulled [together] up a history from the Archives of the Interior Department, because Secretary Ickes, sponsored, by congressional legislation, the World Energy Conference that was held in

Washington, D.C., in '36, or something like that in there. The government funded part of the conference. [The Bureau was a worldwide recognized engineering organization, because of Hoover, Grand Coulee, Shasta dams and other large irrigation projects. Engineers from all over the world came to visit the engineering laboratories in Denver. Bureau engineers were sought after for advice worldwide. For example, Savage was the innovator of Three Gorges Dam in China.]

#### **Commissioner Daniel Beard's Speech at the ICOLD Meeting in Durban, South Africa**

So the Bureau was really a recognized engineering organization. I'm sorry to say today that isn't so. When the Commissioner was in South Africa, in his speech about the Bureau being minimized, it had an effect. There were a lot of people saying, "Well, the Bureau's no longer the leader." And the Bureau *was* the leader of dam building [and irrigation developments]. There's no question. Hoover Dam was really the *spark* of large dams. After Hoover Dam, many other countries picked up the leadership in dam building. Hoover, as I mentioned before, is [now] in thirtieth place as far as reservoir [size] is concerned. As far as height is concerned, it must be someplace about fifteen or so on the list [worldwide].

By the way, if you want to see a list, I can show you a list in one of the [British magazines for which I still maintain the list].

END OF SIDE 1, TAPE 1. APRIL 2, 1995.

BEGINNING OF SIDE 2, TAPE 1. APRIL 2, 1995.

**Harold L. Ickes**

Mermel: Ickes had some [personal] characteristics [which he passed on to the Department]. He would send a memorandum to all employees not to use the infinitive 'or'—what was that word, anyway? I'm not a grammarian. But here is one that he issued about not using the word "war effort." He said "effort." You're not sitting on the pot and making an effort.

Storey: "War effort is weak and ineffective. It means that we are trying to do something. This is a war that we are waging and let us [do] so proudly and defiantly." (laughter)

Mermel: He did not want to have the words "war effort" appear in any letter that he would sign. And this was distributed to all the stenographers and so forth.

Storey: You moved to Washington in '43 as a result of the war?

**Assigned to Work on Priorities with the War Production Board**

Mermel: Well, as a result of the war, when Pearl Harbor happened in '41, [on Sunday] I was on the front lawn of my house when that happened. I got a call from McClellan and said, "You're going to Washington Monday." The whole idea was, even at that time, priorities were being assigned to critical materials, because we were building ships, and the lend-lease program. So a lot of the war materials were going already to Europe. But they were going to tighten up for construction in the United States.

So it was my job to see that when we let a contract for penstocks, why, I had to go to the War Production Board [present our request as being related to the war needs,] to see that the steel plate was put in a schedule [at the steel mill] and got appropriate rating so that it would be rolled when they needed it.

The controls of the War Production Board were so rigid at that time. To make ketchup bottles, you had to have priority for the glass, for the facilities and so forth, to get other things. So getting steel, reinforcing steel, you had to get a priority. Otherwise, you'd get at the end of the line [and no steel could be purchased]. If it was for private construction non-connected with the war, you couldn't get even reinforcing steeling. [The entire capacity of the industries was controlled by

issuance of priorities, especially on those materials used for making war materials.]

So everything was controlled very tightly. So the job was to get a rating. When we couldn't get a rating, [and we needed the material critically] I would have to get the Commissioner to write to the Secretary, a letter from the Secretary to the War Production Board, and make emphasis that this [was] a essential war effort project. So there was a lot of paper-pushing to get material. That's how we got units at Grand Coulee and at Shasta, because of the war effort. [Those plants were to supply power for the shipbuilding industry.] But for irrigation, it was very low.

#### **Goodrich W. Lineweaver and Priorities for Materials for Irrigation Projects During World War II**

Well, Lineweaver was a exponent that brought out the theory that [irrigation projects were] ~~we're~~ producing food and fiber. Even our irrigation projects [then] were able to get [most anything] ~~a thing~~ because they were going to produce "*food* for the war effort." So a lot of projects that *didn't* contribute to that were shut down. But it was a very exciting [job] ~~thing~~.

So I traveled between Washington and [Denver] ~~that~~ at least twice a month, and I had to travel by train. Well, I used to live in Chicago, so I welcomed that,



because the train would arrive in the morning and leave in the evening for Washington, and I would visit my father and my folks in Chicago at that time during the war.

Oh, priorities—well, for food, you had to get food stamps, you had to have gasoline rationing stamps and other critical things. So, conscientiously you felt that you were doing *something* for the war.

Many years have gone by and it bothered me, but at the time I was doing it, I felt I was making a better contribution than I would have been if I had been in uniform. But the psychological impact is still [with me that] you weren't in uniform, but as far as I'm concerned, I made a contribution[, and I have a certificate from the Secretary of the Interior to make me feel better].

### **Providing hydroelectricity for Shipbuilding During World War II**

The big contribution that the Bureau made is to take the Shasta units[, which were already manufactured and would not require more steel,] and transfer them to Grand Coulee [to help build ships]. They didn't fit in the same holes, because they don't fit in the same bay, but they were put in there. That idea came from Sam Judd. Sam Judd was a structural

engineer, the head of structural engineering, just like McClellan was head of electrical. And he says, "Well, if they want power, let's move the units over there and we'll adjust them." And it turned out to be the right answer. [They got power much sooner than if they had to manufacture new units.] Then after the war, they moved the units back to that. That should make a very honorable mention, the fact that someone had the ingenuity to use those units. Here the material was already in the units, and they needed them up there for shipbuilding. [I believe that should be on Sam Judd's tombstone.]

Well, it was quite exciting. Then I continued to travel back and forth. The reorganization came in about '43, and [Harry W.] Bashore was Commissioner. He says, "What the hell. Why don't you transfer to Washington [instead of moving back and forth]?" Well, since I'd been in Washington before, I'd worked in Washington in 1933, my family had no objection coming to Washington. So I came to Washington in 1943.

### **Edward Weinberg**

At that time, the reorganization called for [a] ~~this~~ Power Utilization [Division], and since I was electrical, I was made head of the Power Utilization. But we were handling power contracts and so

forth with a lawyer by the name of Weinberg. Weinberg will tell you the story and confirm it. Well, Weinberg and Mermel were running the power business in Washington. McPhail[, who was the head of that Division,] had to come into Washington out of Denver because he was [not effective] power in Denver, so he came into Washington and took over Power Utilization. Then I became the Assistant to the Commissioner for Engineering.

#### **Barney Bellport Upset with Mermel's Relationship with Commissioners**

Now, that was also a thing. McClellan was Chief Engineer, and the Assistant to the Commissioner [for] of Engineering was supposed to interpret whatever engineering problems there were for the benefit of the Commissioner who may or may not be an engineer. In this case, Dominy was not an engineer. So I handled the engineering contacts with outsiders, interviews, and so forth. Later, when McClellan ceased to be [Chief Engineer] –Bellport became Chief Engineer—he resented the idea of having a "engineer advisor" to the Commissioner [when he was supposed to be "the" Chief Engineer]. At one of the staff meetings, he raised the question [about my responsibilities for engineering in Washington], and Dominy said, "God

damnit, Mermel is going to stay in that job, and if he's going to do anything just to buckle under you, I'm going to fire him." (laughter) So I did have good support from Dominy.

### **Putting 500 mW Units in the Third Powerhouse at Grand Coulee**

I mentioned this before, and I'm still proud of it, I was instrumental to get the 500 megawatt machines in Grand Coulee. As early as 1966, I was in touch with the Russian literature, and [learned] they were building units, 500 megawatts, and so forth. So I was promoting larger units [for Grand Coulee]. Bellport wanted 300 mW because his turbine man said 300 mW was the limit[ of American technology].

But come as it may, I gathered a lot of material [about] of sizes [of units] worldwide. I prepared a paper that I presented before the American Society of Mechanical Engineers, and I have some pictures here showing what the Russians were doing in large units. Here's Krasnoyarsk had a big runner, and the idea was if they can do it, why can't we?

Well, Dominy was egotistical enough, too, that he thought, "What the hell. If the Russians can build the big units, why can't we?" And this got up as high as the Secretary [of the Interior Udall]

to make a decision. Historically, I pointed out that plant-wise—well, unit-wise—the United States [was] progressing [slowly], we had 150 megawatts was the top size in 1960. The Russians already had made and they were fabricating [more] 500s. As far as plants are concerned, in the United States, Grand Coulee was the biggest plant. In Russia, they already had two plants exceeding that, and then the Krasnoyarsk was already in the mill first thing. So this was sort of a propaganda paper.

But one of the big problems was, well, you had to have a shaft, and the American industry could not make [such a large] a shaft. Well, the Russians also didn't have [forging technology] that, so they used bent plates and they made the hollow shaft by bending plates and welding them together, and they were called "hollow shafts." So when I visited Russia, I took pictures of it, standing next to one of the shafts, and pushed [this] as an illustration that we should adopt hollow shafts, because Bethlehem Steel and U.S. Steel said they couldn't make [solid forgings] them that big. So here they were [the Russians] making a shaft.

The Russians also were the leaders in what is called electroslag welding. In order to weld a [thick plate] piece like this, you can't just weld it [conventionally] here. Metal has to be [solid throughout] in there.

So they developed a system where they could get molten metal in there and be able to make these shafts [from bent plates].

Storey: To fill in the entire space between the edges of two plates that had been bent.

Mermel: Yeah. We got the Russian books [from the engineers at the dam, and] had them translated, and we distributed—I have distributed personally—to Bethlehem Steel and they said, "We're not interested, because there isn't anyone who needs them."

Well, at that time, we were not talking about 500 megawatt machines. But when the specifications were written, the specifications were written that we'll take solid shafts or hollow shafts. But hollow shafts were bid on, even by Westinghouse and GE and the Dominion of Canada, the Dominion General Electric of Canada. And Willamette got the contract and they got together with the Canadians and made them. The Japanese were willing to make them, the Swedes were willing to make them, and the British were willing to make them, but GE and Westinghouse said they wouldn't make them without a million dollars of research money. That's all in the files, and it was interesting.

I prepared the correspondence. It went to GE and Westinghouse, and the reply came back saying that they wanted

research money before they'd do it. So here are some pictures in some of the other countries like Furnace . I visited Furnace, Brazil. These were 225 megawatt machines. In this way, I'd say I got people to think.

Then I must mention that my collaborator [at] in the Department [level was an engineer] by the name of Morgan Dubrow. He was an Assistant to the Assistant Secretary [Kenneth] Holum, and he prodded from that [level] thing. And Dominy [listened and] was willing. See, as far [as] that goes, Dominy was willing to listen [to me and Dubrow]. But Bellport was unwilling to listen, or the engineers in Denver were unwilling to listen [and told Bellport to resist].

The showdown was to be—and I mentioned this before—by having a meeting with the Secretary to decide once and for all. The Secretary said, "If the Americans won't build it, we'll let the Russians build them." That hit the newspapers, and I've got some clippings someplace that Udall would accept Russian-made machines. Well, our relations with Russia were not the best. But probably it was good propaganda.

So when the meeting was held with the Secretary, Bellport walked in there and came in with a recommendation that he

recommended 500 megawatt machines, and the record now shows that the Chief Engineer of Reclamation recommended 500 megawatt machines.

Storey: Even though he got pushed into it.

Mermel: See, there's a picture. Allis-Chalmers gave me that. (laughter) This is a copy. I made a Xerox and I'll give it to you. I don't know what you want to do with it.

Storey: Thank you.

Mermel: You can put it in the library, if nothing else. I'm sure there is one in the library. But, mind you, this is what, thirty years ago. You know, it's surprising. I don't know. You probably don't have the same feeling. But, you know, it's a funny feeling to me that thirty years ago I was writing that paper. I don't realize that thirty years went by.

Storey: And you've been busy every minute of it, I'll bet.

Mermel: I don't realize that it's so long. I retired from the Bureau in 1973. Today I'm [eighty-eight] ~~ninety-five~~. Where in the hell did time go? What in the hell have I done? [And, I'm still working five days a week as consultant at the World Bank.]

**Barney Bellport**



Storey: Do you remember anything about Barney Bellport retiring?

Mermel: Retiring? Oh, I remember him very well. I remember Barney. Barney and I personally liked each other, but professionally he was opposed to my stimulating Dominy with large units, or that my voice was heard or something. I don't know. But we were on good terms. We traveled together to large meetings. He would go to the meetings, too.

Storey: What was he like?

Mermel: He was a very nice guy. He came from the Central Valley Project. He was a construction engineer, a real construction engineer, on one of the main canals. I don't know whether it was Contra Costa or something [else]. But he was construction engineer and a very capable guy. He was very strong-fisted and he ran the good Denver office very well. He was a good manager, no question about it.

The only thing is this, he would announce that he's against "grandpaism." He wants new ideas. He was progressive. Well, in the lower ranks, as I say, he said he's against grandpaism, but he doesn't want any change. Well, when it came to discussing the units, why, he said he's against grandpaism, but he sure doesn't want any big units. But, no. He did a lot

in the Denver office. He ran the Denver office very well. After that I don't know who was in there. [Grant] Bloodgood went in there.

Storey: Well, let's see.

Mermel: Wasn't Bloodgood in there?

Storey: I think Bloodgood was before him.

Mermel: Before him? Bloodgood wasn't very [effective]–

Storey: Yeah. Grant Bloodgood was before him.

Mermel: Now, let's see. We've got–

Storey: And after Barney Bellport–I think after Bellport was Harold [G.] Arthur.

Mermel: After Bellport?

Storey: Yeah.

### **Harold G. Arthur**

Mermel: Harold Arthur. Harold Arthur was a professional engineer with good stature, but I don't think that he was an aggressive leader. But he was a professional, and he had engineering stature. But I don't think we can point to any kind of great innovations, or I can't. When did Bellport retire?

Storey: '72.

**Walker (Brig) R. Young**

Mermel: '72. See, I retired in '73. So my relations with Arthur were not that—now, one thing I wanted you to put into your history about Brig Young, Brig Young was chief engineer of Hoover Dam, the construction engineer. He built it. We looked up to him. Here when I retired, he wrote me a letter. The idea of having him write ~~me~~ a letter, he was age ninety at the time, I felt unusually proud of the fact that he took time out to write a handwritten four-page letter.<sup>14</sup> You *have* to read it.

Storey: This is Walker Young?

Mermel: Yeah.

Storey: Why was he known as Brig?

Mermel: Brig. The reason there's a connection is this. The Mormon leader is Brig Young.

Storey: Brigham Young, yeah.

Mermel: Brigham Young. And somehow or other during some kind of occasion—I don't think he was a Mormon. Young was not a Mormon, I don't think. But they gave him

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14. Look for the letter in the appendices.

the nickname Brig Young and they called him Brig. Everybody knew that Brig Young was the Mormon leader, so they called him Brig and it stuck. I associate that way. I have no other way of knowing it.

Now, he had a man underneath him, was Ralph Lowry. Now, Ralph Lowry was also the man who was the construction guy at Boulder Dam. He makes a little story in there, and that's why I think that that makes it a very interesting letter. It talks about the early days of Hoover Dam.

Boulder City was on a federal reservation, so they could make their own regulation. Liquor could not be sold in Boulder City and no gambling in Boulder City. The road from Boulder City to Las Vegas went across a little region called Railroad Pass. Railroad Pass was the borderline between Boulder City and [Las Vegas beyond] that. So people from Boulder City would go to Railroad Pass and there were slot machines, gambling, and red-light district and so forth, were all at Railroad Pass, because that was the closest place you could go to gamble, and it was rather a popular place. So Boulder City, if you wanted to go to gamble and you didn't want to go to Las Vegas thirty miles away, you went to Railroad Pass.

Now, the part of this letter was saying that Ralph Lowry was driving his car and his engine dropped out. Evidently they gambled at Railroad Pass, and there evidently were some kind of insinuations that they were being entertained or so at Railroad Pass. Anyway, I made a Xerox of that letter, that I'll give you and let you read it when you have time, and you'll find it amusing [see attachment].

Now, that letter has an enclosure. That enclosure was written on the occasion that University of [Nevada,] Las Vegas wrote and gave him an honorary degree, a doctor's degree. He enclosed this article when he wrote the letter to me, and he says, "No doubt they gave me this honorary doctorate degree for the recognition of what Hoover Dam did for Las Vegas."

Storey: This is an article in the *Independent*--

Mermel: He says, "When we just came there, Las Vegas had a population of something like 3,600 people." And he says when he arrived in Las Vegas in 1920, when they were first surveying--he talks about surveying and he talks about getting hold of one of the steel rods that was driven by boat people into the bank so that they'd winch up their boats, and he mentions here that that metal rod is available awaiting to be put into the museum that's supposed to

be built in Boulder City or at Hoover Dam. You might want to find out what in the hell happened with that steel peg and where is it, who has it.

And he says when they went in there, the population and environment, there was about 3,300 people. According to the last edition, he says there's 365,000 people and growing.

Anyway, I have a gift. I don't know what you're going to do with your materials, but if you would want the original, I'd be glad to give it to you, because I know that my heirs won't be able to do anything with it, see, and to them it will be meaningless. While one of the boys might say, "Well, that's Grandpa's," I'm sure ultimately it'll disappear. Now, if you think enough of it, let me know and I'll give you the original.

Storey: Well, I think enough of it, but I don't think we need the original.

Mermel: What?

Storey: I don't think we need the original. We have the copy. Now, this newspaper article is the *Independent Journal*.

Mermel: By the way, I made a Xerox of that, too.

Storey: And that's a San Rafael paper?

- Mermel: That you can glue together.
- Storey: That's a San Rafael paper, I think. This is a San Rafael paper of June 7, 1975.
- Mermel: Yeah. 1975. It's thirty years old. Now, I made a photostat of this thing that you can glue together in case you want to read it.
- Storey: Okay. Good. I appreciate that.

**Files Ready to Go to the American Heritage Center,  
University of Wyoming**

- Mermel: Now, a lot of the stuff that I have is in boxes, thirty-five boxes, and it's on its way to the University of Wyoming when I die. My heirs are supposed to send it. The University of Wyoming asked me for it. But when my wife died, I decided that I would not ship it out, because I wanted to have something to hold on to. They're in boxes and they're down in the basement. They've got tags on them, and all the stuff. Now, there are a lot of photographs from the construction period, and there are a lot of photographs of dams from all over the world. My thought, if the University of Wyoming wanted it, I might as well send it to them rather than have my children dispose of it in the trash.
- Storey: That would be a good place for that letter from Walker Young, too.

Mermel: Well, I think probably what I should do is put this in the batch of stuff for the University of Wyoming.

**Renegotiating the Power Contracts for Hoover Powerplant in 1930s**

Storey: Last time, you had started to talk about renegotiating the power rates with the power companies for Hoover Dam. We had gotten, I think, to the renegotiation.

Mermel: Yeah.

Storey: Do you want to pick up there and tell me about that?

Mermel: Well, actually, the original Hoover Dam Act<sup>15</sup> said that there had to be contracts entered into with the power companies to repay the dam and powerplant before Congress would appropriate any funds. So they did negotiate the contracts, and the contracts were presented to Congress. The contracts were based on the fact [that the power companies would pay for power at what it would cost them to purchase it in Los Angeles—studies were made on that basis.]

END OF SIDE 2, TAPE 1. APRIL 2, 1995.

BEGINNING OF SIDE 1, TAPE 2. APRIL 2, 1995.

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15. The Boulder Canyon Project Act of December 21, 1928, ch. 42, 45 Stat. 1057.

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Storey: This is tape two of an interview by Brit Storey with Ted Mermel on April 2, 1995.

Mermel: Why don't you come down in the basement. I'll show you the thirty-five boxes I have packed and destined for University of Wyoming ~~that one book~~.

[Tape recorder turned off.]

Mermel: ... to talk about the renegotiation of the rates in 19[37], well, it was at the end of the construction period. The dam was almost finished. The power allottees convinced Congress that it would be unfair to make money on Hoover Dam, so that the rate [should be] ~~was~~ changed to allow the government to recover all of its money and that the rate would be readjusted every three years so that in 1987 the dam would be paid for. Then they would [again] renegotiate what kind of rate to charge.

So in 1987, Congress had legislation [presented by the allottees of Hoover power] in which they changed the rate. Now there's a new contracting system where the government is getting enough to operate and maintain the dam, and probably, oh, they will repay the \$25 million that was allocated to flood control, and the government is [made] whole.

### **Hoover Dam**

Hoover Dam really was a tremendous investment. It was a well worthwhile investment. It helped develop California and so forth. Now, Hoover Dam in its entirety at that time cost \$160-and-some million, and I understand by the present clippings in the papers that the Bureau of Reclamation is building a Visitors Center that will cost as much as the dam cost.

Storey: Well, I don't think quite as much.

Mermel: And there's a lot of criticism of that, and there's probably a lot yet to go. What is the status of that Visitors Center?

Storey: Well, I think it will open by next summer. It's a really complicated project.

Mermel: Well, actually it's different money. It's different money.

Storey: Oh, yeah. A lot different than it was in the thirties.

Mermel: Actually, to give you a little excuse, I'll tell you that in 1933 you could buy, in Denver, a pound of butter for twenty-five cents, and you could get a pound of steak, T-bone steak, for twenty-five cents a pound. Today you pay five dollars for the steak and you pay two dollars for the butter. So building this Visitors Center at this price is really an unjust comparison.

Storey: Now, as I understand it, during these renegotiations you were running all of the various scenarios based on the various assumptions?

Mermel: Well, I was doing *for McClellan* all of the computations that had to be made, and I had to travel with him. Every time there was a different assumption brought up, I had to make these [studies] things. When we went to Hoover Dam, there was an accountant there that provided data, by the name of Mel Raines, and there was a chief accountant in the Bureau of Reclamation [in Washington] by the name of Bill Kubach. Then there was an accountant also by the name of Leonard Moran, who was in Denver. They accumulated all of the financial data, and then we had to crank into these studies to see how this repayment would come out and what kind of a rate it would be.

Storey: How did you figure those?

Mermel: Well, using a computer. At [that] times, we were just advancing to the electrical Monroe [calculator], where you had, instead of hand-cranking it, you had a motor on it. But the Denver office, when they built Hoover Dam, they had, oh, probably a hundred engineers making computations for all stress analysis in Hoover Dam for Jack Savage, who was the Chief Designing Engineer. And all of

those people had these Monroe calculators, which had to be either hand-cranked or advanced to the point of motor-operated. But they were not computers as we know them today. Today you would probably do that very simply.

Storey: Where did you have to travel to, and *why*, during the renegotiations?

Mermel: Well, one, you had conferences in Washington and you had conferences in Boulder City and you had conferences in Los Angeles with the allottees themselves, so all of these people tried to get together. The data were located [there] ~~in it~~.

Our lawyer in Los Angeles was Dick Coffey. He represented the Bureau's legal position. McClellan was the head of the negotiating team. I wasn't the only one. By common parlance, I was carrying his briefcase. But I did all of the computations that had to be made by sitting in on these meetings and sitting in [when] ~~on what~~ the assumptions were changing. The load growth, what it was, or any other assumption, you had to present figures as to when they're going to install the units and how much they're going to cost and so forth. So the data was being fed, and this went on for almost about two years, that preparation of that kind of study.

Storey: So for a couple of years you would travel. How often would you travel?

Mermel: Well, I traveled quite often on that, but I traveled more often when the war was on. I was traveling between Denver and Washington twice a month.

Storey: For a week at a time?

### **Washington, D.C., During World War II**

Mermel: No, two weeks at a time. In other words, I'd be in Denver a week and then I'd be here about two weeks, then I'd go back to Denver for two weeks and so forth, going back and forth, accumulating the data that I had to have and then preparing the material here, by actually going to these [meetings].

Washington was a changed place. The Mall was full of wooden structures, and there were thousands of people. And hotel space was not available. But on F Street, I could get a room for five dollars a night, and that was a pretty good rate. Naturally, it was only a bed and a table. That's all. But everybody was satisfied to be able to get some kind of living quarters during the war.

Storey: Do you remember Ray Walter? Ray Walter, the Chief Engineer?

- Mermel: Of what?
- Storey: Reclamation.
- Mermel: Ray Walter. No.
- Storey: Well, let's see. How about S.O. Harper?
- Mermel: Oh, yeah. S.O. Harper. But you're talking about R. F. Walter.
- Storey: Yes. Ray Walter. Raymond F. Walter.

**Raymond F. Walter**

- Mermel: R. F. Walter. R. F. Walter, he was the Chief Engineer in the early days when we were in the Custom House. We were in the New Custom House, occupied that, and our laboratory was down in the basement. The Bureau was expanding. Actually, when I first came to the Bureau, I worked in that building. Your saying Ray Walter didn't ring the bell. It was R. F. Walter. Everybody knew him as Raymond but not Ray. It was Raymond. But R. . Walter was the name. He was a big heavyset guy, probably weighed 250, if not 300 pounds. He had a drawer with seaweed that he used to eat to keep his stomach from demanding food. But he was a *very* strong-fisted guy.

One little story I'll tell you. In those days, we didn't have refrigerated drinking fountains. We had round tub fountains where they would put ice

[blocks] ~~cubes~~ in, and water would chill. They'd put big ice chunks in and the water would chill, and that's where you got the water. Well, the draftsmen had a union, and they went to R. F. Walter and complained that they weren't putting the ice in the drinking fountain and that they were making a complaint. R. F. Walter just flipped up his head, "Where do you work?" And he says, "Over there." He says, "Go back to work." And that was the end of the interview. (laughter)

It was a different day. It was a different day. *And* R. F. Walter had to approve your annual leave, personally. When you took leave, that leave card had to be approved by R. F. Walter, nobody else. Even the Chief Electrical Engineer or the Division Chief couldn't approve it. R. F. Walter had to approve the leave record.

Storey: Really?

### **Denver Days at Reclamation**

Mermel: Yeah. In those days, salaries were a secret. Nobody knew how much money anybody was making. Even you didn't know what grades the other person was in. There was a personnel officer by the name of Bonnet there, who was the only one that *knew* anything about personnel. Anyway, it was a different world. It was a different world.

We didn't have too many women engineers in those days, not in those days. Then from when we were in the New Custom House building, we [ran] got out of space. There was a department store that went bankrupt, so they rented this department [store]—Goldman or someplace.

Storey: Golden Eagle?

Mermel: Anyway, it was a department store, and then we moved into that building. But I stayed in the New Custom House building. Then after that, they rented space in the National Bank Building and a couple of other places. By that time, the war was over, and the munitions plant—that's where we are now. That was a Remington Arms Plant [built during the war], and they gave us the space. Naturally, they had to do a lot of remodeling, but the remodeling was pretty short in coming. But it took them many years before they made the space liveable for engineers. Then as time went on, shortage of space, the “Dominy Building” got built. But now the Denver office is all in the “Dominy Building.” They're all in that one building?

Storey: No.

Mermel: The laboratories are still in the barracks or in the—



Storey: Yeah. We have about four different buildings that we occupy. Tell me what your office was like, your office space.

Mermel: I think there was a figure that was a hundred square feet per person. We were pretty crowded. We had draftsmen tables. Draftsmen tables are probably about this size. By the way, this is a government desk. I bought it from the government surplus.

Storey: Say about five, five and a half feet wide?

Mermel: Yeah. And we had a draftsman table like this with a drafting machine, and the next draftsman was facing you and his table was abutting right against you. We were what we called a bull pen, and we'd have twenty or thirty tables in one room. The head of the division would have a desk, and he would sit at the end of the [room.] ~~but then~~ We [also] had high stool chairs. Not all of us were privileged to have electrical calculators. We used "slip stick" in those days for computations.

Storey: Slide rules.

Mermel: Yes, but slip stick is what they called it. All the computations were generally made on the slip stick. Then later, if you wanted to do some more, you would use the calculator. But for design purposes, your slide rule was enough, *and* you were good

at it. And you were good at it. You could read pretty good numbers on that.

Storey: Somebody once told me that there was a spittoon at every desk. Is that right?

Mermel: Well, no. There were spittoons, but that was in some cases a novelty. But there were people who were smoking and then probably they had some. But I think it was government issue. The spittoons were government issue. But that was the time of the day.

The floors were hardwood floors. They weren't linoleum-covered in those days.

Storey: Or carpeted?

Mermel: No. No. No carpeting. Hardwood floors.

Storey: How did you work at your draft table?

Mermel: You had a high stool chair. A high stool chair.

Storey: How did you fasten your drawings down?

Mermel: Well, you had your top. You had thumb tacks. Thumb tacks were used, not tape. I think today they tape them down, don't they?

Storey: I don't know, really.

### **How Drawings Were Prepared, Finished, and Duplicated**

Mermel: I don't know. I haven't been in a drafting room for a long time. I don't know if there are very many drafting rooms, because they do them by computer electronically and you get your drawings done. We used to have where you would draw them on vellum in pencil, and then they were sent to the drafting room, which would draw them in ink. In other words, your first drawing was the original with your pencil and your lettering, *but* that had to be done on vellum, as they called it, by a draftsman. So there was a big drafting room with lots of draftsmen and the engineer designer who made the original thing on heavy brown paper. That would be sent to the drafting room and they would do the uniform lettering using a LeRoy lettering machine. The machine was by hand, and you had to letter. So that there were hundreds of draftsmen who were just making the drawing.

Then the drawing would come back to the original designer, and he would have to check it. Then you'd go and get blueprints. In those days, we had photostat machines, and the photostats would reduce them to nine-by-eighteen or something [along that line]. That is the way. You had to send to the field rolls of drawings *and* these photostats. You'd have to get the

thing into the distribution channel. In other words, in Hoover Dam there must have been 100,000 drawings, and there was a lot of logistics of going back and forth shipping the vellum, the originals. Then they would make them blueprints. So that was a *big* job.

The office handling of engineering probably has changed today. I'm sure that you don't have that kind of staffing. Just think of all of the people that were eliminated through computers and automation of all kinds, and then you had your own filing cabinets underneath your [drafting table] ~~thing~~, or they'd give you filing cabinets [elsewhere] ~~there~~. But the original computations you made by slide rule in those days.

**John (Jack) L. Savage**

Storey: Now, Jack Savage. Did you work on the design of Hoover?

**Transferred from Mechanical to Electrical Engineering Work in Denver**

Mermel: Yeah. My first job was designing a retaining wall on Hoover Dam[*'s* powerplant]. I was electrical, but I was assigned to Sam Judd because he was structural. We were designing the retaining walls on Hoover Dam. I worked for him probably about six months. But later he found out I was electrical. He

says, "Well, why don't you go to Max Kight's outfit." And I was transferred to Max Kight. Max Kight was a wonderful leader, I still want the record to show. By the way, I understand he's in a nursing home now.

Storey: That's what I understand.

Mermel: You ought to see him just for the record.

Storey: Okay.

Mermel: For the record. Max Kight. Maximilian H. Kight. He must be ninety-three. I think just for the record to show that you interviewed a ninety-three-year-old guy, and you ask him about how the design goes.

### **Maximilian H. Kight**

Now, one thing about him, he delegated responsibility. He delegated a job and then he supervised, but he gave you an opportunity to come up with your ideas. I think that I owe him a lot [for the] of opportunity that he gave me. He wasn't afraid to have me do the design. And when we had to go to McClellan to explain it, he'd take me along and say, "Here's what Mermel came up with." And I doubt that there were many people like that. They generally take the paper up and say, "Here

it is." They wouldn't give you the credit. He was a remarkable guy.

### **Water Rheostat Built to Test Generating Units at Hoover Powerplant**

But I mentioned this before, I think, about [the] testing [of] the machines [for the Hoover generating units], where we had to have a water rheostat.

Storey: You did.

Mermel: Actually, it was original thinking and original design. Sure, the idea was that you had to have a rheostat, but how would you do it? By scouring the literature and then getting mathematicians to help you and getting the laboratory to do a little testing to confirm some assumptions, we came up with a gadget that tested those machines. Today you don't need it unless you were in the middle of Africa and you didn't have any load to test it on.

But the Bureau of Reclamation was a *leader*. The Bureau of Reclamation was a *leader* in engineering. You can't say that today.

### **Raymond F. Walter**

Storey: Do you ever remember R. F. Walter coming into the drafting room where you were working?

Mermel: Yes. He used to walk around. He used to walk around. He used to walk around, and the story goes—it didn't happen to me, but it happened, no doubt, at the time in there—that he came to one of the draftsmen or one of the designers who was doing something. The designer didn't know him. He just said, "What you working on, and what have you got there?" And he says, "You name it and you can have it." And he didn't know he was talking to the Chief Engineer. (laughter)

It was sort of a funny story that he used to come around and look over their shoulder to see what they were doing. But he was gruff, is the word, but probably it has a different meaning to different people. Well, he was a hard-fisted guy. He was a manager of the old type. We had an open-door policy, but don't dare cross that threshold.

Storey: [Laughter] You could go anytime you wanted to, but you didn't dare.

Mermel: You rarely took the initiative to go to talk to the Chief Engineer. I remember one time, at the urging of my wife—we had one youngster and so forth—and I went to McClellan and said, "Mr. McClellan, I feel I need some more money, and I need a raise." My story was that, "It's about time, I think I ought to be recognized," and so forth.

And he said, "Well, Mermel, you're doing very well. How much money are you making?"

I said, "\$3,300."

And he says, "How old are you?"

"I'm 33."

He says, "Next year you'll be 34. You'll get \$3,400." So that was the gauge.

Now, the thought went through my mind that at that time the Chief Engineer, I think, was getting \$8,000. I said, "Doggone it, you've got to be eighty before you get to \$8,000."

But my personnel record will show that I was inching up fairly well. While I and my wife might not have been happy because we, like any young couple—oh, I'd say throughout my government career, I'd say I didn't have enough money. I sent my boy through med school and I was pressed for money very much, and we had to live from paycheck to paycheck. We didn't have a hell of a lot of money. I wish I had the freedom of money that I have now—then. It's sad. But when you're young, you don't have the money. When you're older, you've got the money, but the only pleasure you get out of it is giving it away.



- Storey: Tell me about Jack Savage.
- Mermel: One more thing.
- Storey: Okay.
- Mermel: About Henry Plumb one time. Henry Plumb was an assistant to McPhail. He was a sort of quiet guy. I mean, he was very approachable, and he was—I don't know. You know, some people you don't mind talking to them and they're sympathetically responsive.

#### **Contemplates an Offer to Move to the Bonneville Power Administration**

Well, I went to him and I said, "Mr. Plumb, I got an offer from Bonneville Power Administration to go up there, transfer, and they're offering me a little more money. What do you think I ought to do?" He wasn't in my line of command, so I was sort of seeking advice of a senior fellow. He gave me the advice I remember today. He says, "You're on a railroad track, and you're destined to a certain place, and you have an idea of where you're going. You're now coming to a switch and that's going into another branch." He said, "You *don't know* where that branch is going. It's up to you to decide whether you want to throw the switch." And that gave me the idea to stay with the Bureau. But it was a philosophy.

He was a very, very personable guy and I admire him for it. He was a sort of scholarly type of guy.

We had an electrical engineer that was assigned to design circuits for lighting and so forth. He had a Ph.D., by the way, and he was told to [design circuits] ~~do it~~. Well, the big thing was when he came up with his computations, he had his computations down to the fourth decimal point, and everybody laughed that a theoretical Ph.D. would do that instead of being a little bit more reasonable. But those are the things [that happen in life].

Storey: What was his name?

Mermel: Sensintofer. Sensintofer. He was a [brilliant] smart guy. There was no question about it, he was a [brilliant] smart guy. He was electrical, and they gave him more, probably, theoretical work to do. Probably the early time that he got the assignment was something that should have been done on a slip stick. The only thing that the Bureau didn't do is they did not [train their people to advance their capabilities.]

END OF SIDE 1, TAPE 2. APRIL 2, 1995.

BEGINNING OF SIDE 2, TAPE 2. APRIL 2, 1995.

**In Those Days, Reclamation Wasn't Good about Providing Training**

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**Bureau of Reclamation History Program**

Storey: The thing that Reclamation didn't do was give training.

Mermel: They [offered] ~~had~~ very little opportunity for training. And today, take I'm working in [the] a World Bank, and I'm telling you, the World Bank spends a hell of a lot of money training *everybody*, no matter what level he's on, whether he goes to seminars within the organization or whether he goes outside. But they do a tremendous amount of money spending on training. I think, well, it probably was a older organization. Today, probably in the Bureau of Reclamation they probably do have a new philosophy of training. But in those days, there wasn't much training.

#### **At That Time, Few Meetings Were Attended**

Attendance at meetings was very, very scarce, too. Now, attendance at meetings was, from a professional point of view [essential]. Later on we started encouraging the thing. This was one of my angles that I promoted a lot [of exposure attendance at professional meetings] ~~in there~~. But let's see what other subjects we can get into.

Storey: Jack Savage.

#### **John (Jack) L. Savage and Three Gorges Dam**

Mermel: Well, he was a brilliant guy. No doubt visionary. I don't know too much of his background, where he came from or so. I do know that Frank Banks came from Maine someplace in there. But Savage, well, he was given on loan or something, the State Department, to help the Chinese. Then he came up with this Three Gorges Project that he had a [conceptual] design [for it] ~~in~~. The Bureau really was responsible for making the first, let's say, engineering feasibility study. When he made the [plan] ~~unit~~, he had 100 megawatt units in the [powerplant] ~~thing~~, and he had a very *long* powerplant. Today, the Chinese are trying to build units themselves, and they probably won't even go to [300mW] ~~500~~. They may go to 500 megawatts [later]. They're still ~~going~~ [planning and expect to build them themselves.

But the Bureau is not getting much credit for its original thinking. Well, the Bureau has evidently backed out and the Canadians are in there now. But Jack Savage, oh, it was thought of quite a lot that it would be a good idea for China to start it, but actually the record does show that China is building so damn many dams now. They've got twenty or thirty dams that are almost equal to the size of Hoover Dam.

Storey: Did Savage ever come down to your drafting room, the room where you were?

Mermel: He would come down [once in a while and] ~~a time~~, walk through. But normally you'd have the heads of the divisions [take design drawings to him.] ~~or so would have the rolls of paper~~. They would go up there and lay out their plans. In those days, we didn't have staff meetings either. Well, maybe we were in the lower echelons. Remember, in those days, I was—well, I came in as junior engineer, and then I went probably associate engineer. I didn't get into higher brackets until many years later.

Actually, you were getting about \$100-a-year raise in those days, because when I went in there, it was about \$2,000 a year. After working there quite a while, I got \$3,300. I was in the Denver office for ten years. Ten years.

Storey: Did you ever have any personal interaction with Jack Savage?

Mermel: Have what?

Storey: Did you ever talk to him directly on business?

#### **Leslie N. McClellan**

Mermel: I'd be in his office, I mean, when we had discussions or so, even on smaller design problems. But generally the work that I was doing brought me closer to McClellan. McClellan. See, Nalder was the Chief

Civil Engineer. Jack Savage, at that time, was Chief Designing Engineer, and McClellan was Chief Electrical. And then there was a mechanical [position]. But then they abolished that job, and McClellan became Chief Electrical *and* Mechanical Engineer. The thing is that I remember and always marveled at, he was chief electrical, mechanical engineer at age *forty*, and he was responsible for all the electrical things at Hoover Dam at age forty.

Storey: What did you design at Hoover Dam in the electrical system?

Mermel: My, let's say, original thing was the bus structure, the connections between the generators. But also I was involved in the layouts of the plant and layouts of the units. I was not in the control section. I was in the equipment—oil circuit breakers, generators, [transformers.] bus structure. That was the area I was in, because there was others in lighting, control, mechanical. Mechanical was a big division. Bill Baley was in charge of mechanical. There was a great guy.

### **Reclamation Benefitted from the Depression in Terms of Personnel**

The Bureau had a wonderful team. It was fortunate that during the Depression all other work all over the United States

slowed down. So when they were expanding, they brought in the best talent they could find. Southern California Edison Company contributed a lot of engineers. Edison and EBASCO, which at that time is called Electric Bond and Share, it was called then, that was the forerunner of EBASCO.

[Before 1930,] ~~In those days,~~ utilities were expanding. There was tremendous growth nationwide. Actually, just before the Depression came in 1929, the utility business was really expanding. [Samuel] Insull, if you knew who he was, he was the leader of holding companies of these electrical companies. Ultimately, they think that was the downfall.

[Telephone interruption. Extraneous materials removed.]

### **Reclamation's Relationship to TVA**

Mermel: So when the Depression came and all of this engineering collapsed, the Bureau really brought in a hell of a lot of them. Then as that was going on, [President Franklin D.] Roosevelt started up TVA [Tennessee Valley Authority], and we drained some of the Bureau people that went to start TVA. We did some work for TVA initially, on Wheeler Dam, I think. You ought to talk to Max Kight just to be able to. He was there in 19[30.]

[Telephone Interruption.]

Mermel: So the Bureau really had a great opportunity to bring in the best talents.

### **Bob Blanks at the Laboratories in Denver**

Well, the one story that you should [cover]—the laboratory and the concrete ~~stuff~~, leadership, was Bob Blanks. You ought to make some kind of investigation about Bob Blanks. He was a very, very imaginative, *good* laboratory leader. He was the one that really, well, predicted what kind of concrete you had to have for Hoover Dam. But the story about Bob Blanks was that when Mike Straus was appointed Commissioner of Reclamation and the reorganization was taking place, somehow or other he got invited up on the Hill to testify about the Bureau of Reclamation, and he made a comment that the Bureau of Reclamation should not be led by a non-engineer, while that was when Mike Straus was [Commissioner], which stepped on Mike Straus' toes. As a result, Bob Blanks sort of retired within a short time thereafter. But, unfortunately. Why he said that, I don't know. But probably he didn't know Mike Straus well enough[, as he supported the Denver office engineers].

### **Mike Straus Supported the Laboratories**



But Mike Straus was a *great supporter* of laboratories. Mike Straus really was *willing* to support the laboratories appropriation and give them all the things. Actually, a big dam testing machine was bought on the basis of their justification, and Mike Straus went along.

Storey: The big five-million-pound press?

Mermel: Yeah. At the time that it was purchased, that machine, there probably were only two or three of them in the United States. So it was an *outstanding*, let's say, tool for—well, we did a lot.

#### **Walt Price at the Laboratories**

Walt Price was another piece [of the laboratory success]. Blanks was succeeded by Walt Price. Walt Price was quite a laboratory leader. He was a laboratory leader, too. But by now, the laboratory has gone to the dogs.

Storey: Well, it's still there and still functioning.

Well, I hate to say it, but it is five o'clock.

Mermel: Yeah.

Storey: My understanding is that you want the tapes and transcripts from your interviews

to be closed until your death. Is that still the case?

Mermel: I wouldn't want to get into a debate with anyone who reads the tape today. But as far as I'm concerned, I could tell this story in front of anybody. So this idea of whether the tapes can be read after my death, I'm not insistent. In other words, while you asked me to sign something last time, I thought, what can anyone do except to say, "I don't agree with him." So let it be [open].

Storey: You mean you want them to be open now?

Mermel: Yeah. As far as I'm concerned. The only thing is I don't want to go into a debate with anybody. [No objection to anyone reading this.]

Storey: Okay. Good. Thank you very much.

END OF SIDE 2, TAPE 2. APRIL 2, 1995. END OF INTERVIEW.

BEGIN SIDE 1, TAPE 1. AUGUST 30, 1995.

Storey: This is Brit Allan Storey, Senior Historian at the Bureau of Reclamation, interviewing Thaddeus Mermel on August 30, 1995, at about 6:30 in the evening at his home in Washington, D.C. This is tape one.

**John (Jack) L. Savage**

You were starting to talk about Jack Savage.

**"The Bureau really was bursting at its seams when it was expanding, when Hoover Dam got under design"**

Mermel: Yeah. Well, the Bureau had a lot of remarkable men. Actually, the Bureau really was bursting at its seams when it was expanding, when Hoover Dam got under design. Naturally, there were such leaders as Jack Savage, and there was Lowry and there was McClellan, and there was Nalder, and S.O. Harper. Each one of them had his own characteristics. [All were top engineers with great experience.]

#### **Leslie N. McClellan**

McClellan was *the gentleman*, straight as anything. When he walked down the hall and he was present in a room, there was *dignity*. There wasn't any [fooling around or] ~~feeling~~ of even any jokes. Anyway, he was a gentleman, and he was very interested in the employees. He had an imagination. Naturally, he was educated prior to the thirties, so our scientific things [and technology] were [advancing] ~~breaking~~, and he probably, just like I, had a hard time keeping up with what's going on. In those days, we were just introducing microwave transmission for controlling electric powerplants. McClellan was very interested, and he

immediately tried to employ young people that were knowledgeable in this field to sort of bring the Bureau in, although he himself was not, let's say, fully knowledgeable. Just like I am, I would say. I'm illiterate as far as Windows® are concerned. [Laughter]

Storey: On the computer, you mean.

### **John L. Savage and Three Gorges Dam**

Mermel: On the computers. After all, I haven't been exposed to it. Savage must have been quite imaginative to be called upon by the Chinese government to give them a proposal, and here it is fifty years later. Basically, it's the same project.

Storey: The Three Gorges Project.

Mermel: Yeah. No doubt today there is a different approach. There was one thing that he had, and I remember it. He had a powerhouse with 200 megawatt units in it, because that was the biggest that we could think of. Grand Coulee had 100 megawatts, and Grand Coulee was, well, a dream as far as size was concerned. When Hoover Dam was built, the generating units were only 87.5 megawatts, and *they* were the *biggest* in the world. That was the *biggest* powerplant in the world, and it was the *biggest* dam in the world and the *biggest* reservoir in the world. Today

we're in around thirty-third place in comparison.

Storey: With Coulee.

Mermel: In comparison. But it shows the kind of people the Bureau had.

### **Raymond F. Walter**

Talking about each one had individual characteristics, Chief Engineer R. F. Walter, he was a big heavy-set guy. He wanted to give the impression that he was a *tough* boss, and naturally, he would growl. When you walked into his office, you had to have a purpose. He had an open door, but don't dare walk into it. [Laughter]

I probably mentioned this before. When the draftsmen union went to him to complain that there wasn't ice in the water coolers, because in those days they had tub water coolers and coils, and they weren't refrigerated water, and he looked at them and he said, "What division are you working in?" He says, "Well, go back to work." [Laughter] You wouldn't treat a union man that way today. But he signed leave cards, himself, the Chief Engineer.

Storey: This was in the thirties when you were in the Denver office?

- Mermel: Yes. This was before the forties. This was in the thirties, when we were still in the New Custom House. After all, the concrete laboratory was in the Custom House basement. R. F. Blanks, there was a brilliant guy. He was the concrete specialist. He was working with Savage to see what could be done about Hoover Dam and so forth. We didn't have computers except the hand-cranked ones. Those who worked in Savage's division got electric motors on theirs.
- Storey: The calculators that they used.
- Mermel: Yeah. Calculators. The Monroes. Most of us had hand-cranked ones. He had some sixty or eighty of them just cranking for a full year, the stresses on Hoover Dam, because they had to make sections and compute each section separately to have the ideal stress distribution.
- Storey: This is the trial-load method [of analysis]?
- Mermel: Yeah. Yeah.
- Storey: Why was that developed, do you know?
- Mermel: Well, I think it was Savage's idea, because he had also a bunch of mathematicians that were really just mathematicians. I don't say it in a derogatory way. They were the brains of the mathematics, and they used calculus and all the other kind of things that were modern in those days. There was

a guy by the name of *Glover* that was head of that group. They were really brilliant guys, and they conferred with Savage all the time. And in the Bureau, we had access to this "brain trust" for computations of some special stresses and so forth.

My first job when I just came to the Bureau, I was assigned to Sam Judd, who was structural, Chief of Structural Engineering, and designing a retaining wall at Hoover Dam. But when he found out that I was electrical, he transferred me to Max Kight. By the way, have you heard, is Max Kight still around? He's in his nineties.

Storey: I understand he's in a nursing home in Denver, yes.

Mermel: Yeah. He's in his nineties. He's up in his nineties. There was a brilliant guy *and* also a fair, square shooter and a good administrator, a *good* boss.

You know, in progressing in a big organization, you have to fight for survival. I had one particular case. McClellan used to come down and go over the drafting tables and talk to the men and so forth. I was working on something and McClellan said, "Well, there is a handbook someplace that will give you some information on this item."

I told him, "Well, Mr. McClellan, I went to the library. I made inquiries everywhere, and I just couldn't find it. I'll have to make some more effort."

The guy in back of my desk said, "I've got one." He knew very well that I was in need of it, and he wouldn't share it. In other words, I learned my lesson [the hard way] that there are people who are not necessarily your best friends. I don't think he gained much from it, but I surely learned a lesson.

Well, we were pretty crowded. These tables were one next to each other. You only had one file cabinet, and tables were pushed together pretty closely. That's why the Bureau had to move out of the New Custom House. They expanded into several other buildings before they got into the Remington Arms Plant after the war.

Storey: Tell me more about Ray Walter before we go on.

Mermel: Well, the top staff was very exclusive. They were in a little corner, and while they claimed there was an open-door policy, you generally didn't walk across the threshold. Everything, as far as administration is concerned, was quite—well, I would say, secretive. Management was only communicating among themselves. So the fellows down the line—and that particularly was



noticeable when it came to personnel actions. There was a personnel officer by the name of Bonnet, and you could go to the personnel and ask questions and you'd never get a single answer. But Bonnet always was conferring with the top staff.

### **Pay Cut after Joining Reclamation**

This was, well, the 1930s. This was probably permissible in the government. ~~New regulations coming out.~~ At that time when the Depression was on, we had to take a 15 percent cut. I joined the Bureau as a junior engineer at \$2,000 a year, and we got cut to \$1,800. That was quite a big cut. But I rented a house. I lived in it for \$35 a month. Butter was twenty-five cents a pound, and you could get steak, cuts, twenty-five cents a pound. So \$150 a month did pretty well, especially to have a job during the Depression.

### **Sam Judd**

Organizationally, the division heads were *very* good men. We had a fellow by the name of Sam Judd in the structural division. He was a very, very cooperative, pleasant administrator. He'd come around to the boards and really *help* the draftsmen. He didn't stay. He just actually came around to each desk and talked with the men as he went along.

### Drafting Process in the 1930s

In those days, you had to draft on vellum, your data and drawings and so forth, and then that was sent to the drafting room, and then there were hundreds of draftsmen who did nothing but inked these vellum and put them into ink. Hoover Dam, When you had this ink tracing, then the next thing was to get black line prints and photostats and send that to the field. That was a real, real big job in those days to get, and there were thousands of drawings as far as Hoover is concerned. I am sure that Hoover Dam had more than 10,000 drawings. That's a small number, I'm sure.

Yet when we looked forward, fifty years was a long time ahead, and Congress required that in order to remove the risk, the government had to have contracts for the sale of the power. Because a congressman, when the hearings were on Hoover Dam, the congressman on the floor said, "There's a million kilowatts in Hoover Dam. It will be a million years before you'll use them." How wrong he was. Well, he was on the opposition side.

But, nevertheless, it just shows that in those days we didn't have imagination of future expansion. Oil was selling a dollar a barrel, and that was considered very expensive. In forecasting the future revenue from Hoover Dam, you were

assuming that the steam powerplant would use oil at a dollar a barrel.

**McClellan Gave Special Assignments, Including Work on the Renegotiation of the Power Contracts at Hoover**

When McClellan sort of, I don't know, maybe got a liking to me, he started asking me [to travel with him] for special assignments, and I started making these studies for him.

Storey: This is when he was the Chief Electrical Engineer?

Mermel: What?

Storey: This was when he was in charge of the electrical?

Mermel: Yeah.

Storey: Not when he was Chief Engineer?

Mermel: No. No. That was when he was Chief Electrical *and* Mechanical Engineer.

Storey: Okay.

Mermel: Yeah. He was Chief Electrical *and* Chief Mechanical Engineer, and it fell to him to be the negotiator with the power companies to get these contracts in[-place] ~~there~~.

Then as time went on, 1939-, 1940-came. I was still in the Denver office. The power companies went to Congress and got what they called an adjustment act, because they said that the conditions had changed, that the rates should be changed and that there should be a new formula for repaying Hoover Dam. Originally, Hoover Dam was to be repaid with power revenues at competitive prices, and they convinced Congress that Congress shouldn't be using Hoover as a money-making machine. The rates should be what will be enough to pay for the dam *and* the powerplant and give the benefit of these low rates to the people.

### **Public vs. Private Power**

In those days, we had this philosophy of very cheap power, and the only way you can get cheap power is to have public dams built to show the power companies that power can be generated at very low rates and that the power companies were making a lot of money, and, therefore, public power versus public power became a big issue.

Actually, during that time, Ickes was a public power man and so was Roosevelt, and that's why he built TVA, to show that the power could be used to develop a region, and the cheaper the power, the better the return or the

economy—the growth. Naturally, the utilities fought that.

So there was a battle between public power versus private power. When we would go up to Congress to get appropriations, all the [private] public utility people, particularly out of California, would come to testify against the Bureau. They said, "All right. Let them build a dam, but the power companies will come and *get* it with their own transmission lines and *they'll* take it." They didn't want the Bureau to build the transmission lines in California from Shasta down the [Central] Valley, because they [Reclamation lines] would pick up customers that PG&E had. Ickes was advocating that we'll build the line, and cities along the line will be able to get cheap power from the government lines, cheaper than from PG&E. And that's when municipal power started growing. The Sacramento Municipal Power District was one of them, and then Roseville and Redding and those towns along the routes got the benefit of this cheap power.

That really was what gave, probably, Roosevelt the idea to have REAs, and REAs were created because the utilities did not want to go into the rural areas because you had to have a lot of capital investment for one single customer. That's why Roosevelt felt that public

money was needed to have these transmission lines built at very low interest rates, say, pay 2 percent interest. This is how electrification of the rural areas, which were beneficial, and today we've got 99 percent of our population has electricity. In those days, 50 percent of the population didn't have electricity.

Storey: Do you happen to remember Carl Hoffman?

Mermel: Oh, yeah. Carl Hoffman.

Storey: I think he told me that Ray Walter would come to the door of what he called the bull pen.

Mermel: Yeah.

Storey: When the bells rang at the end of lunch and sort of look around to see who wasn't there. Do you remember anything about that?

### **Lunch Hour at Reclamation in the 1930s**

Mermel: I remember Carl Hoffman. He was a smart Jewish boy and well educated. I'm telling you, the Bureau had some very brilliant Jewish fellows. Carl Hoffman, he was active in professional societies, and he was a hard worker. But there was this—we had half-hour lunch periods, and it was a half hour. There were no cafeterias. You had to eat your lunch at the desk. Going out to eat lunch was a *rare* thing. There was a

Greek joint across the street, and probably some boys went down there to get soup or something. But normally you had to brown-bag your own lunch. But when twelve o'clock came, I wouldn't be a bit surprised we even had a bell at twelve o'clock so everybody'd have lunch, and then 12:30, the bosses would expect you to be at your desk.

I must admit that in the World Bank, a half-hour lunch is more than an hour. Well, today, in modern office environments, a half-hour lunch is only theoretical. But I wouldn't be a bit surprised that there were some of these divisions where they were quite strict about it. They expected you at your desk. We didn't punch a clock. We didn't have time cards. In the government, they didn't have time cards, but they really expected you. *And* if you did come in late, they'd charge you annual leave. Like if you came in at nine o'clock instead of eight, you put down one hour of leave. If you went shopping or so, you took a one-hour leave. Well, those were different days. The management had a stricter hold on the employees. There wasn't much goofing around. You really were working.

Another thing that I would mention, Warren McBirney. Do you remember, has that name come up?

- Storey: I think Carl has mentioned it, as a matter of fact.
- Mermel: There was a division, I think, McBirney, of canals, and I think he had a son by the name of Warren McBirney. Warren McBirney really was in what they called the Scientific Division, Technical Division, and later it expanded into finding technical articles of value to the design staff, making copies and sending them to the division. In other words, they were researching references applicable to the Bureau work.

### **Foreign Technical Publications**

I got in touch with him when I got transferred to the Washington office after the war. The U.S. military forces were raiding all of the German libraries and German technical institutions *and* Russian ones, too, where they could. There was a policy of the [United States's] Russian Embassy buying technical books from the Russians, and they were sending them to Washington, and they would come by the tons. There was a program of translation of these things.

I got in on this thing and began finding things that had to do with Russian dams and the Germans working on underground cable. The Germans had done experiments on oil-filled high-voltage cables. So when these publications got to the Library of Congress, translated, I



would go over the list, get them, and send them to McBirney, and McBirney would then send them to the [interested] staff people. It even got into a routine that engineers made what they called their own preference profile of what they were interested in, and he put that in his library cards. When a publication came, he had it coded and it went to these various people who had their profiles. There were, at first, little abstract cards. If he was interested in an abstract card, he would go and get the document itself.

It was a *big* program, and the Bureau spent a lot of money on that. We called that "exploiting foreign technology." I feel I had a little credit in there myself, because I was able to get contact with the library and be able to send the stuff to them. But McBirney made quite a production out of it and really had a system. That thing now folded up and I think it's dead, but there probably are remnants of it there. But the Bureau picked up a lot of ideas from this foreign technology. [The Bureau has now fallen behind advancing technology.]

Now, on underground cable, the foreigners were far more advanced than the Americans, and I say "Americans" to include the Bureau of Reclamation but include also public utilities. When I was in Washington, I was very active in

professional societies and contacts with professional people, including the Edison Electric Institute, which is the utility's stronghold. We would try to exchange information with them and try to disseminate this kind of stuff.

### **Electroslag Welding**

The Russians, for instance, were the ones that developed this hollow shafts for *large* hydroelectric units. I was instrumental in getting the Russian book, actually, and have it translated. The Bureau considered it. But they talked to the industry, and the industry says, "We'll give you a forging, a solid forging, that we won't have to use this technology." But they were talking about 200 megawatt units. But when we got to the 500 megawatt unit, the shaft is so damn big, you can't forge it. So they had to go to that.

I personally made contact with Bethlehem Steel and exchanged letters with them and told them about this technology, and I got a letter back saying, "We're not interested because we wouldn't find a customer for the product."

The Russians also were the first to come up with what is called electroslag welding. They would be able to weld steel plates that were six or eight inches thick, weld them together, and they did that by

fusion of certain kinds of material and be able to make that joint. Today, electroslag welding is used in the industry in the United States. So, actually, our stimulation of the large units at Coulee was a result of stimulation of Russian technology. The Russians really were [further advanced than we were.]

Storey: This was the Third Powerhouse?

Mermel: Yeah. The Russians were leaders. And they were also leaders in dams. They built on the Volga River dams—

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BEGINNING OF SIDE 2, TAPE 1. AUGUST 30, 1995.

Storey: Dams on the Volga River.

Mermel: Yeah. The Russians were building dams on the Volga River, and they were earth-filled dams. They were building them evidently very cheaply and very fast. They used dredging, but a different technology than what was used at Fort Peck. When Fort Peck was built, they had hydraulic fill in between to fill up the dam. But the Russians evidently had a *better* way of doing it, and that's why they built a lot of these large dams. Also, when they built Bratsk Dam, they had special kind of expansion joints that we didn't have. We got their books and so forth, and we adopted some of those ideas. But the

Italians adopted the same idea. As you know, dams are built out of big blocks.

Storey: Of poured concrete.

### **Russian and Reclamation Techniques for Grouting a Concrete Dam**

Mermel: Of concrete. As they shrink, after they're chemically warm, they shrink, a crack develops and you have to grout that crack. Well, the Russians developed a piping system. You have to install pipes, and then you would send grout into those pipes. But you had to have some kind of way for that grout to be released. So the Russians developed a plug with a rubber plug just like on a milk cap but a big rubber thing. I had one here that I've been carrying around for fifty years.

Storey: You mean like on an old-fashioned milk bottle where it had the crimped paper thing with a circular cardboard?

Mermel: Yeah. But it was a solid rubber cork, and as they would send the grout under pressure, this rubber, since it was embedded in concrete, would give and bypass this grout into the crack. So they installed these pipes with these relief valves, so to speak. That was a technique that was very good, because the Bureau originally had to have a form, a formed piece, when the block was made, and then the grout would go in there. But the grout

probably wouldn't go all the way down filling the whole base of the block. So it would only fill these when the dam shrunk.

Storey: So it wouldn't be a uniform filling of the cracks.

Mermel: Yeah. Yeah. Now, the Bureau had a system that they would have cooling water in the blocks, and they would send refrigerated water through those blocks, super cool the blocks so they would shrink more than normal. Then they would inject the grout. When the block would go to a normal temperature, the ambient temperature of that, it would expand and it would make it tight. But it was very costly. The Hoover Dam was a [lot of] ~~million miles of pipe~~ in every block.

I have some pictures of those in the boxes. I haven't sent my boxes to the University of Wyoming yet, but I'm sure going to. I've got to do it. Surely, I know my grandchildren will send them, because they're already packed and addressed to them. But I had a lot of photographs of construction during the thirties.

Storey: I think Ellis Armstrong sent his in last year finally. He got tired of storing them. Didn't go into them very often.

Mermel: Well, I'm getting to that stage, although I have looked into them, oh, in the last six

months, maybe once or twice—just to find something. But there were very interesting photographs. Now, what University of Wyoming will do with them, I don't know. But I also have carbon copies of my own personal file of letters dealing with exchange of information, professional societies, and things like that.

Storey: Tell me more about other foreign contributions to Reclamation's dam-building activities.

### **Israeli Irrigation Methods**

Mermel: Well, in the early days, in Israel they developed this trickle irrigation, and the trickle irrigation came [into the United States] ~~earlier~~. It came from Israel, and it is being used in the West. Now, actually, the Bureau—I'm not the irrigation man, so I have maybe a little bit of a different viewpoint. But I don't think the Bureau was necessarily economy-minded on the economic use of water. They were more inclined to build big pumping plants and big canals and big ditches and let the farmers to take care of that. But the Israelis were interested beyond that point, how to use the water efficiently on the land. The Bureau really, I don't think, was an economically-minded agricultural land user of water. They were a builder of canals and supplied water to the gates, and it was up to the farmer to use it efficiently.

**Reclamation Lacked Interest in Water Efficiency Issues**

I feel that the Bureau missed—well, it didn't miss the boat. The Bureau was an engineering organization. It was building canals, and it wasn't particularly concerned on the efficient use of water. Today, in Central Valley we ought to do something about it, on economic use of water. We're only interested in selling water. Just think, we're selling water so cheap that the farmers are now beginning to sell their water rights to the industry and let the land go because the water is so precious.

I'm not an irrigationist, but I do think there is an area where the Bureau could become, let's say, a research organization for the economic use of water. But that was intruding, really, in the Department of Agriculture. The Department of Agriculture was supposed to take care of that. Once you got water to the farm, it was up to the Extension Service of Agriculture. So I think there's where there is a loose link, the relationship between agriculture and the Bureau of Reclamation.

Well, I don't know. Probably the Bureau of Reclamation's destination is to shrink more and more. Its function doesn't have a future. I don't think we're going to build any canals, because you can build

canals with private money now. You can build dams with private money.

### **Changing Mission for the World Bank**

By the way, there was a very interesting article on privatizing the World Bank, that the World Bank's usefulness has been outlived, that there are plenty of banks that can fund projects, that the World Bank is losing its mission and changing its mission. It's getting into socially-oriented projects rather than reconstruction and rebuilding or developing underdeveloped countries.

Storey: Economic development.

Mermel: So there is something that's changing, and probably in another ten-, twenty- years, I forecast that the World Bank will also shrink.

Storey: Can you think of any other areas where foreign technology contributed to Reclamation?

### **Foreign Contributions to Transmission Lines**

Mermel: Well, transmission lines. The Russians were at 500 kv transmission lines earlier than we. However, the Russians had tremendous wasteful towers. We had scientifically designed towers. We had testing grounds for testing structures, while the Russians evidently didn't. If you see



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some pictures of the Russian technology and transformers and transmission towers at 400 kv, well, they went to 750 kv.

I've got one more story to tell you on that. [We] ~~They~~ went to 750 kv-[ac switch yards] ~~actually dc.~~ [We also went to 500 kv dc switchyards.] ~~They went also in dc.~~

Storey: In direct current?

Mermel: Direct current, yeah. They built some lines. Asea, at first, got the technology, and Asea joined the General Electric Company, and this is how we got our dc transmission line from Grand Coulee down to California. The roots of that technology is in the USSR

Storey: Asea? What's Asea?

Mermel: Asea is a Swedish company, electrical company. A-S-E-A. Asea. It's still in existence. It's melded together with Brown Boveri. Brown Boveri of Switzerland, Asea of Sweden have merged into a company called ABB now.

### **Effects of Electromagnetic Fields Around Transmission Lines**

About that time, American Electric Power Company here in the East was building 750 kv lines, and they had quite a

lot of difficulty because people were saying that the electromagnetic field affected them. There was a gal that I corresponded with who was a crusader in the *Christian Science Monitor* magazine, saying that the utilities ought to study the fact that the electromagnetic field has influence on people and that there has to be some kind of protection. There was a farmer [in Pennsylvania] who had some mink, and when the line went through there, the minks didn't reproduce, and he was suing them. The utilities didn't like that.

But when we visited Russia, we talked to them about [this issue] it, and they said that's true, and they had a report[, which they gave me,] that ~~they~~ said that they would not permit a worker to work in a transmission line substation more than seven hours, within twenty-four, because of the electromagnetic effect.

The utilities in the United States pooh-poohed this. I brought that report back and I gave it to the utilities. I was active in the Edison Electric Research Institute, and I gave it to them and we talked about it, and they said that they made a study and that there is no relationship whatsoever. They do have now this Edison Research, ERPI,<sup>16</sup> in

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16. Electric Power Research Institute (EPRI).

California. [That] ~~There~~ is a [public] utility organized research institute. *They* made a study and they said that there wasn't anything [to it].

Well, actually, the magnetic field goes through the body, and the blood and the bones *are* affected. The molecules orient themselves positive and negative, and what side effect it has nobody was able to know, but today this study is very active. I have some copies on my desk here that the utilities are now admitting that there is electromagnetic effect, and they are now even getting to the point of admitting scientifically that sitting in front of a fluorescent lamp has impact on your physiological behavior of your blood and so forth. Naturally, the utilities aren't very anxious to publicize that, but it is acknowledged that the electromagnetic field has some influence, and they have to start thinking of shielding.

### **Shielding Transmission Lines Underground**

Well, one of the best ways of shielding is to put transmission lines underground. In Europe, the transmission lines are underground more prevalently than in the United States. Paris had underground utilities long, long ago. Washington has underground [downtown]. *But* as soon as you're outside of [the center of] Washington, [the lines] ~~you~~ go to

overhead. Up here [in my neighborhood], as far as I'm concerned, we're overhead in this area, but downtown Washington is all underground.

So utilities fought this underground. I was on a [technical industry-organized] committee [representing the Bureau, and] ~~in there~~ ~~when~~ we were studying this. Part of the study of that made it possible for us[, the Bureau,] to put high-voltage cables at Grand Coulee powerplants. We have all the power from the right powerhouse going to the left powerhouse by a [bunch of cables] ~~hunk of cable~~ going through the [dam] galleries. Before that, there were towers on both sides of the river, and there were a hell of a lot of wires. The environmentalists were kicking about it, and they were also ugly and they were dangerous. So they took them down. So the Bureau actually learned its lesson at Grand Coulee. [I consider we were stimulated by Russian technology.]

Now, at Hoover we should have had underground cable rather than those wires coming up the canyon wall. [The technology was not available when Hoover was built.] I visited Kurobe Dam in Japan, and they had 500 kv cable underground. I got a report from them. I gave it to McClellan at that time and Kight and the others. Well, it was costly. It was very costly. But the pressure for modernization

was on that they did consider it, and we have underground cable in one of these Colorado projects. There's a small arch dam, and there's underground cable there [to protect scenic values] ~~just for scenic purposes~~.

So we went through, let's say, growing pains. I would say the Bureau was a little slow in adopting the most modern technology. I don't know. Today I can't say. We did get started on computers quite early, but I can't say that I know that much now, because I left [the Bureau before] ~~after~~ the computer stage was really at its best.

Storey: You mean before?

Mermel: Well, the computers were being used in the Bureau before 1973, but they were not as widely used as [they] are used today, between 1973 [and now] there's a tremendous expansion. You take in the World Bank, every damn person's got a computer on their desk. I have a computer and I'm learning as much as I can for my daily uses. But for design purposes, the computer is really the thing. I have a grandson that is a structural engineer, and he works in a consulting firm. He says they do everything on the computer.

Storey: And at Reclamation they have computers on virtually every desk now.

Mermel: Oh, yeah. I'm sure that the Bureau has adopted it. They may probably be a little bit behind times—a year or two. But I'm sure that they're—after all, they've got to get it in the budget and they've got to be able to spend money.

Storey: Tell me about technology going the other direction. One of the images you have is that Reclamation has a worldwide reputation.

Mermel: Oh, well, definitely. Definitely. The Bureau of Reclamation, when it was building Hoover, Shasta, Grand Coulee, Friant, those dams, they were really worldwide renowned, and the Bureau of Reclamation, when it attended the large dams meetings, all the engineers were just anxious to [get to know Bureau engineers and to] get Bureau publications [and research reports].

### **Promotion of Participation in Professional Organizations**

Now, again, my modesty has to guard my words. I was in a very fortunate position as being Assistant to the Commissioner for engineering. My really, well, life's ambition, maybe, was to get the Commissioner to endorse the Denver office to join professional organizations. There are memoranda in the file[s] where I would get the Commissioner to write to the Denver office that they should show

their professionalism by being identified with a professional society. He made it a point that the Bureau did send people to conventions and, let's say, congratulatory letters were written to people who presented papers at these conventions.

*I must say I was in instrumental in suggesting that Dominy join American Society of Civil Engineers, and we got Dominy to join the American Society of Civil Engineers, and he was pretty proud of it. I was very active in professionalism, as I would call it, arranged to have him invited to be the keynote speaker at one of the—it was at a Phoenix convention, ASCE. Dominy got up there and he said, "Gentlemen, I wouldn't be here because your organization was the one that wrote to the President that I should not be Commissioner." That's how he opened his remarks. And then he made his speech.*

### **Dominy Support of Large Units in the Third Powerhouse**

But he supported engineers. He wanted the engineers to use the most advanced thinking. Actually, he, Dominy, was supportive of the idea that I was able to send these Russian books to the Denver office to tell them we ought to think about big units. I've mentioned this before, and I think you ought to talk to this Morgan Dubrow, who was in the Secretary's office,

because he also helped maneuver this idea of big units [at that level], and we got [Assistant Secretary for Water and Power Development Kenneth] Holum and Udall interested that if the Russians can build units of 500 mW, we should put 500 mW in the Third Powerhouse. This was 1965. Just think how far back that was.

Naturally, Bellport didn't want it, and he had a turbine man who definitely was against it also. But with all the pressure, Bellport came to the meeting [with the Secretary and Dominy] and said, "I recommend the big units," and, therefore, he was the one that recommended the big units. It was just like a shotgun wedding. But, nevertheless, it was really under pressure.

Now, there are in the files letters that I drafted for Dominy to recommend for Udall to send to General Electric, Westinghouse, *and* to Allis-Chalmers. In those letters, we said, "Enclosed is a reproduction of a study of the Russians. They're building the dams and they say that large dams are more economical, large units are more economical, and that's why they should be built." Udall signed the letter saying, "Please advise us whether your industry would be interested in developing units for Grand Coulee."

GE and Westinghouse both wrote back. GE says, "We could not do it unless



you gave us \$2-, \$3- million dollars for research." Westinghouse said, "No, we would not do it." Allis-Chalmers said, "We would not do it."

After we got that, we made contact with Hitachi of Japan and with Asea [of Sweden] and English Electric, and they wrote letters to the Bureau of Reclamation saying that, "If you are contemplating 500 mW units, we'd be interested in bidding." And that's what really broke the camel's back.

After I quit the Bureau, by the way, I was hired as a consultant by them to gather technical information here that was available in Washington to send to the Hitachi of America on superconducting transportation. Do you know what—

Storey: Transmission? Yeah.

Mermel: Transportation. [Magnetic levitation.]

Storey: Okay.

Mermel: It's electromagnetic. The only thing I wanted to show you is this.

Storey: Oh, a clock. "To T. W. Mermel, our sincere appreciation for your consultation services on behalf of Hitachi America, Ltd. T. Kitamura, President. November 1975."

Mermel: Well, I went to the Library of Congress and made a search of this electromagnetic levitation. You know, the new design in the future, and they're using it in Japan already, they have magnets over the railroad tracks. If the magnetic is empowered, it lifts the train off of the rails or takes the weight off, and by electric pulses the magnetic field moves and the train moves by the electromagnetic field moving. That was being developed in Germany, and Russia was doing some studies of it. But there were also some other studies made here in the United States.

### **Electromagnetic Levitation**

What Hitachi wanted me to do is search out the Library of Congress for all the material on this electromagnetic elevation. There's a technical word. Levitation. Levitation. Magnetic levitation.

### **"I had the Commissioner's ear"**

That was also an indication of my interest in the kind of things that I was doing in the Bureau. I was very fortunate to be the Assistant to the Commissioner, because I had the Commissioner's ear. Fortunately, like Mike Straus, oh, he was great. He also wanted to do things that were in [advance and] ~~the~~ modern

thinking. He was not an engineer, but he was a great administrator.

Then we had Dominy. He did very, very well. I also served under Armstrong. Let's see, who else was there?

Storey: Well, let's see. Were you with Mike Straus? You started with John C. Page?

Mermel: Well, I started—Bashore. No, Mead was in the Washington office when I visited the Washington office a few times. Then he died and Page became Commissioner, and I worked for Page. Also, the position was not as glorified as Assistant to the Commissioner, but it was some kind of a title of a chief of an engineering—it was called engineering assistance. Prior to that, there was W. R. Nelson. By the way, did you ever contact W.R. Nelson?

Storey: No.

Mermel: He must be 100 years old by now, but he's here in Washington. I can give you his address or something.

Storey: Okay. We can do that later.

Mermel: Anyway, well, W. R. Nelson was an Assistant Commissioner, but he was office engineer working for Brig Young and for John Page.

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BEGINNING OF SIDE 1, TAPE 2. AUGUST 30, 1995.

Storey: This is tape two of an interview by Brit Storey with Thaddeus, known as "Ted", Mermel on August 30, 1995.

Mermel: I don't think I had a Christmas card from him this year, but I had one from him last year. Wesley R. Nelson. The wife's name is Dorothy. And he was on 1600 South Joyce Street, Apt. A911, Arlington, 22202 is the zip code, and the telephone number was—

Storey: Arlington. Just one second. Arlington. What?

Mermel: Virginia. 22202. And the telephone number was (703) 521-0742. And his wife's name was Dorothy.

Storey: He went to work for AID, I believe?

Mermel: Huh?

Storey: Did he go to work for AID? A-I-D?

Mermel: Yeah, he did, and he went to Baghdad or someplace like that.

Storey: Ken Vernon knew him quite well.

Mermel: Yeah. Ken Vernon knew him very well. But there was also a dignified gentleman type of guy, like McClellan, W. R. Nelson.

But he must be 100 by now, because he was ninety. But you could contact and see maybe if they might have some kind of relics or mementos or something.

Storey: Well, let's see. You worked for Page as—

**Commissioners Worked for**

Mermel: Engineering Assistant.

Storey: So then you worked for Bashore?

Mermel: Bashore.

Storey: And Straus and Dexheimer and Dominy and Armstrong. What about Gil Stamm?

Mermel: Gil Stamm became Commissioner just about the time when I retired. I think Armstrong left in the spring of '73, and Gil Stamm became the Commissioner in '73.

Storey: Did you ever meet Elwood Mead?

Mermel: Elwood Mead? Oh, yeah- yeah.

Storey: Tell me about Elwood Mead.

Mermel: Well, it's hard to describe him. He was an older gentlemen. He had an arm amputated. He had the physical appearance of what you would remember what bankers looked like in dark black suit and quite heavy-set. But he wasn't an

aggressive type of man. He was more of a bureaucratic—I didn't see leadership there. He was holding a post. When he died, why, then Page came in.

**Mae Schnurr**

- Storey: Did you meet Mae Schnurr?
- Mermel: Who?
- Storey: Mae Schnurr, Elwood Mead's assistant?
- Mermel: Mae Schnurr, personnel. Schnurr, she was what, personnel?
- Storey: She was the Assistant to Commissioner Mead.
- Mermel: Oh, wait a while. Yeah. Yeah. It didn't last long. She must have been Assistant Commissioner.
- Storey: Well, I think it was Assistant *to* the Commissioner.
- Mermel: Yeah. At first we thought that she was part of Information Division. But, no, I think they were trying to make her an Assistant Commissioner, and she had some kind of political pressure from someplace. She was somebody's political endorsement. She was on the financial side and information side. I didn't have much contact with her. She was either in the

finance or information, or I stayed clear. I remember May Schnurr, yeah.

### **John C. Page**

Storey: Tell me about John C. Page.

Mermel: Well, he was Office Engineer [at Hoover]. He was a typical Office Engineer. When he became Commissioner, he was what you would call a slow, methodical person in his behavior, mannerism, and so forth. When I used to come to Washington in those days, there was a man by the name of William B. Kubach, who was Chief Accountant. The Chief Accountant and Page and I would come down to the Interior cafeteria and have breakfast, oh, for months at a time, because I traveled to Washington quite a lot. In those days, we had a thirty-five-cent breakfast, ham and eggs and toast and coffee for thirty-five cents. He wasn't setting the world afire.

### **Report on Chief Engineer's Relationship to Commissioner**

By the way, did you run across the report that some independent outfit did? I think it was connected with Harvard University or some other university that prepared a report on the Bureau of Reclamation. It was a recommendation for reorganization just prior to reorganization in 1943. In that report, it portrayed Page,

saying that Page was only a pawn of the Chief Engineer in Denver, that the Bureau of Reclamation was *run* by the Chief Engineer in Denver. Page did what the Chief Engineer told him, and Page went to get the appropriations and turned the money over to the Chief Engineer, and the Chief Engineer would spend it and allocate it to the projects. That's true, because the money was appropriated to the Bureau and then the central disbursement office was Denver, and the Chief Engineer actually did the planning and allocated the money to those projects.

### **Ickes Wants Reorganization into Regions**

At that time, when this university was interviewing Ickes, he said, "John Page is just an office boy for the Chief Engineer." And at that time, the Chief Engineer was S.O. Harper. He said, "When I tell Page what to do, he tells the Chief Engineer, and the Chief Engineer doesn't do it. That's why I want the Bureau reorganized." He said, "There's a bunch of Republicans in the Denver office. I want my public power policy carried out, and Page is unable to convince those Republicans in Denver to carry out my public power policy. I want the Bureau reorganized, and I want the power of the Bureau in [the Commissioner in] Washington, not in the Chief Engineer." They wanted to *strip* the Chief Engineer of that authority. The regions were created at



that time, and the Chief Engineer was just an engineer.

Storey: And that's what the reorganization was about in '43-'44?

Mermel: '43, yeah.

Storey: I think Abe Fortas actually *signed* the reorganization in '44, but I think it was implemented sooner.

Mermel: Yeah. There was a man by the name of Ellsworth, who was supposed to be a managing man, and he was the one that drew the organization charts. Actually, the reorganization was directed *from* the Secretary's office, and he would make these charts and so forth. Well, we had conferences. I gave you probably some pictures or showed you pictures where Ickes would have meetings with the Bureau staff, and when the regionalization occurred, he had all the regional directors brought in and he would lay down what the policy was and said, "I want this and this followed."

Bashore became Commissioner at that time, but he didn't stay long, and Mike Straus was appointed. Mike Straus was an information officer in the Department of Interior.

Storey: Who selected you for the job in Washington?

Mermel: Who selected me? Well, that's a different story. When the Boulder Canyon Adjustment Act was going through in 1939-, 1940-, I was--what do you call it--McClellan's attaché, and I traveled with him.

Storey: You had told me about that.

Mermel: I came to Washington quite often. So I knew Washington. People in Washington knew me, because I came with McClellan. Then we had hearings on that and it was quite involved.

### **Ordered to Work on War Priorities**

Then when war broke out, we had to get priorities in order to be able to purchase steel for building our [dams and] plants and so forth. Every bit of contract for materials had to be given a priority. Since I knew Washington, McClellan says, "Well, Mermel, you take on this job." And I took on the job of being this liaison man between Denver and Washington from about--well, when Pearl Harbor happened, I was told to come to Washington the following Monday--Monday, Tuesday. Pearl Harbor happened on a Sunday.

The regulations on priorities were coming out even before Pearl Harbor,

because Roosevelt had this lend-lease program, and ships were being built by the thousands up in the Pacific Northwest. The Kaiser Shipyards were building ships and the ships were being built here. So steel plate and steel structure were hard to get. The rolling mills were running and every plate was scheduled two months ahead. So since I knew Washington, I was made this messenger to go to these various places we wanted to get [these priorities].

We were building Shasta at that time. We were putting units in at Hoover. They were finishing them, really, at Hoover, but Shasta and Grand Coulee were [also] very active. Shasta units were running, and at Grand Coulee there were two units running. They needed power for the shipyards, and they needed power at Hoover for the magnesium plant [at Henderson, Nevada], because we were going to burn the hell out of Japan with magnesium bombs.

So ~~the~~ priorit[ies]y became a big issue. Irrigation projects were practically shut down. They couldn't [even] get a low priority for material, especially when you wanted special things like for generators, you had to have shafts[, penstocks, etc.]. The forging mills were just loaded with orders. Even reinforcing bars were hard to get.

So I traveled from Pearl Harbor through '42 up to '43. The war was still on. Bashore was Commissioner, and I would travel to Washington and stay one week and then come back to Denver one week, and then go back there, and I had to do it by train. Maybe it was two weeks and one week. But I was shuttling back and forth. I had a very tolerant wife who accepted this. Our kids were growing up at that time. But I was on the run. But I was home every two weeks or something.

#### **Commissioner Bashore Suggests Transfer to Washington, D.C.**

So Bashore finally said, "For crying out loud, Mermel. You're traveling back and forth so much. Why in the hell don't you transfer to Washington?" Well, we lived in Washington before, from 1930 to 1933. So my suggestion to the wife saying, "Well, let's come to Washington," or "They want us to go to Washington." I wouldn't be a bit surprised I got a raise because Washington cost of living was higher. So that was an inducement, and I was doing something for the war, see.

So Bashore actually told McClellan, "Rather than have him shuttle back and forth, let him come to Washington and he can still go back to Denver back and forth."

So I got transferred in '43 into Washington. I don't know, it must have been October, maybe, or something like that. I don't remember the date. Yeah, it must have been about, because I had a daughter born in Washington in '43 or '44. But, anyway, that's what precipitated my coming to Washington.

#### **Effects of Reorganization of 1943-1944 in Washington, D.C.**

Then the reorganization happened, and the reorganization had a different set-up in Washington. I was Engineering Assistant in Washington at that time, and my special assignment was War Production Board. Actually, I was in the Reserve Corps, Signal Corps. When I went to college, I had a commission as a reserve officer. And when this came in, they started saying, "Well, how about reporting for duty?" I said, "Well, okay." So I went to the headquarters and I said, "Where do I report?"

#### **Called up as a Reservist**

And they said, "Well, we've got a procurement office here. We're buying materials and everything else for the war. You're going to be stationed in Washington. We won't send you anywhere. We want you in here."

Now, my specialty [in the reserve] at that time was [cryptography] cryptology. I was a cryptographer in the Signal Corps. I went to Bashore and told him that, "Well, they want me to report there."

### **Commissioner Bashore Obtains Deferment for**

And Bashore says, "What the hell. You'd do more for the war here than you will over there. Why don't you see if we can't keep you." So he wrote a memorandum to the Secretary of the Interior, and the Secretary of the Interior wrote to Donald Nelson, because that was the routine [when] asking for deferments[, and he confirmed my work to the Selective Service Commission which gave me a deferment].

Storey: And Donald Nelson was?

Mermel: Donald Nelson was head of the War Production Board. The War Production Board was a vital war effort, and I got a certificate for doing my service in the war signed by Bashore. So personally I felt that I was doing a lot more for the war effort by getting Shasta and Coulee and those units running than I would have sitting in the Washington office, not even doing [cryptography work] cryptology. I thought if they sent me to the field for [cryptography] cryptology, I probably would have gone. My wife was prepared that I would probably go. So I was

deferred for one year. Then I was supposed to renew that deferment for another year. Well, the war was getting hotter and hotter, so they renewed the deferment.

### **Felt He Should Not Have Had a Deferment**

After the war was over, I really regretted that I probably should have gone. You would at least have the recognition that you were in the Army. But my conscience, as far as that goes, indicated I think I made a contribution just as well. I don't know whether I'd make any better contribution if I had gone and sat in the Washington bureaucratic [procurement] outfit. Well, anyway, that was gone. That went by. But that's what brought me to Washington.

### **Transfer of Staff from Denver to Washington, D.C., as a Result of the Reorganization of 1943-1944**

Then when the reorganization came—this was the important part—the power [or authority] was supposed to be in Washington, so the head of planning that was in Denver would be in Washington, [so would] the head of operation and maintenance. The head of power contracting, that was very important because they wanted public power pushed. And then there was the engineering assistant to do the liaison work.

### **McPhail Was an Ardent Public Power Man**

McPhail came in from Denver, and he was the power man. McPhail was the ardent public power man. So he and Udall and Secretary Ickes. They loved McPhail. He was a public power proponent. The planning man, I think they appointed a guy by the name of Jack Dixon, because the guy by the name of—it began with an H—was in Denver, he didn't want to come into Washington. They had a guy by the name of Lineweaver, who was from Agriculture. They put him charge of O&M.

### **Alfred A. Golzé Made Head of Programming**

So that became the "power" of the Bureau was in Washington. The Chief Engineer was stripped of all budgetary things. A new budget was run out of Washington. Golzé was made head of the programming and so forth. He set up a very good *system* of planning and budgeting and so forth, and he made good presentations [to the Department and Congress]. Then they appointed the seven regional directors. Bashore was doing the nomination. The Secretary, I think, put [Richard L.] Boke in California, and at Pacific Northwest they named [Frank] Banks, but Banks didn't want to go out of Coulee. He became administrator to Bonneville, and they appointed—not Harold Nelson, but [R. J.] Newell, Bob Newell.



Bob Newell was Regional Director before Harold Nelson.

In the Missouri Basin there was a guy that had the Missouri Basin plan. What's his name? [W. G.] Sloan. Then they appointed [H. D.] Comstock. Now, of all the people, Comstock was the—well, he was just an ordinary construction man that came from Riverton Project. As he was described, the Riverton Project never completed its contracts on time. They were two years, three years behind schedule on everything. So, anyway, Comstock was the poorest Regional Director appointment.

#### **Erdman B. Debler**

In Denver they appointed--Binger? Bunger? [Miles] Bunger, I think was his name. Oh, no. I think [E. B.] Debler was appointed Regional Director *at first*. Debler was really the planning—

Storey: ~~Eugene~~ [Erdman B.] Debler.

Mermel: Yeah. And then later Binger. No, Bunger. Bunger got in there. Then as the war ended, naturally the Bureau was pushing to make food. Mike Straus got a hell of a lot of money, and the Bureau was really [expanding]—they 19,000 employees at that time. That was the heyday of the Bureau.

And Udall was a great supporter of Mike Straus.

Storey: Now, Udall would have been [Secretary when] Dominy [was Commissioner]?

Mermel: Huh?

Storey: Which Udall are we talking about?

Mermel: Stewart Udall was Secretary of Interior.

Storey: But that was under [John F. Kennedy] [~~Richard M.] Nixon~~, right?

Mermel: Well, but he came--

Storey: That would have been [when] ~~under~~ Dominy [was Commissioner].

Mermel: Udall came in. Who was before [Lyndon B.] Johnson?

Storey: President [John F.] Kennedy.

Mermel: Kennedy.

Storey: Oh, okay. He was Kennedy's Secretary. That's right.

Mermel: He was Kennedy's appointed Secretary, because when Johnson came in and Lady Bird [Johnson] came in there, Udall pulled up his high card to play up the environment and played up to Lady Bird. She was the environmental leader, and

Udall was the great environmentalist in the Department of Interior. He even took Lady Bird Johnson down the Colorado River on the boat and really played good politics.

Storey: Kennedy would have been elected in '60, inaugurated in '61, I believe. That was Floyd Dominy's term as Commissioner.

Mermel: Dominy boasts himself that he was appointed by Republicans and then he lasted through Democrats. I think he was—

Storey: He was appointed by [Dwight D.] Eisenhower.

#### **Appointment of Wilbur Dexheimer as Commissioner**

Mermel: Eisenhower came in and [Wilbur] Dexheimer got appointed. Eisenhower was a Republican. Dexheimer was appointed Commissioner because Tudor was Under-Secretary of the Interior, and Tudor and Dexheimer flew the Burma Road during the war. Dexheimer saved the Bureau of Reclamation, because Tudor wanted to shut the Bureau of Reclamation down and tell them to only be an engineering office to hire consultants. Tudor had a consulting firm in San Francisco. Dexheimer really talked him out of it and he saved the Bureau. I have my greatest respect for Dexheimer for that.

Now, Dexheimer was a *poor* politician. He had a hell of a time with congressional people, and, naturally, Dominy was head of operation and maintenance. When they went to justify projects on the Hill, well, Dominy would do the talking. Dominy, really, you've got to give him credit. He was a sharpie. He knew what the congressmen wanted, and he talked the way the congressman wanted to hear. Pretty soon, the congressmen would make contact with Dominy [exclusively] and not with the Commissioner, and pretty soon the Secretary started calling Dominy to explain things on the Hill for him. Pretty soon, Dexheimer—well, it would be in the best interest to resign ~~and Dominy~~. So Dominy really pushed Dexheimer out.

It was a dog-eat-dog thing. But there's no question that Dexheimer was a nice engineer and a very fine gentleman and all that other kind of thing. But he didn't know the ropes on the Hill, and Dominy undermined him pretty fast, and he wasn't Commissioner very long.

Storey: Well, '53 to '59. That was six years, I guess.

Mermel: Was it that long?

Storey: Well, according to the records.

Mermel: From what year?

END OF SIDE 1, TAPE 2. AUGUST 30, 1995.  
BEGINNING OF SIDE 2, TAPE 2. AUGUST 30, 1995.

### **Floyd Dominy as Commissioner**

Mermel: ... continuing as engineering assistant and Dexheimer was an engineer, and I was promoting professionalism. So I worked in very well with Dexheimer. I worked very well with Mike Straus. When Dominy came in, I worked pretty well with him. Dominy was, no doubt, a forthright driver, but he'd "son of a bitch" everybody. You didn't take it as an insult. You knew it was Dominy, so you didn't make [much of] it. In a staff meeting or so, he's say, "Son of a bitch So-and-so and Son of a bitch So-and-so," but you recognized that that was Dominy speaking.

But he liked to have his ego bolstered, and I think I made a contribution. [Laughter] Doing some of the things he wanted, I arranged for him to be invited to come to Spain to, let's say, review the irrigation projects in Spain. And, naturally, he went. He took me along, and somebody else went along.

Storey: Harold Arthur, maybe.

### **Trip to Spain for Commissioner Dominy**

Mermel: I don't remember who really was in there. Anyway, the guy that I worked through

was a guy by the name of Toran that I knew from the large dams meeting[s]. Toran got the Minister of Public Works to invite him, and they took us around Spain in a helicopter for a good week, treated us royally. One time we had to land in a wheat field, an emergency, because the pilot smelled gasoline fumes. So we just dropped down on the field, and [he] told us to get the hell out of the plane until he could find what happened.

#### **Commissioner Harry W. Bashore**

Storey: What kind of a Commissioner was Bashore? Was he a good Commissioner?

Mermel: He was a matter-of-fact Commissioner. He wanted the facts laid down before him. He wanted you to give a selling job, and he would believe you and he would support you. It was on that kind of a routine. He was a business—I wouldn't call it business. He was a construction-type man that accepted an explanation. If it sounded good to him, he'd do it and he'd tell you right to your face whether he liked it or he didn't like it. He was all right.

#### **Commissioner Michael Straus**

Storey: What about Michael Straus as Commissioner?

Mermel: Michael Straus was a very aggressive and imaginative guy. He had [good] contacts

on the Hill. When somebody needed some kind of support, political support, by getting a project in that area, he'd get a project in there. He'd get Project Planning to find one, and they'd put a project in the program and the appropriation would get another vote. It was just that simple.

Storey: Is he the one where somebody got a bill passed in Congress that said that Commissioners and Regional Directors who weren't engineers couldn't be paid?

Mermel: This was earlier. It had a little different tone. During the time when—what was this guy from Wisconsin that was the Communist hunter?

Storey: [Senator Joseph] McCarthy?

Mermel: McCarthy.

Storey: Senator McCarthy.

### **Congress Refused to Pay Mike Straus His Salary as Commissioner**

Mermel: During the McCarthy era, everybody in the Department of Interior, for instance, had to have a Secret Service or FBI investigation to hold a position over a certain grade. I was investigated by FBI. There were a couple of guys in the Department of Interior who they were after—let's see, his name's on the end of my tongue—and they

said that he was a card-carrying Communist and that he shouldn't be in the Department of Interior. Mike Straus defended these guys. Somehow or other, he offended someone on the Hill[, who decided to attack Straus by] using as an excuse that he wasn't an engineer. And I think the engineering fraternity [also] aided and abetted it. They did write to Congress saying that Mike Straus shouldn't be Commissioner, that he wasn't an engineer.

Actually, there was a rider in the appropriation bill that says, "Funds shall not be used out of this appropriation bill for the payment of salary of the Commissioner of Reclamation." I don't think they named him, but they must have said, "Who isn't an engineer," see.

### **Suspicious Richard Boke Was a Communist**

Storey: And I understood Boke, I believe was not an engineer also.

Mermel: Yeah. But Boke, they thought that he was maybe Communist-connected or at least one of these liberty guys.

Storey: A liberal guy, you mean?

Mermel: Yeah. A liberal. Well, a different kind of a liberal.

Storey: A libertarian or something, maybe?



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Mermel: Close to the point that they thought that maybe he was a card-carrying Communist. But they didn't make it. In those days—oh, that guy in the Department of Interior—they actually made a big battle about it. Now, Mike didn't get paid for almost a year. When the year was up and the next appropriation didn't have the rider in, he got his pay, see, because the lawyers found out that you can't perform services for the government without getting paid. Anyway, he got paid. But he was off the payroll for almost a year, I think.

Storey: Do you know if he got back pay?

Mermel: Yeah. He got his back pay, because the lawyers found that when the next appropriation didn't have the rider in it, they just said that they owed him money for services rendered and he just got paid for services rendered. There was some kind of a law saying you can't work for nothing.

Storey: Now, he, I believe, had political pull somewhere.

Mermel: Oh, yeah. Well, he had political clout because he was really connected with Ickes. He was Ickes' public relations man, head of the Information Division. He knew how to play politics, and he was the intermediary between [Ickes] ~~Udall~~ and the politicians on the Hill. He learned the

tricks, just like Dominy did, that whenever somebody wanted a project, they put it in the appropriation.

Storey: Where was Udall in all of this? I'm having trouble with Udall, because he didn't show up, as far as I understand it, until about '61.

Mermel: Well, he showed up during—

Storey: And that was Dominy's<sup>17</sup> term. That's when he was Secretary of the Interior.

Mermel: No. He [Udall] showed up during the Nixon Administration.

~~Storey: Right.~~

~~Mermel: Yeah. And he was appointed by a Republican.~~

Storey: Well, he [Udall] showed up under Kennedy, I think we agreed.

Mermel: All right. Maybe Kennedy.

Storey: Yeah. But that's later, and that's after Straus.

Mermel: Well, he was the next guy after Straus. He was continuing. He was continuously

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17. Floyd Dominy was appointed by Dwight D. Eisenhower in 1959 and served until 1969, serving under Eisenhower, John F. Kennedy, Lyndon B. Johnson, and Richard M. Nixon.

[Commissioner] –he [survived three] ~~did~~  
~~the~~ administrative change[s], and Dominy  
knew how to switch horses. I think  
originally he was appointed under  
Eisenhower.

Storey: Yeah. But we were talking about Udall  
and Straus.

Mermel: All right. But Straus left when Eisenhower  
came in.

Storey: Yeah.

Mermel: Yeah. And actually he left. The change of  
administration calls for all secretaries, all  
[presidential appointees] ~~guys~~, to resign,  
see.

Storey: Right.

Mermel: Now, the Commissioner at that time, well,  
he was a political appointee, see, so he's  
not subject to Civil Service. So they all  
had to tender their resignation, and his  
resignation was [not] accepted for a couple  
of months or something like that. But,  
anyway, everybody knew Mike Straus had  
to leave.

Storey: But what I'm confused about is you were  
saying that Straus had Udall's support.  
Was Udall a congressman or a senator or–

Mermel: No. No.

- Storey: Was it Mo Udall instead of Stewart Udall?
- Mermel: No. You mean that Udall and Mike Straus don't overlap?
- Storey: That's what I'm confused about. I don't *think* they do. Udall and *Dominy* overlap.
- Mermel: Yeah.
- Storey: And I think it was Fred Seaton as Secretary of the Interior [when Dominy was in office] ~~who was Dominy's Secretary.~~
- Mermel: Wait a while. There was Chapman.
- Storey: Oscar [L.] Chapman.<sup>18</sup>
- Mermel: Oscar Chapman was Secretary for a short time.
- Storey: Yeah. He was Secretary under [Harry S.] Truman, if I'm recalling correctly.
- Mermel: He was Secretary *after* Ickes died.
- Storey: Okay.
- Mermel: I went to Ickes' funeral. But wait a while. Ickes didn't die in office. He died after he

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18. Oscar L. Chapman was Secretary of the Interior from December 1, 1949, until January 20, 1953, under Harry S. Truman. He was Assistant Secretary of the Interior and Undersecretary of the Interior from 1933 to 1949.

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- was out of the office. He didn't die in office.
- Storey: Let's see. Maybe I'm confusing Chapman.
- Mermel: Chapman came in.
- Storey: Chapman was Assistant Secretary during the Colorado Big Thompson authorization, which was the late thirties. And he was Secretary during the Echo Park controversy, which would have been about the time Straus and Dexheimer were Commissioners. He must have been a Democrat—it must have been while Straus was in office that Chapman was the Secretary.
- Mermel: Well, Mike Straus got appointed by Ickes as Commissioner of Reclamation. So he stayed. After Ickes left, Chapman was there. So Mike Straus was still there. And then after that—by the way, did you read the Ickes book?
- Storey: No, I've never read that biography of him.
- Mermel: Of the pilgrim? I've got a copy. If you want to loan it, I'll give it to you.
- Storey: No.
- Mermel: Huh?

Storey: I'm having trouble reading the Reclamation stuff. [Laughter]

Mermel: It's got some very good leads in there. It's got a lot of detail in there.

Storey: Yeah.

Mermel: It's got a lot of detail in there, a lot of detail that I personally knew was going on and some things that I didn't know. For instance, as you know, [Ickes] ~~Udall~~ got married while in Scotland and nobody knew about it.

Storey: Ickes did?

Mermel: Ickes, yeah. Ickes.

Storey: I didn't know that.

Mermel: Yeah. Oh, that's an interesting story. You've got to read that. He married his secretary, and he didn't want anybody to know that. So he went to Scotland, and she came over there and they got married and then they came back here. Mike Straus was the one that relayed the messages to the administration or something.

Storey: Oh, really?

Mermel: That book is very interesting. I read it. It's that thick.

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- Storey: Yeah. I know it's a thick book.
- Mermel: But you would jump around. There are some early parts that are not related. But if you can catch the time when he was Secretary, I think it would be helpful for some of this, you know, memory.
- Storey: Tell me about Floyd Dominy as Commissioner. Was he effective?
- ~~Mermel: No. He supported the Denver office, but he had a hard time on the Hill.~~
- Storey: Floyd Dominy?
- Mermel: No. We're talking Dexheimer.
- Storey: Okay. I'm asking about Dominy.
- Mermel: Oh, Dominy. He was an effective Commissioner, very effective. He told everybody where they stood.
- Storey: What were his strengths then?
- Mermel: His strength was aggressiveness and his strength was that he had political clout, and he knew where to get political endorsements.
- I didn't intend to keep you up this late.

Storey: Well, let me finish with Ellis Armstrong and we'll stop, if that's all right.

Mermel: Good.

**Ellis Armstrong**

Storey: Tell me about how you saw Ellis Armstrong as Commissioner. Was he an effective Commissioner?

Mermel: Unfortunately, as much as I respect the guy, he wasn't very effective. I wouldn't use the word wishy-washy, but he didn't have a strong follow-through, and he had a hard time getting support on the Hill. While he tried to make as much contact by making speeches, he did a big effort trying to sell Reclamation by speaking at many conventions and so forth. He used to pull slides together and topics. Wherever he went, he wanted to have a slide presentation. But it wasn't that effective. His weakness was that he didn't have support on the Hill. When he didn't have support on the Hill, he evidently didn't get too much support in the Secretary's office either. I traveled with him quite a lot, too. I had the fortunate thing, I traveled with the Commissioners, just carrying their briefcase, if you want to call it that.

Storey: What were they like to travel with?

Mermel: Well, Dominy ran a tough schedule, and he expected you to produce whatever he



needed, and he demanded a lot from the staff where he ever visited. But, I traveled with Markwell a lot. He was a good administrator, but he wasn't a dependable one.

### **Kenneth Markwell**

Storey: Somebody told me, I believe, that he was an alcoholic.

Mermel: Yeah. He was. When you traveled with him, and I traveled with him a lot, for regional meetings and so forth, he'd hit the bottle and wouldn't show up in the morning. I'd have to go up there and sort of make excuses that he's detained or his schedule changed and he won't be available.

Storey: What about traveling with Armstrong?

Mermel: It was nice traveling with him. He would be considerate, gentle and so forth, and he considered you very close. He treated you like you're a part of buddy-buddy, whereas, Dominy, now, he treated you- "You are my helper."

Storey: What about Dexheimer? How did he relate?

Mermel: This guy was business, business oriented. He didn't get into personal discussions. It was all official business. He was a

gentleman and a nice guy and so forth, except that he just didn't know how to fight in Washington.

Storey: And what about Bashore, before him?

Mermel: Well, Bashore was just a construction man. He didn't care where the chips fell. He didn't play politics, and he didn't last long either on the Hill. He'd go up on the Hill and he'd just tell them the facts. If they said they wanted something, he says, sure, he'll deliver and that's it. And Page was in that category, too.

Storey: Well, I appreciate you spending time with me tonight.

Mermel: I remember one time, though, in a hearing where Page was asking for appropriations for a project and so forth, and Senator Hayden said, "Mr. Commissioner, couldn't you use another \$4 million on that project by letting a little more contracts and accelerating the work?"

And Page said, "No, sir."  
[Laughter]

Storey: [Laughter] He was asking him to take \$4 million.

Mermel: Yeah. But you take Mike Straus, heck, he'd take it, and he'd say, "We'll build something." He'd find out from the congressman what he wanted, and he

played right into the record that he was offering the thing. So the congressman felt very good about it. Dominy and Mike Straus knew how to play the Hill.

Storey: They did that well.

Mermel: Yeah. They did that well. Well, Bashore and Page, they were straightforward, "You want to give me money, I'll take it. If you don't want to give me money, that's all right, too." And if the constituents don't [put] ~~get~~ enough pressure [on] ~~from~~ the congressman to build a project, then the Bureau is not going to go out there building it.

Storey: They don't put enough pressure on their congressmen to build it.

Mermel: In other words, it's up the constituents to tell the congressmen what they want, and then the congressmen ask the Bureau to do it. Mike took it the other way. He asked the congressmen, "What do you want done and I'll get it done."

Storey: Okay. Well, I'd like to ask you again whether you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Mermel: I don't see any reason why [not].

Storey: Why not, you mean?

Mermel: Yeah.

Storey: Okay. Good. Thank you very much.

END SIDE 2, TAPE 2. AUGUST 30, 1995. END OF INTERVIEW.

BEGIN SIDE 1, TAPE 1. SEPTEMBER 8, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Thaddeus Walter Mermel, also known commonly as Ted Mermel, on the evening of September 8, 1995, at his home in Washington, D.C. This is tape one.

### **Privatization of Reclamation Projects**

Mermel: Talking about privatization, surely there's going to be a lot of pressure on the Bureau to get these irrigation projects privatized, as well as the dams, as well as the power. There was an article in yesterday's *Wall Street Journal* about privatizing the Department of Energy, which means the Bureau of Reclamation dams. They're talking about the power authorities or the power marketing administrations. There was one in Alaska that they're going to sell. Well, that would include Bonneville and Southwestern and Missouri Basin. All of those areas, if they get sold, well, somebody's going to make some money on it. But at least the government will get out of it.

Storey: It becomes an issue of whether politics will let it happen, I think.

Mermel: Well, I think it's a matter of politics, but the pressures are in that direction. Look at what's happening in Europe. Privatization is going just mad, even in Communist countries, and more so even in England and in South America, talking about privatization. Now, really, Communism eventually collapsed, but, you know, capitalism is not a cure-all. Just because it's privatized doesn't mean you can make money or that you can serve people.

Storey: Well, and that's the thing. You know, I think when the Western congressmen begin to realize their constituents are not going to receive the cheap power they received before, and things like that, it might put a damper on some of this. But, of course, Reclamation *is* looking toward privatizing single-use facilities.

For instance, we have a dam, I understand, that just serves Norman, Oklahoma. It provides water for the municipal water supply, doesn't have any other uses to speak of. And that seems like the kind of prime candidate that we ought to give it to Norman, Oklahoma, and let them operate and maintain it so that down the line we don't have to do any major maintenance.

Mermel: Well, it's a natural. But, mind you, the Bureau of Reclamation was created in 1902 when the West needed encouragement to develop.

Storey: That's right.

Mermel: And the Bureau of Reclamation performed a tremendous function to stimulate that. But look at what private people have gone beyond. Salt River Project, Sacramento River, a municipal district, why, they don't rely on the Bureau anymore because they need more money than Congress can give them, and they're building their own facilities with bonds. The Salt River bonds are really [valued quite highly] ~~prized quite heavily~~ and then they're sold in the East and they're recognized as being very good.

Now, what really happened is that the government encourages this by giving them interest-free money. Now, surely under today's circumstances, why shouldn't the Westerners go to Congress and get interest-free money? I'm sure you'd like to have your house paid for over forty years, interest-free. That would be a great deal.

### **Subsidies on Reclamation Projects**

So I think that the time has come where the people of the East, or the taxpayers, let's say, will realize that these subsidies are really unnecessary for the

development of the West, and they're beneficial for a certain class of people, and, therefore, the politicians are keeping that alive, and they're going to keep it alive as long as they can. But sooner or later, it's going to come to an end.

TVA is almost acting like a private outfit. There's a semi-arrangement with—they're issuing bonds and so forth. So that will happen to the Bureau of Reclamation, too. That's why it doesn't look too good for, let's say, engineers in the Bureau of Reclamation. It's a sad story, but you go through that transition.

Storey: Yes, times are changing, that's for sure.

### **Reclamation Is No Longer Doing New Things**

Mermel: Well, when I started in the Bureau in the thirties, I think the Bureau was on a pedestal in the engineering world. Today the Bureau of Reclamation is hardly even mentioned worldwide, and their engineering talent has gone to the dogs. Surely we can say that there's still a concrete manual which we issued in 1950 that's still a textbook. But we are not doing anything new, and we will not gain any engineering status in the engineering world if we don't have any projects to build.

Storey: But speaking of those days back when we had the hydraulics lab, for instance, last

time we talked, you talked about technology transfer where we went out and got the technology from foreign countries.

Mermel: Yes.

Storey: Are you familiar with any instances where technology developed at Reclamation was then exported to other users?

### **Export of Reclamation Innovations to Other Countries**

Mermel: Oh, definitely. When we attended the international organization meetings like large dams or irrigation and drainage,<sup>19</sup> they looked to the Bureau of Reclamation as the key spokesmen on technology, and the Bureau presented a lot of papers and—well, concrete was probably the Bureau's recognition and then soil mechanics. Jack Hilf wrote some very good papers, and Jack Hilf, his name actually was internationally recognized [among] in the large-dams people about his soil mechanics philosophies and theories and papers that he wrote.

### **Commissioner Daniel Beard's Durban, South Africa, Talk**

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19. Referring to the International Commission on Large Dams and the International Commission on Irrigation and Drainage.



Actually, well, when I was traveling with the Commissioners, whether it was Mike Straus or Dexheimer or Armstrong or even Dominy, we shipped out two-, three- boxes of Bureau books that we put on a table to give, and they would be snapped up right away. Everybody was anxious to get them. Actually, the last meeting we went to, it [Bureau of Reclamation] wasn't any recognition even mentioned. Now, the large-dams meeting in Durban, [South Africa,] when our Commissioner made the final speech, well, it was a eulogy that you make at a wake. (laughter)

Storey: This was Commissioner Beard?

Mermel: Yeah. And it was a sad story to listen to it. A lot of people that knew me as being connected with the Bureau saying, "Well, gee, whiz, the Bureau is sure destined to be ended, to be disintegrated." Well, there's no doubt that the Bureau is going to slowly wither on the vine. There's no question about it. It's a sad story. *But* the Bureau *was* on the forefront.

***"But the bureau was on the forefront."***

Well, Hoover Dam really made the key. When Hoover Dam was built, it was an outstanding engineering accomplishment. It was a risk never before taken. You've got to give credit to Savage,

and you've got to give credit to Nalder, to Harper, and McClellan, because they had the imagination to move in that direction. The laboratory really was an outstanding laboratory, and people would come visit the laboratory from all over the world. Today there isn't any laboratory to visit. The laboratory probably reached its peak when it bought that big testing machine. That big testing machine, there were only three or four of them in the United States, and here the Bureau of Reclamation had one. It did a lot of research work and we wrote a lot of papers. I'm telling you, well, while I might have been doing a little prodding, Dominy supported professionalism and so did Armstrong, so did Dexheimer.

#### **R. F. Blanks and the Laboratories**

Well, Mike Straus, he was proud. Mike Straus was very proud of the laboratories, except at one point. The laboratories were headed by R. F. Blanks. I don't know if you remember that name, but he was the head of the laboratories during the Hoover Dam days, and he was the outstanding laboratory man.

Storey: That's B-L-A-N-K-S?

Mermel: Yeah. Blanks.

Storey: Like in blank bullets. Okay.

Mermel: Blanks. And he was head of the laboratories. Just about the time when the Bureau of Reclamation was reorganizing, there were hearings on the Hill that the Bureau of Reclamation should reorganize and regionalization and all that kind of stuff. By some means, Bob Blanks was invited or got invited on the Hill to [give] ~~make~~ some testimony, and he talked about the Bureau of Reclamation and so forth. One of his phases of testimony was that the Bureau of Reclamation should have an engineer as a Commissioner. Mike Straus was Commissioner at that time.

Well, Bob Blanks cut his [own] throat, because Mike Straus was supporting the laboratories. He was very enthusiastic about it. When he said that, well, it sort of upset him, and it wasn't very long, maybe a couple of years, Blanks retired. I don't think there was any pressure that I know of, but he felt uncomfortable because probably the Commissioner didn't show too much personal interest in him. So that was an unfortunate thing.

**"The Bureau doesn't have to have an engineer as a Commissioner. It has to have an administrator . . ."**

The Bureau doesn't have to have an engineer as a Commissioner. It has to have an administrator, and Floyd Dominy was one. He did very well. Mike Straus did

very well. And Dexheimer, as an engineer, wasn't the outstanding person to head the Bureau of Reclamation. He was an engineer, but he wasn't a politician.

Storey: Did he support the laboratories?

Mermel: Dexheimer, well, yes, he supported Denver very, very much. But it's getting the money from Congress to build projects that brings side money to support the laboratories.

Storey: Let me say the labs are still there and they're still functioning. They've changed their direction a little bit. They're still there.

Mermel: But where are the papers?

Storey: That I don't know.

### **Decline of Reclamation**

Mermel: Where in the civil engineering magazine or the electrical engineering magazine or in international magazines or even in the Congress papers [on] of large dams [or] and irrigation and drainage?<sup>20</sup> The Bureau of Reclamation doesn't have papers there. Well, somebody can tell you that I'll show

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20. Again referring to the International Commission on Large Dams and the International Commission on Irrigation and Drainage.

you an exception. Sure. But not the kind of welcome that we had in the old days.

Storey: Were there other areas you can think of particularly? You mentioned soil mechanics with Mr. Hilf.

Mermel: Yeah.

Storey: Were there other things? Maybe valves, for instance?

Mermel: Oh, yes, yes.

Storey: Or modeling? Or . . .

**Bill Beaty, Chief Mechanical Engineer**

Mermel: We had a Chief Mechanical Engineer, Bill Beaty. Now, he was a remarkable mechanical guy, and actually in the Bureau of Reclamation there were a lot of patents issued on valves and various things. They were dedicated to the public. This was a small, little internal problem, because some of those patents were applied for in the names of the engineers while they were employees of the government. So in order to avoid conflict of interest and so forth, they were assigned to the Bureau, see, which cleared that thing. But there were quite a few of the patents on the valves and gates.

The Bureau did an outstanding job in designing hydraulic works. In those days, they issued a book on hydraulic works. It was very popular at the large-dams meetings, and it was very much in demand. , I think, was the name of it. I bet you can't even see it now anywhere. You won't find it.

### **Hoover Dam as a World Leader in Dam Development**

Talking about exploitation, following the war, the Bureau began traveling to these various countries and they did find that there were developments going on elsewhere. Well, Hoover Dam, when it was built—I'll repeat this again—it was the largest dam in the world, the largest reservoir, the highest voltage, the largest generating units in the world, and today they're in about thirty-third place. But Hoover Dam sparked the thing. From Hoover Dam, other dams have been built. You have Vaiont Dam [Italy] and you have Kariba [Africa] and you have Guri [Venezuela] and you have others.

Then the Russians went into develop earth-[filled] ~~volume~~ dams. Fort Peck was built, which was an outstanding mass-earth dam. It was the largest in the world. And the Russians started building a lot of them. This technology of the United States was spread, but we slowed down and the rest [of the world] started running.

I had a paper that I wrote at some time trying to show where the leadership of dam-building was taking place by the trends, and made a graph where Hoover Dam was built, a few years later some other one outstripped it and outstripped it and outstripped it. And when we were arguing<sup>21</sup> [about] ~~on~~ the Third Powerplant size units, I made a paper and presented it to the Society of Mechanical Engineers in New York, and I forecast that there would be bigger units. I had a graph and I had some pictures that I took while in Russia on a trip. You should get a copy of the report that was written after Udall went to Russia. Naturally, I was the ghostwriter. But, anyway, Udall prepared a report on his visit to Russia, and he admitted in that report that there was technology for us to look at.

So it's unfortunate. The Bureau is withering on the vine. The laboratories are not going to be cost-effective because there are many laboratories all over the world now. You take Holland has laboratories. India has laboratories in the irrigation field.

Storey: Was your paper ever published?

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21. Ted Mermel suggested the word "arguing" be replaced with "deciding." However, given the nature of the discussion, it does not appear to the editor that he misspoke in this instance.

- Mermel: Sure.
- Storey: Where would it have been published?
- Mermel: Oh, in the mechanical journals. It must have been in the '65 period, someplace in there.
- Storey: Thaddeus Walter Mermel.
- Mermel: Right. Well, T. W. I generally don't use Thaddeus or Walter except on my bank account and my will. T. W.

### **Max Kight and Ces Kilgore**

Well, you ought to see Max Kight. He's in a nursing home probably. But even so, there was a brilliant guy. He stimulated the electrical world. There was another fellow, let's say, on equal, let's say, capability rank, Ces Kilgore. Ces Kilgore was an electrical mechanical guy. And then, oh, at some time or other he left the Bureau and created an engineering organization in Denver and hired quite a few Denver boys and created quite a company. I would say he made a smart investment. Later the company was bought out by another company and he went to Hawaii and retired in Hawaii. Kilgore died not long ago, a couple of years ago, maybe.

Another dam leader was Rawhouser. Rawhouser was a leader in—I



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think his specialty was outlet works, and he was in Hawaii. He retired to Hawaii.

Storey: Well, now, as the Assistant to the Commissioner for Engineering, or in your earlier title, did you ever find you had to fight to give the laboratories the support they needed?

Mermel: No. But we found this, that Mike would—

Storey: Mike Straus?

Mermel: Straus, yeah. Would make demands, "Now, give me some things." He even would carry around some of these engineering reports. When he would go to the Appropriations Committee to ask for money for the laboratory, like, for instance, in getting that big machine, that was a big item in the budget, because it would be distributed ultimately to the overhead on projects. But it was an impact.

Storey: I've forgotten the name of it now.

Mermel: What? The testing machine?

Storey: Yeah, the testing machine.

### **Supporting Foreign Meeting Attendance**

Mermel: Well, it's a compression testing machine. At that time, there weren't more than four of them in the United States. And the

Bureau, no doubt, wrote a lot of papers [because of research with] ~~on~~ that [machine]. I'm sure if you'd just make a statistical study by going through the fifties and sixties and see how many Bureau of Reclamation authors you could find and how many authors you can find today, you'd find a big difference. But attendance at meetings had to be approved by the Commissioner, because foreign travel had to be approved by the Commissioner. Sometimes later we had to even have it approved by the Secretary. Naturally, being an Engineering Assistant to the Commissioner, it was my job to get the justification and so forth and get Denver to name the people and give me the supporting material as to what is it that they're expecting [to do or find] and so forth.

We had delegations, five or ten people, going to some of these conferences, and they would bring back papers from all over the world and they were outstanding people. Then they got in *Who's Who in Engineering*. Mermel got himself in *Who's Who in America* and *Who's Who in Engineering*.

Storey: Were there any other particular areas where Reclamation was developing technology that other people then used, that you can think of?

**Litani Project and W. R. Nelson**

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**Bureau of Reclamation History Program**

Mermel: Well, this was one of the reasons why the Bureau was sent, why W. R. Nelson went to Israel and Baghdad and that part of the world. We had a big project in Lebanon, the Litani Project, and we had a big team of people there. Leroy Snyder was one of the people that I knew was there. Corfzitson was another man that went on that Litani Project. They stayed there about four or five years, and it was Bureau of Reclamation, the Bureau of Reclamation *team*, and there were a lot of teams all over the world.

See, there had to be an arrangement so this could be funded properly so it didn't want to go into the irrigation projects. It had to come out of some different kind of category. We got, in cooperation with the State Department, and the State Department would get the foreign government[s] to ask the State Department for assistance from the Bureau of Reclamation, and they would give money to the State Department and the State Department would give us money for those particular teams.

#### **United States Agency for International Development (Aid) and Reclamation**

Then later, AID was created and AID was a mechani[sm]es for doing that. Today AID probably doesn't call on the Bureau very much, but we do have some

teams now. I think we've got a team in Egypt. There was another big team in Australia a long time ago.

Storey: I think there may be one [in] ~~on~~ Saudi Arabia, one in Brazil, perhaps.

Mermel: The Snowy Mountain Project, when it was just being built.

Storey: In Australia.

### **Training Engineers from Other Countries**

Mermel: There used to be a tremendous number of trainees coming into the Bureau of Reclamation from foreign countries, and they would pay their stipend to the Bureau for training. Well, there was one guy in the [World] Bank from Thailand. When I got there the first time, he says, "Well, Mermel, you're from the Bureau of Reclamation. Did you know McClellan?"

I said, "Sure."

He said, "Well, McClellan came out to Thailand, and we sent a team [to the Bureau for training." This fellow became a trainee in the Bureau of Reclamation, and he came and headed an irrigation division in the World Bank.

Storey: Do you know the origins of the international program at Reclamation?

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### **Bureau of Reclamation History Program**

**S. P. Wing and Reclamation's International Technical Program**

Mermel: It's an interesting story. Way back when, in the early thirties, there was a librarian in Denver who was a son, no doubt, of a professor in the University of California, and so forth. He might have been an educator himself. But his name was S. P. Wing.

Storey: W-I-N-G?

Mermel: Just a plain wing.

Storey: Like a bird wing.

**Distributing Foreign Technical Information Through the Library**

Mermel: Yeah. And he was the head of the library, and he was the collector of all [interesting] international documents [relating to Bureau interests] that he could find to get into the library and disseminate them [to engineers] in the office. As the big program grew and a lot of the information was coming through our [Library of Congress] congressional channels and this technical translation, joint translation outfit, was established in Washington, he got transferred to my division. I was Engineering Assistant, so I had the engineering people there. So he was the one. Now, he was really the originator of

the interchanging of people, contacting the State Department and getting the requests from the State Department to the Bureau of Reclamation and so forth. He was the [innovator] ~~working guy~~ in this thing.

Following him, there was a man by the name of Corfiztson that did the same thing, because he went on some of these organizations [trips]. Unfortunately, [Mr. Wing] ~~he~~ went to the doctor for a physical and he died in the doctor's office of a heart attack. But he was a *dedicated* technology professionalism guy. He was a—I wouldn't call it a bookworm, but a book researcher worm. [I give him credit for creating the idea and movement.]

That created, then, [enough] Denver's interest to catalog these various [technical references] ~~things~~. Then McBirney , Warren McBirney, son of McBirney who was in the Canals Division, took up this thing. You ought to look up the history of that. We set up a computerized dissemination program. I mentioned that to you, I think, before. Every engineer expressed five subjects of interest that he wanted to be kept tuned in on. As library material came in and was indexed, he would be coded to see that article. If it was an article on some soil mechanics or something like that, well, then those people in soil mechanics would have that article routed to them. This was a tremendous benefit to the Bureau. Now,

naturally, as the Bureau started shrinking, that program died and dropped out, and I don't think they have it today.

Storey: That's one side of the international technology interchange. What about the program for bringing people in and training them? Do you know where that originated in Reclamation?

Mermel: Well, again, the same thing originated through Wings' contacts with State Department, and requests from Thailand and requests from other countries came through that area. He was the liaison man that could bring it. But the request originated from our people going to these international meetings and the international people saying, "We'd like to send [people for] training." So the person would say, "You make your request on the State Department and we'll cooperate."

Storey: And when did that begin, do you know?

Mermel: It must have been the fifties, in the fifties, because the Bureau was quite an outstanding thing in the dam field, when we [helped] organized the Congress for Large Dams in 1958 in New York. Dexheimer was a chairman of the organizing committee. Frank Friel from Philadelphia was the chairman of the committee, and I, being the attaché to Dexheimer[, traveled with him] when he'd

go to the meetings, we saw what they needed and so forth. The Bureau of Reclamation offered, let's say, visits to the laboratories. Part of that congress had a tour to the laboratories, [also a] tour to Grand Coulee, there was a tour to TVA and so forth.

END OF SIDE 1, TAPE 1. SEPTEMBER 8, 1995.  
BEGINNING OF SIDE 2, TAPE 1. SEPTEMBER 8, 1995.

Mermel: ... Thailand people, Indian people, Egyptians, there were a lot that have come in [to the Bureau for training]. So we were an outstanding outfit much in demand.

### **Gathered Information about Dams of the World**

Now, when I attended those meetings, Frank Friel was the chairman, and I'll tell you the origin of the Register of Dams. I had, as a matter of a hobby, in the Bureau, a drawer [filled] with cards. Every time I saw a newspaper article that Russia has built a dam on the Volga River and it's got so many units in that, I'd make out a card and put it in there. The next time I saw the thing, it gave me how high it was. The next time I saw it, they gave me how big the reservoir was. So I had [assembled] cards of all the [major] dams of the world. Oh, I had probably about 2,000 cards, and I had about 600 cards of the United States [dams] alone. Now, I picked that [information] up and would jot



it down [on the card] and put it in [the file]. Sometimes I would get it out of a publication, attending ASCE and so forth.

**Created a Register of United States Dams for the Organizational Meeting of the International Commission on Large Dams**

Well, when we went to the [organizing meeting for the International Commission on Large Dams] congress, we said, "What can the United States offer to the people of the world, some kind of a gift?" I came up with the idea and says, "Let's create a register of dams in the United States and distribute it free to them."

Frank Friel says, "Mermel, that's a good idea. What can you do?"

I said, "I've got 2,000 cards. I have a good start. I can build that up into a book."

He says, "How much do you think it will cost?"

And I said, "Well, \$10,000."

"You've got it." Just like that. Frank Friel.

Storey: Who was Frank Friel?

**Frank Friel**

Mermel: He [had] ~~was~~ a consulting engineer[ing] firm in Philadelphia, and he was chairman of this organizing committee of the congress.

Storey: This is the International [Commission] ~~Council~~ on Large Dams?<sup>22</sup>

Mermel: Yeah. So I, as a hobby in my basement, collected a lot of data. Naturally, Dexheimer gave me a little leeway using stenographers and gathering some material in the Bureau and whatnot. I created a manuscript, and at one of the meetings turned it over to them. McGraw-Hill said they would publish it. McGraw-Hill published [5,000 copies of] it. Oh, I don't know. I gave all my copies to my grandchildren, and I don't have one myself.

Storey: But, you update that list annually, don't you?

Mermel: Well, but this was the *first* register of dams of any country in the world, and it had in there, I think, oh, about 700 dams [in the United States]. But what was nice about it, it had pictures of about 100 dams, photographs, very nicely done. The book was published. You ought to find it in the library, *Register of Dams in the United*

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22. International Commission on Large Dams (ICOLD).

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*States*, 1958. My daughter's got one here in the library. But I don't have one myself.

Years later, we updated it in '63. It had this kind of format. The format stayed the same. These were great big sheets. I rented a typewriter and the U.S. Committee on Large Dams paid for the rental of the typewriter, and I hired some girls in the basement in my house to type this. They typed this and the manuscript was created, not by the Bureau but by the committee.

Storey: And then it was published, though.

Mermel: It was published. It was published [by McGraw Hill] in a hardbound black cover. This [copy] was an updating that the committee did later [pointing to the 1963 printing].

Storey: But it was published by ICOLD or by the U.S. [Commission] ~~Commit~~ on Large Dams?

Mermel: No, it was published by the U.S. Committee on Large Dams.

Storey: Committee on Large Dams.

Mermel: Yeah. Now, by that time, Bloodgood was chief engineer in '63, see. By the way, Barry Cooke, he's a rock mechanics consulting engineer, he's still alive. He's in his nineties and he attended the meeting

that I was to in Oslo. Stewart Brown from [the] Federal Power Commission. See, we were in a very high-class group of people. Here's a list of outstanding—well, Floyd Dominy was Commissioner. ~~He was consulting engineer.~~ Friel, Frank Friel, he was Albright & Friel in Philadelphia.

Storey: That's F-R-I-E-L.

Mermel: Yeah [pointing to picture]. He was a Corps of Engineer man. Corps of Engineer was very active in this thing, too. Wendell Johnson was from the [Corps of Engineers] ~~Federal Power Commission~~. At that time, he was. McCarthy of TAMS [Consultants, Inc.]. Slichter, [also] ~~he~~ was from [the Corps of Engineers] ~~Federal Power Commission~~.

Storey: How did this register of U.S. dams evolve into your international register that you publish annually?

### **Issues Involved in ICOLD Agreement to Publish a World Register of Dams**

Mermel: At the Congress on Large Dams in 1958, when the committee met, then every member had a copy. They printed something like 5,000 copies, and there were about 2,000 copies distributed [free] at that meeting. The committee made a motion that a world register should be created emulating the United States register. Well, there were a lot of people

saying, "Well, for security reasons, we will not give you a register." Like some of the countries.

So a resolution was passed that those countries that are willing to cooperate should submit the thing. At one time, they wanted to have the location, and we said only have the nearest city. But some of them thought maybe we ought to have the geometric, the latitude and longitude. But that was only mentioned to irritate those or to stimulate the reasons *not* to give it, because they said, "Well, missiles will be pointed at those dams if there's a war. For security reasons, we don't want to give it to you."

Well, about, oh, sixty countries voted. So they passed and created a committee. Guthrie Brown of England was made the chairman. I was made part of that committee representing the United States. The first [version] of that [world] register is, well, someplace down in my basement. [They] ~~it~~ tried to make it a loose-leaf thing so that you could replace [pages] things, but that didn't turn out to be practical. But pretty soon the countries realized that aerial photography was pinpointing all the dams all over the world, that this idea of not listing it was silly. So everybody started submitting dams, and now there's probably, oh, 6,500 dams listed.

- Storey: What are the criteria for being listed?
- Mermel: The criteria for listing were set up by the definition of the World Register of the Committee on Large Dams. They said fifteen meters [high], that's forty-five feet, fifty feet, and anything below, not. Then the next criteria, it had a large reservoir. It could be fourteen, fifteen meters and create a large reservoir. The size of the reservoir was another criteria. If it had a large spillway, it would be another criteria. This was primarily to give the small countries an opportunity to participate in the register, because a lot of them didn't have dams 300 feet or 400 feet high. So most of the countries would say, "I don't have any dam to list." So that's why the fifteen meter was brought down low enough, so countries that at that time didn't have big dams could participate. And there are a lot of countries still that don't have a dam over 100 meters, which is 300 feet.

### **Current Lists of Dams Prepared for Publication**

Now, later, as time went on, I took on as a private job of my own preparing a *current* list of dams that were being built in that particular year that were [over] 150 meters. I selected 150 meters so I wouldn't have such a big list, and I found that there were about fifty dams in that category every year in active construction.

As far back as the sixties, I contacted the *Britannica*, *Encyclopædia Britannica*, and at one time they even wrote me a letter to write an article on a dam and so forth. So I wrote an article and then later they came with the idea how about a table of current dams. And up til today, I'm an author in every annual [published by *Encyclopædia Britannica*]. What's this? '86. I prepare every year for them—naturally on my own time—engineering articles. They cover bridges, buildings, so forth, and then they would cover dams. They would ask me to write this article here, and [I would] give a list of dams currently under construction in that year, and then dams that were completed in the year. That would be revised every year. Just for your edification. There's T. W. Mermel [displaying a copy of the annual of the *Encyclopædia Britannica*].

- Storey: Down in the corner of the chart.
- Mermel: And down here as the author of the article.
- Storey: Didn't you show me a list that's updated of the highest and the biggest dams in some magazine, also?
- Mermel: Now, this was going on every year. Well, as time went on, the [*International*] *Water Power [and Dam Construction]* magazine editor said that they would like to publish

something like that, but they'd like to publish just dams, largest dams in the world, and again they contacted me and we selected [as] criteria [dams] 150 meters [in height] that are finished, see. And that would only make, oh, about 300 or so.

So in the engineering magazine, up to now, a recent magazine, every year I would update the list and they would publish it *annually*. But this would cover all dams in existence in the world, brought up to date. So this little exercise was bringing in the current ones, and then that I would feed also into that list, and they would have that list.

Storey: And there were maybe 300 of them?

Mermel: Yeah.

Storey: How many of them would be Reclamation dams?

Mermel: Not too many. Well, the Bureau, probably total, has 120 dams, maybe. There should be about 100 of them in here because—now, see, this happens to be 1992. This is called a handbook.

Storey: *[International] Water, Power, and Dam Construction [Magazine]*.

Mermel: Yeah. Yeah. There I would be called upon to give them a list. "Dams and Hydroplants" by T. W. Mermel. This



shows the twenty-five highest dams: highest dams, all types; highest dams, concrete; highest dams, embankment; highest dams in volume; largest capacity reservoirs and so forth.

Now, to give you an idea of the highest dams, see, Hoover's in ninth place. That was in 1936. 1963-'78, Russia. Honduras has one. India. China is under construction. This one is finished in Russia. Vaiont. Vaiont, the Italians did a remarkable job [and advanced dam construction]. And then the Swiss. The Swiss got the highest one. Grand Dixence is the highest of concrete.

Now, when you talk about largest embankment dams, Russia has [one] under construction, is Rogun [Tajikistan]. They constructed Nurek [Tajikistan]. Now, mind you, what the height is, 300 meters; ~~that's 600 feet.~~

Storey: Nine hundred feet.

Mermel: Nine hundred feet, yeah.

Storey: Yeah. That's pretty high.

Mermel: Yeah. That's higher than the Washington Monument. Washington Monument is 556 feet.

Storey: Then New Melones [California].

Mermel: Now, that was supplemented by countries, listing the dams by countries. Now, you'll find in some of these countries the dams aren't very high. You take Kenya. Here's one in Kenya. They only have one, 153 meters. In the Philippines there's only one, 114 meters. So the idea was to bring this world register to fifteen meters so a lot of the countries could participate.

### **Listing of World's Largest Turbines**

Now, this list is "[dams] under construction." This is "completed." I was asked to always update this. Later, she[, the editor,] got a guy that was interested and he started classifying pump storage projects. That's not my invention. And then he has here another one on a different category that he put in there. World's largest turbines, see. He's trying to interest turbine people to participate in [their magazine].

Storey: And Grand Coulee, it says, is number one [in turbine size].

Mermel: Well, Grand Coulee. But Itaipu [Brazil/Paraguay] has now got a larger unit. Now, this megawatt capacity is not the official megawatt that even the Bureau recognizes, 838 megawatts is not.

Storey: That says mv.

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- Mermel: The units were rated when they were bought. They were rated 700s, see. Then Itaipu came [with] ~~and was~~ 740s, and Guri has 725s. This is questionable.
- Storey: The 838 mvs? Megavolt? Is it megavolts?
- Mermel: Well, megawatts [mW]. But they indicated the turbine capacity. Probably they rated that way. But this was supplied by the manufacturers. See, the magazine encouraged the manufacturers to supply the data on that. That you can see. See, Grand Coulee units here, these were the 500s. Now, here, evidently, this is rating on the turbine and not on the generator. The generator would probably be—you notice the head is 87 meters, while here at Itaipu is 118.
- Storey: And 146 at Guri.
- Mermel: G-E-N of Canada furnished the turbines.
- Storey: At Grand Coulee.
- Mermel: Yeah. And at Itaipu the Europeans got it. Krasnoyarsk [Russia] is the one that we visited. They're the ones that [inspired] ~~urged~~ us. I mean, this is what drove us. If they could do it, why couldn't we, see? And before Bratsk [Russia] is around 200, and we visited Bratsk. That's where the picture of the hollow shaft was and we got

the Secretary [Udall to see that]—in Guri, for instance, see, they're [only] 265.

**"I made a forecast that there would be 1,000-megawatts units. . . ."**

But, see, the paper that I wrote—I've got a copy someplace downstairs; I'll have to send a copy to you—in there, because I made a forecast that there would be 1,000-megawatts units. At that time, the audience sort of giggled and says, "You're imagining. You're running away with your imagination."

Storey: Have they gotten there yet?

Mermel: No. No, but they're actively considering that size in Russia. Before Communism fell apart, the—anyway, I've got to show you something else. Before Communism fell apart, they got a big powerplant on the Lena River, and that powerplant on the Lena River is so large that they were thinking of putting 1,000-megawatt units in there.

The Three Gorges Project [China] ought to have probably those size units, but the Chinese do not have the manufacturing capacity to make those kind of units, and they are worried that they probably won't be able to make the 500-megawatt machines. [But they are working on having them Chinese-made.]

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Storey: Let's see, I believe it was Bashore who asked you to come to Washington?

Mermel: Well, I'm trying to bolster my ego. I would like you to recognize that *Water and Power* magazine [has a list of] editorial consultants, now, there is an outstanding man, Mosonyi. He's a Hungarian, but he teaches in Germany. Then Mermel is in there. Votruba is from Czechoslovakia. And these were added. But at first there were only three: Mosonyi, Mermel, and Votruba.

Storey: Mosonyi, —O-S-O-N-Y-I, and Votruba, V-O-T-R-U-B-A.

Mermel: You know, it gives you a little ego.

Storey: Yeah. That's nice.

Mermel: Now, we live on that. So the *Britannica*, by the way, the *Britannica* pays me in kind. They give me a set of encyclopedias for writing the article. So every grandchild in my family has the *Encyclopedia Britannica*, and some of my friends and so forth, because when I get it, naturally I give it. My neighbor here has a set because I gave it to him for Christmas, because he's had some boys just growing up at that time.

By the way, have you got a world atlas in your own home?

- Storey: Yes.
- Mermel: Well, I was going to give you one if you didn't have one.
- Storey: No, I do have one. I appreciate it, though.
- Mermel: *Britannica* has given me atlases, in addition, and then I also give them to those who I think that are interested in world events.
- Storey: What was your title when you moved to Washington?

#### **Organization of the Washington Office upon His Arrival**

- Mermel: Well, my first title was "engineering liaison," because W. R. Nelson was "engineering assistant." Then when Engineering Assistant [Nelson] ~~he~~ went someplace or reorganization, they made me "engineering assistant." Then the reorganization happened, and they created a Liaison Office where they had "power utilization." McPhail was in [that] ~~one~~ branch. Operation and maintenance, and I think that was Lineweaver. Then there was project planning, which was Dixon. Then there was [an] Engineering Division. No, it wasn't Engineering Division in there. O&M, project planning, power. Oh, program and finance. But I was put as an appendix to the Commissioner as "engineering assistant," see.

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- Storey: Did you have any staff then?
- Mermel: Oh, yeah, about thirty. Yeah, I had about thirty to thirty-five people. I also had about—
- Storey: So you were a division chief?
- Mermel: —six draftsmen. Six draftsmen were in the office.
- Storey: What was that office doing?
- Mermel: Well, we were busy. We were making publications. The information division was busy putting out press releases and so forth. The Drafting Division primarily was preparing illustrations for publications.
- Storey: So you had more than one division under you?
- Mermel: Well, there were about thirty people. There was one called "engineering," that handled contracts. It was headed by K. K. Young. Contracts that came in that had to be cleared by the Commissioner came in to K. K. Young, through me to the Commissioner. So in other words, the Chief Engineer was only authorized to sign a contract, I think it was, \$300,000 or a half a million dollars in those days. When it came to half a million dollars, it had to come to the Commissioner with a justification. The bids were opened in

Denver and so forth that it was a recommendation for award.

### **Politics and the Management of Contracting**

Now, if it was, I think, \$5 million or something, it had to go to the Secretary. Now, the reason, it was not for challenging the review or adding it to anything [but] for political dissemination, see, because if the contract was awarded in Kansas to some contractor there, Mike [Straus would] or so called up the congressman and [tell] ~~to~~ him, "Your [constituent] congressman is going to get awarded a contract for \$5 million on this particular project." And the congressman would call the contractor, and the contractor hadn't even been advised by the Bureau yet, felt proud that his congressman had something to do with it. And this is politics. Naturally, the contractor sort of felt some indebtedness to the congressman and at least voted for him.

But it was for political announcements, and when it was in the millions of dollars, it would [get] ~~got~~ to the Secretary's office and sometimes the press release was issued by the Secretary or by the Commissioner, "The Commissioner announces award of contract for \$5 million to Such-and-such and Such-and-such-and-such." The public relations people made political hay out of it, because if the Chief Engineer in Denver is awarded a contract,



only the contractor ~~would know~~ and the Chief Engineer [would know]. All the congressmen on the Hill knew it and the Appropriations Committee knew it, and that's how you got money.

Storey: And K. K. Young worked for you?

Mermel: K. K., yeah, worked for me, and he had about five people under him and about three girls.

Storey: And this was in the reorganization in '44-'45?

Mermel: Yeah. Yeah. Then we had a division which was this Foreign Activities Division. This was called Research Division, and they were the ones that were supporting research. Now, we had a big program on evaporation suppression. I don't know if you remember that.

Storey: I'm aware of it.

### **Studies on Ways to Reduce Evaporation**

Mermel: Oh, what was the name of the guy in Denver? I've got a picture of him in the basement, and if I looked at the picture I'd remember his name [Garstka]. Anyway, that evaporation program took several million dollars, and it was going on for at least ten years, and we were finally coming to the conclusion that it is an unrealistic

expectation that you would really make it cost-effective.

See, this was distribution of some chemical molecules over the reservoir which created a film over the reservoir area and it prevented evaporation. Call it an oil slick if you wanted to, but it wasn't. It was a molecule. The fish started liking it and they started eating it, and that's where you had to replenish it. Another thing is, when the wind came, the wind would shove this thing and it would pile it up on the shores, and you had to replace it. Then if it was wavy, it would break up and the effectiveness wasn't there.

Now, the research on a quiet pond produced *very* good reports, and on irrigation ditches and irrigation ponds where there were small reservoir areas and there weren't big waves and so forth, it was all right. Technically it was, but practically it didn't work. Toward about the tenth year, I think we were putting in about a million dollars in it.

Storey: Annually?

Mermel: Annually. And that was a little too much. Well, we wrote a lot of reports and there's a lot of flowery reports and a lot of irrigation people were interested in it, and it made good publicity that you can save water for very little. It looked very good. But when it came to showdown, it couldn't.

Then finally Dominy had to say, "Well, we'll have to call it quits."

END OF SIDE 2, TAPE 1. SEPTEMBER 8, 1995.  
BEGINNING OF SIDE 1, TAPE 2. SEPTEMBER 8, 1995.

Storey: This is tape two of an interview by Brit Storey with Ted Mermel on September 8, 1995.

Dominy decided the anti-evaporation using chemicals had to go?

Mermel: Well, he liked it. He liked it, and he supported it for many years. Garstka was the guy's name.

Storey: How do you spell that?

Mermel: G-A-R-S-T-K-A.

Storey: T-K-A?

Mermel: Yeah. T-K-A. Garstka.

Storey: Did you have any role in the decision to discontinue the project?

Mermel: I probably put my vote on discontinuing the project, because we'd done it for a long time and we were not—we were getting a lot of reports, but we weren't getting any evidence that you could continue it. But there were many reports written on it.

Now, it was a good research project. There's no question about it.

### **Studying Earthquakes, Dam Construction, and Auburn Dam**

Now, another thing we started out, we bought an earthquake shaking machine, because we wanted to determine whether certain dams can take an earthquake. When we ran into building Auburn, we got a lot of environmentalists and technical people saying that it's an earthquake area and they opposed it. Now, we spent probably \$20 million on Auburn, building tunnels, and the dam was about ready to go and we had to kill it.

### **Auburn Proposed as a Thin Arch Dam**

Now, I think there *will* be a dam built in Auburn, but a different type. But at that time, we had a very thin arch dam in Auburn. The designers were proposing a thin arch dam. But when the earthquake people started—oh, actually, it was a campaign in California against the dam. Not the local people. The local people all wanted it. There were a lot of people who wanted it and it's still needed and it's still a necessary project. But they've got to find the solution to satisfying it. Now, I think the Corps of Engineers has a proposal now that they may put an earth dam in there.

### **Walt Price Headed the Laboratories after Blanks**

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**Bureau of Reclamation History Program**

We started out an earthquake shaking table, and the laboratory made a lot of studies for how soil has to be compacted, how the rock will be affected, and things like that. We really had a very advanced team in there. Following Blanks, I believe Walt Price came in there. He was a very active and good laboratory leader. He built up that laboratory.

Storey: Well, then the laboratory people worked for you?

Mermel: No. No. I was actually the Commissioner's advisor in the area of that, and I was a line to the Commissioner and no line to the Denver office, see. But Bellport didn't like that I had the Commissioner's ear and that the Commissioner sort of relied on whatever analysis I would provide him. After all, he wasn't dumb. He was pretty smart, too. You don't have to know that if Russia can build a 500 megawatt machine and puts out reports saying that the larger the unit the cost per kilowatt hour is smaller and the cost of the power building is smaller, the cost of all of the appurtenances is smaller. So it was an economic issue, *but* there are technical problems, cavitation on the turbine runners, and Bellport was governed by his turbine man. I forgot his name. He was dead against it because he says we hadn't had the proper laboratory experience in making runners so they wouldn't

cavitate. There's a technical name—"specific speed of the unit," the amount of water that goes by a blade and so forth. It creates a vacuum and the metal pops out and creates cavitation.

By the way, just the other night I was looking at the box in there and one of the boxes says "Arguments About Specific Speed." I searched a lot of the Russian literature. I took Russian lessons. I could read Russian technical literature. I could speak it enough for conversation with the Russians when I traveled to Russia. I've been to Russia about five times with either the Large Dams Committee or with the Commissioner, with the Secretary, with the World Power Organization, also.

There's also another thing, World Energy Congress. It's the old World Power Congress. Actually, the Large Dams is an offshoot of it. The interesting part about it, in 1935 the Department of Interior was the sponsor of the World Energy Congress, and it got money from Congress for this meeting. We tried to get some money for the 1958 meeting, and I think we got about \$50,000 from Congress to hold that meeting in New York. And I had to search up all the history, the literature, how in 1935 we made a request for congressional support of that meeting. I've got records down in the basement that all are going to the University of Wyoming.

- Storey: What other divisions were under you after the reorganization in '44, '45?
- Mermel: Well, I was always "engineering assistant," but we were supposed to be the advisor to the Commissioner, "assistant to the Commissioner." We had no line authority to any activity. Our responsibility was to the Commissioner.
- Storey: But you had several divisions, right?
- Mermel: We had special divisions. Well, we had the Engineering Division, we had the Research Division, and we had a Foreign Activities Division. I think that's it.
- Storey: Now, the Foreign Activities Division was the one that gathered data?
- Mermel: It gathered data and also arranged for meetings and arranged for interchange between the State Department and the Bureau for sending people. Then later they took the Foreign Division out and put it as a separate unit out of the thing, and Luke Cliff became the head of that division. It was the Foreign Activities Division, and then Foreign Activities *grew* so large that it was not part of my unit. So I only had Engineering and Research.
- Storey: When did that happen, do you suppose?

Mermel: In the sixties. In the sixties. Yeah, in the sixties.

Storey: So in the engineering—

Mermel: At first, there was a guy who was quite, oh, I would say, friendly with Dominy and so forth, and quite energetic, gregarious, full of vim and vigor and vitality. He was looking for a spot, and he gave it to him, and I can't think of his name. He was a forerunner of Cliff. He didn't stay very long. He went someplace else. But, yeah, it was a big operation. Foreign Activities probably had a million-dollar program just in travel.

Storey: When you moved to Washington, '42-'43, what grade were you?

Mermel: Well, let's see. I must have been either—I think when I moved to Washington, I got moved into a [GS-]14. And then when I became an engineering assistant, I got a [GS-15]. And toward the end I was in a [GS-]16, see.

Storey: Toward the end when? Say in the sixties?

Mermel: Before I retired.

Storey: Late sixties?

Mermel: I retired in the tenth step in the 16th grade.

Storey: You did that in '73, right?



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Mermel: Let me tell you this. Did I tell you my problems with Civil Service Commission?

Storey: No. Please tell me.

Mermel: Well, I don't care whether it's on the record because it's settled. I got a letter from the Civil Service Commission saying, "Mr. Mermel, we have reviewed your records and we find that we have overpaid you \$88,000."

Storey: When was this?

Mermel: This year. *Early* this year.

Storey: Really?

**Retirement Pay Was Higher than If He Had Stayed in His Job**

Mermel: "And we would expect reimbursement." So I had many meetings with them. I intended to hire a lawyer and everything else, and I made a research of all the legal aspects and whatnot. They made studies and I made studies and so forth that said that. They found that actually under the retirement program you are not supposed to get more money than if you had stayed and worked with all the escalations. My retirement was more than the occupant of the position, Grade 16, step 10, was getting. Because of the RAMSPEC of the COLAs [Cost of Living Allowance],

inflationary things were faster than the actual raises.

Storey: From the actual salary increases.

Mermel: Yeah. So they had to recompute it, and they said that the problem was that they used that formula, but they should have gone and used the formula I left on was restricted at that time saying that while you're entitled to so much, you are limited not more than so much. This limitation was evidently overlooked by them and they continued to increase my COLAs on the basis of this erroneous base data.

Well, we argued about how are you going to get \$88,000 out of that. He says, "Well, if you can claim you're in a poverty class, why, we have a law that will say we can waive it." Well, I wasn't anxious to get into that kind of occupation. So they said that, "Well, we'll deduct \$1,000 from your retirement from here on out." So I agreed to that. And then they also said that, "You have insurance with Civil Service Commission that you have after you retire, you know, that you can assign that insurance to them." So I agreed to that and we settled the case.

Storey: They made the error.

Mermel: Yeah. Actually, my lawyer was saying that if you wanted to fight it, you probably would get them to admit that it was their

error and they have no right to reclaim it.  
But—

Storey: That's a terrible nuisance.

Mermel: The lawyer would have taken probably \$20,000 or \$30,000 and you would have saved probably \$10,000. Interesting.

Storey: Yeah.

Mermel: This particular section I don't think that you ought to put in my memoirs for everybody to read.

Storey: Well, you know, it shows what happens to you after you retire from the government. Tell me more about how your office evolved after the reorganization. You started with three divisions.

Mermel: Well, three organizations. Dominy had to have someone to interpret engineering things for him or to handle paperwork. Also, he had a lot of calls [and visits] from engineering organizations. He had [contact with] a lot of consulting people. So he would visit with them and he had somebody to turn them over to. So I was the guy that took them off his hands. When there were arguments on engineering questions, appeals or something, why, Dominy would have someone to say, "Well, you look into it. [Give me the highlights.]"

- Storey: Now, you did this, basically the same position, under Bashore, Straus, Dexheimer, Dominy, and Ellis Armstrong.
- Mermel: Ellis Armstrong and then Stamm became Commissioner.
- Storey: And a little while for Stamm.
- Mermel: Yeah. Yeah.
- Storey: I've been told that you'd been offered other positions and you wouldn't move. Is that true?

**Offered Positions in the Regions but Was Reluctant to Move**

- Mermel: Yeah. Well, even in the earlier days, I was offered positions to go into the regions. I wasn't too anxious. When I was even in Denver, I was offered to go to projects. I didn't want to go. My family was in their school years and I didn't want to go. For instance, I had a definite offer to go to Boulder City, and we spent six months in Boulder City, but we didn't want to transfer to Boulder City. When it came back—coming to Washington, why, we didn't mind. Washington was all right[—we lived there earlier in the 30s].
- Storey: You came to Washington.
- Mermel: Yeah.

Storey: And then did the Commissioners offer you other positions in Washington?

**Chose Not to Compete for Assistant Commissioner Positions**

Mermel: In Washington I think, well, I don't want to feel egotistical, but I don't think that there was any questions in my mind I could have been an Assistant Commissioner. I could have been. I think there were opportunities where if I wanted to compete for it I could have. But I was satisfied where I was. The nice part about it is that I had the confidence and, let's say, respect from all the Commissioners. [I had their support and seemed to provide them the type of service they needed.]

**Had Good Working Relationships with the Commissioners**

I was very fortunate. When I even worked with John Page, my contacts were very small with him but, nevertheless, they were quite personal, because we had breakfast together all the time. But with all the Commissioners I was very fortunate that I was able to *deliver* what they wanted. I had in my own mind the motto "It's my job to make the Commissioner look good [and get what he needed], and if I can do that, that's my job."

Storey: One of the things one of the guys told me last week in an interview was it's always stressful when a new person comes in and you have to figure out what they want and what they need and *how* you deal with them. Did you go through any of these feelings as you went from Commissioner to Commissioner to Commissioner?

Mermel: Let's say we had what we called crises, up and down. There were *always* all kinds of rumors of reorganization, changes, and so forth, which were stressful, and you had to wait for whatever was going to happen. But somehow or other, when the chips came down, we were able to hang on. We probably lost people at times and gained people at times and lost a function, like Foreign Activities would become independent.

But the thing is this, that I think the function was needed. There was a need for some kind of a backer-upper that didn't take away anything from the Commissioner, but gave him more, see. And I think I did a good job at that. I made them look good [and be in the right place at the right time]. Now, they would get letters from somebody and they got an invitation from Spain to come visit the projects. Who maneuvered that? Mermel. [It was a high-ranking government visit. Dominy got the Senate to publish a formal report on his trip.]

Storey: This was Dominy?

Mermel: Yeah. And it made the Commissioner look good. When we went to Russia, Udall called me to the office and said, "Mermel, you know more about Russia, I understand. I want you to make an itinerary for me." He, at that time, was very friendly with (Anatoly) Dobrynin, the (Russian) ambassador [to the United States]. And, "I'll see that the ambassador will let us go into the prohibited areas that the State Department would not even *think* of letting us ask for." [This was at a time when reciprocal visits were tit for tat—one-for-one.]

### **Oren Beatty, Stewart Udall's Right Hand Man**

Oren Beatty was [Udall's] ~~his~~ executive right-hand man, and there were many, many days that I spent with a map and telling them what was to be seen there[, primarily dams,] and so forth, and we made out an itinerary and he only wanted something for ten days. We figured out where we would stay and whatnot, and then he talked to Dobrynin and Dobrynin said that it could be arranged.

### **Stewart Udall Invites Mermel on Trip to Russia**

Then Udall wrote a letter to the State Department, and the State

Department was mad that he already had the approval of the Russians without asking the State Department. When we were getting to the conclusion of the thing, he says, "Mermel, goddamn it, if you have prepared this itinerary, I want you to come along." And that was quite a compliment.

Storey: Yes. That's very nice.

### **Russian Trip Studying Hydropower Technology**

Mermel: I went along, and that picture over there is during that trip. Udall. We were on that trip, whether it was on the departure or so. And then he wanted to invite [the] ~~this~~ poet, Robert Frost, and Robert Frost went on the flight with us. Robert Frost read poetry and the Russians really admired it. He arranged that with Dobrynin also, see.

Naturally, we all went first class. In Russia they gave us very, very good accommodations, and we were treated with a red carpet, as a Secretary should be treated, and we went to a lot of the prohibited [dams and] areas.

Storey: Did you get to talk to Robert Frost?

Mermel: Oh, yeah. Well, we were on a plane together. The delegation was about eight people, maybe. Robert Lee from the White House. See, Udall was very smart. He knew how to see to it that he covered all



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the things. He had one of the liaison people from the White House. He was a lawyer. He invited the head of the Federal Power Commission. He invited a [prominent] guy from the irrigation district, a friend of his in Arizona, and then a fellow from the [Sacramento] Salt River Municipal District, and Dominy and myself and Oren Beatty. You ought to read that report. It was a nice summary. It isn't too long to read.

Storey: Tell me about the Chief Engineers. The first Chief Engineer that you must have worked with when you were—

**Raymond F. Walter**

Mermel: R. F. Walter.

Storey: ~~Yeah. Ray Walker.~~

Mermel: ~~Yeah.~~

Storey: ~~Raymond Walker. Walter. Why am I saying Walker?~~

Mermel: Yeah. R. F. Walter. Walter.

Storey: I think we've discussed him, though, and you didn't really have a lot of direct contact with him, did you?

Mermel: No. No. But he personally approved your leave slips [and was a strict appearing person].

**Sinclair O. Harper**

Storey: Yeah. But when you came back, S. O. Harper was the Chief Engineer.

Mermel: Yeah.

Storey: And at that point you must have been having some contact with him. What was he like?

**Leslie N. McClellan**

Mermel: Well, S.O. Harper was a little more—what do you call—official, standoffish type of an individual. He wasn't very warm like McClellan. But S. O. Harper, I don't think, stayed very long, and McClellan became Chief Engineer, and my relations with McClellan were very fine. Well, Grant Bloodgood came in there for a while, and then Bellport came in.

Storey: After Harper was Brig Young.

Mermel: Brig Young, yeah.

Storey: Tell me about Brig Young.

**Walker (Brig) R. Young**

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- Mermel: Brig Young was a very warm guy, very nice guy. When he came to Washington, we had very many personal contacts.
- Storey: You've talked quite a bit about [McClellan].
- Mermel: After Walter ~~Young~~, I think—
- Storey: Was Mr. McClellan. Mr. McClellan was after Walter ~~Young~~.
- Storey: Yeah. You've talked about McClellan quite a bit. Then came Grant Bloodgood.

### **Grant Bloodgood**

- Mermel: Grant Bloodgood.
- Storey: What was Grant Bloodgood like?
- Mermel: Oh, well, he was a construction guy.
- Storey: Was he on the Belle Fourche Project in his early years?
- Mermel: Yeah. He must have been on the Hoover Dam Project in the early years, too. He and Dexheimer were close, because I think Dexheimer's [position was chief construction engineer] ~~Chief Engineer is somewhere in between.~~
- Storey: No, I don't think he ever was.

**Wilbur A. Dexheimer**

Mermel: Did Dexheimer come to be Commissioner directly from his position there?

Storey: Yeah.

Mermel: Now, Dexheimer was very friendly with the Under Secretary Tudor , and I repeat this story again that Dexheimer saved the Bureau of Reclamation, because Tudor wanted to shrink the Bureau and have everything done by consulting engineers, because he was a consulting engineer, he had a big consulting engineering firm in [California] ~~Denver~~. And Dexheimer and Tudor were buddies flying on the Burma Road [during World War II]. So he could go up there and talk to him very frankly and get the pressure off the Bureau.

Storey: But what was Grant Bloodgood like?

Mermel: He was just a construction guy. He was very, very frank and a matter-of-fact guy, but was very friendly.

Storey: What kind of management style?

Mermel: Management style? No, I don't think he had any management strategy or anything. He wasn't an office man. He was a good construction man, and he ran a good organization. He told you what to do, and that was it. But I didn't have too many contacts with him.

**Tensions with Bernard (Barney) P. Bellport**

Now, see, when Bellport came in, he began to resent the fact that Mermel was whispering to Dominy [on engineering matters], see. And at one staff meeting, Bellport made some kind of remark about me making some kind of [engineering suggestion about which he was not asked] thing, and Dominy says, "Goddamn it, he's working for me, and if he starts getting scared of you, I'm going to fire him." Yeah. And naturally, it was in my presence. I had Dominy's support, and he didn't want me to kowtow to Bellport or keep from Dominy things that he should know.

Storey: Other people have told me that Bellport wasn't really a very nice person.

Mermel: That he was not?

Storey: That he was not a nice person.

Mermel: Nice person? Oh, I think he was all right. [He was very pleasant in ordinary contexts.] I have a high respect for him, even though he probably didn't like me because of our professional relationships. But as person to person, I think we understood each other. Yeah, I have no complaints [about] to Bellport. I accept that he resented my expressing an opinion that might have been contrary to his.

Storey: Um-hmm. Like on the third powerplant, for instance.

Mermel: Yeah. Yeah.

Storey: And after him was—of course, by then the title had changed, but the position was basically the same—Harold Arthur.

Mermel: Yeah.

Storey: What was Harold Arthur like?

#### **Harold G. Arthur**

Mermel: Well, I didn't have too much contact with him, but I don't think he was an effective, strong man. He was a good head of a division, and I think he had a limited, let's say, management viewpoint. Although I don't know what he's doing now. He went into the consulting firm. I think he went to Harza and then he left from there, and I don't know where he is now. But he wasn't a McClellan. He was a pretty good leader, I would say, from the distance [as] I saw it, yeah.

After Harold Arthur, who was there now?

Storey: After Harold Arthur came a guy named Jansen, I believe. Now there is no equivalent position.

Mermel: There's no equivalent position there now.

Storey: Yeah. Robert Jansen. He was on the Teton Dam Committee, I believe, that considered the collapse there. Then Rod Vissia. Did you know Rod Vissia?

END SIDE 1, TAPE 2. SEPTEMBER 8, 1995.  
BEGIN SIDE 2, TAPE 2. SEPTEMBER 8, 1995.

Storey: ... probably Regional Director up at Pacific Northwest in Boise when you were with the organization [in Washington]. And then after him was Darrell Webber, and Darrell was really the last person that sort of occupied that position.

Mermel: Well, the thing is this. The leadership of the Bureau has been waning away and the Chief Engineers are following the same path.

Storey: Yeah. Tell me about the Secretaries of Interior whom you've known.

### **Harold Ickes**

Mermel: The Interior. Well, [Harold] Ickes was a remarkable Secretary, and I think you should read that book. I think I ought to bring it up just to point out some chapters for you to be reminded of. [An outstanding character.]

Storey: Oh, I can get it there. But tell me, you said you were at his resignation.

Mermel: Yeah.

Storey: Tell me about that.

**Harold Ickes Resigns under President Harry S. Truman**

Mermel: Well, as I was mentioning, the thing is this. The Secretary was suppose[d] to go up [to] ~~on~~ a congressional hearing for the qualification of a man by the name of Paul Pauley, who was an oil corporation representative or he was interested in oil companies in California for a long period of time. He was part of the oil industry, and he was being nominated as a Secretary or some kind of Under Secretary or Assistant Secretary to the Navy. There was a political issue about the pressures of the private industry that the naval oil reserves be turned over to the private industry for exploitation and so forth. That seems to be in the background.

When he was going up on the Hill, Truman was President at that time and said to Ickes, when they were in the White House staff, "Be kind to Pauley," implying that he should say nice things about him, or at least that was the story.

Then when Ickes went up on the Hill and he started testifying, he indicated that Pauley was very interested in getting the naval reserves for the oil industry and, therefore, it implied that he wasn't



qualified to be an Assistant Secretary because he may advocate the transfer of the naval interests to the oil industry, and Pauley didn't get confirmed.

Truman evidently got mad at him and never wanted to see him or didn't answer his calls, and the Secretary got angry and decided to quit. He wrote a letter of resignation, but before he sent it to the President, he sent a memorandum to all the people in the Interior Department to come to the auditorium for a certain time, and he came and made a speech saying that he reiterated—the speech, had a copy of it because he read from a press release. He said that he'd be tendering his resignation to the President, and he turned the [original] letter of resignation [over] to the messenger on the podium and told him to deliver it to the White House.

Naturally, the newspapers played this up that he declared his resignation before he told the President. In the resignation, he said that he would be willing to stay until the end of the month or some particular date in order to provide for the transition of a new Secretary. But Truman announced that he made the resignation effective immediately. That was the key. I think you should read the book. I think there are a lot of nice, spicy details about that story.

Storey: But you saw him talk to the Interior employees?

Mermel: Naturally, all of us went down to the auditorium to hear the Secretary.

Storey: What was he like? What did he look like, I mean?

### **Implementing the Boulder Canyon Project Adjustment Act**

Mermel: Now, the Secretary of the Interior, he was a wonderful guy. Oh, I have to tell you one incident. We had these Boulder Canyon hearings where these power companies were asking for a reduction of the [power] rates of the legislation for reduction of the rates for Hoover Dam, rather than to have the prevailing rates, to have the rates just pay for the dam. This was called the Boulder Adjustment Act.<sup>23</sup> Since this was under Ickes, he appointed a man by the name of Harvey V. L. Wright to be the coordinator, to prepare this legislation and report.

Well, we had hearings, and I traveled with McClellan for six months in these hearings. I did all the computations for him late at night, because we had to have them in the morning. But, anyway,

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23. The Boulder Canyon Project Adjustment Act of July 19, 1940, ch. 643, 54 Stat. 774; 43 U.S.C. 618 et seq.

they had the final hearing. The allottees wanted to be heard by the Secretary [personally], and the Secretary said he would give them an audience. There were, I think, four allottees to be heard. So we came into the Secretary's hearing room, the big auditorium that he has upstairs, you know, the meeting room, and everybody was seated. He was supposed to come at some hour, like ten o'clock or so. We were all ready. So here the door opens, the Secretary comes in, sits down at the head of the table and said, "Good morning, gentlemen. Glad to see you all here. I understand you have some problems and you'd have me hear you. I have limited time." And he took out his watch and he put it on the table and he says, "There are four, I understand, allottees to be heard. Mr. So-and-so, do you want to be the first speaker? I'll give you fifteen minutes to make your case. Proceed."

This lawyer starts out saying, "Mr. Secretary, this is such a complex issue that this will take a lot more time than that, and there are these things and these things involved."

[The Secretary] He said, "Five minutes are up. You won't have much more time to finish if you continue along those lines."

Storey: Were you there?

- Mermel: Yeah. And so naturally this guy was practically mad, and, naturally, he presented his case, what time he had left, and then [the Secretary] he said to the next guy, "You have fifteen minutes." And he listened to him. Naturally, they presented what their complaints were, what their appeals were. "And you and you." [As] The time went on [Ickes] He picked up his watch, put it in his pocket, and says, "Thank you, gentlemen. You will hear from me shortly."
- Storey: And he got up and walked out?
- Mermel: And he went out. Now, that's the kind of a guy he was.
- Storey: Had he already made up his mind or what?
- Mermel: No. No. No. He had a staff that [reviewed] ~~did~~ the problems [for months], and they [were to recommend,] ~~will come~~ and tell him what has to be done, and he will exercise his judgment, and if they had any last-minute points that they wanted to make, that the staff probably might not make, he was giving them an opportunity to be heard.

Also Harold was known as "Honest Harold." He handled for President Roosevelt a lot of these big public works contracts, and he personally would review them, and he signed them in his own signature. Really, everybody trusted that

he was "Honest Harold." There was no maneuvering.

Storey: Were you on McClellan's staff?

Mermel: Yeah.

Storey: That were making the recommendation?

Mermel: Well, Harvey L. Wright was the Secretary's representative. See, he was the Secretary's representative, and he was supposed to collect all of this information and make hearings. We had hearings in Los Angeles, and all the allottees would present the arguments why this and this, and the Bureau of Reclamation had to present whatever facts they had.

Now, the issue was that Hoover Dam cost so much money, it'll have so much power, and the assumptions had to be made that you would be able to pay for it by 1987. Now, mind you, I'm surprised I lived until 1987. You know, next week I'll be eighty-eight.

Storey: You will?

Mermel: On the twelfth. Next week, Tuesday, I'll be eighty-eight. I didn't think I would see Hoover Dam paid for. But it got paid for in 1987 and the contracts were finished.

Now, what I was doing for McClellan was collecting the information like, for instance, the cost of the equipment. We had to go into the Boulder Canyon book accounts and make out all the estimates of what has been spent and what was going to be spent before it got finished. Now, this was being done in 1937, '38, at that time, '39, see. But the figures were all based on 1987. Fifty years.

So you had to have depreciation studies. You had to assume. During the conferences everybody would argue, well, how the equipment depreciates. I made a lot of depreciation studies, and I got a lot of searches as to what Federal Power Commission was using, what other utilities were using, to see whether they were reasonable. And we had to study how many times the units had to be replaced so that at the end of 1987 it would be paid for.

Then the sale of power had to be forecast. Then you made a study for fifty years and said that at the end of the fifty years, the dam was paid for, see, and all of the expenses. Then you had to say which allottee would take what power. The formula was that every year or every other year you would recompute this and change the rate in order to be sure that by the time the fiftieth year came by, it would change. We had to have agreement on the

depreciation on the new placements, on the forecast of power use, all that kind of thing. I've got boxes of studies that were made.

When 1987 came around, the question was, "Well, what's going to happen now the dam's paid for?" So the state of Arizona and the state of Nevada made a claim, wanted to make a claim to Congress, that since they are the owners of the resources, they want to be the privileged people to get the power after 1987 [since the Federal Government got back the cost of Hoover Dam]. The idea, they presented a bill on Congress and Congress was supposed to pass a bill allocating who was going to get what power after 1987. Now, Arizona and Colorado hired a lawyer in Washington to represent them in these legislative sessions.

Storey: Arizona and Nevada?

**Served as a Consultant When the Power Contracts at Hoover Expired in 1987**

Mermel: Yeah. And that lawyer happened to be Ed Weinberg. Ed Weinberg was a [brilliant] lawyer in the Interior Department at the time, not at the time of these hearings, but he knew that I was at that time of the hearings. So I was retired. This was 1987, not long ago. He asked me to be a consultant to him to go to the Federal

Archives and find the data on which we made the assumptions and see if we could help arguments that he needed for his support of his studies.

So I went. I was hired by him. I don't remember what I got paid, but I got paid. I went to the archives to study the original papers that were studies that were made, because all the original files were in the archives. You know, I think it was a very touching thing to pull out drawers of papers where I had my own name, my signature, my handwriting, fifty years laying over here in the archives. Can you beat that? It gave you a thrill to know that your fingerprint is someplace in the archives.

Storey: Going back to the reorganization, though, or the renegotiation, did the allottees' meeting with Secretary Ickes result in any changes?

Mermel: I was drifting. My mind is someplace else.

Storey: Did the allottees' meeting with Secretary Ickes cause any changes or cause any discussions or meetings that you remember?

Mermel: No. We knew what they wanted. The government committee under leadership of Harvey V. L. Wright had findings, [as] it was called, and it's in a big, thick book. All the studies were there, and they were



making certain points that they wanted to have added and whatnot. The Secretary had a discussion with the staff, and the staff made a recommendation and that was it. They had an opportunity to be heard. But I think that McPhail was very active in this. McPhail and McClellan and Kubach was the accountant and Raines , who was a Boulder City accountant, and Leonard Moran, who is also an accountant in the Denver office, they were the ones that provided all of this data.

Storey: Tell me about the next Secretary that you remember.

Mermel: Next secretary? Well, we haven't mentioned Chapman.

Storey: Okay.

Mermel: Now, Chapman was—

Storey: Oscar Chapman.

### **Oscar Chapman**

Mermel: Oscar Chapman. And he came in probably after Ickes? He must have come in after Ickes.

Storey: He was an Assistant Secretary before Ickes,<sup>24</sup> and then he became Secretary, I think, after Ickes, yes.

Mermel: Ickes, yeah. Yeah. He was, I think, Under Secretary. [Chapman was a close replica of Ickes as to honesty and straight forwardness.] There was another guy—

Storey: Another layer there.

Mermel: Now, there was a very, very mild-mannered and very effective politically knowledgeable and a good liaison. He had a *very good* liaison with the White House during the Roosevelt days, and he also had very good relations with [William Averell] Harriman, and he also had good relations with the people on the Hill. And he was a very effective Secretary, without creating a hell of a lot of noise.

Storey: Was he good for Reclamation?

Mermel: He was friendly to Reclamation. Under Democrats, the Bureau of Reclamation had no problems. It's when Eisenhower came in, and Dexheimer came in under Eisenhower is when the Bureau started shaking.

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24. Oscar L. Chapman served as an Assistant Secretary of the Interior from 1933 to 1946 under the Franklin D. Roosevelt and Harry S. Truman administrations. He then served as Under Secretary of the Interior from 1946-1949 and as Secretary of the Interior from 1949-1953, under the Truman Administration.

- Storey: And who was the Secretary then?
- Mermel: Could it be [Julius A.] Krug? Krug? I don't know. I know that this other guy was Assistant Secretary. But who was Secretary then? It could have been Krug, but I don't know. Chapman. Krug. Who else was in there? We had a good budget officer by the name of Otis Beasley. He was a handicapped person, but he was *brilliant* and he was very friendly to Reclamation, and he was a good liaison between the Secretary's office and the Commissioner.
- Storey: It was Julius Krug, I believe.
- Mermel: Yeah.
- Storey: Tell me about him.
- Mermel: Well, he was in the War Production Board at a very high level under—who was the guy? Head of the War Production. Nelson? What was his name? His name was Nelson, but I don't remember his first name. I think Krug came in there. But he was very quiet, and I think he was an Easterner. I don't think much one way or another. I think it must have been during the Eisenhower administration that Krug was in. After Krug who came?

By the way, you ought to have a discussion with Holum.

**Kenneth Holum**

Storey: Ken Holum?

Mermel: Yeah. He lives here in Washington. [He was a smooth working assistant secretary—good to the Bureau.] He's married to his former secretary, Catherine Klein, who was in the Bureau of Reclamation when I transferred to the Washington office. Very brilliant gal. At one time, I wanted her to be my secretary, but she said no. She wasn't interested in that job. I always remember that. But she climbed the ladder and then she became Secretary to the Assistant Secretary, Holum, for quite a while. Holum's wife died and, oh, I think they didn't get married until after Holum left [Interior] and after she retired and so forth.

Storey: Tell me about Ken Holum.

**Morgan Dubrow**

Mermel: Ken Holum. Very hard worker. Willing to understand, and quite innovative. He helped contribute to this business of third powerhouse expansion. Oh, he had a staff assistant, probably comparable position as I am, by the name of Morgan Dubrow. Dubrow is retired from the [NERCA]—he used to be the head of Bonneville's representative in Washington, and he then worked for the national rural electrification outfit and he just recently retired. His wife

died not long ago. But he is a knowledgeable [engineer] guy of that Holum era, because he was Holum's right-hand man, and you ought to put the name Morgan Dubrow.

Storey: I've already got it.

Mermel: He's here in Washington. Or you could have lunch. He comes to the Cosmos Club quite often. I had lunch with him in the Cosmos Club about six months ago.

Storey: He's a member there?

Mermel: Yeah. Yeah. So you'd meet him there at the Cosmos Club. He could fill you in, and he could fill you in on the third powerhouse angle, and I think it would be a good idea if you did meet him, because you'd get a little different flavor of what I was telling you. But I'm sure we wouldn't be very, very far apart. [If it wasn't for Dubrow and Mermel working for the 800 mW units at Coulee, they would not be there—I sincerely mean that!]

### **Stewart Udall**

Storey: What about your impression of Stewart Udall? I've already got some specifics, but—

Mermel: Stewart Udall was fine. Well, he was a good Secretary and good politically

oriented. He was friendly to Reclamation and he was friendly to Dominy and they got along very well. He was a good politician and he had good relations on the Hill. We had [an] Assistant Secretary Watt. When Eisenhower administration came in, they put in Watt.

Storey: James Watt.

Mermel: Yeah. James Watt. And he was Assistant Secretary before Holum. Now, it must have been the Eisenhower Administration, but I can't connect Watt being a Republican. But, anyway, he was in—

#### **James G. Watt<sup>25</sup> under Richard Milhouse Nixon**

Storey: Yeah. He's a Republican.

Mermel: Well, anyway, he was in there. When he came in, in the Bureau of Reclamation—

Storey: It was under Nixon.

Mermel: We were trembling.

Storey: I think it was under Nixon.

Mermel: Nixon, yeah. It must have been under Nixon, but he must have been a Republican, then.

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25. James Gaius Watt served as deputy assistant secretary of water and power development from 1969 to 1975.

Storey: Yeah.

Mermel: Well, Krug must have been under Nixon, too. But, anyway, Watt came in and he set a rule. He didn't trust [anyone from the previous administration] ~~a damn soul~~. All of the Civil Service people, you know, as far as he's concerned, were enemies. He set up rules that everything that had to be a decision made, he had to, well, approve it. Then he wanted to know who worked on it and all that. We trembled terribly, because he wanted to clean out all of the old guard. But somehow or other, we survived. Now, there was a crisis in there, and Watt, he didn't trust anybody. That's the only thing I can say about him. But somehow or other, we survived. That was his characteristic. He didn't trust anybody. We had a hell of a time supporting everything we were doing.

### **Harold Ickes and Correspondence**

One of the oddities of Secretary Ickes was that he would write memoranda to all the staff. He says, "I don't want any split infinitives in my correspondence." And he'd just make a one sentence and they mimeographed 3,000 copies to send it all over the department. Any letter prepared for the Secretary should not have any split infinitives. Well, I didn't know what a split infinitive was, so I let my secretary worry about that.

Another thing he said, "In any letter that was written to me (I may have mentioned this to you before), I will not sign any letter that mentions "war effort," because war effort means that you are straining. Just say we are at war, but not war effort." And he sent this memorandum around with that one sentence to all the 3,000 employees.

- Storey: Were there any others like that?
- Mermel: That was quite often. You'd get a memorandum like that, say, every other week from the Secretary. That's true. In those days, you had to mimeograph, by the way.
- Storey: Yeah.
- Mermel: Mimeograph. You should read that Secretary's book, that book. Pilgrim? The title of the book is what?<sup>26</sup>
- Storey: I don't remember the title.
- Mermel: Let me show it to you.
- Storey: Oh, you showed it to me once before.
- Mermel: Well, I don't want to keep you too long. I fell behind in all my mail and all my

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26. T. H. Watkins. *Righteous Pilgrim: The Life and Times of Harold L. Ickes, 1874-1952* (New York: Henry Holt, 1990).



reading, and ultimately I find that I can't read it, so I throw it in this and then the next thing that goes down in the basement.

Storey: You didn't tell me about Udall.

### **The Wall of Fame**

Mermel: I still think he was a nice guy. By the way, oh, years after, they had a reception on the farm here, somebody's farm. I don't know if it was Oren Beatty's or someplace out here. And he wrote a book. Naturally, he called all the old-timers together and they had a big picnic. There must have been 200 people there. He was autographing books to everybody.

[Here on my wall are some autographed photos.] I think that some of these signatures were sincere and they were not stereotype. You take Ken Holum saying, "To Ted Mermel, who always has the information and sound advice. In appreciation, Ken Holum." Now, that's pretty nice.

Storey: Yes, it is.

Mermel: I think he meant it. And even my friend Dominy, "To Ted Mermel, with appreciation for valued assistance over the long period of time." Coming from

Dominy, doggone, that's nice. I appreciated very much for him to take the time out to invent those words. Now, I got this one from Harold Ickes, but I did that because I went to the Secretary and asked for an autograph. It said, "To T. W. Mermel. Harold Ickes." But at that time, I probably never shook his hand, but I shook his hand later on. And I prize that picture. And Mike Straus, I don't know what I've got down here.

Storey: Well, that's Gil Stamm, isn't it?

Mermel: "To Ted Mermel, an ever alert—" I can't read that word. "An ever alert [adviser] ~~something~~ on Western construction."

Storey: And that's Mike Straus, okay.

Mermel: Mike Straus. And John Page. Well, here was a very nice guy, [Charles] Luce. He was Under Secretary, but he was also head of Bonneville Power Administration. By the way, he also went to Russia [with us]. And he said, "To Ted Mermel, with happy memories of our work and travels together."

Storey: What was his first name?

Mermel: He was Under Secretary. He was Under Secretary. And Page, I don't know, he probably didn't have time, "To my friend, Ted Mermel. John Page." Brig Young over there and Bashore, "With regards and

best wishes to T. W. Mermel." And that is 1948. I'm surprised. I don't think he was Commissioner that long.

Storey: No, he wasn't, I don't think.

Mermel: 1948?

Storey: I don't think he was.

Mermel: Was that '48 or '45? Probably so.

Storey: Bashore was '43 to '45.

Mermel: All right. That's '45. October '45. Ken Markwell was a remarkable administrator. He was a good leader, a good supporter of engineers in the laboratories and [served the Bureau well.]

END SIDE 2, TAPE 2. SEPTEMBER 8, 1995.  
BEGIN SIDE 1, TAPE 3. SEPTEMBER 8, 1995.

Storey: This is tape three of an interview by Brit Storey with Ted Mermel on September 8, 1995.

### **Ken Markwell**

Go ahead and talk about Mr. Markwell.

Mermel: Markwell. He was a remarkable administrator. He had good relations with Denver, he had good relations with the

Commissioner, and he had good political relations in the Secretary's office. Now, here he writes a little, "To my ready, willing, and able friend, Ted Mermel, with regards. Ken Markwell." I still admire the man. I think it was unfortunate that he sometimes was inclined to drink too much.

But despite that, and everybody knew it, it could have been grounds for, let's say, dismissal, but he had so many good points that he was Assistant Commissioner for a long time.

Storey: What ultimately happened to him?

Mermel: I think it was change of administration. I think he left when the Eisenhower Administration came in. So I don't know. I call this [array of photos] "the men of my life." I'm pretty proud of it. Naturally, nobody will know it except me [pointing to the photographs on his home office wall].

Storey: Well, I see Ellis Armstrong here.

Mermel: Yeah. Ellis Armstrong. Well, he worked awfully hard. I think he was effective as far as organization is concerned, but I don't think he was a master of politicians on the Hill. "To Ted Mermel, with deep appreciation and high esteem and with best wishes for the great days ahead." That's about when I was retiring. Yeah, the men of my life.

Storey: Well, you were there how long? How long at Reclamation?

### **Forty Years of Federal Service**

Mermel: Forty years, consecutive. And I enjoyed every one of them. They were stressful days. The Distinguished Service Award, I didn't even have time to put it away back into the drawer where it was for the last ten years. [I had a good team for a staff, and that medal partly belongs to them.]

Storey: Well, my two hours are up. So I'd like to ask you again whether or not you're willing for the material contained on these tapes and the resulting transcripts to be used by researchers.

Mermel: I have no objection. What I say are *my* views and *my* impressions and no one else's.

Storey: Everybody understands that. Well, thank you very much.

END TAPE 3, SEPTEMBER 8, 1995.  
END OF INTERVIEWS.

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## Appendix A: Letter from Walker (Brig) R. Young

WALKER R. YOUNG  
24 TREEMAVEN DRIVE  
SAN RAFAEL, CALIFORNIA 94901

July 4, 1975

Mr. T. W. Mermel, Consulting Engineer,  
4540 43<sup>rd</sup> St N.W.  
Washington D.C. 20016

Dear Ted:

Your good letter of May 5<sup>th</sup> was received on the eighth, the day following my 90<sup>th</sup> birthday. Was that a coincidence or have you kept a check on Old-timers? Now that you have joined that group you should be in position to appreciate the enclosure about Ralph Lowry. I am also sending a copy to Les McClellan. In a letter received from him a few days ago he reminded me of a visit Dick Coffee and I made "incoognito to the entertainment facilities of Railroad Pass which Dick was so fond of telling about" and "the time when the engine of Ralph Lowry's car fell out somewhere on the desert." Of course you remember the character of the entertainment at Railroad Pass. As for the other yarn Ralph was driving a new Nash Coupe that was gotten for him before we moved from Las Vegas into our new homes in Boulder City. Actually the engine did become dislodged and fell, nose down, on the graveled roadway where it turned left into Fremont St; then the main stem of Las Vegas. Ralph had spent the day at the damsite and was in no mood for that. At the time I thought of writing facetiously to Mr. Nash whom I had met, but refrained. By the way, Max has moved. If you do not already know; his present address is 240 South Monaco Parkway, #511, Denver, Colo 80222.

As for you, Congratulations on having completed a long and successful career in the Service of your Government. You beat my record by six years and you too went through the difficult days of Bureau reorganizations. You are to be commended for the fine

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job you have done in regard to the World Register of Dams. Your travels during the past several years must have been extremely interesting. I thank you for the enclosure with your letter which brings me up to date on what is going on around the World with respect to Dams, Reservoirs and Hydroelectric Power Plants. I know that you must have been responsible for things I have received from Washington D.C. since my retirement.

Answering your inquiry, - Yes, I received a copy of Water Power Development in USSR. The recent Interior Annual Report has not arrived but probably will before long.

It is difficult for me to realize that K.K. Young, and his wife, have reached retirement age. I still remember them as they were. For instance, I was amazed when we received the announcement of Roscoe Greengard's retirement and, more recently, of his and Mary's 50<sup>th</sup> Wedding Anniversary. They arrived on the Kittitas Project as Bride & Groom. They rented a small house at Easton, the point of diversion of the Main Canal, that the Bureau had acquired in the purchase of rights of way. As I recall the monthly rent was \$1.

You asked about us. No, I do not play golf and never did. Our yard keeps me busy. Jane and I are doing very well. I wish I could say the same for Marguerite. As you probably know, before coming to San Rafael on Oct 1, 1964 she had encountered arthritis. She now spends a lot of time resting in bed but she does come to table for meals. Reluctantly, she has given up writing and almost all reading because of glaucoma which came on since coming to California.

Enclosed is a copy of an article that appeared in the June 7<sup>th</sup> issue of our local paper which I am sending to a few of our old friends of many years. The presentation of the Degree was made at the Commencement Exercises on May 18<sup>th</sup>. Leo E. Dunbar, Sr. accepted the award on my behalf. Leo, now retired but still re-



siding in Boulder City, was our Hydrographer during construction of Hoover Dam and Power Plant. He also was the one assigned to recover the Ring Bolt Rapids wrought iron, wedge and feather, anchor bolt used by the early River navigators to winch their boats up the rapids. It and the wood stake set by Homer Hamlin to identify a dam site in Black Canyon that should be investigated if sites in Boulder Canyon were found infeasible, are now being held in the field awaiting construction of the proposed reception and museum building at the dam site. The Hamlin stake was used as the base line for the diamond drilling at Hoover dam site.

In a letter to President Donald H. Baepfer, URLV, I said that "For me, this (the Doctorate) is indeed a great honor, tempered however by a sense of humbleness in view of the thousands of individuals who in one way or another participated in bringing the Boulder Canyon Project to fruition; especially the one hundred, more or less, who lost their lives in the endeavor, including three USBR men - which would have been four had it not been for the spectacular rescue of one of the Bureau's excavation inspectors by one of the dam contractor's canyon wall "high scalers."

It really is staggering for me at this late date to think of all the people involved in the design, laboratory testing, specification writing, manufacturing, shipping and placing of materials; in many respects unprecedented.

In George H. Pattitt's book "So Boulder Dam Was Built," a Six Company publication, it is stated "More than 20,000 men benefited in some manner of service on the Black Canyon front; for that was the number examined by the Government physicians and accepted for employment. (by Six Companies). They came to Nevada from all parts of the United States," and "Of the total of 31,000,000 or more man-hours of employment provided by Six Companies,

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approximately (only) eight tenths of one percent was overtime; namely 260,000 man hours." Six Companies became well known. In my opinion Babcock and Wilcox is entitled to a lot of credit. I still think that Hoover Dam is the "Glamour Girl" of all dams built to date.

Kindest regards and best wishes

Sincerely,

Brig

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P.S. To me it seems likely that the granting of the Degree was essentially in recognition of what the Boulder Canyon Project has done in general for the Southwest and particularly for Las Vegas. With respect to the latter, measured by population growth, when I first arrived in Nevada, during the last week of 1920, the population of Las Vegas and environs was said to be about 3,300. According to the last estimate that I have heard it is now 368,500, and growing. Furthermore, there are now said to be around 10,000,000 per annum visitors to Lake Mead which, of course, is beneficial to Las Vegas. The National Park Service no doubt has the actual figures for the past 39 years.

If the 10 million figure is anywhere near correct it must have been on the basis of those who signed the Park Service register and paid the usual entrance fee, including a large number of multi-repeaters.

WRJ

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## Appendix B: Notification of Death of Thaddeus (Ted) W. Mermel

1454 Highwood Drive  
McLean, VA 22101  
February 2, 2002

Dear Dr. Brit Allan Storey:

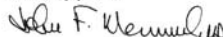
It is with great sadness that I must inform you of the death of my Father, T. W. Mermel, on October 7, 2000. He had been in good health, mentally alert, and active. He continued to work every day as a consultant at The World Bank until April of the year of his death. He was diagnosed with leukemia and was treated, but over the subsequent months, he became weaker and was slowly overcome by this disease. Fortunately, his illness was brief and he was able to continue to live in his home where he died at peace.

Dad was 93 years old at the time of his death and all of us in the family celebrate his long and productive life. We miss him terribly, but we are grateful for his longevity and all that he gave us, both materially and spiritually, throughout his many years.

If you are interested, we have established a memorial for him in the form of a scholarship fund for engineering students at the University of Wyoming. Those friends of Ted, who wish to perpetuate his memory, may forward contributions payable to the "T.W. Mermel Engineering Scholarship Fund" directly to: Ms. Brenda Bland, Director for Development, The University of Wyoming, P.O. Box 3295, Laramie, Wyoming 82071. All contributions in this format are 100% tax deductible. The University of Wyoming was chosen because the School of Engineering had accepted his collection of his professional papers and records for their archives and for future study. We felt this memorial would please Dad, encompassing as it does, two of his great loves: engineering and education.

I would be happy to talk to you if you would care to call me at: 703-536-4560.

Sincerely yours,

  
John F. Mermel, M.D. (son)

Appendix C: Obituary of Thaddeus (Ted) W. Mermel

**OBITUARY**

**Thaddeus W. Mermel, former Bureau of Reclamation official  
with 43 years government service.**

**Washington, D.C. resident for 50 years.**

Thaddeus W. Mermel, 93, whose career included 40 years of distinguished service with the Bureau of Reclamation, died of chronic leukemia October 7 at his home in Washington, D.C. after a brief illness.

Mr. Mermel was born in Chicago and received a degree in Electrical Engineering from the University of Illinois in 1930. Upon graduation he came to the Washington, D.C. area and was employed by the Interstate Commerce Commission. In 1933 he transferred to the Bureau of Reclamation engineering center in Denver, Colorado where, over the succeeding ten years, he participated as engineer-designer in the design of Hoover Dam, Grand Coulee Dam, Shasta Dam, Hungry Horse Dam and several other major dam projects.

During World War II, he was transferred to the Washington office of the Bureau of Reclamation as the Engineer Assistant to the Commissioner. He was known for his innovative ideas and international research of advanced technologies for application to Bureau projects. In the post war period, he studied Russian advanced dam technology used in the construction of several dams and hydro-electric plants on the Volga and in Siberia, and German research in high voltage underground transmission cable development.

He was a member of several professional engineering societies including the American Society of Civil Engineers and the International Commission of Large Dams where he served as chairman of the Committee on the World Registry of Dams. He published many professional papers and was the original author of the "Register of Dams in the United States".

Representing the Bureau of Reclamation, he traveled worldwide participating in bilateral technical exchanges and visiting large dams and hydroelectric projects to gather the best and the brightest technical ideas of the time. He shared this information with Bureau of Reclamation engineers and others throughout the industry at technical meetings and conferences through the presentation of papers such as: High Voltage Underground Cable, Common Rights of Way for Utility Services, Advanced Tunneling Methods, and others.

He traveled with the Secretary of Interior, Stuart Udall, to inspect dams and hydro-electric plants in Russia, a leader in this technology at the time. This visit was instrumental in the Bureau of Reclamation's adoption of, what was then, the world's largest hydro- electric turbine, with the capacity of 500MW, for installation at the Third Power Plant at Grand Coulee Dam.

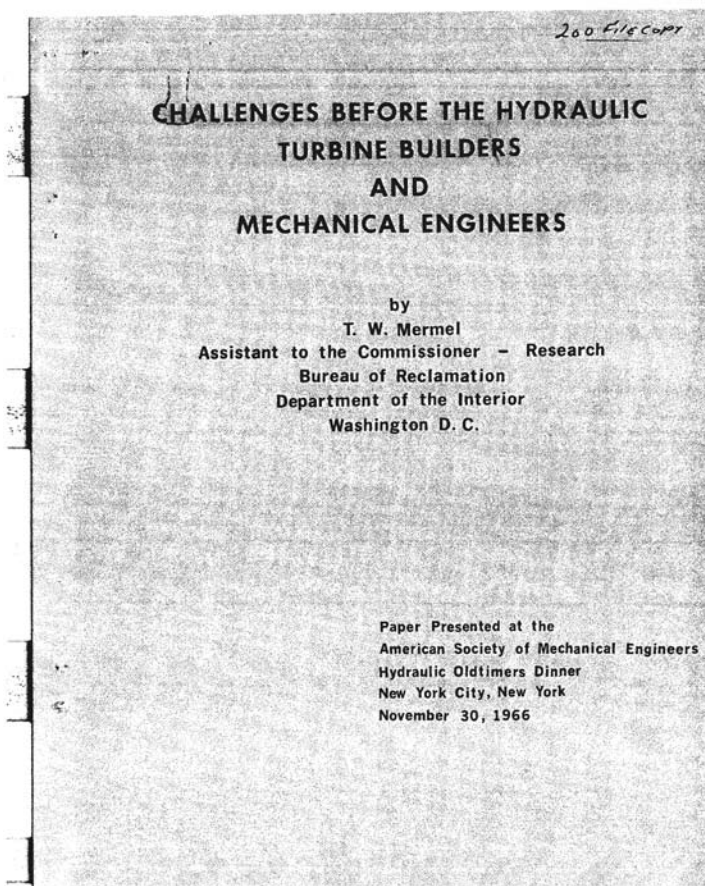
At the time of his retirement in 1973, Mr. Mermel was serving as Assistant to the Commissioner for Scientific Affairs. He was awarded the Department of Interior's Gold Medal Award for Distinguished Service. Subsequently, the University of Wyoming, School of Engineering accepted his professional papers and records of his career with the Bureau for their archives and future study.

Following retirement from government service, he served as a consultant to the World Bank as an engineering contract administration specialist. He remained at this post until he became ill, six months prior to his death. He had been a resident of Washington for more than 50 years. He was a member of St. Ann's Catholic Church, Washington, DC.

His wife of 57 years, Lillian, died in 1988. He is survived by three children: Yvonne Rodler, Washington, DC; Dr. John Mermel, McLean, VA; and Marilyn Disbrow of Mill Valley, CA; six grandchildren: Dr. Eve Rodler of Orinda, CA; Paul Rodler, Larkspur, CA; David Rodler, Bethesda, MD; Mark Myers Mermel, New York, NY; Dr. Cecilia MacCallum, Portland, ME; Adam McClure, Mill Valley, CA and four great grandchildren: Grace Mermel, Liza and Abby Rodler, and Matthew MacCallum.

In memory of his strong commitment to the profession of Engineering and his dedication to formal education as the best means for self-advancement, Mr. Mermel's family has established the "T.W. Mermel Memorial Engineering Scholarship Fund" at the School of Engineering at the University of Wyoming. Those friends of his, who wish to perpetuate his memory, may forward contributions payable to the "T.W. Mermel Memorial Engineering Scholarship Fund" directly to: Ms. Brenda Bland, Director for Development, The University of Wyoming, P.O. Box 3295, Laramie, Wyoming 82071. All contributions in this format are 100% tax deductible.

Appendix D: "Challenges before the Hydraulic Turbine Builders and Mechanical Engineers" by T. W. Mermel



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Paper Presented Before the  
American Society of Mechanical Engineers  
- Hydraulic Oldtimers Dinner  
New York - Nov. 30, 1966

CHALLENGES BEFORE THE HYDRAULIC TURBINE BUILDERS  
AND MECHANICAL ENGINEERS

by  
T. W. Mermel, Assistant to the Commissioner for Research  
Bureau of Reclamation, Washington, D. C.

Mr. Chairman, and Oldtimers. Your Program Committee has asked me to speak to you on the challenges that lie ahead as I see them. This personal challenge is not lightly regarded. Most of you are fully aware of many of the identifiable challenges, for in this room we have the "cream" of hydraulic expertise and the cumulative career experience of more than 2,000 years. It is indeed humbling to speak before such a distinguished group.

In this audience are many of my friends in the industry who helped build the hydraulic equipment now operating at Hoover, Shasta, Grand Coulee, Lewiston, Noxon, Ice Harbor, Rocky Reach, Wanapum, John Day, Taum Sauk, and at numerous other multiple-purpose projects. The United States turbine industry has made great strides in meeting the demands of its customers, and the associated requirements for higher hydraulic heads and greater horsepower.

Some critics say we are working for a dying industry - that the hydro-electric era is virtually at an end. This I cannot believe; I disagree completely.

However, we must admit that the need for improved efficiency and economy in the design and construction of hydropower facilities is apparent if hydroplants are to remain attractive to investors and operators. Steam plants have improved spectacularly in recent years. Nuclear plants are getting more inviting every day. Yet plants dependent upon hydraulic energy seem to coast along with the same old designs, concepts, and efficiencies with which we have lived for many years. On the other hand, good damsites are fast disappearing. This means that more costly sites must be utilized. Thus the investment per kilowatt goes up, while hydro turbine designs are not improving to a measurable extent. One possible way to overcome this adverse situation would be to design larger units, as has been done in the steam industry.

Progress and competency in the design and manufacture of turbines have not been static. Neither have the talents resulting in such advances been confined to the U.S. We must recognize that engineers in other parts of the world have learned from us, and that they have put the knowledge thus gained to good use.

Let me give you an example: When the Hoover powerplant was built in 1936, its 82,500-kw units were the largest that man had conceived. In the postwar period of 1945, when 108,000-kw units were installed at Grand Coulee, they were the world's largest units. These installations demonstrated that savings in investment per kilowatt by going to much larger units can be enormous, not so much because of the turbine runner



itself, but also because of the reduced numbers of units in any given plant, with savings in substructure, housing, and accessory electrical and mechanical equipment.

Since Grand Coulee, worldwide competency has been rising rapidly. However, the leadership of the hydraulic turbine industry in making bigger turbines has found the U.S. lagging behind. However, let me make it clear that this isn't entirely the fault of the industry's turbine designers or the result of their unwillingness to initiate research and development to keep pace with the rest of the world. The turbine industry must have a partner, a customer, one willing to accept its creative talent and possessing a strong desire to advance technology by making better use of new ideas, new materials, and new concepts. Both owner and designer must recognize the certainty of obsolescence; they must have a determination to excel. Jointly they provide the opportunity for change through creativity, and a desire to improve on the status quo.

We must boldly and aggressively plunge into new areas of research. Maybe revolving blades are not the only way to get the energy out of falling water. High capacity hydraulic machinery is needed to run generators at the speeds of steam turbines. The achievement of one million-kw hydraulic units does not appear to be impossible, and we should aim our sights accordingly.

Obviously, the few manufacturers of hydraulic equipment cannot afford to conduct an adequate research program alone. A concerted cooperative effort, with utilities and Government represented, is needed, and we should all work earnestly to that end. In this effort, there is a prime need for diversity of approach. The mechanical engineer must pool his fund of training and experience with that of the metallurgist, chemist, physicist, and other disciplines. Who knows what new concepts and ideas await outside unless we open the door? Such fanciful ideas as eliminating the turbine runner as such and channeling the water through the generator may not be as silly as they sound, if investigated seriously by competent and imaginative people.

Bringing about such creative conditions is not easy, for the normal forces at work are conducive to the preservation of the status quo. These insidious barriers to progress include mental inertia, which decrees repeating what has been done before; the fear of failure, with a consequent loss of professional status; and the dubious, deterring belief that nothing can go wrong. It may be trite, but it is true that if you want to be a leader you must be out in front where the hazards exist.

I have with me some pictures of power houses built abroad, which amply demonstrate innovation. Furnas of Brazil, LaBathe of France, Ferrara in Austria, Volgograd in Russia; these scenes are typical of what may be found the world over.

When the Russians started building large turbines, they were willing to innovate and to fabricate hollow shafts like the one here illustrated. They did this because the size requirements exceeded their conventional forging capabilities. Such a prefabricated shaft also offered tremendous savings in material, labor, and shop work, as well as ease of handling during installation. When they mastered the technique of fabricating shafts these Russian pioneers no longer confined its use to manufacturing shafts of large sizes. Many other applications were found.

Our forging presses can handle ingots to meet our needs, so why should we innovate for the new method? Why should we take on the risk of failure? Why not stay with the forged shaft, even though it does waste materials and manhours? Such fabricated shafts, turbine casings and components call for heavy welding of thick and massive segments. We can make castings, so why use electroslag welding, even if it is cheaper? It is a new technique but why take a chance on it and risk failure? Shouldn't we stay with what we've done before, even when metal and manpower savings are indicated in creative changes?

Another interesting area for consideration is highlighted by this graph showing specific speeds for various units. The specific speed for units in the 300-foot head zone are approximately: Grand Coulee - 33.5; Mosby Rock - 45; Lewiston - 49; Bratsk - 50; Furnas - 53; Kariba - 55; Krasnoyarsk - 59. This graph is similar to the one contained in a paper on trends toward larger units which was presented before the ASME in

Denver this summer. Could it be we are afraid of vibration, cavitation, or loss in efficiency? Just so that we dispel some of the fears regarding efficiency, here is a reproduction of a table from a recently translated Russian book showing the efficiency at Bratsk 93.5; the efficiency at Krasnoyarsk, where the 500-megawatt machines will be installed, 94 percent, as determined from a model. Even if you allow these quoted figures a variance of two percent plus or minus, they are still in the ballpark. Should we adopt something different from the status quo? Should we risk a chance of failure? Or should we keep on down the path we've traveled before?

Why develop larger capacity units? The argument is heard that our rivers are not as large as those in other countries. Still, we have power houses with ten, sixteen, and more units. Another argument for a large number of small units is flexibility; yet in the steam turbine industry units of a million kilowatts are being planned on the same kind of system for which the hydraulic turbine people insist on units one-tenth that size.

Another example involves bearings. The turbines in this country employ only two or three different types of bearings. Elsewhere in the world many more types we seldom hear of are being used, including water lubricated rubber sleeves and others. So why innovate? Why do anything different?

There is another practice that perhaps you, too, will wonder about. Many customers insist that hydraulic turbine efficiencies be guaranteed. The contract specifies that the turbine manufacturer guarantee a specific efficiency and imposes a heavy penalty for failure to achieve that stated goal. The manufacturer is heavily penalized for each one-tenth of one percent not attained. When it comes to testing the turbines, the best testing method now available is probably accurate to only plus or minus one percent, or perhaps even less. Testing methods used abroad vary substantially from the American system. Research in developing methods for improving the technique of measuring efficiency is at a very low ebb. Why not maintain the status quo? Why not repeat what has been done before? Why embark into any area which might conceivably lead to failure? Is this due to apathy on the part of the industry, or inertia among the engineers?

These are only a few of the examples which come to mind. I am sure you in the audience could produce many more. I believe we must always be prepared to seek out and adopt new and better ideas, rather than maintain the comfortable position of the status quo. Your industry has given us two recent and very worthwhile developments: the pump storage units and the horizontal turbines. These are examples of the types of progressive design and fabrication which we desperately need. They are also examples of leadership, and I urge you to continue to be leaders and accept the hazards, as well as the satisfaction, of being out in front. It is well to remember what the Romans said: "He who cannot go forward must fall behind."

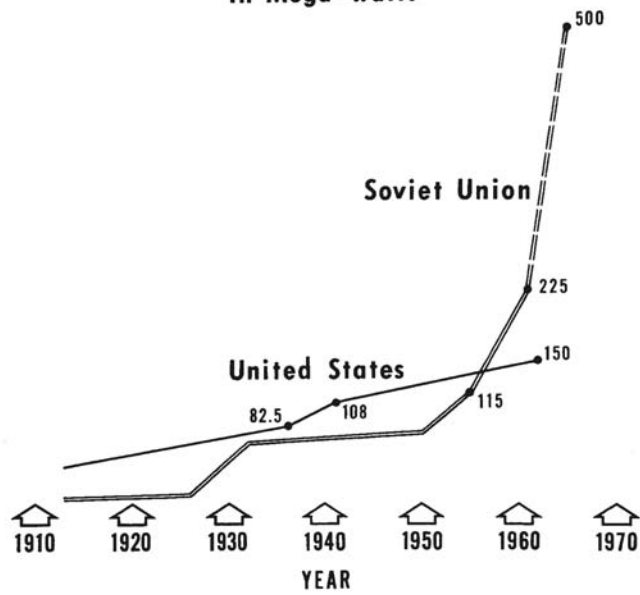
## BIBLIOGRAPHIC REFERENCES \*

- "Hydroturbines - Design and Construction," by N. N. Kovalev. Translated from Russian. May be obtained from the U. S. Department of Commerce, Clearinghouse for Federal, Scientific and Technical Information, Springfield, Virginia 22151. Reference Number TT 64-11087. Book - 682 pages. Price \$9.82. (Book reviewed in WATER POWER, November 1966, pages 452-458)
- "Development of Hydropower Engineering in the U.S.S.R.," by F. Ya. Nesteruk. Translated from Russian. May be obtained from U. S. Department of Commerce, Clearinghouse for Federal, Scientific and Technical Information, Springfield, Virginia 22151. Reference Number TT 65-50096. Book - 280 pages. Price \$6.00.
- "Large Hydraulic Prime Movers, Recent Developments and Current Trends," by J. L. Haydock of H. C. Acres and Company, Limited, 1259 Dorchester Road, Niagara Falls, Canada, and D. M. Coulson and R. I. Gilchrist of Rynard Simpson and Associates. Paper presented at joint ASME-EIC Conference, Denver, Colorado, 1966.
- "Electroslag Welding," by B. E. Paton, translated from Russian. May be obtained from the American Welding Society, Incorporated, 345 East 47th Street, New York, New York 10017. Book - 468 pages. Price \$12.00.
- "Annotated Bibliography of Bratsk and Krasnoyarsk Hydroelectric Projects in Central Siberia, U.S.S.R.," compiled by Anne W. Sands, Office of Engineering Reference, Bureau of Reclamation, Denver, Colorado. Bibliography No. 244. 96 pages. Price \$2.00.
- "Recent Electric Power Developments in the U.S.S.R.," report of the United States delegation tour to Soviet Russia, August 28-September 9, 1962, under the Chairmanship of Secretary of the Interior Stewart L. Udall. Report - 63 pages. Available on request from Department of the Interior, Washington, D. C. 20240.

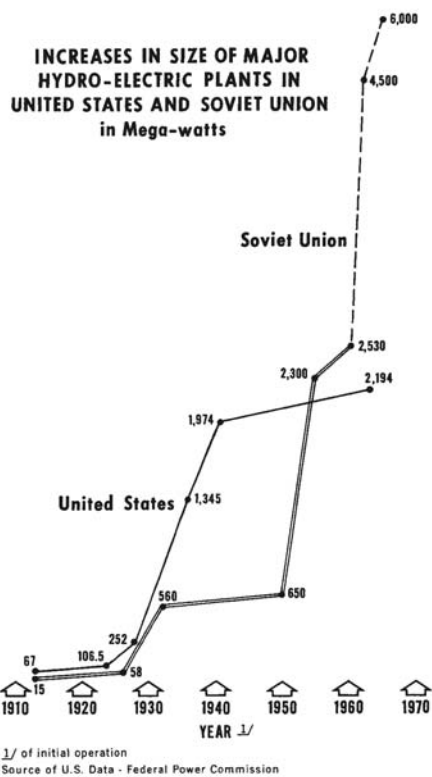
\* Credit is hereby given to the many ideas which have been drawn from these publications.

**INCREASES IN SIZE OF HYDROELECTRIC  
POWERPLANT GENERATING UNITS**

In Mega-watts

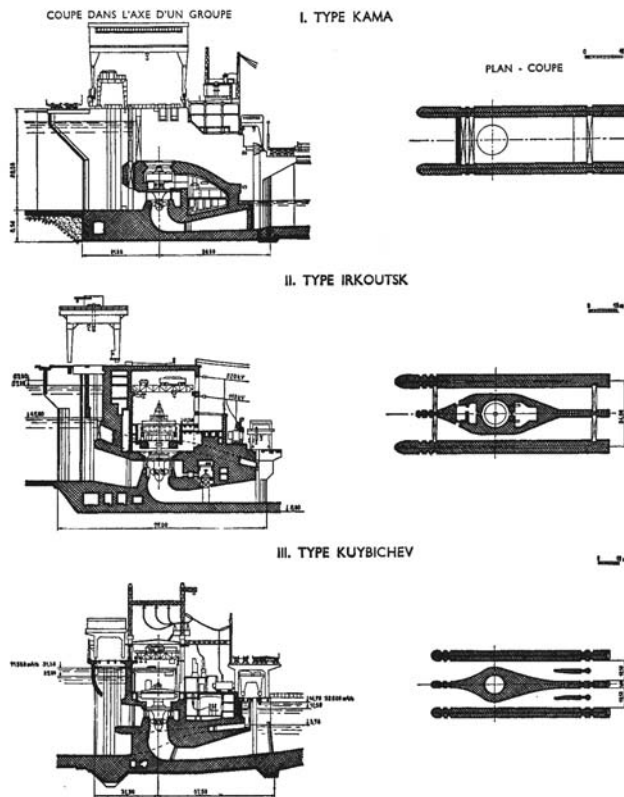


Source of U.S. Data - Federal Power Commission

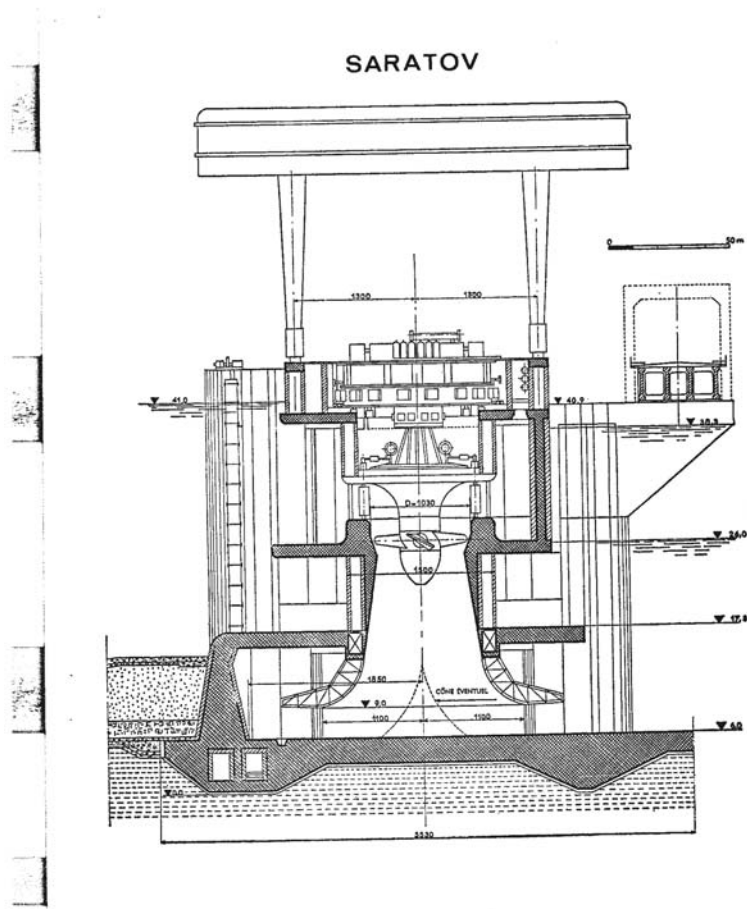




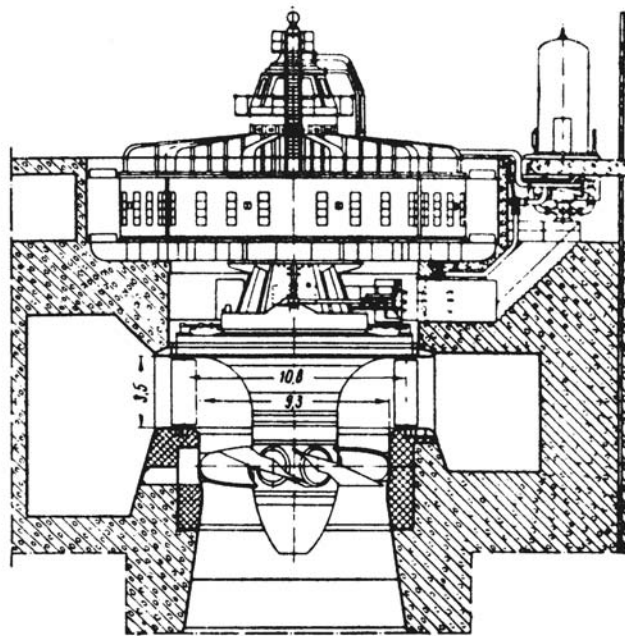
## TYPES OF SPILLWAYS



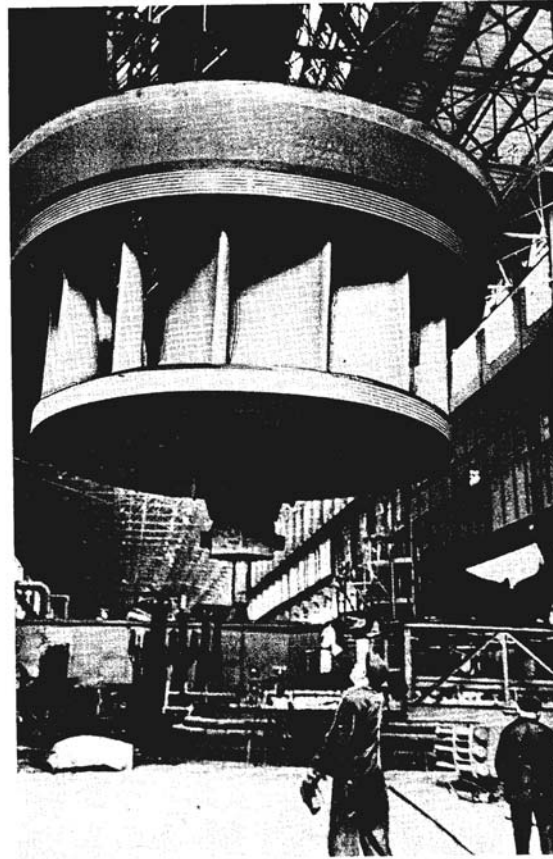
Oral history of Thaddeus (Ted) W. Mermel







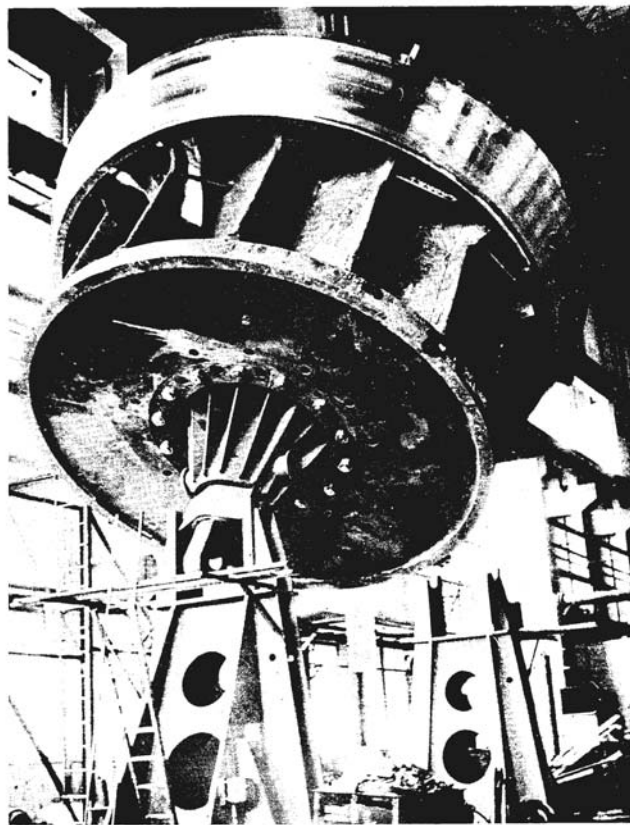
VOLGOGRAD 125 MEGAWATT UNIT



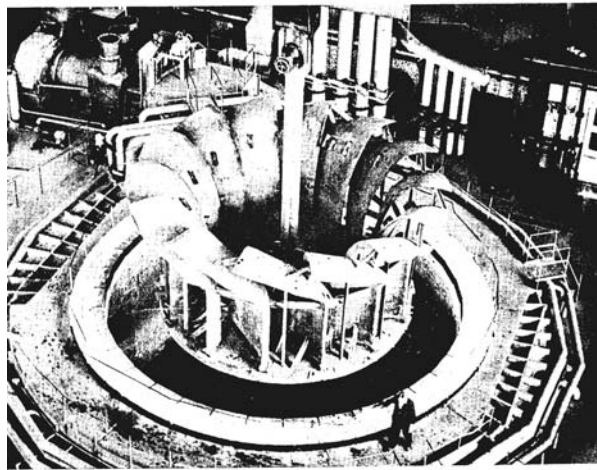
KRASNOYARSK 685,000 HP RUNNER. 312 FOOT HEAD-93.8 RPM

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**Oral history of Thaddeus (Ted) W. Mermel**



KRASNOYARSK 685,000 HP RUNNER. 312 FOOT HEAD; 93.8 RPM

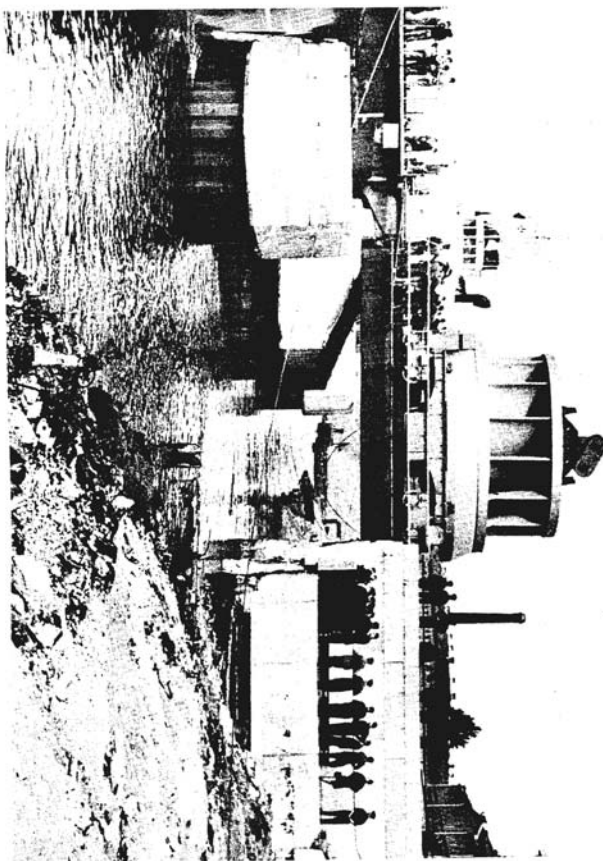


KRASNOYARSK RUNNER BEING LOWERED INTO GAS-FIRED OVEN

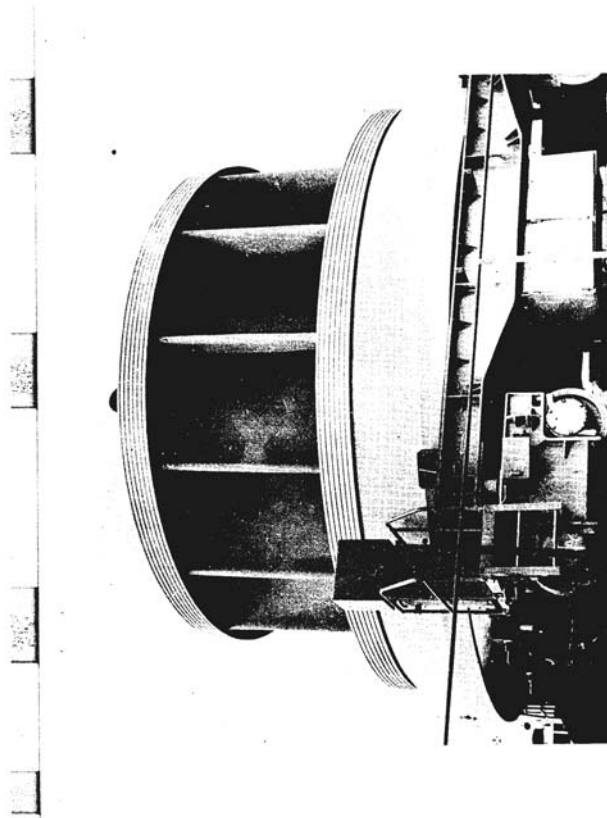
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**Oral history of Thaddeus (Ted) W. Mermel**

KRASNOYARSK RUNNER BEING LOADED ON SHIP. WEIGHT - 250 TONS, DIAMETER - 7.5 METERS.

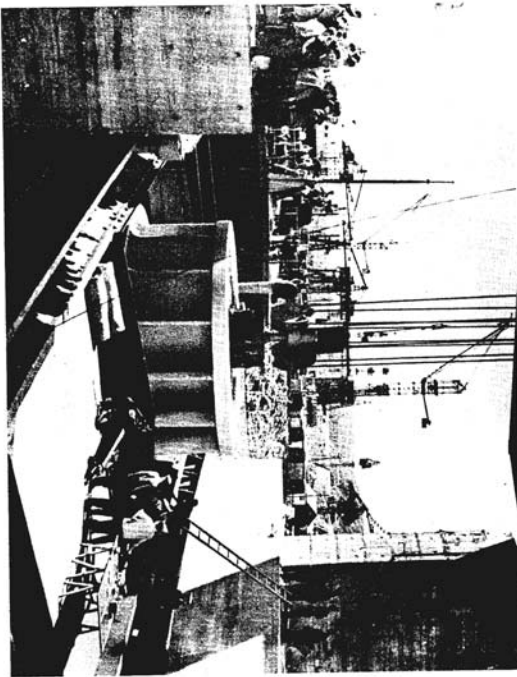


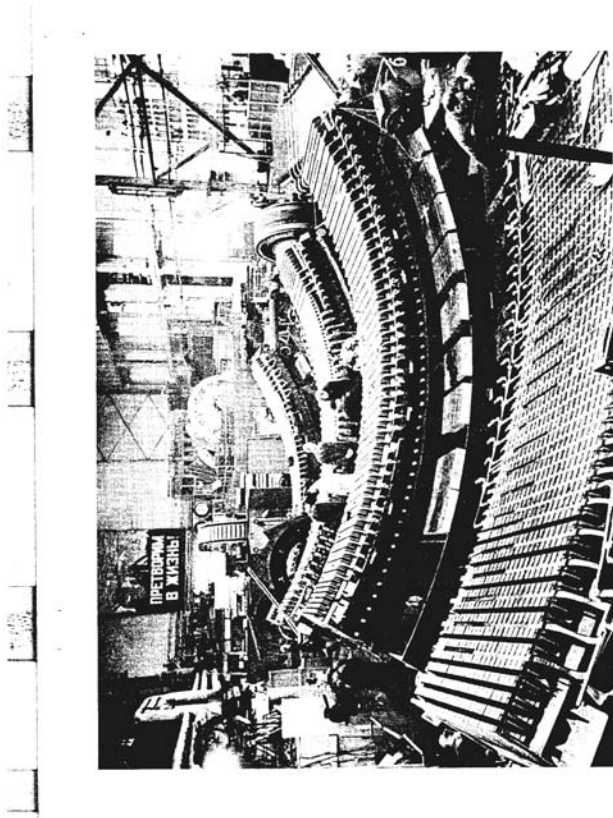




KRASNOYARSK 685,000 HP RUNNER. 312 FOOT HEAD - 93.8 RPM

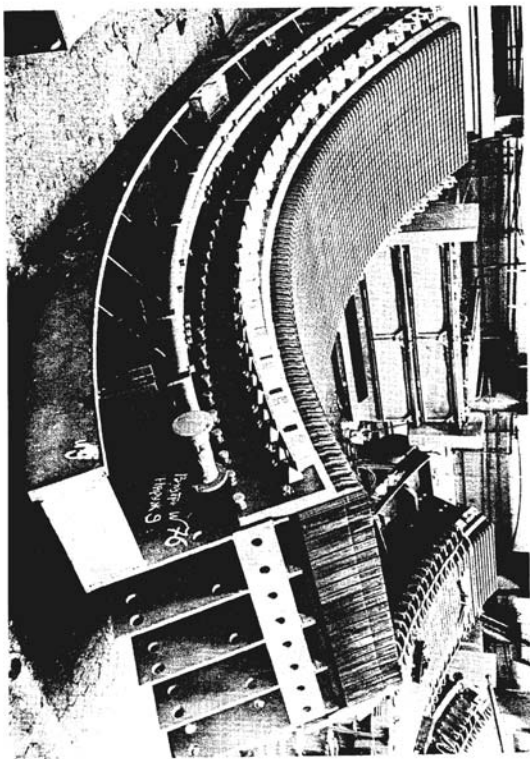
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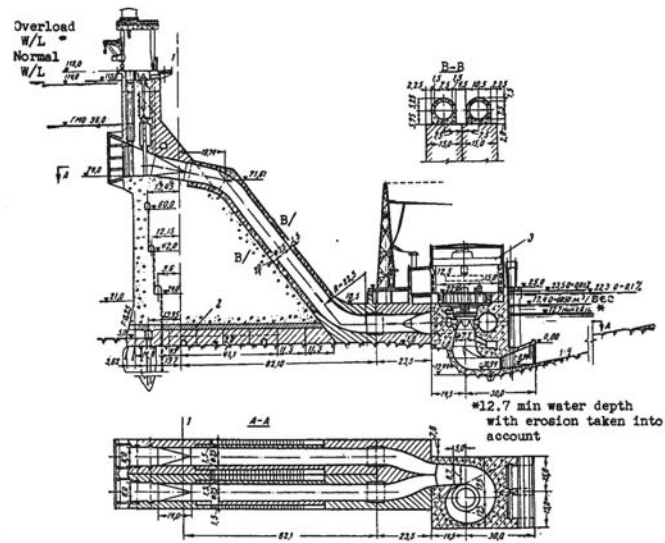




KRASNOYARSK 500 MW STATOR SECTIONS. STATOR COIL SEGMENTS WATER COOLED.

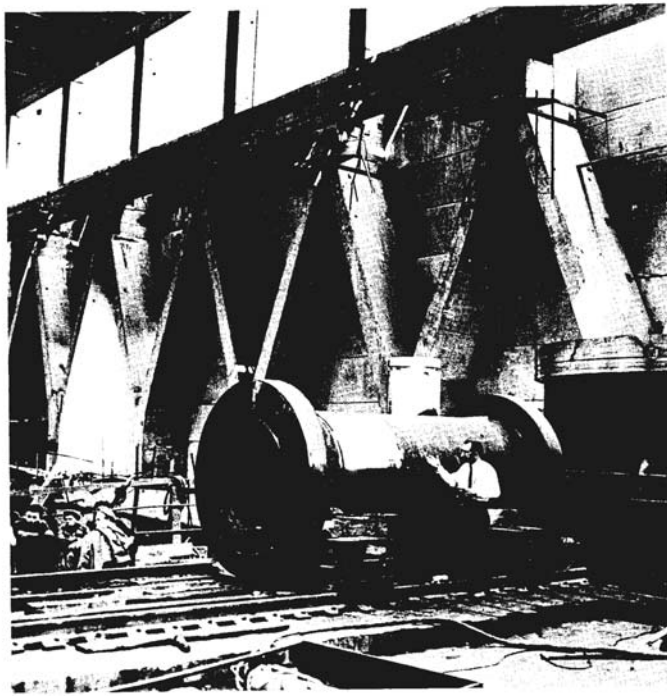
KRASNOYARSK 500 MW STATOR SECTIONS. STATOR COIL SEGMENTS WATER COOLED.



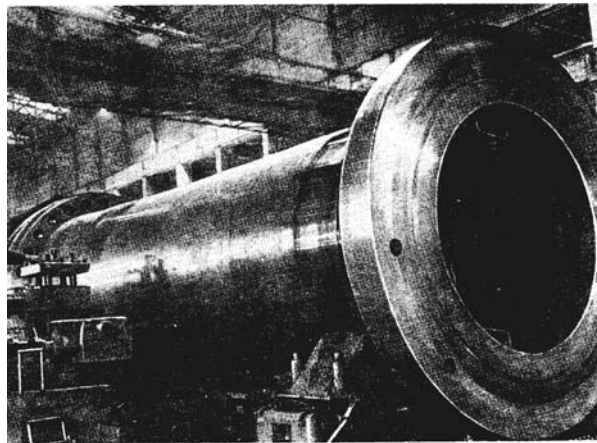


CROSS SECTION OF  
KRASNOYARSK DAM AND POWERPLANT

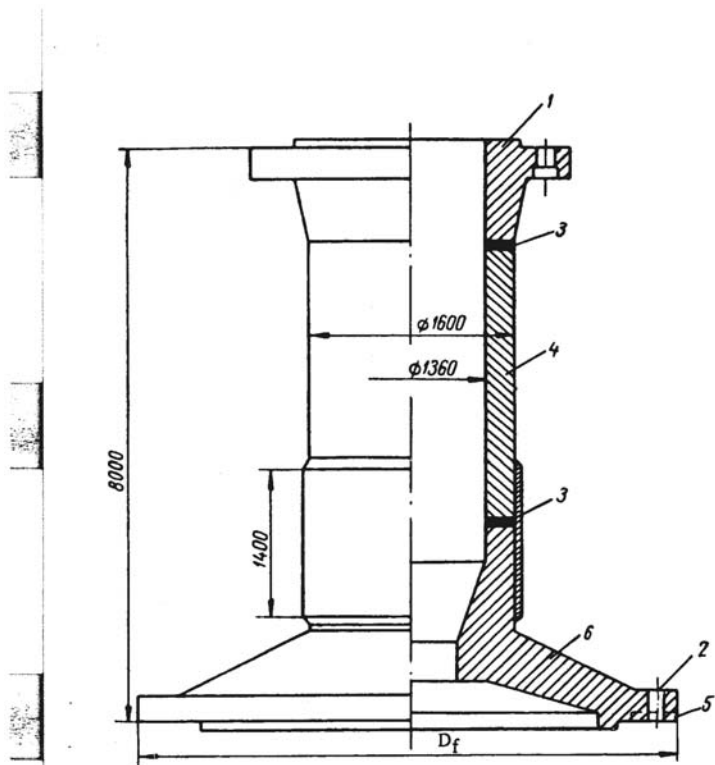
Oral history of Thaddeus (Ted) W. Mermel



HUGE HOLLOW WELDED SHAFT FOR 225,000 KW BRATSK GENERATORS

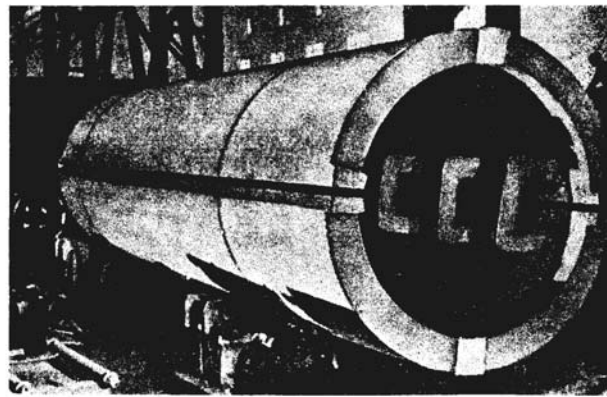


FOR 685,000 HP KRASNOYARSK UNIT. DIAMETER - 2 METERS, WEIGHT - 70 TONS

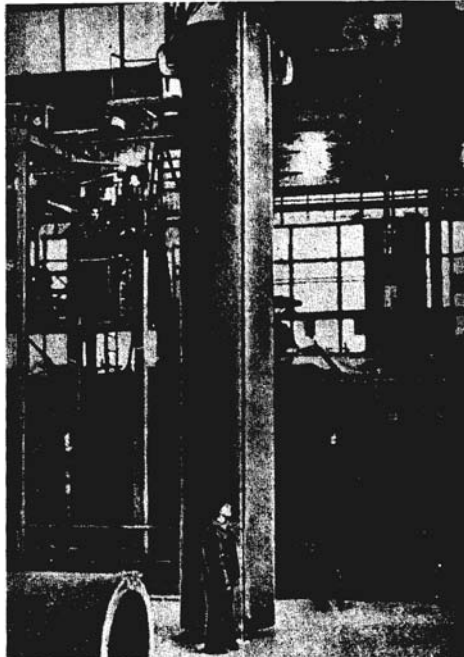


ELECTROSLAG WELDED SHAFT

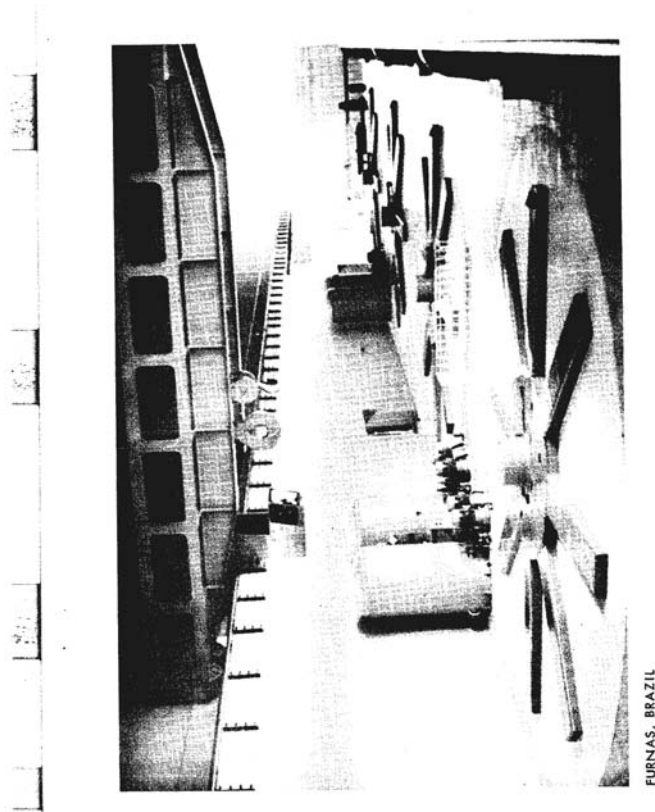




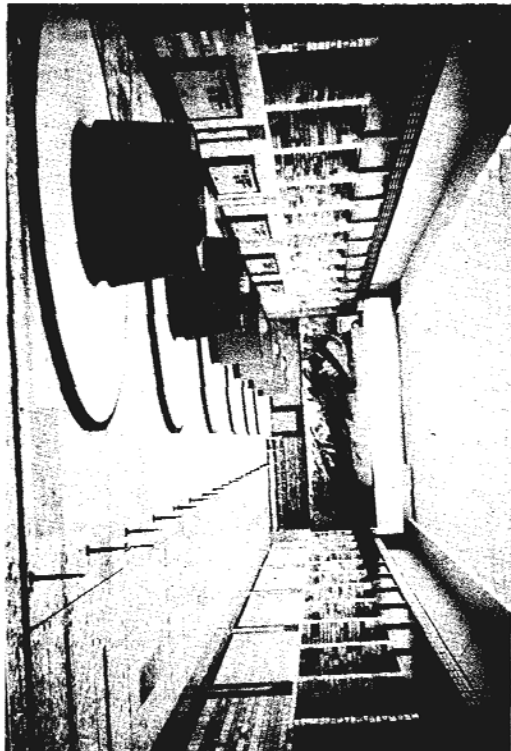
TWO FORGED TROUGHS-WALL  
THICKNESS 6 INCHES ASSEMBLED  
FOR ELECTROSLAG WELDING

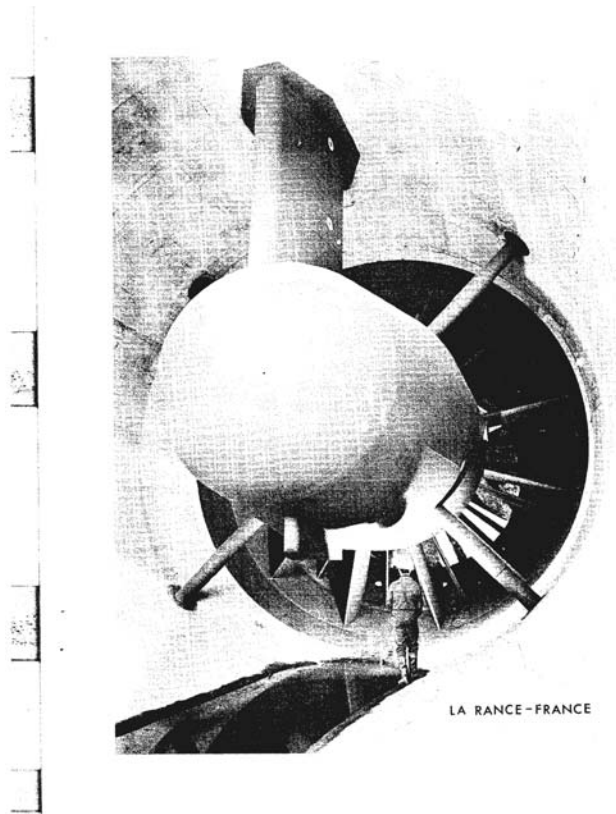


CYLINDER 25 FEET LONG ASSEMBLED  
FOR ELECTROSLAG WELDING



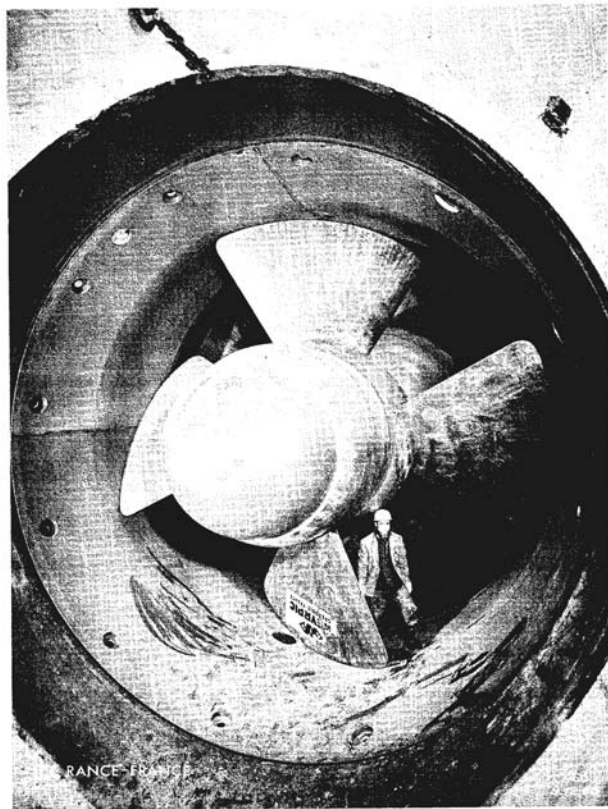
LABATHE, FRANCE - UNDERGROUND PLANT

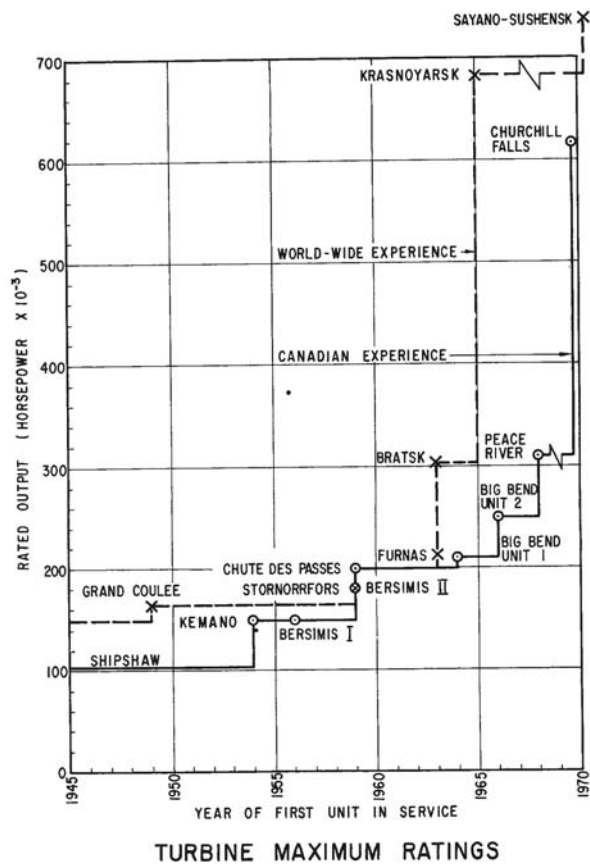




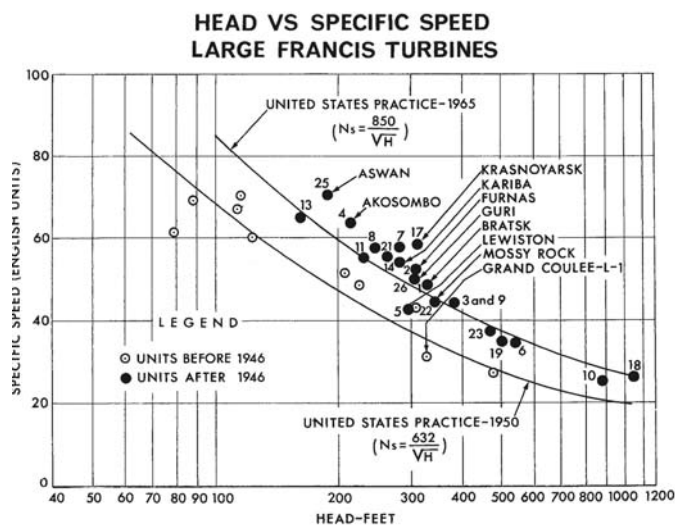
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**Oral history of Thaddeus (Ted) W. Mermel**

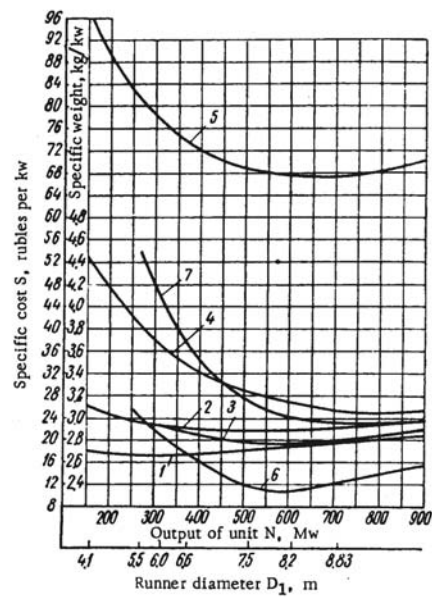




Oral history of Thaddeus (Ted) W. Mermel







VARIATION OF SPECIFIC COST AND WEIGHT OF THE UNIT WITH UNIT OUTPUT (HEAD  $H = 100$  M):

1 - COST OF POWERHOUSE STRUCTURES (INCLUDING CRANES); 2 - COST OF TURBINES; 3 - COST OF TURBINES WITHOUT ADDITIONAL TRANSPORTATION AND SPECIAL MANUFACTURING EXPENSES; 4 - COST OF GENERATOR; 5 - TOTAL COST OF POWERHOUSE, INCLUDING AUXILIARY-POWER AND HOISTING EQUIPMENT; 6 - TURBINE WEIGHT; 7 - GENERATOR WEIGHT.

Oral history of Thaddeus (Ted) W. Mermel