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Interview with Professor H.L. Bral

10 November 1965

I came here in the last of August, 1903, and Professor Osborne came to the University a year before then, in 1902. And of course you know that Professor Osborne was a professor of physics at Olivet, Michigan where I did my undergraduate work and Dr. <sup>Kane</sup> Caine, who was at that time President, had been a professor of Latin at Olivet and he came to the University here in 1900 and in my opinion that was really the beginning of the institution as a university from an academic standpoint. When I came in 1903 Professor Osborne hadn't been here a year. I had taught in high school in Michigan for that year, 1902 to 1903, and the man who apparently had been head of the department ~~x~~ I don't remember, I know I had never met him, but a man by the name of Kelly had been an assistant professor but he resigned that year but he was still here in Seattle when I came, I met him, and he went East I think to do graduate work. Now that is the beginning. I know nothing about the Physics Department before that, except a few things that were in the department, a few pieces of apparatus.

U Do we still have them? What were they?

The first thing that stands out in my mind was a Kelvin balance.

K Yes. We still have that. Somebody was going to junk it and Roger (Knappe) rescued it.

Anyway they should have it, I do not know why they bought a thing like that. Then electrically the thing that I was interested in rather soon in my stay here was we had a Thompson Reflecting Galvanometer and I remember two resistance boxes. They were there 18 years ago when I retired, long boxes and printed on them, legal ohms, in other words they were manufactured

under U.S.

U = E.A. Udell  
K = R.W. Kenworthy

G = R. G. G. G.

K I went through some old catalogues and in one of them I found a list of the apparatus of the Physics Department at that time. I recognized three or four ~~xxx~~ pieces at that time.

It would perhaps be wise<sup>s</sup> to emphasize the fact that Professor Osborne was professor of physics and electrical engineering. Electrical engineering was a part of the Physics Department. A man named, <sup>Hiene?</sup> Hiene, did the work, taught classes in electrical engineering and during that first year I was here, 1903-04, the school year, four seniors graduated from electrical engineering. They were the first electrical engineering graduates in the College of Engineering.

U Was Magnuson here at that time?

No. No. Hiene was the man that taught the electrical engineering. I don't know how much you know about the location--it was in the basement of Denny Hall, the library was in the basement, the wing at the west end there, the actual Denny Hall.

V Was that the general University library?

Yes. The University library. A man named <sup>Coffman</sup> Kaufman was the librarian. Then in the south end of the basement of Denny Hall was the Chemistry Department. And pharmacy--and electrical engineering had one room. When you stand out on the front steps of Denny Hall, to your left is a fair sized room there, electrical engineering. All the equipment they had was a few machines and we had the big room or laboratory and the room at the end--you know that semi-circular room and the room above that was our lecture room.

u Was that on the first floor then?

The lecture room was on, I think they called that in those days, the first floor, and where we were, the rooms they called the basement. They changed this--no matter how deep down you were, you were on the first floor.

u Well there were only three people in the department at that time, weren't they? You and Professor Osborne and then the man who left.

I was supposedly on half time as a graduate assistant, \$500 and a man named Rathbun.

u Was he here before you came?

Well he had just graduated from the University, really as a math major but had taken physics courses that had been offered at the time and he did his thesis work in mathematics.

u What thesis work would this be? Would this be for the bachelor degree or the master's degree?

For the master's degree in mathematics.

G May I ask a question? You say Professor Osborne came in 1902, had there been a physics department before that?

Well there must have been because this man Kelly had the rank of assistant professor and someone else but I can't think of it at all, he has been away from Seattle for a year but later on I know that he had some

graduate work somewhere.

I think the record in the catalogue shows that there were physics taught. It was sort of sporadic up until 1890 someplace there.

K Apparently they bought a few things when they bought that Kelvin ~~KLM~~ balance and the galvanometer. You know I think those were way back in ancient history because in South Dakota when I was there they had one of those. It had been there for gosh knows how long.

? G What degrees were they giving at that time. Mathematics, you say they gave a masters. Was physics giving a masters degree at that time?

I rather think that I was the first one to get a masters but I am not positive.

G What year would that have been?

That is 1905.

U I could ask you what courses were taught but the catalogue would show that.

Yes. Rathbun and myself, we were the two people who were supposedly doing work for our masters degree, with physics as a minor and mathematics as a major and I had physical chemistry in my mind. Then in 1904, Hiene retired and Professor Magnuson was called a professor of electrical engineering but as a part of the physics department.

W Did he come from outside or did he graduate from this university?

No. Professor Magnuson had his undergraduate work in electrical engineering in the University of Minnesota. Then he went to Wisconsin under Wood, the old famous Wood in those days, for his doctor's degree in physics. There was no question at all that Magnuson was a man of good ability in mathematics. Of course he had to pick up quite a bit of engineering because he was down in New Mexico, a professor of physics I think down there and he didn't take up his work in the University in 1904 until the end of October because he <sup>was</sup> tied up. The man that had practically promised Professor Osborne that he would take the position in engineering <sup>at</sup> the University of Michigan did not--he backed out in late summer and so it was not until late October that Magnuson came to take up the work in electrical engineering. That was the second year I was here and there were two men then students as seniors in electrical engineering. One was a Seattle boy, a very nice man and the other was a Japanese who later became an electrical engineer over in Japan and translated American alternating current ~~books~~ for use over there. He was well known for his work over there. They were seniors in electrical engineering. Then I have forgotten just what year, possibly at the end of 1905, Professor Osborne initiated the work to have electrical engineering removed from the Physics Department. The same type of thing had been done at the University of Michigan. In other words, it was not an uncommon thing in those days to have electrical engineering originate in the physics department. Professor Carr <sup>Carhart</sup> at the University of Michigan, Professor of Physics for a year was a recognized authority in electrical engineering problems. Perhaps he could have avoided the blackout. They had blackouts then. Well from then on the common thing <sup>was</sup> for Professor Osborne full time and after I had my master's degree in 1905 I was given the rank of an instructor full time and that was in the summer of 1905.

U Then there were two of you in the department?

Yes.

M You and Professor Osborne?

And a graduate assistant, another one came in. His name was Wolf and he was later a teacher in physics in Western Washington and California.

K Do you remember what your salary was as an instructor?

Yes.

G. Probably too well.

900 dollars. Since you brought up that question of salary, you see Professor Osborne in the summer of 1906 had a leave of absence and went to the University of Michigan and finished his work for his doctor's degree. That was my second year, the summer of 1906.

? Do you know what his salary was?

No. That was a secret. The only one outside of Professor Osborne, the head janitor undoubtedly knew it because he read the books. Well at least during the year, the year that Osborne was away, a young man by the name of George Winchester who had practically completed his work for his doctorate degree under Millikan at the University of Chicago was here to take Osborne's place.

This is in 1906?

It must have been, the school year 06 and 07. And during the winter 1907 when Osborne was away, before he left he gave me a great long string of "you do this and you do this" and you do that, tell Winchester to do this and tell Frank Johnson, "(who was then half-time physics, half-time electrical engineering). Well, I didn't do much bossing; I got along fine with those two men. In the winter Winchester said to me, he said he had noticed that there was an examination in civil service bureau standards, and he said, why don't you take that exam? I said, "there is no chance, it is open to anyone in the United States, I can't compete." He said, "oh, you can too." I did. I took the exam in May of 07 and in a few weeks I had word that I passed my two topics that I wrote on, general physics and AC and DC engineering. I got almost a perfect score in general physics. I didn't do so well in engineering but that was all there was to it. I had given as references for the Bureau of Standards, Professor Osborne and Dr. <sup>Kane</sup> Caine. All I heard from the Bureau of Standards was my record, the two grades and they had communicated with Osborne and <sup>KANE</sup> Caine and so they knew that I was being really considered for a position and I had put down that I would accept a position for ~~\$1200~~ \$1,200 at the Bureau of Standards so along late in April, I had word that I had been appointed for the next year at a salary of ~~\$1300~~ \$1,300, ~~and an increase~~ \$400 and the old head janitor after the meeting of the Board of Regents, he read the books while he was doing the janitor work, he came and slapped me on the back and said, you got the highest increase in salary, next to the president. He is the only man that got higher than I did. Then in 1909, they brought in another full time instructor, Dr. <sup>Gronda</sup> ~~Gronda~~, a man with a doctor's degree from Johns Hopkins University. He stayed here until the end of 1912. In 1910 I took a leave of absence and went to Cornell University where I studied for my doctor's degree. I completed the work in 1912.

71 Who did you do that work with?



As far as the thesis was concerned it was under Shearer. The courses primarily that I was interested in were under Professor Merritt. There was one other year's work in theoretical electricity, magnetism, the other one, mechanics.

W Was Richmeyer there then? Or was that before his time?

Yes. He was there. He had completed his work for his doctor's degree. And a man named Gibbs was likewise there.

Is that Gibbs, a physical chemist?

Gibbs was head ~~XXXXX~~ after Professor Nichols resigned--Professor Nichols was very anxious to reach the age of 63 so he could retire and Gibbs was made head of the department. Gibbs and <sup>Recht</sup> Greibmeyer did their work pretty much at the same time at Cornell. They were both Cornell graduates. Then as I say, <sup>Grondol</sup> Grundall and Osborne were full time and I was full time. Then when I was away I had to pay a substitute which was Lester who was at the University for the two years that I was away and then he went to Princeton and worked for his doctor's degree.

What do you mean when you say you had to pay a substitute?

In those days it was customary for a man who had a good reason. He could have a leave of absence and a man would be brought in to do the work to satisfy the department and the president and executive officer. And this man Lester--I was getting \$1,300 and I paid the first year \$1,000 so I had \$300 left over.

Did you get any money from Cornell?

No. My first year there towards spring, Professor Nichols came to me and he said, "we'd be glad to have you take an assistantship in the department next year but we cannot offer you more than \$600 in the regular assistantship but of course I was getting a little money from the University here and I didn't consider that offer at all. I told Professor Nichols that I was supposed to put in all my time ~~XX~~ as a graduate student at Cornell University while I was getting a certain allowance from the University of Washington.

G When I was a teaching assistant at Berkeley in ~~XXXX~~ <sup>the 1930's</sup> /I was getting \$600 a year.

It didn't change much.

I hadn't heard of the system before ~~XXXXXX~~ of the instructor going away on his salary that I am paying out of that. I am pretty sure that Doctor Gronda~~f~~, the years he was here, he came in 1909 and resigned in 1912 and accepted a position with a commercial concern in Pittsburgh and stayed with them until he retired a few years ago. He is still living back there in Pittsburgh.

U Professor Brakel, do you remember any stories about the classes in the early 1900's, about any particular students or any incidents that took place?

Well I am not sure that this is of special interest to you people. It was to me at the time. It simply convinced me that I had the right idea. This student who was <sup>an</sup> ~~XX~~ /electrical engineering junior the year I came, who was a Seattle boy, had graduated from high school here in Seattle, he told

me, and I know definitely that he was <sup>the</sup> man, I would take his word on anything, he was very reliable. He said, "when I finished the 8th grade, I decided to go on to Seattle High School. Some of my classmates came out to the University and when in four years I completed the high school, those people graduated from the University with a Bachelor's degree." That is why I say, just about in the year 1900, Dr. <sup>Keane</sup> Gaines in 1902 was made acting president and in 1903 he was given the rank of president.

G Professor Bratell, you mentioned that most of the students in the activity that you mentioned has been electrical engineering. Is it that there were no students that were interested in physics itself?

At that time the only ones that were taking anything that I can think of for the first two years were two of us as student assistants working toward master's degrees. I completed mine and the next year we only had one because it gave me the standing of instructor so I just had one graduate assistant.

G But no undergraduates?

I do not remember, I cannot think of any of the students at that time who listed themselves as physics majors.

G This is understandable.

Now of course the work in general physics--the students were engineering students and liberal arts students. They took the same course and the other thing I think we must have overlooked--in those days and for quite a few years after that, physics was a requirement for all people who were working for a degree whether they were going to be poets or what not they had to take,

and that course I <sup>thought?</sup> thought, right from the first, that was one of my big jobs.

Do you remember what book you used?

*Carhart & Chubb*

Thugh - High School Physics.

*K* You know that is what I had in high school physics. I had high school physics - 1914-15-----

I think for a period of 10-15 years, 80 or 90 per cent of the students in high had Carhart. Well there is one other thing in that connection, during the winter of 1904, the faculty was anxious to start a summer school because ~~a~~ <sup>several</sup> a number of high school teachers had requested that we have summer courses in the summer school, or summer courses. The Board of Regents said there is no provision for that, there is no money, we cannot give you any money for summer school in 1904. Well the faculty decided said they would teach that summer, 1904, without any extra salary for the 6 weeks providing the Board of Regents would definitely promise that after that there would be an allowance for ~~summer~~ <sup>summer</sup> summer school work so we did start summer school in 1904 and Professor Osborne told the President, he said, "I cannot ask the man <sup>as</sup> ~~Brinkel~~ to work in the summer school for six weeks when he has only been getting \$500 for the year so I would like to have you pay him \$75 for the six weeks summer school and they did.

A real bonus.

The amount for those 6 weeks, I worked at least 60 hours every week in trying to do the things that Professor Osborne would like to have me do, fix up lecture experiments and so on with very poor equipment. That was my

other big job was to help set up lecture experiments and the equipment was in anything but in working shape. There wasn't much of it and most of it was very badly misused. So that is my first two years. The other thing, of course, that was of interest to me at the time, Professor Osborne was chairman of the committee on accrediting. You see in those days for a number of years, the university faculty did its own accrediting, visited the high schools and gave them standing throughout the state. Pullman did the same thing, of course that was the state law then and of course since I have had some teaching experience, Professor Osborne in the first months of school work ~~XXXXXXXXXX~~ during October came to me. "Now I am going to be away next week on Saturday morning for three days, I am going to be visiting high schools and I want you to take this general physics ~~XXX~~ class." Well I did of course, and a very common thing throughout that year and the next year. Professor Osborne would sometimes be gone as much as a week and I taught the physics class. Well one other thing that came in of interest to me, in those days we heard the expression over and over again, "service to the state by faculty people." And the first thing we knew they had quite a list of problems. No one in the city lighting department, in the Puget Sound Power and Light here in Seattle and anywhere in Western Washington and even up in British Columbia, they had no ~~XXXX~~ means of checking the accuracy of their instruments. So we had the responsibility of testing electrical apparatus primarily and anything else that they wanted to bring in. I remember one time the City of Seattle Lighting Department was asked to test the electrical power company people for the City of Tacoma because they were having a dispute with the company from whom they were buying the power because they couldn't sell as much power as they thought. They brought out a whole wagon load of volt meters, ammeters and two watt meters one Saturday afternoon. "We want you to test those." We worked for hours and checked them. We had a few instruments by that time that had been checked by the Bureau of Standards. ~~XXXXXXXXXX~~ I made use of the old Kelvin balance that measured currents up to 400 ampere and that work continued

for five, six years or more. Professor Osborne did the business end of it and helped with the testing. He and I would test in many cases, at first for a number of years, we got nothing, that was part of our work. After that we were allowed to charge a small amount. To give you some idea of how much was involved, both the City of Seattle Lighting Department and the Puget Sound Power and Light one winter, there was a bad rubh, they had trouble day after day, they had calls, "we know that our electric bills are too high, the meters can't be right,"so both the city light and the Puget Sound Company put it up to us, will you test those meters--yes, but you have to charge a little or we will be swamped. So we charged a dollar for testing the killowat hours and with the understanding that if the meter was within one per cent correct, the customer had to pay it. If the meter was more than one per cent off the company could pay it.

u That is interesting.

Well for a month or so we had just a string of meters sent in and practically in every case the meter was in good shape. The people then were satisfied. One woman called up, the City Lighting Department had just started, and said, "can you change the speed of our electric meter?" They said, "yes." "Can you do it simply by phoning?" He said, "no we have to actually work on the meter." Everybody's meter was wrong and they just had a disease but in a month or so it all disappeared. But we did a lot of testing for the City Light, Puget Sound. I remember one time Professor Osborne was away ~~K&K~~ on one of his school visiting jobs. City Light called up, "we have at least five dozen incandescent lamps that we want tested." I said, professor Osborne is away and we have extra work and ~~XXXXXX~~ we can't possibly do it. "But we have to know within three or four days because we have to put in our bill of orders." So I finally agreed to the testing. The only way to test, as you all know, a light problem is to test yourself, test it, then put it away and

then do it over again because your eyes might play tricks on you. I worked I imagine on that collection of lamps, I worked at least 50 hours.

K What did they want, what they call a candle power test?

Yes, a different voltage, slight changes in voltage just to see what-- and I forgot, the bill was some \$25 or \$30 for the good many hours of work that I put in. It was hard work too for one person, if two of us worked together one could check the other but we had that type of electrical standardizing.

~~XXXXXXXXXXXX~~

K Do you remember about when you had begun to teach what we would call a good college physics course?

For the college students, they used Carhart's University Physics.

K That is right, I guess there were two books.

And that went back to 1905 did it?

Oh, yes, Carhart's University Physics, two volumes, they weren't big books, they were rather small but two volumes, covering all of the subjects in electricity, mechanics, heat and light, sound. I am sure that Carhart must have written, to begin with the very first edition were very likely back in the 90's.

W So you were teaching both the deficiency course and the regular college physics course?

Yes, I had charge of the so-called high school physics for the first five or six years and then the University no longer required physics from all the

students. Of course the engineering students, the chemistry majors, the physics majors, the math majors, most of them had physics in high school. The engineers of course had to have it in order to enter the College of Engineering.

u When Professor Osborne made the arrangements to have electrical engineering a separate department, then were you beginning to have some physics students, some who were interested in physics?

Yes. You see I was away from June of 1910 until about the first of September in 1912. In other words, two school years and ~~FROM~~ Grondas was here and there were a few students who started their work as physics majors. They were before your time although one of the boys Sebastian Carr--they called themselves physics majors, Sebastian and Enoch.

u Was this before you went to Cornell or during?

They entered ~~IX~~ the University in 1909. Those Carr boys, there were three boys--two physics majors--one Frank, the oldest one was another one and two girls. There were five Carr children in school at the same time. Entered the same time, completed their work for their bachelor's degree and Sebastian came out to see me two years ago and we had a very nice visit. Sebastian and Enoch, both of them were very good students. Enoch got a fellowship at Johns Hopkins University and Sebastian at the University of ~~MICHIGAN~~ Illinois. And there were a few others--two girls, as the years went along, went out as teachers, high school teachers. Very few so-called physics majors.

K I suppose you were giving upper division work in optics and heat and things like that weren't you?



Yes, a course in heat, a course in optics and of course I told you Dr. Gronda~~s~~ resigned in 1912 and accepted this position with a commercial concern in Pittsburgh and a man by the name of Herbert Anderson, he had his doctor's degree from the University of Illinois and started his work as an instructor in 1912.

— Anderson came here in 1912? Did he have his doctor's degree when he came here?

Yes. And he had at least one year or two years teaching in some small school down in the south somewhere, Missouri or Arkansas.

— What happened to your replacement, the one who took your place while you were away?

Lester? When I came back he went to Princeton University and got his doctor's degree. Then he taught here for a couple of years after he had his doctor's degree. He was married and came back here. / Then he was connected with the government work and x-ray studies in a laboratory up in Massachusetts. He was not connected with any schools directly but it was research work and he developed the application of x-ray studies of structure and metals. That was Lester. Then Anderson of course went into the war service in ~~1908~~ 1917-1918 and returned and resigned.

W Did he go into the war service as a scientist?

Yes, signal corps work. And that is what he took up after he had leave of absence from 25 to 27, no later than that.

\* Later than that because he wasn't here when I came. I think he had been

gone a year or two/.

I am taking a pretty long jump as far as years are concerned. After two years of leave of absence after his work with the--actually during the war you see, he was back here and then ~~XXXXXX~~ at the end of two years, apparently this office said you must either return or resign and he resigned and McCurdy was appointed. McCurdy was here from ~~XX~~ 1927 to 1929 and you came in '29. Dr. Suzzalo initiated the thing. He was president and he called in Osborne one day without any preliminaries at all and he said I have decided that the more graduate work, advanced work, must be given in the physics department and you suggested that we bring in a man with at least a doctor's degree and have him half-time teaching and half-time research time. Before that there was no time for research. It was all, if you do any research you will have to do it extra.

Q Now what year was that that Suzzalo made that pronouncement?

A It must have been about 1926, just ~~XXXX~~ a short time before Suzzalo was fired. He wasn't fired because of that suggestion. The governor didn't want him any more.

Q When you say that building, do you mean our physics building?

A Yes, we moved into that in 1928. We had been in there a year when you came. McCurdy had left because he started his work in ~~XXXX~~ 1927. He had a doctor's degree from Johns Hopkins University and had done some other research work for a year at least, I think with people in Princeton, I am not sure about that but when he was brought here the people in the department were very much annoyed because he supposedly had half time research time and half time teaching.

He would have nothing to do with teaching graduate students and was given the engineering course that the first quarter work started in the spring quarter. In other words, the flunks from the fall and the winter plus some others. That was his course that he was allowed to teach and I couldn't do anything because I was not one of the favorites any more so that he came to me during his second year and he said, "I am discouraged and I feel that I should resign." He asked me what I could do and he knew I knew what the conditions were there and I said, "I can't do anything for you because all the others are against ~~me~~ anything that I would suggest as far as McCurdy was concerned.

— There were only two others, weren't there?

Utterbach was here then. You see Utterbach started his work for his master's degree in 1917, got his bachelor's degree in 1918 and then delegated his work until about 1922 and then went to Wisconsin for his bachelor's degree and taught down in Georgia for one year and then came back here. So McCurdy resigned and a man named Eller has been here and then in 1929 Henderson was brought here and Kenworthy. You know all the rest of the story.

Paul Higgs had started, Newberry was on the staff.

No, Newberry was not at the time.

Mrs. Newberry?

Oh, yes, I am sorry. She had her master's degree from here and she was a physics major and she got her master's degree at the University and then about 1926 she went back to the University of Minnesota for her doctor's degree and she was here in charge of the general laboratory. Was she in

charge of the laboratory when you came? She died very suddenly in 1932.

I would like to go back just a bit--during the war, there were these great things that were happening in physics. Like before the war, Rutherford's experiments. ~~These were the~~ Then there were the things that Rutherford did right after the war. Does this have any impact at all? I mean does the information about these things come here? When did you learn about the Rutherford experiment for example?

Well, of course, way back in the years 19----the winter of 1905, maybe 1906.

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I think at the end of the other reel you were telling us a little bit about Spencer.

Up to that time the Governor had the right to tell the Board of Regents what to do and they had either to do what ~~THEY~~ he asked them to or he would at once tell them that they were off and put in someone who would so Spencer was put in on those conditions. He never took an active part in the administration of the University. <sup>Padelford</sup> Paddieford and Thompson were the actual runners of the University. Then, of course, one of the first things that we did was advise a change in the department program or point of view, have things pretty much decided, not entirely, because I think you know that they cannot be decided and run. For instance, one of the men, I wish you were right here to remind him of it--<sup>Jah</sup>Lockeridge came in--I have foregotten completely what he suggested that we do. I said, "no, Don, I said the only thing that that would do would bring up a fuss." He said, "sure, we haven't had a fight in the Department for some time." But I said that fight on that topic won't get us anywhere, it could cause trouble and nothing else and I convinced him then. <sup>Loughridge</sup>Lockeridge didn't like it too well but he didn't carry it beyond that as far as I know and I didn't. But otherwise than that I tried to get the point of view of the people in the department. Then, of course, what we tried to do right away is to get permission to complete graduate work with students and grant a doctor's degree. I think in '35 was the first.

I am trying to remember who the first one was, I don't know, but it was along about '35 or '36.

Dahlstrom, Abbott and Young. There were three of them.

Not all at once, I don't believe.

Yes, all the same year. I am pretty sure at any rate, I am pretty sure. I remember so definitely, Young--Bob Young. Do you know Bob Young?

I know his name, but I have never met him.

He has been prominent in ~~the~~ sound. (*Acoustics*)

At San Diego--he was President of the Acoustical Society one year.

Pretty much his thesis work was done under <sup>Young</sup>Lockeridge--but distinctly independent. And I said to Bob one day towards the end of the year--I said, and I knew what he had hoped to do. I said, I am afraid that as a department, I can't do much for you. He said, that is not necessary, I am running after this myself. This is my job and he took a job with the ConMusical Company as a physicist. In other words, he got in touch with them and they originated the matter of having a physicist help them out in planning, designing in the type of musical instruments. Bob Young was a good musician. Just a natural, I don't know how much training he had. I remember Bob real well, and Abbott, Dahlstrom.

⊗ Professor <sup>Brakel</sup>~~Brinkle~~, I don't want to make you repeat things but some of this didn't get on the tape, the story of the transition and could you just briefly--by transition from Osborne to you as Chairman. Just so we have it recorded.

Now of course I told you before about McCurdy being brought here as the man that was borrowing Suzzallo's ideas, half-time teaching and half-time research. It wasn't successful at all because everybody was against him and McCurdy resigned in 1929 and then Henderson came and then came Mr. Kenworthy. Then in 1932 <sup>Lough</sup>Lockeridge was hired and I think it was the same year or maybe the next year that Kennedy came. I have ~~at~~told you the Kennedy story about coming here. And I knew of course because Professor Osborne was giving Professor Henderson the same type of treatment at the end of two years that he had given McCurdy, and Henderson went to the administration and fought back and won out. Then Kennedy came and took part in the work in the Department the Winter Quarter of we will say 1933.

Then in the Spring of 1933, <sup>ugh</sup>Loeckeridge and Henderson and Kennedy,  
primarily, am I right--?

They were the ring leaders.

They were the ring leaders. They went apparently, I didn't know anything about it, and told the administration that a change would have to be made. I think they told them that before they ever said anything to me. Then you came, and Kennedy and <sup>Lough</sup>Loeckeridge and Henderson. They talked about what they had done and what they had recommended. They were asking me whether I would do it, and I didn't agree to do it at first because I was ~~XXXX~~ sure that Kennedy was brought here for that purpose, and he was very positive and it was very evident likewise that it wouldn't do to push that any more but they said, am I not right, Ray, that no matter whether I accepted or not, they were going to push it anyway.

They were going to do it, I know.

Well then of course they had told the administration, Prof. <sup>Padel</sup>~~Padelford~~ and Thompson. They were the people who listened~~x~~ and deciding pretty largely and they called Osborne in. The old timers I am pretty sure would have been ~~XXXXXX~~ perfectly willing to have Professor Osborne go on and try it but when they called him in, the whole group and Dean Landis, Dean of the College of Science then. They asked me whether I thought Professor Osborne could change and adjust himself to a new point of view. I thought he could not--~~XXXXXX~~ and said so. That pretty much settled the thing. I had agreed that there ought to be a workable plan that I would take over the responsibilities as executive officer. But I likewise told them, I don't know if you remembered, Ray, I know I made the statement to the group at different times during those days that as far as I was concerned, I had all the sympathies and agreed that conditions were bad, should be changed~~x~~. But since I was being left alone, I was willing to stick it out the rest of my days if necessary.



Well I think this is true<sup>d</sup> that all members of the staff agreed a change should be made. Yes, there were two people who would not sign it because of their long time personal friendship with Osborne. I talked to both of those people and they said, yes, a change should be made.

Professor Utterback told me very definitely, he said that he agreed a change should be made but he thought it hadn't been done in the right way.

That is right and Paul wouldn't do it because of his long time personal friendship.

Your picture is the same as mine even if it is more than 30 years old.

Professor Osborne stayed on then?

Yes. Of course he told me very definitely that as far as he and I were concerned, we were no longer anything except people working in the same department and pretty much stuck to it. I was anxious to have---- you see he insisted after he was no longer executive officer. He still insisted--he was on half time in those days. When you were 70 you had to go on half time. But he insisted on carrying practically a full load. He was very determined that he would not give up Physics 1, 2 and 3 and Home Economics and \_\_\_\_\_. I talked to him but of course he wouldn't listen to anything. He said, very definitely no. And of course it was all right. I agreed it was all right because he was on or it wouldn't be very long before he would be on half time. Professor Thompson and Professor Pad<sup>el</sup>ford told me very definitely, whether they did it in your presence or not, I don't know but they said, "now be sure that you don't do things to annoy Professor Osborne." And of course he had been a prominent worker in the University and as I say, he did some good things for the University. Dean Condon of the Law School--I remember he described Professor Osborne one day. I have foregotten how it started

but I remember Dean Condon saying, well Osborne he could convince a jury as an expert witness, he could convince a jury that water under certain conditions of course (froze) up hill.

He was a very positive individual.

Positive and ~~XX~~ put it in such a form that unless you analyzed it pretty carefully, or caught him in certain statements that the conclusions were right providing his assumptions were right.

One other thing I would like to ask--wasn't there pressure on the University to build adequate facilities for the Physics Department which was the major reason for getting these buildings and Suzzallo did that. Suzzallo originated that. He called Professor Osborne in connection with having a man on half-time research and half-time teaching. He said we must have new quarters and we must have a building.

There was something about the American Association that said that they should have more science equipment, more science facilities.

That could be but I don't remember definitely.

Of course that was before my time but I picked up that idea some place.

Very likely that type of thing I know was in the air. In other words, the University--let me make one other statement. I think you were surprised that we didn't have more physics majors?

Yes.

Now here was the situation. It came up year after year. A young fellow, we will say a freshman. Perhaps he had<sup>not</sup>/definitely decided.. But here was the question--if I major in physics, what would I do when I graduate? Well--be a high school teacher. You could work for Bell Telephone Company. They take a few people from the whole country in a year. The Weston Company, *Western Elec* perhaps a few likewise.

Eastman Kodak too. Eastman Kodak used to take one once in a while.

They did, but a very limited number. Then on the other hand, a student who was interested in science work and perhaps would have been a physics major took chemistry because chemistry had a lot of openings relatively speaking for the person who had a bachelor degree, a major in chemistry. I am sure a large number of students.

That sounds very convincing.

Well pre-war we used to have about 4 or 5 seniors a year.

Yes, yes.

Professor ~~Brakel~~<sup>Brakel</sup>, are there any stories connected with the beginning of the Phd. degree in Physics? How you negotiated to be given the privilege of awarding degrees?

No. I think Dean Pad~~el~~<sup>el</sup>ford primarily, Dean Thompson at the time was Vice President--I am pretty sure from that standpoint that Thompson would take Pad~~el~~<sup>el</sup>ford's words for it and I think there was no question in his mind that we were entitled to it. And we were very conservative. One thing that Henderson and Lock~~er~~<sup>er</sup>idge and \_\_\_\_\_, we always said that now because we were beginning people in this line of work, we have to put the pressure on harder than an old time university. Because they can take ~~KEM~~ chances.

Almost without exception everyone of our pre-war Phd's has done very well.

There is no question about it. Now take the three--I am satisfied, Ray, that I am right, the three of them. Bob Young, Frank Abbott and Dahlstrom. They were good material. Frank Abbott was a little uncertain in some respects but he is a brilliant fellow.

Very solid.

I wouldn't be at all surprised that in some respects he was more developed scientifically than either Dahlstrom or Young. Young had very good ideas and was a willing worker, an efficient worker and Dahlstrom

was good too but I am pretty sure that Abbott had worked and pretty much in mind the type of thing that Lawrence did down in Berkeley.

Well, they almost did what <sup>Kerst</sup> Kartz did.

Abbott worked with Joe Henderson--

Yes. If they hadn't broken the apparatus they would have made it.

I remember Abbott coming to me and talking about it and he said this thing seems so darned simple, he said what is the catch to it. We sat and talked about it for an hour. I said I can't see anything the matter with it, why didn't somebody think of it before? It is so darned simple and it should work.

-----was one of the early ones, can't think of his name. I can see his face and hear him talking. He was a little older, he did his work with <sup>uab</sup> Loeweridge and they had that tank when it caught fire one day. What was his name?

Skramstead.

Sure. He was a good thinker too. Of course he had had some high school teaching experience.

Well there was <sup>Goss</sup> ~~Goffs~~, and <sup>Wychoff</sup> ~~Whitenhoff~~.

There is no question about it, <sup>SS</sup> ~~Goffs~~ is a brilliant fellow. I've known that young chap--he would pick up a magazine article and I knew he hadn't started more than two hours before and in two hours time he had digested that article enough so that he could give a very consistent and a nicely running report on that piece of work.

Barkus was much more quiet and retired--

Smart fellow though.

Barkus was a very good student. A very young chap. He got his bachelor's degree at the University. I don't think he was more than about 20 years old--not much more.

Well I think probably you have exhausted Dr. ~~XXXXXXXXXX~~ <sup>ahel</sup> Brinelle.