

**ORAL HISTORY INTERVIEW:**

**WALTER BITTERLICH**

with

Elwood R. Maunder  
David T. Mason  
Willie Tischendorf

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This is Elwood R. Maunder speaking from the home of Dr. Walter Bitterlich in Salzburg, Austria. It is May 13, 1969, and sitting around the table with me here today are Mr. David T. Mason and Dr. Walter Bitterlich and Dr. Willi Tischendorf. Dr. Bitterlich is a professor of forestry at the University of Vienna; Dr. Tischendorf is a graduate of the University of Vienna, School of Forestry, and now more recently a graduate of the University of Georgia with a Ph.D. degree and I believe you are the first Austrian forester to receive the doctorate from an American University and return to your native country. Right?

TISCHENDORF: Right.

MAUNDER: You were originally a graduate of the University in Vienna, were you not?

TISCHENDORF: Yes.

MAUNDER: Before you went to the United States. Now it's customary at the beginning of these interviews, before we get into the main stream of what we are going to be discussing, just to get a little bit of personal history on each man who is participating in this event. And so I would like to begin to ask you, Dr. Bitterlich, to give us just a quick summary of your own personal history. Where were you born and when?

BITTERLICH: I was born in Reutte, Tyrol on February 19, 1908 and there I went to elementary school. In 1919 I had to go for one year to high school in Innsbruck, Austria for the first year, in 1920 we moved to Salzburg; my father was also forester and he took over here in the leadership of the biggest private owner of timberland in Salzburg, Mayr-Meinhof, for seventeen years. The main office of this main Mayr-Meinhof, is not far from here. All this land you see here was his. Now, in Salzburg I finished the high school and went to the University of Vienna in 1926. There I finished in 1930. And also, of course, after I had studied I was a volunteer.

MAUNDER: You volunteered to help your father?

BITTERLICH: Yes, one of my jobs I did, was to divide into lots the former agricultural land in order to get it sold for settlement purposes. All this part of town you see around my present home got its shaping by me in 1931.

MAUNDER: Did you major there in Forestry?

BITTERLICH: Yes, in Forestry. And this was a bad time when young men couldn't find any employment and so I had to work for five years without pay but I worked all of the time.

MAUNDER: Five years without pay?

BITTERLICH: Yes, partly under my father and partly with the Federal forests. Sometimes we got some pay as a laborer, but not more, and for example we had to sign a contract that we could not demand pay later.

MAUNDER: That means you don't have any claims for your labor.

BITTERLICH: Yes.

MAUNDER: For demanding pay later on?

BITTERLICH: Yes.

MAUNDER: Go ahead.

BITTERLICH: AS a result of my very diligence in doing it, I was appointed in 1935 to the Federal Forest Service.

MAUNDER: In what capacity, what job?

BITTERLICH: I was one of the assistant foresters in the big district Newberg-Murzsteg. In this area I worked for two years. It was a very interesting logging operation over there. Forty thousand cubic meters every year came by water down the river Murz, and were caught by very interesting mechanical devices (I have pictures taken there if you would be interested?) And it was a difficult operation because all of the forty thousand cubic meters all from one year, the previous year, had to come out within forty days because the need of using this melting water of snow in spring. Every day one thousand cubic meters had to swim out of a two kilometer long canal (I have a picture). It was a very interesting but a very strenuous service. It took two years. I also was concerned, with construction of roads and working out of plans of situations of old pipelines for drinking water, in the village because as all of the pipelines for water supply were owned by the Federal Forest Service. Also a big monastery was over there which was managed by the Federal Forest Service. I remember that I had one day to work out a plan of all the roofs and so I had to climb to the roofs and I won't forget the very close, very quick because the roof workers always gave invoices to the Forest Service.

MAUNDER: To the Forest Service?

BITTERLICH: Yes, about the work which they had been doing to the roof, and nobody could say how many square meters there were.

MAUNDER: And you were a means of checking up to see that they were accurate?

BITTERLICH: Yes, yes. This is only one part, it was a very different job.

MAUNDER: A forester was called upon to do many things that had little to do with forestry?

BITTERLICH: Yes. That's true.

MAUNDER: Was that typical of the jobs that you had in those days?

BITTERLICH: Yes and it is still typical now.

MAUNDER: Still typical now?

BITTERLICH: Yes and in 1937 I could move to Weissenbach am Attersee and there I had the opportunity to get a home in order to be able to get married, and I married in October of 1937.

MAUNDER: What was your wife's maiden name?

BITTERLICH: Ilse Hauptmann.

MAUNDER: Hauptmann?

BITTERLICH: Yes. This was then the time of the Anschluss, a very turbulent time. You remember that.

MAUNDER: Right. 1938.

BITTERLICH: From there I had an appointment first to go to Reichraming, Oberosterreich. This is another big district, but I found a colleague who like more than I this place and I could leave it to him. Then I had to go to Achenkirch in Tyrol. I wrote to the old forester telling him "I am going to replace you." This was the first news he got about his retirement and he didn't know why. And it was a political move against him and he tried how to find out [why].

MAUNDER: What was the political involvement there? Was he against the new regime?

BITTERLICH: No, I think the only reason was that any forester who takes care over his certain district will be the goal of pirates if the political situation turns. There is no good forester who has no enemies. It is impossible to have no enemies and still be a good forester. Yes, I read it in the "Memoirs of a Forester" by David T. Masson. You have some very similar problems but in our country it is such that as soon as the political situation is changed immediately the foresters are most times the first to lose their jobs. All the enemies come and say, "oh, this is a bad political man--he must put away."

MAUNDER: And is that still true today in Austria?

BITTERLICH: It is not so, we are now a little wiser than we were thirty years ago. Our people are a little wiser but I think if we would have sharp change the same would come again. A change, for example, if the Communists were coming in.

MAUNDER: The foresters are not then what you would call civil servants who are career people who are outside of the influence of politics?

BITTERLICH: No, not at all. In any ways they always are the goal of pirates.

MAUNDER: Is this partly because the forester is of such great importance in every local community that he is looked upon as a leader of the community and therefore is involved to a certain extent in the politics of the community?

BITTERLICH: No. Not that. But the forest is on many places an important thing.

TISCHENDORF: It is use of our forests which has its impact on all of the people, and the forester is here to defend the public (common) interest.

BITTERLICH: And it is not possible to do all men right.

MAUNDER: I understand.

BITTERLICH: It is not possible--everyone wishes to have some advantages.

MAUNDER: Special consideration?

BITTERLICH: Yes, and to get out money of the forests in any kind of business, for example, selling wood. If you say, "No, we don't sell if you do not pay this price." He does not agree with this.

MAUNDER: When you do your duty, you step on many toes.

BITTERLICH: Yes.

TISCHENDORF: The Forest Service in many areas is a relatively large employee.

MAUNDER: In other words, the forest is a big part of the local economy and involves a great deal of employment of local people and is a position of great deal of employment and then to be a forester in that community and that is a position of great importance. And I understand that in times of political change people who are employed by the forester now may have opportunity to attack him and say, "We ought to have someone else be the forester now that we have a new political situation." Is that a correct interpretation?

MAUNDER: Not merely employees you're also doing business all the time with a lot of people.

TISCHENDORF: And then a constant quarrel is the boundary between the farmland and the forest.

BITTERLICH: This is a primary point of struggle.

TISCHENDORF: For example, someone claims the use of land that belongs to the Forest Service.

BITTERLICH: Yes, and this is only one thing that could be the cause of a big fight.

MAUNDER: The cause of a great discussion and debate.

BITTERLICH: Yes, Yes.

TISCHENDORF: The compulsory right is the main problem.

BITTERLICH: Yes.

MAUNDER: Would you explain that just a little bit, Willi. I think you can probably illuminate our thinking on what this problem is?

TISCHENDORF: I might have to go back a little to these property rights of the Bavarian settlers in their village. Each settler or each farmsteader had his own small individual lot. Then outside was the Freie Mark, {QUERY AUTHOR} was land where everybody could graze cattle or use this land according to the farmstead's need. Thus, the German tribes didn't know the word "property" in the sense of the Romans. Thus, the "free" land outside of the village or of the settlement was for public demand. Later on, with the Roman Law introduced in our jurisdiction, public demand was legally represented by the government. Therefore in some instances the Forest Service now is the legal successor of the free land. On the other hand, there are many individual rights still involved in the forest land, such as grazing rights, or using forest litter or a certain amount of firewood or timber for construction or fencing. I call them "compulsory rights". These rights are, by law, connected with property of specific lots. Such a property owner has a certain right in the forest. Another school of thought is that the farmsteaders themselves, and not the public, are actually the legal successor of former "Freie Mark". And this is a frustrating (useless) situation (discussion), actually. Now the Forest Service has the problem to satisfy all these demands on the one hand, on the other hand, work as a self-sustaining economic body. If it takes seventy or eighty percent of the total yield to satisfy the individual rights, then it becomes difficult for the Forest Service to maintain a balance of payments. The Forest Service cannot in such cases satisfy all the compulsory rights, while the farmsteaders want these compulsory rights without regard to a sustained yield, and to sustained management. This is the main problem, I feel.

MAUNDER: Yes.

TISCHENDORF: The name Reutte, as many of these Bavarian settlements, means "clear-cut" or "to remove trees." This applies very much to these old Bavarian settlements, where you have the clear-cut area and then around it, you have the individual yards, and then outside was the free land, that is now often Forest Service land.

MAUNDER: And this was the new position, then, that you came to in 1938?

BITTERLICH: Yes, in July.

MAUNDER: In July of 1938. This was after Anschluss.

BITTERLICH: Yes. And I was very glad about this appointment.

MAUNDER: Excuse me. Let me interpose a question. Were you obliged at this time to become a member of the party in order to get such a position?

BITTERLICH: No, I wouldn't have been obliged but we were, because we saw some new development, a new regime, a very good thing. We knew the old times of depressions and so on which nobody seemed able to help, and Hitler seemed to be the only man without the communists and everyone knew Hitler couldn't do now a change, the communists would certainly do it. There was no other alternative, and this was the reason why especially all of the foresters who were proud to get more power.

MAUNDER: More backing from the government?

BITTERLICH: Yes, they, nearly all of them, were favorable to the new regime.

MAUNDER: Did you get more money then to do the forestry jobs?

BITTERLICH: Yes, all the people, you cannot imagine all the people got more money it seemed but also got new duties that we didn't know before: for example, you were a soldier in the war and all your free time you had to use for other purposes, you were not anymore a private man, or example, I had to go to Reutte as a Forester in the first place and I hoped to be able now to continue all of the work of my father, road construction and so on. My father was a very active man and was very known by this people and I succeeded him now; I was very proud. But I got new duty to be the Kreisjagermeister. This is a bureaucrat which they had for hunting and I remember there were one hundred different hunting districts between the Alrberg and Oberammergau which always had to be administrated by myself and when I should do that? I had no time anymore. And the Germans had leased most of the hunting area; big men like, let me think, like Bosch, Opel, and Dr. Heinkel, the famous constructor of airplanes, then Furst Hohenzollern of Sigmaringen. Then Wolle-Schmidt, and many other owners and managers of industries in Germany had their hunting there and I had to serve with them all of the time from early in the morning until late in the evening, they came with their cars and say, "Oh, I wish to get one chance more to shoot." I had a powerful place but I was not informed about; the one hundred different hunting districts and I had not too much heard with other men and so I had a very difficult position besides my main profession.

MAUNDER: How were you able to carry on the mainstream work of forestry?

BITTERLICH: I worked morning until late in the evening and in spite we got four children within three years and I had nearly no time for my family; finally I had a scrap with one of my superiors in forestry; I was getting nervous from being so overworked, to have so much duties then I said to him "Let me go to war. I think I can better do my job in the war, let me get a soldier." So I came in January, 1942 I went to join the soldiers. My youngest daughter was two months old, we had four children, my wife was quite alone and I went to the war and all seemed to be cut off; it seemed to be a wonderful time but it was a very great tragical time.

MAUNDER: When you went into the military, what did you do? Did you go in as, an Officer?

BITTERLICH: No, I began as a simple soldier.

MAUNDER: A simple soldier?

BITTERLICH: A very simple soldier. But after I was in two years I was a lieutenant.

MAUNDER: In the infantry?

BITTERLICH: No, it was, what we call "Do-Werfer." Rockets, outfit, in connection with the infantry.

BITTERLICH: But we shoot not smoke alone. We also shot shrapnel, and we were a helpful support for the infantry.

MAUNDER: Where were you in the war? Where were you located most?

BITTERLICH: Just for education and training in Bremen, January, February and March, 1942. In April I came to Russia.

MAUNDER: You went right to the front?

BITTERLICH: Right to the front.

MAUNDER: Where were you in Russia?

BITTERLICH: At first at Witebsk then we had a short fight near Rshjew, not far from Moscow, and we had at that time in 1942 in the spring to fight with guerrillas near Orscha and Smolensk, then we went to Roslawl-Juchnow. I should show it to you on the map. But in the coming winter we had our front near Wjelikjeluki in the middle part of the Russian front and on February 19, 1943 we were moved to the south and we had to, we were under restriction to, support the second occupation of Charkow and there was a very hard kind of fight. The SS, Storm Troopers, were the very best and we were backing them up. From the first of March it began and on the fourteenth of March we had reached Charkow and this was a most troublesome time. We had no sleep, what we want to eat we had to shoot and during the night we moved from one part to the other and in the morning we would shoot from the other side so that the Russian men would think there were so many more German than there really were, as Rommel did in Africa.

MAUNDER: You gave the impression of being much stronger in your support of the advanced troops by frequent moving around?

BITTERLICH: Yes.

MAUNDER: And this gave the Russians the impression that you had many more rocket installations than you actually did have?



BITTERLICH: Yes, Yes. And then in July 1943 we had to make a big attack against Kursk but we were surrounded by the Russians and now I had the good luck to be wounded I got a little pressure on the neck--wounded--and this was the only reason to come out of this mess.

MAUNDER: You received a neck wound, from what shrapnel or bombs or what?

BITTERLICH: From a tank, yes. I was in a car with munitions, and it burned immediately I could jump out and I jumped out at the last moment and all of the people thought I was burnt but I came out and I went with the infantry and a few hours later I came back to my people and they say they are astonished that I still am living and so I said if anyone is called to be dead he will live very long.

MAUNDER: So then did you come back?

BITTERLICH: I came back, yes, in, to the hospital and got a military leave for four weeks I remember in September, 1943 and I could visit my family but after that I had to go again and I was taken into an Officer's School during the winter and I just came to the invasion as a new officer with the rocket army again and I had to have the same problems with Normandy.

MAUNDER: You were again assigned to rockets for the defense of Normandy.

BITTERLICH: Yes, yes, but this was a very different kind of war than in Russia. In Russia it was dangerous to be very close to the front. In Normandy it was the best part--the best thing to be very close to the front because behind the front, there was the problem. That was where the rockets struck.

MAUNDER: Where the rocket batteries were set up?

BITTERLICH: Yes.

MAUNDER: Why was that, because of the infiltration?

BITTERLICH: The American and the English Army had so much material and if we should release our rockets immediately there it would be such a terrible fire that they couldn't help us.

MAUNDER: You mean immediately there was a focusing right away?

BITTERLICH: Immediately, yes. It was astonishing what they did.

MAUNDER: From the air or from the ground.

BITTERLICH: Both. From the air they were the absolutely dominating.

MAUNDER: Dominating the air.

BITTERLICH: We could only move in the night and we were hidden during the day in forests.

MAUNDER: Let me ask you a question about your reaction at that point? Hadn't you assumed that the Luftwaffe was supreme in the air? Hadn't you gotten the impression from your experience that your own Air Force was dominate? And suddenly, you found that it wasn't dominate; that it was actually to the contrary? What did this do to the morale of you and your fellow soldiers?

BITTERLICH: We always were said a new development of new arms is just coming and this one fact kept the morale alive, this one fact. We never know, we never knew something about atomic things, but it seemed to be such an important thing.

MAUNDER: Was this told everyone that something new is coming that is going to change everything?

BITTERLICH: Yes. And the discipline was astonishing good--astonishing. Nearly at the same time one year ago we were encircled in Russia in 1943 we also were in France in August 16th and 17th, of 1944 near Falaise in Normandy. One of my comrade he was ordered to, in the early morning of the day where we were settled, went out to look for and he was shot just two hundred meters from the camp. During this event I was gone in another direction to the latrine, behind a tree. Therefore this other officer in my Battery had to go for me, because it would have been my duty to, I was mainly an observer. My short absence was good luck for me but not for him. He was the only son of a lady in Wilhelmshaven and I visited her. Later she gave me this last thing.

MAUNDER: Wallet?

BITTERLICH: Yes. The war ended in May 1945.

MAUNDER: Did you retreat with the German Army?

BITTERLICH: Yes, I did, yes. And the last fight was in Landsberg am Lech not far from Reutte, Tyrol. WE had to defend it for the last time and then we moved into the mountains and to the border lines there and then they gave us our duffel bags back and said, "Now everyone can do what he likes to do." It took me a fortnight to come from this place to Reutte, Tyrol in order to avoid becoming a prisoner.

MAUNDER: You had to walk?

BITTERLICH: Yes and I also gained a bicycle, yes, and I got permission, too, from the Forest Office from Kramsach, Tyrol, but I only came to the Mieminger-Plateau and there it seemed to be the end, because I didn't have what I needed. I didn't have the seal from the C.I.C. I had to have one on my document. We hadn't. Nobody could move in the country without this document.

MAUNDER: Was this an American?

BITTERLICH: Yes.

TISCHENDORF: Wasn't the FBI succeeding the CIC?

MAUNDER: I don't think the FBI really ever operated in Europe. CIA might be what you are thinking of.

TISCHENDORF: Maybe. It was called CIC-Central Intelligence Corps.

BITTERLICH: Nevertheless, I had the good luck to also come with this man who had this document and we were allowed to go to the American Captain, and he did not look over my document only the other, and asked, where are you going and would you like to go with me in my car, and we said, no, we had our bicycles with us and so I could go and I came home.

MAUNDER: And this is how you were discharged from military service?

BITTERLICH: Yes.

BITTERLICH: And I only had to go for one day in order to get the leave.

MAUNDER: The ordinary leave.

BITTERLICH: It was issued on June 16th.

MAUNDER: In other words this was actually before the final surrender of Germany?

BITTERLICH: Yes, it was after. From the 5th of May I think May 15th I returned to my family.

MAUNDER: I see. And then when you got back were you able to resume again the same position that you had?

BITTERLICH: No.

MAUNDER:; No, you did not?

BITTERLICH: I was called to the Bezirkshauptmann. I talked to that main officer and he said me, he's not able to use me anymore and I wrote already a story about all these things but I will publish it later because too many people now living that I cannot do it.

MAUNDER: In other words you were outside now?

BITTERLICH: Yes, I was outside, but after all this problems in the war I was a very fortunate and grateful man to be alive. The only what struck me was the death of my brother, my other brother, he was killed on March 21, 1945, after five years of being a soldier.

MAUNDER: At the end of the war?

BITTERLICH: Yes, at the end of the war. In Yugoslavia. This was the most painful point to me personally but there were many other facts too.

MAUNDER: And you have written this down in some detail for publication at a later date?

BITTERLICH: Yes. Under other names. Not under the true names. I gave one copy to Mr. Hoffman as we were in the Bluhnbachvalley a few days ago because most of the story was in his area.

MAUNDER: If you would like to deposit a copy of that into our care with an agreement in writing that it not be published, we do that sort of thing too. Just to make sure that the document is never lost, you see, so that there may be a copy put aside in a careful archive where it won't be touched but where it won't be destroyed either.

BITTERLICH: Yes, I could do that. But it would not be easy to translate because many things are written in idiom.

MAUNDER: Yes, I realize that.

BITTERLICH: An idiom when speaking with people and so on.

MAUNDER: Well, you might want to consider that. Now what did you do when you came back finally?

BITTERLICH: I was only allowed to do simple jobs, as a worker. After all the long years. Also the old director Nolscher of Bluhnbachtal was put out of his position. He was a friend of my father. He was allowed to work out plans for the next ten years in his forest and he took me as one of his workers to help him and so I had two and a half years to work in Bluhnbachtal and in that time I discovered now my Angle Count Method. The professors of Vienna gave me the opportunity to publish and some people recognized immediately that it was a good thing. And this was the first step ahead again. I got back my professional recognition and prestige.

MAUNDER: How did you and when did you first conceive this idea of measurement of the forests?

BITTERLICH: It goes back to 1931, as you see in this diary but I didn't think about it all the time during my other professional and duties and during the war. I had no opportunity.

MAUNDER: In 1931 you were here in Salzburg?

BITTERLICH: Yes, but only as a volunteer.

MAUNDER: Only as a volunteer working without pay?

BITTERLICH: Without pay, yes.

MAUNDER: For your father and for others?

BITTERLICH: Yes, for my father and for the Federal Forest Service and I had to make and pass an examination, after having the three years practice I had, a big test which I had to take. And therefore I had to write this diary and that idea is put down here.

MAUNDER: I see. And you did nothing to develop the idea or to publish your findings or theory?

BITTERLICH: At that time I was not interested because I saw no way of doing that; it was such bad times that there was no point. It seemed that all young men were not to use.

MAUNDER: There was a surplus of young men and nobody paid any attention to them?

BITTERLICH: Yes, and therefore you were not forced to do anything much; the only question was, how to find any job.

MAUNDER: Did you ever try to convince your father or any other forester in a superior position of the merits of what you had worked out as a formula? Did you talk to anybody back in the thirties?

BITTERLICH: Yes, with my father. But I forgot to mention this: during the war I was inventing many things as a simple soldier because we had a certain number for mail (12,000) and forgiving them to the Army Development Office at Berlin and I was successful also in this later. I could show you some documents about it.

MAUNDER: You mean devices that were used in the rockets?

BITTERLICH: No in the war in general, in development of arms. And at first I devised an instrument for survey, to survey our batteries in Russia, for example. You always had to survey your standing points of your batteries. It was a very complicated thing and in practice they didn't survey; they guessed where they were on the map and how we extend and how we were shooting in the direction of the magnetic needle to the next village.

MAUNDER: It was all very imprecise, not very accurate?

BITTERLICH: Yes.

MAUNDER: It was done by fact.

BITTERLICH: And I invented an instrument in order to give a faster identification of, not of the targets, of the site, where you stay. Where you put your rocket batteries down. And I got an honor for that, I have it. And later on when I was in the hospital, I made proposals for self-adjusting rockets against airplanes.

MASON To seek the airplane?

BITTERLICH: Yes, and I could show you some.

MAUNDER: Maybe the U.S. Army uses these plans?

BITTERLICH: No, they have now much more better things but I couldn't understand why groups of airplanes could enter into Germany and Austria without any defense and therefore I also made a proposal for that in two ways: optically and always I tried with sound but I didn't know anything about radar. As a result of this I was sent two times to Berlin to further explain my ideas and they said "Well, we would keep you as a researcher for our purposes but you are now in a very important Army and you are an office and you are young enough and we cannot have you. You must go to war." Later on I thought it was better they had sent me back, because in Berlin it was not so fine--every day you bumps on your head and at the front it was much more free. And this was the beginning of my inventions and after coming back I continued in the forest thing. You know I made a lot of things I could show you; other things, quite beside the forestry, too.

MAUNDER: That you have invented?

BITTERLICH: Yes, which I produce and which are used by people. You know, these local foresters, they have a lot of things which are all of mine, for example, and the principles are mine, origin in my theory.

MAUNDER: Do you hold patents on these things? Patent rights?

BITTERLICH: Yes, partly, The idea of the theory you cannot patent, but for example this one is patent and all of these. You see this is my newest instrument with which you can read what Mr. Jim Craig said.

MAUNDER: Craig writes "Dr. Bitterlich: has done it again. He has invented an instrument with a precise mechanical solution of regression problems."

BITTERLICH: This is only a part of forest research. But I try to, as explained before to my new subject on which I have written here, to find out new styles in furniture and to explore more use for wood. There is a translation of it. The idea is to find out new styles in craftsmanship or in architecture and in furniture design. The idea is to find out new styles in craftsmanship or in architecture and in furniture design. This is an example here made out of the instrument. You can tell only these black points and your get out a very harmonic shape for a new style. This is quite aside of forestry.

MAUNDER: I see, yes. You were a born inventor. That's obvious.

BITTERLICH: Yes, not only born but also made an inventor out of the time.

MAUNDER: Well now, with these many contributions to our instruments of the day, one would normally derive an income of quite some substance from the sale of these. How do they get manufactured? Do you let contracts go to manufacture them?

BITTERLICH: Yes, we went one. I had with the first one and it is produced in Salzburg here but with the second one, I am producing it here now quite by myself. I am the only person, I have no help.. I had some people, I had twelve different firms to produce the parts. But in main I am the only person and you see I have so much to do. But I would be glad to find a producer who gives me the parts and makes it for me. It would be much better because I am not able to spend the time.

MAUNDER: I see. I think what we would like now to have you tell us about is how this concept which you set down first in a formula in your diary in 1931 matured in your mind to the point where you could state it so that all the world could hear about it and learn from it? When did this transpire? When did you get to that point? Can you tell us about how it developed?

BITTERLICH: Yes. After working nearly one year after discovering this first principle, and I did much research on it, I drew graphical representations of my research with this Winkenzahl method. So I got a picture that there is a close connection between the number of trees counted (if they are bigger as in a certain angle) and the basal area density. First thought this is only a very accidental correlation. But coming back from a concert, I told you already I went to a musical concert in August, 1947, and sitting quite alone in the train going back to Werfen I found that the brain worked all the time on this problem. And I found that it is a very close relationship and also I devised a proof and I put it down.

MAUNDER: Did you write it down while you were on the train?

BITTERLICH: Oh, no, I had it in my mind it is no so complicated. It is a very simple problem but it seemed to be not solved but I thought it must, it could be solved, and so it was just the next opportunity, as I remember it. I came on this point, then I put it down and tried it out and I saw for my professor in Vienna (one of the old professors in Vienna) and he recognized [it] immediately.

MAUNDER: Who was that?

BITTERLICH: Professor Friedrich Hempel. A very old professor of Forestry.

MAUNDER: And he immediately saw merit in what you had done?

BITTERLICH: Yes, he immediately believed and he gave me the opportunity to publish as did Professor Herman Flatscher, both [have] died already.

MAUNDER: Both are now dead. But they both supported you and encouraged you? What did they suggest that you do?

BITTERLICH: Oh, they said you must publish this. But first before I did publish I looked to have it patented and I wasn't familiar with the proceedings in patent law and first I tried to patent the theory and people said to me, this is not possible to patent. I tried the idea, the theory. But I learned that a theory cannot be patented.

MAUNDER: An idea cannot be patented?

BITTERLICH: No.

MAUNDER: Only an instrument that carries out and applies the theory.

BITTERLICH: Yes. And this was the reason why I didn't publish immediately, and I waited until January, 1948, and then started the first publication.

MAUNDER: Where did you publish?

BITTERLICH: In our forestry journal in Vienna "Allgemeine Forst-und Holzwirtschaftliche Zeitung", now Allgemeine Forstzeitung.

MAUNDER: This was the first published announcement and explanation of your theory?

BITTERLICH: Yes, it was the first one of the most practical shape, but I must tell that just one year earlier I published already the first idea of [the] main principle.

MAUNDER: What year was that?

BITTERLICH: This was published in June, 1947, in the same journal as mentioned above.

MAUNDER: Did that explain the principle of the operation?

BITTERLICH: Yes, but it was not the same procedure, much more complicated. But it was very important for the development of the other one.

MAUNDER: The more refined method of measurement, the more we find tools by which the measurements could be made.

BITTERLICH: Yes.

MAUNDER: And are these then the later developing tools which were to be used?

BITTERLICH: Yes. This one was the simplest and here I added a small sight blade. ( stick length 100 cm and a sight blade width 2 cm enables to produce a sight angle of the proportion 1:50; any tree diameter exceeding this angle is standing with a circle of 100 diameters and counts for a basal area density of 1m<sup>2</sup> per ha.)

MAUNDER: All right, Dave, I think you want to add something here.

MASON: Yes, I would like to call attention to the fact that Dr. BITTERLICH: got out his first publication in June, 1947. My friend Flem Junker I think soon after that, read about it. Flem Junker is a Danish forester who lives in northern Jutland in Denmark and with whom I and other members of my partnership (Mason, Bruce and Girard) have been acquainted for a number of years. And soon after he read this, I don't



remember whether he sent a copy or not, but at any rate he let us know about it. Then my partners Don Bruce and Karl Nenze, particularly, and Don Bruce's son, David, started study it and they had gone far enough in studying it so that by June 1950 I already happened to be here in Europe and my partner Karl Henze sent me a letter suggesting that I call on you here in Salzburg.

BITTERLICH: I still have this letter.

MASON: Yes. But I was unable to come but that is just illustrating the connection that resulted eventually in this publication by Donald Bruce on "Prism Cruising." This was not published, however, until I think that it takes there is a date on it somewhere, I don't notice any date but anyway that was published later and I was just calling attention to this part of it. I think through our firm's taking the matter up in the United States resulted in becoming in the United States generally used in timber cruising.

BITTERLICH: Yes.

MASON: That's about all I want to say. I thought it would be interesting to bring that point.

MAUNDER: How quickly was this idea taken up and used here in Austria?

BITTERLICH: It was taken up immediately by some foresters and it was assured at the time of the Forestry Congress in 1949. There had already been a paper on it.

MAUNDER: Paper?

BITTERLICH: A paper prepared by me but read by the he assistant Dr. Kovacovics at the University. This in French but I think there should also be one in English.

TISCHENDORF: The assistant is now the director of this sawmill school in Kuchl, south of here.

MAUNDER: And he gave the paper at the Forestry Congress?

BITTERLICH: He gave the paper for me but he had set down his name first. He excused himself later that this happened. He went with this instrument "Rendel-Relaskop"; he took it to the World Forestry Congress in Helsinki as I was not able to go over there. He made it up for me.

MAUNDER: He made it for you with your permission, I presume?

BITTERLICH: Yes, yes.

MAUNDER: Did you help to write this before he went?

BITTERLICH: Yes, but not in French. I think only in German.

MAUNDER: I see. And his name is Karl Kovacovics.

BITTERLICH: Yes. Kovacsovics.

MAUNDER: That sounds like a name that is not Austrian.

BITTERLICH: No, it is of Slavic origin.

TISCHENDORF: There are for example more Czechs in Vienna than in any Czechoslovakian town. That may explain it.

MAUNDER: I see. And this was read, then, as a special paper in Helsinki in 1949 at the Third World Forest Congress.

MAUNDER: This is Elwood Maunder speaking again from the home of Dr. Walther Bitterlich in Salzburg, Austria. We are continuing now on a new tape the interview with Dr. Bitterlich and Dr. Willi Tischendorf and Mr. David T. Mason. We had just gotten to that point in the story where your colleague had presented a paper on your findings at the Third World Forestry Congress. What was the result of that paper's reading and publication?

BITTERLICH: The result was a number of letters I got and as I remember there was also a visit by Dr. Fred Hummel from the Forestry Commission Wrecclesham near Farnham in Surrey, England, with his father in order to get contact with me and to show him my instruments and my new theory in practice. AT that time I think it was in 1950 that he made his first visit to me in Zell am See and Dr. Hummel was the first English-speaking man who brought my publications and my new ideas to the English-speaking world. In Forestry abstracts and also in a first publication by Keen, I remember of the Research Station.

MAUNDER: When you come to doing the editing of this transcription will you please insert the full names and addresses of these various men you are speaking of now? It's not necessary we do it here now on the tape but when you come to reading the transcript of the tape that we will send you, you can then pencil in the full names.

BITTERLICH: Yes, I will do it.

MAUNDER: Good. And also correct all our bad spelling, I am sure there will be much bad spelling of names of people and of places that you are telling us about, but don't be concerned about that, just make the corrections in the transcript. Now you can go on with how the English foresters made known to the English-speaking world the results of your work.

BITTERLICH: Yes. There was on of the first, Mr. Lewis Grosenbaugh.

MAUNDER: From the University of California?

BITTERLICH: At that time he was in the south, Louisiana, the Forest Experiment Station in Louisiana. He brought out in 1952 his first publication, "Plotless Timber Estimates--New, Fast, Easy" in Journal of Forestry, Volume 50, Number 1.

MASON: What year was that?

BITTERLICH: In 1952. Then in the Journal of Forestry in 1955, "A New Way to Look at Trees," not by Donald Bruce but by his son, David Bruce.

MASON: The publication was by Donald.

BITTERLICH: No, no that was a later one. It was David who came up with the idea of using prisms.

MASON: That was questionable whether it was he or Karl Henze. That prism idea originated, but I think it was Karl's suggestion and David took it up.

BITTERLICH: But actually the idea of using prism was also borne in Austria by my first professor, Hempel. He was the first one who said, oh, if you need an angle of constant size, the best way would be to use a prism. A professor of Vienna, Miller, put out also a prism device in a joke but the main use was made in the United States and Mr. Mason you came in 1958, you gave me that prism. You see it here. Continuing now about prisms also a Russian professor, Anutschir produced a prism for that purpose and you see it on the other side but it is called the Anutschir-prism. Now the prism is a very useful tool, in order to use the system, but it is not the only way and I for myself tried to develop a better relescope which was not only for progress cruising but also for measuring all possible things on trees and on forests. The main publishers of the systems in English, or let me say in America, the first man was Grosenbaugh.

MASON: We were I'm sure already doing it but he got ahead of it and published it first. Wasn't his year of publication in 52?

BITTERLICH: Yes, that was his first publication .

MASON: Yes, but Donald Bruce and Karl Henze were working with it and developed it but they didn't publish it until later.

BITTERLICH: Yes, yes. Mr. Grosenbaugh was only the first publisher in the United States but I think that Donald Bruce and Mr. Henze worked earlier or at the same time and did more for introducing it.

MASON: It had spread around quite a bit in the United States by the time Grosenbaugh published it.

MAUNDER: How were people using it, with instruments that you provided from here or had they taken the idea and worked out instruments of their own?

BITTERLICH: Yes, both are true, I would say. The prism is indeed the most simple instrument to use, the problem is cruising, but nevertheless the prism became very common in the United States and there grew up in certain industries about it. As I learned in 1960 at the Sixth World Forestry Congress they also use the relescope very much and the only trouble I had with the relescope was that we had so little money and

it was a very poor light, you couldn't see too much.

MAUNDER: Had a poor lens?

BITTERLICH: Poor lens, poor accuracy and some mechanical troubles and I was so sad with what they produced, I often went to them and said, "oh, don't sell such an instrument, you will spoil the whole market. this happened, for example, in Finland. The Finnish Foresters tried at that time the new relescopes and they were not satisfied so it did more bad than it did good. All people say it is a good idea and a fine thing but the construction itself has to function and finally in 1958 it had grown up to a stage that this problem disappeared and since that time it is a rising number of sales.

MAUNDER: So you are selling a great many more?

BITTERLICH: A great many more, yes.

MAUNDER: Where is it made now?

BITTERLICH: Now it is made also in Salzburg.

BITTERLICH: It's a relatively small firm called Feinmechanishce-Optische Betriebsgesellschaft M.B.H. (The address is Karolingerstrasse 4, A-5020 Salzburg-Austria). But in the main it is only a miniature firm.

TISCHENDORF: Craftsman.

MAUNDER: All right. Now it is being sold by them and distributed all over the world.

BITTERLICH: All over the world and mainly the United States, and also the prism is very well known.

MAUNDER: I might comment that the prism of course will not do all the things the relescope will. But it is very simple and very low cost and is good for finding whether the trees are in or out. It's simple, so that is, I think that is why it is used.

BITTERLICH: Yes, the simple thing already is the best, nearly always is the best.

MAUNDER:; Well, like all new devices they grow from the very simple and crudely designed to more and more sophisticated new models. And I presume that we can anticipate there will be refinements of all of these instruments as times goes on and they will be steadily improved; therefore, we probably shouldn't be too critical of those that were at the very beginning; after all, there was much to be learned.

MASON: I would like to comment that the really great thing about all this is the original idea which has been explained and developed and Dr. Bitterlich had the idea and developed it and has earned very great credit world-wide by which he is recognized.

MAUNDER: How has he been recognized for this very significant contribution to forest history in a formal way? Have you received any honors for having done this work?

BITTERLICH: Oh, yes, I got, for example an Honorary Citizen of the City of Nashville, Tennessee, because as I stayed there we had a big meeting with forester people and they showed their use in practice. My relatives, I think, did also something, contributed too. The second one is that I got a membership corresponding member of the Society of Finnish Foresters.

MAUNDER: You are an Honorary Member of that Society?

BITTERLICH: A corresponding member.

MASON: You ought to be an Honorary Member of the Society of American Foresters.

MAUNDER: I was going to say. That's very true.

MASON: You also had the honor of being invited to speak at the Fifth World Forestry Congress in 1960 at Seattle?

BITTERLICH: Yes, thank you. And the other honor is that I would be appointed now as a professor in Vienna.

MAUNDER: This honor came after all of this had been publicized.

BITTERLICH: Yes, yes. But it means not too much, I would say, because my former profession was also very good and, the only advantage coming very late, is, I now have more time for scientific work than I had before.

MAUNDER: But how much of your time can you give to scientific work? How much do you have to spend in teaching and how much do you have to spend in research?

BITTERLICH: Fortunately, I do not need too much time for teaching. I only have six to eight hours a week and sometimes, for example, as when you arrived my first assistant could then do it for me, I did not have to go to Vienna. All these days I have a lot of freedom and can do much for research.

MAUNDER: That work is done right here in this office and laboratory?

BITTERLICH: Yes, when I was still in Hallein, I had not enough place. All was crowded over in my home. You can imagine if all these things would be over at my home--I couldn't find anything--and so I decided, although it was not easy, it was a very difficult decision--to build this house in order to have place enough to work.

MAUNDER: This house wasn't yours to use either for many years after the War? I believe this was occupied by the American military, was it not?

BITTERLICH: Yes, for more than ten years. This was the reason why I moved from Tyrol to Salzburg always thinking and hoping I could go in here but in the meantime I got my old profession back again and in connection with our profession we always find homes. You saw yesterday.

MAUNDER: Yes. The Forester has a fine home.

BITTERLICH: Yes, he has always.

MAUNDER: It is now twenty minutes of twelve, gentlemen, and you have taken a little break to make a telephone call to Dr. Plochman and we had a chance to look at some of Dr. Bitterlich's personal papers and diaries and some of the things that he kept from experience during World War II on the Russian front and in several other places. I would just like to say again to you, Dr. Bitterlich, that I hope that all of these things that you have written and preserved in such a fine way in your files, should be assigned properly to the care of a good archive where they may be useful as time goes on to scholars who will find in them much that is very helpful to their understanding, not only of your life as a man, because I fully anticipate the day will come when someone will write the biography of Walter Bitterlich and it will be published as a book. You may not now think that is true, but I truly believe that that day will come when such a biography will be written and when it is, the man or the woman who takes on the job of doing that will understand your story only as well as the records that you have preserved maybe made available to them to study. You see, this is why it is terribly important from the historian's point of view that things of this kind be carefully conserved like the forest is conserved, so that it may be used in their records.

BITTERLICH: This is very difficult because the notes can only be understood by myself, they are in shorthand for example; and I see no time or opportunity to convert all these things into a form which could be read.

MAUNDER: I understand that those little field diaries that you kept while you were in the service are composed in a shorthand of your own creation and probably you are the only one that could decipher it. On the other hand, I think that the time might come when someone like myself [might be] coming back again to Austria [and] might have a larger amount of time to sit down with you with the tape recorder and go systematically through the diaries and have you then translate these entries into a running fuller translation of them, but these diaries are important. But the things that you have written in longhand in the larger statements, these are not hard for anyone to follow. Anyone who could read German could quickly understand what it says, so I just put into the interview now my urgent plea that you make arrangements for the permanent preservation of these records in some reliable place where they can be eventually studied and used. I would suggest that the proper place for such deposit would be in a historical society here in Austria, because you are Austrian and these records are a part of Austria's history and therefore the best place for them is here. Not in America or in Germany or in England but in Austria. Perhaps at the University of Vienna there is someone who takes charge of such personal papers and sees to it that they are carefully put aside and catalogued and eventually at the wish of the person who gives them they are made open. You might for personal reasons want to say to the Archivist, "These papers of mine shall not be used for a period of so many years or until so many years

after my death." And they will strictly observe these, this rule. So this is just parenthetical to our interview but now I would like if we can depart from the realm of purely personal history and ask that we take a look at larger subjects and may I just by way of introduction suggest to you that we talk about, first of all, what you see as your profession's principle contributions to the mainstream of your country's history and of European history during the course of your lifetime? What has forestry done for Austria? What do you feel that it has accomplished?

BITTERLICH: The answer is not that easy.

MAUNDER: I realize that this is a difficult question.

BITTERLICH: You mean the contribution of forestry in Austria to all the other to the life of the nation?

MAUNDER: To the life of the nation and to the life of the individual communities within the nation.

MASON: Elwood, maybe that question could be changed a little to, what has the forest contributed but of course including the practice of forestry?

MAUNDER: All right.

BITTERLICH: Primarily the forests in the vicinity of the first settlements in this country were the enemy of men and they were destroyed by fire or by power, cut down. There are many names of villages show it, for example, my birthplace. Reutle comes from Roden and means clear-cut forever, removing the stumps. The first purpose of the forests if one can say it was to be destroyed.

MAUNDER: To get out of the way?

BITTERLICH: Yes. But the second was to furnish timber for the construction of houses and for fuel and these original purposes are still found in the compulsory rights of farmers in the vicinity of forest lands. And especially in Salzburg there is a big problem how to manage these rights now and in the farther future. One solution was to give some forest land back into private property in order that the rest of the forests would be free of such rights. A few attempts at this were made, for example, for certain communities near Zell am See, about sixty years ago.

Certain communities which got their "rights" back to their own were called the Ausgeforstete Gemeinden.

MAUNDER: Each community then reasserted its rights to the forest land surround in other words?

BITTERLICH: Yes.

MASON: Wasn't it, as I understood, a division of a forest rights so that the several different parties, each got an undivided ownership in the forest land? We have that kind of situation in the United States and sometimes straightened it out by an exchange.

TISCHENDORF: What do you mean undivided?

MASON: Well suppose you, Dr. Bitterlich and I and Elwood Maunder each have a one-quarter interest in this whole forest but we don't like it that way because I don't want to do what you want to do and Dr. Bitterlich doesn't want to do what Elwood MAUNDER: wants to do and so we say, well, let's divide it up. And each one, you take your quarter, Elwood his quarter, and so on.

BITTERLICH: Yes, it was this kind of regulation which was tried in certain communities but the result was not a good one because many communities exploited the woods too much, didn't reforest in a proper way and the forests dropped down very poor yields and then the government took care of these forests in order to get a sustained yield management again.

MAUNDER: To bring them back to a better production?

BITTERLICH: Yes, now these owners, these communities, have to pay for every cubic meter they got. They have to pay for the management and it would be much more fair to have the old compulsory rights rather than the ownership of the ground.

TISCHENDORF: The ownership implies duties while the compulsory rights only imply the right to get something and the management is left to someone else. Actually this is in some part a grant which a farmsteader obtains from the forest and so these thirteen communities i.e. the "Ausgeforsteten Gemeinden" are not very happy because they would rather have only their rights and not the duties also which the forest law implies.

MAUNDER: This is the only story of wanting your cake and eating it too, is it no? You want the benefits but you don't want the responsibilities.

BITTERLICH: Yes, that is quite true. And as this experience turned out they stopped this kind of regulation and all remained the same.

TISCHENDORF: And hasn't the Forest Service given some forest land to private owners in order to get rid of these rights.

BITTERLICH: Yes, yes. There is also single rights.

TISCHENDORF: That means a farmer, got his piece of land to manage.

BITTERLICH: Then there is a very similar problem. Now the farmer wants to get in exchange for their rights for grazing, although everyone knows that grazing is not anymore of big value today.

MAUNDER: Grazing in the forest is not of great value? Is this because there is no foliage?

BITTERLICH: No, not because of that.



TISCHENDORF: You don't have any herdsmen.

MAUNDER: Oh, you don't have people to watch over them?

BITTERLICH: Yes, and it is too complicated to graze in the forest and it does down from year to year and the owners are very glad about this. They say, "Now we still have the compulsory rights for grazing but we'll not keep on, not use them, "and therefore our forest gain in production, there are many advantages of that development." But on the other hand the farmers know this also and they say, "Now we want to get rent for our grazing.

TISCHENDORF: As a substitute for the improved production of the forest, because the farmers do not graze anymore.

MAUNDER: They want to be paid a rebate in a sense for this right they have.

TISCHENDORF: Yes.

MAUNDER: Let me ask you a question. In American and many other countries there is a great trend of population from the rural areas into the cities. There are fewer and fewer farmers and fewer and fewer farm families. Is that similarly true here?

TISCHENDORF: It is the same here. It is very similar.

MAUNDER: All right then, what is happening then to the lands which were formerly owned and operated by the these small farmers here in Austria?

BITTERLICH: They will be sold by forest owners sometimes and reforested.

MAUNDER: They will be sold to forest owners and reforested?

TISCHENDORF: The Forest Service tried to buy the land with all the rights in order to have exclusive control over his own forest but sometimes, not always, but sometimes the land owners move and maintain their property and establish maybe a hotel and keep these rights. They are not farmsteaders anymore and very often, in these many villages where we drove through, many storekeepers, business people, and restaurant owners have a right in the forest, although a long time ago, they had abandoned their farms and don't need timber for fencing nor foliage for grazing.

BITTERLICH: Yes, that's true.

MAUNDER: Is this because there has been a decline in the profitability of being a farmer? There is more to be made by becoming a guesthouse proprietor.

BITTERLICH: Yes, certainly.

MAUNDER: There is more to be made in being a worker in some small factory in the town?

BITTERLICH: Yes, it's true.

MAUNDER: I see. And so the movement has been to leave the farm and come into the town?

TISCHENDORF: Yes, I think so.

MAUNDER: But they still hold the land out there, is that right?

TISCHENDORF: In some cases.

BITTERLICH: But it is different in other cases, for example, on the Heuberg (a mountain near Salzburg), which we spoke about it and where I hope you can go over today for lunch.

BITTERLICH: The Heuberg is a piece of land that was sold to a big, private owner eighty years ago and reforested and has now a very fine yield as a forest. This is one example of the farmers leaving the land. This development that farmers sold their land to big private owners goes back one hundred to one hundred and fifty years ago; since that time people moved to the city selling their agricultural lands.

TISCHENDORF: By 1910 the population working in agriculture and forestry in Austria was about seventy five percent or eight percent and it is now seventeen percent or sixteen percent. It is the same development as all over Europe and the U.S.

MAUNDER: A tremendous drop!

TISCHENDORF: And the forested area in Austria, the forest land, because of the abandoned pastures and summer grazing areas has increased from thirty two percent in 1956 for example to forty three percent in 1969. Each year, for the last fifteen years, about one percent of land has turned into forests.

MASON: Let me get these figures down here if you don't mind. What was that first one?

TISCHENDORF: From about 1900 or 1910.

MASON: For forest and agricultural workers.

TISCHENDORF: And now sixteen to seventeen percent are working in agriculture or forestry. As another example, the sawmills have dropped from five thousand in the year 1956 to about three and a half thousand by 1969.

MASON: In 1956 how many were there? Seven thousand?

TISCHENDORF: Five thousand sawmills, very small sawmills. Now there are less than four thousand.

MAUNDER: And of those that are left are they all of the larger size or are they still small?

TISCHENDORF: We saw a very small one yesterday. I think you were in the car when Dr. Bitterlich showed us which is going to be permanently abandoned within this year. That was a very small one. And the forest land has increased also about one percent each year from 1956 to 1969.

MAUNDER: What has been happening to the utilization of forest products in the same time? The number of sawmills has been greatly diminishing, what about the utilization of the forest products itself? Has it been declining or increasing?

TISCHENDORF: To my knowledge with the tourist traffic the products of timber and paper industry have dropped percentage-wise in volume and money-wise also.

MASON: Well, money value is deceiving sometimes, it changes. I think it's better to talk about it in volume.

TISCHENDORF: To my knowledge after tourist traffic and iron and steel the timber and wood products rank third in export if you consider tourist traffic as an export.

It dropped to twenty percent of the gross export from twenty five percent because of the increase in tourist traffic.

MASON: I don't think we want the exact figures.

MAUNDER: Just an approximation is fine. But I gather from what you say that the total harvest from the forest has not been increasing really. It has been either rather stabilized at a certain level or it is starting to even go down. Is that right?

TISCHENDORF: Within what period of time?

MAUNDER: Well, this same period of time that we've been talking about, or from 1910 to the present time.

TISCHENDORF: It is a known thing but I have not the statistics at hand. The harvest of timber products has increased readily for the last years with improved access to timberland, increasing timberland, improved harvesting methods and management, etc. Same trend as everywhere in the Western World. See what Dr. Bitterlich says.

MAUNDER: I think these are statistics that can probably be gathered and put into the interview at the time of correcting the rough draft. That would give you time to search the sources, but you know the import of the question that has been asked?

BITTERLICH: Yes, but I think that we can produce nowadays more because we have much more roads and we can reach every small forest whereas in former times we could not reach the remote areas as well. Between about ten to fifteen million cubic meters is the number in Austria of harvest.

MAUNDER: I am told from our field trips that part of the problem is that there really is no great market at the moment for forest products. Either for pulp or for fuel or for lumber, that there is a very limited market for the products.

TISCHENDORF: For pulp there is a considerable market. The paper mills in Germany even import Canadian pulp. From Finland they cannot obtain any pulp wood anymore because the Finnish capacity is way above its own supply. The Finnish capacity is twice as big [as one] of the biggest outputs in Savannah, Georgia.

MAUNDER: International Paper, Union Camp.

TISCHENDORF: But our papermills sometimes buy Polish and Russian pulp wood.

MASON: The wood itself or the pulp?

TISCHENDORF: Wood.

MASON: I didn't know they were exporting from Canada across the Atlantic. I don't say they're not, I am just surprised.

TISCHENDORF: Canadian timber is shipped up the river Rhine right in Southern Germany.

MAUNDER: Raw pulp or pulp logs?

TISCHENDORF: Pulp wood logs.

MASON: It might be. I didn't know it, but it could be.

MAUNDER: In other words you cannot harvest from your own forests pulp wood at a price which will compete with pulp wood that is harvested in Canada and Russia and shipped all the way over here?

TISCHENDORF: Yes that is about right.

MASON: What percent of the area of Austria is in forests?

TISCHENDORF: Forty three percent. I think you have this information from the papers.

MAUNDER: Is this part of the rationale of those in the federal Forests, National Forest Service who are arguing now for effecting a more efficient way of harvesting the forest resource of the country so that they can indeed compete with these foreign markets?

BITTERLICH: Yes, now they try to get into competition again, they try with the help of other methods and with their tools and machines but we foresters, most foresters cannot be convinced that this is a real good way. You read it out of the article of my cousin Ernst Bitterlich you remember. The new mechanized harvesting methods are certainly a contribution in order to have a certain success but not at that price.

MAUNDER: You mean at the price he sees it will cost in damage to the land, if it was done by more highly mechanized harvesting methods.

BITTERLICH: Yes, yes. And the reforestation will be a bad situation too.

MAUNDER: Would you say the majority of foresters here in Austria feel as Ernst does and as you do in this matter?

BITTERLICH: Yes, he wrote "one of the many foresters who care," I remember him. His did not tell his name or origin.

MAUNDER: Yes, yes. And would you say then that this represents in a true way the feeling of the great majority of Austrian foresters? Would you agree with that Willi?

TISCHENDORF: I think Mr. Mason was in the car when we talked about the necessity in the Austrian market for individual supply such as a certain order for German consumers for the Italian market or for local demands. This cannot be done with the mass production. Many believe that individual supply is the strength of Austria's forest industry.

BITTERLICH: Products which represent piece work done on a small scale, by individual selections, cannot be done with highly mechanized machines which require a harvest of two thousand to three thousand cubic meters at once.

MASON: Well, the planing of new forests is mostly on good land. We saw yesterday several places where they had planted forests on meadows.

TISCHENDORF: This may be misleading. Most of the land which is turning into forests are our abandoned farms and the grazing areas around timberline. And also in Austria we more and more {QUERY AUTHOR} to feel the lack of forests around the cities and we get more and more forests in an area where we really do not need them as much around big cities. Even our area has very few forests in the valley.

MASON: They are used for recreation as well as for things like hunting, fishing.

TISCHENDORF: A statistic of Professor Eckmullner giving five classes of forestry land, from heavily forestry to no forest, shows that even our heavily forested mountainous areas do not have enough woodland around the cities. For instance, of Hallein for example, with 48% forest land. The whole district lacks the recreational forest just around the villages.

MASON: Yes, I can see where around the city the building of houses has taken part of the forest. Is steel or tourists your number one industry?

TISCHENDORF: Tourists.

MASON: I thought it probably was.

TISCHENDORF: Here again the potential of forests is important for tourism.

MASON: Yes, and the forest from the tourists' point of view is very important, the beauty of the forest and so on.

This is Elwood Maunder speaking from the home of Dr. Walter Bitterlich in Salzburg, Austria. It is now May 15, 1969. WE are continuing the seminar discussion we began here. I think I would like to ask Mr. Mason to open the discussion this morning with any pertinent questions or lines of discussion that he sees as possibly desirable for us to cover in today's session and we might take off from that point. Dave, do you want to open it up?

MASON: Yes, I can do that although I haven't off hand any particular one selected. There is one question that I think is left hazy in my mind and maybe it is hazy in the record as to the time of beginning of forest management according to the records here in Austria. Now I think you could distinguish two kinds of forest management; one, you might call, the non-professional stages which naturally came first and then your professional forest management which began perhaps one hundred years ago. But before that you had needs for wood. Now does that make a question that's reasonable to?

MASON: Will, has a manuscript here, what is this manuscript?

TISCHENDORF: This was a kind of home work of a tech in Hellein. This lady wrote about the changes in the forests in Salzburg during historical time and of course she has also covered a little bit the legal aspects. There she mentions that the owners, which were mainly the archbishops, had all their rights and privileges and the sole right for the mining industry in this country. And they needed the forests and thus there was at least some forest order as early as 1237. They had the first Waldordnung in 1237 which was mainly an order to get sustained yield to sustain the supply of fuel wood and wood for the mining industry itself. This was, of course, a mining law and it implied quite a lot of forest management designed to create sustained yield.

MASON: It was a public law so to speak. You might call it a law requiring forest management.

MASON: In other words they were concerned about immediate needs for fuelwood but they were also concerned about assuring themselves that these supplies would be available to them in the future.

TISCHENDORF: And it covered all forests which were usable in the vicinity of the mines, where the transport problem was not too big, or where it could be solved. Then successively there followed several orders by the beginning of the sixteenth century already the seventh improved order concerning the mining industry was given; but the first real forest management order was set up in 1524. It declared all forests in the vicinity of the mining industry to the property of the archbishop. He was solely responsible for the management.

MASON: Can I summarize my understanding now? Beginning in 1237 there was the first law; from then on there were gradually over time additional amendments of that

law to make it more effective. All of these laws were the result of the need to provide wood for the future of the miner. Then what that law of 1524?

TISCHENDORF: This was the first real law for the forests management (and not only for supply the mines), and it declared that all the forests which were in the vicinity of mines, and salt mines, particularly, had to be survey. The law distinguished between forests which were used for local demands and the ones which were particularly managed to supply the mines. So this was the first inventory also.

MAUNDER: Had there developed some real shortage of wood supply by 1524 which might have provoke this kind of action?

TISCHENDORF: Apparently. I am not too familiar but it seems that one reason was the shortage of supply and it particularly forbade the use for grazing in the areas. The main production was now for timber. So this was quite a restrictive use of the earlier public area, now it could be used just for the production of timber.

MASON: This is most interesting. I am not familiar with all the laws in all the places, but it seems to me that is about the earliest and most definite law on this subject that I know of anywhere.

TISCHENDORF: And it provided for a so-called forest master who had to obtain an inventory; he had to look after the proper management in such a way that regrowth was not damaged by any operation in the forest and particularly for grazing {QUERY AUTHOR}

MASON: That is a very interesting law for placing forestry on a definite basis. Another question I asked was, when did the professional work in forestry begin? That would be the second steps-when you had a forest school, for example, with men who were studying in the he school in order to become professional foresters.

TISCHENDORF: Well, I don't know about the schools but about this time, from about 1500 on, the archbishop provided foresters for the management and supervision of his forest. I do not know where these foresters obtained their knowledge but about 1500, there were foresters and supervisors who were in charge for the forests; perhaps they were trained by tradition.

MASON: This may have been the way the study of law started, not in law schools but with apprentices who would work with an experienced lawyer and gradually learn law.

TISCHENDORF: And similarly probably an apprentice was worked with the forester and learned management and the legal requirements. Some weeks ago--Sept. '70--a Symposium on forest history was held in Slowekia with special discussion of early forest schools. Although education in forestry seems to go back to early 1800's, nothing seems to be known of the times prior to that date.

MASON: This the second half of a tape recording on May 15, 1969 in Salzburg, Austria. We were talking about this manuscript and what it reveals about the early history of forestry in this area. I've suggested to Dr. Tischendorf that we work

cooperatively together back and forth by correspondence in getting together an article or a series of articles which would reveal a great deal that is new and generally unknown about this early history of forestry in central Europe. Dr. Tischendorf, this seems to be something I believe that you can work out in your spare time during the winter, is that right?

TISCHENDORF: Yes.

MASON: Well, we'll enter into some correspondence then come fall or early winter.

TISCHENDORF: Yes, I would like to.

MASON: All right, fine. Now, Dave, I think you had something very important to say if you would, please.

MASON: Well, I regard this as one of the most important phases of early forest history. What happened right here in this area was that very early that was a need for salt--a large need for salt--and you had the raw material available here. But you had to have lots of wood to reduce the liquid to a salt solution, to dry salt. It took a great deal of wood so that a forest furnishing wood without any arrangement for reproduction would after a while just give out. It was foreseen by the bishop and his people, way back four or five hundred years ago, that there must be, no matter whether they called it forestry or no, provision made for protecting and reproducing the forest and this very early law tends to that. A similar thing happened in Sweden with regard to copper mining where they began early in that particular area to practice forestry. And as it seems to me that is very natural, that the only real sound reason for practicing forestry is the need for the wood; when there is need for the wood then we must protect the forest and reproduce it and manage it as well as we can for wood production.

TISCHENDORF: I don't know if this is right but if I remember right, many of those Swiss Forest Laws required the protection of the forest were done in order to prevent avalanches.

MAUNDER: Let me ask you a question. How much do forestry students in Austria and Switzerland know this background of their profession, that is, its early roots. How much do you learn going to forestry school about such things as we are talking here? Do you cover these in your courses?

TISCHENDORF: Oh, yes. These facts are contained in teaching program, too.

MASON: Do you have a course that deals specifically with the early developments of the profession?

TISCHENDORF: Yes, there is a lecture at the University in Forest History now.

BITTERLICH: Now, but there was none when I was there.

MAUNDER: Who teaches this?



BITTERLICH: Professor Eckmullner. He is now the head of the Section of Forestry in the ministry for agriculture and forestry.

MASON: Does he still teach this course?

BITTERLICH: Yes.

MAUNDER: Yes.

MAUNDER: And does he have a textbook that writes it out?

BITTERLICH: No, I don't know.

MAUNDER: There is nothing then such as a volume on the forest history of this area?

TISCHENDORF: Maybe some earlier forestry books may contain considerable sources.

BITTERLICH: Yes, and especially about the rights, compulsory rights; see in this one.

TISCHENDORF: This study was done by a lawyer about the compulsory rights.

MAUNDER: There was some writing of the early history by Bernhard Fernow who wrote a history of forestry and another book on the economics of forestry which were published, I believe, towards the end of the nineteenth century or very early in the twentieth century, in English. But they are very fragmentary in their coverage of the subject. I wondered whether there were more sophisticated studies that concentrated particularly on Austrian, or German Forest History that we might turn to. This is something that you might explore, Will, in doing the research that we are talking about.

BITTERLICH: I have the other book from Diemitz in my library here about the compulsory rights in the country of Salzburg and it contains a lot of the historical backgrounds.

MASON: Now there is the second part of my question which was the development of what we would call the profession of forestry. Maybe that is a good deal more difficult thing to state because it would naturally be a gradual evolution. A law is passed on a certain date but the development of a profession, no doubt, is spread over a great deal of time but I think we are also interested in the development of the profession.

MAUNDER: And, in formal forestry education. When do you consider the beginning of the schools of forestry here?

BITTERLICH: Yes, there is article contained in some forest calendars and I have one here from 1960 about the history of the forest research near Vienna in Marianbrunn. This was in former times a monastery of monks and was secularized by Kaiser Joseph II in 1783. In the year 1813 it was converted to one of the first forest schools. In

1867 it was made into a forest academy and in 1875 it was made a section of the new University for Agriculture of {QUERY AUTHOR} in Vienna.

MASON: Now, Elwood, wouldn't that also be something that would be desirable for Willi to study and develop as well as he can? I think that would be a very interesting part of this history, not only the practice of forestry on the land but the beginnings of the formal education for that kind of practice.

TISCHENDORF: And is it all right for me that I mainly work on this area here?

MASON: Yes, I think you have to really concentrate your research on this area because its in this area that you would have the reliable sources to draw upon rather than a wider area.

MASON: It think its better to do that anyway than to generalize on all of western Europe or the entire Austrian area.

MAUNDER: I could say that this could very well be done in this fashion. Perhaps three separate articles could be written. One would be an article on the very earliest developments of forest practice, now going back to the 1200's and the needs of the salt mines and fuel wood and the second article would be based upon the beginnings and the early development of forestry education, that is the beginnings of a profession of forestry and thirdly a final article which would seek to relate what has happened in the last fifty or one hundred years and to bring the story up to date. Then the three articles together can be put together as one publication and it could be a very useful thing for us to have in America but it would seem to me also that it would be tremendously valuable to you here because it would help to give prestige to forestry, to have this kind of recognition in an international publication and this kind of publication would enhance Willi in his professional career to have his name on such a thing and to be used then in whatever purposes you might have for it in this country.

BITTERLICH: Yes, this would be of great value because we in Austria have not enough money and not enough time to do this only for ourselves but in this connection it would be a start to better understanding of forestry in publicity.

TISCHENDORF: The government of Salzburg each year provides a small grant if a study with regard to the forestry and agricultural developed in this province is done. So I might have a chance to get at least the support form my boss for this study also. Mr. Gradnitzes is quite familiar with early historical developments so I hope this might ease it a little.

MAUNDER: When you get your letter from Elwood Maunder it might help to show it to your governor who has the disposal of funds.

MAUNDER: How large are these grants?

TISCHENDORF: This is about forty dollars (\$40.00). It is just more a recognition, after you have done it and if it is all right.

MAUNDER: Well, we certainly would not consider that in any way an adequate compensation for the amount of work that you would have to do. I'm quite certain that I shall be able to find some avenue of support for this kind of study among my directors of the Forest History Society so that we would be able to provide you with a stipend that would help you to meet whatever expenses you would have and some compensation for your time as well so that it would not be a burden upon you.

TISCHENDORF: Thank you. Just as an example of the high recognition of the Austrian research, Dr. Bitterlich got \$120 to visit the World Forest Congress in Seattle. That was not even sufficient to reach Paris.

BITTERLICH: I think it was a little more but most of the money I got through Mr. Mason and I am so very grateful that this way was found.

MAUNDER: Well perhaps we can leave the early beginnings and the development of a profession of forestry and this kind of research now and go on with out discussions here this morning with more information on the contemporary and more in the recent past which you are intimately acquainted with because you have been a participant in it and a contributor to it and along that line I wonder if you might have anything to say about what the professional response of foresters has been to certain factors which we all recognize as being very powerful in present time. First of all the profession's response to the growing population problem. How does the population's growth impose itself on the forester and what has been his response to that growth? What are the demands upon the forester and the forests made by a growing population? You have a growing population, do you not?

BITTERLICH: Yes, we have.

MAUNDER: And this growing population is making new demands upon forestry and the forests? How do you see the foresters reacting to this condition?

BITTERLICH: Well, you can get the reaction of foresters to this problems from the article I gave you by my cousin, Ernst Bitterlich, and you see that there is too little understanding of this by the public.

MAUNDER: We have now a paper that deals specifically, I take it, with the questions I just raised.

BITTERLICH: Yes.

TISCHENDORF: This came out just a year ago. It is "Goals of Forest Politics". A recent study and one of the authors is Dr. Otto Eckmullner who is mainly a forest politician rather than a historian. I think he just does the latter as a side issue. He teaches forest history but hasn't done any basic research in it. The other authors were Professor Dr. Erwin Niesslein, who is the secretary of private forest owners' Society in Austria, and Peter Gluck who is an assistant of Dr. Eckmullner. The main goals of the study are covered in the first page already. They are, first to determine so-called under-forestation, which is areas which are endangered by the lack of sufficient forest. They have several criteria as to why these areas are endangered in their cultural aspects with

the lack of forests. The second goal then is to decrease or to prevent the trend to remove forests from the regions of the strongest need of industrial development or urban development. The third one is how to face the problem in regions where the forest area is increasing. This is particularly the case in areas which they call "Economical No-Man's Land" of the high mountains and the marginal agricultural areas where the profit is too small to sustain agriculture. Their fifth goal is to improve the areas where permanent overcut is causing not a deforestation, but rather lack of conservation of the forests, lack of management, where the cut areas are too large and lack of labor increases the problem. Another problem is to separate agriculture from forestry, so problems of grazing, of forest litter use, for agricultural purposes and so forth are discussed. The sixth point, then, is the improvement of the structure of ownership. Particularly in small private forests the lots are so small that is not a joke--sometimes one tree is almost the property of two owners. Very often where property lines are very close, logging is a problem and hence the property structure. The seventh point is how to increase the productivity of the area and of labor which is involved in the change of brushland into forests, as well as transportation problems and higher efficiency of forest labor and so forth. Number eight is to prevent damages by fumes and smoke air pollution in forests. That is particularly serious in the industrial areas. And ninth, which is very interesting, is the questions of recreational values of the forests and the attempts to evaluate economically such things as the effects of the recreation in the close vicinity of agglomerates and then forest and tourist traffic and winter sports. As an example of the very last point I made, with regard to winter sports, there are two towns in the province of Salzburg which have put tremendous pressure on the Forest Supervisor to cut forest land on timber line because this is, of course, a very good skiing area; on the other hand, reforestation in this area was very costly. The reason of the reforestation was the high erosion and the frost problem in the basin of Talemsey and the torrent control services has done in successful cultivation of the timberline; how the local chamber of commerce wants to cut eight hectares of timberland in a most critical areas to develop a new winter sports site.

BITTERLICH: I am informed this reforestation was the best example of a successful recover.

TISCHENDORF: Here is an article from Hartwagner, now head of the forest control service in Salzburg with a wonderful picture of this area. It appeared in memory of seventy-five years annual publication of the Austrian torrent Control Service.

MAUNDER: In other words, the demands of a growing population are for such things as creation of ski areas. This is a very popular thing to do now and very economical and produces a great deal of income now for whatever community provides the facilities. Is that right?

TISCHENDORF: Right.

MAUNDER: Now the forester is being pressured to cut certain parts of his forests at timberline to make possible the creation of ski-tows and areas for the skiers to ski upon. Is that right?

TISCHENDORF: Yes.

MAUNDER: Is that more than just a token thing or is it becoming a considerably growing pressure?

TISCHENDORF: Very recently, two local ski areas demanded to cut forests along the timberline. Well, with the Austrian topography, of course, the headwater regions are relatively flat, while the oversteep channels are in the mid slope, so the head waters and particularly the uplands provide very good skiing. In Zell am See the point is that this area was especially recultivated, in order to avoid the tremendous danger of floods.

BITTERLICH: One hundred years ago they enforced the reforestation, and they were very successful in order to get no bigger floods in to the town. All the people saw an example of what shouldn't be done. Now is the first time they have forgotten this. Unfortunately, I couldn't find this picture that I have, a very impressive picture taken one hundred years ago, which shows how the grazing areas were very expensive on this area which is now covered with forests and therefore not anymore a danger to the town in respect to avalanches and floods. I am very surprised to hear that they will do the contrary.

TISCHENDORF: There is political pressure from the local politicians.

MAUNDER: Who don't understand the treats.

TISCHENDORF: No, they don't. Very typical of the position of the forester, as my boss explained to me, is that if he opposes they will do the contrary.

TISCHENDORF: There is political pressure from the local politicians.

MAUNDER: Who don't understand the {QUERY AUTHOR}

TISCHENDORF: No, they don't. Very typical of this position of the forester, as my boss explained it to me, is that the decision is solely upon the forester. If he opposed the cutting by pointing at the law he will always have troubles due to local opposition. If he okays the cutting and some catastrophes would occur in the next years, then it was the forester's mistake because he should have known, that is a serious problem.

MAUNDER: In other words the foresters are caught in a nut-cracker. If he doesn't say "yes" he will be condemned as a person who stands in the way of developing a new industry, a new means of money for the town. But if he does say, "Let's go ahead," and then floods and avalanches result which bring disaster to the town then he will be condemned too. Is that what you are saying?

TISCHENDORF: Yes.

MASON: May I comment on this? This is an important thing, I think, Elwood, from our point of view, because in the United States we are having the same kind of a problem where they want to take a piece of the forest for various purposes such as recreation. But the question I would like to raise is how, is there some way of reconciling these two uses? In other words, put the ski area somewhere nearby and

have the skiing without doing the damage to the forest? I don't know whether that is feasible or not but the people that want the ski areas they generally don't want to bother to try to locate them where they won't hurt the forests but in this particular situation do you think that it is feasible to have a skiing area in this general locality?

BITTERLICH: They have it already but they intend to expand. As you see on this picture in 1737 there was a big flood in this area and destroyed nearly all of the town and then there is a description of the history of the reforestation and recovery. They were very successful and now I am afraid that this new move is a very bad idea.

MAUNDER: The question Mr. Mason has raised is this, why is it not possible to preserve the protective areas that guard the town against flood and avalanche and find adjacent slopes or areas where a ski facility could be built which will not cause these disasters so that the town can also have the benefits of developing this recreational facility without endangering itself? Is this impossible to do or can it be possible.?

BITTERLICH: I am sorry that we had not the time to go over there. You could see that the most has been done already for skiing. There is a cable line up to the top--there are two cable lines--the second one on the sun side. There are many runs and several downs. There is a big skiing area already but I think it is very critical to cut down forest around the timberline.

MAUNDER: The people in the town want to enlarge the development over what they already have?

BITTERLICH: Yes, they only want to enlarge.

MAUNDER: Why is that? Is that because they see that they could accommodate even more skiers and make more money?

TISCHENDORF: Yes, it is a big demand. This is a very well known skiing area.

MAUNDER: Now let me ask you this. In America we have a great many ski areas too but they cannot seem to build them fast enough to meet the tremendously growing demand. In New England, for example, we have had scores of new ski areas built in the last ten years but everyone of them is just crowded to such an extent that there is a great pressure to build more and more and more. Now is that the same condition that you have here?

TISCHENDORF: Yes, there are two types of ski areas in this area, I would say. One is the ones which satisfy the local demand and these are small towns where city people come over the weekend. They have the capacity which is not sufficient on very bright and nice days, all week, but they generally provide sufficient income for the small town for the small owner. Then we have the huge developments that are world-famous, where people go for a vacation for a couple of weeks. These areas of course cannot satisfy the demands. As soon as one town has the possibility to create a new ski slope at timberline with bright sunshine, perfect view and very good snow conditions, of course the pressure from the cities is relatively high. As for our specific case, Zell am See, the problem is that in 1790 or about 1800, the area ( as most of the province),

had the largest extension of agricultural lands and most areas were heavily overstocked with cattle. The basin soils were quite compact, and there was very much surface runoff and erosion. With the start of the Federal Torrent Control Service in 1880 these areas were recultivated, while the farmlands were already abandoned and with the removal of forests to develop new ski areas the problem starts new again.

BITTERLICH: But I stayed for five years in Zell am See and was Forstmeister over there and I know that Schmittbach is very dangerous all the time in spite of these successful operations. If you change here a little too much a big misfortune or catastrophe could come again.

MAUNDER: You are both very ardent skiers, I understand. You are also both professional foresters and if you were the forest master in this particular area how would you deal with this problem?

BITTERLICH: I would say the same as Mr. Mason said already. As far as it is possible to separate the two purposes. It should be done at any rate but it would be nonsense to cut down the new plantations that they made, and were made in my time too on the timberline in order to prevent avalanches.

TISCHENDORF: Yes, for avalanche control particularly.

MAUNDER: Well, I'd like to comment that looking at it from our own country we are too much inclined to go for something new disregarding the damage it may do to something that is already vital. There ought to be a recognition of moderation, that is in favor of multiple use of the forests, rather than taking a given area and exclusively using it for something and particularly, of course, where there is a protection forest. A forest shouldn't be destroyed in order to temporarily have some skiing and then maybe cause the destruction of the village below due to the forest being wiped out. There needs to be foresight. With foresters, of course, their main business is foresight. But the fellow that's trying to make money, all he needs is foresight long enough to see if he can get a big crowd in there to spend money more or less regardless of what happens five years, ten years, forty years in the future.

TISCHENDORF: My study in the United States was very much concerned with the floor or storm flow through the forests. One weakness of the Austrian Forest Service is that Austria is probably in western Europe the only country which, despite a traditional torrent control, has never done any quantitative studies on these facts. The article about the reforestation work in Zell am See shows nicely the transport of sediments in the year 1884 and 1954; but it does not say anything about the amount of rain, the exact measure of rain, so we cannot say that, for instance, direct runoff before reforestation was fifty percent, and in 1954 (after reforestation) was twenty two percent. To my knowledge this depends very much on the total rainfall pattern and the antecedent conditions. With these few data, the problem is that from the hydrologic standpoint the Forest Service will have a tremendous difficulty explaining the situation, whereas from the avalanche standpoint it is easier. And these upper timberland margins are planted for avalanche control also.

MAUNDER: We are getting into rather highly technical questions now that could be enlarged when you review the tape. But I think there are some other angles of this

same subject that could get some discussion. I would like to remind all of us that we have there in the United States a very strong public demand for recreational use of the forest but the idea of many of these people is to stop the cutting of timber entirely and use the forest land solely for recreation. Some of us foresters who are familiar with such things say to them recreational use is compatible with forestry use. You can have wood production and recreation at the same time. Now right here at the edge of Salzburg we can look up at the hills where there are forests, and I suppose they are cutting trees out of those forests and utilizing them and at the same time there are roads and trails that are used by people for recreation. Now I would like to hear some of your comments on how it works, whether people resent the cutting of trees in these forests that they use, whether it actually hurts the recreational use?

BITTERLICH: Generally, no. But many of the roads in forests have to be closed because the owner of the road is responsible for all accidents on his road.

MAUNDER: We have the same thing, where people want to go everywhere in a car but if they want to go in a car then the roads have to be made so that it's feasible, but do you prevent people walking in?

BITTERLICH: No, not at all, only in certain places as in the Bluhnbach valley it is also forbidden to leave the trails.

MAUNDER: Well, that's for a special reason though. That is for their safety and partly for hunting purposes. But that's a private forest where they just don't want people anyway.

BITTERLICH: But in the Federal state forests everyone can go on foot just as he likes I suppose.

MASON: Do the people who do go in on foot, do they say well, now they ought to stop cutting the trees here because it doesn't look as nice anymore when they cut trees?

BITTERLICH: No, till now I couldn't find too much of such feelings. Now and then a journal may write something about that but it is not serious.

TISCHENDORF: Since clear cutting more than 150 feet wide is not permitted by law anyway, forest cutting is accepted as a source of income.

MAUNDER: In other words you don't have large areas that are clear-cut and therefore look bad.

TISCHENDORF: It's forbidden by law.

MAUNDER: And as long as you just cut selectively the appearance does not trouble the recreational users and they don't complain too much?

BITTERLICH: Yes, but in the last times in connection with the economical situation of forestry as you read in the article by Ernst Bitterlich there is no the tendency to change the law so that will permit the cutting of larger areas in order to allow for the use of bigger machines.



MAUNDER: When that happens you may anticipate a larger negative response from the people who use the forest for recreational purposes?

BITTERLICH: Yes, I think so. I think so.

MAUNDER: Let me ask you another question that I think bears up what we have been talking about. Austria is not a rich country as far as gross national product is concerned, I think you have said to me before that this is a country that depends on tourism on one of its main means of creating wealth for itself. Now the possibilities for increased tourism are therefore a great incentive to have government, and your local citizens who make money from the tourist trade, to seek ways and means of expanding the tourist trade. Now this must cause some considerable pressure upon the forester and on forestry and on the forests as a resource because they are not completely compatible. There is a pressure being brought to bear all the time on you from the top. Is this correct?

TISCHENDORF: I think so.

MAUNDER: Could you give us in your own words how you see that developing? What is this pressure and how is it being applied to you as foresters?

BITTERLICH: Yes, we think that the public should give more money and lower taxes to forests in order to keep them in good shape and in order to be not enforced to make something which is only necessary from the viewpoint of economy, to get income, and to be able to continue good management. If the public is only thinking the forest is the same as an industry we are going to a point where forestry cannot exist anymore in an industrial society.

MAUNDER: Well, if Mr. Mason is correct in his judgment of how forest management develops, he says, that you get good forest management when the economic values of the forest become evident. Well now those economic values can be not only for lumber and pulp but they could be also in this area as well. Now would it not therefore follow that if these economic values of the forest become more and more obvious to your government, your government and private owners will consequently be willing to expend more money to preserve and expand and to cultivate the forests which provide you such a desirable attraction to the tourists.

BITTERLICH: Yes, this is true. Yes.

MAUNDER: Simply the difference between clean-cutting and selective cutting. When you cut selectively lots of trees are always there, and the forest is beautiful. When you cut clean there's a period of a few years when it's bare and doesn't look very good. It might be more efficient from a cost point of view to cut clean but it might be at the same time quite destructive to public opinion and it's better to have the public opinion reconciled with the kind of management. In other words a forest management which maintains the economic use of the forest for wood production but at the same time keeping it looking nice for the tourists who come to this region to see it. There are things of that kind that can be reconciled.

TISCHENDORF: The taxation of forests is a considerable source of income for the government. Therefore there is resistance from the forest owners and also from the Federal Forest Service to the permitting of public access or to use of the land. The owners and the Federal Forest Service do not want the land open for recreation as long as the government does not reduce the taxes for that purpose. Dr. Bitterlich has written an article, which shows how it would be possible to calculate the recreational use of the forest and put it into money value. But until now there has been no evidence of desire on the part of the Department of Finance for tax exemption (or reduction) of recreational forests. The taxation of the forest is a steady source of income and this is the discrepancy.

MAUNDER: Does there exist any one man or any one group of men who keep up a constant pressure and attempt to convince the Federal Government that this should be done? This will only be done if there is a sustained kind of effort. Do you have that kind of pressure group in the government?

BITTERLICH: Yes, we have. Do you mean within the government?

BITTERLICH: No, outside the government. Does your Society of Austrian Foresters, for example, do this kind of thing with the government?

BITTERLICH: Yes, they do but they are able to exert only a very small pressure. The secretary here, Niesslein, always tried to convince some people of the government. And the government is already convinced but the power of money and the need of money is higher and therefore not too much is being done and everyone tried to put aside these questions.

MAUNDER: Mr. Mason could tell you a lot about how he had to contend with exactly that same condition in America, for many years trying to get the message across to our government. It took a long time and a lot of hard work.

BITTERLICH: I remember at the Fifth World Forestry Congress the Director of FAO, Dr. Glaeinger, gave a report and he said the same thing. In connection with his articles I wrote at the time another article, I have it here, where I tried to evaluate this and to begin an evaluation of forestry in all other respects too. As I remember Dr. Glesinger said, it is a fault of the forester only. The fact that nobody in the world recognizes the high values of multiple use is the fault of the foresters since they did not develop until now an evaluation of these uses in financial terms. Always this is the foresters fault and this was the reason why I wrote the article. It is not written in English. It is written in German but it was a short summary in English.

MASON: That kind of thing I think is very, very necessary I'm looking at it from the point of view of the private owner. The public through the National Forests or states forests in our country are not so concerned, because they are not taxed, but our private forests are taxed pretty heavily and without any recognition at all of all the things that those private forests furnish in addition to the production of wood. That is a benefit of the forest itself on health and on recreation and for hunting and fishing and water control.

BITTERLICH: Yes, I worked out a big list of all these utilizations.

MASON: And the one thing that I want to see done myself is a recognition in the State of Oregon, where I live, that if the private land owner permits the public to use his forest lands for recreation, hunting, berry picking, fishing and all the rest of it, then he ought to be relieved of part of his taxes. Here in Europe you can sell the hunting rights, each year you can get money, but we do not have that custom to any extent in America.

MAUNDER: Let me ask you a question here. Is the condition of forestry any better in other countries surrounding you such as Germany, Switzerland, Hungary, Yugoslavia or Italy? Do they have a better public response to support the work of forestry in Germany, for example?

BITTERLICH: No, I don't think so. For example, Switzerland has no problem in showing a good forestry because they earn their money in other ways than through forestry alone. They may say look at our wonderful forests. That is an easy way, but in our country forestry is pressed like a lemon, unfortunately.

TISCHENDORF: I understand that in England, for instance, the impact is very strong on this two percent of forested land. Even in England, to my knowledge, they have not succeeded in getting the tax exemption for use other than the production of timber. So multiple use is not recognized financially in England.

MAUNDER: How much dialogue is there between you and foresters in other countries with regard to this problem so that perhaps out of an exchange of ideas you may come to ideas and insights that will help you to deal with it?

MASON: It would help us and the other countries to understand what you do so that we might learn from that.

BITTERLICH: Oh, Yes I have had some dialogue already about these things internationally. For example, with Dr. Durk of Munich. He is an assistant of Professor Montale. He made his dissertation about all these things for Germany and we had big conversations together; I already have his booklet.

MAUNDER: Do you have any conferences of foresters from different countries that come together, let's say every year or two and discuss these problems and try to learn from each other how to solve them?

BITTERLICH: Yes, there is a certain section in the IUFRO, you remember. At the last {QUERY AUTHOR} Congress in Munich I gave also a report for that and I have a print of it. I think and there is a new section now, I think twenty five or six multiple uses.

TISCHENDORF: The problem is only that the financial ministers never join or come to these meetings.

MAISON: Well, we have the same trouble with our Congress.

MAUNDER: This is the continuation of the interview with Dr. Walter Bitterlich, Mr. David Mason and Dr. Willi Tischendorf on May 14, 1969, in Salzburg, Austria. This is a rather big question but I hope that perhaps all three of you can state something in the way of an answer. Each one of you can give your own particular answer to this question. What do you see as the current state of forestry in your country and the world and where do you think forestry is heading in the next ten, twenty, twenty-five years of time? It is on an upgrade or has it reached a plateau or is it beginning to decline in its prestige? I would hope that you might say a few words about how all this present condition of world forestry matches your own best hopes for your profession and your own work. This is a big question, I know, but it's the kind of question, I think, that will help me a great deal in proposing articles that have to be written when I get home. Could we start with you, Dr. Bitterlich and just make whatever response you like?

BITTERLICH: Forestry in the future will certainly be of a high interest for not only for foresters, for forest owners but of our whole forest society of industry, for the whole industrial society, the whole of human life. But it will be necessary to have some big chances with respect to evaluation, that is with respect to the ranking of forestry in the whole scale of human values and activities. Without a new ranking, this is only true with forestry but in other economic fields besides, there could be some serious difficulties. For example, forestry now in Austria, but I think in the whole world too, is so sensitive to prices for rough timber. It is very sensitive. So that only a little decrease or increase may change the economical situation and on the other hand, the costs of labor are constantly climbing at a steady rate because this is development of our industrial life. Now if we do not want to get into too serious difficulties in forestry we should have preventive measures in order to help forestry if, for example, the price which is dictated from outside, should decrease to the point where economical difficulties arise. The thinking about this problem should be a very public question, not only of foresters alone, just as it is in regard to agriculture products. It is not possible to let down the prices for agricultural products because in that case we wouldn't have any more farmers. Farms also have multiple uses, in our view, with respect to population. It is not good for people to be always concentrated in towns and new industry only where nobody can find the country outside anymore. And in agricultural political decisions the public helps the farmers if the prices decrease to a point where it is dangerous for the economic state of agriculture. A similar thing should be done for forestry too. Not in order to make rich men out of the forests owners or rich men out of every forester. No, only to be an assurance against severe price fluctuations.

MAUNDER: Yes, I understand.

BITTERLICH: I hope there will be a concentrated effort in this.

MAUNDER: Do you have high hopes that this may be realized in your lifetime?

BITTERLICH: Well, I think the development of our time is to try to enlarge the districts for forester to reduce the number of foresters, to enlarge the areas for clear-

cutting, to use only big machines, and to think not anyone so much for the future. This trend in the very present time could make awake the thinking of other people to the necessity for better management and more concern about the future and then I hope it will come within the rest of my life to a development where forestry will be seen as a very important fact for all of our lives.

MASON: Well, I'm sorry but we've run out of time.

MAUNDER: Well, Dave, I wonder if you could just say a little bit on the tape for the benefit of the record on this.

MAUNDER: You'll get plenty of chances with me, Elwood, and I think that Willi ought to say something.

MAUNDER: All right. Willi, as a young forester ought to say what his view of the scene is.

TISCHENDORF: I just wanted to ask Dr. Bitterlich a question. He said that his one extreme trend in forestry would mobilize other pursuits of conservation.

BITTERLICH: Yes, you can better express it than I am able to in English.

TISCHENDORF: That is what you meant? You meant just like one reaction brings a counter-reaction?

BITTERLICH: Yes, yes, I would say.

MAUNDER: One extreme always brings a counter reaction. What is your own view of world forestry today, Willi? You have had a chance to see it and other countries and to study it in America and now to practice it in your country, what do you see as the current state of world forestry?

TISCHENDORF: When we visited the Bluhnbach area Mr. Mason said that it was certainly one of the most desirable positions of the forester to govern such a beautiful area and be more or less a king over it. I think that time, I'm afraid, is over. When I was at the University of Vienna School of Forestry, we still were brought up very much in the traditional way of what the forester means. So there was universal training from engineering to management. But now even at the University there seems to be the trend for a specialization. I'm afraid that one reason for resistance of the forest administrators for specialized training is that this old concept of traditional European forestry seems to be fading. It seems that the problem is maybe that it is not a very fortunate decision to take away all of this universal knowledge of the forester who is really more than a specialist. I just think that with the highly specialized need in industry it is a problem whether a federal agency or forest owner is able to afford a specialist. Finally he will rather use a company which does a better job and the forester is more or less only the administrator and not anymore the king.

MAUNDER: The policy maker.

TISCHENDORF: Yes.

MAUNDER: Do you see this as true in America as well as here?

TISCHENDORF: I think it has been true a little bit more already in the United States where you have these various fields of forest studies: Wild Life Management, recreation, Watershed Management, Forest Management, and Range Management. We, on the other hand, still have one field of basic or general forestry which includes everything. Although in Austria, the strength of our education was in Forest Engineering, so it already was a relatively specialized study in one certain field. Isn't that right?

BITTERLICH: Yes.

MAUNDER: And that particular training was more oriented to production of a forest that would provide fuel, and lumber and pulp, than it was to provide for some of these new demands that are being made on the forest.

TISCHENDORF: Yes, and this is certainly the fault of forestry itself. To my knowledge the school doesn't even yet provide any basic training in multiple use in forestry. There is still no course or attempt to bring to the student the multiple use concept.

BITTERLICH: I for one person, I try to do this.

TISCHENDORF: But just in the field of Biometrics which is certainly not the purpose of Biometrics to teach the students multiple use alone. There is no unit which teaches multiple use.

BITTERLICH: Yes.

MAUNDER: What do you see as the future of your profession, Willi? What are your anticipations for the next ten, twenty, twenty-five years?

TISCHENDORF: I think that the multiple use particularly in this area becomes more and more the main or sole aim of forestry because of the tremendous impact which we have. Not in the mountain forests but in the closer vicinity to the cities, during the weekend the impact on forestry through tourist traffic is so strong that we have to have some kind of knowledge and directions and regulations. Up to now there isn't anybody who even knows this interdependence. Dr. Bitterlich's discussions are probably the first attempt ever made in an Austrian Forest Magazine to evaluate this on an economical basis.

BITTERLICH: Yes. Mr. Maunder you could find here some references also from German and in order to ask other people to give out these questions.

MAUNDER: Well that's my purpose of course in these seminars that we will now proceed to hold in both the University of Munich and also at Zurich so that what we endeavor here is to try to set in motion some international discussion between America

and Austria and Germany and Switzerland regarding these matters and perhaps some good will may come out of this. This is what we hope may be the result. Maybe we'll all derive some insights from talking to one another that we didn't otherwise have before.

TISCHENDORF: In Switzerland my Coloradan roommate might serve as a good translator.

MAUNDER: Who is that?

TISCHENDORF: Hans Keller from the Forest Research Station in Zurich. He got the Masters Degree in Watershed Management from Colorado State University. And he was in New Zealand studying several multiple purpose studies on forests, mainly with water in forests.