

EARLY FOREST SERVICE
RESEARCH ADMINISTRATORS

Interviews with:

Verne Lester Harper
George M. Jemison
Clarence L. Forsling

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METHODOLOGICAL PREFACE

Some, including many historians, classify the writing of history as an art. If it is so, then it must be defined, and its success measured, as any other art form. It then is the creation of the historian artist and must transcend mere reality to offer a statement about the human condition or society -- whether optimistic or pessimistic, real or ideal. The historian as artist produces an interpretation of the past that reinforces his view of reality through either his selection of historical source material, his interpretation, or, more often, through both. While supposedly seeking "truth," what he presents as his art is his own view of reality and seldom, if ever, approaches an accurate account of the past.

The other type of historical thought sees history as a social science. Through the scientific method, these practitioners argue, a more accurate account of past events can be attained. The advantage of science is not only that it names, classifies, records, quantifies, and predicts, but that it lets the "facts" offer their own interpretation, regardless of what it turns out to be. The historian-scientist is aware of his ignorance of reality and realizes that his laws and labels, descriptions and definitions, are the products of his own thought. He too has subjectively chosen his raw data. In the end, he realizes (or should) that his method has enabled him to use the world for purposes of his own devising rather than to understand and explain it, and he has thus produced a work almost as subjective as that of his historian-artist cousin.

Much of the historian's troubles come from the fact that only the present exists in reality. The past did exist (and the future will exist) but is lost forever. We cannot study the past empirically, but only its traces. The traditionally used sources of historians -- letters, records, and all other archival materials -- are merely traces of the past and in no way offer a complete (or perhaps even a partial) story of what actually took place. These sources seldom approach the "why," and the interpretation then is left to the historian.

The historian is not a super-human, but a man of this world. He shares the paradigm, or world view, of his society and his time with all its assumptions and prejudices. He can only view the past in the present and interpret it only through his own social context. All historiography is therefore subjective, relative, and timed.

This is as it should be, because it makes history vital, alive, and relevant. It has caused major schools of historiography to emerge that reflect and justify their own particular social periods. The "progressive" school reflected the early part of this century's idea that America was always improving and that linear "progress" was not only an ideal but a reality. This school gave up its prominence to the "counter-progressives" of the 1950s, who held a more cynical view in more cynical times. During the social turmoil of the late 1960s, the "new-leftist" historians arose and offered a totally new and, usually, opposite interpretation of the past.

A single event can be analyzed and explained several different ways, depending upon the context in which it is written. Thus, the past, through the writing of history, always has relevance to the present. The trouble is that few historians recognize their own bias or the relativity of their own views. Seeing themselves as the holders of "truth," all others must be wrong. The sad fact is that a new generation with new ideas and beliefs will view them as antiquated and, indeed, they will be.

Oral history is an interpretation of past events, just as is any other historical methodology. It is probably more valuable, in that it is the interpretation of an actual actor in the event and not of a historian who is by theory and practice an outsider. While the interviewee may make some errors in fact, and one must assume the limiting factors of memory loss and pride, he will probably offer an interpretation that is closer to the truth. His source material is not only the "traces" left in the records, but the memories of himself as a participant. He knows the "whys" and "hows" as well as the "whats" and "whens." The offering of oral history, while still incomplete, offers a fresh and valuable insight into the mystery of the past. It is still subjective, but that very subjectivity is in itself objective fact.

The following interviews were conducted by Elwood R. Maunder, a pioneer in this technique, and were transcribed by his wife, Eleanor. They then went through an editing process by our staff oral history editors, Karen Burman and Linda Brandt. The edited transcript was then sent back to the interviewees for their approval. They were granted the right to edit their interview as they felt was necessary in keeping with standard oral history procedure. Their editing was quite heavy in sections, so that what is presented here is an edited version of what was originally tape-recorded.

David A. Clary, Head of the History Section of the United States Department of Agriculture, Forest Service, wrote the Introduction, and Linda Brandt wrote the brief introductions for each interview. Upon the final completion of the manuscript, it was indexed by Debra Hansen of the indexing service of the Oral History Program of California State University, Fullerton. This book was a joint project of the USDA Forest Service and the Forest History Society, Inc.

Ronald C. Larson
Oral History Coordinator

INTRODUCTION

A bureaucrat, Webster tells us, is "especially, a government official who follows a narrow rigid formal routine or who is established with great authority in his own department." Bureaucrats are often described in terms of disdain, even of opprobrium. At their best, so common wisdom holds, bureaucrats are "faceless" moles endlessly scratching out, filing, and propounding tedious pettifoggery; at their worst, bureaucrats are viewed as callous, collectivist tyrants, grinding the citizenry to a paste with rigorous and inflexible rules. But what about the story of the bureaucrat who tried to close down a child's lemonade stand because it lacked public restrooms? Perhaps tales like that are intended to persuade us to accept bureaucracy as an annoying but not especially destructive nuisance, like chiggers, playing a minor role in the human comedy.

But such disparagement is overdrawn. Bureaucracy seems, on the basis of several millennia of human experience, an essential element of civilization. Even societies that subsist by hunting and gathering assign to their members offices and responsibilities and the power to regulate the hunt. The great empires all owed their rise, prosperity, and ultimate fall to the strengths and weaknesses of their bureaucracies. The urge to divide labor that leads to the formation of bureaucracy is so prevalent that it may be a distinguishing characteristic of our species. To bureaucracy must go credit for some of the best as well as some of the worst of human achievements. Many a saint martyred by one bureaucracy is honored by another established in his memory. So integral is bureaucracy to the human condition that great thinkers from Confucius to Plato to John Stuart Mill developed philosophies that acknowledge it as a fact of nature and a potential instrument for human well-being.

So we shall not concern ourselves here with pettifoggers and pencilheads and petty tyrants, for the small-minded are found in every walk of life; rather, we shall consider the good bureaucrat. What is he? The good bureaucrat may or may not be someone who does things. His distinguishing feature is that he makes it possible for things to be done. He identifies what needs to be done, he hires good people to do it, he gets them the money to do it with, he protects them from interference, he fights for the survival of his organization in political and budgetary battles

and he insures that the work being done is worthwhile and valuable to others. The good bureaucrat is a creator, a planner and designer, a talent scout, a father (or mother) confessor, an administrator, a critic, a spokesman, a politician, a fundraiser--anything he needs to be to manage an efficient, productive program, to make it serve the public interest, and always to try to improve it. Without such people cathedrals and television sets could not be built; wars against nations and against famine could not be waged; libraries, hospitals, schools, and national forests and parks could not endure. There are bad bureaucrats, to be sure, and more mediocre ones. But most are competent and dedicated to the public interest, however they might define that. And a few bureaucrats are very good indeed.

Clarence Forsling, Verne Harper, and George Jemison--the subjects of this volume--were, each in his day, good bureaucrats. They left indelible imprints on the research programs of the Forest Service. While each was an accomplished scientist in his own right, even a cursory review of the interviews in this volume will reveal the native bureaucrat in each one. They envisioned the role research should play in national forestry programs; they established and continually improved their organizations; they defended their people and programs in the dangerous world of politics.

The true bureaucrat desires order, regulation, productivity, and a measurable product. Forsling, Harper, and Jemison imposed rationality on the seemingly untameable habits of the investigator and the experimenter, and did so without stifling creativity. They showed that it was possible to organize, plan, and place research activities in a sensible priority--and as a result, they obtained the budgets and political support without which no research would have taken place. They made it clear that their programs could and would contribute directly to the multiple needs of natural resource use and management, that they would not indulge the uncontrolled whimsy of individual scientists, and in the event they furthered the arts and techniques of forest conservation. All three were planners, administrators, politicians, and diplomats--that is, good bureaucrats.

While the "bureaucratic mind" is the subject of much public cant, it is not often that the minds of bureaucrats are offered for public scrutiny. It is therefore fortunate that this volume--the latest in a series of oral history projects undertaken cooperatively by the Forest Service and the Forest History Society--has come forth. If one wants to understand the origins and nature of an important bureaucracy, in this case the research establishment of the Forest Service, one should examine the character of the people who created and built it: Forsling, Harper, and Jemison

reveal themselves as creative. They relate some of what they did and a lot of what they think about the bureaucratic process. As three distinct intellects they demolish any notion that there is such a thing as one "bureaucratic mind." Each achieved "great authority in his own department," but they all eschewed the "narrow rigid formal routine."

A word of caution to the reader is advisable. Although interviews like those recorded here are called "oral history," what you are about to read is not a history in the full meaning of the term. These interviews are documents, sources that will be useful to future historians, political scientists, and biographers. More precisely, the interviews are memoirs of a particular sort, wherein reminiscences are elicited by a questioner. The scientist in Forsling, Harper, and Jemison will remain conscious of the warning offered by the Heisenberg Principle, which the bureaucrat in each would express as, "The questions you ask determine the answers you get." It is not as a factual record that oral histories like these offer value. Rather, it is the look they give us at the personalities and judgment of people with something instructive to say about their (and our) past, at the human dimension of social processes, at the mythology and folklore and mores of the bureaucracy, at the little things that add human flesh to the dry bones of the official record.

So read these interviews not in search of a detailed accounting of Forest Service history, but for the lessons that experienced men of affairs wish to impart. You will learn how three makers of that history view their roles in it. You will come to appreciate better the bureaucratic and political and personal reality that has determined the Forest Service's evolution. And you may learn to recognize a good bureaucrat when one happens along.

David A. Clary
Head, History Section
U. S. Forest Service

Washington, D.C.
May 30, 1978

Verne Lester Harper

The Forest Service career of Verne L. Harper spans nearly forty years and encompasses such roles as Division Chief of Forest Management at the Southern Forest Experiment Station in New Orleans, Division Chief of Forest Management Research in Washington, D.C., Director of the Northeastern Forest Experiment Station in Philadelphia, and Deputy Chief of Research in Washington, D.C., a post he held for fourteen years. Harper's interest and work in international relations resulted in his obtaining funds to assist American foresters in attending foreign universities, helping to establish the North American Forestry Commission and the Latin-American Research and Training Institute, and becoming co-founder of the International Union of Societies of Foresters, of which he was president for six years. He is at present a Professor of Forestry at the University of Florida.

Throughout Harper's efforts on behalf of forestry and research run the threads of dedication to ideals and vision. His innovative approach to research, which involved written problem analyses and study plans, was slowly accepted. A station territory map was prepared to guide the future expansion of forest and watershed projects as separate forest ecosystems. And, Harper's five objectives in program planning during the 1950s helped bring about new policies and enhanced the Forest Service research program's capability. These were: personnel development actions, the man-in-job concept of classifying research scientists, the abolition of the research center leader position, the establishment of pioneering research units, and the improvement of scientific environment and research facilities.

Research Planning at the Field Level

Project and Study Level

Elwood R. Maunder: The purpose of this oral history interview, Les, is to trace some of the history of the development of research programs and research administration in the Forest Service. It is one of a series of interviews with men who held responsible positions in planning, policy development, organization, coordination, and supervision of Forest Service research nationally, and in some cases, internationally.

The history of research planning can best be treated by looking at what developed at three levels: first, at the project and study level; second, at the regional station level; and third, at the national level. Could you begin by explaining how problem analysis and study plans were developed at the project and study level?

Verne Lester Harper: I'll begin by explaining why and how I developed the kind of problem analysis and study plan that evolved from my work at the Lake City [Florida] branch of the Southern Forest Experiment Station, which began in 1931. The concept of a written problem analysis and study plan originated with me in 1931, shortly after I had been put in charge of the research work at the Lake City branch. I was imbued with the responsibility to see that the new studies we were to undertake at this newly opened branch office of the station were soundly conceived and fruitful. These thoughts led to the problem analysis and study plan, each to be prepared in writing according to carefully considered guidelines.

The purpose of the problem analysis, as I saw it, was to clarify the technical aspects of a given problem and to identify the main questions which would later become subjects for individual studies. Then for each designated study a plan would be drawn that involved a set of principles to be observed, such as a clear statement of the object of the study, a valid design

that would permit data analyses leading to results within a calculated degree of confidence, and other items.

I should further explain that, during my time in Forest Service research, a project leader was assigned a line of work called a "line project." Within each line project there were, typically, many problems on which research could be done, but some were of higher priority than others for reasons of the time. And for each problem selected for research, typically two or more studies were required for its solution. The problem analysis that I referred to a moment ago is applicable to this selected problem for research, and the study plan is applicable to the two or more studies that would be required to solve the problem.

ERM: There had been no guidelines set down along these lines before?

VLH: No, there had been no guidelines of this nature before. Most of the project leaders with whom I talked during the early days of my work in developing the guidelines claimed that they were, of course, basing their selection of studies on a knowledge of problems in the areas of research assigned to them, but they seldom wrote down their analysis. Written study plans were more in evidence. However, the quality was highly variable and too often the plan was limited to a physical description of the sample plots involved, such as size, location, and when established. There was no distinction, as a rule, between a study plan and a study establishment report.

One of my earliest conclusions in regard to the written problem analysis and study plan was that they would serve to develop planning ability in young researchers, provide a means for review of others, and force the development of a project's program of research according to a definite plan.

It was easier to say that these instruments of program development should be written than to actually write them. There was no magic formula to be followed. There were, however, certain principles to be observed. Fortunately, I was well situated to ponder these matters. I was in charge of a branch station located several hundred miles from headquarters in New Orleans, and my staff of young scientists and I were largely on our own in determining the studies to be pursued. Written problem analyses and study plans not only would be useful to us in guiding our research but also would

be something concrete to refer to when we were visited by supervisors and colleagues.

ERM: Under whom were you directly working?

VLH: Under E. L. Demmon, Director of the Southern Forest Experiment Station. At that time, Demmon also was chief of the station's division of forest management. In addition to Demmon, we were visited periodically by Ed [Edward N.] Munns, F. X. Schumacher, and others from the Office of Silvics in Washington, D.C.

ERM: Who were the people with you at Lake City?

VLH: Frank Heyward, Jr., James G. Osborne, Theodore A. Liefeld, and I constituted the regular research staff. Lenthall Wyman was with us for a short time before joining the forestry faculty of North Carolina State College at Raleigh. Other permanent employees were: Bettie C. [Mrs. Thomas N.] Busch, statistical clerk; Truman E. Pease, ranger for the Olustee Experimental Forest; Clark Street, administrative assistant; and May Patchett, secretary. In addition, we had several temporary field assistants, the number depending upon the current work load. Notable among these was William Keel, a graduate architect who, among other things, designed the original attractive complex of buildings that were constructed on the Olustee Experimental Forest in 1932. Austin Cary had a part-time office with us, and although he was not a member of the station he served us in a consulting capacity.

The research people at Lake City were all involved at one time or another in helping to develop or test the guidelines for problem analyses and study plans, especially the latter. Other members of the Southern Station also were helpful.

ERM: Who were some of those others?

VLH: The most helpful in terms of specifics were Philip C. Wakeley and William G. Wahlenberg. Others were Henry Bull, Roy A. Chapman, and Eugene Gemmer.

ERM: How was your work on these guidelines viewed by Demmon and the men from Washington?

VLH: With encouragement. Demmon thought the guidelines would be useful throughout the Southern Station. Schumacher was especially interested in the guides for study plans, the part that dealt with experimental

design and statistical analyses of data. Ed Munns thought the kind of work I was doing would fit well under a broad line of work he was personally heading up in Washington that dealt with a manual of research methods. He assigned a project with that name at Lake City with me as project leader for the Southern Station. S. R. Gevorkiantz of the Lake States Station had a similar project.* Also, I might add, Munns thought well enough of the progress I had made in developing the concept of written problem analyses and study plans to ask me to present a paper on the subject at a service-wide research project leader conference in Washington, D.C., during the early 1930s.

ERM: Do you have a copy of the paper you presented?

VLH: No, it was lost years ago. I do have a couple of things that were prepared at a later date which show the elements of problem analyses and study plans. One is entitled The Problem Analysis (dated 1940), and it contains outlines for both the problem analysis and the study working plan.** The other is a document titled Guide for Forest Service Research Scientists (dated 1965) that explains (on pages 13 and 14) the problem analysis and study plan.*** I'll send you my personal copy of each of these documents.

ERM: Before you go on, Les, during the early years of the Forest Service certain working plans and projects were carried out by individual members of the Service, particularly for private landowners in regard to how they might practice a better kind of forest management or cutting. Was there any link, historically, between what you were setting forth to do in the early 1930s and what had been done earlier?

*See page 101 in Forest Research in the United States, Report of the Committee on Forestry, Division of Biology and Agriculture, National Research Council (St. Paul, Minn.: Lake States Forest Experiment Station, 1938), processed.

**U.S., Department of Agriculture [USDA], Forest Service, The Problem Analysis (Washington, D.C.: GPO, 1940), processed.

***USDA, Forest Service, Guide for Forest Service Research Scientists (Washington, D.C.: GPO, 1965), processed.

VLH: No. The projects and working plans you are referring to pertain to management plans for the handling of forest properties, whereas the kind of planning I was doing pertained to the conduct of research. Research planning is a horse of a different color.

ERM: Would you go on with your analysis? Would you indicate, first of all, in what significant ways your approach differs from those that had been used earlier? I think you have alluded to that in some of what you said.

VLH: My approach, Woody, differs from earlier ones in three main respects: first, I would identify and keep separate the two principal stages of research planning at the project and study level. These two stages are analysis of the problem selected for the research program and, following the analysis, the preparation of a plan for the conduct of each study indicated by the analysis. In contrast, earlier planning, to the extent there was any, made no distinction between these two sequential steps--the problem analysis and the study plan.

Second, my approach would establish guidelines for the preparation of these two documents, guidelines that should be considered in all cases and followed where applicable. The burden of proof for not following the guidelines would be upon the researcher responsible for the planning. In earlier practice, there were no such guidelines.

Third, my approach would require that the problem analysis and study plan be written. Earlier practice had no such requirement.

ERM: Your last point, the requirement that the problem analysis and study plan be written would make it possible to subject proposals of an investigator to the criticism of his peers.

VLH: Exactly. And what's more, leave tracks behind so that, if the investigator departs, someone else can pick up where he left off without any loss of previous work. The follow-up researcher would not have to plow the same furrow again.

ERM: Who prepared the 1940 statement on the problem analysis?

VLH: It was prepared by Ted [Irvine T.] Haig and me. Haig was then chief of the Division of Forest Management Research, formerly the Office of Silvics, and I was his assistant. One of my first assignments after I

was transferred to Washington, D.C., in 1937 was to prepare a draft of such a statement which Haig hoped Clarence L. Forsling, then assistant chief for Research, would endorse and send to all research units for their guidance. But there were objections to my initial draft from some of the research division chiefs in Washington on grounds that it didn't fit their needs. So, after the statement had been kicking around the Washington office for a couple of years or more, Haig got Forsling's permission to adapt it especially to forest management research and then to send it to the stations as an advisory from his divisional office.

ERM: Was your next move toward making the written plans a national requirement the Guide, which was prepared in 1965?

VLH: No, there were a couple of initiatives prior to the preparation of the Guide. The first was in 1951 when I became Chief of Research. I told all the stations then, as I visited them, that a problem analysis at the project level and a plan at the study level should be prepared in writing, and that this requirement applied to all our research except Forest Survey and like activities where such documents were clearly inappropriate. The second was in the early 1960s when statements on the subject became part of the new directive system of the Forest Service Manual. The 1965 Guide, about which you are asking, was made up mostly of excerpts from the research portions of the Manual, including mainly the research chapter that I had personally rewritten during a couple of weeks in a hideout office just before I retired from the Service. Aside from this rewritten chapter on research, the Guide for Forest Service Research Scientists includes certain other excerpts on such subjects as participation of research people in studies of national forests or other administrative units of the Forest Service, employee teaching and employee training.

ERM: Now that's covering a period of more than twenty years from when you started at Lake City to when you say this finally became national policy.

VLH: Yes, 1931 to 1951, before it became a Service-wide policy, and longer, of course, before it became easily accessible as the Manual to new as well as older research scientists.

ERM: How do you account for the fact that it moved so slowly towards recognition and acceptance?

VLH: Probably a number of things were responsible. In the first place, books and articles on forestry research during that time did not lend much, if any, support to the need for written problem analysis and study plans. A 1929 study by Bailey and Spoehr pointed out that the current state of forestry practice in the United States was such that Forest Service research, which was largely descriptive and empirical in nature, was not intensive, and hence the implication that sharp analysis of problems and precise scientific experimentation were matters of little moment.* A slightly later study (which I alluded to earlier) by a committee of the National Research Council of the National Academy of Sciences, showed Forest Service research under the Branch of Research as being higher in quality than most other units or agencies, and hence the implication that measures to increase the quality were not urgent.**

Secondly, there was a feeling, perhaps not shared widely but penetrating higher echelons, that good research depends on the gifted and dedicated scientists who have creativity, are motivated by inquiring minds, and who have the drive to achieve. Any imposed procedural methods would inhibit such people, they felt.

Thirdly, there were two factors especially--which were related to application of the guidelines for problem analysis and study plans--that hindered a fuller acceptance of the concept. One was a tendency to overuse the caveat that the guidelines "are not to be followed blindly." As I had explained in early promotion of the guidelines, they were not meant to be applied to cases where there were good reasons to the contrary. The other was that an occasional enthusiast for problem analysis would get carried away in its preparation to the point he would make a career out of the process of polishing it for publication. Thus, instead of serving as the means to effective research, some analyses tended to become ends in themselves.

ERM: What was your answer to these reasons for delay?

*I. W. Bailey and H. A. Spoehr, The Role of Research in the Development of Forestry in North America (New York: The Macmillan Company, 1929).

**Forest Research in the United States.

VLH: I was not impressed by the implication derived from the two Academy of Sciences sponsored studies. Bailey and Spoehr were making a case for endowed forestry research to be carried out by universities; they understated the role of the Forest Service in intensive research of a fundamental and searching nature. The Committee on Forestry of the National Research Council was overly generous, in my opinion, in its ratings of quality of Forest Service research. But aside from this, not to continue to push aggressively for increased quality of research would reflect a complacency wholly unacceptable to me. As to research methodology's inhibiting creativity in research, experience amply refuted that claim. Our best researchers were among the first to use good methodology of planning and research performance.

The two factors that I mentioned which hindered wider application of the guidelines were corrected in the administration of them: closer supervision to prevent those who claimed exemption beyond proper justification, such as by inspection from the Washington office; and a revision of the problem analysis guidelines by stating that the problem analysis "may be reviewed by others but normally it will not be published."* This revision was successful in reducing excessive effort and cost in polishing and publishing the analyses.

ERM: The McSweeney-McNary Act, passed in 1928, greatly stimulated the growth of research in the Forest Service. How do you relate what you are talking about to that enlarged research support from the public through Congress?

VLH: The problem analysis and study plan at the project level were designed to make more effective use of research funds that were authorized by the McSweeney-McNary Act. Their purpose is in harmony with that legislation as one aspect of implementing the law.

I am moved to comment on your premise that this Act stimulated a greatly enlarged research support from the public, etc. The record doesn't bear you out. In 1925, three years before the Act, the appropriation for research was \$763,539. In 1930 it was \$1,160,000.

*See pages 18 and 25, USDA, Forest Service, Report of General Research Inspection: Southern Forest Experiment Station, by V. L. Harper and Thomas C. Nelson (Washington, D.C.: GPO, 1965), processed.

By 1940, the appropriation was \$2,769,364.* This is hardly a greatly stimulated growth. Moreover, I saw no evidence that an enlarged public support was gained by the act. The support was in Congress, but it was temporary and sluggish for lack of support by constituents of legislators.

ERM: Certainly the support was less in comparison with what's come on since World War II.

VLH: Yes. Backing up a bit, there is a relation (if I may be permitted to add to what I have said too briefly) between the problem analysis and study plan and what the McSweeney-McNary Act authorized. I envisioned in the early 1930s that the day was certainly coming when public support would demand more intensive practice of forestry and hence a greater need for research. We were already experiencing at Lake City the pressure of problems growing out of more intensive forest practices. Under situations like that it seemed to me that one couldn't afford to be less than extra careful in his priorities of problems selected for the research program, and certainly one couldn't expect effective results from poorly designed studies with fuzzy objects.

ERM: In earlier days, how were priorities determined at the project level--Lake City, for example, when you were stationed there?

VLH: The system used is presented in the 1965 Guide [pp. 5-14]. Briefly, it involved, first, the problem selection process: choosing from several problems the ones that seemed most urgently in need of research. Second, came the analysis of the selected problems into their component parts, and then arranging the parts in priority for the research attack with studies. Third, the preparation of the study plans, starting with the study having the highest priority.

ERM: Did you bring the public into the consideration of problems and their priority?

VLH: Not in a formal way. But we had informal discussions with landowners, associations, and scientists. For example, the Pine Institute of America was active during that time and we often saw Carl Speh, manager of the Institute.

*USDA, Forest Service, "History of Forest Service Research: Development of a National Plan," by Herbert C. Storey (Review draft, September, 1974), p. 126.

Up to now I have not mentioned the problem selection process because it really is a part of program formation at the regional station level. My eventual view was that the director's office--probably a division chief--should take the initiative in selecting the problems for research, bringing the project leader into the process for consultation and advice on scientific considerations, such as whether the problem can feasibly be researched, whether it is being researched elsewhere, and so on. Actually, however, we were selecting the problems at Lake City, subject to concurrence of the station director.

In more detail than I gave earlier, the problem selection process was about as follows: we first considered all the important problems in the lines of research assigned to us from the vantage point of our knowledge of the forest conditions in the coastal plain of the Southeast. Usually this resulted in a list of several problems that appeared to have some urgency.

Next, we examined the list in the light of advice about pressing problems obtained from forest landowners, naval stores operators, industry people, national forest personnel, state foresters, and others. Out of this consideration came a shorter list.

Finally, we scrutinized that list in the light of research already done or being done elsewhere on similar problems, available facilities and funds for doing the required research, and probable success of our research attack. Out of this last consideration the list shrank in size again, leaving perhaps two or three problems. Those problems then were designated in order of their apparent priority as the last step of problem selection. From that point on came the problem analysis and the study plan processes.

ERM: How many projects, or line projects as you called them, did you have at Lake City?

VLH: We had three running concurrently during my time: naval stores production, silviculture of slash and longleaf pines in the southeastern coastal plain, and forest fire use in forest management. In addition, I carried a project entitled research methods, as I mentioned a while ago.

ERM: Was the determination of priority of problems and the analysis and study planning a team approach among your junior colleagues?

VLH: Very much so.

- ERM: The planning was a matter of staff discussion, thinking through the sequence of studies and other aspects of the whole problem of setting up the active research program?
- VLH: Correct. Once we had settled on the selected problems, I usually undertook the problem analysis leading to the designated studies. The other members of the science staff prepared study plans in their respective line projects. We reviewed each other's work and gave help in our particular specialties. The actual field work of establishing given studies was often shared by all of us.
- ERM: Did you organize any advisory committees outside the staff in those early days?
- VLH: No.
- ERM: It seems to me that [Samuel T.] Dana at the Northeastern Station was instrumental in starting an advisory committee [Northeastern Forest Research Advisory Council] about that same time, perhaps a bit earlier.*
- VLH: Yes, in 1924. Dana was the first in Forest Service station research, so far as I know, to form an advisory body.
- ERM: This was also the time of the great impact of Earle Clapp as a research man in the Forest Service. Clapp, R. C. Hall, and A. B. Hastings, under sponsorship of the Society of American Foresters, produced a report entitled A National Program of Forest Research.** So all of this was developing about the same time that you were beginning your work in the Forest Service. To what extent were you in touch with and responsive to what was going on at that particular level of study of the problem?

*Samuel T. Dana, The Development of Forestry in Government and Education, oral history interview conducted by Amelia R. Fry (Berkeley: University of California, Bancroft Library, Regional Oral History Office, 1967), p. 39.

**A National Program of Forest Research, Report of a Special Committee on Forest Research of the Washington, D.C. Section of the Society of American Foresters, by Earle Clapp (Washington, D.C.: American Tree Association for Society of American Foresters, 1926).

- VLH: We had a copy of the Clapp report.
- ERM: To what extent do you think Clapp's report dealt with the matter of problem analysis and working plan of a study?
- VLH: Not at all. Clapp's report dealt with planning at the national level, planning which defined very broad fields of research. It did not deal with research at the project and study level.
- ERM: So, in a sense, your thought was developing in logical progression in the same direction.
- VLH: Yes, planning at the station level and on down to the project and study level. No matter how good a broad national plan might be, it needs to have the planning extended to the ground level.
- ERM: To what extent were your decisions on what projects to embark upon, for example in the early days at Lake City, dictated by limits of your own budgeting? Did you encounter other pressures besides just strictly those of limitations of funds? Were there any regional economic pressures of any particular kind, or political pressures, or were you isolated from these?
- VLH: We were far from being isolated from regional and local interests in our work at Lake City during those early days. The economic pressures came largely from the naval stores industry and from forest landowners. There were some pressures also from cattlemen and wildlife interests, especially in the use of fire for habitat management. The studies that we could undertake were limited, of course, by the funds at our disposal. These included mainly the appropriated funds allotted to our work, plus such cooperative help as we could arrange locally as from the University of Florida in Gainesville, forest landowners, and others. Their cooperation came mostly in the form of donated time of people and materials.
- ERM: Earle Clapp, head of Research at that time, must have visited your research center at Lake City. What was his attitude toward your proposed guidelines for problem analysis and study plans?
- VLH: Clapp visited the Lake City branch only once during my four years there, and we did not discuss that subject during his stay. His visit was very short. He was there at the request of Ray [Raymond E.] Marsh, his principal assistant at that time, who had

just completed an inspection of the Southern Station. Marsh felt that Clapp should be present during the windup session with Demmon over the findings of his inspection, including questions to be settled about organization and personnel matters.

ERM: What were these matters?

VLH: The main reason for his joining Marsh, as stated by Marsh himself a few days before he completed his inspection, was to make a decision in regard to a proposal by the station to decentralize the research in forest and range management to a series of branch stations similar to the one at Lake City. And there were other questions involving personnel transfer actions, as I subsequently discovered.

Perhaps I might tell more about that visit, even though it doesn't relate directly to research planning at the project and study level. It does relate, however, to a role in research planning at the regional level that I was soon to take.

ERM: How did this question of branch stations arise and what were the personnel matters that needed decision?

VLH: E. L. Demmon and Cap [Inman F.] Eldredge stopped by my office in the early fall of 1934 to tell me that Marsh was to make an inspection of the station in a few weeks and to ask me for suggestions on any matters concerning the Lake City program that I wanted called especially to Marsh's attention. At that point Cap Eldredge suggested that Demmon ought to propose to Marsh the establishment of a series of branch stations patterned after Lake City. Demmon and I agreed that the proposal had merit.

Marsh arrived in December of 1934, accompanied by Demmon. They spent a week reviewing the Lake City program. Toward the end of the week Marsh telegraphed Clapp to join him at Lake City over the weekend. Clapp arrived on a Saturday evening and he and Marsh departed the next evening. Clapp, Marsh, and Demmon spent Sunday in closed conference.

On the way to Jacksonville by automobile to catch the train back to Washington, Clapp explained to me why he had rejected the proposal of further branch stations. He said that Lake City was an exception to his policy of no branch stations, an exception justified by the nature of our naval stores research, which required virtual year-round field work and hence local residency

of the research people. He pointed out that he had created the regional stations in order to bring scattered research personnel in the West to central locations and he did not want to let the newer eastern stations take a step backward. He cited many disadvantages of the system prior to establishment of regional stations--thinly manned and scattered research locations of the West and difficult access to many of them, slow communication by mail and telegraph, isolation of personnel, etc. He felt that research personnel would profit from the intellectual stimulation of group association and discussion. Moreover, he concluded, there wasn't enough money at present to support subdivisions of the Southern Station, and if there were, he would favor establishing an additional regional station in the South rather than decentralizing to branch stations.

On the way back to Lake City from Jacksonville, Demmon told me of other decisions Clapp had made at their Sunday meeting. The Forest Survey, which up to that time had been organized and operated independent of the station, was being merged with the station as a divisional activity. Similarly, forest economics in the South, which had been directed out of Washington, was being added to the station. With three research divisions of the station, Demmon was to relinquish his immediate supervision of forest and watershed management in order to devote full attention to overall station direction and administration.

Then the bombshell. Clapp had agreed that I was to be transferred to New Orleans to head the station's division of forest and watershed management. I moved to New Orleans in July 1935.

ERM: How would you characterize the influence of those at the study level and regional levels in determining the thrust and emphasis of research? Did this increase or decrease as time went on?

VLH: The emphasis of research in terms of broad fields for study including new areas and changes in the definitions of older ones, was then and still is set by the Washington Office of Research, subject to congressional authorization and funding and certain department-wide rules and coordination. But within the fields for which a station is authorized, the study and regional levels exert major influence in determining the emphasis to be given specific problems and the thrust that is given to achieve research results. Their influence has grown tremendously in these respects as

the quality of researchers has increased through more advanced training and the use of more highly sophisticated research equipment and facilities.

ERM: What I was getting at, Les, is this: your story of the visit of Ray Marsh, Earle Clapp, Cap Eldredge, and E. L. Demmon gave me the impression that the top and middle echelons came down to the project and study level, took an idea and carried it up the line. You got "bumped up the line" to the regional office, and not long thereafter you got "bumped up the line" to the Washington office, and I wonder to what extent that process continued to operate as time went on. To what extent have those at the top and middle levels listened to and effected the ideas of imaginative young scientists who were moving into the field at the project level?

VLH: Okay, your question is on research administration matters, organization, and personnel promotion, the kind of ideas discussed by the people during their visit to Lake City. I'll reply to the organization idea first.

The fact that Clapp rejected the proposal to create more branch stations in the South is not surprising in view of his national plan for research that had only recently been completed. Therein he states that the system of regional forest experiment stations begun in 1920 was then complete except for the possible addition of another regional station in the case of a large territory such as that of the Southern Station.* If Clapp were to be faulted for dismissing out of hand the idea of branch stations in the South with year-round residency for scientists, it would have to be on grounds that he didn't foresee the key role that multicenters of a station could play in stimulating public support for research funding and effectively carrying the load of an enlarged research program. Had Clapp been better acquainted with the South he would have seen the beginning signs of a quickening degree of forest practice and hence the potential increased demand from the local people for more research.

A story was being told in Southern Station circles during the days of preparing the Copeland Report, in the late 1920s, that Clapp had rejected some station observations on forest conditions with the comment

*A National Program of Forest Research, pp. 149-150.

they were "contrary to well-founded opinion." Clapp was deservedly admired for his broad vision in long-range planning. But he also was known for a determined adherence to his convictions--views once formed not easily shaken.

Now as to whether the up-the-line flow of ideas on research organization and like administration matters continued, or indeed whether there were many of such, I can't say. However, in my opinion, project leaders and scientists at the study level are not likely to spawn new ideas on such matters. They are more apt to resist changes of this nature. Their expertise and creativity lies in another direction--in how best to tackle a problem and set up the studies needed, and in doing research. In other words, the flow of ideas on research administration is more apt to be down than up. In contrast, the flow of ideas about research doing and research accomplishment is mostly up the line.

There has always been reasonably good communication between its echelons. In the early days it was generally informal, a style suited to the small size of the research program. Later, the process had to be organized because of the greatly enlarged program. The modern system of Washington office inspections was in response to this need. An example of this type of medium for exchange of ideas is the General Research Inspection.

Finally, as to personnel transfers, my moves to successively broader supervisory and administrative positions in research was not unusual then and the practice continues. I would have been content to have remained in a research-doing, project leader role, but I was not unhappy to go the research administrator route. The main problem about research promotions in the early days was that they were strongly influenced by the Civil Service classification system. The better-paying positions in research were supervisor and administrator slots. In comparison, the career ladder for the person who wished to remain at the project and study level was very short. Civil Service classification was based on the principle that responsibility, and hence salary, is governed more by the number of people supervised than by other factors, such as the ability to conceive research studies and achieve research accomplishments.

Later on, after I became chief of Research, I helped get a change in the research job classification system so that research people who wanted to remain in

research-doing positions could have attractive career ladders as tall as those for research administrators. But this is another story to which I'll want to return when we talk about policies to enhance the quality of research.

ERM: As you have observed it, Les, was research planning at the project and study level markedly different in the various regions of the country? How did you see the idea of written problem analysis and study plan take on in other areas, and where did it catch on first, after it caught on in the South?

VLH: First, the difference, if any, was in the planning at the project and study level between the various regions prior to my guidelines for problem analysis and study plans. I doubt if there was much difference among the stations; few analyses or plans were written. Within a given station, however, the quality of mental planning varied widely, depending on the investigator. Some people had a gifted capacity to arrive at meaningful studies without the benefit of written analyses and plans and could give a good oral account of how they got there. Others, clearly the majority, too often ended up collecting data that were unmanageable, devoid of justifiable purpose, or in excess of need.

This unflattering appraisal is at variance with the previously mentioned 1938 survey reported by the Forestry Committee of the National Research Council, which rated 81 percent of the research projects under way in the early 1930s at Forest Service stations in the high-quality class.* These ratings, of necessity, were based on descriptions of the projects, since written problem analysis and study plans were generally nonexistent. Therefore, it was impossible in that survey to judge a project (which was defined simply as a problem being studied) in terms of its priority and reasons for doing the so-called project. Also, it was impossible to judge the adequacy of study design, except in a general way.

As to application of these planning tools, acceptance was a gradual process brought on by persuasion and attitudes. Written documents for the problem analysis and study plan undoubtedly gained some following after my paper on the subject at the project leader

*See table on p. 14 of Forest Research in the United States.

conference in Washington, D.C., in the early 1930s. Then in 1940, Haig distributed from Washington an advisory on it, enclosing a statement outlining the elements of planning to be considered. The biggest gain in the use of the tools probably came in the last half of the 1940s and early 1950s as strong advocates of the idea assumed key research administrator positions: I. T. Haig to the Southeastern Station [formerly called Appalachian Forest Experiment Station], Raymond Price to the Southwestern, Demmon to the Lake States (from the Southern), George Jemison to the Northern Rocky Mountain, and Harper to the Northeastern and then on to become head of Research.

- ERM: To what extent did your ideas catch on in the faculties of forestry schools around the country to influence upcoming forest research scientists?
- VLH: So far as I know, the forestry schools do not teach research program planning.
- ERM: In other words, there was no effort made to implement this kind of training at the academic level.
- VLH: That's correct. We were interested mainly in getting university graduates with both broad and specialized education. More than half of our scientists came from departments other than forestry--for example, from chemistry, botany, plant pathology, entomology, soils, biochemistry, engineering, physics, mathematics, geography, geology, psychology, economics, and so on. We had researchers in some fifty fields of specialization by the time I left the Service in 1966.*
- ERM: Now, that would apply certainly at the bachelor's level, but what about the graduate level? Methodology would surely come into focus there, would it not?
- VLH: Yes, methodology in the sense of research techniques, but not in planning of research. Techniques are taught to some extent at the undergraduate level and certainly at the graduate, doctoral level. Examples of such techniques are use of the library, use of computers, experimental design, statistical methods, operation of sophisticated scientific equipment. Planning the research program at the project level depends largely on an agency's mission; each has its

*Guide for Forest Service Research Scientists, 1965, pp. 41-44.

own system. The agricultural experiment stations, of which most forestry schools are a part, maintain a system akin to ours, except the project is defined differently and the analysis of the problem and plan for the study are more general. Other departments of the university, in their faculty research, emphasize the research-grant application which usually incorporates ideas on why and how the research will be pursued. In my judgment, planning at the project level, even grantsmanship, are best learned on the job.

ERM: The idea being that once the graduate gets out into the world of practice, these other skills will come.

VLH: Yes, the skill will come with on-the-job training and working with experienced researchers of the employing agency.

ERM: How did you go about recruiting personnel for your Lake City center when you were there? Were you involved directly in recruitment or was it a matter of people being assigned to the center from regional headquarters?

VLH: Mostly a matter of personnel being assigned by the station director. This was true for full-time people that had to be obtained from the national Civil Service register. I usually hired the clerks and secretaries directly from the regional Civil Service register; and I hired temporary field assistants and as-needed skilled and unskilled labor.

ERM: How were the expenses of the research center met? You mentioned research customers or clients who wanted particular problems solved and were prepared to help meet the cost. Did that provide a substantial part of your revenue?

VLH: A very small part in terms of money. Help was usually contributed in manpower and materials rather than in cash.

ERM: People from the faculties of the universities?

VLH: Yes, and from forest landowners. We got a substantial amount of scientific laboratory help from the University of Florida's Agricultural Experiment Station. Help from landowners usually was in the nature of land, materials, and labor for establishing experiments.

ERM: Your program was, of course, contained within limits

of a budget. Therefore, mechanisms by which budgets are arrived at become important to understanding the history and development of this idea. How did you put together and get approval of the budgets of the research center?

VLH: The annual budget of the Lake City branch was made up of two parts: the fixed costs of personnel on a full-time basis, the records of which were kept at station headquarters in New Orleans, and the local operating costs, for which I made estimates. This latter part of the budget varied by year depending upon need for vehicles, machinery, scientific equipment, and other costly items. Items such as travel, temporary assistants, labor, and miscellaneous supplies were fairly constant. The center's budget was reviewed at station headquarters and any adjustments required because of limitations of overall funds were arrived at through correspondence and telephone between the two offices.

Once the operating budget was set, I tried to stay within its limits. However, in case of emergency I would request relief from New Orleans, and usually got help from the station's contingency fund maintained for that purpose. The station business manager, John Lubbe, kept in close touch with our center, and all other units of the station. He was very helpful.

ERM: What was the starting date of the Lake City branch?

VLH: It was 1931. However, from the historical view, the starting date was 1923, when this research center was first located in Starke, Florida. The headquarters were moved to Lake City in 1931. I joined the Southern Station in 1927 and was assigned to the Starke branch under Lenthall Wyman.

ERM: Why was the headquarters moved?

VLH: Essentially to be near a newly purchased experimental forest.

ERM: There was no federally owned experimental area at Starke?

VLH: No, we leased areas from private forest landowners. In 1929 I was assigned the task of finding a suitable forest area that could be acquired either by donation or purchase and which would be near a suitable headquarters town. Paul Rudolph of the Starke staff

who soon transferred to the Lake States Station, helped me examine several forest areas. I searched throughout south Georgia and north Florida and eventually found a tract of about two thousand acres near Olustee, Florida, that came the nearest to meeting all the criteria. It was purchased as part of the Osceola National Forest and formally set aside by the chief of the Forest Service as the Olustee Experimental Forest. Wyman stayed on at Starke to wind down the ongoing experiments in naval stores practice and soon thereafter, as I mentioned earlier, resigned to accept a faculty position in the newly established forestry school at North Carolina State College, Raleigh. The rest of us moved to Lake City where we established the office of the center's new headquarters.

ERM: This research center, then, was established about the same time as the regional station for the South?

VLH: Almost the same time. The Southern Forest Experiment Station was established in 1921 with headquarters in the old Customs Building on Canal Street in New Orleans. It began as a very small operation; in Cap Eldredge's words, "with Reg [Reginald D.] Forbes, Miss Spuhler, and a brass spittoon."

ERM: Is the Lake City center still in operation?

VLH: Yes, with a new name and other changes. It is currently [1976] called the Naval Stores and Timber Production Laboratory but there is talk of changing that to something like Forestry Research Laboratory, a more general term to better fit changing programs. The headquarters office and laboratory facilities are in the modern, large building that was constructed on the Olustee Experimental Forest in two stages during the late 1950s and early 1960s. This research center is now under the jurisdiction of the Southeastern Forest Experiment Station.

ERM: If you were to name two significant accomplishments of research at Lake City during your time there, what would they be?

VLH: Let me answer in terms of what eventually grew out of the research. Studies begun during my time at Lake City, of course, were not all completed before I left. In fact, some of the same problems are still being studied. I would name tree improvement through genetics, and the controlled use of fire as a protective

measure against disastrous wildfire. Both of these accomplishments grew out of studies begun during my time. The Lake City center, therefore, can lay legitimate claim to having played a pioneering role in regard to them even though in subsequent years several other research units--Forest Service, university, and industry--joined the investigations and made major contributions, all of which tends to obscure their beginning.

ERM: Did the planning system that you devised lead you to select the problems in these areas for study?

VLH: Yes, and I should add that we drew heavily on our own vision, imagination, and scientific knowledge about the subject matter to make the final selections, particularly in the case of the forest genetics problem. Neither the forest industry people nor the others with whom we discussed tree improvement as a candidate problem for the research program thought the problem worthy of being undertaken at that time. Reaction to the use-of-fire problem was mixed. Some people rated it low in priority; others differed widely in their perception of the problem to be researched.

ERM: Fire was a controversial subject in the South, especially about the time of your research there.

VLH: It was for a fact. And the controversy differed depending upon the part of the South and the forest type. For example, in the longleaf pine stands of Louisiana the issue was the use of fire to prepare a favorable seedbed for the pine's natural regeneration. In the flat woods of north Florida and south Georgia one of the issues was the planned periodic use of fire in the slash-longleaf pine stands to remove herbaceous and woody undergrowth as a protection measure against wildfire. There were strong public agency advocates of complete exclusion of fires, abundant evidence of a public desire to burn the woods annually, and a few closet burners--landowners who were using fire as a protection tool but not advertising their practice for fear of offending the state forester and the Clarke-McNary inspector of the Forest Service, and thus jeopardizing their status as cooperators in fire control.

The basic problem for study, as we perceived it, was whether use of fire had hidden effects that would slowly degenerate the ecosystem. Possible destruction of soil fauna and fertility were often cited as a risk too great to assume and an argument in favor of complete protection. Frank Heyward's studies of the

effects of fire on soil provided, for the first time, reliable evidence that soils were not impaired by properly controlled use of fire. And my studies showed that slash and longleaf pine stands were not reduced in growth unless by severe crown scorching, something that could be avoided by proper techniques of controlled burning. On the plus side were improved livestock grazing, better quail habitat, and reduction of fuel hazards.

ERM: No further problems for research?

VLH: Oh yes, but about that time I left Lake City and so did Frank Heyward. The Lake City program was curtailed until after World War II, but research on use of fire continued elsewhere, especially on the techniques of controlled burning aimed at lowering the cost. More recently, management of smoke from use of woods fires in the South in order to prevent smog as a road-traffic hazard has become a big research problem.

ERM: Why did forest industry people and others downgrade the priority of forest genetics as a research problem during the early 1930s?

VLH: It was an idea too new and the outlook for success too uncertain to justify a place for it in the program. The pulp and paper industry had not yet moved to the South. The naval stores industry was constantly on the verge of disaster and thought the idea of breeding trees for increased gum yields too fantastic to be real, even though the leaders were amused by the thought of it. The whole idea tickled their funny bone but made no impression on their lobbying arm. Others with whom we discussed tree breeding and propagation, including university and Southern Station scientists, saw major obstacles to early success. Pines were not susceptible to vegetative propagation, they pointed out, and therefore one would have to wait for a generation or more of trees to effect improvement.

ERM: In spite of this cold water on the idea, you went ahead with the genetics research. How did you see the problem?

VLH: We saw merit in the genetics research for our program because of the favorable growth rate of slash and longleaf pines in our region as compared to rates of growth of trees in regions of colder climates. Moreover, there was a wide difference between the naval stores production from trees believed to be inherently high yielders and those of low yields. My previous

research at Starke had shown that individual pines differed widely in their capacity to yield naval stores gum, a difference that could not be accounted for by environmental factors. T. A. Liefeld, who was then working full-time in naval stores research at Lake City, and I both felt that we had a good chance of ultimately increasing the average naval stores yields by a considerable margin and, furthermore, that a naval stores objective would make a good pilot study in forest genetics to test its usefulness for more general application to improve other properties of southern pines.

ERM: You failed to stimulate the naval stores industry to give help in funding. How did you manage the beginning of genetics studies?

VLH: First by program adjustment at Lake City. This adjustment wasn't substantial, but it made possible the collection of seed from trees having high yield of naval stores gum. Liefeld made this start, including planting the seed in the nursery. It wasn't until the latter part of the 1930s, after I had transferred to the Washington office, that the badly needed new funding came. Initially, it came from the Agricultural Adjustment Administration in the form of a research grant. After two years on grant money, additional Forest Service funds absorbed the costs to keep the research going. Harold L. Mitchell, a forest physiologist, was recruited, on my recommendation, to head the expanded genetics work at Lake City.

ERM: You were unable to achieve funding from the Forest Service budget prior to the AAA grants?

VLH: Our research budget was too tight at that time. Forsling, then head of Research, tried for an increase in the budget for forest genetics research, but failed. The financial situation was exacerbated by the recent donation of the Eddy Tree Breeding Station at Placerville, California, to the Forest Service. Our service-wide research budget had been stretched to its limits to care for the Placerville treasures and to keep that program moving ahead. The barely-started, struggling genetics project at Lake City could wait.

But I didn't want to wait. I talked with Carl Speh about our need for ten thousand dollars to hire a plant physiologist to learn how to propagate slash pine vegetatively, graft pine trees, and do all the other things needed to make tree breeding practical. Speh was then with the naval stores division of the

department's Bureau of Chemistry, having joined the bureau when the Pine Institute of America failed. He and I were friends from our mutual days in the South. The Bureau of Chemistry could give no help, but Speh thought I might seek a grant from the Agricultural Adjustment Administration. He had heard that AAA had uncommitted funds in its research-grant program. I was warmly received at AAA by people whom I had helped in 1936 to write a benefit-payment program for naval stores producers. They paved the way to my getting the first year grant of ten thousand dollars. Upon our failure to get funding of the genetics program into the Forest Service's budget at the end of that year, AAA renewed the grant for another year.

The Depression years of the 1930s were difficult for regular federal programs. The alphabet programs, WPA, CCC, AAA, and so on, were the affluent agencies. If it had not been for the direct and indirect help we got from them, our research program in forestry would have suffered still more.

ERM: With the help of the AAA grant of funds you got your start on forest genetics research at Lake City. Was it smooth sailing for the project from then on?

VLH: Program-wise, yes. But not financially. Mitchell had early success in rooting cuttings of slash pine. He was not obliged to keep me informed on each significant advance in his experiments; nevertheless, he reported periodically by personal letter on his early progress. Once I got a three-word telegram from him, soon after he began greenhouse studies of slash pine, which read: "It has whiskers." This was his first successful rooting.

During the war, all programs at the stations--and I use the term "station" as we usually did, to mean the Forest Products Laboratory and other field units reporting directly to Washington, as well as the regional stations--were curtailed and work redirected to war-connected projects. Mitchell managed to keep the forest genetics work alive at Lake City during that period. Then, as World War II drew to a close, one of the first congressional increases for research was for the Lake City genetics project, which came outside the budget with the help of the Forest Farmers Association and southern congressmen. By that time Mitchell had sold the project on the basis of early successes in his work.

Soon other forest genetics programs sprang up throughout the country, several of them in the South. The idea of

super trees was boldly embraced by the pulp and paper industry in the South, and through cooperative arrangements with universities, it launched a major research and development program aimed at producing southern pine trees for planting that have faster growth, good form, and generally superior qualities in all respects.

Regional Level

ERM: You moved to a regional position of the Southern Station in 1935 and were there for two years. What did you do to develop new policies and procedures to guide program development at that level?

VLH: The development most worthy of note was the map of the station territory that I prepared to guide future expansion of the forest and watershed research programs. The map showed forest types, each of which was deemed sufficiently important to justify a separate research program. In modern terminology we would call them separate forest ecosystems. In preparing the map I drew upon several sources, including opinions of knowledgeable people both within and outside the station and pertinent literature, and I did field work to sample conditions in each of the ecosystems. The principal factors considered, as I recall, were species of trees, ground vegetation, animal life, soil types, elevation, water, and watershed characteristics. On the copy of the resulting map I plotted existing research locations. Most of these, except for the Lake City center, were clustered near New Orleans, which left several of the forest types completely without programs.

ERM: Did you correct that imbalance?

VLH: Only so far as could be done by making feasible program adjustments. Program increases were almost nonexistent during the Depression years of the 1930s. In the few forest types covered by the current programs we designated the research locations in each that were to be kept and marked the rest for a phaseout as experiments were completed. The forest types not yet reached by the program had to wait for new funding, which happened in 1945 when the drive, spearheaded by the dynamic Forest Farmers Association, resulted in a substantial congressional appropriation for the establishment or bolstering of

research centers in the South. Then a small research center in each of the forest types was established with two to three scientists in year-round residence.

ERM: This was the first region in which the idea of research center branches was implemented?

VLH: Both the Southeastern and the Southern stations shared heavily in the first surge of research center establishments. The other stations did fairly well in this respect during the next few years.

ERM: Do you think there was any reason why the research center form of organization for research emerged here in the South? Was it a factor of anything other than the leadership of the people who were involved in the research program?

VLH: It was both Southern Station leadership and other forces that caused decentralization of forest management or forest-use research to emerge at that particular time. Let me take leadership first. When I was at this station our feeling was strong that the policy of centralizing that kind of research at our regional headquarters was not only wasteful of funds and time, but was also harsh on the families involved because the researchers had to spend so much time away from their homes in travel. It was natural, therefore, that the station would welcome the first good opportunity that came along to establish more centers after the fashion of Lake City. The fact that the change probably would help generate more funds made decentralization even more attractive.

ERM: Before you go on, let me ask why the leadership for the movement toward research centers came from the South and not from some other region? Were there regional differences involved?

VLH: Yes, there were regional differences. Growing seasons are longer and winters are milder in the South. Much field work is done in the winter as well as summer. In most of the other regions, on the other hand, there would be little point in trying to do field work in silviculture and like research under a blanket of snow and in below-freezing weather. But the main reason, perhaps, was in life style of the researchers involved. Outside of the South it was more usual than not for the families of researchers to accompany them for the field season and to set up housekeeping in summer quarters, and then move back to headquarters when school opened. The South lacked

alluring summer vacation places near research areas. And field seasons did not coincide well with a school's vacation periods. Neither the work economy nor the family hardship factor was the acute problem elsewhere as it was in the South. The real incentive to decentralize to research centers was in the South. Moreover, it was my opinion, undoubtedly shared by several of my associates at the Southern Station, that decentralized units of a station provided a better political base for attracting local support of the research.

ERM: Continue your analysis. You mentioned that other factors were involved aside from station leadership.

VLH: There were several factors that converged in 1945 to make establishment of research centers possible. Most of the factors were peculiar to the South, which helps explain why the research center movement started there at that particular time. One factor was the expansion of the pulp and paper industry in the South with its accelerated program of forest land purchases and its intent to put these lands under intensive forest management. Another was the newly [1940] organized Forest Farmers Association, based then in Valdosta, Georgia, which was ready and eager to push for increased funding of research. Still another factor was the example of the Lake City center and the map of forest types to give a measure of the number of research centers needed for the Southern Station. And finally, an important factor was that the war was then drawing to a close and Congress was ready to turn to domestic programs that had been curtailed during the emergency.

ERM: But there was a national policy not to decentralize to research centers. Had this policy been changed?

VLH: Yes, I assume it had. Earle Clapp had retired. Lyle Watts was then chief of the Forest Service and Ed [Edward I.] Kotok was head of Research. Kotok welcomed the push to establish research centers. In fact, when he was director of the California Station, he maintained three research centers with some year-round personnel: San Dimas Experimental Forest [watershed research], Institute of Forest Genetics at Placerville, and the San Joaquin Range near Fresno.

ERM: How did you see this idea take on in other areas, and where did it catch on first after the South?

VLH: The movement to establish research centers, as I have said before, spread to all regions during the late

1940s. The Southeastern Station, because it was within the southern region served by the Forest Farmers Association, shared well in the movement that first year, along with the Southern Station. The Northeastern Station, of which I was the new director at that time, soon organized both itself and grass-roots support for research centers and, accordingly, it fared very well. In fact, all of the stations in the East seemed to show much enthusiasm for the research-center idea, and did well in that respect. The stations in the West, except California, displayed less enthusiasm for the idea and, in general, fared less well.

ERM: Earlier you implied that western stations in general lacked incentive to change their organizational pattern. Yet their attitudes did change, at least in part, perhaps more slowly than in the East. What caused this change in attitude? Was it a Washington office directive to establish research centers?

VLH: There was no directive, that I can recall, that dealt specifically with the question of organization. And I'm not at all sure that old attitudes had really changed in most of the stations of the West. Perhaps "subdued" is a more descriptive term. The need for funding was so great that it probably overcame attitudes. Unfortunately, there was a serious lack of Service-wide planning that would involve both the Washington level and the station level for the stations to take the best advantage of the research-center movement and for Kotok to represent stations' specific needs with the congressional appropriation committees. There was uncertainty, for example, in some regions about the exact meaning in the usual congressional language of the appropriation acts--a certain amount of money "to establish or support a research center" in a given forest or range type or location. Because of my former connection with the Washington office and continued special jobs there, I knew that Kotok held a rather liberal interpretation of that language. To him, "research program" could be substituted for "research center," leaving one fairly free to organize personnel headquarters in respect to such increases in a way to suit a station's situation. But the western stations were inclined to a literal interpretation of the appropriation language in the sense of the concept of the South, where it all began.

ERM: Were any of the research centers established in the mold of Kotok's more liberal interpretation, with nonresident staffs?

- VLH: Not in the East. But in the West, a sort of half and half. I was more familiar with the eastern stations during that period, 1945-1951.
- ERM: Could they have been established that way?
- VLH: Yes, of course, depending upon the understanding the Forest Service had with legislators and supporters of the centers. In the South and East we "campaigned" on the promise that research centers would be staffed with people in residence; we were committed and wanted it that way. A station could have had an understanding that the "program" would be established, but the researchers would be headquartered elsewhere and still have won, although some of the local political appeal might have been lost.
- ERM: Suppose Congress had granted the Forest Service a lump sum for forest and range management, the subject matter of the research centers, and left the organization of the program up to the Forest Service. Could the Forest Service request funding that way?
- VLH: Yes, the request could be made that way, but with less chance of its being granted beyond a token amount. It would be nice to have all that freedom. However, my experience taught me that the more you unitize the request, the easier it is to justify before the committees. And the more you particularize a unit as to location, the more local support you are apt to generate for it. Unfortunately, some research activities are difficult to break down that way. Examples are forest survey, forest economics, and forest products at the Forest Products Laboratory in Madison, Wisconsin. For such activities one must use a different strategy: justify the request on a broad regional or national basis of need, and it is helpful if the request is made at a propitious time when the national mood is favorable toward research expansion.
- ERM: You planned the basis for decentralizing forest management research when you were at the Southern Station. Did you do any other planning at the regional level?
- VLH: I became much more involved in settling priorities of the problems selected for the project research programs. As I indicated earlier, when discussing problem selection at the project level, I came to view the problem selection process as the responsibility of the division chief (or, as called later, the station assistant director), at least insofar as its initiative is concerned. I came to this conclusion on grounds of

who was in the best position to see the problems as a whole, to detect emerging new problems, and to anticipate problems of new conditions. The division chief is in a position to acquire ideas from others and have time to reflect, analyze, and otherwise consider factors that help him formulate problem priorities as he travels, attends meetings, arranges conferences, and as he goes about his functions of directing, conducting, and supervising the research programs.

Project leaders have much to contribute to priority-problem selection too, and therefore should be a partner in the process, particularly in areas of their respective specialties or assignments. They can lend imagination to the selection, as well as provide advice on the technical aspects, such as the feasibility of fitting the problem into the active program and the likelihood of a successful research attack. To ask the project leader to do more on problem selection would seriously cut into his time for problem-solving.

ERM: Was there participation from the Washington level in the problem selection phase of program planning at the station?

VLH: There were several visits, as a rule, each year from staff people in the Division of Forest Management Research, the division under which my work belonged. Their advice, counsel, and discussion of problems and research in other regions was very helpful. The planning, however, took place within the framework of existing program areas--work and line projects--approved in Washington and assigned to the station. There was no general systematic effort at that time, through Washington and regional level communication, to explore new horizons, new problem areas, or to plan locations and research facilities for the program. Regionalization of this kind of broad planning would be the new dimension to research program development that came in the 1950s, when I was head of Research.

Planning at the National Level

Laying the Foundation

ERM: You moved to the Washington office in 1937, and were there until 1945. Were there research planning activities during that time in which you had a role?

VLH: There were two activities then which I should mention in the context of research program planning. They are in the category of foundation blocks of experience that, along with what I did in the early 1950s, made possible the kind of planning launched in the last half of the 1950s, which eventually resulted in new policies and a greatly enlarged and improved research program of the Forest Service. The activities were RPS and reappraisal.

RPS stands for requirements, production, and supplies of forest products, a war-connected program that was carried out by Research for, and financed for the most part by, the War Production Board [WPB] during World War II. Initially, RPS was organized under the Division of Forest Products, of which George W. Trayer was chief. In 1942 I was made one of his assistants and was assigned to liaison between RPS and WPB for the purpose of negotiating Forest Service contracts for special studies and surveys and for directing and coordinating them as they were carried out by the regional stations. We compiled estimates of the immediate and short-range future requirements for lumber and other wood products of the armed forces and war industries, the mill capacity to produce the products, and the supplies of available timber. We made monthly reports of lumber production by region and class of timber and did other special studies for the WPB.*

*Verne L. Harper, A Forest Service Research Scientist and Administrator Views Multiple Use, oral history interview conducted by Elwood R. Maunder (Santa Cruz, Calif.: Forest History Society, 1972). See pages 31-32 for more details on RPS.

In 1943 I became chief of the Division of Forest Economics and from that post continued to handle my RPS functions (which had been transferred to economics from products) until the close of that activity in 1944. Then I served as project leader for the reappraisal of forest conditions in the United States, an activity organized under the overall direction of R.E. Marsh, assistant chief for Programs and Legislation.* Almost the entire division of economics, both in Washington and in the field, including Forest Survey, was engaged on these two major undertakings for the duration.

In 1945 I was appointed director of the Northeastern Forest Experiment Station but stayed in Washington until mid-1946 on the reappraisal job. In fact, I was called upon several times during my term as station director for short-term jobs connected with the reappraisal or other work of the Washington office. The last one, a report on the Forest Service research program in response to a Senate request, was prepared in 1949, a short time before I transferred back to Washington to head Research.

ERM: What motivated the Senate to request a report?

VLH: Basically, I would say the report was requested because of the heavy pressure from outside witnesses before the Senate Subcommittee on Agricultural Appropriations for increased funding for research centers in forest and range management.** Plainly, there was uncertainty about the program--how it was organized, plans for the future and the place of state and local agencies in bearing some of the costs of the needed research. The request, made in calendar year (CY) 1949 in connection with fiscal year (FY) 1950 appropriation for Forest Service research, was for a complete analysis of the entire program, giving special attention to the number of experimental forests and ranges that would be required for effective research, with plans for any consolidations that would lead to better operation, and the contributions

*Ibid., see pages 34-38 for more details on the reappraisal.

**At the time of the requested report, the Forest Service budget was considered by the Senate and House subcommittees which handled Department of Agriculture budgets; in 1954 the appropriation subcommittees were restructured and the Forest Service budget then came under the Department of the Interior and related agencies' subcommittees.

to forest and range research being made by nonfederal agencies, in cooperation with the Forest Service program and on their own.*

ERM: You were called upon from the Northeastern Station to prepare the reply. Did anyone from the national level participate?

VLH: I was called to Washington in April of 1949 by E. I. Kotok, assistant chief for Research, and asked to prepare the report. He proposed that I chair a committee of selected station directors for purposes of deciding the general content of the report and for advice on a survey of federal and nonfederal sources to obtain data on the cooperative situation and the nonfederal dollar amounts of research going into forestry. Kotok wanted me to include essentially the same projections of program costs for five years ahead (except for adjustments in time to bring it up-to-date) that he had submitted to the House committee in connection with the 1947 appropriation bill. I was to choose the manner in which to carry out the assignment and to have a draft of the report in Washington by fall of 1949. We decided on the following station directors to serve with me on the committee: Charles Connaughton, Southern; Harold L. Mitchell, Central States; and J. Alfred Hall, Pacific Northwest. The committee functioned through correspondence without meeting as a group. A plan for obtaining the needed field data was agreed to and sent to each Forest Service station to collect the data. All data were to be in my hands by July 1, 1949. With the help of James C. Rettie of my station, I completed the report in August.

ERM: Was the report sent to the Senate in 1949?

VLH: No it was sent in early 1950. The report was reviewed in Washington by Kotok, Walter Larrimer, L. I. Barrett, and perhaps others. They liked it, except for a recommendation that legislation be enacted to authorize matching federal grants for forestry research to state agricultural experiment stations and forestry schools, much as the Hatch Act, as amended, authorized grants for agricultural research. That recommendation was deleted. Except for this deletion and a summary section prepared in Washington,

*The fiscal year begins July 1 of the preceding calendar year; in 1976 the fiscal year was changed to begin October 1.

the report was sent to the subcommittee as initially submitted by me.

ERM: You spoke of this report in the 1972 interview.

VLH: Yes. I'm conscious of that and don't want to repeat what was said there.* However, I need to mention the Senate report here because I learned something from that experience that bears on matters about which I will speak later. In fact, the Senate request in 1949, followed by a related request from the House Subcommittee on Appropriations in 1951, combined to shape my course of action during the early years of my tenure as head of Research. I have my personal copies of these two reports; would you like to have them for the Society's files?*

ERM: We'd like to have them. I want to ask a question or so about the reports, but first, will you explain the 1951 request from the House subcommittee, why the request was made and the nature of your response?

VLH: In 1951, about a month before I replaced retired Kotok as head of Research, the House Subcommittee on Agricultural Appropriations asked the Department of Agriculture for a report on the forest and range management research of the Forest Service, with special attention to the cooperation existing between the Forest Service and state and local agencies in support of such research, and the legislation needed to get more contributions from state and private agencies. The report in response to this request was prepared under my direction and personal participation during my first year as chief of Research. The recommended legislation, minus the section that would authorize the Forest Service to establish a forest and range research national advisory committee, became the Whitten [U. S. Congressman, Jamie Lloyd] Act, about which I talked in some detail in the 1972

*Harper, A Forest Service Research Scientist. See pages 45-47 for the 1949 report and pages 47-52 for the 1951 report.

**U.S., Congress, Senate, The Forest Research Program, Excerpts from Hearings before the Subcommittee of the Committee on Appropriations on the Agricultural Appropriations Bill for 1951, 81st Cong., 2d sess. (Washington, D.C.: 1950), pp. 469-502; USDA, Forest Service, Cooperation in Forest and Range Management, December 11, 1951 (processed). This report was in response to the House subcommittee request of 1951.

interview previously cited (see pages 47-49).

Also in 1951, Congress amended the McSweeney-McNary Act, Section 2, as follows: "On and after August 31, 1951, funds may be received from any state, other political subdivision, organization, or individual for the purpose of establishing or operating any forest research facility located within the United States, its territories, or possessions" [16 U.S.C., Sec. 581 (a-1)].* This amendment was initiated by Congressman Whitten, I assume, before my time as chief of Research.

ERM: Did the Forest Service recommend the amendment to the McSweeney-McNary Act that you just quoted?

VLH: I don't think so. The Forest Service already had that authorization in Section 1 of the McSweeney-McNary Act.

ERM: Why then did Congressman Whitten introduce the bill to effect the amendment?

VLH: I don't know. I can only speculate that he was the one who did it because, to my knowledge, he was the only member of Congress who had expressed interest in that particular subject. Moreover, his amendment addresses a unique cooperative enterprise in forestry research in his district, which includes our Delta Research Center at Stoneville, Mississippi. In the late 1940s and early 1950s, some forty industrialists and hardwood landowners formed a Hardwood Forest Research Group and raised over seventy thousand dollars in cash for forest research which it deposited with the Delta Research Foundation, a nonprofit organization established in 1951 by Delta Council, an agricultural association whose aims are to promote research in agriculture, forestry, and economics.** Foundation money helped support research at our Delta Center. I suspect that Whitten believed that authorizing legislation aimed specifically at the use of nonfederal money to support research centers would encourage that practice elsewhere.

ERM: Why did the Congress delete from your recommended legislation the section that would authorize the

*See page 85 of Storey's "History of Forest Service Research."

**See article by John W. Squires, "A Cooperative Research Effort," Forest Farmer 18 (November 1958): 16.

Forest Service to establish a national forest and range advisory committee? This recommendation was in your report that responded to Congressman Whitten's request.

VLH: One reason could have been Congressman Whitten's reluctance to see us spend Forest Service research funds for travel expenses of a national advisory committee, which was a part of that recommendation and the main reason for seeking the authority. We had many local advisory committees for research centers at that time, but we did not pay their travel expenses. In the case of a national advisory group, however, we felt the Forest Service should pay travel expenses of members.

Another reason is that the department already had authority to pay travel expenses of advisory committees established under the Agricultural Research and Marketing Act of 1946. I learned this after we had submitted our recommendation. The language of the 1946 act was broad enough, according to our department lawyers, to cover any research activity of the department. In fact, it did cover the Advisory Committee on Forestry Research that I organized under the provisions of this act in 1952.

ERM: Let me back up and ask how you saw the attitude of the Senate subcommittee at the time you took over the lead reins of Research. Was the Forest Service report in response to the subcommittee's request received favorably? Did the report help the Forest Service in the funding of the research program?

VLH: It did not help in the funding. Nevertheless, the report was received well enough for Senator Dick [Richard Bevard] Russell, chairman of the subcommittee, to order it printed in full in the hearing's record.

ERM: How about the House subcommittee request and the Forest Service report in response?

VLH: That report did not help the immediate funding situation, either. Yet, the report was received with obvious welcome by Jamie Whitten, chairman of the subcommittee. His pleased attitude was more unexpected than I had realized at first. I learned this from Ralph Roberts, then the department's finance director, later the assistant secretary for Administration.

I was told soon after I became head of Research that Roberts wanted us to submit our report to Whitten

through him, and that he had asked that the reply to Whitten be prepared with extra care and thoroughness. When Roberts received the report he was disappointed in its content, brevity, and what looked to him a superficial response. He called me to his office to say I had better consider carefully whether more work was needed to improve the reply to an "angry chairman of our Appropriation Subcommittee." I learned that Whitten had charged Roberts with the personal mission to see that the Forest Service fully faced up to the seriousness of his request. After I explained that I had personally led the task force that prepared the report and that I had cleared its contents and our recommendation for new legislation with Chief [Lyle F.] Watts and full staff of assistant chiefs, he relaxed, but added that I had better be prepared for a storm when we appeared before Whitten's subcommittee.

Roberts was at our hearing. Whitten was in a pleasant mood and liked our report very much. He agreed to introduce the legislative bill that we had recommended; meantime, he would explore giving us the authority we needed in the language of the appropriation bill. Roberts was obviously relieved as he congratulated me for having got off to a good start with the subcommittee.

ERM: Did the uncertainty about the research program as it was being developed in the field--a factor that seemed to be behind the Senate subcommittee's request of 1949--have anything to do with your decision to plan a new national program for forestry research?

VLH: Yes, it did. It was very clear to me from the start of my tenure as Chief of Research that program planning needed to be done; especially needed was regionalization of the planning and building of the program from a base of well-selected research center locations.

However, there were other implications in the Senate request and our reply thereto that also needed attention. Some of these things were urgent and needed immediate attention, others were matters basic to the planning itself, and still others could wait until after the program planning job had been completed. For the sake of completeness, let me list five of the things that I set out to do: first, dampen down the outside pressures on Congress for increased funding for research centers and personally take control of research finances, including budget making and setting priorities of research increases.

Second, try to establish confidence in me and the Forest Service research program with members of Congress, the Budget Bureau, and the USDA people involved in department research policies, coordination, and budget preparations. Third, stimulate the forestry schools and agricultural experiment stations to do more research on forestry problems. Fourth, try to improve the quality of the program by putting emphasis on advanced training of research personnel, increasing the fundamental content of the program, and providing more adequate laboratory and scientific equipment. Fifth, improve the effectiveness of the program by better methods of inspection and coordination, manual guides, publication system.

ERM: When did you decide the five objectives?

VLH: In 1951, soon after I took charge. The first two tasks were decided immediately as jobs that had to precede any serious program planning. The others took shape during the year, as I was performing the first two. Means by which the last three objectives were to be accomplished evolved over the next several years.

ERM: Your first priority was to turn off the pressure for research center funds. Was this pressure coming from all quarters of the country? Was it spontaneous, and how did you see the pressure as a problem?

VLH: The pressure was from all regions, although not uniform in amount. It was not spontaneous. In the case of the Northeastern Station, when I was director, it was stimulated by station planning with the advice and knowledge of the station's research supporters. There was no overall national plan for the development of research centers at regional stations. Stations were on their own and most directors, of which I was one, pushed hard to get all the centers they wanted while the getting was good.

I saw the problem of pressure in terms of what was lacking to make it effective over a longer period than it had enjoyed. There was no one in Congress then who believed in and was willing to dedicate time over an extended period to the issue of an expanded program of research; that is, no one to lead the cause. And there was no national plan for the research programs at the station and research center levels to give substance to the cause. Leadership in Congress for the principle of a greatly enlarged research program, in concert with legislator interests of many members in filling the local pork barrels, would have

provided a combination whose force might well have sustained the growth of research at a faster rate and over a longer period.

ERM: You wanted to reduce the pressure until you had time to develop or stimulate these other ingredients?

VLH: Correct.

ERM: What actions did you take to accomplish the reduction in research-support pressures on the Congress?

VLH: I simply asked each station director to turn off, to the extent he could, any pressure from his station territory for research center funds as such. I informed them that I was personally taking control of budget making for Research and that they should clear with me any urgent needs for increases before allowing grass-roots support to develop. I explained that I needed time to pave the way for more receptive attitudes in Washington toward further expansions. I promised to do my best to get as many of their high priority needs into the administration's budget as I could.

ERM: Have you dealt as fully as you would like with the matter of personal control of the research budgetary process? Did you confine increases only to those which you were able to get accepted in the Bureau of the Budget?

VLH: For the first year or so there were few increases outside of the president's budget. After that we began getting several such boosts per year. I personally coordinated the station field contacts with members of Congress relative to increases in the president's budget, and the field directors kept me informed of support for items outside of the budget--items that we had agreed deserved high priority. We developed very effective teamwork in the budgetary process. This teamwork continued, of course, after we had a new national program that spelled out the planned field locations, type of work, and its planned ceiling in funding, to be reached in ten years at each location. The national plan made the budgetary and coordination job much easier, and the program funding became much greater.

ERM: In other words, you surveyed the needs, as expressed to you through the chain of command, from the centers and then worked out a budget that you felt was adequate to the needs.

VLH: In principle, that's the way the process worked. However, the budgetary process was complicated at the

Washington end. The department and the Budget Bureau usually imposed ceilings on allowable increases for a given agency over the current budget base and often mandated cuts below the base for certain activities. The resulting adjusted agency request became the president's budget as it went to the Congress. Each House and Senate subcommittee on appropriations before which we appeared in defense of the president's budget could, and often did, make cuts or additions to that budget.

During my time as head of Research, many, and perhaps most, of the big increases in forestry research were added to the president's budget by actions of the subcommittees and the House and Senate conferees appointed to reconcile any differences between the two committees' recommendations. Obviously, pressures from research supporters had much to do with the congressional increases over the budget, but now without the confusion and hassle caused by the major push for research center establishment in the late 1940s. I'll talk about this later when I comment on implementation of the national program of forestry research.

ERM: Your second priority was to establish more confidence in Forest Service research. What caused you to see lack of confidence as a problem?

VLH: Perhaps lack of confidence is not the best description of the problem. Poor standing in the eyes of Congress and the department may be a better expression of the problem as I viewed it. It was clear to me that Congress was critical of our research program and that some of that criticism had rubbed off on department people who were involved in financial or coordinating aspects of department research. I have already spoken of Ralph Roberts's concern that we take seriously Congressman Whitten's request for a report on our research.

More specifically, though, Senator Russell's comments about our research during my first encounter as a witness before his subcommittee--which took place within a few days after I arrived on my new job as head of Research in 1951--revealed that he held our program in low esteem. Russell, chairman of the subcommittee, displayed thinly veiled scorn and obvious sarcasm in two instances that I have long remembered. We were asking for a small increase in our \$130,000 nationwide budget for fire-control research, to be applied on problems in the South. Russell thought the increase ridiculous; he said a pine top, cut from a

sapling tree, makes a perfectly good swatter for beating out a forest fire in Georgia and that method of control certainly did not require much research. Then, when he came to our forest products research item, he wanted to know why the Forest Products Laboratory hadn't developed anything new from its large budget. He said we had shown the same samples of new wood products for the last several years and that the samples had been worn thin from repeated slidings across the witness table.

Now I don't want to leave the impression that Senator Russell's poor opinion of our research was permanent. Eventually, he became a strong advocate of forestry research, especially in the South. He called me to his office many times to discuss urgent problems in his state of Georgia and the size and kinds of research laboratories which we had planned for locations in his state. He helped to obtain three national forest fire laboratories along with large nationwide increases in funds for their staffing. About a third of all this went to fire research in the fire laboratory located in Macon, Georgia. He saw our total fire budget grow from the \$130,000 in 1951 to several million dollars per year. In 1976, according to a recent notice, the appropriation for Forest Service fire and atmospheric science research was over \$8 million.

ERM: What actions did you take to increase the standing of Forest Service research in the department?

VLH: One of the first things I did was to become personally involved in the department's Agricultural Research Council. The council was comprised of the heads of all the research bodies in the USDA. It was chaired at that time by the administrator of the Agricultural Research Administration, the largest research agency in the department. Its purpose was to provide a forum for discussion of research administration problems, to develop departmentwide research policies and a medium through which coordination of research objectives, procedures, and agency policies was facilitated. The chairman of the council was the official coordinator of all research in the department. The council typically had several ad hoc committees whose characters dealt with exploring policy problems and making recommendations thereon to the council. My wholehearted participation in the affairs of the council and its committees and my obvious desire to bring Forest Service research into the family of research agencies of the department won many

department friends for our forestry program and for me personally. We all profited from exchange of information about our respective research programs.

ERM: Had not others before you participated in the department's Research Council deliberations?

VLH: I don't believe the previous heads of our research had much personal contact with the Research Council. As I recall, the council was established around 1942 at the time that several formerly independent research bureaus were grouped under the Agricultural Research Administration.* I imagine that a member of the research staff from the Forest Service may have attended some of the council meetings during Kotok's tenure as head of Research. Members of the council knew very little about Forest Service research prior to my association with them.

As one result of my work with the Research Council, I was appointed the department's representative on forestry matters to the National Research Council of the National Academy of Sciences. There I came in contact with a wider group of scientists, including liaison people like me from other departments of the federal government, as well as members of the NRC from universities.

ERM: What did you find in your first encounters with people of the National Research Council of the National Academy of Sciences? Were they unaware of what was going on in forest research?

VLH: They were unaware generally. When I first began regular attendance at the annual meetings of the NRC, the only forester in the Division of Biology and Agriculture of the NRC was Clarence Korstian, dean of the School of Forestry at Duke University. Korstian, of course, knew about forestry research; in fact, he spent many years in the Forest Service research organization. One or two other members of the NRC recalled having seen some research reports on forestry

*In 1953 the name of this agency was changed to Agricultural Research Service (ARS). In 1962 the function of the research council and of research coordination were assumed by the newly established office of Director of Science and Education. Vince [Philip Vincent] Cardon was Administrator of ARA in 1951 and was succeeded in 1952 by Byron Thomas Shaw. Shaw was a very active and good Coordinator of Research.

problems that had been prepared under the auspices of the NAS or NRC. Whereas several members of the Division of Biology and Agriculture of the NRC were from colleges of agriculture which were associated with schools of forestry through agricultural experiment stations, they appeared to understand very little about forestry problems and the research being pursued relative to those problems.

ERM: Were your meetings with these people on an informal level or on a formal paper-reading level?

VLH: The annual meetings of the NRC were formal, usually with a featured speaker. In addition, each division of the NRC would have its annual business meeting to hear reports of its committees and to appoint new committees. In between sessions there were opportunities for informal exchanges.

ERM: Hadn't your predecessor, Ed Kotok, or Earle Clapp or Sam Dana or any of these other principal people who had preceded you in the research field in Washington taken part in all this, too?

VLH: Not on a regular annual basis, so far as I know. Certainly a few Forest Service people had contact with the NAS and NRC in the early days. There are records to show that Pinchot, Greeley, Zon, Graves, and others had connections with the work of that body. For example, in the research area, William B. Greeley, then chief of the Forest Service, presented a paper before NAS in 1924 outlining the gravity of the forest resource conditions and asked the advice of the Academy on how best to meet that situation. The Academy made a study of the role of research in forestry development. That study (which I cited earlier) was made by a committee, appointed by the NAS, on which Henry Graves served.* Moreover, someone from the Forest Service (probably Earle Clapp) requested the NAS through its NRC to make a survey of the kind and quality of forestry research in the United States during the 1930s. I've already talked about the 1938 report of this committee--Forest Research in the United States. Raphael Zon was chairman of the Committee on Forestry, Division of Biology and Agriculture, NRC, which supervised that study. Ed Munns, Hardy Shirley, and Robert Marshall of the Forest Service were members of the committee.

*Bailey and Spoehr, The Role of Research.

It was my experience that, in general, very few of the biology or agricultural scientists in the NRC or the USDA knew much about the forestry research being done either inside or outside of the federal government. I suppose one would be led to conclude from this that, in terms of its contributions to fundamental science, forestry research at that point in time had a low standing in the scientific community.

ERM: Perhaps scientists and scholars in other fields tend to be strongly individualistic people in many ways, and their powers of concentration and focus on the special areas in which they are involved dominate their lives to such an extent that they don't move in the wider circles that you're talking about now.

VLH: I'm not sure that's true. I think that may be an erroneous impression that's gained popularity through repetition. The best of scientists, it seems to me, are usually well aware of new developments in knowledge from related disciplines and are more apt than not to be well-read, outgoing, and good listeners in the exchange of ideas with other outstanding scientists.

ERM: How do you suppose this myth about the scientist originated?

VLH: I don't know. Certainly there are some ivory-tower scientists and scholars but there are scarcely enough to say that their isolation characterizes the tribe. You might find more of them in universities than in the outside world.

ERM: I suspect that I draw my judgments from my university experience where I've noticed that quite often people at work in one discipline are totally out of communication with what the people are doing in a sister discipline that may be located only down the hall or on another floor of the same building.

VLH: However, may I suggest that the fault might not be on the side of the people who are totally out of communication with work down the hall. The down-the-hall work might be only the scientific putterings of teacher and graduate students or it might be application of existing scientific knowledge to a very local problem. To try to keep up with all such work would be a fruitless exercise for anyone and a boring ordeal at that. On the other hand, if people in one of the rooms were making outstanding additions to knowledge of the sciences underlying their discipline, or

significant applications of existing basic scientific knowledge to revolutionize general practice, then the people in sister disciplines would indeed be remiss in not being tuned in on what was going on. People who make outstanding contributions usually want and seek visibility. They publish in scientific journals and speak in forums. They are reported in the press and on the screen.

ERM: Were the scientists in agricultural research in the Department of Agriculture, when you first began associating with them in 1951, unaware of Forest Service research because it was not basic or significant enough to attract their attention?

VLH: Woody, my short answer is yes, in respect to the agricultural scientists at the project level. For those in research administration positions, there was an additional reason: a faulty system at best for the exchange of ideas and information between leaders in different disciplines, and in the past a poor participation by the Forest Service in that system. The system was there to be used if one reached out for it; one got value out of it only in relation to the extent of his putting time and effort into the system.

A short answer, though, doesn't do justice to your question and its broader implications. There is nothing bad in the fact that forestry research, particularly in the problem areas of forest production, had been largely descriptive and empirical in nature up until the period following World War II. This kind of research, although not spectacular, is quite appropriate and in keeping with the pioneering forest practices that characterized the early period of American forestry, as Bailey and Spoehr pointed out in their 1929 book The Role of Research. In fact, it was not until after the war that there was demand for more intensive forest production, and hence the need for the more sophisticated and fundamental research to give balance to the applied research.

How best to provide for this intensification of research was uppermost in my mind during the early 1950s. It was clear to me that Forest Service research would have to have far more well-trained scientists, a great deal of scientific equipment, and many laboratories in which to do the fundamental research required to underpin field experimentation. As I saw it, the problems of acquiring the needed people who were trained and skilled in basic research, and of

building the needed laboratories and furnishing them with scientific equipment were huge and urgent. In agricultural production research, the trend toward more laboratory and greenhouse work had been a gradual, evolving process. In contrast, we in Forest Service research needed to make the change in forest production research at a much faster rate.

Now there are two footnotes to what I have just said that I must add. One, I drew a distinction between production and utilization research. Forest products utilization research at that time was completely centered at the Forest Service's Forest Products Laboratory in Madison, Wisconsin. And in 1951 the Agricultural Research Administration's Bureau of Chemistry and Soils was in the process of establishing four large regional utilization laboratories for research on agricultural products. In the fields of forest and agricultural utilization research, in contrast to the situation in forest and agricultural production research, there was communication. Both types of laboratories drew from the same basic sciences--chemistry, engineering, physics, etc.--even though their application to problems were quite different. Both types had a reasonable balance between fundamental and applied research.

The other footnote is that Bailey and Spoehr in 1929 foresaw the need for fundamental research in forest production and advocated nongovernmental institutes for the basic research, all to be separately organized from, but supportive of, the empirical experimentation of the Forest Service stations. In A National Program of Forest Research (1926), Clapp expressed the same idea in a different way: he advocated (page 183) privately endowed forest research institutions to insure an adequate attack on fundamental problems as an addition to the field experimental work of the Forest Service regional stations. Meanwhile he was planning (page 197) a "section dealing with biological problems" in the Forest Products Laboratory of the Forest Service in recognition of ". . . the gradual convergence of fundamental research upon silvical and products problems in the United States Forest Service. . . ."

Ever since my Lake City days in project research, I have been convinced that Clapp, and Bailey and Spoehr as well, were wrong in thinking fundamental and applied research should not be together under one organizational arrangement, specifically, in the forest and range experiment stations. This is not to

say that I was against fundamental research on forestry problems in private, independent laboratories supported by endowments, fees, and contributions, as they had recommended; nor was I against a biological section in the Forest Products Laboratory. What I was against was a kind of planning that excluded fundamental research in the Forest Service stations. It was not realistic to think that real progress could be made in solving forest and range production problems without fundamental studies at the regional stations.

ERM: Was there fundamental research at the stations during those early days? I believe your Lake City center was doing some. You have probably alluded to the general quality of research at the regional stations. Could you be more specific in how you viewed the relative amounts of fundamental studies and empirical field experimentation?

VLH: There was indeed some, a low percentage of total fundamental research at the stations during the period of the reports of Clapp, Bailey and Spoehr, and the NRC-Forestry Committee, a period between 1926 and 1938 which the reports refer to. I wouldn't want to be pinned down to a specific percentage figure, but here are a few examples of research that used a fundamental and analytical approach that I believe would have rated as "fundamental" by earlier-day standards: H. T. Gisborne's fire research at the Northern Rocky Mountain Station; Leo Isaac's Douglas-fir seeding studies at the Pacific Northwest Station; Lloyd Austin's genetics research at the California Station; A. W. Sampson's and others' grazing studies at the Intermountain Station; some of the naval stores and fire-use studies at Lake City-Starke centers of the Southern Station; the watershed studies at Coweeta Center of the Appalachian Station. These examples may not be the best; there are others, I'm sure.

I believe I have said or implied previously that, in my judgment, the fundamental content of the Forest Service's forest production research was not as low as that stated by Bailey and Spoehr, nor was the quality of Forest Service research as a whole as high as the Forestry Committee of the NRC showed it to be. We must remember that a good deal of value judgment is involved in rating such things. There are no precise measuring sticks, and standards change over time. What was judged fundamental and analytical in earlier times would seem primitive and inadequate by present-day standards.

All I was sure of when I began my tenure as head of Research in 1951 was that we were ill-equipped with personnel, laboratories, and related scientific facilities to do as much fundamental research as we should be doing at the stations.

ERM: What role did the Cosmos Club play in the exchange of ideas between scientists of different disciplines?

VLH: No direct role in my case. I was a member of the club, as were many scientists and scholars in the Washington area.

ERM: Was it a meeting ground, an opportunity place for the exchange of ideas?

VLH: It was. I used the club's excellent quarters for meeting people and for luncheon conversations on research business matters, and I sometimes scheduled group discussions on current forestry problems at the club. The club had a good kitchen and bar, and provided small dining rooms for combining dinner and shoptalk.

ERM: It also provided a forum for giving papers on special topics and as such gave an opportunity for broadcasting what you were doing, for building a certain measure of recognition of that work which you might not otherwise have.

VLH: That's correct, but I did not use the club as a forum. One evening a week was normally given to a program in the club's auditorium, a program designed to entertain, stretch minds, or otherwise enlighten and enrich the membership's intellectual well-being. I attended some of the concerts, travelogues, and lectures. I enjoyed them, but for my purposes at that stage of trying to develop a better program of research, a one-on-one situation--for the exchange of ideas, for an evaluation of a prospect for employment in our research, for a plea for support of an individual for our research program, or for a diplomatic effort to smooth working relations between another and myself--was better than broadcasting in an open forum.

ERM: Now, Les, part of the role of the administrator of Research is certainly that of cultivating the interest and the enthusiasm of key people in high political positions. What did you do to generate interest in Congress, for example, for Forest Service research? Who did you find most responsive to you?

VLH: First of all, during the first year, I visited the offices of many senators and congressmen with the purpose of introducing myself in my new position and to invite them to call upon me at any time about research matters in forestry. I had provided myself with a list of those members of the Senate and House with whom our station and FPL [Forest Products Laboratory] directors had contact and with names of those I had worked with in prior times. All told, I believe I saw at least one senator from each state and two or more congressmen from a region of each of our stations. In most cases I was cordially received and in some cases I was asked many questions about our research program.

In succeeding years, throughout my fifteen years as head of Research, either I or a member of my staff visited each key senator and congressman of a region at least once if not more times each year. The term "key" applies to those members of Congress who were the most responsive to forestry research progress and needs. Many of our calls were in response to requests from them for information about the current year's budget for research, or in regard to a research item about which they had correspondence from constituents. In addition, our field directors of research paid annual calls on the key senators and congressmen from their respective regions. Usually this was done at the time of the annual regional foresters' and station directors' meeting in Washington, D.C. The foremost "key" senator was John (Cornelius) Stennis of Mississippi. He became the most responsive to the need for sustained growth of our research program.

ERM: So you had a strong advocate in the Senate.

VLH: I first met Senator Stennis in either 1951 or 1952. I was in his office in response to his request to the Forest Service for information about bristlecone pines. He had just returned from the West Coast on Senate business and while there had paid a visit to our Forest Genetics Institute at Placerville, California. He had acquired a specimen of wood from one of the old bristlecone pines and he wanted to use it in his Sunday school class to tell of the great age of this tree whose birth reached back into biblical times.

After I had supplied him with the information he needed we talked about forest genetics and other

developments in our program. I learned that he owned a modest-size tract of forest land near his hometown of De Kalb, Mississippi. He had planted pines on part of it and was gradually building up the forest to a time for making timber sales. He had visited most of our centers of research in Mississippi and neighboring states and was familiar with forestry magazines. He wanted me to keep in touch with him and to call on him for any help he was able to give our research work. He introduced me to his legislative assistant, Charlie Jones (whether or not his formal name was Charles, he always signed as Charlie). Charlie became a staunch friend and an ardent advocate of our research.

In addition to Stennis, there were two others who became responsive and long-time supporters of an orderly, sustained expansion of our research program: Senator Carl [Trumbull] Hayden of Arizona, chairman of the Senate Appropriations Committee and chairman of its Subcommittee on Interior and Related Agencies, the subcommittee before which the Forest Service budget was heard; and Senator Robert [Carlyle] Byrd of West Virginia, a member of the Senate Appropriations Committee. I should add that Senator Stennis was also a member of the Senate Appropriations Committee.

ERM: You've mentioned three from the Senate.

VLH: Yes, those three were from the Senate; they were the continuous advocates of the forestry research program as a whole as well as effective legislators in bringing research facilities and programs to their respective states. We had no strong, continuous advocates of the research program as a whole in the House. However, the House Appropriations Subcommittee on Interior and Related Agencies filled that role rather well by following the Senate lead on increases above the Budget Bureau allowances. Rarely did the House conferees object seriously to the increases added and defended by Senator Hayden, and Hayden was equally sympathetic to the increases wanted by the House.

There was much support from members of both the House and Senate on items in their respective states and districts. But, unlike the three senators that I first mentioned, their support was intermittent, arising in active advocacy only on items of special concern to the people of their constituencies. Items of this nature, however, happened frequently and were numerous each year, once we began implementing the newly planned national program of research with laboratory

construction, which was often done in stages, i.e., in two or three installments spread over a several-year period.

Moreover, after construction came the need to staff the laboratories. Since we had built laboratories, or had planning funds in hand for that purpose--at locations in each of forty-five states by the time I retired in 1966--most senators and a substantial number of representatives in the House had been involved in the program at least twice (for construction and then program staffing) and some as many as six times (where there were three laboratory centers in a state) during the seven-year period of rapid implementation of the planned program, 1959 to 1966.

ERM: I'll want to get into implementing the national program of research later. Meanwhile, how did all this activity of you people in research in contacting members of Congress get reconciled with the work of the deputy chief who worked directly with the Hill?

VLH: There was no conflict. During my time, the deputy chief for Administration (Earl Loveridge and later Clare Hendee) had a working relationship with the appropriations staff in regard to budget books and related papers. However, the deputy chief for a major program--National Forest System, Research, or State and Private Forestry--had the responsibility to defend his budget before the appropriation subcommittees and to deal with other members of the Congress on questions concerning his program's progress and financial needs. If one of us was asked questions by members of Congress in another's program field, it was answered directly if the answer was known, or referred to the proper deputy chief for later response. Because we were expanding our program rapidly in research, especially from 1958 on, and there were many requests for information about individual items, my immediate staff and I probably had more reason for activity on the Hill than either of the other program deputy chiefs. In the process, we frequently encountered questions on National Forest activities which we kept the deputy chief for that program informed about.

ERM: Who was that in your time?

VLH: Ed [Edward P.] Cliff for most of my time.

ERM: And where was John McGuire?

VLH: He was in Research. He came up through the ranks of

Research. For a short period in the early 1960s, John was an assistant to me in Washington; then he was director of the Pacific Southwest Forest and Range Experiment Station for the period 1963-1967; then deputy chief for Programs and Legislation, 1967-1970; associate chief of Forest Service, 1970-1972; and chief in 1973.

- ERM: I meant the deputy chief for Programs and Legislation.* Were not your activities on the Hill legislative?
- VLH: Yes, in the field of appropriations legislation. The deputy chief for Programs and Legislation dealt only with authorizing legislation. But even in the field of authorizing legislation he did not generally deal with research matters. This was true also for research program planning and development. Both programs and all forms of legislation were handled within Research. Also, during my time, unlike the National Forest System and State and Private Forestry, I exercised line authority in dealing with the field. All of this was not in strict compliance with the organization chart, but it was an accepted practice.
- ERM: As I understand you, you had a different concept of organizational responsibility and authority as applied to Research than that indicated by the organization chart, is that correct?
- VLH: Yes.
- ERM: As you saw it during your time, were there inherent reasons why Research should be self-sufficient in respect to programs and authorizing legislation and should be administered by a deputy chief with line authority--unlike the way National Forest System and State and Private Forestry were administered?
- VLH: I think there was one main reason, during my time, for making Research self-sufficient relative to programs and legislation. There was a dual channel of command for Research, unlike NFS and S and PF, to the office of the secretary of Agriculture. One line led to the office of the research coordinator (science director) in the top echelon of the department where policies, program plans, and legislative matters for

*The term deputy chief was first used by the Forest Service in 1962. From 1935 to 1962 those in the top layer below chief were called assistant chiefs.

all research activities of the department were supervised and administered at the secretary's level. The other line led to the office of the assistant secretary of Agriculture where research operations, along with all aspects of the rest of the Forest Service, were dealt with at the secretary's level. The science director demanded a great deal of time and creative thought from the heads of department research programs in the form of staff work relating to his responsibility; accordingly, it would have been difficult for anyone in the Forest Service outside of myself and others in Research to have handled authorizing legislation and program planning for Research.

On the other hand, I saw no good reason why NFS and S and PF should be denied the exercise of line authority by their respective deputy chiefs. I think this would have been superior organization, but I'm not sure that the deputies for those branches would have agreed with me at that time. Certainly the chief and the deputies for Programs and Legislation and Administration were not inclined to favor it.

The line and staff organization of the chief's office in Washington, during my time, was designed to serve the National Forest System, the flagship of the Forest Service. The chief and a bank of deputies--for NFS, Programs and Legislation, and Administration--were all kept busy with problems of the national forests. The only one with line authority was the chief. He and the deputies dealt with a heavy load of policy and legislation problems as well as program procedural matters that were generating a number of public issues relating to the use and management of the National Forest System. Central to this system of governance for National Forests was the meeting each week of the chief and staff (deputy chiefs) where problems were discussed and decisions made.

As in any organization, whether department, bureau, or whatever, if its mission is heavily weighted with one, big, overshadowing responsibility, the lesser-size responsibilities tend to get neglected, especially if the heads of those smaller units lack line authority to make things happen on their own. The lesser units are left to "take the hind teat," to borrow a descriptive, though inelegant, farm expression.

I decided to "take charge" of Research--and no one took serious objection to my assuming line authority--in order to get done what I considered must be done.

Without direct and personal contact with the field organization of research, including rapid decisions on budget priorities, personnel matters, and general operations, I saw little chance of pulling Research out of its difficulties in Congress of the late forties and of turning it around in search of sound growth and excellence.

ERM: Didn't Earle Clapp and those in charge of Research ahead of you exercise line authority?

VLH: Yes, Clapp and Forsling did, and to a lesser extent, so did Kotok. About the time of Kotok, however, the chief's line and staff organization had assumed great prominence in the Forest Service and was touted by the top command with pride and joy. It remained that way through Ed Cliff's tenure as chief, although he would have ended it had there not been internal objection. It remained for John McGuire, who succeeded Cliff as chief, to formally delegate line authority to deputy chiefs for NFS, S and PF, and Research.

ERM: What problems did you have with the Bureau of the Budget?

VLH: We had no special problems with the Budget Bureau that I can recall. We experienced the usual budget cuts in our research estimates, problems shared by other program branches of the Forest Service. There might have been reason for trouble in the BOB when we began implementing the new national program of research. Some of our increases in Congress over the budget allowances of the BOB were large and continued that way for several years. I sometimes thought that the BOB cut back our estimates in anticipation that Congress would grant big increases anyhow.

There was always a person--usually a junior officer--in the BOB who maintained close contact with a given bureau in a department. Our Forest Service contact man spent a lot of time with me or members of the Research staff making sure he understood how we arrived at estimates of financial need. We welcomed his investigations. He was our bridge to the senior staff of BOB and to the White House staff on science and technology.

ERM: Do you want to add anything more on the Budget Bureau?

VLH: I am looking at the last paragraph of Secretary [Orville L.] Freeman's letter to Congress of April 16,

1964, transmitting A National Forestry Research Program. His last paragraph was phrased by the Budget Bureau. It says:

The enclosed report should not be regarded as a request for the appropriation of funds, or as a proposed rate at which the program will be implemented with fund requests. The Department intends to carry out this program in an orderly and balanced manner at a practicable rate within the overall budgetary requirements and financial resources of the Government. The need for funds will be considered each year in the customary way through budget processes.

The fancy jargon--"within the overall budgetary requirements and financial resources of the Government"--is diplomatic put-off, commonly used in government to parry questions on the funding of programs. In this particular case the "put-off" could have had a deadening effect on the research plan; that is, if we had chosen not to do anything further about it beyond the BOB. Instead of permitting the planned program to perish, we preserved its viability through the interest and advocacy of a good many members of Congress. Our special thanks go to Senator Stennis.

Recently, I saw Senator [Barry] Goldwater on television. He was answering the political-campaign criticism of excessive power in the White House. He said the real power in Washington is not in the White House; it's in the bureaucracy, with its pervasive influence on committees and members of Congress. The senator was exaggerating, but there is truth in what he said. And what's so bad about that?

ERM: That's why you have a bureaucracy.

VLH: Absolutely.

ERM: Somebody has to work out details. Somebody has to draft plans and ultimately suggest legislation. It all has to come from somewhere.

VLH: Yes, of course.

ERM: How has Research in the Forest Service dealt with communications with the White House?

- VLH: There wasn't a great deal of communication directly. Official letters would, of course, go through hierarchical channels. Informal contact, on the other hand, was by telephone to some member of the White House staff--usually in the science and technology group--sometimes directly, and more often indirectly, through the science director in the department or through our contact person in the Bureau of Budget.
- ERM: Have you ever felt that there were friends in the White House in a given administration, those who were more favorably inclined toward forestry research than perhaps was true in other administrations?
- VLH: Yes, in both the Eisenhower and Kennedy administrations, although possibly not outstandingly so. Also, our research continued to prosper under the Johnson administration, although under White House attitudes rather indifferent to our research. President Eisenhower's personal interest in our research stemmed from his contact with it during his summer vacations on a ranch near our Fraser Experimental Forest in Colorado. Through his rancher host, Eisenhower expressed interest and warm approval of forestry research, as well as forestry in general. Sherman Adams, chief of staff for Eisenhower, was even more favorably inclined toward our research. I knew him when he was governor of New Hampshire; I saw and dealt with him frequently when I was director of the Northeastern Forest Experiment Station. Adams knew much about forestry, having managed forest land for a wood products firm in his home state. He became well acquainted with our research installations in New England and was especially partial toward our Hubbard Brook experimental watersheds in New Hampshire. I don't recall any special action on the part of the Eisenhower White House relating to forestry research, but Budget Bureau treatment under that administration was generally favorable toward us.
- ERM: How about the Kennedy administration? Were actions more positive toward research in the Forest Service?
- VLH: Yes, I think the Kennedy administration created a general atmosphere more favorable to science generally. With regard to forestry research, he made a specific recommendation for expansion of the program. As stated in the April 15, 1964, letter from the secretary of Agriculture to the president of the Senate and the Speaker of the House transmitting A National Forestry Research Program:

President Kennedy in his 1961 special messages to Congress on American Agriculture and Natural Resources called for certain measures needed to insure adequate forest resources in the future by sound, effective programs relating to privately owned woodlands, as well as our National Forests and other public lands. Included among these measures are expansion of forestry research [emphasis supplied] and acceleration and expansion of the Forest Service's long-range program for the development and improvement of our National Forests.*

- ERM: The Forest Service has been one of the very few agencies of government that has, over the years, returned a larger amount of money to the public treasury than it has spent.
- VLH: That's true only in regard to the cost of forest land management in the National Forest System in comparison with the sale of products and use permits from the system. Even in this narrower context, I'm not sure money income has always exceeded the outgo, and I doubt if this will be true in the future. I saw some figures the other day which showed that for the first time the total appropriations for the Forest Service for fiscal year 1977, including Research and State and Private Forestry, were over \$1 billion. Of this amount, Research accounted for \$87 million and State and Private Forestry, \$33 million. The biggest expenditures were for roads, trails, construction, and land acquisition, etc., for the National Forest System. Total receipt from the national forests for fiscal year 1976 were \$438 million. The 1977 appropriation for forest land management alone for National Forests was \$397 million.
- ERM: Do you think that Congress has become enamored of the notion that the Forest Service can always be an income producer rather than a drain upon the public purse?
- VLH: No, I think the interest of Congress in the amount of money generated by national forest timber and permit sales has already subsided. Other issues have over-ridden sales. Now the questions in Congress are more

*USDA, Forest Service, A National Forestry Research Program, Miscellaneous Publication 965 (Washington, D.C.: GPO, 1964), p. iii.

apt to be on clear-cutting, environmental matters nondeclining even flow, and the like.

ERM: Congress is feeling pressures from other sectors of society.

VLH: Yes, from the environmental and wilderness interests especially.

ERM: How does all this affect the research program? Does it have a stimulating effect or does it depress the program? Or is research just directed into new fields, new problem areas?

VLH: I think all this is having both a stimulating effect for increased funding for research and a demand for redirection of existing programs. For example, forest insect research has been greatly strengthened recently and charged with finding ways to control destructive forest insects without use of the controversial chemicals. There also has been a strengthening of timber management research, as well as a redirection of previous programs, as a result of questions raised in the controversy over clear-cutting and timber harvesting practices on national forests. A striking example of the effect of concern over pollution is the new emphasis being placed on the management of prescribed fires in the South aimed at reducing smoke and smog hazards to the traveling public.

Developing the Research Program

ERM: Les, after you had moved to Washington, D.C., in 1951 and had begun to establish some support for the National Program in Forestry Research, how did you go about developing the program?

VLH: We went about that task in several stages. The first was in 1956 in connection with a department-wide analysis of all research programs and the last stage was a three-year period of outside review of the planning report that ended in 1964. In 1964 our report was published under the title A National Forestry Research Program, from which I quoted a few minutes ago. This eight-year period of development is misleading in terms of getting the results of the planning into use. Actually, enough of the planning had been completed by 1958 to get an appropriation from Congress

for the initial construction of new research laboratories. In 1959 we were far enough along to present a preliminary projected research program as part of the Program for the National Forests.* The transition in the implementation of the national research program with funds was smooth and with a steady gain in the rate of growth of the program. It began in 1958, proceeded through the 1959 version of the program, and then to the completed version in 1962--three years before the plan had reached final clearance.

ERM: Was the department-wide study the motivating force that started you in the development of the program?

VLH: Not really, although it helped us make a good start. By 1956 I was ready to begin a thorough planning job of the research program. Things were by then going well for Forest Service research in the department, Budget Bureau, and Congress. We were getting modest increases in the funding of research and I had established a firm place for myself in the department's Council of Research Administrators.

It was a fortunate coincidence that Byron T. Shaw, coordinator of research in the department, decided in early 1956 to establish the Committee on Research Evaluation, known as CORE, for the purpose of identifying those areas of agricultural and forestry research that could be curtailed or eliminated, those that ought to be expanded, and those that would be new in order to meet emerging high priority problems. The CORE study was to lead to redirection of the department's research programs where needed and to the flagging of those problem areas in need of research but which could not be reached without increased funding.

I served as a member of CORE, along with other heads of major research programs. To help in the evaluation, we appointed several short-term task forces drawn from our respective research staffs. After about six months of nearly full-time, continuous work for CORE members we completed the review. During the next couple of years the initial draft of our report underwent review by representatives of the state agricultural experiment stations and forestry schools. The final

*USDA, Forest Service, Program for the National Forests, Miscellaneous Publication 794 (Washington, D.C.: GPO, 1959). Pages 22-45 deal with research.

report of CORE was published in 1960.*

ERM: Was this the beginning of bringing the forestry schools into the planning of a national program of research?

VLH: Yes. The CORE report review sessions that we had with representatives of the state experiment stations, which included at least one forestry school dean at each session, were landmark sessions for the forestry school people. For the first time they were being included in joint sessions of research planning between the people of the land-grant colleges and the department. Ultimately, these early sessions led to the McIntyre-Stennis Act of 1962.

Thus I was able to realize the third objective I had set up during my first year as head of Research: namely, that something should be done to stimulate the forestry schools and the agricultural experiment stations to do more research on forestry problems. My recommendation in 1951 to the House subcommittee that the Forest Service be authorized to make grants to nonprofit institutions for research on forest problems resulted in the Whitten Act of 1956, which was a good start. But, in my judgment, more was needed to provide a major stimulus to forestry school research. Conditions became favorable in 1961 to develop the program authorized by the McIntyre-Stennis Act of 1962.**

ERM: In developing the program of research, I assume one of your goals was to strengthen cooperative research at colleges and universities. What actions were planned to do this?

VLH: It was one of the goals and a subject of much discussion with representatives of the forestry schools and agricultural experiment stations. Once developed, our program had taken into account the programs of all the nonfederal agencies, public and private, which were then engaged in research on forest problems, along with their probable contributions in the future.

*USDA, An Evaluation of Agricultural Research, Miscellaneous Publication 816 (Washington, D.C.: GPO, 1960).

**For discussion of the McIntyre-Stennis Act, see pages 52-74 in Harper, A Forest Service Research Scientist.

Then we devoted a section of the planned program on ways in which cooperative programs with colleges and universities would be supported. Greater use of the Whitten Act was one of the ways; use of a relatively new government-wide authority to make competitive project grants to nonfederal agencies was another source of support. Most important of all sources of support to cooperative research was the McIntyre-Stennis Act of 1962, which had become law just as we were putting the finishing touches on the national program of forestry research.*

ERM: Did this CORE study give you all the information you needed?

VLH: No. It provided only the beginning. It provided us with a description of the lines of work which should be continued and, in most cases expanded, but it didn't provide us with the detailed information as to where the work would be done and the facilities that would be needed to carry on the research. What was needed was a further study that continued and intensified what was done under CORE. So in 1957, as soon as we had completed the CORE study, I decided to continue work within the Forest Service on developing a national program of forestry research. We called this study CORTYA, standing for Committee on Research Ten Years Ahead.

ERM: Who served on this committee?

VLH: The membership of CORTYA included Ivan Sims, who was my staff assistant; each of the research division directors in Washington; George M. Jemison, who became the deputy assistant chief for Research in 1957; Thomas McLintock, who later joined my staff as an assistant; and myself as chairman.

ERM: And the purpose of CORTYA was to develop the national program of research?

VLH: Its purpose was to develop an overall view of the proposed research to be undertaken, the first phase of the development of the national program. The second and final phase of its development came later--

*See pages 1-3 and 28-30 for treatment of cooperative research in A National Forestry Research Program.

it dealt with the detailed planning at the station and project-location levels. Tom McLintock assisted me at the Washington end of this phase.

ERM: The overall view you speak of was done before any planning had been completed at the field level?

VLH: Yes, the broad outline of the program was a steering document for the planning to be done at the field level as well as a general description of the projected program. It consisted of two main guides--examples of the broad problem areas in which research was proposed and the estimated annual cost of the program to be reached in the tenth year of a ten-year period. There was also an overall cost estimate of new laboratory construction for the ten-year period.

ERM: How did you arrive at the cost estimates? Were the stations brought in on this?

VLH: No, the estimates were made by me alone. They were overall costs that had no hard basis. I based them on my general knowledge of the costs that would be required to do the kind of research that I anticipated would come out of the field end of the planning, plus a judgment on what might be attainable under the political process of budgets and appropriations. To me the two overall estimates of cost--\$80 million annually for the operation of the program to be reached in the tenth year and \$50 million for construction of research facilities--seemed reasonable and realistic; to some others, especially those outside of forestry, they seemed preposterous. Even some of our own research people, who had long existed under meager support, found it difficult to adjust their project planning to the high sights in the guidelines without first going through mind-stretching exercises.

ERM: How did these estimates work out in the actual funding of the projected program?

VLH: Very well, indeed. The rate of growth varied, of course, during the course of the ten years. It began at a fast rate, slowed down in the late sixties and early seventies, and then resumed a fast climb. I saw figures the other day that showed \$80 million for Forest Service research in fiscal year 1976, some four years behind our target year of 1972 for that amount of funding. For long-range planning, that record has to look pretty good.

ERM: Let's take a step back for a moment, because I think

it's important to find out why you chose George Jemison for such an important role in the research division with you. Where did he come from and what recommended him to you as the man you needed for the position of deputy assistant chief for Research?

VLH: George came from a station directorship, and before that he had been a station division chief, project leader or scientist in various regions of the country--all in Forest Service research. Although he was one of several candidates, he was my first choice. His research and supervisory record was outstanding, and I had known him personally over the years. I felt that we could work together well and that he would be a good alter ego. As deputy he would be acting head of Research in my absence. When we were both on the job we would share the work load with more time for me on policy and planning aspects.

ERM: Of which station was Jemison director?

VLH: The California (later Pacific Southwest) Forest and Range Experiment Station at the time of his selection for the Washington assignment. Before that he was director of the Northern Rocky Mountain Station.

ERM: This was the first such position to be established?

VLH: It was the first, both in Research and in the Forest Service. Soon after, however, there were others in the Service. Ed Cliff got one for National Forests and then came one each for State and Private Forestry and Administration.

ERM: What was Jemison's particular assignment in the development of the projected research program?

VLH: He was, of course, a member of CORTYA, arriving late in the committee's work but in time for some of the final sessions. His particular assignment was in 1961 when we decided to go ahead with the preparation of a report that would present the overall view of the projected research plan--a report that, if clearance approval permitted, would be aimed at publication for wide distribution. His task was to take the planning material developed by CORTYA and shape it for a review draft of the report. It was not a big job; it was completed well in advance of the meeting of the forestry research advisory committee in the fall of 1961. This committee would be the first body to review the report.

Meanwhile, with Tom McLintock's assistance, I continued to work with station directors in extending the planning down to the project level. This was the big job of the whole planning effort, which spanned some four years with completion in 1962. It involved making program estimates project by project and location by location, making estimates of laboratory construction where needed, and relocating research centers, where possible, to campuses of colleges and universities. Much of our communication with the field directors about all the planning was by telephone or letter, and some of it required special trips to stations to help resolve especially difficult and complex planning. After the field data came in to Washington there was a good deal of coordination and adjustment to be done before we had a balanced program.

ERM: Was this field material on planning included in the report to be reviewed and published?

VLH: No.

ERM: Why not?

VLH: A good question on the face of it, inasmuch as I have often said the greatest value of planning of this sort is in its particularization at the field level. However, I think I can make it clear why we thought putting the field data in the report was both impractical and unnecessary: impractical because of the great bulk of detailed material from the field end of the planning and the heavy cost of processing and duplicating it for wide distribution; and unnecessary because its inclusion would lend little, if any, value to the purpose of the report.

The purpose of the report was to inform the reader about the proposed research in broad descriptive terms and by examples; to tell how the research would be carried out in respect to in-house and grant programs; and to say what the total cost would be. These were the things at which the administration, Congress, and others would look in forming their judgments about the proposed program. Actual implementation of the plan would come later, after the program's approval by the administration and its support in Congress.

The purpose of the field data was to facilitate the implementation of the proposed program. Although this material was not published, it was available to anyone who needed or requested it. The data--specific new laboratories needed, size of research projects,

and locations of the work by town and state--certainly were necessary and helpful in both the budgetary and political processes of funding the work and absolutely essential to the orderly establishment of an expanding program.

ERM: What proportion of the research centers was planned for locations on campuses of colleges and universities?

VLH: I don't remember the exact figure, but I would guess it was about 90 percent. We had eighty locations planned as centers for project research. Some of the existing centers were already on campuses and of course, most new centers were planned for such locations. Most of the existing centers which were not on or near campuses were slated for relocation. This was to be done as research facilities became available on campuses and as program and related conditions permitted.

ERM: I suppose that good, strong, supportive libraries on these campuses figured as an important asset in locating there.

VLH: Having access to a good library certainly was one of the reasons and an important part of a general scientific environment that we considered to be desirable. In addition, we believed that close association of our people with university faculties would stimulate cooperation between them and would help to open some outstanding opportunities for Forest Service competitive grants to the universities. It also would make it easier for our people who needed advanced classroom training to get it, and opportunities would be provided to a school's students to do their thesis work in our laboratories or to take part-time employment with us. Then there was the practical consideration of cost-free land, which was usually provided by colleges or universities for the construction of Forest Service laboratories.

ERM: That is part of the quid pro quo for the universities.

VLH: I'm sure that was a factor.

ERM: When did you complete the planning for what you call the overall view of the research program?

VLH: In 1957 for the most part. The overall view and dimensions of the projected plan provided the

guidelines for the field part of the planning, which began in 1958.

ERM: And it was 1961 when the report, which did not include the field-planning material by intent, was completed. Is that correct?

VLH: Yes.

ERM: Why the delay? Couldn't you have prepared it earlier and started it on the road to review and approval before then?

VLH: It could have been prepared somewhat earlier; preparing the report itself was a short job. It was delayed because of our decision in 1958 to include research in a report to be prepared on national forests. This is the report to which I referred earlier--Program for the National Forests. It was sent to Congress in 1959. At the time of that decision I believed it wise to defer a separate report on the research program.

ERM: How did the decision come about to include research in the national forest program? Who participated in that decision?

VLH: It was the unanimous decision of chief and staff. In 1958 Ed Crafts, assistant chief for Programs and Legislation, raised the question before the staff as to whether a national forest program should be prepared--a report that would embrace all programs that contributed to the development and management of the National Forest System, including recreation, which had been the subject of an earlier program (Operation Outdoors) sent to Congress. He recommended such a report be prepared and said he had assurance from the department that the secretary would sign a letter submitting the report to Congress. His recommendation was agreed to. Then he asked if I wanted him to include research as one of the sections, or was I planning to prepare a separate report on research. I opted in favor of a section in the national forest program and this was agreed to. Crafts was to prepare the program.

ERM: What moved you to make the choice?

VLH: Expediency. There could be no question about the value and importance of the research contribution to national forests, and the department's intention of sending the program to Congress was already on record.

On the other hand, the department was stalled on the disposition of the CORE report, which, in turn, held up any decision about separate reports by agencies. In the research council of the department there was talk of having the secretary send the CORE report to Congress. I had argued that this should not be done, since the report was not geared to agency programs and budgets. I had recommended instead that each agency prepare a separate report for that purpose. Other council members felt that there should not be separate reports, at least not until after the CORE report had been published.

The Forest Service decision to include research under cover of the national forests program was a way to bypass the CORE report deterrent without making an issue of it. No one in the department gave much notice to our research section, whether because it was inconspicuous, or because they thought nothing much would come of it. In all candor, I must say that I did not anticipate at the time that this short section would, in fact, become the basis in Congress on which funding of the whole forestry research program would develop.

ERM: This initial plan for research to reach Congress was prepared by Crafts and his staff, is that correct?

VLH: No. I prepared the research section in Program for the National Forests. Crafts and his staff prepared the other sections. The idea originally was that Crafts and his staff would solicit the kind of material they wanted from staff members of Research and National Forest System and then put it together in a report. The procedure worked all right for the national forest sections but it ran into trouble with the research part. It was easy to quantify program proposals for the national forests as so many miles of road construction, board feet of timber to be sold, campground units to be built, and so forth. It was difficult, on the other hand, to present a meaningful measure of the research work. Number of studies to be established, and the like, had no appeal. Finally, Ed Crafts asked me to personally give him a hand on it.

I soon found a way to fit research proposals into the general style of his other sections by enumerating examples of the kinds of research, such as forest genetics to improve the quality of trees, forest recreation studies to cut the costs of campground maintenance and to better manage recreational use in

harmony with an area's carrying capacity, and so on through some fifteen proposals that illustrated the full breadth of the projected ten-year research program. I remember that the last item called for construction, where needed, of laboratories and for the acquisition of scientific equipment.

One aspect of including research under the national forest program bothered me and I could see no easy solution to it at that time. The emphasis would probably appear to some people to work to the disadvantage of problems on state and private forest land. The national forest area was about one fourth of total forest land. How could we assure a balanced program?

ERM: How did you resolve that problem? By later preparing a separate report to embrace the problems of both public and private lands?

VLH: We did, of course, prepare a report later that emphasized the broader coverage of problems. However, that was not the main reason for the separate report. The matter of limited program was a possible image that never developed. I simply ignored from the beginning any difference between the classes of ownerships in regard to the kind of research required, and I made budget estimates based on our planning for the entire research program. The rationale for this was that most of the research would have value for all ownerships. In a research and development program such as ours the main difference would be in the developmental phase--the transfer of research findings to practice in a manner suited to the field conditions and ownership needs of a particular class of forest land. And it was customary for the owners and managers of land to participate liberally in the work and costs of the development and of the research.

ERM: Were your budget estimates questioned by anyone along the line of the budgetary process?

VLH: The department and Bureau of Budget people usually questioned them mainly because of their size rather than their appropriation to national forests alone. Members of Congress assumed that the research being proposed covered problems of private as well as public lands. Most of their constituent support for research came from those representing private land interests. I did not discourage their assumption.

ERM: How was the decision to prepare a separate report on

the research plan arrived at? Why did you decide to go ahead with it, given the fact that the plan already sent to Congress was faring so well?

VLH: The decision was made in late 1960 or early 1961, again in a meeting of chief and staff. First there was the decision to prepare an updated, revised report on the national forest program for the next ten years so that it would be ready by 1962 in the hope that the new administration would endorse it to Congress. I recommended the research section be left out this time in favor of a separate report on the ten-year research plan.

One reason why I decided that this would be the better procedure was the absence then of the CORE report restraint. That report had been published in 1960. A stronger reason, however, was a public educational benefit that I hoped would result from a published Forest Service research plan that not only recognized the magnitude and importance of forest and forest products problems but also carried the endorsement of the administration for a greatly accelerated program that included both Forest Service in-house research and federal grants to universities and certain other nonfederal agencies.

There were other reasons, too, that were less tangible. They are nonetheless worth recognizing as having had some influence on the choice. I wanted to get rid of any appearance of duplicity by stating clearly that this proposed research plan had taken into account the research needs of private as well as public lands. Moreover, I wanted greater public identification of our program as a separate entity with its broad scope, size, and new policies. This would come, I believed, through the review process and from wide distribution of the published report.

I did not know then, of course, that the White House itself would be a major stumbling block to the approval of sending the report to Congress. That knowledge, however, might well have only heightened the challenge of going after it.

What this boils down to is that, notwithstanding a strong temptation to take the easy way out because things were moving well in getting the research funded, I chose to go for benefits beyond funding alone. The choice was fully supported by Jemison and others who would assist in the preparation of the report and in herding it through the review process.

New Research Fields Added

ERM: Now, we've covered a good deal about preparation of the projected program. Were there not some new fields of research added to this program?

VLH: Yes, six were added: forest diseases, forest insects, forest engineering, forest products marketing, fish and wildlife habitat, forest recreation. The new fields doubled the former number. The former fields were: forest management, range management, forest products, forest influences, forest fire, and forest economics (including forest survey).

The twelve fields of research were planned as to their field locations at the regional stations, Forest Products Laboratory in Madison, and Institute of Tropical Forestry in Puerto Rico. Each of the twelve fields were to be headed by a research staff man in Washington, D.C. The twelve units appeared in the Washington office organization chart either as research divisions or branches of research divisions.

ERM: Some of these areas of research were old in the Department of Agriculture, or in other divisions or bureaus, is that right?

VLH: Two of them were ongoing research programs in other bureaus of the department. They came to the Forest Service by transfer in 1953. One was forest insects research, which came from the Bureau of Entomology and Plant Quarantine and the other was forest disease research, from the Bureau of Plant Industry, Soils, and Agricultural Engineering. Also, in the 1953 reshuffling of research units, the Forest Service lost part of its range research.

ERM: What prompted these transfers?

VLH: They were part of a general reorganization of the Department of Agriculture, especially in regard to the older research bureaus, under the new secretary of agriculture, Ezra Taft Benson. The reorganization was announced in January 1953, soon after the new administration took office. The purpose, said the secretary of the department, was to modernize and make the research organization more efficient and responsive to the needs. Byron T. Shaw, research coordinator for the department since the retirement of Vince [Philip Vincent] Cardon in 1952 and administrator of the newly created Agricultural Research Service (ARS), told me

that the reorganization had been ordered by Benson during the transition period and had been kept under wraps until publicly announced in order to forestall unrest and opposition to the abolishment of the old-line bureaus and transfer of their functions to newly named units. Shaw had recommended transfer of forest insect and disease research to the Forest Service because he thought they would fare better there. In exchange for these units, he explained, the Forest Service was to transfer range research to ARS. In reply to my question, "But why transfer range research from the Forest Service?" he said it was requested by the secretary's office. He suggested that I talk to Al [A. H.] Moseman, head of the Crops Research Division in the newly created ARS.

ERM: And what was Moseman's attitude about the transfer?

VLH: He was reasonable. He said the range work from the Forest Service was being added to the pasture branch of the Crops Research Division. He understood that the secretary's office had suggested this transfer. When I objected to the move on grounds that our range research was closely related to our other programs in fields such as big game range, fire, and forest management, Moseman suggested we meet with someone from the secretary's office to see whether the Forest Service should not keep those parts of range research that were directly involved in management of forest and related range lands.

In quick preparation for the meeting, which was scheduled for late that morning, I discussed possible retention of some or all of the range work with Joseph Pechanec, who had newly replaced retired W. R. Chapline as head of our Forest Service Division of Range Research. Pechanec outlined those areas that we should try hard to hold and listed those which would be most easily endured should we have to lose them. As I recall, a member of Budget and Finance of the department met with Moseman and me. We were told that the department had received requests from western stockmen to transfer range research out of the Forest Service and that Secretary Benson believed the transfer of it to the pasture branch of ARS was logical. The upshot of our conference was a recommendation to the secretary that only part of the range work be transferred from the Forest Service, namely, the portions which clearly dealt with the treeless range or were closely allied with ongoing pasture research: the Jornada Experimental Range in New Mexico and other work applicable to the Great Plains, and range reseeding and weed control by chemical and biological measures. To be left in the Forest Service we recommended grazing management

research on forest and related ranges, reseeding or revegetation of range for wildlife habitat, range ecology, and plant control by grazing management and fire. We defined forest and related range as range commonly used by the same domestic animals. Shaw and the secretary's office approved our recommendation. Thus in effect we transferred a very small part of our total program of range research.

ERM: Did the secretary or his representative say why the stockmen had requested the transfer of range research from the Forest Service?

VLH: I did not press for the reasons; I was well aware that stockmen had been openly critical of our range research, which they alleged was slanted in favor of Forest Service policy to reduce range stocking on national forests. In fact, a Forest Service station director and I were told by a western university president, during a courtesy visit to his office, that stockmen had approached his people with an offer of a grant for a range study to prove that Forest Service research results had been slanted. "The university will not accept the grant," he said, "unless the station participates in the repeat study." This was readily agreed to.

ERM: Were the new areas added to your program new in the sense that nothing in those areas had been done before by the Forest Service or other agencies of the department?

VLH: No, they were new only in the sense that they were added on a formally organized basis that would give them identity, planning emphasis, and budget support from Washington. Some work had been done previously at stations in each of the added fields, usually in connection with one or another line project. Wildlife habitat studies were begun, for example, in 1946 at the Intermountain Forest and Range Experiment Station, and a fish habitat works was an active part of our Alaska Research Center's program of forest management research in the late 1940s. Forest engineering studies had been carried out by stations as part of other projects where new equipment or related technology was involved, and, of course, the engineering division of the Forest Service had long been doing equipment development work for road and trail construction and fire suppression in the national forests. Forest products marketing research had been done here and there as parts of forest economics studies and forest products utilization research. Forest recreation had been studied as parts of forest economics, wildlife,

fisheries, and silvicultural research. And forest insects and disease had their own identities in their respective bureaus prior to transfer to the Forest Service.

ERM: Can you clarify how the matter of budgeting for forest recreation research was handled? The public obviously was developing a great deal of interest in this field. Certainly the demand for recreational use of national forest land was growing in those days. How did you feel towards need for funding research in that area prior to this change in the new projected program of research?

VLH: Let me take your last question first. While I was director of the Northeastern Forest Experiment Station in the 1940s, I would like to have had separate funding for a real push in forest recreation research. There were many live issues even then in that area and it seemed obvious to me that the problems would intensify with time. However, I could not arouse the interest of anyone--industrialists, conservation organizations, watershed councils, or others--to publicly support this kind of research. They saw forest recreation as a land use and land management problem with policy and legislative overtones but couldn't see an important role for research per se. Only the wildlife or sportsmen's associations were interested and they confined their support entirely to wildlife and fishery aspects of recreation. In those early years I was able to get increased funding for research in wildlife habitat management but not for recreation.

Now, your first question. The first money specifically set aside as an annual continuous allotment for use in forest recreation research was in 1955. I created this reserve by taking ten thousand dollars off the top of a congressional increase in forest and range management research funds for the fiscal year 1956. In subsequent years this reserve was further increased in the same way. I first used funds from the recreation reserve to hire Sam Dana in 1956 as a forest research consultant to make a problem analysis of the forest recreation area as the first step in launching an organized research program in that problem area.* My decision to do this was prompted by a recommendation of the Forestry Research Advisory Committee, which

*USDA, Forest Service, Problem Analysis: Research in Forest Recreation, by S. T. Dana (Washington, D.C.: 1957).

called for the establishment of a program of research in that area. Dana was the prime mover of that recommendation, first made in 1953, as I recall. At first he encountered resistance from other members of the committee who were skeptical of the importance and priority of recreation as a problem for research. I believe his recommendation won approval of the committee in 1954.

ERM: Do you remember who some of the skeptics were?

VLH: The most vocal debater with Dana about the issue was Clark Heritage. The best supporter on the committee for Dana's recommendation was Seth Gordon. A few other members felt that problems in watershed management, fire, forest genetics, wildlife, and so forth were more urgent. Some felt that there were recreation problems all right, but doubted whether federal funds could be obtained to support such research.

ERM: The skeptics supported only the traditional fields of forestry.

VLH: Not entirely. The committee was composed of knowledgeable persons in touch with industry and environmental wants from forest lands and they all were looking at problems in need of research pretty objectively. At first they didn't share Dana's enthusiasm for forest recreation as a research problem, but he won them to his viewpoint with persistent and persuasive argument. Dana's motion to include the need for forest recreation research in the committee's recommendations to the secretary of Agriculture won approval without a dissenting voice.

I asked Dana if he would be available as a consultant to help us get the program under way, that is, to prepare a problem analysis as the first step. He agreed. Dana had been doing occasional consulting work since his retirement as dean of the School of Natural Resources at the University of Michigan.

ERM: He added a lot of prestige to the assignment.

VLH: And he already had command of much of the information needed for the analysis and could get access to other ideas and data. Unfortunately, however, he did not prepare our conventional problem analysis, which would aim the analysis at designating precisely the studies to be established first, the locations for those studies, and how best to organize for administration of the program. What he gave us, though, was a very good first part of the problem analysis, an excellent

overall look at the scope of problems in forest recreation and a description of them, including a bibliography.

For purposes of finishing the analysis and getting a field program in forest recreation research started, I first assigned that task to the Division of Forest Economics Research. This assignment did not work out well for lack of both a favorable environment and weak leadership in the kind of research needed. So I reassigned the function to the division which already included other environmental matters--Wildlife and Range Habitat and Watershed Research. Harry Camp, a seasoned scientist and research administrator, was assigned to head the branch of Forest Recreation Research under division director Herbert C. Storey. With Camp and Storey working directly with Jemison and me, we soon had research in this problem area started in five different stations, the California and Pacific Northwest stations in the West, and the Southeast, Northeast and Lake States stations in the East. Work at most of the other stations was started later. I should mention that Walter Hopkins succeeded Harry Camp as chief of Recreation Research in the Washington office after the first year or so and successfully led that activity for several years until his retirement.

ERM: Was there resistance at the regional level to the idea of robbing Peter to pay Paul in order to fund recreation research?

VLH: There were no objections. In the first place, the assessments for recreation problems came from the increases in congressional funds for forest and range management research; therefore, there was no disturbance to a station's ongoing research because the level of its previous funding was not thereby reduced. Secondly, the stations were anxious to begin formally approved and funded line projects in forest recreation.

ERM: In other words, the initial research in recreation developed from adjustments in budgets rather than as a result of selling the idea to Congress or anyone else. Is that right?

VLH: That is correct--adjustments in our allocation of budget allowances by Congress. I believe the first time that we listed forest recreation as a separate research proposal was in the research part of the Program for the National Forests, which was sent to Congress in 1959. About that same time, probably in

the fiscal year 1960 budget, which was sent to Congress by the president in early 1959, forest recreation was listed as one of the line items under forest and range management.

ERM: That's the first sight of it as a line item in the budget?

VLH: Yes.

ERM: No one on the committees, or coming into the hearings before the appropriation committees, questioned the item or the size of it?

VLH: No one questioned the item. By this time there were two important things going for research in forest recreation. One was the creation of the Outdoor Recreation Resources Review Commission in 1958 and the awareness that this brought to Congress and the public of the growing importance of outdoor recreation. The other was the strong backing that we had for the projected research program as a whole, of which recreation was a small part. Senators Hayden and Stennis in particular, and many other senators and congressmen were pushing the whole research package by 1959 and beyond. Prior to this there was little, if any, sympathy in the administration or Congress for a recreation research item.

ERM: No real ground swell.

VLH: For recreation research, that's the understatement of the year. For recreation action programs, the swell was being reflected in Mission 66 of the National Park Service and Operation Outdoors of the Forest Service--both programs dealing with the construction of recreation roads and facilities. There was also a movement to authorize and protect by law a wilderness system. The real ground swell came in the middle and late 1960s with accent first on natural beauty and then on broader environmental concerns. These concerns had their impact on demands for more research on environmental problems as well as for action programs. Recreation research appears to have shared to some extent in these demands.

ERM: You have alluded previously to the problem of getting research in recreation started, aside from funding. After you got the program going, did it develop readily and produce effective results?

VLH: Conceptualizing a research program in recreation was

easier than putting it to work: like multiple use, the idea is attractive but making it work is difficult. We had difficulty finding capable researchers in the social sciences; accordingly, much of our research in the beginning was resource oriented--that is, aimed at improving management of the recreation resource itself--campground location and maintenance, etc. As we developed capabilities in the social sciences we increased emphasis on people-oriented problems--wilderness use, management of recreationists, etc.

ERM: Weren't universities or foundations doing people-oriented research in recreation?

VLH: Resources for the Future was doing good work on the economic aspects of supply and demand, particularly on measurement of demand for outdoor recreation. Universities were doing some work on conceptualizing the problems of providing for the recreational needs of urbanites, especially the poor and the disadvantaged. Very little was being done to research solutions to these social problems.

In 1968 I served on a steering committee of the National Academy of Sciences and then participated for several days in a workshop at Woods Hole, Massachusetts, studying the scope and content of a research program in recreation which would emphasize the social sciences aspects. This study was done under the auspices of the Academy and was made at the request and expense of the Bureau of Outdoor Recreation; we produced a report.* But in the course of its development, several university members said that their social scientists believed that research in recreational problems was not nearly as urgent as research in national problems of poverty and housing for inner city masses. They wondered whether the better social scientists could be attracted to outdoor recreation research--except, of course, by liberal grants to universities earmarked for that purpose.

* U.S., Department of the Interior, Bureau of Outdoor Recreation, A Program for Outdoor Recreation Research (Washington, D.C.: National Academy of Sciences, 1969).

Clearing and Implementing the National Programs

Clearing the Research Program

ERM: How long did it take you to get clearance approval from the White House to forward the ten-year research program to Congress?

VLH: It took three years, 1961 to 1964. Final clearance was given April 15, 1964, the date of Secretary of Agriculture Orville L. Freeman's duplicate letters to the Speaker of the House and the president of the Senate which transmitted to them A National Forestry Research Program. The program had been prepared in early 1961 and in the fall of that same year it cleared the department's Forest Research Advisory Committee, the first of several reviews it would receive during the ensuing two years. I was unavoidably absent in Europe at the time of the 1961 advisory committee meeting--because of the heart attack hospitalization of my wife in Villach, Austria--so the program was presented to that group by Jemison. He received a few small, though important, suggestions for changes. But in general the projected program was very well received and applauded by the committee.

ERM: The initial presentation by Jemison to the National Advisory Committee on Forestry Research was only the beginning of a long review period. Why did it take so long?

VLH: Basically, the cause of the delay was the science staff in the White House, who felt that our projected program was not receiving thorough review by competent scientists from outside the Department of Agriculture. We had hoped that the review of the department's Forestry Advisory Committee would be sufficient. Our projected research program cleared the research coordinator in the secretary's office of the department and was sent to the Bureau of the Budget by the department at the same time as the 1962 revised program for the national forests. The BOB gave clearance approval to the national forest program but turned back the research program for further

review by an outside committee of scientists.

Soon after President John F. Kennedy took office in 1961, he organized, under a White House science and technology advisor, a staff of scientists drawn largely from Harvard, Yale, MIT, and other prestigious institutions. This was the beginning of the space age, as you know. One of the roles of the White House science staff appeared to be the shaping of bureaucratic research along lines more to their liking. Orders soon went out to all departments that each secretary should have a science advisor as a minimum, and in the case of several large research activities within a department, there should be an overall science director for all the research. For the USDA, the order was that there should be both a science director and a science advisory committee composed of outside scientists of distinction. The White House science staff took a dim view of the scientific caliber of the USDA advisory committees established under authority of the Agricultural Research and Marketing Act of 1946.* It also had a low opinion of agricultural research generally, especially that done at the ag colleges. Getting all the new requirements implemented by the department took time and the new Science Advisory Committee turned out to be a tough body to impress with a forestry proposal.

ERM: Who comprised the department's Forestry Advisory Committee, the one established under the Research and Marketing Act of 1946?

VLH: I don't recall who was on the committee in 1961 when the projected research program was reviewed. However, I have a list of most of the members who served at one time or another in the period from 1952, when the committee was established, through 1965, when I retired from the Service [see Appendix A for the list]. I compiled this list when I was trying to help Herbert C. Storey identify the members of the committee for 1952.**

*Hope-Flanagan Act of 14 August 1946, 60 Stat. 1082.

**Two publications of interest in this connection are Storey's "History of Forest Service Research, Development of a National Program," and Forest Farmer, 28, no. 2 (November 1958). Pages 3 and 27 of the latter show the committee's membership in 1958. Moreover, this issue of Forest Farmer, magazine of the Forest Farmers Association, is devoted entirely to research on forestry problems of the South and is a good source of information on the status of forestry research at that time, including who was doing the research and who was supporting it.

ERM: How was the composition of this advisory committee chosen? Who decided the membership?

VLH: I made the recommendations, and they were subject to the approval of the department's science director and the secretary of Agriculture. The secretary made the appointments. The decision process worked like this: I received recommendations for membership from our research directors in the field and staff people in Washington. From these I selected the members and sent the list to the research coordinator (later the science director) for approval. Letters of appointment for signature of the secretary of Agriculture were prepared in the office of the science director. I can't recall that any of my recommendations were turned down by either the science director or secretary of Agriculture.

The composition of the committee was chosen with certain guidelines in mind. One, a member's credentials should be based on his individual capabilities and not on the position he holds in an organization. Two, there should be a reasonably good balance in the geographical representations. Three, there should be a balance in the specialized knowledge of members about problems in need of research. In regard to this last, we tried to maintain a reasonable balance between those in forest production, products utilization, and the forest amenities. Oftentimes an individual member was quite knowledgeable about several subject areas and had a keen interest as well in how the public saw the forest and what society expected from it.

ERM: Do you recall whether there were written minutes of the advisory committee meetings?

VLH: There were no minutes that recorded an individual member's comments. However, the committee itself prepared a report on the results of its review of the ongoing research and made recommendations to the secretary of Agriculture about the research program. The committee had the help of a department staff officer who served as the permanent secretary of the committee. He helped to prepare as well as process the report. The committee secretary was assigned from the staff of the department's science director.

ERM: So you wouldn't get the impact of individual participation so much. But somewhere in the archives there probably is a file of the committee reports and recommendations.

- VLH: The permanent files of the Forestry Advisory Committee actions were kept by the committee's secretary in the office of the science director. All discretionary research advisory committees of the department, of which forestry was one, were discontinued in 1970 by action of the secretary of Agriculture, and the office of science director was abolished in 1972. Presumably, some of the advisory committee files were sent to a federal government records center.
- ERM: Back to the White House science staff and its unfavorable view of agricultural research. Do you think this was a reflection of what you had determined some years prior to this--that agricultural research in general, and forestry research in particular, had not yet achieved prestige in the total scientific community?
- VLH: I think both lack of prestige and a poor image may have been factors. The White House science staff in 1962 was comprised mostly of people in the hard or exact sciences, with some in the biological or medical sciences. They seemed to think of agricultural research as being essentially agronomic in nature and consisting mainly of field experimentation. They tended not to think of laboratory work of biochemists, physiologists, physicists and other specialists as agricultural research; which, of course, much of it was. To make things worse for agricultural research, the critical national agricultural issue at that time was what to do about the persistent problems of overproduction of food, high costs of grain storage, and billions of dollars in subsidy. This was a political and social problem that did not lend support to a need for more research to increase production.
- The situation was different in forestry. There were no surplus forest commodities or services and the Kennedy administration supported an expanded research program. The concern of the White House staff about forestry research seemed to be wholly one of trying to steer our development along lines that would avoid some of the alleged pitfalls in agriculture, especially formula grants of federal money to land grant colleges and agricultural experiment stations.*
- ERM: Do you suppose they were concerned, too, that the formula approach favored the state land grant colleges and did not recognize the old private universities?

*See page 61 of Harper, A Forest Service Research Scientist.

- VLH: They felt that the old private universities and others which were rated in the top ten for their excellence would return more and better research for the dollar. However, I didn't detect any aspiration on their part for the private universities to become the leaders in the agricultural and forestry fields. I think their point was that we would do better by concentrating the research grants at the better universities, state or private, rather than spreading the funds to all of the states in support of weak as well as strong state institutions.
- ERM: Was the criticism of agricultural research in any way a harbinger of the rising tide of interest in environmental science?
- VLH: I doubt that. It is true that later on many of the new developments to increase the production of crops--heavy use of fertilizers and lavish application of pesticides and herbicides--got agriculture in trouble with the environmentalists. But I don't think the White House staff had environmental considerations in mind in 1962. It would be generous to attribute an environmental consciousness to the White House at that time, but my honest assessment would deny this. The ground swell of public concern about environmental impacts of agriculture, forestry, industry, and community waste disposal systems was yet to come.
- ERM: The first signs were not showing then?
- VLH: No, not in 1962. The environmental movement began later. Rachel Carson's book Silent Spring was published in 1962 but it took a while for people to be influenced by it.
- ERM: But in the middle sixties there was already a ferment developing within the universities.
- VLH: By the middle sixties, yes. The concerns about the environment developed rapidly about that time.
- ERM: And there was concern within the country about outdoor recreation at an earlier date.
- VLH: There was, of course. Concern for wilderness legislation began in the 1950s; out of the wilderness interest grew the broader concern about outdoor recreation, resulting in the U. S. Outdoor Recreation Resources Review Commission in the late 1950s and the establishment of the Bureau of Outdoor Recreation in the Department of the Interior in 1962. Then came the Wilderness Act of 1964, not to mention the Multiple Use-Sustained

Yield Act of 1960 with its recreational and environmental implications for national forests. Out of the ground swell about outdoor recreation came interest in natural beauty, which led to the White House Conference on that subject in 1965. Soon to follow was a still wider concern over air and water pollution, excessive noise, sewage and waste disposal, and rate of population growth. By 1970 all of these concerns from wilderness to cities had become one big package wrapped in the term "environmental movement."

Now in regard to the sequential stages in the development of the environmental concern, I would note this difference in their impacts on science. Wilderness and outdoor recreation, the forerunners in the movement, never generated much if any public support for research--science and technology were seen as enemies, and the less of them, the better. Whereas, beginning about the middle sixties, pollution of the environment--whether in the form of civilization's assaults on the integrity of natural conditions and beauty, use of deadly pesticides, or discharge of particulates and chemicals into the air and water--met with a storm of protests and cries for new and more harmonious ways to treat the environment. If science and technology got us into this fix, they could help get us out of it.

ERM: What was your next move in getting the projected research program cleared?

VLH: Copies of it were given to the newly appointed science advisory committee [Advisory Committee on Agricultural Sciences] that had been established by the secretary of Agriculture in 1962 in compliance with the request of the White House.

ERM: This was under Secretary Freeman?

VLH: Yes.

ERM: Who comprised this committee?

VLH: I can't recall their names at this date except for the one forester on the committee: Bill [William Clark] Bramble, then head of the Department of Forestry and Conservation, Purdue University. The other members were drawn from the state land grant colleges and elsewhere. All were scientists connected with agricultural problems in some capacity. I don't recall that the proposed membership of this committee was discussed within the department. My guess is that Secretary Freeman called upon the National Academy of Sciences for nominations.

ERM: And did this committee move promptly to review the proposed research program?

VLH: All things considered, yes. Our projected program was given to the committee in the spring of 1962 and received clearance approval in January 1964. In the interim there were several committee actions on the program.

The first was to set aside our projected forestry research program until the department could submit a projected agricultural research program to be reviewed by the committee at the same time. Meanwhile, Dr. Bramble of the committee was to study the forestry program, consult with the Forest Service about it, and be prepared to present an analysis of it along with his recommendations to the committee. George Jemison and I met with Bramble and a faculty colleague of his in Chicago. Most of Bramble's questions were on the feasibility of staffing a program of the size that we had projected--a growth that would quadruple size within ten years. "Where will you get the trained scientists?" he asked. He was surprised but satisfied to learn that about half our scientists already were being obtained from graduates of departments other than forestry and that our policy was to use a portion of our funds for research grants at universities and other outside agencies.

In due time--I think it was in the late fall of 1962--the secretary of Agriculture received a memorandum from the committee with its report and recommendations on how our projected program should be modified. Some of the changes desired by the committee were improvements in the text of the program and could be readily agreed to. But the main changes were highly objectionable to me: the annual rate of increase of the projected program should be cut to about half because forestry problems were not all that urgent. Moreover, the length of the projected period should be reduced from ten to five years. These changes, the committee said, would bring the forestry research program into line with the projected program for agricultural research.

ERM: They cut the time in half and cut the money in half.

VLH: Yes, not much imagination shown there.

ERM: What did you do about their recommendation?

VLH: Retained the ten-year projection period, but accepted the one-half annual increase. We then applied a six percent annual inflation factor to our estimates. By

using the six percent annual rate of inflation our annual cost to be reached at the end of the ten-year period was \$76 million instead of \$80 million.

I arrived at this solution after consulting A. H. Moseman, the temporary director of Science and Education in the department [official name of the new position established at request of the White House]. Moseman was on leave from the Rockefeller Foundation, where he was vice-president for Science and Agriculture. He had been with the department previously, as I think I said earlier, as director of Crops Research in ARS. Therefore, he was well acquainted with Forest Service research through our former association on the department's Research Council. Moseman's primary role as interim director of Science and Education--pending the arrival of the new permanent director, Nyle C. Brady, in 1963--was to assist Secretary Freeman with matters relating to his Science Advisory Committee.

It was Moseman's recommendation that I apply the six percent inflation rate per annum on the one-half rate of money increase suggested by the committee. He had already done slide-rule calculations to determine that we would end up with a tenth-year cost close to the \$80 million figure in our program. He assured me that a six percent inflation factor was not uncommon in projections of this kind. He also recommended that I keep the ten-year period in the projections, using the flexibility I had built into the plan for periodic adjustments in priorities.

In reply to my question on how the Science Advisory Committee might view our revisions in the light of their recommendations, he said he would try to take care of that; meanwhile, he advised that we send the revised report on up to Congress. He thought Secretary Freeman would sign the letter of transmittal.

We made the changes and then I made informal inquiry at the Bureau of the Budget in 1963 as to the chances of our program now clearing the administration. Reply came back through the liaison staffer at BOB that the White House people wanted our revisions reviewed by the department's science committee prior to sending it over for clearance at the BOB.

Foreseeing more delay, I asked whether the fact that I had already discussed the revisions with our Forestry Research Advisory Committee, and had received its approval, might be considered sufficient outside review. I explained that the Science Advisory Committee was not

scheduled for another meeting until January 1964. Reply was that the White House science staff did not consider the Forestry Research Committee's review of our changes adequate, that a member of the Forestry Research Committee had told a White House staffer that the committee did not review the revised report in detail; instead, "Dr. Harper had only explained the changes that had been made."

By this time, Nyle Brady, on leave from Cornell University, was getting settled into his position as director of Science and Education in the department. He said he would arrange to have our revised program put on the agenda of the January 1964 meeting of the Science Advisory Committee, which was scheduled for New Orleans. He asked me to give him a background memo explaining the revisions and to accompany him to the meeting.

Our projected program revisions received emotional reactions from members of the committee. Some, with flushed faces and sharp tongues, looked upon the cost revision, using the six percent inflation factor, as rank trickery. Others thought the department ought to insist on a six percent inflation factor for the agricultural research program if the Forest Service's projections were allowed to stand. Still others defended the program; they thought the forestry projections bold and commendable. The mood of the meeting began to take on a darker hue. Brady, as chairman of the committee for Secretary Freeman, abruptly called for a vote by show of hands. Not many appeared to vote. "Approved," Brady announced.

ERM: Brady stepped in and saved the day.

VLH: He knew his university colleagues and wasn't about to let the debate fan the opposition. He had made up his mind to fully endorse our program and obviously was attaching little value to the quality of argument against it.

During lunch after the meeting, I visited with a member of the committee who had earlier worked with Bill Bramble in shaping the initial recommendation of the committee regarding the forestry program. He said the only hangup when the committee first considered our program was its fast rate of expansion compared to that of the projected agricultural research program. He agreed that the agricultural experiment stations had traditionally given forest problems low priority but thought attitudes were changing. He admired Forest Service success in getting increased funding for

research and had visited some of our new laboratories. Moreover, he thought my appearance on programs at regional meetings of the agricultural experiment station directors was helping to bring forestry problems to their attention. Most of all, though, he believed the new McIntyre-Stennis Act of 1962 was having a strong influence on old attitudes.

ERM: You had your green light. What was the process from that point?

VLH: Clear sailing. The science liaison man of the Bureau of the Budget was present at the New Orleans meeting. He assured me that the program would now promptly clear the BOB for transmission by the secretary of Agriculture to Congress. And it did.

Implementing the Program

ERM: So the projected program then went to the Congress for consideration by committees?

VLH: Yes. As I've said before, Secretary Freeman signed identical letters on April 15, 1964, to the Speaker of the House and president of the Senate. They, in turn, passed copies of the projected program to their respective committees and subcommittees on appropriations.

ERM: And your friends in the Senate, in particular, I suppose, got moving on this and got the necessary action on the Hill, is that right?

VLH: They were already moving to implement it, a movement that got its main stimulus from the research portion of the program for the national forests. That program, as I earlier said, was submitted to Congress in 1959.

ERM: Was the 1959 research plan that was in the Program for the National Forests the beginning of involvement of Senators Stennis and Hayden in increasing the appropriations for research?

VLH: No, they became involved in boosting our research before then; in fact, as early as 1954, when Hayden became chairman of the subcommittee in the Senate before which the Forest Service appeared. We got Budget Bureau allowances plus increases over the budget every year thereafter, as I recall. In fact, some of our new laboratories were provided prior to the 1959 research plan.

ERM: The 1959 research plan, then, was the beginning of the rapidly accelerated program of research in forestry?

VLH: That is correct. The acceleration became more orderly as well as rapid beginning in 1960, when Senator Stennis began his annual speeches about the 1959 research program on the floor of the Senate.

ERM: Stennis spoke on the Senate floor about the research and not before the subcommittee on appropriations?

VLH: He sometimes did both, but he regularly spoke on the Senate floor beginning in 1960 and each year thereafter, until I retired at the end of 1965. He may have continued his Senate speeches on our research after I retired; I don't know about that.

ERM: What prompted him to make the speeches? Was this discussed with you?

VLH: First, as to what caused Senator Stennis to adopt the rather unusual and highly effective course of making annual speeches about Forest Service research on the floor of the Senate, making the speeches was Senator Stennis's idea. But that idea followed discussions that I had with Stennis's legislative assistant, Charlie Jones, and Bill Woodruff, clerk of the subcommittee that was chaired by Senator Hayden.

Jones and Woodruff met with me early one morning before regular work hours in January 1960 at my office in the South Building of Agriculture; they stopped by on their way to their respective offices on the Hill. The subject of our discussion was how to maintain a reasonably fast rate of progress in funding the projected research program.* We had all seen projected programs bloom for a short period and then quickly fade away for lack of broad-based congressional support of a sustained nature. Senators Hayden and Stennis were interested, according to Woodruff and Jones, in a stronger research program in forestry, and that meant making substantial additional appropriations for it each year over a several-year period. We agreed that Senator Stennis would be the logical key figure in bringing about the necessary, sustained, broadly-based support in the Senate, and Jones was sure that Stennis would be glad to try to fill that role. He was to let us know Senator Stennis's decision on what that role would be.

*The program referred to here is the research section of the Program for the National Forests (1959).

Jones reported back that Stennis wanted to make a speech on Forest Service research on the Senate floor well in advance of appropriation hearings that spring; and from me Jones was to get material for the speech including proposed laboratory locations and a list of research construction projects most urgently needed for the coming fiscal year. Jones asked whether I could provide staff help in assembling the material for the senator. George Jemison worked with Jones in preparing a draft of the speech. In the end, as was his custom, Stennis reworked and shaped the material to his style and purpose. Each year we discussed the speech, sometimes over lunch in the Senate restaurant as a guest of Stennis and other times in his office.

ERM: Did the Senator's speeches help to generate the wide support among members of the Senate that was hoped for?

VLH: Yes, it proved so effective the first year that Stennis continued the practice of a speech on the Senate floor in late January or early February of each year from 1960 and thereafter, during my time as chief of Research. This was a period of rapid expansion of the research program and of building research laboratories.

In each speech, as I recall, Stennis presented two tables. One showed, for each of the broad categories of the budget (called financial projects, in budgetary terms), the administration's estimate for the next fiscal year, and opposite each such estimate the proposed increase in funding required for planned progress. Any budget shortfall relative to planned progress was thereby highlighted. The other table showed details of the research construction items; that is, estimated cost of laboratory construction by town and state. The construction projects were presented in two groups: first came those that had been provided for in the president's budget; and second, those that were required above the budget in order to meet planned progress.

Well in advance of delivery of his speech, Stennis had his staff distribute marked copies of it to the offices of each senator whose state showed a budgeted or above-budget increase for a laboratory construction project. This lead time permitted each of the involved senators the opportunity to prepare appropriate remarks to be made during the Stennis speech. And, of course, the speech, with interjected remarks of the various senators, was published in the Congressional Record.

ERM: Did Senator Stennis consult you on his choice of

laboratories to be constructed with funds over the president's budget estimate?

VLH: Yes. He always asked for our recommendations on those laboratories most urgently needed to maintain reasonable progress in the projected program. However, as he usually stated in his speeches, he also consulted informed people in various parts of the country. Stennis traveled a good deal in the United States in connection with his Senate committee responsibilities regarding the armed services, and in connection with those trips he would visit nearby research installations of the Forest Service. And he carried on correspondence with forestry and conservation leaders from around the country. After the senator had a chance to study the list which we sent him at his request, and organize his questions about certain projects, he would ask me to discuss the list with him.

Some of our construction projects were planned in installments, first a basic structure to provide space for a few years, and then one or more additions to the laboratory in succeeding years. Stennis liked this procedure because it kept the cost of construction low for any one location in a given year and gave an opportunity for a given senator to express his interest in the program several times over a period of years. But he always asked, in the installment cases, and in all cases, as a matter of fact, whether I was satisfied that they were sound proposals and whether they were in accordance with our planned program.

ERM: Were the materials that you regularly passed on to Senator Stennis based on ten-year projections of planning, or were they only annual additions that you wanted immediately?

VLH: They were annual additions based on the planning of the ten-year program. For the purpose of his speech Senator Stennis was mainly interested in getting from us the annual planned additions to the current budget, including the cost of research construction by locations that I considered to have high priority. But he also requested a complete list of planned research-center laboratories which he kept for reference purposes.

Stennis was a firm believer in orderly implementation of the research program and strongly supported our planned increase in funding. Nevertheless, in the legislative process, a few of his items sometimes got deleted and occasionally other construction items were added.

In spite of these changes in budget add-ons, because the recommendations of Stennis carried great weight due to his intimate knowledge of our research, and because of his personal prestige in the Senate, our research program moved ahead with remarkable orderliness and dispatch. Helpful in this respect were the constant supports of Senator Hayden, chairman of the prestigious and powerful Senate Appropriations Committee, and the aggressive backing of Senator Byrd of West Virginia, both of whom were strong supporters of the National Plan for Research.

ERM: The projected program of research was fortunate in having the endorsement and active support of those three senators.

VLH: Yes indeed, and we were fortunate in having the opportunity of working with them in getting the program implemented with funds. I suppose I may have had some influence on the program's implementation in the manner that Senator Goldwater spoke about the other day on television when he said the biggest power in Washington's executive branch of government was the bureaucracy. Senator Byrd seemed to think I had a positive hand in the matter, as indicated in his speech before the Senate on February 16, 1966 [see Appendix B]. If you look beneath the lavish praise of a retirement speech, you will see that Senator Byrd and many others in the Senate were aware of our research program and had appreciation for the vision displayed in the projected plan as well as gratitude for my help in bringing the program and its financial needs to their attention. I cite this speech with gross immodesty and, to prove that point, I will give you a clipping of it. My former secretary in Washington, Amy King, sent me two of them.

ERM: As I understand it, Senator Stennis gave emphasis to the construction of new laboratories.

VLH: He did, although he also presented the research program needs, or laboratory staffing needs, as it was often called in the subcommittee discussions. Stennis's belief in laboratories was fundamental. He saw them as absolute necessities to good research. But beyond that, they offered good practical politics--a bit of log-rolling in Congress that was akin to public-works pork barreling, on a much smaller scale, of course, but with a much higher social standing. There was a special appeal about the term laboratory. It evoked the image of science and a monument to be associated with. And since we had planned laboratories at locations throughout the country, they attracted broadly-based support.

ERM: Your ten-year program of research reached Congress in 1964, is that right?

VLH: Yes.

ERM: The results of the ten-year projected program, however, were made available in 1962 to Senator Stennis and he incorporated those results in his speeches, is that correct?

VLH: Yes, the revised program costs were given to the appropriations committee at its request. Senator Stennis explained this in his speech of February 15, 1962.* I have a reprint of that particular speech which I will make available to you for your interview file. It is a fair sample of the annual speeches of Senator Stennis, with the remarks of the various senators.

ERM: Is it not true that the various members of Congress were hearing from associations and individuals from their home states about the research needs?

VLH: Yes, of course, and that was vitally important to the legislative process. However, I had learned from experience in the late 1940s that support from back home, when not guided by a plan and central coordination, can get the Forest Service into trouble. I wanted no repeat of the hassle with appropriations committees that our research faced then. I had decided in the early 1950s that we needed to do three things, all of which were functions of research administration, that would demand close attention and alert effort to ensure a smooth and successful advance of the program.

These functions were: first, make a plan that is not only national in scope but which carries the planning down to the field research centers; second, do a good job of education, aimed at selected groups and individuals, including the Congress itself, which seeks to create an awareness and understanding of the research plan and underlines the soundness of its orderly implementation with funds; and third, provide a well-coordinated informational service for research supporters and legislators on questions of research progress, program needs, and funding priorities.

ERM: You completed your plan. Did these other two functions begin then?

*Congressional Record 108:2097.

VLH: The last-named function, informational services, was put into practice at the beginning of my term as head of Research. We had no national plan then for program development at research centers, but we had knowledge that certain things were surely high priority and would fit into a future planned program. It was imperative then that there be a system of fast communication between the field directors and my office, and I kept a tight rein on what information about research needs should be supplied to local supporters of our research and members of Congress. We were both in touch with supporters and legislators, and the chances for embarrassing snafus were too great to be without a good coordinating system. Completion of the projected program and its accelerated implementation intensified the need for a system of coordinated informational services. However, the actual job of coordination was made much easier by the existence of the projected program.

ERM: In other words, the implementation of the program had to be a coordinated effort.

VLH: Yes, and the planned program, which established for each research center a goal as well as a ceiling to be reached at the end of the ten-year program, was a big help in the required coordination.

ERM: Didn't the national plan at the research-center level in effect tend to put halts on ambitious young men who were developing a dynamic program, as you did in the early thirties at Lake City, Florida? You had ideas and you had the capacity to sell them and draw customers of research, as you described them. This new plan in a sense spread the largesse of research money on a broader, more equitable basis and put halts on all such individual center development, on individuals who had more ambition and drive than others, did it not?

VLH: I can't deny that the nationally planned program would tend to put restraints on an individual at a given center who might want to exceed its limits for his own or other local interests. That is a purpose of planning, whether it applies to research, land use, or whatever. Another and more important purpose is to stimulate sound development for the benefit of the community as a whole.

In practice, the planned research program did not put collars on project leaders. Few research centers had even come close to their planned goals at the time I left the Service, i.e., in the plan's fifth year.

Moreover, there was flexibility in the projected program: programs for given centers could be modified when a good case for it became evident.

ERM: What support did you get on the Hill from outside groups? Did organizations like the American Forestry Association, Society of American Foresters, and similar groups on the national scene become interested in supporting your research program?

VLH: We got no visible support from national organizations, professional, industry, or citizens' groups. Neither did we get open opposition from them. The closest to giving helpful support came from the American Forestry Association, when Kenneth Pomeroy, Chief Forester of the Association, appeared before the committee to say that his organization was for the planned program in principle.

Our best and most effective support regularly came from regional or state organizations or from individual companies and other local bodies. The Forest Farmers Association, a southern regional organization representing forest landowners, was a consistent, vigorous, every-year advocate of the research program in the South. There were many others from the various states and regions not as regular in their support as the Forest Farmers Association, but effective when they did lobby.

ERM: The research program we are speaking to was a matter of implementation with funds. The national organizations, perhaps, are more apt to be interested in authorizing legislation, is that right?

VLH: I think that is true. During my time at least, the national organizations might have fought hard for a law that would authorize a program and then would sit back while the program withered on the vine for lack of appropriations. Enabling legislation seemed to be more popular with them than appropriations legislation. Unlike the regional or local groups and individuals, who were closer to our research, the national groups were inclined to feel that more efficient use of funds and adjustments in budget priorities would take care of whatever needed to be done. They were inclined to oppose increased appropriations on principle.

The Society of American Foresters was relatively inactive during my time, even on authorizing legislation.

ERM: The Society of American Foresters has never distinguished itself, it seems to me, in that regard.

VLH: It is doing more now than it used to.

ERM: But not in comparison, say, with the American Forestry Association. How do you account for this?

VLH: The nature and objectives of the two organizations are quite different and that, in turn, should make their approaches on the Hill quite different. The AFA is a citizens' organization and can take the role of advocate quite appropriately, whereas the SAF is a professional body that can't appropriately be an advocate, but can give advice and counsel on scientific and technological matters that relate to issues.

I'll try to explain, without sounding too much like a professor, the difficulty that SAF has faced in taking a role with respect to legislation. The SAF membership is comprised mostly of professionals who are employees of either public or private agencies. Self-employed members are a small part of the total membership. Generally, the SAF cannot take a position that would advocate one or the other side of a specific piece of legislation without seriously offending a substantial proportion of its membership. This is in contrast, of course, with some other professional bodies whose membership is rather uniform in employment status. For such bodies as the legal and medical professions, which are largely self-employed, a lobbying role as advocates is common. Witness the opposition we saw to no-fault insurance and to Medicare when those issues were before legislative bodies. Therefore, the only effective and non-self-destructive role that the SAF can play in legislative matters is to express sound principles of legislation as they bear on matters of professional forestry, and to describe with honesty and dispassionate objectivity the technological risks or other consequences of proposed legislative actions.

Honesty and dispassionate objectivity are canons that govern the scientist in his scientific endeavors. The SAF, like the scientist, cannot assume the role of professional advocate in a debate on an issue without the likelihood of becoming more advocate than professional. To take the role of advocate would impair its value to its membership, diminish its effectiveness with legislators, and encourage the public to demand legislation that would minimize any risk attendant to the use of forestry technology.

I have been pleased with the recent testimony on the Hill of the SAF in regard to the Monongahela case and the proposed legislation [the bill that became the National Forest Management Act of 1976] to resolve that issue. The role of the SAF was strictly professional, honest, and objective, and I imagine it had more than a little influence with members of Congress. I am sure a continuing role of this kind will increase the confidence of the public in the forestry profession. Moreover, it is a role that every member of the society can endorse. It appears to have taken the SAF a long time to fully appreciate the limitations and strengths of its organization in dealing with policy issues, but I daresay from now on the SAF might well take a place of prominence in its influence on forest policy.

ERM: Isn't it true, though, that many large groups who engage in the art of influencing public opinion and legislation also claim to have science on their side?

VLH: Yes. And there is nothing wrong with that, provided their claims are backed by people who are more scientists than advocates. Legislators are aware, and I suppose the public will also become aware, that there are always a few scientists around in times of emotional issues who will clamor for the spotlight by advocating one or the other side of an issue, even though their evidence may be less than honest and is given without dispassionate objectivity. It is a sad truth that our universities foster a system of rewards that too often puts a premium on publications and personal publicity, which in turn tends to encourage some of its members to become advocates in the name of science, even though the loud applause may be short-lived. Eventually, unfounded claims would be exposed: the self-policing system of the scientific community is sure, though it may be slow.

Actions to Improve the Quality of Research

ERM: Now, we have been talking about the new projected program of research and how it was put on its way to a rapid growth in size. What did you do to bolster the quality of research?

VLH: I introduced several new policies aimed at enhancing the research capability of our Forest Service research organization and hence bolstering the quality of research output. Those that I consider most important are several personnel development actions, including especially a training program to increase the advanced-training qualifications of our research scientists; along with ARS, formulation of the man-in-job concept of classifying research scientists to give them an attractive career ladder comparable to the ladder for research administration; abolition of the research center leader position in the station organization and shift of the research center emphasis to project leaders and their scientists as researchers; establishment of pioneering research units to increase the program's output of basic research; and improvement of the scientific environment and facilities for research.

These five principal actions taken to boost the quality of Forest Service research during my time are not necessarily given in order of their importance or impact. The last one that I mentioned was discussed some distance back: it refers to the construction of laboratories and otherwise acquiring research facilities on or near campuses of colleges and universities. I don't need to say more here about that particular action. However, the others need comment.

ERM: Suppose you begin by elaborating the first new policy that you mentioned, the one designed to increase the qualifications of research people.

VLH: Beginning in 1951, during my first visits to the stations as chief of Research, I emphasized the importance of upgrading the number of researchers with advanced

training through the initial recruitment process or by encouraging our employees without such training to return to school. I outlined the several arrangements that we could make available to assist worthy candidates in taking graduate work.

In the early 1950s we could not pay our people while doing classroom work but we could arrange special work hours, and, in some cases, the individuals could be transferred to work locations that provided convenience in attending university classes. In 1958, Congress passed the Government Employees Training Act, which made it possible to pay the salary and expenses of an employee while taking needed training for his employment.* We took full advantage of this act by encouraging the stations to use it for those employees that showed promise of benefiting from further training.

Also, in 1956, the Whitten Amendment became available; it was used to make grants to forestry schools or other departments of universities which in turn provided funds to hire student assistants for research in partial fulfillment of the requirements for advanced degrees.** Furthermore, we adopted a liberal policy of allowing graduate students to use the results of research work they did in connection with our regular projects for their thesis purposes.

ERM: What were the attitudes of the research people towards your emphasis on graduate training and higher degrees? Did many of them take advantage of the opportunities offered them?

VLH: Their attitudes were mixed at first. Some were indifferent to the policy, some were encouraged and seized the opportunity to acquire more schooling, and some were defiant towards the idea. I was threatened once by a small group of young researchers with bachelor's degrees in forestry who bluntly said they would leave the research organization and seek employment elsewhere rather than be forced to acquire higher degrees. They were taken aback, though, by my ready response, which was to encourage them to leave

*Public Law 85-507, 7 July 1958 (72 Stat. 327).

**Amendment of 6 April 1956 to the Granger-Thye Act of 24 April 1950 (64 Stat. 82).

if they did not wish to become qualified to do sophisticated research. On the other hand, they were welcome to stay and face prospects of low-ceiling salaries. I offered to help them find positions in national forest work or in industry, if they wished my help.

Persistent follow-up on the new policy of raising the level of qualifications of our research people soon began to show results. In 1957 we had 9 percent of the total of research personnel--those with bachelor's or master's degrees--enrolled in university training. In 1960 the percentage had climbed to more than 13 percent, and by 1967 it was around 20 percent. The percentage then began to decline until it reached about 5 percent in 1974, reflecting the high proportion of new recruits who already had advanced training.* The percentage of total professional research personnel having doctoral degrees increased from 16 percent in 1957 to over 40 percent in 1975. An additional 40 percent held master's degrees in 1975, leaving 20 percent with bachelor's degrees.** As these statistics show, many of the research personnel did take advantage of the opportunities offered them to acquire higher training.

ERM: What impacts did all this have on academics? What did it do, for example, with the forestry schools?

VLH: It increased the graduate enrollment in many colleges and departments of universities, and I suppose the policy had its greatest single impact on the forestry schools. I should add that some of the young scientists whom we helped to acquire their advanced training through the doctoral level wound up on the faculties of the forestry schools or other departments. I did not discourage this: it was part of the policy. The only strings attached to financial help for our scientists were legal ones--the brief period which the employee had to agree to serve with us following his training, as required in the Government Employees Training Act of 1958.

*See Storey's "History of Forest Service Research," p. 73.

**USDA, Forest Service, Forest Service Research: Solving Problems on Forest and Related Lands, FS-307 (Washington, D.C.: GPO, 1975), p. 23.

- ERM: In this same period of time commercial users of the forests, the forest industries especially, were themselves becoming much more sophisticated in their management plans and were beginning to make larger and larger demands upon the pool of trained foresters. Did that have much impact?
- VLH: The forest industries, like the federal land management and state agencies, drew heavily on the forestry schools for bachelor's degree graduates for use in their land management activities. The forest industries and others also provided the schools with a good demand for master's degree graduates. The demand for Ph.D.s, I believe, was very light from the forest industries.
- ERM: It was not a factor?
- VLH: The demand of research and educational agencies for Ph.D.'s was heavy during that time, and the impact of that demand on the forestry schools is still heavy. The pulp and paper industry maintained large research laboratories in the field of pulp and paper, but they were drawing many of their research people from departments and colleges like chemistry and engineering. However, some of the forest industries also had research establishments for their forest land management holdings, and they probably drew on the forestry schools for at least part of their staffs. The biggest customer for doctoral degree graduates of forestry schools during that period was probably other forestry schools. This was a period of rapid expansion of the schools.

A recent publication of the Forest Service lists thirty-five fields of science represented in the body of talent of the Forest Service research organization--four under the social sciences, twelve under natural sciences, and nineteen under physical sciences and engineering. The forestry schools, of course, embrace all of these three broad classes of science to some extent, with heaviest concentration in the natural sciences. Moreover, the forestry schools orient their sciences to forest and range resources. As I said earlier, we obtained about half our new researchers from the forestry schools and the other half from other departments of the university.

*Forest Service Research: Solving Problems on Forest and Related Lands, p. 23.

ERM: How about the man-in-job concept? What was it and how did it originate?

VLH: The man-in-job concept is a classification system for pay grades. It is based on an evaluation of the performance and contribution of a person in his job as well as the difficulty and responsibility of his assignment. The concept holds that a position and man can grow over the years, depending upon the capabilities of the incumbent. Further, inherent in the concept, a research scientist is evaluated by a panel of his peers in regard to his research accomplishments and the complexity of his research endeavor in order to establish the appropriate grade level for his position.

The concept originated in discussions of the Committee on Research Evaluation (CORE) in 1956. This committee, you will recall, was established by B. T. Shaw, then research coordinator for the Department of Agriculture. The committee was comprised of the top research administrators in the department, including myself. One of several conclusions and recommendations of CORE was that the department seek permission of the Civil Service Commission for use of this new concept in grading research scientist positions in the Department of Agriculture. Permission was won in 1957 to use the man-in-job concept on a pilot basis. If it worked out well for the Department of Agriculture, the commission would consider making it available for government-wide use. Use of the new concept was adopted immediately in 1957 by the ARS. I was not able to persuade the Personnel Management Division of the Forest Service to use it for grading positions of our research scientists until 1961. By that time the Civil Service Commission had published a description of the man-in-job concept (1960) and had made it available for government-wide use.*

ERM: Why was the use of the new system resisted by the Personnel Management Division of the Forest Service?

VLH: I can only offer an opinion. One reason probably was that administrative models in the Forest Service were fashioned for national forest activities, where the great bulk of the action exists. There also were indications that the stations were cool to the idea.

*See U.S., Civil Service Commission, Guide for Evaluating Research Scientists (Washington, D.C.: GPO, 1960); and Research Grade--Evaluation Guide (1964).

It was always difficult to get separate organizational and personnel models for research--or for S and PF, for that matter. In the case of personnel actions, the personnel management people had to deal with some twenty thousand professional people, of whom only about one thousand were in research.

Another possible reason could have been a showing of some resentment among other branches of the Forest Service over what looked to be a faster promotion ladder for research scientists. This latter reason arises as a consequence of the close linking of action programs and research in the same organization. In ARS, research programs far outweighed its action program in size; its policies and procedures there were first tailored to research needs.

ERM: How does the new system operate?

VLH: To explain its operation I need to say something first about the system it replaced. At the time we originated the man-in-job concept in CORE, the pay of research scientists, like all other employees of the federal government under Civil Service appointment, was tied to classification standards prepared by the CSC. These standards established a grade level on the basis of assigned and described duties and responsibilities of a position. The prescribed salary for the position was controlled largely by number of people supervised, cost and size of program involved, and the like. The grade level never changed, even though the man in the job improved greatly. These standards did not fit a research organization. The unfortunate consequences of them was that a research scientist, in order to get ahead, had to accept more and more administrative responsibilities and hence less and less actual research doing. This was a system that CORE felt was intolerable and we were determined to get it changed. I was one of the leading advocates of the change.

The man-in-job concept of classifying positions as to grade and salary was tailored to the classification of a given scientist rather than to a fixed position. Thus a scientist could be graded upon his research accomplishments, the complexity of his research exercises, and the quantity and quality of his output, which were all highly visible to a scientist's peers. Part of the concept and system, therefore, was that a scientist's accomplishments and other qualities were to be reviewed by a panel of his peers.

Thus two lines of advancement became available for researchers in a federal research organization--up a

ladder of research administration, for which the older system of classification was used, or up a ladder of research doing, for which the man-in-job classification was used.

ERM: Has this system persisted in Forest Service research and has it had an impact on the quality of personnel?

VLH: It was put in operation in 1961 and I assume it is still in use. There was no question about its good impact on Forest Service research. The system came along at the right time to accommodate the growing impact of our emphasis on advanced training. Without this new system we could not have paid enough to attract doctoral degree graduates to our research program. Under the older standards of the CSC, a research center leader had the pay of GS-12 or GS-13. Whether project leaders or others, scientists working under the research center leader could not equal or exceed his grade. Under operation of the new system, a number of research-doing scientists were brought up to the grade level of their supervisors (center leaders had been abolished, which means up to grade levels of project leaders and assistant directors of stations), and in rare cases they exceeded that level.

I doubt whether any policy innovation during my time as chief of Research--or any other time--had more impact on promoting scientists' incentive, maintaining scientists' morale, and helping to retain top-notch research people than the change to the man-in-job system of classification.

ERM: Was this system adopted, then, more widely by other departments in the government?

VLH: Yes. The department that seemed most grateful for it--other than Agriculture, where it all began--was HEW's Institutes of Health. To them it was proclaimed a godsend. They embraced the new policy with fervor.

ERM: In other words, this is one more evidence of innovation in administration by the Forest Service.

VLH: Yes, but credit must go to ARS for using the concept first.

ERM: You did abolish the layer of research center administrators at the stations, didn't you? Why did you do this?

VLH: I did abolish that layer, but abolishment wasn't easy. This particular policy change was related in purpose to

the one which we have been discussing--the new system of classification of research scientist positions. I came to the conclusion that something must be done to remove barriers to advancement of research-doing scientists as early as 1956. We actually abolished research center positions in 1961, at the same time that we introduced the change to the man-in-job system of classification.

Why did I abolish the research center leader position? Our field research organization in terms of line of command had developed in the same pattern as that of National Forest administration. There it was regional forester, supervisor, ranger, each with a staff. In research it was station director, research center leader, project leader, each with a staff. This kind of organization was all right for National Forests, but it had major flaws for Research. The accent, for one thing, was on supervisory and administrative posts and functions and not on research doing.

The basic problem for me was the growing difficulty of defending, in good conscience, a research outfit so heavily laden with chain of command. I could see a bleak outlook--a pedestrian, mediocre research organization which looked for its main research output from the very bottom of the long chain of research administrators and supervisors.

I spent much time in the latter half of the 1950s studying organizational theory and practice pertaining to organization of research agencies in and out of government and considering alternative solutions to our Forest Service situation. Our training program was moving along well, and we would soon be using, I hoped, the man-in-job system of classifying research-doing personnel for pay grades. However, as I said a moment ago, there were signs that the man-in-job concept would not be welcomed with open arms at stations. The idea of paying project leaders and other research-performing scientists more than their supervisors went against the local grain. Center leaders, especially, could be counted on to take a dim view of that idea.

There were three alternatives: one, make no changes in the current organization of our regional stations; two, convert to the ARS pattern, and that of nearly all other federal research agencies that maintained decentralized locations--a pattern which has each research center reporting to the national headquarters for its research direction; three, keep both the regional-station headquarters and their decentralized locations as the basic framework but eliminate as many research administrative layers as practicable,

place emphasis on research doing, and, in order to attract and hold qualified research scientists, make full use of the man-in-job concept for pay grades. This last alternative required that the research center position be abolished.

ERM: I assume you had no difficulty ruling out the first alternative.

VLH: Not so. There was much internal support for keeping the status quo. I knew that the station directors and research center leaders preferred not to make any change. Also, the project researchers seemed content under the current system; the best qualified who wanted to remain research scientists were looking to outside offers after a limited period with us, and the others had hopes of becoming research center leaders or station division chiefs. Furthermore, the deputy chief for Administration and his divisional staffs favored the present organization: it gave expression to "line and staff"--held dear to the hearts of that school of thought.

In spite of all this internal endorsement, however, I did reject the first alternative. I was determined that our research should rise above mediocrity, that the Forest Service should seek excellence for its research organization.

ERM: You must have felt pressure to adopt the ARS pattern of organization, if, indeed, you were to change.

VLH: The greatest pressure came from the management experts of the Bureau of the Budget who favored the ARS system. These experts argued that a couple of administrative-support regional offices, like those in the ARS system, ought to be adequate to service our research centers if they were manned with competent project leaders who would need little overall research direction other than from the Washington office. There was support, too, for this manner of organizing for research in the fact that other federal agencies usually used this system.

But Byron T. Shaw, then research coordinator for the Department of Agriculture and administrator of ARS, exerted no pressure to change to his type of organization. He could see the same drawback to that change that I was certain about: to eliminate our station-director system would eliminate their public-support function in the areas of congressional appropriations and Forest Service policies. Without their public relations efforts in the field and overall station

direction, we couldn't hope to achieve our goal of sustained, fast growth of a carefully planned research program. I could coordinate efforts among eight or so regional directors, but no one could do this for eighty separate and independent research centers. The ARS failure (against political intervention) to close field stations in accordance with its wishes and public announcements, compared with the Forest Service success in this regard, was strong testimony in favor of the disciplined and loyal field support of Forest Service policy.

ERM: Aside from the lack of a regional research direction system in ARS, were there inherent factors of agricultural research that made it difficult to close out field stations?

VLH: I think there were traditional links to agricultural colleges and state experiment stations that made it easy for "university friends" of an ARS center to resist being closed. The land-grant colleges tended to a possessive attitude toward federal agricultural research associated with them, and many of the decentralized centers of ARS became closely integrated into college research endeavors.

ERM: You were moving Forest Service centers to campuses. Was there not this same danger of losing control of their destiny?

VLH: We were aware of the risk, and our station directors were careful to maintain a balance between a proper degree of independence from, and an attitude of good cooperation with, the colleges. Moreover, I felt that our system of organization, which I finally decided was best for the Forest Service, helped to maintain control of the proper balance in this relationship. Our regional directors, or assistant directors in some cases, actually became the heads of their respective research centers after the abandonment of the research center leader positions.

ERM: How was the abolishment of the research center leader positions received?

VLH: With disappointment and some dismay at first by the station directors and research center leaders and apparently by the research scientists at the project level, too. An administrative study of the entire Forest Service organization was made in the late 1950s by a committee of senior Forest Service officials

and representatives of the management consultant firm of McKinsey and Company, Inc.* Among the many items in the report, the study group recommended retention of the research center concept with its center leaders, and I was told by the committee that the sentiment at stations, including that of project personnel, appeared to be strongly in favor of the status quo.

ERM: Your own study of research organization and your personal conviction that it should be changed were taken into account by the study group?

VLH: No, and here is where both Clare Hendee, deputy chief for Administration, and I were at fault. I assumed that the study group would solicit my views and Hendee assumed that Research was adequately represented by a station director and research center leader on the committee. The only people in the study committee from National Forest Systems and State and Private Forestry were field officers, and Research was treated likewise. Hendee and his associate deputy, Gordon Fox, were the only persons from Washington office having contact with the committee. They assumed they could adequately represent that office-- which was more true in the case of NFS and S and PF than Research. In the absence of committee members' seeking my views, I should have sought an opportunity to convey to them my personal conviction that the station organization needed change. I'm not sure, however, whether that would have made any difference in the committee's recommendations.

It remained for me to make my case for change when the recommendations came before the chief and staff for review and decision. After I had presented my reasons, which I have already given in answer to your previous questions, the recommendation that would retain the research center leader as a key position in station organization was not approved.**

*USDA, Forest Service, Gearing the Organization to the Job Ahead, management study report by McKinsey and Company, Inc. (1960), processed.

**See Appendix C for copy of January 9, 1973, letter to Robert E. Buchman which includes a fuller discussion of the alternatives that Harper considered regarding the reorganization of research centers and reasons for rejecting the McKinsey recommendation.

The stations were informed of this action and told that center leaders would be transferred gradually, as suitable openings became available elsewhere in the organization. Some might wish to remain in research administration careers, whereas others might prefer to return to research project work. Project leaders would work directly under the station director's office. Station support services would be beefed up to provide adequate help to relieve project leaders of administrative details. Research doing would be emphasized for all project personnel, including project leaders. The man-in-job concept of setting pay grades for project people would be adopted. The overall purpose of changes was to streamline the chain of command and make it possible to channel more funds to acquire and keep highly qualified scientists--all aimed at improving the quality of the research output.

Not all of this was elaborated to stations in any one document or at any one time. It took a good deal of work of staff members of the Washington office, from both Research and Administration, to help stations implement the new policy. Helpful in explaining the purpose of the change was a meeting of station directors with McArdle and me, held in Chicago in 1960. Also essential in the planning of difficult and complex changes at specific locations were consultation visits to stations by Jemison or me.

In the end, although abolishment of research center administrators first met with poor reception, stations welcomed the new policy. Its impact, along with that of the man-in-job concept, in raising the caliber of scientific talent and in enhancing the quality of the research output was not long in coming.

ERM: I don't mean to jump ahead of the story, but the proof of the pudding in all this was in the end results, and the end results were cast in the form of the written evidences, subject to emendation by those still up the line from the person who was at ground level, doing the basic job, weren't they?

VLH: I'm not sure I understand your question.

ERM: Well, a man would write up the results of his research. He would submit that in writing to the station director, I assume, and it would go to an editor, would it not?

VLH: In most cases it would. It could go directly to a scientific journal, then to its referees, and then to the journal editor.

- ERM: The station editor would have an impact on it.
- VLH: Surely, but he would not be in a position to quash the publication or alter the findings. His job was to help the paper's clarity and put it into form for publication. There was not, and shouldn't be, censorship of research results which are reported honestly and with dispassionate objectivity--the code of scientists.
- ERM: No policy pressures if a scientific finding perhaps is counter to an established position?
- VLH: On the contrary. If the scientific finding is counter to an existing scientific position in the status of knowledge, and if it has been competently arrived at in the eyes of the scientist's peers, the findings and the author of them would be hailed as outstanding. A scientist of stature would take a dim view of anyone denying him his right to publish research findings that were deemed to have been properly obtained and presented by the researcher's peers.
- ERM: Scientific facts notwithstanding, the professions are not without their established mythologies. A well-known example in medical research, of course, is Pasteur. It was years before his findings won acceptance among the medical profession.
- VLH: That's true, but aren't you mixing reporting of research findings with application of the findings? The medical profession is comprised mostly of practitioners. The medical research scientist usually belongs to a scientific society even though he also belongs to a professional society. They are not synonymous. I could be wrong, but I don't recall that Pasteur's research findings were ignored by his research peers. Not all research findings are ready for application in practice until after considerable development and effort.
- ERM: In other words, in the case of research findings per se it's a matter of refereeing by peers?
- VLH: That's right.
- ERM: Of course, the great percentage of key works that are produced by Forest Service research are published by the Forest Service as miscellaneous publications of the stations or serial publications of the Forest Service-GPO rather than through scholarly journals.
- VLH: I believe it is the other way around; the key works are first published in a broad spectrum of scientific

journals. It is true that the publications having to do with interpretation of scientific knowledge in terms of practice are often presented in GPO publications, station papers or notes, and in trade or practice journals. I saw a note a while ago on the wide array of scientific journals in which Forest Service research findings were now being published. I don't remember the statistics, but I wasn't surprised by them because of the more than thirty-five distinct scientific disciplines represented in the research organization.

Before leaving this subject I'd like to back up, if I may, and add to what I have said in reply to your question of whether policy pressure of adhering to an established position was ever applied in order to change or deny publication of a research work. I answered in terms of research policy of my office in regard to publication, namely, to publish results soundly arrived at according to the accepted principles and codes of science. In fairness to your question, which goes to the application of the policy, I have to say that I can't categorically say there never was an instance in which an author was unfairly treated in this respect. I can say, however, that this was not a serious problem. There were only a few cases that I heard about in which disappointed, and sometimes bitter, authors alleged policy pressures.

Our organization was large and decentralized. Station directors had authority as well as responsibility regarding publications. Accordingly, I might not have learned about all such instances. But of those few cases whose details came to my attention, much of the complaint of an author was about delay because of reviewer comments and adverse opinions about publication rather than about unilateral use of top authority to stop or alter publication. These differences between author and reviewer were most often over interpretation of study findings in terms of their application to practice, an area which can be quite controversial and not readily subject to rigorous test.

ERM: I would like to ask about pioneering research units. When were they put to use by the Forest Service, and what is their special purpose?

VLH: We established our first pioneering laboratory in 1960, and we had several by the time I left the Service in 1966. I believe the Service has eight now. The purpose of a pioneering research unit is to develop new knowledge as a basis for future advances, rather than to solve an immediate problem. Pioneering laboratories are built around highly creative and productive

scientists who carry on fundamental studies that relate to the mission of the Forest Service. So far, the pioneering laboratories--or units as they are sometimes called--have dealt with such studies as mathematics and computers in forestry, growth hormones in trees, mycorrhizal values in forest production, and fundamental studies in wood chemistry.

ERM: Did this organizational innovation to encourage basic research originate in the Forest Service, or elsewhere in the scientific community?

VLH: It originated in CORE in 1956. Several new ideas for improving the quality of research in the Department of Agriculture had their genesis in the deliberations of its Committee on Research Evaluation: the man-in-job concepts of personnel classification and pioneering laboratories are the most notable. The committee was chaired by George W. Irving, Jr., then a bio-chemist in ARS, later administrator of ARS, and more recently president of the Cosmos Club in Washington. The pioneering laboratory concept was first proposed by Irving for committee consideration. I immediately saw its value for Forest Service research and became a strong advocate of it, along with ARS members of CORE. Much of our discussion of the concept revolved around safeguards to protect the concept from overuse or improper administration.

We finally agreed on guidelines. First, the concept envisioned basic research of high order to be done by competent scientists of proven excellence. Second, we footnoted the first guideline by observing that the concept does not imply that fundamental research is not being done in most line projects along with applied research. Third, a principal distinction between pioneering and line project research is that the former is to be exempt to a greater extent from the pressures of current problems and from routine paperwork required by the department's uniform project system. Fourth, each new pioneering research laboratory or unit should be approved by and chartered by the head of the research agency concerned, with the written concurrence of the department's research coordinator (later called the Director of Science and Education).*

ERM: What were some of the first of these that you established?

*See Guide for Forest Service Research Scientists (1965), pp. 4 and 15, for a more detailed description of pioneering units in the Forest Service.

- VLH: The first was in forest mensuration at our Pacific Southwest Forest and Range Experiment Station. It was concerned with use of computers and mathematics in exploring the frontiers of sampling methods in estimating timber and other things in forestry. Louis R. Grosenbaugh was the gifted scientist for which this pioneering unit was created. Others during the early period were in lignin chemistry at the Forest Products Laboratory; in physiology of wood formation at the Institute of Forest Genetics, Rhinelander, Wisconsin, of the Lake States Forest Experiment Station; and in formation and decomposition of the forest floor at the Forestry Sciences Laboratory, Research Triangle Park, North Carolina, of the Southeastern Forest and Range Experiment Station.
- ERM: How well did these pioneering units work out? Did they live up to your expectations?
- VLH: They were highly productive during my time and I think they have continued that record. Only recently I saw a note about the 1975 awards ceremony of the U. S. Department of Agriculture, in which Philip R. Larson of the Forest Service's physiology unit won a distinguished service award "for creatively conducting and systematically pursuing research leading to an entirely new scientific interpretation of wood formation and to recommendations for improving wood quality by forest practices." I believe that most leaders of the pioneering units have won awards for outstanding research results.
- ERM: Was most of the basic research of the Forest Service done in the pioneering units?
- VLH: Most of it was done as part of our line project research. The pioneering research laboratory was a policy way of recognizing an outstanding scientist of proven ability to do creative research and get significant results. Such a person was given a charter that enabled him (or her, if there were any and I'm sure there will be) to write his own ticket--to do undirected research. Directed research was a term we applied to line project research, meaning their tickets were prescribed as to the problems they should work on, but not necessarily how much of the work should be basic or applied. Much of it became more fundamental as qualified scientists and research facilities became available. Directed and undirected research were terms originating in CORE. We concluded that basic and applied were adjectives with little meaning to the department's research problem-solving missions.

At best, trying to define the difference between basic and applied research is pretty slippery business.

Internal Management

ERM: What actions did you take to improve organization and management of Research? Was there some reorganization?

VLH: There were several reorganizations, minor and major, and there were several other innovations in internal management of programs, all aimed at improved effectiveness of research. There were two major consolidations of regional stations.

The first reorganization was conceived in 1951 during my get-acquainted swing around the station circuit soon after I became Chief of Research. It struck me that the four mountain stations in the West were overloaded with overhead and that the research output probably could be greatly improved under consolidation, leaving two mountain stations rather than four. Lyle Watts, then Chief of the Forest Service and a former Director of the Northern Rocky Mountain Station, agreed, but advised me to make the consolidations when the White House administration changed, i.e., in 1953. His further advice, which I later found to be faulty, was to get prepared and then spring the reorganization suddenly. There would be so many other changes going on that our consolidation would go unheeded politically. Unless done this way, he warned, political pressures and congressional interventions would prevent doing what was wanted, no matter how many advantages one claimed for the abolishment of an office.

During visits of 1951 and 1952 to these stations, I sought the advice and consent of the four directors that would be affected by the regrouping. I had already decided that if we went ahead with it the Northern Rocky Mountain Forest and Range Experiment Station with headquarters at Missoula, Montana, would be joined with the Intermountain Forest and Range Experiment Station, and Ogden, Utah, would remain the headquarters of the combined stations.

Similarly, the Southwestern Forest and Range Experiment Station with headquarters at Tucson, Arizona, would be combined with the Rocky Mountain Forest and Range Experiment Station and Fort Collins, Colorado, would be retained as the headquarters of those consolidated stations.

What this meant was that the Northern Rocky Mountain and Southwestern stations would lose their identities as well as headquarters, but their research projects, including the research-doing people, would remain in place just as they were prior to change. The directors and division chiefs and general overhead staffs of the abandoned headquarters would be transferred to comparable positions elsewhere in the station system.

George Jemison, director of the to-be-abandoned Northern Rocky Mountain Station, strongly favored the consolidation; Raymond Price, director of the Southwestern Station, was not enthusiastic about losing his station, but thought consolidations could be done with careful advance planning to prevent a political upheaval. I left it to the two directors to take such measures as they deemed necessary to prevent political opposition to the move.

ERM: How did this work out? Was the consolidation successful?

VLH: It was accomplished in 1953 as planned. However, the abandonment of the headquarters for the Northern Rocky Mountain Station in Missoula was resisted, with political pressure on the Forest Service. We had become all set early in 1953 to make the changes without serious objections, I thought. Then Senator Mansfield began hearing complaints from the local people in Missoula, Montana. He asked the Forest Service regional office in Missoula what the talk of losing the station was all about. Pete [Percy D.] Hanson, regional forester in Missoula, made a special trip to Washington, D.C., to see whether the closing of the research headquarters might be reversed by the Chief in the face of strong political objection that was sure to come. McArdle, then chief of the Service, asked me my attitude. I was for standing firm and explained that the moves had been planned for some time. McArdle agreed.

Hanson said he would do the best he could to explain to Senator Mansfield the advantages of the change and the relatively small loss in number of personnel at Missoula that would result from the consolidation, but

that we should not be surprised if we heard more from Mansfield and probably other senators. He warned that the word would be spreading rapidly as soon as he reported back to Missoula that the Forest Service was not backing off from the consolidation. We proceeded with the reorganization.

ERM: No further objection from members of Congress?

VLH: No serious attempt to flatly stop the consolidation. However, Senator Mansfield never forgot the incident; he once told Reed Bailey, director of the combined stations, that he had nothing to discuss with the man who benefitted from the stolen station from Missoula.

McArdle was especially sensitive to criticisms of senators at that particular time and would have preferred not to oppose Mansfield. He told me after the conference with Pete Hanson and the decision to go ahead with the closing that he wished he had known sooner about the proposal, with its political implications. He would have said, "Don't do it." McArdle had been made chief just before the change in administration and he, along with Crafts and the rest of us, was anxious to avoid anything within reason that might jeopardize his retention by the incoming administration. The timing to close the office in Missoula was indeed bad.

Also bad was the fact that we had failed to do the necessary advance work with the local people and members of Congress in order to avoid surprise and antagonism. As we would demonstrate in Research many times in the future, office closures and transfers could be done without political hassle.

ERM: Missoula is also the site of Montana State University; I suppose they may have seen this as a slight slap of rejection.

VLH: Could be. But the opposition came mainly from business and related local interests. It's always difficult to close an ongoing station or office without a lot of local preparation for it well in advance. That incident taught me a lesson. Our public relations, which eventually gained much recognition for its success, had failed.

ERM: The Southwestern Station was closed without political difficulty, was it not?

VLH: Yes, the consolidation of that station with the Rocky Mountain Station proceeded without incident. Raymond

Price did a fine job of preparing the way. I don't know what he did locally, but he asked to come to Washington in 1952 to visit congressmen and senators from Arizona to explain why we wanted to consolidate the two stations, which would entail the transfer of himself and a few others from Tucson. He asked me to accompany him to explain the reasons for the reorganization.

I recall our visit with Congressman John [Jacob] Rhodes, whom Ray Price thought would be a key figure should there be local opposition. Rhodes thought our proposal was sensible and thanked us for telling him about it in advance. He said he would be able to explain why we were closing the director's office if he encountered complaints.

ERM: I suppose the people in the closed offices were transferred to other locations; no one lost his or her job in the closures, is that correct?

VLH: Everyone was placed, so far as I remember. George Jemison was moved to Berkeley, California, to become director of the California Forest and Range Experiment Station, a vacancy at that time. Ray Price became director of the consolidated stations with headquarters at Fort Collins, Colorado. William G. McGinnies, former director of the station at Fort Collins, was transferred to Columbus, Ohio, to fill a director vacancy of the Central States Forest Experiment Station. Division chiefs and administrative personnel of the closed offices were placed in various stations where and when vacancies occurred.

ERM: Did Mansfield's objection to the consolidation prevent him from supporting the Forest Service in its programs?

VLH: Not at all, although as I indicated a moment ago, he never forgot the 1953 reorganization. Subsequently, Senator Mansfield and Senator Lee Metcalf [a congressman first and senator in 1961] were both leaders in providing funds to construct and staff the Forest Fire Laboratory and the Forestry Sciences Laboratory in Missoula and the laboratory at Bozeman, Montana. I had no problems with Senator Mansfield, and he became a strong backer of the national program of forestry research that was presented annually by Senator Stennis in speeches on the floor of the Senate.

ERM: According to my notes there was another station eliminated from the system in 1965. What station was that, and what happened to the work under way at that station?

- VLH: It was the Central States Forest Experiment Station. It was sacrificed in 1965 in the cause of increased effectiveness. The director's office was closed, but all project personnel remained in place, some at the director's office headquarters but most at research centers at various locations in the region. The research centers in Iowa, Missouri, Illinois, and Indiana were added to the Lake States Station and that station was renamed the North Central Forest Experiment Station. The centers in Ohio and Kentucky were added to the Northeastern Forest Experiment Station.
- ERM: This was the second reorganization of stations in which the Northeastern Station gained additional territory. The first took place in 1942 when the Allegheny Station was combined with the Northeastern Station.
- VLH: Actually, it was the third change in boundary of the Northeastern Station. The second came in 1945 when West Virginia was added. That adjustment was made along with changes in the boundary between the Appalachian [renamed Southeastern Station as part of the change] and Southern Station. They were all made to better accommodate the new policy of decentralized research centers, a policy that superseded Earle Clapp's earlier policy of containment of researcher residency at the regional station headquarters.
- ERM: What motivated the consolidation in 1965? Why was the Central States Station selected for elimination?
- VLH: It was prompted by a Bureau of Budget review of the organization and management of the Forest Service in 1965. The review was made by management experts of the BOB, who were making a systematic study at that time of all agencies in the Department of Agriculture. Gordon Fox, deputy chief for Administration, rounded up Forest Service material and helped the "experts" make the review. Fox was aware that I had said that someday we might want to eliminate one of the stations in the Middle West or East in the interests of improved effectiveness of our station system. He persuaded me to let him inform the BOB people that I was proposing to eliminate this station. Fox wanted a few examples of the progressive approach the Forest Service was taking to improve itself.

When the management review team reached Research, I was made aware of the probable pressure I was about to get by the opening remarks of the leader. He said he had read about the bold changes I had made in the research organization and looked forward to discussing with me further improvements in the interest of still

greater efficiency.

I explained, with the help of charts and job-load statistics, our current organization (minus the station we were then proposing to close), which we were still in the process of perfecting since our latest adjustment--a reduction of station division chiefs by one-half and changing the titles and duties of the remaining half to assistant station directors. This reduction of administrative and supervisory positions, in addition to the former abolishment of research center leaders, made an impressive story, I thought. The reason we could make these reductions, I explained, was because of our shift in emphasis to research-doing project leaders and their capable teams of scientists, a shift made possible by the success of our actions in other respects--providing advanced training for personnel, use of the man-in-job concept of classifying research people, improved laboratories and equipment, and locating our research centers on college campuses in order to provide a good scientific environment for our scientists.

ERM: The team of management specialists thought you should go further in reorganizing?

VLH: They pushed for further reductions in the number of stations: down to two in the West and two, or perhaps three, in the East. They thought I'd laid good groundwork for the real payoff reorganization, a move that would yield big dividends in terms of greater efficiency.

ERM: The Bureau of the Budget was arguing this?

VLH: Yes, I know it sounds a bit out of character for the Bureau of the Budget. However, the BOB had had a division of management for as far back as I can remember, and has placed varying degrees of emphasis over the years on its management functions. Now the name of the BOB has changed to Office of Management and Budget, or OMB as it is called for short. Apparently, renewed emphasis on management has been given to this White House agency which, according to the press, is taking a continuing strong interest in organizational matters relating to the various departments.

An economist that we recruited from the BOB's management division during the early 1940s said they were instructed to worm their way into a department's considerations of management functions, and, once with this foot in the door, they could then move more aggressively to take charge of reorganizing the department along more efficient lines. Our man had quit

because of the difficulties and frustrations in getting departments to adopt BOB recommendations.

ERM: What reasons did the management review by the BOB offer for its recommendation to drastically cut the number of regional stations?

VLH: The main reason was the example of the ARS. Their two regional offices (aside from their regional utilization labs) were strictly administrative in character: purchasing, payroll, personnel actions, and the like. There were no regional directors of research at that time. Their many research centers reported directly to the ARS headquarters in Washington. The management review study did not recommend we go completely to the ARS system, but it did seriously question our need for as many directors and assistant directors at regional locations as we were proposing to keep.

ERM: What was your answer to that argument?

VLH: Mainly that our system was based on a different concept of organization. We maintained only a skeleton research staff in Washington compared to ARS, depending on our regional stations for research direction and coordination of projects as well as for support services. I again explained how I had already cut the number of supervisory positions at stations and was still ironing out problems stemming from those changes. Moreover, I pointed out that drastic changes in the organizational structure are normally resisted by our scientists--any research people, for that matter--and that there was a limit to such moves beyond which more damage to morale and efficiency would likely result rather than more research for the dollar.

What I didn't say to them, for obvious reasons, was that we also depended on the regional directors in our system of organization to develop local interest in forest problems and help obtain funds for the needed research. However, I suspect the BOB review people already knew this. Perhaps that is one of the reasons they recommended further reductions in the number of stations.

ERM: Did the secretary of Agriculture embrace the recommendations of the management review team? And what was the attitude of the chief of the Forest Service?

VLH: Word from the secretary's office to the Forest Service was to make such use of the report as our judgment dictated; we should not adopt recommendations that we

were opposed to. Edward P. Cliff, then the relatively new chief of the Forest Service, believed "research came through [the review] with flying colors."*

There were several other recommendations in the report that concerned Cliff more than those pertaining to Research. He concurred in some of them during the review. Region 7, for example, was to be eliminated, and there were to be some combinations of forests under fewer forest supervisors and some consolidations of ranger districts. He had also agreed in principle that the deputy chiefs for National Forest System, Research, and State and Private Forestry should all have direct line authority, along with responsibility for carrying out their functions. And he had agreed that State and Private Forestry should be separated in the field from jurisdiction of the National Forest regional heads, especially in the South and Northeast, where the work load was heaviest. Furthermore, he had agreed that S and PF should expand its mission to deal more directly with getting research findings applied.

ERM: Was line authority given each of the program deputy chiefs?

VLH: No, there was no formal delegation of line authority over field offices during Cliff's tenure as chief. As I think I've said before, the three deputies having field programs now have that authority under Chief John McGuire. The question of line authority delegated to the program deputy chiefs was raised by the BOB reviewer during one of the sessions he had with Research, at which Cliff was present. The reviewer had been told by Gordon Fox that Research was operated differently from the other main branches--State and Private Forestry and National Forest Systems--and that I had assumed line authority whereas the other deputies had not. I was being quizzed about this by the BOB representative when Cliff interrupted to say that he heartily approved of the situation in Research and thought that the other two deputies should also exercise that authority. He said he would look into making the delegation a formal part of the organization chart for the Washington office. The management-efficiency report recommended this be done.

ERM: Why wasn't this done?

VLH: Cliff told me later that he had encountered obstacles

*See Appendix D for letter from Cliff to Harper, December 1, 1965.

that caused him to back off. There were objections from the deputy chief for Administration on grounds that delegation of line authority to the three field-program branches would adversely affect the classification grades of the other deputies and their staffs.

ERM: Did Cliff's agreement to separate State and Private Forestry from National Forest Administration in the field share the same fate as the reorganization of the Washington office?

VLH: No. Two State and Private Forestry area offices were established in the East--one in Atlanta, Georgia, and the other in Upper Darby, Pennsylvania. They were called S and PF area offices and each had its director. There was no change made in the West, where the S and PF load was relatively light. The biggest organizational change was in broadening the scope of duties of S and PF to include helping the states, the forest landowners, and forest industries to apply results of research. For this purpose S and PF worked closely with the regional research stations. In fact, S and PF established a number of field offices alongside the research offices, often in the same laboratory buildings.

ERM: Was there any pressure from the forest products industries to move in that direction, to make their impact felt?

VLH: On S and PF?

ERM: On giving S and PF full and equal status with National Forests.

VLH: I don't think so. I think that was wholly an internal idea developed by the management study team with assistance from Gordon Fox and others.

ERM: A wholly administrative decision.

VLH: Yes. I'm sure that the state foresters were informed of the reorganization before it actually took place. There was no reason, however, why they or the forest industries should object to the change, a change designed to help them.

ERM: Was there any pressure to prevent closing of the National Forest office of Region 7, or of the Central Station regional office?

VLH: Not that I recall. I am sure there was no political difficulty in closing the director's office of the

Central States Station, and the consolidation of Region 7 with Region 9 appeared to take place smoothly.

ERM: This was all part of the big economy wave that went on in 1965.

VLH: I suppose the BOB study was part of President Lyndon B. Johnson's economy drive. But, unlike closures elsewhere which were normally sprung on the people by announcement in the press so the administration would get political mileage out of it, we did not herald these closures by publicity fanfare. I persuaded the rest of the staff to let the Central States regional research director and the regional forester of Region 7 pave the way for the closures by using their respective judgment and influence to prevent opposition. As for Research, I wanted our field people to work with their research customers, legislators, and potential critics long before the actual move and before announcement in the press. I didn't want to try to close any office, where I had a choice, without thorough advance preparation.

ERM: You went that way once before.

VLH: And nearly lost a station closure in 1953. This time I worked closely with the Central States Station director, Dick [Richard] Lane. We first prepared a fact sheet which outlined that no project people or locations would be changed except that they would report to a different director's office. The director and his immediate staff would be transferred to new, comparable positions. About fifty thousand dollars would be saved annually by the consolidation. Modern communication, computers and other equipment made the change in organization timely. I don't recall all that we listed in the fact sheet, but these are examples. I kept in touch with Dick Lane's progress. The transition went smoothly; not a single hitch. He had personally contacted all key persons in his region and all congressmen and senators that would be involved.

ERM: Evidently you never got a single leak to the press.

VLH: That only happens when someone gets upset for some reason, such as lack of advance information about the move, or opposition that can't be resolved by discussion. Then he spreads the alarm and appeals to his congressman and senators for help in thwarting the change.

Dick Lane and I had had experience before in closing a research center in his station. This was in the early

sixties under very adverse circumstances. Secretary of Agriculture Freeman had announced in the press, without any advance warning to the Forest Service or others, the closing of certain field research centers, including several that belonged to the Agricultural Research Service and a couple of ours. Our politically vulnerable one was in Indiana. The chairman of the House subcommittee on appropriations was from Indiana, Congressman [Winfield Kirkpatrick] Denton. As I recall, the department, in collaboration with the Budget Bureau, had offered these closings, among other economies, as evidence of trimming out deadwood. The budget estimates submitted to Congress carried a substantial reduction due to these savings. The department apparently had obtained the locations of the two Forest Service research centers from its Office of Science and Education, where we had listed them for eventual transfer to other locations in accordance with our new ten-year research plan.

ERM: This was a bombshell.

VLH: Indeed it was. It left us between a rock and a hard place. We could do our best to close the center office and, if successful, it would be in accordance with our long-range plans, even though the timing was premature. Or we could sit back and let the opposition flow, with almost certainty that we would be ordered to keep the center office open. In either case, we stood to lose funds. We decided to fight for closing the center.

ERM: That means you'd have to go outside normal budget channels to recoup the loss?

VLH: It normally doesn't work that way. What usually happens is that you have to rob other research centers of funds to keep the office open. In this particular case it actually did develop that we got additional money outside of the normal budgetary process.

There was angry local opposition to the closing and it was not long in coming, in spite of all that Dick Lane could do in the short time available to prevent it. Copies of letters to congressmen and senators were sent from the Hill to the Forest Service for us to comment on. Our explanation of the closings did not satisfy legislators or constituents and there would be another round of correspondence. I dreaded having to face the chairman of the House subcommittee on appropriations when we would appear in defense of Forest Service budget estimates.

ERM: Who was that?

VLH: Congressman Denton of Indiana. He gave me a truly hard time. He held up a sheaf of letters of protest as proof that the closing was highly unpopular and perhaps stupid.

ERM: Were these people who were protesting from industry?

VLH: As I recall, some of them were. Others were people in the hometown of the center to be closed, including a minister, businessmen, and other citizens.

Following the hearings I telephoned Dick Lane to tell him the dismal news and to suggest that we both go to see Denton in his office. I had little hope that we could influence the outcome in regard to the center in Indiana; in fact, it appeared certain that we would not succeed in closing it. Nevertheless, I had some hope of retaining Denton's interest in our carefully planned ten-year program of research, an interest that he had expressed on previous occasions.

Congressman Denton greeted us with cool politeness. He soon relaxed as we expressed our concern for the political embarrassment that we had caused him, and explained our inability to have discussed with him and others in Indiana the closing of the center in advance of its abrupt announcement in the press. The congressman asked questions about the progress of our projected program as it pertained to the central states. He then surprised us by his support for closing stations that did not fit into the master plan, including the one in Indiana. Then he surprised us even more by asking how much more money we needed at Carbondale, Illinois, and Ames, Iowa, the two centers that also served forest problems of Indiana. Dick Lane replied that he needed \$150,000 at Carbondale and \$100,000 at Ames to fully staff the new research facilities that had recently been constructed at those locations. The congressman thanked us with appreciation for our visit to his office, invited us to have a Coke with him, and promised to help us all he could.

When the House bill with Forest Service appropriations was reported out, concurrence was given to the closing of the two centers--including the one in Indiana. The bill also contained increases above the Budget Bureau allowances for several research locations, including \$150,000 for increased staffing at our new Carbondale laboratory and \$100,000 for research at our laboratory in Ames, Iowa.

ERM: He had gone to bat with the Appropriations Subcommittee.

- VLH: Yes, as chairman, he, of course, had influence. The subcommittee, however, as well as the full Committee on Appropriations of the House, was already sold on the projected program.
- ERM: What about the changes in the nature of the Forest Utilization Service, the FUS units at regional stations? How would you describe that?
- VLH: There were two main policy changes in the original Forest Utilization Service, which was located at regional stations. The first came in the 1950s and the second in 1965. To understand these changes, one must begin with the origin of FUS. In the ending days of World War II, the Forest Products Laboratory at Madison, Wisconsin, the Washington office division of Forest Products, and Ed Kotok, assistant chief for Research, agreed that a two-man unit should be established at each station, whose duties were to act as service agents of the Madison FPL. The FUS units would disseminate FPL research findings to forest industries in their respective regions and collect problems of the industries for funneling to the FPL for the needed research. Accordingly, in 1945 as I recall, funds were obtained from Congress to establish the FUS units.
- ERM: In other words, if the service units could not deal with the problems at the local level, the problems of the industries would be sent back to the big station at Madison.
- VLH: Yes, to Madison where laboratory facilities and skills were available to do that kind of research. In effect, this arrangement was in accordance with Earle Clapp's philosophy of the 1920s: all Forest Service research requiring fundamental studies of a laboratory nature would be done at Madison, leaving for the regional stations the field experimentation of a local or regional nature.*

However, questions soon developed that cast a shadow on the practice of having forest products units at stations whose functions were restricted solely to serving as field agents of the FPL. There were many regional wood utilization problems that could be handled more expeditiously by research at the stations, and local pressures of the wood industries favored forest products research units at stations as well as centralized,

*See page 155 of A National Program of Forest Research.

complex research at the national laboratory in Madison. Therefore, in the early 1950s we sought additional funding for modest utilization research units at stations. They were often located at research centers rather than at station headquarters. Their purpose was to handle forest products research of a local or regional character, often in cooperation with the Madison laboratory. We still maintained the "service" function, however, of the original FUS units, in addition to research.

By the early 1960s the regional pressures for more forest products research at the stations became more intense, resulting, in one instance, in considerable political pressure for the establishment of a Forest Products Laboratory in the South comparable in skills and equipment to FPL in Madison. To help explain to our research clients as well as to clarify policy within the Forest Service research organization itself, I had a special booklet prepared, and widely distributed, that showed by use of organization charts, illustrations, and description the nature of the forest products utilization research at stations, its relation to other research of the stations, and the cooperative link between the FPL and the station forest products utilization research units.* The term service was eliminated from the name of the utilization research units, although it would not be until 1965 that the service aspect itself would be transferred out of stations to State and Private Forestry.

ERM: Was this change in policy and its explanation accepted by all concerned?

VLH: Yes, after much discussion in which the FPL, the Division of Forest Products Research in Washington, and I participated in carefully developing the phraseology and contents of the booklet Focus on Research, A Look into Wood Utilization Research. The Division of Information and Education, of which Clint Davis was director at that time, helped us prepare the text of the booklet and edited it for publication. Both the FPL and original FUS employees were reluctant to see the service aspect of the station units "demoted" by the decision to drop the term from the name, but the FPL was relieved that I was not yielding to pressures

*USDA, Forest Service, Focus on Research: A Look into Wood Utilization Research Activities of the Forest Service, PA-615 (Washington, D.C.: GPO, 1964).

for establishment of regional forest products laboratories on the general pattern of the Madison establishment. The station directors were well satisfied, of course, with the newly articulated policy. The policy had existed since the early fifties, and now they had a booklet for distribution that spelled out how the policy was being implemented.

Only the Louisiana Forestry Association was visibly disappointed in the policy and the booklet. It had protested vigorously to the Southern Station and me, my decision not to program the construction of a major forest products laboratory in the South. They had appealed my decision to higher authority in the executive branch of government and had enlisted the help of Senator Ellender from Louisiana, a senior member of the Senate Appropriations Committee, in an attempt to persuade the appropriations committee chairman, Senator Hayden, to add that item to the Forest Service budget and to direct that the lab be constructed.

In telling me about the incident, Senator Hayden's clerk of the subcommittee before which the Forest Service appeared for hearings said: "Senator Hayden turned down the request of Senator Ellender on grounds that you told him it was not in accordance with the projected program and that the Forest Service was opposed to it." In spite of initial bitterness over this setback, the Louisiana Forestry Association eventually became quite happy with the progress of forest products research, which shared space with several other station projects in our new research facilities at Pineville, Louisiana.

ERM: How well did the forest utilization research units work out at the stations? Were they productive?

VLH: They worked out very well during my time, and subsequently I have read about their continued good progress. For example, the project under Peter Koch's leadership in the small (compared to the Madison FPL complex) but well-equipped forest products laboratory at Pineville, Louisiana, has been remarkably innovative and productive of new wood processing methods and new equipment and machinery for southern pine utilization. And the housing research under Richard F. Bloomquist's leadership at the Forest Service's Forestry Sciences Laboratory on the campus of the University of Georgia at Athens has made good progress.

ERM: What was the second change in policy in regard to these units--the one in 1965?

VLH: That change was made as a result of the Bureau of Budget

review of the Forest Service's organization in 1965. As part of the reorganization of S and PF and its added mission of research applications, the service function of Forest Utilization Research at the stations was transferred to S and PF. It was a logical move that I initiated; I was glad to put forest products research at stations on the same footing as other research projects.

ERM: Did this require transfer of personnel from Research to S and PF?

VLH: Yes, it included transfer of some of the Utilization project people to S and PF. As a matter of fact, in the next few years following reorganization, many Research people were transferred to S and PF, some to fill top positions in both Washington and the field.

ERM: What checks and balances did you initiate to consolidate all these various gains that had been made in Research support, Research legislation, Research administration, and reorganization? What did you do to put a capstone on all that and set up some system of inspection and guidance to the people under the Research banner of the Forest Service?

VLH: There were several new policies and procedures of that nature. Some were developed during the preparation of the projected research program, and some done as final actions designed to make sure the stations understood the changes. I'll mention the more important.

A multiple-purpose reporting system was designed for obtaining information annually from stations by line projects--date of establishment, research progress, number of personnel assigned, publications planned and completed, costs of the project, and the like. This reporting system gave the Washington office and station the information needed for internal use, and more importantly, it provided a time-saving feature at the Washington level: without having to go back to the stations, answers could be supplied quickly to many questions during the course of the year from external sources such as Congress, Bureau of Budget, and the department's finance and budget people.

New outlets for publishing research findings were developed through wider use of scientific journals; a means was developed to better identify and number papers and notes published by stations in order to facilitate their handling by libraries and others.

In collaboration with Administration, Research

established a task force to make a field study of the workload and relationship of station management to the present and projected research program of a station with the aim of improving research support services to project leaders and their teams of scientists. The report of the task force was published in June 1966.*

Overhaul and revision of the inspection system for Research introduced a new type of Washington Office inspection of field research. Called the General Research Inspection, it was to be made at intervals of five years for each station by the deputy chief--or associate deputy chief--and an assistant to the deputy chief.

During the last week of my term as deputy chief I completely rewrote the research portion of the Forest Service Manual. Excerpts of the Manual were then put in a special publication as a handy reference to "policy, definitions, and procedures that each Forest Service researcher, from bench scientists to director, needs to know in order to formulate and carry out research programs."**

I think I have already talked about this last item and perhaps some of the others, too, during our discussion of related topics.

ERM: In regard to the multiple-purpose reporting system, wouldn't the information needed have been a part normally of the director's annual report?

VLH: No.

ERM: It goes beyond that?

VLH: The multiple-purpose report yielded information way beyond that normally found in the station annual reports and, in fact, considerably beyond that required by the department's uniform project system. We needed the additional information for our own internal planning and control and the detailed data that we obtained were frequently called upon to respond to external requests. The annual reports of

*USDA, Forest Service, A Guide for Strengthening Research Support Services (Washington, D.C.: GPO, 1966).

**Guide for Forest Research Scientists (1965), p. ii.

stations normally did not provide detailed information on personnel assignments, project costs, et cetera, especially as the stations grew in size and complexity. Moreover, the quality of the reports varied widely among stations, depending upon the time and energy that the directors personally dedicated to the task of preparing them.

For many years the station annual report was a Washington office requirement. I abolished that requirement in the early fifties. Each station was told it could continue its annual report or choose an alternative method of reporting to its clientele. Most chose alternative ways of keeping in touch with their research customers. The Forest Products Laboratory is the only unit that I can recall to maintain a continuous record of annual reports, and the style and character of its reports have changed several times.

The credit for designing the multiple-purpose system of project reporting belongs largely to Ivan H. Sims, staff assistant in my office during the 1950s. He was followed by Thomas Lotti, who revised it periodically to keep abreast of needs. During the 1960s, after the department created the Office of Science and Education, Science Director Nyle Brady made frequent requests for special reports involving detailed project data. Our one-shot annual system of gathering detailed information from the field enabled Lotti to supply the required special report information in a matter of hours. In contrast, ARS, because it had to go to the field for each special request, normally required a minimum of two weeks for its response. This great difference in response time attracted the attention of Brady. He established a task force to study the Forest Service system with the view of adopting it, or a version of it, department-wide. Tom Lotti was a principal participant in that study.

ERM: Did the new outlets for publishing research findings include external as well as internal outlets?

VLH: Yes. Our emphasis on external outlets was for our basic scientific findings, the normal first appearances for the results of scientific research. In 1955 I strongly endorsed and gave substantial support to a proposal by Steve [Stephen Hopkins] Spurr, then a professor in the Forestry Department of the School of Natural Resources at the University of Michigan, to have the Society of American Foresters publish a new monthly journal devoted to scientific articles in forestry. Forest Science was the result. Steve Spurr was the first editor of Forest Science; I served on

its editorial board for ten years, 1955 through 1965. I had offered Henry Clepper (executive vice-president of SAF) financial support of this new venture, in the event of need, by liberal purchase of reprints of Forest Service authors, but the new journal paid its own way from the start through subscription and normal reprint purchases. In addition, we encouraged publication of scientific articles in the many journal outlets represented in the thirty-five or more disciplines that characterized our research organization.

Research publications designed for the practitioner had outlets in USDA bulletins and circulars, in Forest Service papers and notes, and in professional and trade journals. One important improvement was the complete overhaul and revision of the haphazard system of papers and notes that were being published by stations and other research units of the Forest Service, each acting independently of the other. We settled on three types of Forest Service research publications, as I recall: General Technical Reports, Research Papers, and Research Notes. Each was to be identified by a number, preceded by the initials of the issuing unit and the phrase "USDA Forest Service." Examples: USDA Forest Service General Technical Report WO-1; USDA Forest Service Research Paper SE-145; USDA Forest Service Research Note FPL-22.

ERM: According to the task force report, Station Management was to become Support Services. That includes library service as well as the other more traditional things such as administrative support through procurement of supplies and equipment, financial management services, and the like?

VLH: Yes, it does. Support Services, during the mid-sixties normally embraced four main activities of a station: Information Services--library, editor, visual aids, publication production, and information dissemination; Biometrics Systems--statistical analysis methods, computer programming, data processing, computing, biometric research; Facilities Engineering--planning and design of research structures and facilities, plant engineering, instrumentation; Operation--administrative services, budget and finance, personnel management.

Support Services was headed by an assistant director of the station and each of the four subdivisions by competent and well-trained persons. One main purpose of the task force study was to highlight the importance of Support Services to the entire research enterprise

and to define the career opportunities in this field in order to attract and hold well-trained people.

ERM: And to give Support Services more glamour.

VLH: Of course.

ERM: How about the General Research Inspection. What was its purpose? How did it originate?

VLH: The General Research Inspection (GRI) was recommended by me about 1960, when our research began to expand very rapidly, and was approved by chief and staff. The GRI was designed to fill a critical gap in the Washington office inspection system of field units. That system, as it applied to stations at that time, consisted of a General Functional Inspection (GFI) made periodically by a Washington office research division director and a General Integrating Inspection (GII) of a station and neighboring national forest region, made at periodic intervals by a deputy chief and the chief inspector of the Forest Service. The GFI reviewed activities in some detail in certain research fields, while the GII looked into policy matters of Service-wide importance, major regional problems, and overall in-service and external relationships. The gap between these two inspections was to be bridged by the GRI, made by the deputy chief or associate deputy chief for Research. Neither the GII nor the GFI concerned itself very deeply with such matters as research program development and balance, station organization, coordination of project research activities, and effectiveness of station Support Services. The GRI was designed specifically to deal with such matters.

The GRI report which I cited earlier in our discussion describes on page 2 the purpose and scope of a GRI, and the report as a whole illustrates the nature, tone, and content of a GRI.*

ERM: How long would these inspections usually last?

VLH: Two to three weeks for a given station. GRIs were made at intervals of five years.

ERM: Did you ever find it necessary to alter the routine of this interval and call for a special inspection, apart from the regular five-year schedule?

*Report of General Research Inspection, Southern Forest Experiment Station.

- VLH: Yes, trouble-shooting trips were made frequently to look into a new situation or problem.
- ERM: In other words, if there was a call for help, or if you were aware of a growing problem for which there was no call for help, you could go to a station and deal with it. And you or Jemison generally did that, too?
- VLH: Generally, either Jemison or I would go. Sometimes, however, another member of the Research staff was dispatched for that purpose. If the problem was in the research support bailiwick, a member of the staff of Administration might look into it.
- ERM: The important thing to note here is that the General Research Inspection was a new development in the research inspection procedure.
- VLH: That is correct. It was an added inspection to fill a new and critical need of the time.
- ERM: The Guide for Forest Service Scientists is the publication that put a capstone on all the new developments to date and provided manual guidance regarding those developments to field research people. Has this Guide been revised and kept up-to-date as further new developments on procedures were made?
- VLH: As I said, I prepared this Guide just before I left the Service in 1965. I know it was revised once during the latter part of the 1960s, and I assume it has been revised further since then. The basic document, of course, is the Forest Service Manual; it is a loose-leaf affair that is revised whenever a change is made in policy or procedure. The Guide consists, for the most part, of excerpts from the Manual.

International Forestry

ERM: Les, you've played a rather important role in international forestry. First of all, perhaps you can explain why this activity is now lodged in the Research branch of the Forest Service.

VLH: I assume the principal reason is that there hasn't been a compelling reason to place it elsewhere in the Service. In the early days, up to World War II, the Forest Service's involvement in foreign forestry was confined largely to research. Many Forest Service researchers, notably Raphael Zon and William Sparhawk, kept up with foreign developments in forest science, policy, and practices through library research and occasional overseas travel. And during World War II, Al [Albert C.] Cline headed a project in the Division of Forest Economics of the Research Branch that studied forest resources of certain foreign countries, a project under contract with U.S. intelligence agencies. After the war, the Forest Service broadened its international activities beyond the research interest. Notwithstanding the broadened interest and a growing participation, the primary responsibility for international forestry as a whole remained in Research. Research had the concern and gave the kind of leadership to it that would have been hard to find elsewhere in the Service during the postwar decades of the rapid development of Forest Service involvement in international activities.

I don't want to leave the impression that this organizational arrangement went unchallenged. For in 1951, about a year after I was appointed assistant chief for Research, Earl Loveridge, assistant chief for Administration, proposed to chief and staff that primary responsibility for looking after international forestry be assigned to either State and Private Forestry or Administration. His reasons were that the character of Forest Service involvement had changed from research to largely technical assistance to developing countries; that S and PF had expertise in the technical assistance field through its domestic program

of support to states for service assistance to owners of small forest land; and that much of the international staff work was already being done by Administration--recruitment and personnel actions, travel arrangements, etc.--in connection with foreign technical assistance.

Chief and staff rejected the Loveridge proposal in favor of leaving international forestry in Research. Lyle F. Watts, then chief of the Forest Service, felt strongly about the matter. It was his wish that I give that activity its needed leadership through the critical years of its early development and growth. He wanted to see the Forest Service play a major role in international forestry.

ERM: What were some of the things you did in that area?

VLH: I have a list here of things I did or helped to do. The list shows six principal areas: (1) organization of the Forest Service international effort to deal with that activity; (2) participation in the affairs and activities sponsored by the Food and Agriculture Organization of the United Nations (FAO); (3) the world forestry congresses; (4) the International Union of Forestry Research Organizations (IUFRO); (5), the Public Law 480 grant program for forestry research at foreign institutions; (6) the International Union of Societies of Foresters.

Under "organizing the effort" there were three principal activities. The first involved creating a more effective organizational arrangement within the Forest Service itself. Work being done in various divisions was gradually brought together in a single unit attached to my office. It was first called Foreign Forestry Unit and was headed by Al Cline until his retirement in 1961; it was then changed to Foreign Forestry Services, with Robert K. Winters as director. (Later it became Division of International Forestry and now it is the International Forestry Staff.) Both Cline and Winters were capable leaders with deep interest in international work.

The second action was to personally participate in all department committees and meetings that involved policy matters relating to USDA involvement in United States bilateral technical assistance programs, exchange of visiting teams of specialists with the Soviet Union, and whatever.

My third organizing effort was to become a regular

member of the government interagency committee pertaining to FAO and other United Nations activities that involved programs in agriculture and forestry. Interagency committee work consisted mainly of discussion of U.S. policy, and position papers relating to international meetings.

ERM: To what extent would you say that your organizing efforts contributed to a broadening of the scope of Forest Service participation in international forestry, as well as making its involvement more effective?

VLH: There isn't any question about it, they were highly effective in making both broadening of scope and effective participation possible. Organized as we became within the Forest Service, we were able to bring good staff support for our involvements, whether for U.S. training programs and schedules for foreign visitors, studies of forest resources of foreign countries, or preparations for international meetings.

Moreover, because of my regular and active participation on the policy level in departmental and interagency deliberations relative to international agriculture and forestry, I was able to develop excellent working relations with other government agencies, and especially the State Department, which greatly facilitated Forest Service participation in international forestry. For example, I had ready access to people in the State Department who dealt with United States' hosting of international meetings and of U.S. participation in meetings in other countries, as well as access to American embassies abroad that greatly facilitated our travel arrangements and participation in forestry meetings.

All this in turn led to a broadening of the scope of Forest Service interest and effective participation in international forestry affairs, as is indicated by the rapidly growing list of Forest Service involvements in that area during my time.

ERM: How were the international activities of the Forest Service financed? Did you have a line item in your budget for this purpose, or did you make assessments against congressional appropriations for other specific items in order to meet these costs?

VLH: To a large extent, Forest Service participation was supported under contractual arrangements with government agencies having direct responsibility for the work: for example, the forest resource studies of certain

foreign countries were supported by the Central Intelligence Agency, the Defense Department, and others directly concerned with international security. The training work for foreign nationals in the United States was supported by the Agency for International Development in the Department of State, as was the assignment of Forest Service personnel to foreign countries in behalf of AID; and the State Department financed the travel of leaders of the more important U.S. official delegations to international meetings.

Beyond these costs, there were certain expenses, of course, that were borne by the Forest Service through assessment against its regular budget items. General assessments, meaning those against all Forest Service activities, supported some of the costs of my international forestry staff, and assessments against research items alone supported my time on international forestry and the time and travel of research personnel in connection with international research organizations and meetings.

I was one of the leading exponents in policy meetings of the interagency committee for having the agency which had direct responsibility for international work provide funds to cooperating government agencies for their administrative as well as direct costs. We won our case against considerable initial resistance from the State Department and AID, who claimed that it was the policy of the president that all departments should cooperate in carrying out international work of the U.S. government. But their case was weakened in the face of developing congressional sentiment that favored funding of reasonable costs of the cooperating agency by the agency that had responsibility by law for the activity.

FAO affairs and activities comprised the second category of our participation in international forestry. In this class were the preparation for and participation in the work of the U.S. delegation to the FAO conferences, which were held in Rome at two-year intervals, and participation in the meetings of the Latin American and North American forestry commissions. I was a regular member, as the forestry delegate, of the U.S. delegation to the FAO conferences in Rome during most of the 1950s, but skipped most of the conferences in the 1960s. I regularly headed the U.S. delegations to the FAO Latin American forestry meetings, held every two years, and chaired the Latin American Forestry Research Committee, a subsidiary body of the commission. I also played the leading role in organizing the North American Forestry Commission.

ERM: Did these initial trips to Rome stimulate your interest in international forestry?

VLH: They certainly helped. Like other people, when first introduced to foreign travel I was attracted by the glamour of it all, the great differences in cultures of countries, and in seeing firsthand the historical institutions and sites of older civilizations. Nevertheless, the motive that really sustained my efforts was the fact that international forestry was one of my Forest Service responsibilities and I felt obligated to redeem that trust.

I'd had no experience in international travel and meetings prior to 1951 when Lyle Watts, then chief of the Forest Service, asked me to accompany him to Rome to the FAO conference that was being held for the first time in its new headquarters in that city, following its move from Washington, D.C., in 1950. To help justify my addition to the U.S. delegation, Watts had me schedule a trip to Greece and France as an extension of the one to Rome.

Watts was designated by the FAO Forestry Division as chairman of the forestry committee, which was comprised of forestry delegates from member countries. This left me to be the spokesman for the U.S. at the committee meetings. Because of this capacity I was also made chairman of a subcommittee composed of selected delegates from both the forestry and agricultural committees to consider the question of adding work on livestock grazing in forest ranges to the program of FAO.

It was the position of the U.S. delegation that FAO should deal with forest ranges, and we had advance knowledge that the Forestry Division wished to undertake such work. However, the Agricultural Division of FAO had questioned within the FAO family circle the need for this work, in view of the grazing activities already going on in the Pasture Branch of the Agricultural Division. It was the hope of the Forestry Division that I could persuade the subcommittee to recommend the forest-range problem for FAO attention in its upcoming program. I was to report back the next morning to the forestry committee the results of our subcommittee session.

The subcommittee session went poorly. We lacked simultaneous interpretation from one language to another, and neither the forestry nor agricultural delegates understood how forest ranges might be managed for mutual benefit of livestock and forest. The forestry

delegates looked upon grazing animals as serious pests which should be eliminated if possible. The agricultural delegates were curious about my use of the word range. They first thought I was talking about geographical mountain ranges. In the end, our allotted time was up and we had accomplished nothing.

Later that evening I told Lyle Watts what had happened. He said he was not surprised. He had not expected the subcommittee to endorse the proposal. When I asked Lyle for suggestions on how I might promote the range work in forestry committee the next day, he replied, "Frankly, I don't know what can be done. I'm afraid the proposal will not get the needed support for a resolution calling on the Forestry Division to initiate forest-range work." I spent much of that night thinking about strategy for gaining the needed support.

This was all very new to me, but I had the advice and counsel of a good friend, Ted Haig, for whom I had worked in the Forest Service during the late 1930s. Haig had joined the forestry staff of FAO in 1951. With his back-room coaching on who's who among the forestry delegates, their interests, and likelihood for support of a resolution for the range work, I managed to maneuver a proposal to successful passage that called upon FAO to expand its forestry program to include livestock grazing on land within and related to forests. My apparent aptitude for this sort of work and achievement at this FAO conference probably was decisive in influencing Watts to leave international forestry with Research.

My further trip to Greece and France was equally new and impressive. I was met in style by a car and driver from the American embassy and delivered to the hands of Forest Service nationals who then took me on a week-long tour of their respective nations' forests. In each case my guide was a government forest officer who had previously visited the United States as a guest of the U.S. Forest Service under a U.S. government program that had financed his trip.

In northern Greece in December with temperatures well below freezing, I slept in small-town hotel rooms that were unheated and wholly without running water. I ate in restaurants where the cook stove served both as buffet and space heater. I saw goats on eroded hill-sides eating brush and other plants to their very roots; saw herdsmen, each with his scrawny dog, an American-made cigarette lighter, and an empty cigarette pack. My return trip to Athens to attend a banquet arranged by the Greek forest service in my honor was planned to

take eight hours by jeep. We were slowed during a snowstorm in traffic jams on mountain roads so we decided to store the jeep and proceed by train. But the train was six hours late. When we reached Athens the banquet was over.

France was a contrast. Lodgings in small towns were warm and comfortable. Woods and mill practices were less wasteful than ours, although not efficient by our standards. Light, selective harvesting of trees was done in national parks. Big tall oak trees that were sold as individual trees to plywood plants by the French forest service from state forests were felled by axmen, whose procedure was to first climb the tree to trim off branches and to top it, then to dig a two-foot trench at its base, and finally to fell the branchless bole by axe that left the stump height eighteen inches below ground. Branch wood and chips were carried home by the two-man axe crew for firewood as a bonus.

One highlight of the trip was a visit to a hunting lodge with well-filled stables of horses and foxhounds, and a hunting horn that was played to show me how it all went.

A highlight of each day, which started at 10 a.m. and went to 3 p.m. without break, was the stop for lunch. My host would remark as three o'clock approached, "I know of a little place ahead where we can get food and drink." The food turned out to be a multicourse dinner, preceded by American cocktails, presumably in my honor, and accompanied by a bottle of French dinner wine, painstakingly and ceremoniously selected by my host from an assortment of dust-covered bottles directly fetched from the cellar.

All this was heady stuff, to be sure, for a neophyte, and I can't say I didn't enjoy it. But beyond unforgettable personal experiences, I was stimulated to believe that American forestry had much to learn from, as well as to give to, international forestry. It was this basic belief that urged me on to develop more and more involvement of the Forest Service and other U.S. agencies and individuals in world forestry.

ERM: I suppose you found these foreign trips provided you with a pretty good forum for spreading the word about what was going on in the U.S. research area and also building further the prestige of American forestry, particularly that of the federal government, is that right?

VLH: That's right. And it wasn't long before many others,

both in the Forest Service and outside, became active in one way or another in international forestry. This was particularly true in regard to IUFRO and the World Forestry congresses, both designed for exchange of ideas and information among nationals of various countries.

Along the line of your question, there was another kind of benefit to Forest Service research, a department in-house benefit, that derived from the close working relations of members of the early U.S. delegations to the FAO Rome conferences. In the early years of FAO, after its move from Washington to Rome, the U.S. delegation was always led by either the secretary of Agriculture (Charles Brannon in 1951) or an assistant secretary (John Davis in 1953), and included several other top level people in the department. We developed U.S. positions in principle as a group in early morning meetings of the delegation at the American embassy, and then allowed each member much freedom in dealing with issues as they arose in their respective meetings during the day. During these three-week sessions in Rome we naturally became well acquainted, at times mixing family with business. I'm sure the FAO conferences of 1951 and 1953 were largely instrumental in my gaining ready access to, and acceptance by, the department's inner councils on research policy and coordination. The prestige of the Forest Service and of its research program was thus enhanced within the department, via the international route.

ERM: Did the department's top echelon continue to lead the U.S. delegation to the FAO conferences in Rome after those early years? Or was this early period one of breaking new ground that required on-the-spot high-level government participation?

VLH: As time went on after the early 1950s, the U.S. delegation was not as a rule led by the secretary or an assistant secretary. That task usually was delegated to lesser officials, whose duty it was to make sure that no member of the delegation departed from written position papers prepared in advance in Washington. The early period was one of excitement, high hopes, and innovation in regard to FAO policies and programs. Cultivating and weeding old programs had less appeal than working in the vineyard of new policies and programs. Member governments of FAO after the first few years appeared to lack the desire or will to break new ground. Perhaps there was no new ground left.

ERM: Why do you think that was so? Would you say FAO shared in this growing apathy?

- VLH: I can speak only for my time, 1951 to 1966. What has happened since is beyond my knowledge, except for what I read about all United Nations bodies. I suspect that FAO has continued to slip in world opinion along with the other government sponsored bodies, as poverty and hunger in the third world have persisted and program disappointments have given way to a measure of national disillusionments. FAO, like other specialized agencies of the U.N. became increasingly possessed with problems and interests of the developing nations, and member governments increasingly became more oriented to national self-interests. In the face of this situation, I would say that many officials in FAO shared in growing frustrations about its mission. I know how several of the forestry officials appeared to me when I last visited their offices in Rome in 1970: a study in weariness and harrassment as they gave sidelong glances at heaps of paperwork awaiting attention and talked of dwindling budgets, rising costs of doing business, and other problems.
- ERM: What was the nature and purpose of the regional forestry commissions sponsored by FAO?
- VLH: They were sponsored by FAO as a means by which countries in a given geographic region could get together every two years to exchange information on their respective forest policies and programs, and for the purpose of making regional recommendations about programs which FAO should carry out. Initially, soon after the creation of FAO itself, there were forestry commissions established in Europe, Asia, and Latin America.
- ERM: The Forest Service became an active participant in the Latin American Forestry Commission, is that right? Why this commission and not the others?
- VLH: Yes, we were active participants in the FAO-LAFC. We were not active participants in the others because we had no national forestry programs within the regional scope of the other commissions. Our national forest and our research station in Puerto Rico were the program reasons that made U.S. membership in the Latin American Commission attractive. Frank Wadsworth, director of our Tropical Institute of Forestry in Puerto Rico, has long been a leader in world tropical forestry and has been active in the LAFC. Wadsworth succeeded me as chairman of the LAFC Forestry Research Committee in 1961.
- ERM: When was the North American Forestry Commission established?

VLH: In 1961. That was the date of the first meeting in Mexico City. Actually, the bylaws for its establishment were approved by FAO and the U.S. State Department in 1960.

ERM: Why wasn't this commission established at the same time as the others? Was its purpose different?

VLH: Its purpose was similar to the others except that the NAFC placed more emphasis on its independence of services from FAO. But, like the other commissions, its purpose was mutual benefits from programs such as exchange of information and techniques on problems of member countries. In the case of NAFC, the initial program interest was on forest fires, insects and diseases, forest genetics, and wildlife. The reason the NAFC was not established sooner is a matter of long history.

Mexico favored establishment of a North American commission from the beginning of FAO and repeatedly made a request to each successive conference in Rome for that action. FAO agreed to act on the proposal only if Canada and the U.S. also favored establishment. As forestry spokesman for the U.S. delegation, I repeatedly endorsed the Mexican request and said the U.S. would participate if the commission were established. Canada, however, repeatedly questioned the need for the commission and asked for further time to study the idea. During the latter part of the 1950s, the head of the U.S. delegation, Ralph Roberts, asked me to seek a definite answer from Canada and to be prepared to lay the whole matter to rest at the next FAO conference.

My first move was to determine FAO's precise position regarding the proposed North American Forestry Commission. I discovered its attitude had changed since the Mexican request had first been made. It now would support the establishment of NAFC only on condition that it would cost FAO nothing. Servicing the three existing regional commissions had proved to be a larger drain on the organization's resources than originally contemplated, and any new commitments against its current forestry budget would have to be for programs wholly oriented to the needs of developing countries.

Secondly, with the help of Ralph Phillips, then head of the International Organizations Unit in the Department of Agriculture, I prepared a draft of bylaws that would have Mexico, Canada, and the U.S. taking turns in hosting the forestry commission meetings; have Spanish and English as official languages; and have each country providing the president and secretary for

the commission during the two-year period of its turn as host. Our State Department agreed to provide an operations officer, simultaneous language interpretation services, and translation and report preparation for the periodic meetings to be hosted by the U.S.

Thirdly, I sent copies of the draft of the proposed bylaws to Canada and Mexico, and to FAO through the State Department, asking for reviews. Along with the copy to Canada, I wrote Jack Harrison, then director of the Canadian forest service, asking him to set up a meeting in which Phillips and I could answer questions regarding the proposed commission.

When we arrived, Harrison was still stalling by questioning the need for the commission. However, he changed abruptly when I suggested that Phillips and I would talk to people in other Canadian departments and we might consider going ahead with establishment of the commission if, for example, the forest insect people lodged in one of the other departments wished to join. It was no secret that M. M. Prebble, head of the Canadian forest insect work, wanted to join. Harrison said he would call a meeting in his office the next day at which representatives of the forest insect division and persons of any other units interested would be present to discuss Canada's position regarding the proposal.

Harrison announced at this next meeting his decision as head of forestry work to recommend that Canada support establishment of the commission and invited the other organizational units to join him in his recommendation. An external affairs officer had already informed him, he remarked, that there would be no objection to Canada's membership.

My fourth and last organizing job for the commission was to revise the bylaws in accordance with comments from reviewers. Most of the revisions were minor, but one involved a technicality from the viewpoint of the legal office of FAO. Our State Department was advised by FAO that we could not use the term secretary because that term would imply, according to the FAO constitution, an FAO commitment to provide the indicated service. The term rapporteur was suggested as an FAO acceptable alternative. We agreed.

Following the 1960 World Forestry Congress in Seattle, McArdle and I met with Enrique Beltran of Mexico to plan the sequence of meetings of the new commission. Beltran agreed to host the first meeting in 1961 in Mexico City and thus start the rotation which would

then make Canada host in 1963 and the United States in 1965, according to the schedule that I had proposed. I was to serve as rapporteur for the commission until its meeting in Mexico City and I promised to initiate the establishment of at least three committees who would report their respective proposals for work programs at the first commission meeting in Mexico City.

ERM: The Fifth World Forestry Congress was held in Seattle, Washington, in 1960. How was the decision made to hold this congress in the United States?

VLH: The final decision to recommend to the FAO council that the United States was willing to host the Fifth World Forestry Congress was, of course, made by the U.S. State Department. The FAO council approved the recommendation. The U.S. decision was preceded by a number of steps.

As early as 1952, Lyle Watts asked me to arrange a meeting of representatives of public and private forestry organizations to consider whether the United States should offer to host the next congress. He predicted that their reactions would be negative; nevertheless, he felt we should give them a chance to formally consider the matter. I prepared background material on procedures and costs, including the hard fact that the private sector would have to bear some of the costs. As Watts anticipated, the responses at the meeting were nearly all negative. The costs were seen as far exceeding benefits.

ERM: Who were some of the nongovernment people at the meeting?

VLH: I can't recall their names from memory. However, we invited representatives from all national conservation, forestry, and forest products organizations. Included, of course, were people from the Society of American Foresters and the American Forestry Association. In fact, Henry Clepper helped prepare the list of invitees.

The results of this meeting showed quite plainly that a promotional program would be needed to develop public sentiment in favor of bringing a world forestry congress to the United States. Such a program began in 1955 when the Western Forestry and Conservation Association urged that the Fifth World Forestry Congress be invited to the U.S. As the newly appointed chairman of the International Affairs Committee of the Society, I encouraged other organizations to consider the

question. The results were similar resolutions in 1956 by the Society of American Foresters, the American Forestry Association, and the Forest Farmers Association. At Henry Clepper's suggestion, I also prepared informational flyers about the World Forestry Congresses that could be distributed at meetings of various organizations; also an article for publication in American Forests.^{*} Sentiment in favor of bringing the congress to the United States soon began to mount, and the U.S. government in 1957 made the official offer to host the Fifth World Forestry Congress in 1960. It was promptly accepted.

Accompanied by E. F. Heacox of Weyerhaeuser Company and a member of the council of SAF, Stuart Moir of the Western Forestry and Conservation Association, Corydon Wagner of St. Paul and Tacoma Lumber Company, and Dean Gordon D. Marckworth of the College of Forestry at the University of Washington, I called upon Henry Schmitz, a forester and then president of the University of Washington, in search of a site for the congress. Schmitz offered his university facilities, and these, together with the Seattle hotels, seemed adequate to accommodate the two thousand participants which I had established as a key planning statistic. Ted Haig took early retirement from FAO to rejoin the Forest Service for a couple of years in order to help us organize and operate the congress. The story of the congress itself is contained in its proceedings.**

ERM: Were the proceedings of this congress published?

VLH: Yes, in three volumes.

ERM: Who published them?

VLH: The Organizing Committee of the Fifth World Forestry Congress was responsible for this task. Actually, the Executive Committee of the organizing body, of which I was chairman, made the arrangements to have this done. The work of compiling, editing, design, and other things one must do was contributed by staff members of the Forest Service under the leadership of

^{*}V. L. Harper, "The Fifth World Forestry Congress," American Forests 62 (November 1956): 6-55.

^{**}Proceedings of the Fifth World Forestry Congress, 3 vols. (Washington, D.C.: Organizing Committee of the Fifth World Forestry Congress, 1960).

Clint Davis, director of the Division of Information and Education. Printing was contracted out to a private printer in Washington, D.C.

ERM: Did the published proceedings go only to members of the congress who had paid registration fees or were some copies also made available for sale to the public?

VLH: Several hundred extra copies beyond those needed for fee-paying members of the congress were printed and we tried to sell them to the public. We had little success. The cost of printing and mailing the three volumes of the proceedings to members of the congress greatly exceeded the funds we had available from all sources--registration fees, industry and other cash contributions, and sales to the public. This deficit was met through purchase by the Forest Service of the entire stock of unsold copies, which then enabled the Executive Committee to pay the remaining balance for printing and mailing. Some of the acquired copies were sent by the Forest Service to its field units and the rest were held in stock to fill special requests from libraries and other organizations.

ERM: Do you think the Fifth World Forestry Congress performed a service in bringing so many participants from other lands to this country?

VLH: Yes, I'm sure it did. And it was widely appreciated and applauded by the participants. It was the first such congress to be held in the western hemisphere and in a measure helped repay an earlier debt to European forestry from which we had gained so much.

On the domestic front it was a success also. For the first time that I could remember, everyone, private and public, individuals and organizations alike, with an interest in forests and forestry worked harmoniously as they prepared and conducted field tours, provided home entertainment, sponsored social functions, and did all the other things it takes to stage a big international meeting. The only jarring note of any consequence came when Patrick Goldsworthy, president of the North Cascade Conservation Council and an active member of the Sierra Club, distributed Sierra Club anti-multiple use literature at one of the meetings. The incident was more upsetting to some of the Americans than to foreign participants, who were not unaccustomed to anti-tactics from dissenting segments of their respective peoples. The incident is noteworthy since it foreshadowed a barrage of protest yet to come in the ensuing years of the 1960s as the era of environmental activism unfolded.

ERM: You laid the groundwork which permitted the Forest Service research organization to rejoin the International Union of Forestry Research Organizations in 1956. What provoked your activity in that area?

VLH: My belief that Forest Service researchers needed the opportunity to exchange ideas and information with research scientists of other countries. The Forest Service had been a member of IUFRO for several years prior to World War II. After the war and the advent of FAO it became the policy of FAO to absorb the work of all international forestry bodies, including IUFRO. When I became Chief of Research in 1951, I was told by Lyle Watts that it was Forest Service and U.S. government policy to support FAO's attempt at taking over international forestry research and that the U.S. Forest Service was not to rejoin IUFRO. It took a few years of inquiry and probing for me to discover that IUFRO was not to be absorbed by FAO and that the State Department no longer objected to our rejoining the research organization.

ERM: The U.S. State Department had dropped its support for the takeover of IUFRO by FAO?

VLH: Yes, that apparently happened in 1949, unknown to Watts. In 1948 there was a conference of IUFRO delegates in Helsinki called for the purpose of considering a proposal of FAO that IUFRO merge with FAO. The conference rejected the proposal with indignation. The delegates considered it quite impossible for a purely scientific association such as IUFRO to be merged with a political organization like FAO. As Julius Speer wrote in 1972 in his brief history of IUFRO: "Experience had shown that scientists were quite capable of arranging their own contacts and exchanges of experience."*

After this rejection, an agreement was concluded between the two organizations in 1949 that guaranteed the continued identity of IUFRO and provided that secretariat services to the union would be provided by FAO. The agreement also specified that the union would invite FAO observers to all IUFRO meetings.**

*Julius Speer, IUFRO: 1892-1972, (As, Norway: International Union of Forestry Research Organizations, 1972), p. 14.

**Ibid.

The rejection of the takeover and agreement between the two organizations undoubtedly was reported at the 1949 FAO conference, and accordingly there no longer was any reason for U.S. government support for the FAO takeover.

ERM: The rejection by IUFRO ended the matter.

VLH: It did not end the conflict between the two organizations. For a full decade and more after the 1949 agreement there were occasional maneuvers by FAO to gain a measure of control over IUFRO or its domain, and there was almost constant tension and suspicion on the part of IUFRO over imagined or real threats against its interests. After bitter complaints about an alleged dictatorial attitude of FAO by members of the International Council of IUFRO at the Union's congress in 1956 in Oxford, England, FAO requested, in writing, release from its obligation to provide secretariat services to IUFRO. The request was readily agreed to by IUFRO's Permanent Committee in 1957.

Severing secretariat arrangements, however, did not arrest the suspicions of IUFRO regarding FAO'S intentions. For example, it was difficult for Andre Metro (who replaced I. T. Haig in 1957 as the FAO representative to IUFRO meetings of its Permanent Committee) to make the slightest suggestion without being rebuffed by the committee. Because of this, Metro and I used to discuss his proposals in advance so that I could prepare the way for their reception. In this way we initiated such things as the concept of jointly sponsored specialized international workshops for certain fields of research, such as forest genetics. These jointly sponsored meetings by FAO and IUFRO became quite popular.

The real turning point toward more cordial relations came in 1963 as a result of a speech I made at a meeting of IUFRO's Section 41, Forest Products, in Madison, Wisconsin.* The speech discussed the proper roles of IUFRO and FAO and declared that both were essential and that one was complementary to the other.

*USDA, Forest Service, The Roles of International Union of Forestry Research Organizations and Food and Agriculture Organization of the United Nations in World Forest Products Utilization, by V. L. Harper (Washington, D.C.: GPO, 1963), processed.

This speech, which was widely distributed, was favorably received throughout both organizations. As reported by Julius Speer, president of IUFRO, at the Sixth World Forestry Congress in Madrid in 1966, there was now good "correlation between FAO and IUFRO."*

ERM: Forest Service failure to rejoin IUFRO prior to your time as head of Research was based on the State Department policy of supporting FAO in its desire to take over IUFRO, is that correct?

VLH: Not quite correct. I think that, from what I learned from the State Department representative on the FAO Interagency Committee, Lyle F. Watts and E. I. Kotok initiated the U.S. policy of supporting the FAO in the takeover. This initiative was in the early years of FAO, prior to 1949. The FAO Interagency Committee adopted the Forest Service recommendation, and that is how it became U.S. government policy.

ERM: Did IUFRO encounter the same problem in relation to getting government forestry research agencies in other countries to come back in as members after the war?

VLH: No. As far as I was able to learn, most of the former members returned and some new members had joined by 1953, as reported that year during the IUFRO Congress in Rome.

ERM: Your research organization did not rejoin until 1956. What caused the long delay?

VLH: First of all, it was 1953 before I got all the facts together about the who and why of the opposition to our rejoining IUFRO. When the State Department learned that the Forest Service wished to join the union, I was first told that there was no problem. I was to make a formal application to State and it would be approved. Instead, it was turned down by the budget office of the State Department because the congressional allowance for international membership dues had been exhausted for that year.

According to budget procedures then in effect, all memberships of federal government bodies in

*Julius Speer, "Forestry Research," in Proceedings of the Sixth World Forestry Congress, 3 vols. (Madrid: Organizing Committee of the Sixth World Forestry Congress, 1966), pp. 929-935.

international organizations that required payment of dues, regardless of the source of funds for the purpose, had to be approved by the State Department and such approvals reported to Congress annually. There had been great expansion in the number of federal memberships during the late 1940s and early 1950s with a consequence that Congress became highly critical of the State Department's lack of restraint in such matters. To force a tighter rein, a strict money limit was imposed on the total allowance for membership costs. The limit virtually prevented any new memberships.

Eventually, I worked around that obstacle by explaining to State that the cost of membership in IUFRO was really not for dues but for subscription to the union's documents and research papers, which were issued both annually and periodically. On the basis of this technicality, our application was cleared by the State Department. We were told to proceed with rejoining IUFRO since our case did not come under the provisions of mandatory reporting to Congress. The fact that the annual subscription cost was small was a factor in getting this favorable decision.

ERM: The U.S. research organizations had considerable impact on IUFRO's development during the time you were personally active in its affairs. As you look back on that period, what do you see as their significant impacts on the union?

VLH: There were, of course, federal, university, and private forestry research organizations from the United States who held membership in IUFRO. There were many impacts at the section leadership and scientific levels from all of these U.S. organizations. My own role was at the policy and governance level. Speaking from this vantage point I could name several important developments which I was deeply involved in, but none stands out in my memory as more important than either the achievement in the multilingual forestry terminology area or the rejuvenation of the forest products section of IUFRO.

ERM: Henry Clepper was involved in the terminology project, was he not?

VLH: Yes, as executive secretary of the Society of American Foresters, his Society was the managing contractor for the terminology project during its English-version phase. The project was funded at my instigation by a grant from research funds of the U.S. Forest Service and the Canadian forest service in the proportion

roughly of \$75,000 and \$25,000, respectively, for a five-year period. F. C. Ford-Robertson of Oxford, England, whom I persuaded to take the job, was the full-time project leader in the work and editor of the finished publication.*

ERM: What made the forest products achievement especially significant?

VLH: In the first place, the achievement was our success in retaining forest products in IUFRO against a politically maneuvered attempt by FAO and an ambitious German professor of forest products to lure it away. Secondly, the remarkable recovery from dormancy of the forest products section of IUFRO was a demonstration of the value of the selection of a dynamic section leader by the Permanent Committee and of giving him guidance and support from the top echelon of IUFRO.

All this started when Julius Speer announced at the IUFRO Permanent Committee meeting in 1960 that a new international organization for wood science was being organized with headquarters in West Germany but under FAO sponsorship and secretariat services. Reason: the forest products section of IUFRO was inactive and incapable of doing justice to that important field of international concern.

The announcement precipitated a heated debate within the committee over whether to try to stop the movement to divest IUFRO of its forest products work or do nothing and thus let the union's forest products section die. By majority vote, the Permanent Committee agreed to try to rejuvenate the forest products section and elected me as leader of whatever strategy I could devise to persuade forest products laboratories to join IUFRO Section 41 (forest products) and to make Section 41 an effective unit of the organization.

ERM: Was the view that forest products should share the same organization as forest production generally held in the United States?

VLH: Not as a general rule, I'm sorry to say. I was told by Egon Glesinger, then director of the Division of

*F. C. Ford-Robertson, ed., Terminology of Forest Science, Technology, Practice, and Products, English-Language Version of the Multilingual Forestry Terminology Series, no. 1 (Washington, D.C.: Society of American Foresters, 1971).

Forestry and Forest Products of FAO, that he had canvassed opinions on whether forest products belonged in IUFRO from several U.S. universities with wood utilization research programs, as well as from the U.S. Forest Products Laboratory in Madison, Wisconsin, and the answer was an overwhelming no.

ERM: Isn't it true that forest products is usually in organizations separate from forestry here in the United States?

VLH: Yes, to a large extent. The Society of American Foresters has some members whose primary professional interest is in the products field. Nevertheless, by and large, professional products people do have their own national organizations: Society of Wood Science and Technology, Forest Products Research Society, Technical Association of Pulp and Paper Industry (TAPPI) and perhaps others. I believe this situation holds for other countries also.

ERM: What was IUFRO's rationale for wanting to retain forest products?

VLH: The rationale that I presented to the Permanent Committee in 1960, which won agreement to try to retain forest products in IUFRO, was that I deplored the splintering of forestry organizations--national or international--into specialties that became independent and separate from their parent organizations for lack of attention to the fact that there is a natural, common bond of interdependence that should tend to hold them together, even though loosely. I pointed out that we had been remiss in neglecting our forest products section, in allowing it to wither on the vine without any guidance or help from the top level of IUFRO to prevent that state of affairs. Lastly, we were then faced with a challenge to our leadership and international influence; the test was whether we had the desire, will, and ability to regain and build a strong forest products section of IUFRO in a contest with FAO aimed at taking forest products out of IUFRO. I predicted that if we failed this challenge we could look forward to further inroads and deterioration of IUFRO.

I wasn't at all surprised that the committee wanted me to take on the task that I outlined.

ERM: What actions did you take on this assignment?

VLH: First I enlisted the help of Edward Locke, then director of our Forest Products Laboratory in Madison,

Wisconsin. Between us we visited most of the forest products laboratories and institutes in northern and central Europe on our way to the 1961 congress of IUFRO in Vienna. Along the way we gained large support for a reorganized section of forest products in IUFRO and commitments that forest products delegates would attend the upcoming congress.

At a well-attended and enthusiastic meeting of forest products specialists at the congress, Ed Locke was elected the new leader of the section. To help prevent ruffled feelings, the former leader of the section, who had defected to the FAO idea, was offered a seat on the Permanent Committee.

Egon Glesinger was at the congress and witnessed the rebirth of the IUFRO products section, which he accepted in notably good grace and spirit. His only comment to me personally was: "A job well done; you should be elected president of IUFRO."

ERM: How would you rate IUFRO's value to forest scientists here and elsewhere in the world?

VLH: Its value is strongly related to the participation of scientists. Those countries with large programs of research--federal, university, and private--and having policies allowing and encouraging a liberal participation in the work of IUFRO will profit the most in total, but not necessarily most per scientist, over the smaller countries. Forestry scientists of the United States have strong reasons for belonging to IUFRO. I know for certain that our Forest Service researchers and their research programs have benefited to a large degree from their association with IUFRO.

ERM: What role did you play in getting funds to finance foreign scientists on forestry problems of interest to the United States?

VLH: I played no direct role in that process; the funds came from the sale of agricultural products in countries of soft currencies. Under P.L. 480 as amended, cooperative agricultural and forestry research between the United States and a given country could be financed out of soft currency generated by sale of agricultural products to that country.*

*Public Law 480, Agricultural Trade Development and Assistance Act of 1954, was amended June 30, 1958, to permit use of soft currencies for research purposes of benefit to the United States.

The research, to be performed by a country's own scientists, had to be basic, of benefit to the United States, and related to U.S. agency research. The department's research program in this area was administered by the Agricultural Research Service. My role was to establish forestry as an important segment of the program. My activities in IUFRO, which had put me in touch with many heads of forestry research institutes in other countries, was an important factor in arranging cooperative projects.

Supervision of the foreign research grants in forestry was done by Forest Service Research personnel drawn from our Washington office staff and stations. Bert R. Lexen of the Forest Management Research Division was transferred to ARS as assistant director of the Program for Forestry.

ERM: Where is Lexen now?

VLH: He is retired and living in Michigan. He is more knowledgeable than anyone else about the problems and successes of the cooperative foreign forestry research during its early years. By the mid-sixties the forestry part of this program had reached about one million dollars annually and forestry research grants had been made in countries of Europe, Middle East, Asia, and Latin America.

ERM: This gave a lot of people in the Forest Service a great chance to broaden their own horizons, didn't it?

VLH: Yes, travel by our research scientists to foreign countries to negotiate grants and supervise the administrative aspect of the cooperative research added a new dimension to their work which was stimulating to them. I'm sure our own programs benefit from the contacts they made during these trips beyond the results alone of the cooperative projects.

ERM: You and Tom Gill were cofounders of the International Union of Societies of Foresters. What prompted you to undertake that task?

VLH: I suppose the main reason was that I believed in the objective of an international body to promote professionalism in forestry on a worldwide basis and that I was offered a leadership job in that regard that I couldn't refuse. The initiating body for this undertaking in 1964 was the International Relations Committee of the Society of American Foresters, of which I was chairman and Tom Gill was a member and strong advocate of the concept.

At a meeting in Madrid in 1966 I was elected president of a provisional international union of national societies by a small group of colleagues with whom I had worked in IUFRO and FAO and who were also leaders in their respective national professional societies. In fact, our going ahead with the formation of the new international organization at that time appeared predicated entirely on my willingness to personally lead the effort.

Tom Gill was elected executive secretary of the organizing group, and he and I were empowered to select representatives from other societies to serve with us.

In 1969 I was elected president of the formally launched IUSF at an organizing congress of eleven national societies held in Washington, D.C.; R. Keith Arnold was elected executive director, replacing Tom Gill, who had requested retirement because of health reasons. In 1974, at Helsinki, Finland, IUSF held its second congress, replete with plenary and commission sessions and field-study tours. The Proceedings of the Second Congress show that IUSF had made a very good beginning.*

Leadership for the establishment and beginning period of IUSF came from a relatively small number of American foresters, who worked with only uncertain support of the Society of American Foresters. The SAF Council in 1964 granted Gill and me, at our request, permission to explore, under auspices of the SAF International Relations Committee, the feasibility of establishing an international association of national societies of foresters. But from that date until a membership referendum in December 1969, which strongly favored joining IUSF, the SAF leadership continually expressed doubt about the wisdom of the venture and gave no financial support to it. Tom Gill and I paid all of our travel and operating expenses out of our own pockets during the organizing period, 1964 to 1969, and we raised the money to support the 1969 organizing congress, with much of it coming from our personal funds.

*Proceedings of the Second Congress of the International Union of Societies of Foresters, 2 vols., (Helsinki, Finland: Society of Finnish Foresters, 1974).

With natural and characteristic action the Forest Service came to the aid of IUSF during the critical period of 1969 to 1974, when the new organization was beginning its formal international role. R. Keith Arnold, executive director of IUSF for that period, was Forest Service deputy chief for Research and he and his able assistants, Bob [R. Z.] Callaham and Amy [E.] King, received much material as well as moral support from their agency in carrying out IUSF duties. Some seventy years earlier the Forest Service had provided the leadership and related support that established the Society of American Foresters.

The seat of governance of IUSF passed to Finland in 1975 when Veikko J. Palosuo and Mauno Melvasao, both of the Finnish Society of Foresters, were elected president and executive director, respectively. Bob Callaham of the Society of American Foresters was elected to the executive board. The membership of IUSF had grown to nineteen national societies of which the SAF was by far the largest. Much of the future of IUSF quite understandably will depend on the future official attitude and active participation of the SAF.

ERM: Do you think the prestige of American forestry has gone up in the world as a result of this?

VLH: I'm sure it has, with the result of IUSF plus IUFRO and all the other international ventures participated in by American foresters.

ERM: European foresters generally used to hold themselves rather superior to the rest of the world in forestry. I'm not so sure that they do any longer, but there certainly was a time when they felt the sun rose and set on their superior knowledge in the field. Does that conform with your own observations?

VLH: I think that is correct. Certainly the profession of forestry in Europe is much older than it is in America and there wasn't any question about their superiority for a long time. I suspect European foresters no longer feel all that superior. American foresters have become very active and visible since World War II in the world forestry community.

ERM: Have you been aided at all in your duties by facility in other languages?

VLH: No, I'm sorry to say that I don't handle foreign languages with facility. I know some French, German, and Spanish and can make out with difficulty in reading

these languages, but that is all I can do save for a few phrases of the spoken word.

ERM: It's on an un, deux basis.

VLH: Oui, Monsieur. Probably one reason that I and many other English-speaking persons don't use other languages is that there are so many of us at international gatherings.

ERM: Or they have interpreters at meetings.

VLH: Right.

ERM: I would imagine in IUFRO meetings that earphones are on many of the participants.

VLH: At opening and closing sessions and other plenary meetings this would be true. Many smaller sessions are apt to be in English. Unlike IUFRO and other nongovernmental organizations, meetings of the United Nations agencies always have simultaneous interpretation in all official languages, except in very small working parties, and then they provide individual shoulder interpretation where needed. At such meetings national prestige is at stake.

ERM: Nationalism raises its head.

VLH: Yes. The French are good examples. Many of them speak very good English or German but still they usually insist on delivering a paper in their native tongue.

ERM: The French never bow the intellectual knee to anyone. They feel their tradition--academic accomplishments and culture--is indeed inferior to none and superior to most.

VLH: They are a proud people. Perhaps the French are a bit too sensitive about what they consider their due respect from others at international gatherings. Nevertheless, they and the British delegates are dependably good in any international undertaking.

ERM: How did the State Department view your work?

VLH: With enthusiastic approval during my time. The State Department considered the Forest Service among their more able cooperators in the scientific and technological aspects of foreign policy.

ERM: Are there any forestry attachés in the various embassies?

- VLH: There weren't any during my time and I don't believe there are any now. Before agricultural attachés were transferred from the State Department to the Department of Agriculture in the 1950s, I initiated discussions within Agriculture over the apparent need for forestry attachés in some countries. But nothing was done about it then. After the transfer, it became easier to work out forestry needs along with those of agriculture, all to be handled by our agricultural attachés.
- ERM: Some European countries have forestry attachés in their embassies in Washington.
- VLH: Yes, Germany and Sweden.
- ERM: How would you rate the value of international experiences and work to the Forest Service? You have alluded to this before. Did it help the Forest Service in general or only in some specific ways?
- VLH: I think there were a number of specific ways in which the Forest Service benefited and in total these ways benefited the Service in general. Certainly the active participation of our research people in IUFRO was a great help to Forest Service research as well as a contribution to science in other countries. The involvement of Forest Service people in technical assistance assignments to other countries and in international meetings has both broadened their experience and brought rewarding values to the Forest Service. The Forest Service has gained added prestige abroad for its support of international undertakings and its substantial contribution to world forestry. In all this, the Forest Service has also served U.S. foreign policy.

George M. Jemison

A fascination with the subject of fire as it relates to forestry has been central to the long Forest Service career of George M. Jemison. As a junior forester, he worked on fire danger measurement studies in Montana, continued in forest fire research in North Carolina and throughout his twelve-year tour of duty at the Forest Service Branch of Research in Washington, D.C. Jemison led the first group of U.S. foresters ever to visit Russia for the purpose of observing forest conditions and forestry practices. As another indication of his involvement on the international scene, Jemison served for three years as president of the International Union of Forest Research Organizations. He is the author of over fifty research papers on fire control techniques and silviculture, and is now a Professor Emeritus of Forestry.

After waiting a long time for acceptance of his fire danger rating system by federal and state agencies, Jemison was eventually requested by the Washington branch of the Forest Service to develop a national fire danger rating system. One of his chief efforts over the years was to obtain sources of financial support for fire science programs at universities, and fire research in general. His emphases as an administrator were on sound program development and problem selection and analyses. Other of Jemison's interests were developing support for the research center field organization, and establishing cooperative relationships between the Forest Service experiment stations, state boards of forestry, and industry. He testified frequently before congressional committees and acted as congressional liaison during his years as Assistant Chief and then Deputy Chief of Research in Washington.

Early Forestry Research Topics

Forest fires, fire danger ratings, fire science and insects

Elwood R. Maunder: This is Elwood R. Maunder speaking from the Seminar Room of the School of Forestry at Oregon State University, in Corvallis, Oregon. It is Tuesday, August 23, 1977. I am here to interview Dr. George M. Jemison, who is associated with the School of Forestry here and a retired former Deputy Chief of the Forest Service for Research.

Your early experience in Forest Service work came even before you finished school. I understand you worked in the summers when you were going to the University of Idaho getting your bachelor's degree. Could you briefly tell some of that experience and what you feel its impact on your later career might have been?

George M. Jemison: I worked for three summers on the Coeur d'Alene National Forest in Northern Idaho at various jobs, first as a trail crew laborer in 1927, then in 1928 as a forest fire lookout. I stayed out of school in 1928 and 1929, and worked in the woods of the Coeur d'Alene Forest at a number of other jobs during a prolonged fall, followed by an early spring. These included packing, telephone line maintenance, and a whole variety of administrative chores that were common to a ranger district in the 1920s. During the summer of 1929, I was foreman of a small surveying crew, relocating section lines and section corners in burned-over country preparatory to a remapping job. That, in a nutshell, constituted my experience on the forest during my college years.

ERM: You were exposed early in your life to forest fire, which became a major topic of your research. Did

that early experience have any important impact on you, or was it only incidental?

GMJ: I think you might label it as incidental, although I did work on small and large fires as a fire fighter and a smoke chaser. What really got me interested in forest fire meteorology and fire research in general was a visit to the University of Idaho and Harry T. Gisborne, who was the father of forest fire research, you might say. A very extensive forest history report authored by Charles E. Hardy has been published on Gisborne's career by the University of Montana in cooperation with the Forest Service.* A great deal of my experience with Gisborne is contained in this report and in a taped interview deposited in the archives at the University of Montana in Missoula.

But to get back to your question, Gisborne was a very inspiring person. When he came to the University of Idaho and gave talks on the outlook for progress through forest fire research, I was so intrigued that I applied for and got a summer job in 1930 under Gisborne at the Priest River (Idaho) branch of the Northern Rocky Mountain Forest and Range Experiment Station. Subsequently in 1931 I received my first professional appointment there under Gisborne in forest fire meteorology work.

ERM: What did you do in that assignment?

GMJ: Well, I did a lot of menial work while learning the rudiments of the research method. My principal job was to take fire weather observations at four forest locations three times a day and to learn how to operate, maintain, and repair various instruments. I had the experience of climbing a tree topped at 150 feet, in order to maintain the weather instruments placed there. This was not only a thrill but a lot of fun, too. I also built weather shelters, put up fences, things of this kind.

*Charles E. Hardy, The Gisborne Era of Forest Fire Research (University of Montana Forest and Conservation Experiment Station and USDA Forest Service, 1977), processed.

But the main recollection I have of those first years is of the extremely stimulating role that Gisborne played in my life. He was a very dynamic person. When I dug fence post holes, he would not only grab the shovel and help but at the same time talk about the program, its objectives and goals, why we were doing certain things, and what the payoff would likely be. He was an extremely helpful man to take a young person like myself, get me all fired up, and try to give me an understanding of what research was about.

ERM: Gisborne's story, I suppose, is rather carefully drawn in the work you say has been published by the University of Montana and the Forest Service.

GMJ: Yes, that's correct.

ERM: Do you think that story is complete? Can you think of anything that might be added in the way of an anecdote or an insight?

GMJ: This published report on Gisborne's life was built from interviews with a number of people, including myself. I believe it is quite complete, and it does include many anecdotes to illustrate the characteristics of the man. He was a fiery, intense person, quick to point out deficiencies but also to praise when someone did good work. He demanded very high standards and kept them himself. Physically, he literally drove himself to the grave; you may recall that he died of heart failure while examining the Mann Gulch fire in Montana after fifteen smokejumpers had been incinerated. He was a great person and it was a privilege to work under under him.

ERM: In 1932 or 1933, you studied under another man, F. X. Schumacher, where you had a somewhat different training, in statistical methods. Would you relate that part of your story and the influence of Schumacher on your life?

GMJ: In 1932 most of us did field research by accumulating large numbers of data without really knowing how to design field experiments or how to test the reliability or significance of statistical measures obtained. So there had

arisen in the Forest Service nationally a strong belief that this deficiency had to be corrected. I was fortunate to be selected as one of the young trainees to go back to Washington and study under F. X. Schumacher, who was probably the leading forest statistician in the country at the time. Schumacher, like Gisborne, was a very dynamic person, and a very likable chap. He was fun to work with and an excellent teacher.

Those of us who were detailed there for a nine-month period to study statistical methods had our own mass of data, which became the learning vehicle. We analyzed our data under Schumacher's direction and in the process he taught us the basics of the statistical method. We were also required to take night school courses in the Department of Agriculture Graduate School, which added to our understanding of statistics. I think I came away from that training, as did the other trainees, with a fairly good basic understanding of the statistical method as it should be applied in field research.

- ERM: Who were some of your associates at the time?
- GMJ: Charlie Connaughton, Bill Hornibrook, Roy Chapman, and Luther Schnur were with me, I think.
- ERM: Were you the first group brought to that intensive study?
- GMJ: I believe that Roy Chapman preceded us by one year, but we were the first group of trainees that entered this program, and it continued for many years.
- ERM: During the thirties and forties, little of the forester's field knowledge had been translated into formulas or graphs so that it could be readily applied by anyone dealing with the problems. At what point during your career was the scientific basis for field projects generally understood by men in the field who had no education or training in advanced mathematics and forest science? Can you cite evidence of the old-timers' distrust of the new professionals?
- GMJ: When I came back from the detail in Washington, Gisborne, although he was not old in years, was

an old-timer in terms of his rank in the field of fire research. He was frankly quite distrustful of the "new" statistical method approach, and very cautious about applying it. I guess it was probably in the early 1940s and following World War II, when there was great expansion in research, that the value of a statistical basis for planning and conducting research was generally accepted. There were, as you suggest, old-timers who doubted that all this newfangled stuff really was worth anything. But by that time, you see, about eight or ten years later, there had been enough good work done to demonstrate that these methods really paid off.

- ERM: Did the stimulus come out of the Washington office or from some other quarter? Was it influenced to any extent by what was beginning to happen in some of the better forestry schools in the country?
- GMJ: Certainly, forestry schools played a big role. As a matter of fact, Schumacher left the Forest Service, as you know, and went to Duke University as a professor in forest statistics and mensuration in 1938 or 1939. And I think the acceptance of statistical methods grew partly because of people like Charlie Connaughton, who certainly had been well-trained. He became a station director and therefore had an opportunity to influence the methods used. In my own case, when I went back to Missoula, I was asked to hold a statistical training course for the rest of the staff. Incidentally, Lyle Watts, later chief of the Forest Service, was one of my students. He was our station director at the time. Gradually, through things like that course, understanding and knowledge of statistics spread.
- ERM: How long did it take before statistical training got into the mainstream of forestry education?
- GMJ: In 1930 or 1931, I took a course at the University of Idaho in what was called research methods. It touched on some key principles of statistics, but it was so poorly taught and vague that I don't believe many of the students really understood the subject. By the late thirties, there were enough

well-trained statistics teachers so that the courses began to develop valuable breadth, intensity, and background.

ERM: Were there any papers presented through the professional group SAF [Society of American Foresters] or its journal, or any special lectures in the universities that perhaps you see as benchmarks or beginning points?

GMJ: The Forest Service organized seminars beginning in, oh, I'd say the mid-thirties, at which the few national experts, like G. W. Snedecor from Iowa State University (who was not a forester), and R. A. Fisher from England, came and held seminars.

ERM: Did we gather important help from foreign sources, then, in the beginning?

GMJ: R. A. Fisher was the author of a prominent book on analysis of variance. While he was very difficult to read and understand, he certainly had a strong influence on getting better experimental design and analytical methods instilled into the field of forestry.

ERM: Major forest fire research contributions during this period were analyses relating forest fuel moisture to weather factors. Who were the people most involved in that research?

GMJ: This particular area of research was my principal assigned responsibility under Gisborne. He was probably one of the first researchers in forest fire meteorology to recognize that a systematic method of measuring the key factors in critical fire conditions was necessary to predetermining what kind of action to take in increasingly severe fire weather. Measuring factors such as precipitation, wind velocity, temperature, humidity, and the inflammability of lightweight fuels was the key to knowing what was likely to happen if a fire started.

With the urging of Earle H. Clapp, in 1931 or 1932 Gisborne conceived the first fire danger meter, which was a slideruletypeddevice that integrated

these basic fuel moisture and weather factors into numerical ratings called fire danger. This system of measurement insured uniformity of evaluation for similar conditions measured simultaneously. And, if conditions varied from place to place, there would be different evaluations based on a series of instrumental measurements and a correlation of weather and fuel factors. This early work was the birth of the fire danger rating system, later greatly refined by others, which is now used worldwide.

ERM: Do I recall correctly that Bush [William B.] Osborne had something to do with this?

GMJ: No, I do not believe so. I knew Bush Osborne, a very ingenious person. He invented the Osborne Fire Finder, which is still in use today, and he developed other devices very useful in fire control.

Julius Larson probably coined a phrase in the late 1920s that had the greatest impact on the recognition of the influence of weather on fire. It went something like, the infinitely small is the all-powerful. He was talking about relative humidity. Then Gisborne began to develop new knowledge in this area, such as the effect of humidity on fuel moisture.

ERM: Were there any other centers of research in your field besides the one that Gisborne led?

GMJ: Yes. McArdle, of course, began work in this same field in the early 1930s. He too was interested in developing the fire danger rating system, and some of the men working with him were very productive in developing low-cost instruments that could be used by organizations with little funds to spend for that type of equipment. McArdle was behind the development of a cheap precipitation gauge, and a wind measuring device. He also helped develop fuel moisture indicator sticks and a weighing device. The work was done principally by George M. Byram and his associates, although McArdle led the program and probably had the initial ideas. Another one of the early developments under McArdle was the haze meter, which measured the visibility of smoke from a small forest fire. It

enabled lookout men to determine how far they could pick up such a smoke, and how intensive the detection network ought to be as visibility conditions changed daily or weekly.

ERM: This was all happening in the early thirties, in the depths of the Great Depression when, I suppose, getting money for research was not the easiest task.

GMJ: As a young forester, I was conscious of our lack of funds, but we got by mostly because we did the work ourselves over long hours. One time Gisborne had an idea for developing a very cheap wind measuring gauge that copied the old letter S-shaped galvanized metal sign that twirls in the wind. We had 160 of them made by a local plumber for two dollars apiece. Each instrument required a separate calibration because no two were made alike.

My wife and I spent many evenings driving up and down the Jack Pine Flats on a level road near Priest River. She would drive at five, ten, or fifteen miles an hour while I lay on the fender, counting and timing the revolutions of the instrument mounted out front in order to develop a calibration curve. This was the way we overcame the financial problems. It was primitive but very effective compared with other methods that we had in those days.

ERM: When did you meet and marry your wife?

GMJ: We met at college.

ERM: In Idaho?

GMJ: Yes. In the year I stayed out of school, 1928-1929, before I went back to work in the woods in April, I went down to visit my roommate, who was engaged to the president of the Delta Delta Delta sorority. He wasn't about to forego his weekend of dates with his betrothed because I was visiting him, so he got me blind dates for that weekend. My wife, Bea, turned out to be one of them. We went together after that and eventually got married in 1931, after I was through undergraduate school.

ERM: You went on to Yale to get a master's degree in 1936. Were you encouraged by your superiors in the Forest Service to do this, or was it your own idea?

GMJ: I had always had in mind a plan to get my doctorate someday. However, my plan included, quite unlike many young people's today, getting experience on the job before I went back for graduate work. I felt, having done that, I would have a better basis for a more serious selection of study areas. However, I was strongly encouraged by both Gisborne and Lyle Watts, who by then was director of the station where I worked, to seek graduate study. I had been assigned a phase of fire danger rating that was to incorporate the effect of living vegetation on inflammability and fire behavior. I had started some field studies and so, when I went back to Yale, I felt a strong need for training in areas that I had not had a chance to study before, namely, organic chemistry, plant physiology, and forest soils, which is really what I emphasized during my year at Yale. This led, of course, to a master's degree, and I wrote my thesis on a fragment of data I had on the effect of living vegetation on fire behavior.

ERM: Who did you think of as your mentor then?

GMJ: My major professor was Harold J. Lutz, but I took work from Pop [Ralph Chipman] Hawley. I also did a great deal of work over in the Osborne Botanical Laboratory under a physiologist and plant chemist who was not associated with the forestry school, Professor Carl Duber. I got to know and respect Dean [Henry S.] Graves very much there, and of course H. H. Chapman. Although I didn't take any work from him, I got to know him quite well. I took forest pathology from Professor Jack Boyce. We became well-acquainted and I admired him a great deal.

ERM: From Yale you returned to the Forest Service and went to the Appalachian Forest Experiment Station [name changed to Southeastern Forest Experiment Station in 1947] in 1937. Did you go straight from Yale to that appointment?

- GMJ: No, I was back at Priest River for the 1936 field season and the winter in Missoula. I went to the Appalachian Station, Asheville, North Carolina, in April 1937.
- ERM: What were your responsibilities in this new assignment?
- GMJ: By that time, the fire danger rating system had become rather firmly established in the West. The Southeastern and Appalachian regions were plagued by a great many fires, and their fire administrators thought this new system of measuring fire danger held great promise. After this transfer, I was put in charge of developing the fire research program at the Appalachian Station. They had a small program under way, but it was expanded to include development of a fire danger rating system for the South and the Southeast. Subsequently this system was established in twenty-three eastern and southern states.
- ERM: How did you and Bea look upon this move from the West, where you had lived most of your lives, to Appalachia?
- GMJ: We were both westerners and we left with some nostalgia, I guess you'd say, but very willingly. I realized that I needed new challenges, new contacts, a broader understanding of forestry. This region certainly gave me all those opportunities, and we had no trepidation whatsoever about leaving.
- ERM: This is a part of being in government service, isn't it?
- GMJ: Yes. We moved about a good deal in our lives. We were always fortunate, I think, to land in one of the better places that could be found, and my wife and family never hesitated to gather up our belongings and move when the time came.
- ERM: It must have been in Appalachia that you first encountered Clarence Forsling?
- GMJ: Yes, he was the director of the station in 1937

when I got there and transferred away soon thereafter.

ERM: Do you have any vivid recollections of Clarence or of your association with him?

GMJ: He went, as you know, into the Washington office to head Research. When I had occasional job offers from outside, or perhaps different assignments inside, the Forest Service, I recall counseling with him, and he was very helpful. He didn't tell me what to do, but he always laid out the pros and cons for each possible change, which I appreciated. I always admired Clarence for his ability to take a young guy and give him direction.

ERM: Did you encounter others in the Forest Service who have had somewhat similar experiences in dealing with Forsling?

GMJ: I guess the answer would be no to your specific question, but I am very confident that others associated with Clarence Forsling admired him greatly, undoubtedly because of his ability to work with people, understand their problems, and give them sound advice.

ERM: You soon encountered Dick McArdle, who succeeded Forsling in 1938, so your assignment carried over into McArdle's regime?

GMJ: That's right.

ERM: Dick also had the reputation of being a very personable leader--a man who established rather close friendships with many people. I wonder if you'd care to comment on McArdle's personality?

GMJ: Without any question, he was one of the finest bosses I've ever had. What you said is true. Just a marvelous person. He was not only technically a sound leader of research and a man who understood the basic principles and problems of organizing and doing his job, but he was one of the most helpful and kindly persons I've ever been associated with. For example, he would take one of my early, very terrible attempts at writing a technical report and he would sit down to help me. Here he was, a busy

man, director of a big station. He would not only show me what I did wrong but how to do it right, and the reasons why.

In addition to this, he was extremely concerned with the personal lives of his folks. He went out of his way to make adjustments easy and to be sure that the job was not unnecessarily a burden. During a prolonged assignment following the New England hurricane disaster of 1938, and during World War II when I was away from home, McArdle was the one who found reasons for me to get back to Asheville now and then to be with my family--perfectly legitimate reasons, but it shows that, although I was out from under his immediate area of responsibility for months on end, he did not forget I existed. He was the kindest and most thoughtful person; I couldn't say enough about McArdle.

ERM: At the Appalachian Station you assumed the leadership of fire danger rating research and developed a system adopted by federal and state agencies in twenty-three eastern and southern states. How did you achieve acceptance of this system? Was it arrived at piecemeal or all at once?

GMJ: It had to be achieved piecemeal. And, as you know, the great difference between the South and East and West is in the responsibility for fire protection that goes with jurisdiction of the land. In the South and East, it was a private and state fire protection program rather than federal. Of course, there were federal programs, too, in limited areas of federal lands, but the job of selling and understanding the use of the fire danger rating system was primarily through the states. This meant that we had to work with twenty-three state foresters and their staffs. We found some, of course, who were ready and willing to accept this system and try it; others thought it was for the birds.

ERM: Can you remember the state foresters who were most easily and quickly persuaded?

GMJ: Yes. One was State Forester Peterson in Virginia. Another was Bill [William J.] Hammerly, who was assistant state forester in South Carolina. Later on the folks in Maine, Connecticut, and Maryland

were very quick to accept it.

ERM: Who were the most reluctant?

GMJ: I won't name names because I don't remember some of the state foresters, but Delaware, New York state, oddly enough, Kentucky, and Louisiana. Hux Coulter in Florida came along fine; no problems in Georgia or New Hampshire. It varied, but with twenty-three states we had so much to do that we worked on the ones who were more willing until we got those systems going. Gradually, the others saw their neighbors using this system, and we really didn't have all that much trouble within our allotted time span. A couple of events that perhaps we'll get to later, really sold the program.

ERM: In other words, personalities, more than other factors such as differences in state government, were the most important?

GMJ: I don't believe any state government policies said, we are not going to fool around with fire danger ratings. I think it came down to personalities and the belief of the leaders in something new. When they saw their fellow state foresters using and making a success of the system, they began to wonder, maybe that's something we should look into. We soon found that they were anxious to go along.

ERM: Was your time largely spent spreading the gospel throughout the region?

GMJ: I wouldn't say spreading the gospel, exactly. I did a lot of research, along with my colleagues, to get the basis for a danger rating system that worked in the Appalachians and in the southern pine regions. Incidentally, there was also a development of the instruments and field moisture indicating materials, things that were new and different from what we had in the West. I did a lot of research that required my presence in the field, establishing measuring stations to check and test our product. Through this process I gradually got acquainted with the principal state fire protection officers.

ERM: What events worked favorably in behalf of this program?

GMJ: I'd have to go back to the West to give the best illustration. The measured forest fire danger system in 1934 showed that we were in the beginning of one of the most hazardous periods of fire weather that we'd ever had in the Selway-Nezperce National Forest and Clearwater regions of North Central Idaho. The supervisor of the Selway Forest had been asking desperately for additional funds to beef up his pre-suppression force in anticipation of blow-up fire conditions. On August 10, 1934, a small local thunderstorm started about ten lightning fires in the Selway Forest. All were suppressed but two that got away. Two days later the Pete King and McClendon Butte fires were burning. Subsequently, they burned together to create a burned area of upwards of two hundred thousand acres.

Witnessed by Roy Headley, fire control chief, and assistant chief Stockdale from the Washington office, that incident convinced them that it would have been far better to have allowed the use of the Forest Fire Fund for pre-suppression purposes than to wait until there was a conflagration to open the purse strings and spend thousands of dollars on suppression. So in 1935, with permission of Congress, the Forest Service issued authority to the field for using the Forest Fire Fund to beef up prevention and pre-suppression activities, if a forest fire danger system indicated that such was necessary.

Of course, that sold the fire danger rating system right there. If a supervisor had no fire danger rating system, he would not be authorized to use these funds in advance. It was hot stuff--let's get on the bandwagon, and it was a sound decision to urge the forces to stop the fires before they got to be conflagrations.

The states did not have the authority to draw on public funds in advance of fires. But that good idea, measuring present conditions in some systematic way in order to judge what might happen in the future, carried over into the South and the East,

and certainly helped sell the principle of fire danger ratings.

ERM: It seems unfortunately to be true that we have to almost face disaster before we see the light.

GMJ: That's perhaps true but, since those early years, I think the system has paid off handsomely, since we've saved millions and millions of dollars as a result of having a measurement system. But it was kind of a disaster that brought it about, you're right.

ERM: Were there other factors working in favor of this? For example, did the advent of the Civilian Conservation Corps have any impact?

GMJ: In its way. You know, two difficulties in those days were always money and manpower. The Civilian Conservation Corps placed many more people in many more forest areas, which meant that we had an opportunity to establish and staff fire danger measuring stations. Without this manpower and without the locations, we never could have done it. Many fire danger stations were located at CCC camps, and men there took the necessary readings several times a day and accumulated them at central points. Another impetus toward the spread and use of fire danger rating systems further north was the 1938 New England hurricane disaster.

ERM: The big blow-down.

GMJ: Yes. It set up such a fuel hazard that the state people in that area quickly recognized the benefits of a danger rating system. One of my assignments was to establish fire danger rating systems there.

ERM: In Connecticut and Massachusetts and areas where the blow-down hit the hardest, had they been convinced of the need for the rating systems before the big blow-down?

GMJ: I think it took the blow-down to bring them around. There were one or two people--I mentioned New Hampshire--and there was a man in Massachusetts, whose name escapes me now, who had done preliminary work in getting fire danger ratings established.

But the hurricane damage really sold the New England states on fire danger measuring systems.

ERM: Did you have any outstanding spokesmen who championed your cause in the political realm or in the media? Or was this a subject that didn't attract much attention?

GMJ: I don't really believe there was much coverage in the media at that time. There were, of course, feature articles in newspapers. That is, we worked to get a story in the Sunday supplement now and then. But I can't recall any voluntary effort by the media to spread an understanding of this system.

ERM: I seem to remember a book entitled Fire by a man named George Rippey Stewart.

GMJ: Oh, yes. I remember that book very well.

ERM: It was published, as I recall, during the Depression. I wonder whether it had any impact on the public's thinking and on the support that you needed from Congress or the hierarchy in the Department of Agriculture or the Forest Service.

GMJ: I suppose it had some impact. There were many things going on during that period. I think the creation and program of the Civilian Conservation Corps helped focus public attention on the forest and forestry, and of course fire control was one of their more spectacular activities. I think that certainly had an effect on public understanding. There was quite a bit of publicity associated with the prescribed burning program in the South in the early and middle forties.

It was almost traumatic for the fire protectionists who had preached fire exclusion all these years-- this includes the federal Forest Service and the state agencies--to accept the findings of research and others in the forest industry that burning, under certain conditions, was a necessary silvi-cultural and fire protection tool. It was quite a wrench to get off the stump, stop preaching fire exclusion, and admit that there can be intelligent use of fire. This got into public attention, too,

and it was interesting that many foresters feared if we started burning the woods on purpose we were going to unleash a tremendous public fire-starting program. People would say, "Well, if you foresters are burning woods, why, we are going to burn them, too." But the reaction was almost the opposite. People said, "If those foresters who have been preaching fire all these years are burning the woods, there must be some good reason. I wonder what it is. Why do they burn here and not there?" Pretty soon they had a better understanding of fire, its damages, when it is beneficial, and so on. It did not solve the incendiary problem, but it helped.

ERM: You were assigned in 1938-1939 to establish and direct fire danger rating systems following the New England hurricane. Could you describe what that assignment entailed?

GMJ: Well, you remember that it happened in September 1938, and immediately the Forest Service was given two responsibilities. One was to salvage the fallen timber, and, to handle this, an organization called the Northeastern Timber Salvage Administration, NETSA, was set up. A parallel organization, New England Fire Emergency Program, NEFE, was set up to handle the fuel hazard and the fire protection problems that arose.

I was assigned to the latter, and my responsibility was to establish a network of fire danger measuring stations and a cooperative program with the United States Weather Bureau for improved fire weather forecasting services. I was headquartered in Boston for the better part of a year and a half to do this. It involved assessing the field hazard situation, determining where and how many fire danger stations needed to be installed, writing special handbooks and guides for the field on how to apply this system, physically assembling the equipment and setting it up, training observers, and then working with the officials in the Weather Bureau to establish and improve a fire weather forecasting service. I also worked to establish a communications network and channel the information to a central point, analyze it, and distribute it

daily to the fire protection agencies. As I mentioned earlier, this disaster gave a big boost to fire danger rating in New England because of the tremendous fuel hazard that had been created by the storm, and the fear of conflagrations that might occur.

ERM: You mentioned cooperation with the Weather Bureau. To what extent had this agency been engaged in fire research?

GMJ: I don't think they had engaged in what you'd call fire research, but from the very earliest days Gisborne had worked closely with the Weather Bureau in the West to improve the quality of their fire weather forecasts, particularly the prediction of orographic thunderstorms, local developing thunderstorms. Ninety percent of the fires in the West are lightning-caused. In the East and the South, the forecasting situation was a little different. Most of the fires there came with frontal storm developments that created high winds. We worked with the Weather Bureau there to improve their forecasts, not only of low humidity and drying conditions but also of high wind situations. But if they did any research, it was related to improving the accuracy of forecasting, not dealing with any results of weather on forest fires.

ERM: I take it that your relationship with the Weather Bureau was always rather good?

GMJ: Well, it was good in the sense that we worked well with the few local fire weather specialists. It was not always smooth sailing with the top people in Washington--I'm talking now about the early years. I even remember accompanying Gisborne on trips to Washington where he really tangled with the leaders in the Weather Bureau over their reluctance to support a strong fire weather forecasting service. I guess, like all agencies, they didn't think they had enough money, and at that time, this was not one of their high priorities. Today I think the situation is quite different.

ERM: From this you moved to attempts to establish a national fire danger rating system at the request

of Roy Headley. Can you give us a picture of him?

GMJ: Roy Headley was chief of Fire Control for the Forest Service in Washington. He was a very fine, crusty old firefighter. He really knew the fire game, and, while he was an old-timer in the sense that he'd come up through the sweat-and-muscle approach to fire problems, he was one of the first to recognize the value of the more systematic attempts to measure fire danger and develop fire control pre-suppression forces in fluctuating conditions. And he was one I mentioned who had a hand in changing the authorization to use the Forest Fire Fund for pre-suppression following the disaster in 1934 in Idaho.

My role here was not very extensive in terms of time, but I think it came out of a meeting that was held in Ogden, Utah, in the late 1930s. All of the fire people met to discuss how fire control could be improved. At that meeting I had the temerity, after many discussions, to propose on the blackboard a schematic diagram of how the basic fire weather and other constant fire factors could be put together into an overall rating. Headley grabbed that and said, "Well, if you can put the basics out in a rational form, why can't we have a national danger rating system?"

By this time individual systems had grown up in the different regions--some rated danger on a scale of one to seven, others rated on a scale of one to a hundred, and none of these systems were compatible. Basically they were all shooting for the same thing, so Headley asked me to come to Washington on a detail and attempt to develop a national danger rating system--at least the principles for one--which I did.

It was kind of a desk exercise, not a research exercise. It dealt with principles of associating different fuel and weather factors, constant and variable factors, into a national scheme. But the regional foresters wouldn't buy it and that was the end of that. I think they saw that, with limited funds, there would be some regions that would suffer because they wouldn't rate as high

as others on a scale of danger, and they felt they were better off with the get-in-there-and-fight-for-my-portion approach rather than a more cut and dried system. But that was an interesting first attempt at a national rating. Of course, they have a national system now.

- ERM: Of course, I don't suppose they argued on those grounds. They must have had some rationalization of their position.
- GMJ: Yes. I think they argued that we didn't know enough, that no system could apply to every area--you can't apply one system to the grass fuels of the deep South, to dry leafy fields in the Appalachian mountains, the heavy logging slash of the Pacific Northwest, and so on.
- ERM: In an article for the Journal of Forestry in 1942 you disagreed emphatically with those who maintained that fire protection was a subject that could not be taught, one that was best picked up on the job and went by rules of thumb. You advocated then that six to eight semester hours be devoted to the subject in forestry schools. When was your view generally adopted in those schools, and are there any changes in professional attitudes on the subject since then? Big question. Take enough time.
- GMJ: I'm not sure I can give you a really explicit answer. I think this--I'd had this feeling for a number of years, but it was in about 1941 that I remember tangling with Clarence Korstian, dean of the forestry school at Duke University, on this subject. I don't think my attitude was that every school should devote a concentrated part of its curriculum to fire prevention and control problems, but I felt that there ought to be, and could be, certain centers, or universities, where people who were interested in forest fire problems as a professional career could really get a sound, well coordinated series of instructional courses in meteorology, fire physics, fire control technology, and so on. And there weren't any at that time.
- ERM: In other words, this would have to be done at the graduate schools of forestry, is that right?

- GMJ: I would think so. Well, since that time others have come along, like Jack Barrows--recent chief of the Division of Forest Fire Research--who began to talk of fire science, and there are institutions now which have programs that provide very fine opportunities. It's a lot more sophisticated now than I ever thought it could be, with computer science and other subjects built in. A person who is interested in graduate work in the fire field can go to an institution like the University of Washington and get a very soundly developed program in fire science. My role was one more of bringing the idea out than of implementation.
- ERM: You have mentioned Barrows, but were there people at other schools who picked up this idea? Where did it catch on most effectively?
- GMJ: I mentioned the University of Washington. It probably had one of the first and strongest programs in fire science.
- Today one could go to almost any good university and, with the leeway in graduate programs, construct a curriculum in the fire science field. Where they would fall down would be in techniques and principles of fire control. You might argue that a person can get that on the ground, and to an extent that's true, but even today many university forestry schools do not have a good general program in that area.
- ERM: I'm interested that you should say that University of Washington was then in the forefront. Would you comment on others in Washington state who might have been influential in getting things going?
- GMJ: This goes back to the influence of the Forest Service research branch, in the case of fire studies at the University of Washington, in the case of watershed studies at Colorado State, recreational research at New York State College of Forestry, University of Washington, and University of Montana. [V. L.] Harper had the idea that in research areas where the Forest Service had a hard time recruiting skilled, well

educated people, it was to the advantage of the Forest Service to stimulate study and give financial and other aid to certain interested universities. At the University of Washington, by transferring some skilled Forest Service research people to that area, in cooperation with the university and the school of forestry, we created a nucleus of interest and skills that began to attract graduate students. In this way the program built up.

The same thing was done at Colorado State. We put a full-time man there, Charles Lathrop Pack, and the Pack Foundation in the first years allocated some funds to develop a strong watershed program that would turn out graduate students in forest hydrology. The university responded by giving better courses and hiring good people to counsel and work with graduate students. It was very successful.

ERM: Did you get any good help from enlightened outsiders? To what extent did a man like Charlie Cowan influence this effort?

GMJ: I think Charlie had probably left before this particular program developed at the University of Washington, but he had tremendous influence in stimulating fire activities across the whole spectrum, including research. He was very skilled in the fire field, and willingly promoted and stimulated work in every fire area.

ERM: A great raconteur, too.

GMJ: Yes, he surely was. One of the better ones.

ERM: He and Cap [Inman F.] Eldredge, I think, were two of the most articulate foresters I've ever encountered.

GMJ: They were great ones.

ERM: What about the private sector? Did any people in industry or in industrial forestry ever contribute importantly to this idea of training people in the universities?

GMJ: I can't be specific. I'm sure that in a general way they were sympathetic and supported the idea, but I can't recall any incidents where they may have put men and money into the program.

ERM: Now research in entomology grew in the West with substantial encouragement and support from certain segments of the private sector. Triggered by the work done on the Black Hills beetle, it gathered steam and got some real help from interested people. Was that ever true in fire research?

GMJ: If you go back to the fire control problem, industry was concerned, interested, and helpful. For example, Bert [Albert Bruce] Curtis was the longtime head of the Clearwater Timber Protective Association, and responsible for the protection of the Potlatch Timber Company lands and adjacent private land. He was instrumental in pushing fire research and was always willing to try something new. And there were others like him who were industry employees, in the sense that industry financed the Timber Protective Association activity. Of course, the association's program was closely coordinated with that of the state.

The same was true in California, perhaps a little bit different from the illustration I just gave with the Timber Protective Association in Idaho. Keith Klinger, fire chief of Los Angeles County, was one of the staunchest supporters fire research ever had. He'd go back to Washington and testify in support of additional funds. He was also an outstanding cooperator in terms of physical help--manpower, everything, from helicopters down to small equipment. He had a twenty million-dollar fire control program for Los Angeles County in the 1950s. Because of the hazardous, dry brush condition of that area of California, part of his responsibility was to protect homes in suburban Los Angeles. We got a tremendous amount of cooperation from people like him.

ERM: Phil [J. P., II] Weyerhaeuser had the reputation of being a company president with more than usual

interests in forestry and forestry problems. Did you ever encounter Phil Weyerhaeuser?

GMJ: I just met him, so I couldn't say more than that. I knew of him, of course, but I never worked with him or had any reason to contact him, more than just an occasional greeting.

ERM: You mentioned the big fire up in Idaho in the thirties. You must remember the big Tillamook Burn in Oregon in 1933. I wonder to what extent that influenced the work in fire research?

GMJ: Of course, every one of those major conflagrations--and there were a great many of them--perhaps indirectly stimulated fire research. However, I can remember that in 1937 when I transferred to the Southeast from the West, the total gross allocation for fire research nationwide was \$108,000 and we had about eight or nine researchers. So we didn't really experience any great growth in fire research until probably after World War II, when we began to get increments that enabled the program to grow. Now what effect the original Tillamook fire and several subsequent ones had on this is a little hard to say. I'm sure the consciousness of people wherever these fires occurred was certainly sharpened to the severity of the situation. Of course, Smokey Bear came along about then, and that had a tremendous impact on national awareness of fire, and probably on appropriations.

ERM: Forest Service appropriations in general were going up at a rather steep rate after the war.

GMJ: That is correct.

ERM: Was the increase in the fire research program proportionate to the overall increase, or were you increasing your operations at a swifter rate than most other areas of the Forest Service?

GMJ: I would say probably it was slower at first and proportional after the first few years. The real whopping increases in research came in the late 1940s when the concept of these research centers sold, largely through the efforts of

Senators [John C.] Stennis of Mississippi and [Richard B., Jr.] Russell of Georgia, and a few other influential southern congressmen. Those increases were primarily for silviculture and related research, timber oriented for the most part. Then in the fifties the programs in all forestry fields of research were better funded. In fact, the increases were really quite spectacular.

- ERM: Was this due to the growing sophistication of the Washington office in selling its program up on the Hill, or was it because more allies had been recruited among important congressmen and senators, like Stennis, who could be your spokesmen?
- GMJ: I'm not sure that any one cause ought to be emphasized more than others. But, for example, after World War II, around the mid-forties, the kraft pulping process really began to take hold. A huge expansion in pulp mill development in the South and Southeast came about, and along with this, the pulp mill owners began to be concerned with supplies. And so fire protection tightened up and became quite effective in the South. This was obviously essential to insuring a perpetual supply of wood; you could afford to plant and manage timberlands if you could guarantee protection.

At the same time, these pulp mill owners began to see that they could make money not only manufacturing paper or cardboard cartons but also growing trees, and, as soon as they saw this, they saw the value of research. This is when they got behind the research program and said, "Let's get some decent programs out here where the results will apply to us and where we can see them and use them."

And that was when Stennis and Russell, Congressman [Robert Lee] Sikes from Florida, and many others really got behind the program and gave it a big push. Then there was a program to build adequate facilities like laboratories, in which Stennis was very instrumental.

Getting back to your question related to fire, [Senator] Mike Mansfield was instrumental in providing funds to build the first major forest fire laboratory at Missoula. Now here was a million dollar laboratory--every fire researcher's dream--with two wind tunnels and a control burning facility and the finest of laboratories, but to be effective, this program had to be funded. Then, along with the realization that we needed better facilities and better equipment, we began to recruit scientists of high quality in many fields like physics, chemistry, meteorology, and this began to pay off, which in turn stimulated more favorable consideration by congressional appropriation committees.

- ERM: Would it be fair to say, George, that the coming of the pulp and paper industry, and its effect on the South, was related directly to research done by the Forest Service? Herty's work was Forest Service-related, wasn't it?
- GMJ: Yes. The development of the kraft process that he brought about certainly made southern pine a pulpable species and that obviously was a tremendous breakthrough.
- ERM: Up to that time there were probably no more than ten pulpable woods in the South.
- GMJ: Yes.
- ERM: And the Forest Survey was a work of statistical research that made clear the tremendous potential of the South as a pulpwood source.
- GMJ: Absolutely. No question about it.
- ERM: And these two factors plus, I suppose, the diminution of the supplies in areas that had been the principal sources of the industry up to that time, converged to draw the industry into the South. From that, as you say, came the interest in a wide variety of research. Would you agree with that analysis?
- GMJ: I think so. Of course, industry clamored continuously for more localized statistics on supply than the Forest Survey was ever able to

give. Even so, they depended very heavily on the inventory data to locate mills, to establish their sources of supply, to develop their own management programs with landowners that would guarantee their supplies, even to locate and purchase land. No question. The Forest Survey had a tremendous influence.

ERM: Let's move now to that period of your experience from 1938 to 1943 when you were working cooperatively with George M. Byram on incorporating theoretical mathematical approaches to refine fire danger ratings.

GMJ: I was concentrating on developing a fire danger rating system for the East and South. I think I mentioned earlier that George Byram had been a fire researcher in Portland under McArdle. He was transferred to the Appalachian Station to work with me. Byram was a trained physicist, and a very ingenious person when it came to applying mathematical principles to a field problem.

I think we made a fairly good team, in that I understood the design of experiments and the statistical approach necessary to get sound answers to them, and Byram, a very fine mathematician, was able to develop theories as to the outcome of many experiments. He could often project the formula that would describe the relationship between the variables we were studying. His skill enabled us to shortcut immensely the field trials necessary to establish these relationships. He would develop a mathematical expression, and then, by properly spot-checking it with suitable field experiments, we could quickly determine whether or not it was correct.

We used this approach in working on the effect of solar radiation on forest fuel inflammability, and the effect of wind as an agent that was correlated to the rate of drying of radiated fuels. This led quickly to some major publications that we were able to work out together. Byram later went on to do excellent work in fire physics relating the effect of wind direction and velocity

to vortex, whirling actions that were very severe at times in the South, and spread fire rapidly.

ERM: To what extent does a fire itself generate this action?

GMJ: We have what are known as fire storms, and the intense heat of fires does generate a storm action within itself, which causes some major conflagrations.

ERM: What you are describing as a part of Byram's work was understanding the physics and the mechanisms of this sort of thing.

GMJ: Byram and I also collaborated on a number of other closely related projects. For instance, one of the problems I've mentioned before in fire danger measurement is instrumentation. We were always on the lookout for inexpensive but effective measurement devices. Byram invented a fuel moisture measurement scale, a weighing device. You see, we determined fuel moisture by the use of indicator sticks or materials exposed in the forest and then weighed. By predetermining the oven-dry weight, when the sticks were weighed after exposure in the forest, we could calculate the moisture content.

Well, Byram developed a device that would automatically give a direct reading of moisture content, thus eliminating the need to calculate moisture content every time. He had the principle, but it was a crude device. I took it to Julien P. Frieze & Sons, Inc., in Baltimore, a manufacturer of fine weather instruments, and together with their skilled designers we made a very low-cost measuring scale that worked beautifully and has been a big seller.

ERM: What precisely was this scale? How did it work?

GMJ: I don't know how much detail you want to go into here, but in the first models, you set on the arm of the scale a slider that was equivalent to the oven-dry weight of what you were weighing.

The pointer on the scale, just by pivoting, would read directly in percent. Later on we went to a standard, one-hundred-gram stick or sticks, which simplified the construction of the scale and eliminated the sliding device. All scales could then be made exactly alike. The only part the Frieze Company played was to improve the design of the instrument itself to make it more sturdy and less costly. Then they mass-produced it.

ERM: Also you standardized the sticks.

GMJ: Right. They would be exposed, and then weighed several times a day. These indicator sticks would pick up and lose moisture in relation to the natural fuels. Thus, they indicated moisture change in the lightweight fuels that first ignite and burn. That was one of the key elements in the danger rating system.

ERM: This was all done when you were getting your doctorate?

GMJ: Just before. My doctorate was on a slightly different subject, but related to the effects of fire. Fire protection had become well enough established in the South that some of the more thoughtful fire control people began to wonder, When do we reach the point where costs exceed benefits? Are we spending too much? Would it be better to accept some damage and lower fire control costs? Now with those kinds of questions, you had to be able to say, How much damage are fires doing?

This got us into an area of research attempting to quantify or evaluate the impact of fire, so that costs could be judged against damages and the least cost-plus-damage point determined. I did some work with H. R. Josephson, who was an economist in Washington and later a very close colleague of mine. With Bernard Frank, who was a watershed specialist, we attempted to evaluate the impact of fires in the Appalachians on watershed values. This was not a very productive job. It was highly empirical, but at least it was a start. Work by George H. Hepting and his

colleagues gave us an abundance of data on the effect of basal wounding of Appalachian hardwoods on decay, and we could translate that into rather specific fire damage evaluation. We had nothing at all on the effect of basal wounding on growth rate, which became the subject of my doctoral dissertation.

ERM: What about the effect of fire on insect problems?

GMJ: We were aware of this but were not studying it at that time. I did considerable work on the effect of fire on the growth rate of important Appalachian hardwood species, and that was my doctoral dissertation at Duke. There I took more formal work in plant physiology and in statistical methods and sampling under Schumacher. I took my major in physiology and my minor in mensuration at Duke for my doctoral program.

What I found was that basal wounding had essentially no effect on the growth rate of hardwoods because of a quick and interesting anatomical change that was made in the conductive tissue, so that wounds in effect were circumvented. The translocation paths for water and food up and down the tree were not really influenced, even by major fire wounds. This in itself was perhaps not a very outstanding contribution, but at least it added some new aspects and understanding of how this problem is overcome by the physiology of the tree, through anatomical changes. This study, incidentally, got me into wood anatomy to a fairly substantial degree.

ERM: What about the softwoods? Did they suffer greater damage?

GMJ: The softwoods or conifers are wounded by fires, but the problem there is more a question of mortality. If they are not killed, the crowns are scorched and growth is temporarily reduced. But at the time we were more concerned with Appalachian hardwood types.

ERM: After you completed your work at Duke, what was your next professional move?

GMJ: I finished my work at Duke in 1942 and for two or three years I was heavily involved in war-related projects--nonmilitary projects, as a civilian, I should say. But my next professional assignment was as head of the Division of Timber Management at the Appalachian Station. Two or three years after I went there, it became the Southeastern Station, with a revision in station boundaries; we gave up Kentucky and Tennessee and took in Florida and Georgia. The Division of Timber Management embraced work in silviculture, ecology, genetics, naval stores, and reforestation.

ERM: You mentioned some frustrations during the war years. I assume that this derived from the fact that the whole momentum of forestry research was disrupted greatly by the war. Am I right in that?

GMJ: This perhaps added to my frustrations, but they really were due to assignments I had that I felt were quite nonproductive and very limited as far as helping the war effort. I was classified as a father with dependent children and, up to the time the war ended, was not in immediate danger of the draft, although I did spend virtually all my time on war-related programs. But none of them, in my judgment, was really very helpful to the war, and that was the source of my frustration.

ERM: Could you highlight some of the projects you worked on during World War II?

GMJ: First I was sent to a training program in civilian defense given by the Chemical Warfare Service at Edgewood Arsenal in Maryland. Following this program that dealt with protection against poison gas, incendiaries, and bombs, I gave instruction to groups in Asheville, North Carolina, where I lived. I spent several months working out of Philadelphia expanding the fire danger measuring network from Maine to South Carolina.

You see, early in the war, German submarines were sinking dozens of ships within sight of

our East Coast. Smoke from forest fires greatly hampered aerial detection and shore battery attack on these submarines. So fire danger measurements gave some added strength to fire prevention and control activities.

G. Lloyd Hayes and I also identified, mapped, and prepared specific plans for locations where intentional fires could be used to hamper coastal invaders. We covered a 50-mile wide strip from Canada to South Carolina. I know this sounds farfetched now, but at the time military leaders were very concerned.

ERM: I suppose the work you described earlier in connection with the New England hurricane was useful to the efforts to improve danger ratings.

GMJ: Yes. That program gave us a big jump on the problem. To complete the account of my war assignments--I worked on a War Production Board survey of sawmills and lumber production in Virginia and Kentucky. I returned to Edgewood Arsenal and worked with military personnel on "napalm," then a new type of incendiary. They hoped it could be used in Europe to start small forest "marker" fires that bombers could follow to specified targets. This project was unproductive, as were some others that related to firebombing of Japanese cities.

ERM: Could you tell us about the research in silviculture-related studies which George Hepting was involved in following the war?

GMJ: During the latter half of the 1940s, I worked very closely with George Hepting on a number of projects. He was a fine person to work with and we collaborated on several scientific reports, perhaps the most important of which was a bulletin on stand improvement practices for the Southern Appalachian forest region. We had a tremendous amount of data from experiments that had run over a period of twenty or more years. George had done a lot of work on the effects of fire and various stand improvement practices on decay in forest stands. We compiled a summary document that in effect brought up-to-date

everything that was known on the better practices for improving mixed young forests in the Southern Appalachians.

I had a number of other silvicultural-related studies at that time. One lesser, but I think quite important, one was a study in pine seed dispersal that I did with Clarence Korstian. We published a report together. Much of the work had been done in the Duke Forest and was tied in with the development of improved cutting practices for pine, which I got involved in a little later. At about this time I began some major experiments in comparing silvicultural systems in Appalachian hardwoods--shelter wood, clear-cutting, various selection systems, and I also did studies of the yield from thinnings in young hardwood forests.

ERM: Les Harper says that he viewed the problem selection process as the responsibility of the division chief, at least insofar as initiative is concerned. Did you assume this responsibility as head of the Division of Forest Management of the Southeastern Station?

GMJ: In the broad sense, I made more or less formal problem analyses; I think I would call them program analyses. That is, let's say I decided from experience and study that one of the more productive areas we should develop would be the genetics or tree improvement of loblolly pine. Then I would depend upon the project leader in that area to develop an analysis of the problem of improving loblolly pine through the application of genetic principles, and to outline a priority course of study that would produce the pay-off. Together we would finalize this problem analysis so it became a guide to the ongoing research study program. In other words, I would select the main area and the specialist who knew genetics, since I was not a geneticist, would make the problem analysis, and I would collaborate with him in solidifying a program that could be financed and staffed with the right kind of people, which was my responsibility.

ERM: Was the Washington office staff of the Division

of Forest Management involved in such decision making?

- GMJ: If you put your question in the time frame of the late 1940s, I would say no. Later on, in the late fifties and sixties, I would say yes, because by then, Harper had initiated and formalized a much stronger control over field program development. He used his staff specialist in Washington to review and make decisions on program content to a much greater degree than in the late forties.
- ERM: But in the early forties the responsibility and authority to act was decentralized.
- GMJ: Yes. However, in the late forties as a division head at a regional experiment station, I was very conscious of the need for sound, careful, program development, problem selection, and problem analysis. I think I wrote the first problem analysis in the fire field in 1937 or 1938, shortly after I arrived in Asheville. So this approach was not new at that time, and formal written study plans were the rule. I spent a lot of my time convincing my co-workers of the value of careful planning, but this was an established procedure by the late forties.
- ERM: Did you have any input from people outside the Forest Service who comprised a regional research advisory committee similar to the one Dana had organized earlier in the Northeast?
- GMJ: When I first arrived in Asheville, we had such an advisory committee. I think it probably went back to the time when Frothingham was director, and subsequently Forsling. Under McArdle's regime the committee was abolished, because we didn't think it was productive. We didn't think the results warranted the time we spent preparing for them.

But that didn't mean we didn't get outside input. We worked very closely with forest industry leaders, state people, other federal agencies, and universities in discussing problems. Our clientele was heavily industrial and state-oriented

because, comparatively, there were not very many national forests in the South, although we worked closely with the Forest Service people in Regions 7 and 8.

- ERM: Who were some of the leaders outside of the Forest Service with whom you were most closely associated? Did you know Bill Oettmeier, by any chance?
- GMJ: Oh, yes, you bet. And he was quite helpful and influential in program selection and problem analysis. Of course, he had very long experience in fire and land management in southern Georgia.
- ERM: He developed some tools for fire prevention and fire fighting, too, as I recall.
- GMJ: Yes. There were several people of that type in the South at the time. Another one we might mention is Tom Bush, who worked for International Paper Company, and was a former Forest Service man. Incidentally, he was ingenious in developing equipment and tools not just for fire purposes but for timber harvesting. And a number of the more modern systems, like scissoring trees rather than sawing them, originated with Tom Bush.
- McCaffrey of International Paper was another man that I looked to for advice and counsel. I was very close to people in the Camp Manufacturing Company. It's now a part of Union Camp Corporation. Old John Camp was a very close friend of mine. Many times I consulted people of this kind as well as the state foresters; I knew all the state foresters well and worked with them and their staffs. Our relations with the universities were generally good.
- ERM: Did you have much to do with Red Bateman?
- GMJ: I knew him but didn't have much to do with him, no. I should also mention the Tennessee Valley Authority. They had foresters and forestry officials stationed throughout the area, and I consulted with many of them about our program and the direction it should take.

- ERM: But the regional advisory committee had been abandoned before you came?
- GMJ: About one year after I arrived in Asheville. However, later on, when we developed the work center concept and had these little enclaves of research centers located subregionally, many of them had locally-oriented advisory committees. We had technical advisory committees such as the Southern Forest Genetics Advisory Committee, made up of technical people. But beyond that first year or two, the Southeastern Station did not have a stationwide committee similar to the one in the Northeast that you mentioned, at least not during my years there.
- ERM: There was in the forties, and to some extent in the late thirties, I believe, a national debate over cutting practices and a constant threat of new federal forest regulations. Before the end of the war, you played a major role in developing recommended cutting practices for the South and Southeast. I wonder if you could detail some of that story.
- GMJ: As you suggest, the industry, particularly in the South, and many of the states were absolutely against any form of federal regulation, and there was, as you know, a national furore over the Earle Clapp proposal for regulation. Following a sort of simmering-down period, it became apparent that, lacking strong federal regulation over forest practices, we ought to have good local or regional guides. Some of the states had already begun to think along these lines; I think Oregon was one of the first states to adopt state cutting practice rules and regulations.

At any rate, in the South it was quite obvious that leadership had to be developed to guide the states towards adopting and practicing some form of local regulation over cutting practices. Well, the Forest Service informally created a team, made up of Jack Currey, who was my counterpart then at the Southern Station in New Orleans--that is, head of Forest

management research division; Eddy Hawes, who was a specialist with State and private Forestry in the regional office in Atlanta; and myself. We were to study southern forest cutting practices in both pine and hardwood types and make some suggestions as to what minimal practices should be. This occupied us for quite some months. We traveled extensively over the region talking to industry people, state foresters, anyone who had knowledge.

We came up with some proposed cutting practices, but there were differences in opinion over the inclusion of a clear-cutting provision for pine forests. To my knowledge this was the first time the Forest Service in the South ever came to the mat on accepting a clear-cutting silvicultural system. The internal debate was really between Jack Currey and myself. He supported the fine work of Russ Reynolds at the Crossett Experimental Forest in Arkansas, who had undoubtedly produced strong evidence that a selection system of cutting in that loblolly-shortleaf pine type was very sound.

Our own work further north in the coastal plain in the Carolinas indicated that a selection system was not sound in many places because of the aggressiveness of hardwoods, and we held out for a clear-cutting provision. Well, to make a long story short, I finally thrashed this out with A. C. Shaw, the timber management assistant regional forester in Atlanta under Joe Kircher. We finally did get a provision for clear-cutting in our proposed forest practice rules and regulations. In subsequent years, of course, clear-cutting has been a major silvicultural system applied to southern pine.

At about this same time, I was appointed by the Appalachian Section of the Society of American Foresters to head a committee on cutting practices for the Carolinas, a continuation of the study that Currey, Hawes, and I had made. The committee subsequently wrote about cutting practices for the Carolinas in

the Journal of Forestry. Korstian and others worked with me on this assignment. That was the story of my involvement in developing cutting practices. I can't say how influential this work was on later developments, although now all southern states have cutting practice rules and regulations.

ERM: At this particular time in the mid to late forties, I presume most of the research under your direction was oriented toward commercial uses of the forest, and perhaps some watershed use. To what extent were other forest resources, in the multiple use sense, taken into account in your research planning program?

GMJ: At the period of time you mention, other than watershed and wildlife aspects, production of timber or timber-related crops like naval stores was the primary emphasis of our research. For instance, we had no concept of the importance of forest recreation as a resource that could be studied and incorporated into a multiple-use management program. Foresters as far back as I can remember have been the best ecologists around. Since we were trained in ecology, we understood the impacts of various activities on the forest as an ecosystem. However, we weren't consciously designing research to measure the impact of people on the forest, other than on watersheds, of which we were very conscious, and, to some degree, on wildlife habitats.

ERM: Of course, most of the forest land in that area is not national forest land. It is privately owned and that didn't enter very often into recreational considerations, at least not until relatively recent times.

GMJ: Yes, that's right. Remember, a lot of the land was coastal plain, and these other uses, while important, were not excessively damaged by timber management programs. In fact, timber management and burning helped wildlife, and, as I say, we didn't worry too much about recreation in those days. We were very conscious of the

impact of logging and other related activities in the Piedmont and mountains on watershed values, and had major programs there to evaluate them.

ERM: How did research in forest entomology relate to what you have been involved in? Did you have any major insect problems in your experience?

GMJ: Yes, there were serious insect and disease problems in the South and Southeast. You may remember, it was not until about 1953 that the old Bureau of Plant Industry was broken up. Entomology and pathology research programs were incorporated into the Forest Service, and certain Forest Service programs were transferred over to what then became the Agricultural Research Service.

So at the times we are talking about, when I was in the Southeast, I had no direct responsibility for insect and disease research. But I did work closely with Hepting, as we've already mentioned, and with Bill Wilford, chief entomologist in Asheville. We were very aware of insect and disease problems, but the research was done by these other groups.

ERM: You also assumed a major role in research administration, with emphasis on developing support for research center field organization. Could you delineate what was involved in that operation?

GMJ: Well, at this time we were emphasizing development of what we called research centers or work centers. They were small programs, usually three or four men with a variety of skills--silviculture, reforestation, watershed management--at numbers of locations throughout the region. I worked with landowners or industries to obtain lands for experimental forests needed for the research centers. Then, of course, it was my responsibility to work out budgets, recruit staff, to develop programs including problem selection, problem analysis, study planning, and to supervise the work.

ERM: Was this a new departure for Forest Service research, or had it been tested in other parts of the country?

GMJ: I would say it was substantially new. The idea originated at the Southern and Southeastern Stations, but not until after the war, when we began to get funds through the efforts of Senator Stennis, did we begin to have the wherewithal to develop this type of program. We worked very hard at coordinating the development of these research centers, the Southeastern and Southern Stations, to cover needs in an effective but coordinated fashion. The additional funds that were made available to us by Congress during the late forties and early fifties certainly gave a big boost to the research center program.

One of the most interesting jobs I had was to obtain, through the opportunities offered by the Camp Manufacturing Company, the Big Woods Experimental Forest in the extreme northeastern corner of North Carolina. This very fine area was made available on a long-term, dollar-a-year lease by the company. I got to know John Camp well, and a very fruitful and warm relationship grew up over the years as a result of that job. I enjoyed this part of my responsibilities very much.

ERM: George, what impact did this research center idea have on giving the Forest Service in general, and its research program in particular, a new high visibility?

GMJ: It was terrific in that sense. You see, it put foresters out into the communities and the subregions where the customers were. We had very carefully selected men leading these programs who talked every day with local landowners and industry people, and many people could see their work through field trips. This gave us a basis for support and for spreading new knowledge to the people who should have it.

- ERM: They were seen as contributing importantly to the economic health of each area that they moved into?
- GMJ: That's right. It got out of hand after a few years because everybody wanted his own research center.
- ERM: How did you put the brakes on this?
- GMJ: Gradually over a period of years. With this research center approach, we had more or less complete little experiment stations, small but covering most of the land management problems. We found that after a certain period of time they dealt with the more readily solvable problems through well done but rather quick research. It became apparent that for the longer run the work required deeper delving and more scientific skills than, say, a general forester could bring to the job. This was why Harper, in subsequent years, gradually brought about a change from the research or work center to largely university-based, functional programs on, for example, tree improvement through genetics or a project in some aspect of forest products marketing.
- ERM: What you are saying is that the new perception of the men responsible for the overall planning was that a new degree of sophistication in research was necessary and this, in turn, required an atmosphere where the community of scholars could come.
- GMJ: Yes, that was it. And some were against this move.
- ERM: You mean a feeling that, after having built up the whole research center program, those at the top were now pulling the rug out from under them?
- GMJ: Yes, although time proved that it was a good, sound move. There have been changes even since I left the Forest Service, such as a changed emphasis on organization.

- ERM: Nothing in this life or world is static; it's all dynamic.
- GMJ: Yes.
- ERM: Let's move on. I'd like you to tackle first, George, the major role you played in field research administration starting in about 1950 and extending to 1957, when you went to the Washington office. Could you take a crack at your experience at the Northern Rocky Mountain Forest and Range Experiment Station in Missoula, Montana, from 1950 to 1953?
- GMJ: That was a small station. Of course, I was going home, so to speak, because that's where I started out, as a junior forester in Missoula in 1931. Many of the old-timers were gone, but I did have close friends on the staff there. One of my main jobs was to try to build support for a small station with a very limited congressional representation in Washington. And I did this, of course, through improving our contacts with key people in Montana and northern Idaho.
- At this time I had an opportunity to work especially closely with some of these congressmen and senators in Washington, because I was on a detail to Harper's Washington office to help develop a strategy for a cooperative program with universities. [Congressman] Jamie Whitten, chairman of the Agriculture and Forestry Committee in the House, was very critical of forestry research for not doing more work with universities.
- ERM: You know, Les had a strong feeling that Forest Service research had a poor standing in the eyes of Congress and the Department of Agriculture, and perhaps among the scientific community at large, in the late forties and fifties when he took over. Do you agree with that estimation?
- GMJ: I do, fully. In the early fifties Harper and others in the Forest Service began to work specifically on programs that would change this viewpoint, because they didn't think it was entirely justified, although there was tremendous

room for improvement in our scientific capability. I worked under Harper as a detailer on the beginnings of a cooperative aide program that was put into legislation in the Whitten Amendment in 1958, which gave us the authority to put money in universities for certain cooperative programs.

Also during my period at the Northern Rocky Mountain Station, plans began for constructing the first major forest fire research laboratory, which I think I mentioned earlier. I worked closely with Senator Mansfield, who was instrumental in bringing this program to fruition.

Later, after I had left the area, I helped consummate with the Munitalp Foundation a long-term cooperative program that was the beginning of Project Skyfire, a very fine research program in cloud physics. It has led to advanced knowledge about cloud seeding in the control of orographic thunderstorms. That program started with Irving Langmuir and Vincent J. Schaefer of the General Electric High Voltage Laboratory at Schenectady, New York, while I was still in Missoula.

I guess we can't leave this part of my forestry career without telling briefly about consolidating the Northern Rocky Mountain and the Intermountain stations with headquarters at Ogden and abandoning the station headquarters at Missoula.

This was almost disastrous. I was called to Washington to explain to Mike Mansfield, the senior senator from Montana, why it was necessary to abolish the station in his home state. I innocently went into his office one afternoon to rationalize the proposed move, only to find that someone had tipped him off as to the purpose of my visit. Boy! was he lying in wait for me. I never took such a dressing-down in my life as that from Senator Mansfield. But, after he got that off his chest, he gave me a chance to explain the reasons, we went ahead with the consolidation, and everything was fine. I think it was just a case of mishandling an attempt to change an organization. Obviously,

Mansfield should have been brought into the discussion much earlier since this concerned his constituency and his district.

ERM: He probably heard from a lot of his constituents in the Missoula area who were miffed, too.

GMJ: Perhaps later on, but this was all done on the quiet. It was a good move at the time, although now the program in Missoula is many times the size of the one we abolished back in 1953.

I next became director of the California (now called Pacific Southwest) Forest and Range Experiment Station in 1954 when Steve Wyckoff retired, and, here again, one of my major problems was to develop stronger cooperative relations with various organizations in California.

A large part of our program was supported by the state or by other public agencies, like Los Angeles County. By working with the state Forestry Board we were able to sustain and improve our cooperative work with the state of California in the field of soil vegetation survey, which has become very important there, and also in watershed management research both in the high Sierra and in the San Gabriel Mountains in southern California.

Strongly supported by state organizations, in the middle 1950s we began Operation Firestop, headed by R. Keith Arnold, who succeeded me as director of the station and in later years as head of research in Washington. Operation Firestop gave us a chance to get deeply into major aspects of fire behavior, mass fire phenomena, chemical control from the air or fire bombing with chemicals, delivery of fire fighters from helicopters, and techniques of laying fire pump hose from helicopters. During this time we had a cooperative agreement with the Atomic Energy Commission to study mass fire phenomena in connection with nuclear explosions. We had a crew at Frenchman Flat,

Nevada, for a number of years, instrumenting forests that were actually moved out to the desert en masse, and studying the effects of blast and heat radiation on the forest and on houses and components of buildings that were erected by the Forest Products Laboratory.

We also began an active program in redwood research in cooperation with the Simpson Timber Company, the first strong undertaking in the redwood region.

ERM: What was the nature of that research?

GMJ: We had two principal thrusts. One was to study various silvicultural systems and methods of cutting in the redwoods to insure regeneration and to compare the yields from different methods of handling timber stands. The second was watershed protection research. The northern California coastal area is subject to violent rainy periods and flooding, and our interest was to relate logging impact on the watershed--on soil and runoff.

ERM: What was learned as a result of those studies?

GMJ: That location of roads and Caterpillar tractor trails is very critical in terms of the subsequent damage that can be done by storms. They also learned that a tremendous amount of natural erosion occurs in virgin forests and that much of the damage is being sustained. Some scientists even think that the erosion process is essential to the long-term life of the redwood forest because it builds sediment and soils in the flats where the huge trees grow best. Of course, I'm not now intimately in touch with what they are doing there, but I know this has been the main thrust of the work.

Also at this time we began our first efforts to start a research program in Hawaii. After I left California, John McGuire became director of the station after Arnold. We finally consummated a small but successful program for Hawaii under the name "Institute of Tropical

Islands Forestry." That, I think, highlights my major activities as director of the Northern Rocky Mountain and California stations.

ERM: Let me ask you a few questions. First of all, going back to that Mansfield confrontation, did you ever have a similar experience with any other person in politics?

GMJ: Well, in later years, I did.

ERM: But not in this period?

GMJ: No.

ERM: Let me see here. Harper said that the biggest gain in the use of the problem analysis and study working plan probably came in the last half of the forties and early fifties. You were among those he cites as strong advocates of the idea who assumed research administrative positions. How did you work for implementation in the Northern Rocky Mountain and the California stations?

GMJ: Well, as I mentioned, when I was at the Southeastern Station, I was a strong practitioner of problem analysis and one of my first actions in fire research was to prepare a complete problem analysis. I think I mentioned also that, as we developed the research center program, one of my main jobs was to work with research center leaders and scientists in the continuous and studied use of the problem analysis approach and in the preparation of study plans.

ERM: Were there any inputs from the public at large?

GMJ: No, not really.

ERM: Were there inputs from industry in the Simpson cooperative venture?

GMJ: Yes, I think we covered earlier that, in making a problem analysis, one does not just sit down and write it, off the top of one's head. It is necessary to diligently search out people

who have the problem, such as those in the Simpson Timber Company operation, and then to weigh their problems against those you learn from other sources. Out of this whole systematic study comes a feeling for the big problem and its component parts. Then you determine by analysis and careful thought the priority problems you could likely help solve.

At this point enters your ability to finance research and to provide the skills necessary to accomplish it. There are constraints from mundane things such as money and manpower, but you reach that process only after you have studied the problem and tried to determine which phase really needs attention and will do the most good if it is solved. In this whole process you keep in constant touch with those who have the problems.

- ERM: Was the application of this research planning approach similar, then, across the country, wherever it was put to the test?
- GMJ: I think the principles were the same. The application varied with the belief in the planning process by various administrators. Some were strong believers, like myself, and some were not. But you asked how this whole process was put into operation. It was done just by training and by discussion with scientists to show them that this was, after all, the quickest and soundest way to approach a research problem. Later, specific requirements for problem analyses and study plans were written as directives for all researchers to follow.
- ERM: How would you characterize the influence of those at the study and regional levels in determining the thrust and emphasis of research? Did it increase or decrease as time went on?
- GMJ: Of course, most researchers are specialists who appreciate the difficulties of making progress in a given area. Presumably, if they are journeymen researchers, they know how to proceed. However, I think researchers need to have a tempering influence from those

who have a wider view and can select where to place major effort. So I would say that the people at the study level do have an important influence in selecting projects to be done, but I don't think a successful program can depend only on their choices. A wider view keeps problem orientation in mind as a major goal.

I'm not against independent, freewheeling research by individuals. There has always been a provision for that in Forest Service work, through the pioneering research approach. But I think the better programs in the Forest Service and in the universities, like Oregon State's School of Forestry, come about by a much more rational, studied program planning approach, and that requires involvement of people above the scientists' level.

ERM: The administrative level?

GMJ: Yes.

ERM: And it's there that priorities are determined?

GMJ: Yes, because that is where the purse strings are and personnel hiring occurs.

ERM: Right. Now, how were the expenses of the research centers met? By customers or clients who wanted particular problems solved and were prepared to help meet the costs, and then government would provide the rest?

GMJ: We always tried to develop programs on the basis of the priorities of the problems that needed to be solved. We tried to avoid, not always successfully, situations in which a member of a timber industry would come by and say, "Boys, I've got twenty thousand dollars here in my pocket I'll give you, if you'll work on my special problem." Now, if that special problem happened to fit our priorities, fine. But if it were off in left field and would benefit the man in some peculiar way, we'd say, "Well, sorry, we just can't take your money."

ERM: In other words, you weren't a gun for hire.

GMJ: That's right. And you know you can't draw the line sharply and say, "We always did it that way," but that was the intention, that was the way our programs were formulated and administered. I think we did a pretty good job.

ERM: There was some mention earlier on about a directive you were given to clear out the hangers-on when you got to the California Station in 1954. Was this part of a purge?

GMJ: No, it wasn't. I think any established research program, like the one at Berkeley at that time, had what you might call hangers-on. Any organization has people who are advanced in years, have lost their zip, have not really done any new thinking for a long time. I guess it is just human to age in this manner. The workers who aren't pulling their weight are usually the most expensive people to keep, so my instructions were to find a way to unload these individuals, to put it frankly. They were all qualified to retire anyway, you see.

It took a little doing, but I can honestly say that what I accomplished was done fairly and without any rancor. We all parted friends and it was just a question of their demonstrating to themselves that they weren't pulling their own weight. When they finally realized that, they were willing to step down. But it took a little diplomatic handling to bring that about.

ERM: In other words, you, as the new director, had to challenge them with an assignment or two. Then, by their own lack of performance, they proved to themselves that they were not up to it.

GMJ: Exactly. We did this in such a way that they had written work assignments and reported their accomplishments in writing and on their own time schedule. When they would continuously fail to meet their own schedules, it wasn't hard for them to see that they could not really be one of a team any more.

ERM: And these people, you say, were already eligible for retirement?

GMJ: Yes, all of them.

ERM: Early retirement?

GMJ: Mostly full retirement.

ERM: And this had no negative impact on morale?

GMJ: I think it was the reverse. I think it had a beneficial impact on the younger staff.

ERM: It was a step in the right direction for them. I presume it opened the doors to fresh opportunity for the younger staff, too?

GMJ: Right.

ERM: Your program was, of course, contained within the limits of a budget. Therefore, mechanisms by which budgets are arrived at become important to understanding the history and development of an idea. How did you compile and get approval of budgets for research centers?

GMJ: Forest Service appropriations for an activity at the station level are fairly stable, except in years when specific increases or reductions are identified and included in the budgeting process. In other words, it's fairly well known ahead of time whether you have a certain number of dollars for a program.

Now, with that general knowledge for, let's say, a unit like the Division of Forest Management, and with allotments already attached to ongoing programs of, let's say, ten research centers, budgeting becomes a problem of re-shuffling funds from less productive to more productive projects. This is hard to do in a small program, because you can't divide men. If you are going to move money you have either got to move men or deal with fractions of rather small monies that are used for support purposes-- travel and so on. Making substantial changes in the program by the budgeting process really meant moving people, but a minimum of moving was required

if you had done a good job of program planning and development.

Now, of course, none of us were perfect in this area of planning, and we did have to adjust budgets, but we tried to get full input from the research center level about their funding and program requirements. As opportunities presented themselves, we'd try to make adjustments out of the regional station office to take care of the needs at the center. Financial or budgetary adjustments were difficult except during those years of rapid growth when we were getting large sums of new money.

ERM: We at the Forest History Society are interested in knowing more about the cooperative relationship between the Forest Service experiment stations and state boards of forestry. Perhaps you want to discuss the period when you were director of the California Forest Experiment Station, or your overall history in this field?

GMJ: I'd be glad to relate this to the situation in California, where the state had a strong active Board of Forestry that carried heavy delegated responsibilities for the forestry program in the state. The first week I was director of the station, I attended my first California State Board of Forestry meeting and was tremendously impressed with the high quality men they had. They were gubernatorial appointments. Bill Rosecrans was chairman for quite a few years. I don't know whether you remember him.

ERM: No, I don't.

GMJ: Rosecrans was a former president of the American Forestry Association. He was a wealthy Southern Californian whose family money came from Signal Oil Company. Nationally, he was an ardent, hard-working conservationist. He was very wise and generous in helping me understand the problems of California, how the various state organizations functioned and interrelated with private industry. As I mentioned before, the state financially supported a number of our programs and Bill Rosecrans was always careful in what he recommended

for state support. He demanded results for state monies that were put into our program. But I think it was a very fine, healthy relationship that we were able to develop with the State Board.

- ERM: Can you speak to the matter of cooperation between the stations and the larger lumber companies? We mentioned your relationship with Simpson in the redwood study. Can you think of others?
- GMJ: Well, yes. Over the years I had very fine personal working relationships. I mentioned earlier the Camp Manufacturing Company.
- ERM: Yes.
- GMJ: We had good working relations with many, many private industries, for example, West Virginia Pulp and Paper Company at Georgetown, South Carolina. There were substantial but smaller lumber companies--one in Florence, South Carolina, the name of which escapes me, but the owner of that sawmill was very cooperative.
- In the West, we have worked well in recent years with Weyerhaeuser and Crown Zellerbach. In California, Winton Lumber Company. I know of many others that I was not personally associated with, paper companies in the Lake States region. Southwestern timber companies, Black Hills, Koppers Company. And the Forest Products Laboratory, of course, another Forest Service research group that had strong industry ties.
- ERM: In your view, were there obstacles to cooperation, either with the state boards of forestry or industry?
- GMJ: Of course, with some companies we just plainly didn't get along and were never able to stir up any type of cooperation. I believe that the performance record of the research program and the researchers decided whether you succeeded or failed in developing cooperating relationships.

ERM: How did you make known to the people in your constituency the results of your research? Did you have a publishing program of bulletins and newsletters?

GMJ: Yes.

ERM: How widely did these get circulated?

GMJ: Circulation was no problem. The problem was to get them understood and used. Even today, that hasn't been solved...completely.

ERM: Okay, that's kind of an extension job.

GMJ: Yes. I always tried to encourage the interpretation of research results so that they could be understood by user groups. Of course, a scientist often writes willingly for scientific journals. Writing well is difficult, but the urge to publish results is, I think, dear to the hearts of most scientists.

ERM: You mean to publish for his peers?

GMJ: Yes. But I found early on that there are certain gifted people who can rewrite their own scientific findings so that they are easily understood by lay readers.

ERM: But that is a challenge...

GMJ: That is not common.

ERM: How do you handle the need for interpretation that occurs with the great majority of scientists?

GMJ: Let me just finish what I was going to say and then I'll answer your question. If I found a scientist like that, I would make it easy for him to spend more time writing for other audiences. But if I found one who couldn't, I would not try to convert him into a popular writer. That would be a waste of time. Now, to answer your question. In these instances, and fortunately they arose more often than not, I would use other writers or occasionally I would do a rewrite myself.

ERM: Do a rewrite?

GMJ: In later years, we had funds to hire people who were professional writers to rewrite and put into package form the results of research. I know that the Forest Service is still very much concerned with information transfer, and you only have to go back about four or five years to a rather infamous study that GAO [General Accounting Office] made of forestry research results to see how poor a job had been done up to that point.

ERM: It's a continuing problem?

GMJ: It surely is.

ERM: Perhaps we can move on now to Washington, D.C., when you were transferred there in 1957 and became the first associate deputy chief of Research for the Forest Service, a new type of position. Would you describe the responsibilities and characteristics of this job?

GMJ: Essentially my job was to perform as alter ego to Les Harper, who was deputy chief of Research for the Forest Service. While I was under Harper's general direction and had certain subjects assigned primarily to me, I was supposed to have the knowledge and ability to handle the administration of the research program as well as he would. When he was away I had the authority to make necessary day-to-day decisions.

I worked in program planning and developing budgets, handled congressional requests for information, and wrote many speeches for congressmen and senators. For example, I wrote so many speeches for Senator Stennis that I could almost write with a southern accent.

ERM: Would you classify that in the realm of congressional liaison?

GMJ: Yes, I think so. Now that, in a broad picture, was my area of responsibility. "Alter ego" in

research administration implies a long list of specifics: participation in general inspections of field stations, research planning (both long-term and national planning), helping in budget preparation, and presenting budgets to Congress every year. A tremendous amount of supporting material had to be prepared for the budgets and I participated very heavily in that.

ERM: So you testified frequently before committees?

GMJ: As associate deputy chief, I was really a backup to Harper, although I sometimes testified when he was absent. The McIntyre-Stennis Act was one occasion, and a special Insect Appropriation Act before the Whitten committee was another. I testified before the Bureau of the Budget, now called the Office of Management and Budget, annually in support of our budgets.

ERM: How has the research branch of the Forest Service handled communications with the White House or the Executive Branch, or is that outside its purview since you are part of the Department of Agriculture?

GMJ: As far as I know, all communications between the Forest Service and the White House went through the secretary of Agriculture. We participated heavily. For example, when a political platform was being developed, every agency had an opportunity to suggest certain proposed planks in the party's platform. These always went through the department and often most of them were boiled down or combined with related items from other agencies.

ERM: Did you ever feel that forestry research had friends in the White House in any given administration?

GMJ: Well, you know, friends at that level might be a little hard to identify. There were undoubtedly certain presidents or certain people on the president's staff who appreciated forestry, but whether forestry research specifically, I couldn't say.

- ERM: What about Sherman Adams?
- GMJ: Sherman Adams, of course, as a forester, was very aware of and quite sympathetic to forestry. I think Eisenhower responded favorably, since he was an outdoorsman himself.
- ERM: I've heard people say that Eisenhower had not the slightest interest in forestry.
- GMJ: Well, there's the old story of his exchanging recipes with Andy at the Fraser Experimental Forest near Denver, where he used to visit frequently. Ike was something of a cook, you know, and Andy, the old cook at the Experimental Forest, and Ike were on a first-name basis. I'm not sure that suggests Ike was interested in research, but he knew of the organization and I know he complimented Chief McArdle personally on the spirit of the Forest Service.
- ERM: George, you were a member of Harper's committee to plan research for the next ten years.
- GMJ: Yes.
- ERM: And, since Harper was in Europe in 1961 when you presented the program to the department's forest advisory committee, did you encounter any important objections from that group?
- GMJ: No, I don't think so. I had the opportunity of being relieved of all duties except to develop that ten-year program during a six-month period. So when I had to present it, I had the advantage of having written it myself, drawing, of course, on input from the field and considerable help from the research staff in Washington. It was well-received by the advisory committee, on which there were one or more forestry-trained people. I'm not saying this because I wrote the text, but it was such a well-conceived and well-structured program that the rest of the department was envious. Harper's long-term leadership in sound program planning obviously paid off.

- ERM: It was emulated by other departments or bureaus, is that right?
- GMJ: Yes, to a degree. Our program, you see, had its beginnings in sound problem analysis. Every project had its objective and scope written out, and was backed up by carefully prepared lists of sequential studies necessary to meet the objective. The extent to which other bureaus in the department adopted the program varied, but the principle was accepted as sound by all the branches of ARS [Agricultural Research Service], for example.
- ERM: Well, it's been my observation that the Forest Service has established a reputation as an innovative, imaginative government agency. Pinchot's genius for public relations in the early years won such widespread public attention that many another agency of the federal government began to copy the techniques he was employing. Similarly, the Forest Service methods of keeping and filing records and the information retrieval systems were emulated. Are there other areas of work in the research field that might be in the same category?
- GMJ: The thorough and systematic planning of research we have discussed led to other advantages. For example, I am sure that the output of good finished research from well-planned, problem-oriented studies paid off because congressmen could see that money given for Forest Service research was well-spent. This was probably one reason why we fared so well in the late fifties, throughout the sixties, and even up to today in financial support from the appropriation committees. Other research bureaus in the Department of Agriculture, I am quite sure, have not been quite as successful, and I believe this traces back a couple of decades to the very careful planning that Les Harper instigated.
- ERM: Could it go back even further in the heritage of the Forest Service? Earle Clapp was a great research man before Harper, and his contemporaries were men like Sam Dana and

Raphael Zon. It seems that the Forest Service has a long tradition of strong leadership by men who were primarily research-oriented--Clapp was the chief and McArdle was a research man.

GMJ: Yes. Those men you have mentioned, of course, all were very dynamic leaders and I am sure that they had a long-term influence on the research program and on the motivation of the Forest Service to do a good job. And it is true, as you have intimated, that many of those who have held high administrative positions in the Forest Service did come up through research. John McGuire, for example, was a career researcher and is now chief of the Forest Service. Tom Nelson, who is deputy chief for National Forest Administration, had a research career. The head of State and Private Forestry was a former researcher, and so on.

That doesn't mean, of course, that the only good guys came out of research organizations, but it does mean that they have been well-trained, have initiative, and can make good decisions.

ERM: Have there been any substantial changes in the Forest Service approach to research between, let's say, the earlier men you mentioned and men in the Harper and Jemison era? Would those changes mainly be what you have been describing, new systems developed in the forties and fifties?

GMJ: I think that, as we have indicated earlier, the approach to research and research organization is dynamic because problems change and the state of knowledge expands. As application catches up with knowledge often new research techniques are required. Better trained scientists are needed. Why, my goodness, a young fellow today has techniques that I can scarcely understand. Research is much more sophisticated now, and requires more skills to solve more complex problems. Demands for knowledge are greater and resource needs are increasing. For example, the social involvement today in forest resource management problems is tremendous compared to what it used to be.

ERM: I was about to talk to you about that. How do pressures from constituencies and special interest groups for the environment and the wilderness affect the research program, its appropriations, and its planning emphasis?

GMJ: Of course, the pressure from interest groups and from segments of the public that state or federal research organizations serve affects program content and direction, and I think it should. Long before the environmentalists' language became popular, we were pressing hard for funds to do ecological research. In the Boundary Waters Canoe Area, social pressures affected resource management.

I can remember answering the phone from congressional offices on the Hill dozens of times back in the middle 1960s, "What do you guys mean by ecology? Here you've got some money in the budget for ecological studies in the Boundary Waters Canoe Area, but what does that word mean?" Well, we were ahead of the pack a little but we could see that sort of pressure coming from public interest groups. We knew we had to learn more about the impacts of people on, in this case, a recreational resource, and so we were trying to make that research a budgeted item.

ERM: On the Hill, what support did you get for your research from outside groups like the American Forestry Association and the Society of American Foresters?

GMJ: We generally got strong support. The Society of American Foresters in particular rarely talked to specific items in our budget. They would not support, and properly, I think, an increase of, say, one hundred thousand dollars for insect research in New Haven, Connecticut. But if they felt it was appropriate, they would support an increase in forest insect research or general research.

The forest environment associations, and some of the timber companies, and individuals in southern California who represented Los Angeles

County would come back every year and testify in support of specific programs. The chairman of the California State Board of Forestry annually supported specifics in our research program. And, of course, congressmen were always pushing for some program within their own constituency, which was good. This arose because of a nationwide feeling that forestry research was a good investment.

ERM: Some critics have held that administrative heads of the Forest Service or the FS men in the field stations were somewhat indifferent to, or ignorant of, ecological dangers until Silent Spring focused national attention on these matters. What would you say in response?

GMJ: I'd say that Silent Spring undoubtedly touched off the "noisiest summer" that you could imagine. But I would not agree that forestry researchers were ignorant of the problems associated with various environmental impacts. Silent Spring was good because it aroused the public and Congress into taking actions that might otherwise have come about much later.

The largest single appropriation for a specific program, up to that point, went through Congress like a breeze. It was a deficiency appropriation of \$29 million for the Department of Agriculture to step up its work on biological control of insects and diseases.

I had to develop the Forest Service research portion of that program and I testified before Whitten's committee in support of it. I don't remember where Les Harper was, but, as I recall, the Forest Service got \$2.9 million in one whack, which in those days was a lot of money for insect research. We immediately stepped up our work on biological controls and I personally went out to Beltsville and hired a rare species, an insect virologist named C. G. Thompson whom we put right here in Corvallis. Hank has since produced, and it has now been cleared by the National Environmental Protection Agency, the first forest insect control virus that has ever been registered. The virus is

used to control the tussock moth and is very successful. And so these things take time but Silent Spring sure had an impact, no question about it.

ERM: I suppose this goes back to what you were saying earlier, that translating the highly sophisticated language of science and research into the common parlance of the day to dramatize its importance to the public is a big chore, isn't it?

GMJ: Yes. Researchers are, for good reason, reluctant to dramatize too much. You know research is never finished, there is never a final answer, so it pays to be cautious. Still, sometimes dramatization is necessary to get the message across and propaganda now and then doesn't hurt if it's carefully done.

ERM: Well, I know from long experience that serious scholars are always leery about appearing in print, because they run the risk of gross distortion of their work by having it popularized.

GMJ: Yes.

ERM: If that happens, their peers turn on them and say, "Why in the hell did you ever let some stupid guy like that write your story? You cast discredit upon us all by allowing that to happen." And so there is a natural reluctance, I suppose, but, still in all, the problem remains. You've got to publish to keep the public informed and thereby keep their support growing.

GMJ: That's right, yes.

ERM: Les Harper extolled the implementation of the man-in-the-job concept as having the single most positive and far-reaching effect on the morale and incentive of scientists. Would you agree?

GMJ: That's a pretty broad statement but I think I'd have to say I agree with him. That idea

eliminated what used to be the old stepladder principle, which was that you couldn't move up until there was an available rung on the ladder.

Research really should not be structured that way. A man should be evaluated and paid on the basis of what he can do, not where he stands in the chain of command. With the man-in-the-job concept, if a scientist was good enough, he could expand his area of responsibility until he reached his limits.

ERM: To what extent do you think the Forest Service has responded to the need for research in recreational areas? Was the need emphasized early in your experience, or was it dormant until political events and statistics were amassed in the fifties?

GMJ: I think it was in 1955 or 1956 when Les Harper employed Sam Dana to make an analysis of forest recreation as a research area. It was a problem analysis well before there was as concerted a public outcry as we now have for better recreation management and better integration of recreation as a resource in the multiple-use management picture. We hired young Frank Craighead as the first leader of the recreational research program. Later on he went into other fields, and it was extremely difficult to get going in recreational research.

One subject on which I disagreed with Harper from the beginning, although I understood his position, and perhaps he was more astute than I, was that I felt we ought to get into people-oriented research studies in recreation resource management rather than research only into physical resources. It was far easier to study how many people use picnic tables two hundred feet from the road compared with fifty feet, or how much trampling a forest ecosystem would stand, and how it would respond to water and fertilizer. We didn't know how to conduct studies that dealt with the behavior of people--why they act as they do in a wilderness

or recreation area. Probing minds and behavior is hazardous and highly sensitive; Congress would be reluctant to give money for us to do that. Today, everybody is beating on the FBI and the CIA for opening mail and prying into people's privacy. There is the same belief that if we studied people, we'd be infringing on their personal liberties.

ERM: I don't quite see that as true, George.

GMJ: I still think limited progress has been made in recreation research on such topics as, why do people litter? Half of the appropriation for forest recreation, millions of dollars, was being spent on campground maintenance and picking up trash. If we had taken the other course earlier and studied "people" problems, maybe we would have lost our shirts. But in my judgment, we have not made much contribution to solving the recreational problems through research.

ERM: How would you attack that as a research problem? Would you use a polling procedure, interviewing people at their scene of recreation?

GMJ: Well, now we are getting down to specific research procedures. I can't speak too knowledgeably because I'm not an expert in sociological or psychological studies. I think it involves the questionnaire techniques and observations. It is difficult to make controlled experiments that involve large numbers of people, but I think it is possible.

John Hendee and associates have done some productive research at the Forest Service station in Seattle. But it's tough, you know, how do you evaluate esthetics? Getting back to your original question, I do not think the Forest Service was slow to recognize that there was a field of recreational research, but we've made slow progress.

ERM: Would you like to comment about the origins and the successful implementation of the

McIntyre-Stennis forestry legislation? It looms as an important part of your career in the sixties.

GMJ: Well, beginning with the 1951-1952 response to Congressman Jamie Whitten's urging to enter into cooperative work with the universities, the Forest Service had pushed for support of university research programs. I was detailed to Washington to assist in preparation of materials that were used in hearings culminating in cooperative aid authorizations under the Whitten Act. Later, a basic research grant authorization broadened the Forest Service's ability to support university research.

The McIntyre-Stennis Act was just another way to get support for university-based research. I had nothing to do with its concept. Les Harper and university people like Marinus Westfeld at Missouri and Dick Preston at North Carolina State were the prime movers.

ERM: Frank Kaufert from the University of Minnesota had something to do with it, didn't he?

GMJ: Yes, and I guess my role was to help sell the idea to agricultural experiment station directors. I also participated in a modest way in the testimony before the Senate hearing on the bill. I did some hackwork, writing portions of different drafts of the ct.

But perhaps my major role related to contacts with the agricultural experiment station directors. I would say that, as a group, they were anti a special forestry research act, because they feared it would lead to appropriations that would cut into Hatch Act funds, which supported agriculture federally at the agricultural experiment stations.

Back in about 1953 I hosted the annual meeting of the state ag experiment station directors at the Priest River Experimental Forest, where I was director. We laid out the red carpet and they had a wonderful meeting. Many were very impressed with the Forest Service research

program. I made good friends with Earl Price of Oregon. I knew Mark Buchanan of Washington very well, Paul Sharp of California, and quite a few experiment station directors that I met.

Then, in 1960 and 1961, when the McIntyre-Stennis legislation was in the hopper, Harper sent me out to Denver to an annual meeting of the ag experiment station directors. The committee on policy was considering whether to support this legislation. Frank Kaufert was there, and I gave the Forest Service reasons for support and told how the legislation would fit in with our program. Of course, Frank strongly supported the proposed forestry research legislation, but at that meeting there was still a very strong atmosphere of suspicion that...

ERM: This was going to make inroads?

GMJ: There was suspicion that the Forest Service was going to try to take away some of the responsibility from the universities, and would try to cut into the Hatch Act funding. But Earl Price was one of the staunch spokesmen on the ag experiment station side, in support of the McIntyre-Stennis legislation.

My role was to participate in winning over the ag experiment station directors, who were quite powerful politically, and at first strongly opposed to the legislation. They finally agreed to go on record in support of the legislation.

ERM: Were any of their fears justified by subsequent funding of the ag experiment station program?

GMJ: No.

ERM: Did the programs grow substantially in spite of this?

GMJ: Oh, yes, sure.

ERM: So that should almost produce an axiom of government, shouldn't it?

GMJ: Well, if you have good programs, they stand by themselves. We were not talking about huge amounts anyhow. A salable program that is soundly conceived has to have a lot of funds, but in such situations it is unnecessary to steal from here to support something there. And the ag experiment stations didn't lose any money from their programs, I'm sure.

I also had to testify before the Senate committee when they were considering the McIntyre-Stennis bill, and Senator Proxmire had problems that he wanted ironed out. They didn't have a forestry school in Wisconsin at the time and he wanted to be sure Wisconsin didn't get left out. So we had to alter the language a bit to be sure that Wisconsin got into the picture for funding.

ERM: You were involved in leading the first forestry group ever to visit the Soviet Union in 1959. I wonder whether you could recall your memories of that junket and tell us whether you gathered enough evidence to make important comparisons between American and Russian forestry, especially government. How did their administrative machinery work? What was the level of technical research, and what was the relationship between planners in Moscow and the men at the field stations you visited?

GMJ: That's kind of a big question. First of all, you must remember that everything in the USSR is controlled by the government. I think our mission was successful in that it did give us a basis for judging, at least roughly, the status and level of accomplishment of forestry research in the Soviet Union versus our own. The team I had was made up of some very capable people, specialists in different areas, who could interpret accurately what the Soviets were doing.

The Soviet scientists had, in our opinion at

the time, rather limited opportunity to do their own program planning. A great deal was dictated by the central authority; there is no private enterprise. I could just illustrate quickly with one example.

They have a very fine forest engineering research facility on the outskirts of Moscow where logging equipment is developed and new machines are tested and evaluated. By edict, this outfit had developed an electric-powered chain saw for felling and bucking timber. It was a good machine, no question about it. The government dictated that 20,000 machines be manufactured and placed in all woods operations.

Well, the saws worked perfectly, except moving the required 200-pound generator from stump to stump was difficult. So the edict came down, "Now we will develop a gasoline-powered chain saw." And so, by another edict, all of the electric saws were thrown away and everything went to gasoline power. This was how their research progressed.

Despite this, they were doing very fine work in some fields. Their research in pulp and paper resulted in a product that was almost intolerable for personal use, they had very limited newsprint, and their kraft paper was terrible. But, according to Bob Seidl, who was our pulp and paper expert, they manufactured special paper to go into electronic components as good or better quality than what we could manufacture in this country. This was mainly for military purposes. So their skills were focused on what end uses they considered most important.

Now you know the Lysenko story, how the government supported his environmental theory and Mendelian genetics was down the drain. Then it was back on again, then down the drain again. This was all controlled by government edict. We found individual scientists who didn't go along with all that stuff, but when we asked to see what we would consider orthodox genetical research, we were told, "That's all being done

in Siberia." I suppose they wondered why we snickered. But I've talked around your question.

ERM: Well, let's have another look at it here.

GMJ: The Russians did good work and poor work, but generally were not as advanced as we are.

ERM: The level of their technical research was far below ours?

GMJ: I would say well below, in most fields.

ERM: What about the relationship between the planners in Moscow and the men at the field stations? Were the planners politically-oriented rather than scientifically-oriented?

GMJ: Yes, essentially. The results of our trip and our conclusions were reported in a published document. You probably have that reference somewhere.

ERM: What about the Orville Freeman reduction in forestry research field stations with the Christmas Eve confrontation and a followup that paid off?

GMJ: This was when McNamara, as secretary of the Defense Department, was making big political news by closing down military establishments. Agriculture Secretary Freeman, not to be outdone, announced a program of closing agriculture and forestry research stations. Harper was gone somewhere on Christmas vacation, I guess. I was the on-the-spot responsible individual, and on Saturday night, it was Christmas Eve, I got a phone call about dinner-time saying, "We would like you to close \$300,000 worth of research stations as part of a just-announced program of reduction of field stations by the Secretary." I said, "Fine, we can do that. Will sometime next Monday be all right?" They replied, "No, we want it now. Right now, on the phone." So I had to think up \$300,000 worth of programs we could abolish, and their locations. I came

up with eight names that roughly totaled \$300,000.

ERM: What a tough answer to have to give on the spur-of-the-moment.

GMJ: Yes.

ERM: You had no chance to refer to anything?

GMJ: No. It had to be done immediately.

ERM: Good Lord.

GMJ: Fortunately, I knew our programs quite well, and I identified the weaker ones. But unfortunately, one program was at Rapid City, South Dakota, where Karl Mundt, who was on our Senate appropriations subcommittee, came from. Another was at Bedford, Indiana, the state of Congressman Denton, who was chairman of our House appropriations subcommittee.

Monday morning before work, I was on the Hill and I went to their respective offices. I told them what I had done and explained the circumstances. Karl Mundt said, "I worked hard for that program. I know it's small but I sure hate to lose it. \$20,000 is all that is involved. It's just a two-man program. How much would it take to get a real good program?" I said, "\$250,000." Well, that next appropriation year we got \$125,000 put back.

But we didn't do so well with Denton. I went over to see him and he fussed about it but finally went along. Subsequently we got that restored, too. This was just a typical incident in the life of a Washington bureaucrat who had financial and budget responsibilities.

ERM: In your review of my interview with Charles Connaughton last year, you noted that Charlie did not discuss the effects that larger decisions such as policy changes, legislation, and political issues had on the forester in the field. Would you like to take a crack at

that, pointing out instances that you witnessed? For example, Charlie said that the Job Corps was even better than the CCC [Civilian Conservation Corps]. Was that so? I know several foresters who have the opposite opinion.

GMJ: I am almost, if not entirely, unqualified to speak specifically to the Job Corps vs. the CCC. The Job Corps came along a short time before I left the Forest Service, and I've had relatively little experience with it. But I do know that the per capita costs involved in the Job Corps were always under the gun because they were very high. Whether the pay-off, in terms of training and subsequent placement of enrollees in the Job Corps, was a good investment, I don't know. I've heard arguments both ways.

Now to your more general question. I may have been referring to the lack in Charlie's discussion of the racial minority problems that involved a major government policy position and must have had a tremendous impact on forestry. I don't think that was mentioned in his talk, for instance.

ERM: Equal opportunity legislation opened the doors to black employment in the regional offices.

GMJ: And the policy that came from that legislation directed field officials to remedy what were considered to be limitations in their personnel management program and equal opportunity areas. I was involved in that in a very critical way in one of my final years in the Forest Service, and I made sure it involved our field research administrators.

ERM: How did these policy changes affect your people and you?

GMJ: I know it affected me personally. For some reason, the secretary's office singled out Forest Service Research as the unit that would be under special scrutiny to see that equal opportunity employment legislation and the employment of minorities was carried out effectively.

This led to very critical reviews of our activities by the assistant secretary, although statistics showed that we probably had the best record of any Forest Service unit in employing minority people. I made a careful personal survey of all our field units, and I found some rather deplorable situations. Not very many, but some. These were, of course, corrected.

I also exerted a lot of time and effort in convincing our field administrators and our research station directors to do a better job in handling our equal employment opportunity programs.

ERM: I can see that this could be dealt with in lower level jobs, but how about in the more highly sophisticated areas of research? There you depend upon a pool of highly trained scientists. Weren't you instructed to carry the policy out to the very top levels?

GMJ: We were instructed to go to every length to employ blacks, even to the point where I had to justify every promotion on the basis that we would try to fill in the opened position with a black. Of course, we couldn't find qualified people in very many cases.

Certain field station directors and I personally visited several black universities to make them aware of our program, and of the kind of people we wanted. We were hiring not just graduate foresters, but also physicists, sociologists, and in thirty-five research disciplines. There were qualified people around, if you could find them. I can't say that those university visits led us directly to highly competent blacks whom we hired. We even had some rather unnerving experiences where we got taken by blacks we were trying to hire. And I'm not proud of this, but we may have hired a few who were really not qualified for the job, just because of the pressure we were under.

But the program and all this pressure, I would have to say, did some good overall. I think

it helped the organization, made us more conscious of what we should have been doing, and corrected some bad situations. At Tuskegee Institute, we placed a full-time forester, paid out of research funds, to counsel students, tell them what forestry was all about, identify the more promising students who might have an aptitude or an interest in forestry or biologically-oriented programs, give them summer jobs, and manage the 6,000-acre forest property at Tuskegee. That program, I understand, is still going on. Again, I can't be sure that it produced many black forestry enrollees, but I'm sure it was worthwhile.

ERM: What hopes do you have for the re-establishment of the CCC program?

GMJ: I think that the CCC type of program does a tremendous amount of good. It not only accomplishes needed resource work, but it certainly is very helpful for young people to learn how to work and how to earn an honest dollar. I know a few who are now top people in the resource organizations and came up through the ranks as CCC enrollees. I would hope that the fine record of the CCC would prod today's leaders into re-establishing such a program. There is much work to be done in the forests, and unemployed youths would benefit greatly by involvement.

ERM: It just amazes me that, in the face of such a mountain of evidence of the good accomplished by the CCC during the thirties, we have been so slow in using that concept again, especially when there is such a high incidence of unemployment among black urban youths and, to a considerable extent, white urban youths.

GMJ: And especially when we are spending so much money on what I consider to be fairly questionable welfare programs.

ERM: Amen. And on fighting spinoffs of the alienation of these young people after they get caught up in the drug habit.

- GMJ: Yes, that is hard to understand.
- ERM: It is. Why has it taken Congress and the administration so long to come to this realization? I have wondered to what extent there was foot-dragging on the part of the foresters about getting involved again in this program. I can recognize that there are a lot of headaches connected with its administration.
- GMJ: Yes. Of course, I can't answer that really, because I've been gone for eight years, but unless the Forest Service has changed, I would say they are still raring to go on a program of this kind. I've never heard of the Forest Service being backward in taking on a job they felt was worthwhile, even without the necessary resources.
- ERM: It would seem to me a marvelous opportunity, George, to accomplish jobs that have been crying to be done in the national forests for a number of years. Think of how much planting could be accomplished.
- GMJ: Yes.
- ERM: If this program had been launched a year ago, there might have been on-stream a body of trained CCCers who could have been rushed into the gap to fight fires in a critical situation this summer. There is a terrible shortage of manpower.
- GMJ: And lots of recreational developments that need attention.
- ERM: Yes, it seems to me it's a good idea. I've been brainwashed by Sam Dana for years on this subject, so you mustn't take me too seriously. Sam has been a great advocate of CCC.
- GMJ: Well, the CCC surely did a wonderful job.
- ERM: Before we get down to the last two sections of this interview, just a few more general questions. I've noted that you, like many

others in your profession, are frequently shifted from one forest region to another. How does this procedure affect people in the Forest Service? Is it thought of as a natural aspect of government forestry work? Is there any resentment when people are moved from one area to another?

- GMJ: No. In my era, it was taken as a natural part of the job, something you expected when you joined the outfit. Perhaps certain individuals had resentment, but I'm speaking now of a general attitude. You thought of moving as an opportunity rather than anything else. In my own case, I wasn't moved around all that much. I did have the experience of working in a number of regions, but I always felt that was a great advantage for me.
- ERM: Do you think the diversity of experience clearly outweighs the loss that might occur if a man becomes familiar with the particular area he's been first assigned to and then is removed from it?
- GMJ: In my judgment, I would say yes. It's stimulating and broadening to move around. Forest Service programs, the policies, regulations and guidelines are well known, well documented and pretty much standard. So when a ranger goes from California to North Carolina, he's still operating under the same rules and regulations and policies. Now, to be sure, he doesn't know the people, he may not know the timber type, and he has to learn his way around his district. But in just a matter of weeks or months he will know them. He's done it before, so it's no big deal. And he always has a staff of more stable technicians who are doing hackwork anyhow.
- ERM: Is it an imposition?
- GMJ: Well, all the time, a Forest Service person is learning and deepening his understanding. Someday he will be in charge of a much bigger program. That's the way to develop men. There may be instances where this is abused. I know

there are cases where an individual gets in trouble and is forced to move away, but this happens in any big organization.

ERM: What about the impact this has on families?

GMJ: That's another story. I think moving does have an impact on families. It used to be that most Forest Service families went along with this. When people got married, they understood this was part of the way of life. And it is probably harder on the wife than on children. Children adjust very quickly.

ERM: I was a Methodist minister's son, and I don't think Forest Service people are ever shoved around or moved around more than a parson and his family.

GMJ: Yes.

ERM: Certainly not in the Methodist Church. But looking back on my life experience, I can only see it as having been an enriching one, because it exposed me to a great number of different cultural situations. I lived in rural communities, urban communities, wealthy neighborhoods, poor neighborhoods, in the middle of a Jewish neighborhood. I became acquainted with a wide range of Americans as part of my growing up. It was disruptive, I'm sure, because I had to give up friendships whenever I was forced to move with my family, but there were always new friendships to be made.

GMJ: When a person is detailed away or on long assignments away from home, this is harder on the family than moving.

ERM: That I agree with.

GMJ: I've had instances, as many foresters have, of being away from four to six months at a time, maybe being gone all year except for one or two visits home.

ERM: This is extremely hard.

- GMJ: It's kind of tough. There may be too much of that going on in the Forest Service, I don't know.
- ERM: How about the new challenges that you faced as the chief of Research from 1966 to 1969? Here, of course, you did have to deal with the problems of equal opportunity.
- GMJ: Yes, we've already discussed that. I think it was one of the major challenges at that time. Another was related to the budgeting procedure.
- ERM: Cost-effectiveness budgeting?
- GMJ: Yes. This was a system put into effect by Lyndon Johnson, again as a result of work that McNamara and his Whiz Kids had been doing in the Defense Department on budgeting processes. It's what Carter is now talking about, zero-based budgeting. In effect what it says is that when you prepare a new budget, you start at zero and put together a program made up of those projects that have the greatest payoff, that are most cost-effective.
- We were directed by the president that year, I think it was 1966, to switch over immediately to cost-effectiveness budgeting. So we went up to the Budget Bureau to justify our proposed budget for the coming fiscal year. We had to show the benefits that would flow from each program in relation to their costs. Those that showed the greatest benefits would be funded.
- Well, in research it's hard to judge benefits, because you must anticipate the outcome before you've done the work. We had to prejudge the outcome of research and extrapolate those research results into applications, then evaluate the values accrued from the application of new findings.
- ERM: Some results are very hard to put into dollars-and-cents values, aren't they?
- GMJ: You can't.

ERM: Would those take a low priority stand?

GMJ: Well, the first attempt was a bit ludicrous. We were justifying our forest genetics program and we'd chosen an example in southern pine to show its cost-effectiveness. We said that we knew from previous work that a short leaf-loblolly-slash pine hybrid has high resistance to the Cronartium stem canker, which is very damaging to slash pine and, in some instances, loblolly. We knew how to produce this hybrid and we knew that it would be effective.

Assuming that we spent an additional \$100,000, we could speed up the research on how to produce this hybrid rapidly over a certain time span. We estimated we could produce so many hybrids, which would be planted on so many acres, and would have specified benefits, in terms of loss damaging stem canker for a greater ultimate timber yield. With the proper dollars applied on the cost side, we got about a 100-to-1 ratio of benefits over costs by spending an additional \$100,000 for research.

We used that in presenting our case to the Budget Bureau. It sounded so good, they said, "If \$100,000 will bring that ratio of benefit, let's put in a half a million." For the first time in my life, I found myself saying, "No, we can't use that much money." It didn't take long to settle down to a more rational basis, but until the time I left the Forest Service, we had a program planning and budgeting unit that worked on presenting the budget. I don't know what's happened now.

ERM: Didn't that policy prejudice budgeting in favor of almost total support of applied research as against original or basic research?

GMJ: Well, it would have tended that way had we carried it to the extreme, as it was originally proposed. But this did motivate our field people...

ERM: To sharpen their pencils?

- GMJ: Yes. Researchers found it very difficult to comprehend, that dollars added to the on-going program always go to support less important work. Otherwise, you'd quit a project to fund something you really wanted to do. That was a hard concept to get across, but it did have the value, as you say, of forcing people to prepare a program and the necessary funding with constant thoughts of what the payoff would be if they continued on this track. The cost-benefit-ratio approach was a fallacious way, in my judgment, to justify research funds.
- ERM: Was that a political balloon, in a sense? Was it an effort to shout to the electorate how economical you were?
- GMJ: I think that's a valid description. In terms of many of the programs in the Forest Service and elsewhere, cost-effectiveness is a good approach.
- For example, let's say you have the choice of building a timber access road here, or there. You can tell the cost exactly, how much timber can come over that road, other cost factors, values of the product, and board feet available for industry. That is a much easier situation to consider under this type of budgeting.
- ERM: Yes, I would imagine that, if you are dealing with physical resources and landscape, you can do that. But when you are dealing with social problems, it's hard to set up priorities. How about the refinement of long-range research programs and the development of coordinated program classification and reporting systems with other U.S.D.A. [United States Department of Agriculture] research agencies in the states? Have we covered that adequately?
- GMJ: Well, we've talked about long-range program planning. One of my final activities as head of Research during the last couple of years was to be involved in another major department-wide long-range research program planning effort. This time, however, it included programs at

all the land grant universities and was much broader based. For the first time, a comprehensive system of project identification and classification by objectives and problem areas was used country-wide by all of the department's research agencies, including the Forest Service, and the universities.

This led us through a very long but useful coordination job with universities. Estimates were made for ten-year program needs in terms of man-years of scientific effort. I think the result was a much greater understanding and a closer-knit long-range set of goals and programs than we've ever had before, department-wide and university-wide, in the agriculture-forestry field.

It took a lot of friendly but hard-boiled bargaining with the universities to get agreement on the program role and where each research group fitted in.

ERM: I suppose to some extent you had to assign certain universities special areas of research to be concentrated on, not to overlap too much with others?

GMJ: Yes, this was hard to do. In the Department of Agriculture, with the support of the state universities, a unit was created that was much more active than ever before in reviewing and approving proposed research projects.

Today any new research project proposed by a forestry school has to go the route, through the department's office for review and concurrence. They pick up not only inadequacies in the program content but overlap, and will come back with suggestions. So it's a useful mechanism. Again it goes back pretty much to the Forest Service pattern of program identification.

ERM: May I ask a question with regard to this McIntyre-Stennis money that was used through the states and land grant colleges? Suppose we had a good young scholar in, let's say,

American history, who's trying to get his Ph.D. in his field. We could get that person to grapple with, as his thesis, the history of, let's say, clear-cutting. Is that a project that might be approved through channels? I suppose you'd first have to sell it in a forestry school and a university history department as a joint project. But could it be done through that route?

GMJ: From the standpoint of the technical operation of authority under the McIntyre-Stennis Act, there is no reason why it could not be done. The money comes to the governor of the state to allocate it to, in this case, Oregon State University, since it is a land grant institution. The president of the university has in effect the say of how that money is allocated.

Now it's allocated up to this point, as far as I know, to the dean of the School of Forestry. But if a graduate student came here who had an interest in the history of clear-cutting, I see no reason why that wouldn't be just as legitimate a project to consider funding under McIntyre-Stennis as any other project. Now whether it could compete successfully with other proposals, I have no way of knowing.

ERM: Yes. I suppose, then, a successful double play has to go from Tinker to Evers to Chance and after it is successfully executed, the ball can be thrown around the horn to everybody.

GMJ: Yes.

ERM: But I guess what I'm asking is, what are the chances of a project like that getting beyond Tinker to Evers to Chance?

GMJ: I suppose not very good.

ERM: Not very good. Why? Because perhaps it's a project that doesn't arouse a lot of interest as a high priority item through a forest scientist or a forestry administrator, who would be the first people to review it before it got to anyone else, right? It has to go through channels.

- GMJ: Yes. You know, every one of these projects has to have a written objective and strong justification. If you can outcompete others, I see no reason why your project couldn't be financed. But it's a competitive area, no question about it.
- ERM: This is a thought that has occurred to me several times during the year. There are parts of the contemporary scene that apply to forestry or forest-related complexes that continue to be matters of great debate, and they all have a long history. It might be to society's benefit to have enough "objective" study made of the subject to try and grapple with its roots in a systematic way.
- GMJ: I guess the argument over funding or not funding this project under McIntyre-Stennis might come down to, is historical research and documentation really research, as defined by the act, is it really original investigation, or is it just documentation that any good trained person could do, without using the research method? Now there are other sources, however, of funds for work of this kind.
- ERM: Oh, yes.
- GMJ: As you know, the Forest Service now has the authority to make grants for almost anything. Again, it's a question of priorities.
- ERM: Well, I know. We are bidding within the next two weeks on a project. The Forest Service itself has asked for bids specifically on the use of electronic devices in forestry work with radio.
- GMJ: Yes.
- ERM: The unhappy part of it is, this has just suddenly been thrust upon us. They said, "Give us a project proposal before September 9th," and we'll go back and say, "Well, what

kind of a study are you after? How long can this be? How soon is it going to be implemented? Is it going to be put on-stream right away? This fiscal year?" Because it isn't easy to go out and recruit somebody that quickly.

GMJ: Right.

ERM: Well, this is apart from the interview. You made efforts to advance the grade and salary of the experiment station directors before you left your position in the Forest Service. Could you tell us about that?

GMJ: Well, a bone of contention within the Forest Service was always the fact that station directors, although they bore almost identical responsibilities to regional foresters, were generally about a Civil Service grade lower than regional foresters.

Now this may be a generalization that can't be backed up in terms of job-against-job details, but in principle they carried the same overall responsibilities for their program, had to make the same level of decisions, and were responsible for carrying out the same overall broad policies. I felt strongly that the remuneration through the grade structure ought to be about equal, so I tried to bring this about, and it was quite a chore.

First of all, I made peace with our internal classification offices in the Forest Service through a fairly protracted series of discussions. I outlined in writing, and in great detail, the duties of station directors, analyzed their responsibilities in comparison with other administrators in the same grade within the Forest Service and in other department agencies, and convinced our classification officer that a change in grade for the directors was not only fair but essential if we were to keep any semblance of equal pay for equal responsibility.

This led to working at the department level, where the same general process was followed

successfully, and finally to the Civil Service Commission, where we really hit some snags. I went through a series of long discussions with officials within the commission.

Finally they said to me bluntly, "You must list the nine station directors in order of priority and we'll consider that list." I refused to do it, on the grounds that it's like saying, which of your children do you like least. And it wasn't a matter of disliking, it was a matter of feeling strongly that they were all competent, all carrying the same responsibility, so why go through the false procedure of saying one is more responsible or carrying a bigger load than the other? It was in a sense partly a bluff, because the workload certainly wasn't identical, but anyhow it was one of my final achievements. We got all the directors up in grade to the same level. I felt it was a hard but worthwhile battle to win.

- ERM: George, you've had extensive experience in international forestry. I wonder if you could just tell us about Public Law 480, a program of cooperative research in foreign countries. I know you've been interested in this for many years. How did it begin? How has it fared?
- GMJ: The P.L. 480 program of research, as you know, is funded by monies that are made available through the sale of surplus agricultural commodities to certain participating nations. Three-fourths of the costs of these commodities are paid in the coin of the nation, deposited in that country to the credit of the United States. Five percent of these funds are available for research under the P.L. 480 legislation.
- The program began for us in the Forest Service one afternoon when the announcement came over from the department: "We have some authority here to fund forestry research programs in certain foreign countries. Please indicate in which of the list of thirty-some countries you'd be interested in having cooperative research

programs started. Identify the universities and the people, and what your programs would be." Well, we had a quick meeting, and no one was really enthusiastic, but we did respond. We subsequently got a small program started in some of the more obvious places.

The Scandinavian countries were participating and we knew they had good scientists. After a year or two, the program began to roll quite well, and we wound up with work in about twenty countries around the world, varying from five to ten million dollars a year.

The department established a regional office in Rome and one in Delhi. We made our scientists responsible for screening and carrying on the supervisory work for the projects in their fields. For example, if we had a project in Poland testing an insect parasite on one of our insect pests, we'd have one of our entomologists trained in this field be program coordinator with the Polish scientist who was doing the research.

The money had to be spent in the country where it was deposited. I think that over the years this program had its good and bad points, but overall we made good use of the funds.

ERM: What stands out as some of the best work done by that program?

GMJ: Well, there was a lot of good work done on tropical hardwoods, their properties and identification, facts that industry moving into the tropics needed to know. This work was done in the Philippines and India--countries where they had good laboratory facilities.

There was some good basic work done in forest genetics, and good work in the chemistry of combustion in Israel. There were several projects on insect parasites and biological control of pests.

ERM: Was that work done in Poland?

GMJ: Some of it, yes, and in other countries, too. There was work done in Italy on the incompatibility of grafts in pine species and how to overcome that problem.

ERM: And is that still a viable program?

GMJ: Yes, but I've lost touch with it.

ERM: You've been active in the International Union of Forestry Research Organizations (IUFRO), and were its president from 1967 to 1971. You were assigned to develop new programs in IUFRO between 1960 and 1967. What would you say about that effort to design or develop new programs?

GMJ: Les Harper was responsible for getting me involved in that project. I first attended the IUFRO Congress in 1956 with Les at Oxford, England, and got to know about the organization and how it functioned. Harper was on what was then a permanent committee, sort of an executive board. Later he became vice president.

One of his efforts was to expand the interest of IUFRO over the whole broad spectrum of forestry. IUFRO had started many years ago as a silviculturally oriented organization with its roots solidly in Europe.

ERM: The old Germanic traditions.

GMJ: Yes. IUFRO was organized in 1892. The first meeting was in Hungary. The scope of IUFRO's interests was subsequently broadened. Harper was instrumental in getting forest products research added as a IUFRO section in 1961. He also felt that forest recreation and wildlife research was an area that IUFRO ought to consider.

So he said to me, "Why don't you see what you can do to determine the interests in, and the opportunities for, organizing a section in IUFRO in forest recreation and wildlife?" So

I set about making contacts with different organizations, and identifying people and institutions that were interested in these fields. I embarked on fairly lengthy travels.

After a couple of years, I made a specific proposal to IUFRO that such a section be added. My immediate activities in that area ended with its adoption, organization, and appointment of officers. I was the first chairman of the new recreation and wildlife section but as soon as it got organized, I was through.

ERM: That entailed your traveling around to quite a number of countries, didn't it?

GMJ: Yes.

ERM: And that was in the early sixties?

GMJ: In 1964 and 1965.

ERM: I understand your work in IUFRO involved a lot of rewriting of statutes and internal regulations, the constitution and by-laws, or was that later?

GMJ: I was elected president in 1966 at a meeting in Munich, and was to take office January 1, 1967. The board of directors told me that, as the new president, I was to look into the possible reorganization of IUFRO. It had grown up as the old European professors' scientific organization, where the professor was the revered individual who dominated the programs.

The result was that, although IUFRO had subject matter sections in, for instance, soil and site factors, in mensuration, and forest economics and policy, the programs were confined entirely to what the old prof who headed that area felt he wanted to work on. So there was a great absence of opportunity for young researchers or others with special interests to find a place to affiliate. My job was to reorganize IUFRO in a fashion that would...

ERM: Open it up to young researchers?

GMJ: Open it up and modernize our approach to research programming. This involved the rewriting you mentioned, in such a way that it would not seriously offend the old guard, yet create a viable organization to attract the interests of a much broader portion of the international forestry research community.

It meant that we had to write out of the constitution obstructions to making the kind of changes we wanted. And what a job that was! But we got it done, and the new organization was adopted at the next Congress, held in 1971 at Gainesville, Florida, and I think it's been very successful.

Now it may be a coincidence, and I am sure that the Society of American Foresters didn't copy the IUFRO's new organizational pattern, but the Society had been having the same problems. The divisional structure didn't provide the flexibility for small groups with special interests to work together under the aegis of the Society.

So a couple of years ago, they adopted almost an identical organizational pattern to IUFRO for the technical side of their program. There is a pigeonhole for every conceivable forestry research area in IUFRO if there are people to activate it.

ERM: So in earlier years IUFRO had been dominated to a considerable extent by professors at some of the older universities. Many older professors hold the concept that anything dated later than 1850 or 1870 is not really history.

GMJ: What's the old professor's name who has written and published two volumes?

ERM: Mantel.

GMJ: Mantel, yes.

- ERM: He's really run that section pretty much, but he is no longer controlling it, I understand.
- GMJ: I believe a young Finn has taken it now.
- ERM: Bob Winters told me that changes have taken place there that are healthy. They would never correspond with anyone, you know, except in Germany.
- GMJ: Well, that was one of the major responsibilities I had as president, to broaden program involvement and exchange among scientists in member institutions, and to stimulate participation of young researchers. I was instrumental in establishing a scientific achievement award for young scientists, which has been quite successful. It constitutes an honorarium, gold medal, plaque, and considerable recognition for five young foresters who have made an outstanding contribution in research.
- ERM: Are these awarded annually?
- GMJ: No, at every congress.
- ERM: I see.
- GMJ: And this is limited to men whose nominations for an award are received before they reach the age of thirty-five, so it brings recognition to younger men in what had been an old men's organization.
- ERM: IUFRO holds major congresses periodically?
- GMJ: Yes, every four or five years an international congress is scheduled. These are major events, with as many as 1,500 scientists from, perhaps, 50 countries in attendance. Technical group meetings, forestry research study tours, and major business transactions are included. Incidentally, IUFRO's membership includes scientists in about 330 universities and institutes in 85 nations.
- ERM: You were responsible for the Fifteenth IUFRO Congress in 1971?

GMJ: Yes. The planning and conduct of the Fifteenth Congress at Gainesville, Florida, was a tremendous job. At that time, we had no paid secretariat and most of the work fell on the president, and it was really a back-breaker for awhile, but we were able to carry it off.

I'm still interested in IUFRO and, according to the constitution, the past president remains as an active member of the executive board for five years. The five years are up now, so I don't know whether I'll continue in any active way.

ERM: How much time has participation in the executive board's meetings and affairs required of you in recent years?

GMJ: They meet annually, each year in a different country. So there is travel expense involved.

ERM: Is that provided?

GMJ: No.

ERM: You have to pay that yourself?

GMJ: Yes. Of course, when I was in the Forest Service it was paid as an official duty.

ERM: Since you retired there is no source of funding?

GMJ: No.

ERM: But from your own pocket?

GMJ: Right.

ERM: That's quite a deterrent.

GMJ: Well, it's quite an expense. But, you know, this is one form of recreation, along with professional participation.

ERM: How long are the meetings usually?

GMJ: They last about ten days to two weeks. There

is a formal set of work meetings for four or five days and then what is called a study tour, a forestry-oriented tour in the area.

ERM: Are these meetings well-attended by the members?

GMJ: Very well. You see, the executive board is made up of nine regional members representing nine geographic regions of the world, and one person is elected from each region to the executive board.

Also on the executive board are the chairmen of the six subject matter divisions, president, vice-president, and past president, so that eighteen people constitute the executive board. The board is divided into working committees; a finance committee, an administrative committee, a program committee, and so on.

ERM: And do they each meet separately and bring reports?

GMJ: Yes. And individual board members are sometimes given special assignments. For example, as past president, I was once given the job of analyzing where we stand worldwide in tropical forestry research, identifying the areas where priority research is needed, and where it could best be done. As a basis for some stimulation, through IUFRO, to get more tropical research in the mill, I was asked to make this study report, which I did as a member of the executive board. I think this kind of work is worthwhile.

ERM: Where is your next meeting going to be?

GMJ: In Fredericton, New Brunswick, Canada, in October 1977.

ERM: And the next congress?

GMJ: Tokyo in 1981.

ERM: Just as long as it's not in Uganda.

GMJ: Yes.

ERM: What about the FAO-[Food and Agriculture Organization] related commissions of which you have been a member, such as the North American Forestry Commission and the World Forestry Congresses?

GMJ: Well, another part of the job as head of research was handling international forestry. That's designated by the chief as a responsibility of the research organization, so in that capacity I did get involved in the FAO and related commissions.

The North American Forestry Commission was one of the more active ones. Canada, Mexico, and the United States composed the commission. We had annual meetings, meeting every third year in each country, with programs mutually agreed-upon and handled through subcommittees.

For a number of years, I was chairman of the forest fire control committee, which dealt with, for example, international compacts where fire control problems existed on international borders. I worked out the exchange of techniques and knowledge, and planned trips of specialists from one country to another. This was all done under the aegis of the State Department, as a United Nations member. Later Ed Cliff became chairman of the U.S. delegation, and I served as secretary.

We were also members of the Latin American Forestry Commission, largely because we had an interest in the Caribbean through our research work and other activities in Puerto Rico and the Virgin Islands. I was chairman of the research committee of that commission for a few years. We met several times with the commission, and we had other international responsibilities.

Since the Research branch had the responsibility for international programs, it fell to the Research organization to play a large role in World Forestry Congresses. I was involved in two of those, one in 1960 when the Congress was held in Seattle. Les Harper was chairman

of the organizing committee, made up of about twenty or thirty people from industry, the universities, and other government agencies. About 2,000 delegates were there, from about eighty countries.

My specific job, other than a lot of the preparatory work as a member of the organizing committee, was to head the technical coordination of programs at the congress. There are many technical sessions with participants from many countries. I had to see that the technical program went on schedule, help unravel problems, and coordinate the sessions.

Then in 1966 I was secretary to the U.S. delegation with the congress in Madrid, a delegation that included about fifteen people, including two senators, two congressmen, and heads of the principal forestry agencies in the United States. Since these were official U.S. government activities, voluminous and complete reports on the congress were required, and position papers had to be prepared. Controversial issues were raised and this involved work during and after the congress. In fact, I didn't get to attend many of the social functions at the congress because I was always working, trying to get reports from our delegates who were assigned responsibilities.

ERM: Well, you look back, George, upon a splendid career as a forester and a long career of public service in the Forest Service. I wonder, as you survey that career, do you have any words of wisdom or analysis of the total experience that you'd like to put into this record?

GMJ: I don't know about the words of wisdom.

ERM: I knew you'd be modest on that.

GMJ: But I do have rather strong feelings about my career, in the sense that I consider I was fortunate to have selected a career in forestry. I've enjoyed all of it very thoroughly. There have been hard times and good times, and I think I've lived through some of the more

interesting periods of development of forestry in this country. I got a sample in the early days of the custodial phase, when things were kind of rough-and-ready. Had many interesting experiences then.

I'm glad I picked research as a specific area of forestry. I've enjoyed that and I lived through the Depression, the war years, and the years of prosperity into the period of rather strong concern over environmental issues. So I think I've been lucky to live and work in this era.

ERM: How do you see the health of your forestry profession in the total social scene today? Is it as strong and healthy now as it's been at any point in time in your lifetime?

GMJ: I guess my overall answer to that is yes. It is healthy and strong. I'm encouraged by the realization, which finally seems to be seeping down through the rank-and-file of foresters, that forestry and the management of forest resources in the long run is not a simple issue of a one-resource-oriented profession... timber. We've got to recognize the social values and the interrelationship of the six major forest resources. Then we must demonstrate by word and deed the importance of this recognition to our own profession and to society as a whole.

I'm a little discouraged by what seems to me a trend. Maybe this is just because I'm old-fashioned and I don't have the youthful vision, but I'm distressed by the lack of a strong work ethic in the young forester. He's too concerned over his eight hours, five days a week, time and a half for overtime. I didn't grow up that way and I didn't associate with people who felt that way. I associated with people who wanted to do a lot more than was expected of them, who believed in doing the best job they possibly could, regardless of personal discomforts or other factors that might have been more pleasant had they been disregarded. I see this trend among the students here in school,

and among the young foresters I associate with.

ERM: I know it; I see the same thing myself. And I have been concerned about the nine-to-five mentality.

GMJ: Yes.

ERM: What about the great continuing challenge of forestry research? Where do you see its great challenge today? What subject areas do you see as most exciting, or are they all exciting?

GMJ: Well, to me they are all exciting; it would be hard to single out one. I think we will see, and we certainly need, advancement in knowledge on three main fronts. One is the biological front, related to producing the resource, the timber, the wildlife, the water. Another front is social and economic, and deals more with understanding and satisfying people's basic needs through research. The third front deals with technology, which means that we develop machines, processes, techniques, and know-how that will help us utilize more fully what up until recently we let nature provide for us.

Those are the real challenges for research. And, of course, the more we learn, the more complex the next answer becomes.

ERM: The longer we live, the more we realize how much we don't know.

GMJ: Right.

ERM: Well, perhaps this is a good place to end.

GMJ: Sort of philosophical, maybe, but I've enjoyed our interview very much, Woody.

ERM: It's been a real pleasure, George. I've enjoyed it, too.

GMJ: Out of all this comes something that is readable and useful to someone.

* * * * *

ERM: This is a postscript to the Jemison interview. We'll deal with your experience since retirement. You've been here at Oregon State University School of Forestry, right?

GMJ: I signed on May 1, 1969, at Oregon State, about five months after I retired from the Forest Service. I took a job as a professor of forest management, with responsibilities for teaching two graduate courses, one in research methods and one in forest policy. My primary assignments, however, were in the office of Dean Carl Stoltenberg.

ERM: George, you could have picked any of a number of forestry schools around the country, and I am sure you'd have been welcomed on the faculty. Why did you happen to choose Oregon State?

GMJ: You are right, I did have one or two definite offers from other universities. I came out here to Oregon State in November 1968, anticipating my retirement in a few months, at Carl Stoltenberg's invitation. In effect, two jobs were offered me--one as director of the watershed research institute here on campus, and the job I just described, in the forestry school, teaching and doing special assignments for the dean.

I was attracted to the West, I guess, because of my early associations here. They brought both my wife and me back to home country, so to speak, although we'd never actually lived in Oregon. The town of Corvallis and what it offered attracted us, a small university community, the geographical location and the nearby amenities, plus the feeling you get in a small community after living in a large metropolitan area.

ERM: They have quite a rich cultural life here.

GMJ: Yes, yes indeed. We are tributary to fairly large cities, which are a couple of hours away, as well as having cultural opportunities right here on the campus.

ERM: Not to mention the fact that there is some pretty damned good fishing around here.

GMJ: Yes, indeed. That has been one of my main hobbies. Shortly after I came here, one of my principal jobs was to organize a research program in the Forest Engineering Department. The school had well-developed research programs in forest management and in forest products utilization. And, while a strong teaching program existed in forest engineering, there was no research. The dean asked me to conduct a study, make recommendations, and head up the development and direction of such a research program.

I found this to be a real challenge. We started off with the acquisition by transfer from another department of two forest hydrologists, a microclimatologist, and an economist as our nucleus of research. The hydrologists were needed because of the great impact of logging and logging roads on soil and watershed values in the Northwest.

It turned out to be a very logical blending of skills in the soil and watershed areas and in, what has later been added, timber harvesting technology. Today there are approximately thirteen people involved with the forest engineering research program, and I think it's been successful. While I no longer take part, I feel that it has produced some very useful research in the last five or six years.

I have undertaken other tasks here that probably aren't too important, other than just to mention them. One was a study about revising the forestry extension or continuing education program in the school. The dean asked me to analyze the administration of the rather large research program the school has under way, as his office staff's area of responsibility.

This was a fun job because, since it was my final effort here at school, I didn't need to pull any punches, nor did the dean want me to. I think it was a productive analysis. I

suggested how the dean's office could take leadership and direct research programs in a more adequate fashion.

ERM: A few questions here were posed by others and members of our staff. I'll toss them out to you. When you taught a graduate course in forest policy and research methods at Oregon State, you wrote an article for the Journal of Forestry in which you urged foresters to be aware of their primary responsibility to people, including the rural poor, and poor city dwellers, as well as the middle class. Did you teach that responsibility to your students?

GMJ: Well, that's a big question. I attempted to teach students how forest policy is formed, what factors interrelate to generate policy, what the responsibility of various groups, including, of course, the forestry profession is in understanding and interpreting policy.

In this process I hoped that the students got the idea that every practicing forester must exercise, in some way, the carrying out of policy, because policy is formulated at every level in the profession. Every forester who meets lay people has a responsibility to explain what forest policy is all about, and it does not have to be done in complicated language. Of course, policy merely is the route one follows to reach an objective.

ERM: When you worked on the forest engineering research program here, did you encounter any of the usual academic realities such as committee inertia, widespread indifference, ignorance, or specific jealousies about empire-building?

GMJ: I'll answer that first with a flat no, and I'll explain why I think none of these things existed. We were fortunate in the development of the forest engineering program here because we began from scratch. We had no program to start with, and there were no empires already established.

It's true, as I mentioned, that there were several research scientists transferred into this new department and they, of course, had work under way. These men were intelligent and understood that there were benefits to be derived from a program that was jointly conceived, well-planned, and problem-oriented.

We had no difficulty putting together a program that was aimed at selected problems of highest priority, and establishing the niche that each research worker had carved out to meet the established objectives. Today this team of researchers in the forest engineering research area is one of the smoothest working groups in the school.

ERM: Would you say that is a good portent for anyone thinking of going into teaching forestry as a professional career?

GMJ: Well, yes. I would say that what I have just described, the harmony, team approach, problem orientation with clear-cut objectives that exist in the forest engineering research program do not necessarily exist throughout the school of forestry or even in the rest of the university.

ERM: Or in other universities?

GMJ: I think there are instances you could find where empires are being built. There are individuals who are jealous of their prerogatives and the answer to that is good honest program planning, with carefully selected problems and clear-cut objectives. This principle was applied in developing the forest engineering program and that proves the success of this approach.

ERM: Wherever that practice is put into effect, you think the potential for a self-fulfilling career in forestry teaching and research is good?

GMJ: That's right. It's been my general observation, however, that there is a higher degree of

individualism, internal jealousy, and unhealthy competition within the universities than in the federal forest research establishment with which I was associated for so many years.

ERM: You believe academe is afflicted more than the federal bureaucracy?

GMJ: I think so. The promotion policies and the publish-or-perish syndrome that seem to exist on many campuses give rise to fierce competition for funds and grants.

ERM: For almost two decades you have advocated recognition of the fact that many decision makers and scientists whose work greatly affects forest policy in the forestry profession are not trained in forestry. You have, therefore, advocated redefining membership qualifications in SAF to bring those people into the organization. To what extent has that change in membership taken place? And have the views of these nonforester forest policy makers and information sources greatly differed from those of professional foresters?

GMJ: Well, I think a substantial change has taken place, in that many nonforestry-trained people who have worked in the field are now very active, strong members of the Society. The Society is better off because of this, and I would hate to see us retrogress to where one had to be a graduate of a forestry school to belong to the Society.

Today's "complex" forestry is a profession that requires the input of knowledge and skills from many disciplines. But those individuals from other disciplines need to have a grasp of the forestry art, and put their expertise into understanding and solving problems.

For example, I don't think a sociologist, period, with no knowledge of forestry problems should be a member of the Society. However, the sociologist who has taken his skill in that

field and applied it to forestry problems could contribute very much to the Society as a member.

ERM: I remember one such sociologist whose name was Richard Means.

GMJ: Yes, I knew him.

ERM: Wrote on forestry subjects after he had been at Yale. Did you know him at Yale?

GMJ: No, I don't think so.

ERM: I gather that what you are saying is that forestry professionals run the danger of becoming afflicted by tunnel vision if they don't bring into their fraternity people who are knowledgeable about the profession but not necessarily trained foresters.

GMJ: Yes, I would agree. You know the history as well as I, of the Society of American Foresters losing the range-oriented and forest products-oriented people because they were nonforesters, by the old definition.

So they created their own professional societies. We drove them away, and there has never since been a strong range or forest products program in the Society of American Foresters, in my opinion.

ERM: The substance of your research and reporting in the 1930s and 1940s dealt with such topics as the influence of drought and erosion on seed production, the rate and density of tree growth after burns and as a result of shading, and the influence of forest litter on growth. In one of these studies you especially cited "dangerous conditions brought about by clear-cutting." That subject is now one of the hottest controversies in the field. Do you side with the "man's way" believers or the "nature's way"? Is clear-cutting no longer dangerous, or has it become an economic necessity?

GMJ: The work you referred to there, I scarcely remember, but I believe it was a very minor study on short-leaf pine in the Appalachians.

Briefly, clear-cutting is a necessary, perfectly sound silvicultural system with economic advantages. When used properly, in some situations, it's fine. When used in other situations, it's lousy. I'm not of the school opposed to clear-cutting at all. But I'm certainly not of the school that says clear-cutting is the salvation for all our problems, either.

ERM: One of your most provocative speeches was "Sacred Cows," at the Western Forestry and Conservation Association in 1971. Remember that?

GMJ: Yes.

ERM: In it you charged that your colleagues in the profession were "fire-suppression happy," instead of being preoccupied with fire prevention. You ascribed that to their over-estimation of the effectiveness of new technology and equipment. Can you talk a bit about that? Is the emphasis on equipment a reflection of the truism that if you aren't spending, they think you aren't working?

GMJ: As the title of my talk suggests, I was asked specifically to be the devil's advocate, and bait the fire people so as to arouse a little discussion. I deliberately, and, as I think the context of the paper will suggest, clearly established my intention. Now this reference to overspending in the use of equipment I believe falls in that category. I would not deny I said it, nor that I think there is more than a germ of truth in the statement.

There has been, and probably still is, a feeling that we've got big machines, airplanes, chemicals we can dump, all these technologies at our fingertips so let's shoot the works. There's a lot of that philosophy in fire control organization, and you can see the results in the huge expenditures.

I know of studies showing that miles of bulldozer lines have been built that the fire never reached. It went out by itself, or the weather changed, or something else came about that made direct control easier.

The use of expensive equipment, without thought of costs, has gotten a pretty firm foothold, rather than our being sharper in our preplanning and in our judgments at the time of the fire control operation. That is what I was trying to say, without painting everybody with that brush.

ERM: Did you get pretty good feedback?

GMJ: Well, as it turned out, I never delivered that paper in person. I was in the hospital and it was delivered for me. But I understand there was some discussion.

ERM: There's one further question I have here. How can prevention be included in annual reports to attract money and publicity?

GMJ: Well, we've always done it, with some success, by showing that the fire prevented doesn't have to be fought. This isn't perhaps an accurate example, but the Sundance fire in northern Idaho about ten years ago was a lightning sleeper fire. They knew the fire was there and unsuccessful efforts were made to find it.

The fire had been started by lightning, so in a sense it was not a fire that had been prevented. It had been asleep for ten days and people knew it, yet sufficient efforts were not made to find it and put it out.

The result was a several-hundred-thousand-acre fire and millions of dollars spent. You could use this as an argument for stronger preventive efforts; in this instance, prevention of a conflagration, to gain support and attract additional funds for keeping fires small.

ERM: One more question, George. In 1965 you somewhat chided your fellow members of the SAF,

urging them to exercise greater effectiveness on legislation by drawing up specific goals and strengthening both staff and membership. You cited the cases of the McIntyre-Stennis Research Act, and the Wilderness Act. Can you point to any other legislative struggles in which, in your opinion, SAF played a significant role?

GMJ: Well, certainly a more recent one was the clear-cutting issue, brought about by the Monongahela case. The legislation that accompanied that definitely turned people on. The National Forest Resources Planning Act was another of more recent origin.

All these major pieces of legislation have been very significant in rousing the profession and getting people to act and learn about what the implications are.

ERM: It seems that in some of your writings you were trying to provoke the members to action.

GMJ: When I was a member of the council for six years, I wrote a column periodically. Often I would try to pick a topic, you know, a little provocative.

ERM: Well, again, thank you, George.

GMJ: I've enjoyed it a great deal, Woody.

Clarence Luther Forsling

Growing up on a ranch and having intimate knowledge of grazing conditions and range management prepared Clarence L. Forsling to become a leader in those fields in his distinguished career. His thirty-eight years of service include work on the Jornada Experimental Range in New Mexico, at the Washington, D.C. Office of Grazing Studies, as Director of the Great Basin Experiment Station in Utah, as head of the Intermountain Regional Forest and Range Experiment Station in Utah, as Director of the Appalachian Forest Experiment Station, as Assistant Chief of the Forest Service in Charge of Research, as Director of the Grazing Service of the U.S. Department of the Interior, and as a member of the Program Staff of the Department of the Interior. He has written many government publications and papers on watersheds, range management, and grazing. Since 1954, he has served as part-time consultant in the conservation and development of natural resources in New Mexico, where he resides.

Clarence Forsling has always been interested in studying subjects pertaining to the range and grazing. He authored a publication that was the first of its kind, on the influence of herbaceous plant cover on surface runoff and soil erosion in relation to grazing on the Wasatch Plateau in Utah. The study brought to light the fact that denudation of mountain watershed by grazing of herbaceous vegetation is a cause of flash floods from torrential rains, under overall conditions in the western United States. Throughout his career in Washington, he fought for fair treatment for the Grazing Service and for his strong belief in a federal grazing policy.

Concerns of a Pioneer Western Researcher

Range management, grazing, and watershed

Elwood R. Maunder: This is part of a series of oral history interviews with former heads of Forest Service research. We are speaking to Clarence L. Forsling. Mr. Forsling, would you tell us briefly about your family and your early life?

Clarence L. Forsling: I was born in 1893 in Cheyenne, Wyoming, where my parents had moved a few years before. When I was two years old we moved down into western Nebraska to a ranch site about sixteen miles east of the Wyoming line on Lodgepole Creek. There my father started his own ranch. My grandfather had established himself close to Kimball, Nebraska, a few years earlier, so my family has had connections there for a long time. I grew up there. At the age of five or six I learned to ride horseback and within a few years was riding the range myself. Of course, it was my idea that sooner or later I'd have a ranch of my own.

It was a great grazing country, in the so-called short grass plains, a part of the Great Plains stretching from Canada to southern Texas in the western and central United States. During the ten to twenty years after the Union-Pacific Railroad was completed in 1869, there was a great build-up of big ranches in the Great Plains. Livestock seemed to have a future there. Many people, even from Great Britain and other foreign countries, came, thinking it was a good place to make a lot of money. Then came a severe drought and some bad winters, and with no feed to keep the cattle alive, there were very heavy losses of cattle in the late 1880s. On top of that, a depression occurred, which in those days they called a "panic." I was not old enough to remember it, but my parents told me about the hard times. People in the eastern part of Nebraska and Iowa, where there was better farmland than in western Nebraska, sent carloads of food, old clothes, and supplies to those in the western part of Nebraska where the drought was particularly bad. It was the first welfare undertaking that I ever heard about.

ERM: Were these the settlers who were called sodbusters?

CLF: Yes--sodbusters, or nesters. The nesters were mostly people who went farther west to the edge of the mountains where there were many small streams which provided watering places for the ranchers' livestock.

But by about 1893, most of the homesteaders who had come into western Nebraska and nearby areas following the establishment of the railroad had abandoned their homesteads and moved out. I can remember when I was only ten or eleven years old riding horseback over the range and finding old vacated homesteads with empty buildings, including sodhouses. Many years later one could locate land that had been plowed, because a different kind of vegetation, especially a small silvery grey member of the sagebrush family, came in on those abandoned fields.

Only a few scattered settlers, those who had started to raise livestock, stuck it out. Their main competition was big sheep herds whose owners had taken over large areas of range after they had learned how to drill wells and put in water troughs where sheep hadn't been before. My father started by leasing Union-Pacific and state-owned land, but for the most part he ran his cattle and horses on the open public domain range. That's where we had the contests with the sheep people.

ERM: Who were the sheep people?

CLF: Some were emigrants from England, others were from eastern Nebraska. I remember one particular man from eastern Nebraska who had established a ranch which extended about sixteen miles east and west one way and about eight miles the other, with seven or eight thousand sheep in several herds. As I said, they had learned how to drill wells, and one could get a well in that country in depths from one to two hundred feet, and not too expensive. Then he quit the year-long operation because of severe winters and began bringing in yearling wethers from the Northwest in the spring by trainloads and summering them to get the benefit of the green foliage on the range. In the fall he shipped them to be cornfed in eastern Nebraska before being marketed.

In those days no one knew very much about lamb as it is sold in the markets for table food today. In fact, it was not until the early 1920s that the sheep men began to sell lambs for their meat. At the time I'm speaking about, where I was on the range in western Nebraska, these wethers were one to three years old before they were

slaughtered. It is not at all surprising that people didn't like mutton, because some of those carcasses were pretty tough and had a strong flavor. You could even smell the cooking mutton a considerable distance from the kitchen.

Well, that was the kind of country that I grew up in, and we thought it was going to be a great place for livestock indefinitely. Then all these things changed because, during the latter part of the first decade of this century, a better crop of farmers came to the West-- people who had farm experience and had learned how to dry farm, whereas most of the early homesteaders had little knowledge or experience in farming. Then Nebraska adopted a herd law, so that instead of the farmer having to protect his fields with fences to keep out the livestock, it was the responsibility of the livestock owner to herd his animals off the planted fields. Gradually the stock business was edged out because one couldn't run cattle on the range where there were scattered grain fields. So now the open range is gone and the good land is in wheat fields or in irrigated forage-producing crops. Grazing of livestock is restricted to the rougher land.

Karen Krebs Burman: And then did your father go out of the livestock business or was he able to continue?

CLF: He continued to operate the ranch until he retired, even though the open range was no more. Even worse, so far as he was concerned, an irrigation company, through eminent domain, took two-thirds of his irrigated land, along the one-and-one-half miles of Lodgepole Creek Valley that he had developed, for an irrigation water storage reservoir. But he hung on and acquired several sections of hilly land to graze on, as the homesteaders on it sold out. In addition, he grew wheat on the flatland and developed groundwater for irrigating forage crops.

The ranch is still in the family. The original rock house and well are still there, but an electric pump has replaced the windmill. My younger brother graduated from Oregon State University as an economist, but later came back to run the ranch, and made quite a success of it.

ERM: But you took a different path.

CLF: Yes, as I went through high school I knew that I wouldn't like dry farming. The irrigation company had taken most of the irrigated land, so I had to look for some other life's work. My decision was to go to the University of Nebraska. I was one of the first boys from Kimball County to attend the university and get a degree.

What got me interested in forestry was the fact that, in the early days, there were stories in some of the boys' and young folks' magazines, probably in the Saturday Evening Post and Youth's Companion, that told about the life and work of forest rangers in the West. That appealed to me. Then I found a small, official pamphlet, with pictures, describing the work of the Forest Service. Then and there I decided that that was for me, and I went to college and studied forestry.

ERM: That's interesting. Another pioneer forester of the Forest Service, Cap [Inman F.] Eldredge, told me how he was induced to go into forestry. It sounds very similar to the story you just told. He encountered an article on forest rangers in one of his young people's magazines-- I think it may have been in Youth's Companion--with a picture of a forest ranger on a snow-white horse leaping over a log in the forest. He said to himself, "If that's what forest rangers do, that's what I want to be," and he too set his course accordingly.

CLF: One additional event finally pushed me over the line. Another chap and I went down to the university to enroll. It was suggested that we would have a greater choice if we'd take engineering the first year. Reclamation had become a popular course and building dams and canals for irrigation projects was attractive. We thought we might enroll in irrigation engineering the first year, and then we could switch to forestry the second year. But, as we were getting registered, we found out that we had to buy a drafting set that would cost forty or fifty dollars. That was a lot of money in those days. We then went over to where students were registering in forestry, and learned they didn't require us to buy anything special in the first year. So that's how the die was finally cast, and I stuck with forestry.

ERM: A forty-dollar decision!

CLF: Yes, a forty-dollar decision!

ERM: Who at the University of Nebraska had the greatest influence on you?

CLF: I think Dr. [Charles Edwin] Bessey. Bessey was a well-known botanist in his day who wrote several textbooks and a scheme of plant classification, but he was a teacher, not a researcher. Because of him, the forestry curriculum at Nebraska was well lathered with such things as systematic botany, plant ecology, plant physiology, plant diseases, and plant histology. At one time he was acting president of the university and he was officially asked to

take the position permanently. But he wouldn't accept because he preferred to teach.

Dr. Bessey was best known for his teaching ability and his effectiveness in guiding young people. I think he influenced every student who took more than one course under him and really got to know him. He had a personality that made students get interested in the subject, and no one ever thought of cutting his class or not preparing a paper when he asked for one.

To illustrate how he could cheer up a person, I'll relate a little story. Between the campus and where Dr. Bessey lived, an Italian who spoke only broken English had a fruitstand--a cart that he could move from place to place on the pavement. Dr. Bessey had passed this man from time to time coming and going to his classes. One day someone ran into his cart with a vehicle. Apples and other fruits rolled all over the street. As Dr. Bessey came along, here was this poor man, in a terrible dither. Dr. Bessey stopped to talk to him, reached over, picked up an apple and said, "That's the finest apple I've seen for a long, long time." It made the old Italian beam. Here was someone who sympathized with him and cheered him up. That's the way Dr. Bessey had with his students, too.

My first contact with Dr. Bessey was in Botany 1. We used to have three hours of lecture and at least three hours in the laboratory each week. I was in the laboratory one day looking through a microscope. He was circulating among the students and stopped to look at my work. I didn't notice that he was taking a special look at me, until he said something like, "That's a good specimen," not referring to me, of course. Next he called over the assistant who was in charge of the lab and said to her, "Don't you think this boy's got mumps?" [Laughter] Sure enough, I had the mumps, and it was diagnosed by Dr. Bessey. I was told not to come to classes for several days.

ERM: Can you tell us about some of the students who were influenced by him?

CLF: One was a man named Frederick E. Clements, who was one of this country's pioneers in plant ecology. He had been one of Bessey's students, became his assistant, taught plant physiology and plant ecology, then later went to Germany to study. When he came back from Europe he was offered a position at the University of Minnesota as head of the botany department.

Roscoe Pound, a contemporary of Dr. F.E. Clements, first studied botany and got his Ph.D. under Bessey because he liked Bessey and botany, but later took law and became dean of the Harvard Law School. Dr. H.L. Schantz, who was a botanist for the U.S. Department of Agriculture and spent time studying flora in Africa, was a plant physiologist and dean of Botany at the University of Illinois. Dr. E.A. Bessey, Dr. C.E. Bessey's son, was head of botany at Michigan State College. Dr. Gilmour Byers MacDonald headed the forestry school at Iowa State College.

ERM: Nebraska seems like a very unlikely state in which a forestry school might develop that early on in the history of forestry education. Can you explain why?

CLF: The Nebraska Forest School was established in about 1907 by Emanuel Miller, who subsequently went to the University of Idaho to establish the forest school there. The Nebraska school operated about eight years; I was a member of the last forestry class to graduate at Nebraska. That was in 1915, the year Dr. Bessey died.

Many of Nebraska's citizens wanted trees to grow. The existing trees were limited mostly to stream banks in the eastern part of the state. A manifestation of that desire was the establishment of Arbor Day. It was first observed in Nebraska on April 10, 1872, and over a million trees were planted at that time. J. Sterling Morton of Nebraska City, who was appointed secretary of Agriculture in 1873, was influential in starting Arbor Day. Nebraska eventually became known as the "tree planter" state. It was a time when there was growing concern about the nation's forest resources and the establishment of the national forests (forest reserves).

Dr. Bessey was one of those greatly concerned about forests and about forest schools being established. It was his thought that the Sand Hills of Nebraska had had forests at one time and should be made to grow again. These factors favored the establishment of the forest school in the state. Bessey had a good deal of influence as a scientist and an educator and also with the politicians, although he was not a politician himself. He carried the day and succeeded in getting the Nebraska National Forest established in the Sand Hills and the forest school established in the university. The great forest tree nursery at Halsey, Nebraska, was named "The Bessey Nursery" in his honor. Over the years, a lot of trees have been planted and there are some pretty good man-made forests in the Sand Hills, even though it's a bad place for fires once they get started.

KKB: You worked during a few summers as a student doing some of that planting didn't you?

CLF: I worked there during the planting season in the spring of 1912 and again in the spring of 1915.

Anyway, the fourth head of the forest school at University of Nebraska was a graduate of the Yale Forest School named Walter J. Morrill. After a couple of years the forest school alumni became dissatisfied with him because they thought he was not keeping up the standards of the school as his predecessors had done. Morrill resigned just about the time Dr. Bessey passed away. It is likely, too, that there was some differences between the alumni group and some of the members of the board of regents, who thought there were greater needs for other phases of the university's program than forestry and so, to end the matter, the forest school was terminated. This would have been most unlikely had Dr. Bessey been there to defend the forest school, which he was in large part responsible for starting.

ERM: In the limited time that the forestry school existed, did it graduate a great number of students, and, if so, who among them have risen to positions of importance in your profession?

CLF: Several of the great earlier research men were Nebraska alumni. Gus [A.G.] Pearson directed the first forest experiment station established in the United States at Fort Valley Arizona. Another one of Bessey's students was Carlos Bates, who started the first study on the effect of forest cover on runoff and erosion at Wagon Wheel Gap in Colorado. Another graduate of Nebraska was Bob [R.R.] Hill, who was head of the Santa Rita Experimental Range in southern Arizona. A man named [Lynn H.] Douglass was one of the early range men in Region 2 of the Forest Service. Dr. Arthur W. Sampson, the first range ecologist in the Forest Service, was the first director of the Great Basin Experiment Station, the first range research center of its kind in the world. He moved to the University of California at Berkeley. Fred Morrell was a Nebraskan who became an assistant chief in the Forest Service, but he preceded the Forest School. Nevertheless, he was a close friend of the school from the time it started. He was a regional forester and the assistant chief for the Forest Service in charge of the CCC project while it was going. And we mustn't forget [W.R.] Chapline, who was head of the Division of Grazing Research in the Forest Service in Washington, D.C., for many years.

KK: How would you characterize Chapline?

- CLF: Chap was a most persistent, dedicated, able chief of Grazing Research. He came in as an assistant under James T. Jardine in the Washington office, and never was stationed elsewhere, although he conducted a number of projects in the field during several summers and at certain times of the year traveled extensively to visit field projects. He worked well with people, and he had quite a creative imagination. He was a Nebraska graduate, about two years ahead of me, so I have known him since a way back. Our families were very close, and we had more than the ordinary association in work. I think Chap deserves a great deal of recognition. He helped develop the range research programs in all the experiment stations where there were appropriations. He's been retired for a time, but he still attends most of the Society of Range Management and Society of American Foresters meetings. He's nearly one hundred years old by now, I guess.
- ERM: These men that you have mentioned all moved to jobs outside of the state of Nebraska. Did that have any impact on the thinking of the board of regents and the legislature when they voted to close the forestry school?
- CLF: I doubt it. Nebraska had many able people leave to work in various professions in other states. The state itself had no forestry program until long after I finished school.
- ERM: Was there any development of state forestry at the same time?
- CLF: Not for quite a number of years. More recently Nebraska has acquired a state forester and a major undertaking is promoting woodlot planting. The Forest Service Rocky Mountain Station has now established a field unit in Lincoln to work on various forestry problems. Of course, a big thing in forestry in Nebraska was its share of the wind-break project in the thirties. That, incidentally, was pretty much the brainchild of Raphael Zon and Carlos Bates. Paul Roberts headed the project and wrote a book about the history of Forest Service rangelands.* He was sort of a cowboy friend of mine. He came from a ranch, as I did, near North Platte, Nebraska, and was head of the Shelterbelt program in the Great Plains. Later he went out and was in charge of the guayule project in California after we lost our rubber supply from the Dutch East Indies, in the Second World War. It is surprising

*Paul Henley Roberts, Hoof Prints on Forest Ranges: The Early Years of National Forest Range Administration (San Antonio: Naylor Co., 1963).

that, although many Nebraskans entered the grazing field in forestry, and Nebraska had a strong botany department, it has been slow in emphasizing range management.

ERM: It seems that most of these men that we have discussed gravitated to range or watershed research. Was that possibly because their roots were in the sod of the prairies and their experience was related to the range?

CLF: It may have been that, but more than anything else I think they were inspired by Dr. Charles Bessey. Also, Dr. George Condra, head of the Department of Geography at Nebraska, was a leader in soil and water conservation, and an able teacher who attracted many forestry students to his classes.

ERM: To your knowledge, has there ever been a good study or article written on Dr. Bessey? He would seem to me to be a logical subject.

CLF: I think so, too. He deserves it, but I have never run across one.

* * *

ERM: Now, would you briefly track the history of forestry research and range research that preceded your entry into the Forest Service in 1915, to give us a background from which to launch into your own career?

CLF: There was no organized research program until after Earle Clapp was brought into Washington by then Chief Forester Henry Solon Graves. Clapp was made an assistant chief in 1916 to take charge and develop a forest research program. Many limited studies had been made prior to that time. The establishment of forest experiment stations in the western United States began in 1908, a range experiment station was started in 1912, and scattered forest products projects were brought together after the building of the Forest Products Laboratory in cooperation with the University of Wisconsin at Madison.

In 1873 Franklin B. Hough of New York presented a paper at a meeting of the American Association for the Advancement of Science regarding forest protection and the cultivation of timber. In 1876 Congress, in a rider attached to an item in an appropriation, provided two thousand dollars to the commissioner of Agriculture, who appointed Hough to what became the Division of Forestry in the Department of Agriculture. Thus, writes Samuel T. Dana,

"The Federal Government embarked on the first venture in the field of forestry with one man and a financial shoestring." In 1882 Hough wrote a report on various phases of forestry, including a chapter on "Experimental Stations for Forest Culture." This may be taken as the beginning of research in what is now the Forest Service.

The Division of Forestry made or encouraged the making of studies on a number of phases of forestry, including wood technology, dendrology, and destructive diseases. Such names as Sudworth, Charles Mohr, Dr. Schrenck, and Dr. Charles H. Herty came into the picture.

Gifford Pinchot became chief of the Division of Forestry in 1898. He fully appreciated the need for research. His first job, however, was to get forestry established generally as a basis for a major natural resource. I think Pinchot recognized the importance of research in a growing field, but in his time he was involved getting forestry under way and administering federally owned forest lands to operate effectively. Forest research expanded considerably during his term as head of the Forest Division, later the Bureau of Forestry, and as chief of the Forest Service from 1905 to 1910.

An individual who became outstanding in forest research, especially in silviculture, was Raphael Zon, who was first employed in the old Bureau on July 1, 1901. In his later years he was director of the Lake States Forest Experiment Station.

From about 1901 to 1908 there was mild growth in research in the Bureau of Forestry, which had become the Forest Service in 1905. The work was done chiefly by individuals working out of Washington. In about 1908 there was a big movement, probably inspired by Zon and his co-workers, to establish forest experiment stations.

Various forest products research projects in specific laboratories had begun in a number of locations several years after Pinchot had been in office. In 1907 a branch of Products was established in the Forest Service and in that year it was announced that a central laboratory was being built at the University of Wisconsin at Madison.*

*For more information on the beginnings of forestry research, see Herbert C. Storey's review draft for USDA, Forest Service, "History of Forest Service Research: Development of a National Plan," September 1974.

Range research in the Forest Service was begun in 1907 by James T. Jardine and Dr. Arthur W. Sampson. Prior to that time, beginning as early as 1868, studies of various phases of rangelands were undertaken in the Department of Agriculture, first in the Division of Botany and mostly in the Southwest. Later research was done in the Division of Agrostology. In 1901 the Divisions of Botany and Agrostology became the Bureau of Plant Industry. A study by Dr. Frederick V. Coville of the Bureau of Plant Industry in 1897 made probably the first scientific range investigation on a national forest.

Projects undertaken by Jardine and Sampson, mostly on the Wallowa National Forest in Oregon in 1907, dealt with the pasture handling of range sheep, the revegetation of overgrazed range, natural revegetation of depleted grazing lands, natural revegetation of rangelands based upon growth requirements and life history of the vegetation, and range improvements by deferred and rotation grazing.

What was the equivalent of an Office of Range Investigation was established in the Washington office under William Dayton in cooperation with the Bureau of Plant Industry in 1911. Thus was begun an herbarium of western range plants and a compilation of information on their forage value, growth habits, distribution, and so on.

Beginning in 1911 the Forest Service Office of Grazing Studies under J.T. Jardine was established in Washington with an individual attached to a Grazing Studies Office in each of the western Forest Service regional offices. These individuals led in the development of range surveys -- a method of making and recording an inventory of range resources, their nature and current condition of the range, contour maps, livestock water supply, existence of overgrazing and depletion. This information helped determine range use and grazing capacity. These grazing study people also led in establishing sample plots fenced to exclude livestock as an aid to comparing the condition of the used range with ungrazed areas.*

ERM: What were your summer jobs before you graduated from the university? Did they involve forestry work?

*For more information on the beginnings of range research, see "The History of Range Research," Agricultural History, 18:127-143 (July 1944).

CLF: Prior to 1915, I spent three summers and part of a fourth in forestry work. In the summer of 1912, two other forestry students and I went to eastern Kentucky to work for the Consolidation Coal Company, which had just opened an immense new coal field overlain by mountainous land supporting a beautiful virgin, mixed-hardwood forest. Some of the coal land border had been acquired from hillbillies who had lived there for generations. The only untimbered spots were their "house places" and the adjoining corn patches. What a different world it was to one who had grown up on the nearly flat treeless plains of western Nebraska.

In those coal fields around Jenkins, Kentucky, we three University of Nebraska freshmen spent the summer mapping forest ecotypes and gathering volume table and tree growth data. It was a great place to study hardwood forest. Also, someone had persuaded the coal company to apply sound practices of forestry, and they had employed a Yale Forest School graduate, Max Forester, to manage the forest. After I was moved to the Southeast in 1935 to take over the experiment station directorship, headquartered at Asheville, North Carolina, I revisited those coal fields and was greatly disappointed. The forestry project, which had been continued until the United States entered World War I, had been abandoned.

During the summer of 1913, I worked as a forest guard on the Missoula National Forest, now part of Lolo National Forest, in Montana. There had been a forest fire holocaust in 1910, but that summer our party did not see even one smoke. We spent our time clearing out windfall of dead lodgepole pine poles that were beginning to clog many of the trails in jackstraw fashion. Later that summer I cut my knee with a double-bitted axe while learning to fell trees. I spent two weeks in a hospital and was then made camp cook for a survey party that had the task of finding and surveying a boundary line between a national forest and an Indian reservation.

In the summer of 1914, I did my first work in forest research. A classmate named Dave Olson and I were sent up to the big tree nursery at Hougan on the Lolo National Forest in Montana. We worked with seedlings, digging up rows of them, threading them into planting boards, digging the furrow with a spade where the seedlings were to be transplanted, and filling the furrow after the seedling board had been placed in position. Also the next summer, I was a member of a rang survey crew on the Manti National Forest in Utah.

ERM: Let's go now to the year you graduated from the University of Nebraska and went to your first job with the Forest Service. What was that assignment?

CLF: My appointment as a grazing assistant in the Forest Service was dated July 1, 1915. I had taken the Civil Service examination earlier that spring. Just before the appointment was made, I learned that my name stood at the top of the Civil Service register. In anticipation of that appointment, I had been called into the field over a month before the end of the college year to take charge of a range survey party on the Cache National Forest in Region 4. I had to pass up my graduation exercises and take my degree in absentia.

After the end of the 1915 field season and through February 1916 I was compiling range survey field data and other assigned jobs. But early in March 1916, I was transferred to become a research assistant on the Jornada Range Reserve, a 202,000-acre tract of semidesert grazing land northwest of Las Cruces, New Mexico.

ERM: Since it was desert or semidesert land, what was the Forest Service doing there?

CLF: That is a good question that I have been asked many times. I was told that it happened as follows: In the spring of 1915, J. T. Jardine appeared before a subcommittee in the House of Representatives in Washington to support an increase in appropriations for performing range research in the national forests.

During the hearing by the subcommittee on the Department of Agriculture's expenditures on Jardine's items, the chairman mentioned that a representative of the Bureau of Plant Industry had recently asked the committee for an appropriation to undertake range research on the Jornada Range in New Mexico and the Santa Rita Range in Arizona. The chairman asked Jardine if it was necessary for two bureaus to duplicate their efforts, and Jardine replied that since he knew nothing about the Bureau of Plant Industry's request, he was not prepared to answer the question. It was proposed that the rest of the hearing be postponed and that Jardine would make a field examination of the two areas and then report to the subcommittee. Jardine felt he could not refuse the request, made a hurried trip to both of the proposed new research sites and, through the

regular channels, presented his report to the committee. In due time the appropriation was approved for the Forest Service. After many years under the Forest Service's aegis, the Jornada Experimental Range was turned over to the Agricultural Research Service in the Department of Agriculture.

Well, I arrived at the Jornada as a greenhorn off the range in Nebraska. Part of our job was to work with the cowboys. One of my first assignments was to spend two weeks rounding up steers, trailing them to the shipping point, and loading them on railroad cars, a whole trainload at one clip, fourteen or fifteen hundred critters.

Sometimes we researchers had little problems with the cowboys, especially when they considered us as "greenhorns." But it just so happened that I had grown up on a ranch and so was perfectly at home with cattle and cowboys. This was tremendously helpful to me, since they began to pay attention to me and give me the records they had to keep when changing cattle from one pasture to another.

KKB: What kind of records were they?

CLF: We were grazing a certain number of cattle in each of thirteen pastures, depending upon the season of the year and the condition of the range, and it was essential to know the number of cattle in each pasture throughout the year. Therefore, the cowboys counted the head in each move and also reported the number of calves branded, and the death losses of cattle and apparent causes. They were instructed by the ranch foreman to note the transaction and give the data to me. However, the cowboys might not supply the information if they thought the researcher didn't know his stuff; and they judged what a person could do largely by how far a horse could throw him.

KKB: Having grown up on a ranch, you didn't get thrown!

CLF: Well, I seldom got thrown, and I rode some of the worst bucking horses on the ranch.

KKB: Were there any range management courses in the universities or forestry schools?

CLF: Not at that time. Range management as a discipline didn't come in until maybe after World War I. Up until then students who wanted to "go into grazing" usually took the regular forestry courses plus a lot of botany and perhaps some animal husbandry.

KKB: So what equipped you was chiefly your experience growing up on the range.

CLF: That is correct. The only range management I had was picked up at home or in the summers I spent on range surveys between school semesters. My father's ranch headquarters was in the Lodgepole Creek Valley, which ran west to east. The next neighbor down the creek to the east also had some range in the land to his south, which sloped toward the creek valley. My father believed in caring for his range and not overgrazing it. Before I started to college, I noticed that our pasture to the south was always green in the spring and summer. The neighbor's range, separated from my father's range by a fence, was yellow with flowers in the summer and relatively less green than ours. When I studied grazing use during my last year in the university, I learned that overgrazing for several years produced grass that went down and increased weeds. What I saw on the neighbor's range was the third stage of overgrazing.

ERM: A little while ago you mentioned that the Jornada Range research project eventually was turned over to the agricultural research agency in the Department of Agriculture. Before we go on to other topics in chronological order, I wonder if you might have anything to say about the way in which these swaps or trade-offs take place in the structure of the federal bureaucracy.

CLF: I think there are several ways it can start. One would be the case I described, in which the appropriations committee concluded units were too scattered and could not operate most economically. A shift in responsibilities might cause changes; that is why the Jornada project was transferred to Research Service. The work there now is going into more specialized phases, like breeding forage plants, whereas the Forest Service is continuing plant testing for specific kinds of rangeland. In another instance, the Division of Forest Pathology and the Division of Forest Entomology were in the Agricultural Research Service, with the pathological and entomological agencies dealing with farm crops. The secretary of Agriculture proposed that the two divisions be transferred to the Forest Service, where they would be closer to the growing timber.

ERM: Did events like the sheep grazing problems in the Southwest tend to stir up interest in getting research under way in the Forest Service?

CLF: I think it certainly pointed out the lack of knowledge in many phases of the undertaking. The Coconino sheep grazing problem arose several years before 1905, while administration of the "Forest Reserves" was still a function of the General Land Office in the Department of the Interior. The G.L.O. certainly was deficient in qualifications for meeting problems like those in regulation of range use.

ERM: Mr. Forsling, you came into the Forest Service some years after Pinchot had left as chief. Was Pinchot still an important influence even though he was no longer present?

CLF: Absolutely, in that he inspired his men. Everybody seemed to get some feeling or boost from thinking and talking about Pinchot, in camps and elsewhere in the field. It's a pretty long time now since I was with the Forest Service, but up until the time I left, that influence on people and the morale boost he provided were still there.

ERM: Did you ever meet Pinchot personally?

CLF: Yes, several times.

ERM: What do you remember about him?

CLF: I was always impressed by him whenever I had a conversation with him or attended a meeting where he was present. He still showed the spark that made it possible for him to accomplish what he did in getting conservation and forestry going in this country. Of course, he also had the friendship and help of Theodore Roosevelt, who was extremely interested in conservation.

I just missed out on the "old gingerbread meetings" that Pinchot used to have in the early days at his residence in Washington while he was chief. However, he held sort of a replay of that event at his home in Washington in 1940, after he finished his terms as governor of Pennsylvania, and I was there. He still had the old fire about keeping the Forest Service in the Department of Agriculture. Harold Ickes tried to undermine Pinchot's record even at that time, but I don't think he got very far, nor did he make very many friends by trying to downgrade Pinchot.

ERM: Who are the men to whom you assign the most importance in building the beginnings of research in the Forest

Service? If you look back on that history, what few men do you see as being the key figures in building it?

CLF: I have never chronicled that. When I came into the Forest Service, the leaders in research work were Raphael Zon and Samuel T. Dana in silviculture, McGarvey Cline in forest products, and James T. Jardine in range management. On June 1, 1915, Forester Henry S. Graves named Earle H. Clapp as the first assistant chief in charge of the Branch of Research. He served as the "mainspring" in research until he retired.

James T. Jardine had a great influence on range management. He was a remarkable man, and was head of what was called Grazing Studies in the Branch of Grazing of the Forest Service. A graduate of Utah State University, then the Utah Agriculture College, Jardine was a native westerner. After finishing at Utah State, he got his master's degree at the University of Chicago. One never heard anything about "range management" at that time, but Jardine seemed to have a natural understanding of what was needed. Brought in at about the same time was Arthur W. Sampson, who was a specialist in plant ecology and plant physiology. They worked mostly on "hot potatoes," but they got research started.

Jardine developed what used to be called grazing reconnaissance, now range surveys. That involved making an inventory of resources on the ground to use as a basis in grazing management. Jardine took many young fellows and broke them in, somewhat the same way that Pinchot did. I remember I was told that Jardine was one of the more able men in the Forest Service, along with Raphael Zon. Jardine was with the Service for about sixteen years, and left around 1920. He first became the director of the state agricultural experiment station in Oregon. Later he became head of the cooperative program in which the State Agricultural Experiment Station and the Department of Agriculture worked together.

ERM: Do you think of Jardine as the father of range management research?

CLF: I would say he was, because he was the first to develop a program of range research in the Forest Service. Many studies were being carried on by state experiment stations and individual botanists from various institutions, but he was the first to organize the research into a program that has subsequently been expanded.

ERM: Would you credit him with being the first to define range management as a discipline?

- CLF: It would be fair to say that, but probably with the help of Albert Potter and Dr. F.V. Coville, later the head of the Bureau of Plant Industry. Jardine wrote several publications, one of which became a bible for the industry entitled Range Management on the National Forests. Mark Anderson was co-author of the publication.*
- ERM: Did the long delay in not establishing the Branch of Research until January 1, 1915, indicate that the Bureau was considered a secondary function in the Forest Service?
- CLF: I believe it was more a matter of doing first things first. The administration of the Forest Reserves was not transferred to the Department of Agriculture until 1905, which probably did not influence the research already being done by the former Bureau of Forestry. Practically all the energy that the Bureau could spare when the transfer was made was turned to putting the forest reserves, later named national forests, under administration protection. Then necessary exploration to determine research priorities had to take place.
- ERM: I think what you are saying is true of many another government agency and organizations in the private sector as well. They don't simply mushroom out of nothing into full-blown, well-balanced operations. There are certain essential stages before an organization arrives at a maturity when it can begin to deal seriously with research problems. Is that what you are telling me about the Forest Service?
- CLF: Yes, it is.
- ERM: Was the area of research in the Forest Service as important to Pinchot as others?
- CLF: Pinchot was the chief for only five years, and simply did not have the time to think much about research. Nevertheless some of his actions indicated that he felt very strongly about its importance, such as the fact that he appointed Raphael Zon as director of the Lake States Forest Experiment Station. I really became acquainted with Zon after I became head of Research in the Washington office. He had a very high respect for research.

* * *

*James T. Jardine and Mark Anderson, Range Management on the National Forests (Washington: Government Printing Office, 1919).

ERM: Let's get on with your early years in New Mexico.

CLF: I went to the Jornada early in 1916. There were only two men assigned regularly to that project, plus one or two summer assistants. The first man in charge of the Jornada was Charles Flemming; his assistant was Leon C. Hurtt, another University of Nebraska graduate. Early in 1916, Flemming resigned to head a range management department at the University of Nevada. In the spring of 1917, I was put in charge of the project and remained in that position during the war and for some time thereafter.

The Jornada is a piece of typical southern New Mexico desert range, probably not the driest or the worst. It has an average rainfall of about eight inches. Besides the typical desert shrubbery and other vegetation, it had large areas of what is commonly called black grama grass, which is related to the blue grama grass that grows so plentifully in the Great Plains and in the Rocky Mountains. It was a fine source of forage for livestock when it was there, but it is now practically gone. Some have blamed the disappearance of black grama grass on overgrazing, but I think the climate probably had more of an effect. As grazing research has continued, some experts have told me that drought rather than overstocking was the reason. The grama grass on the Jornada, I was told later, is growing near the edge of its habitat, where there is a close balance between moisture supply and the permanence of this species. Cyclic droughts have hit it frequently since 1915, and, where the moisture balance was very low for a considerable period, it finally overcame the grass.

While I was on the Jornada, a number of publications were prepared with reference to the management of those ranges during drought.

ERM: How long were you in charge of the Jornada Experimental Range?

CLF: In the spring of 1917, Leon Hurtt, my boss, desired to return to mountainous country. He was transferred to the regional headquarters of the Forest Service in Missoula, Montana, and I was placed in charge on the Jornada Range, where I remained without technical assistance until after the close of World War I.

I applied for enlistment in the 10th Engineers of the U.S. Army to go to France and help get out timber for the French army. It was the first U.S. unit sent to

France. The enlistment papers went through the office of the secretary of Agriculture, where they were turned down on the basis that I was needed in food production.

Besides attending to the experiments on the Jornada, I was occasionally sent out on special jobs pertaining to the war. For example, I was asked to get information on the extent of death losses of cattle from starvation because of the serious drought on the range in southern New Mexico and west Texas from 1916 to 1919. I received no instructions on how to proceed. Entirely by chance, I went to the office of a railroad agent where cattle hides were being loaded for shipment to market. Fortunately, these offices had records of all hides that had been shipped, not only at that time but also for several years past. From this data I could at least make a good guess as to the losses during the period of the drought, compared with the losses in past years. I also got information on the dropoff in cattle production from the ranchers.

From weather records, some going back nearly half a century, we were able to learn about the length and frequency of droughts and what provisions might be made to cope with them. With the help of a hardware distributor in El Paso, Texas, we prepared a machine powered by a large gasoline engine to slice the main stems of large yucca plants. This makes good cattle feed, high in carbohydrates, and, together with a small quantity of cottonseed meal or "cake" made excellent emergency cattle rations. The cooperatives on the Jornada saved a large number of breeding cows with this kind of feed.

Another "little task" we got into was the result of importing, in error, a number of bulls that were infected with scabies, despite inspection at the place they originated. All the cattle on the Jornada were quarantined, as were cattle on all adjoining ranches. In the summer of 1919, after the end of the drought, we had to build a dipping vat at the Jornada and dip all the cattle. Altogether 19,000 head of cattle were put through that dipping vat.

- ERM: Did you measure the effect of the drought on the range?
- CLF: Of great significance were the botanical studies we carried on to learn about the extent of damage done

by the drought to the vegetation, and how much of it recovered when the rains finally came. The driest year received only three and a half inches of rainfall.

ERM: When did you leave the Jornada?

CLF: In 1920 I moved into the Washington Office of Grazing Studies in the Branch of Grazing, as assistant to Chapline, who succeeded James Jardine as head of that office. At that time the Forest Service had three field stations, or work centers: the Great Basin, the Jornada, and the Santa Rita. The Office of Grazing Studies also had charge of the range survey work in several regions, and supervised grazing studies activities in the region. The field men also carried on studies of local problems, especially grazing plots and livestock exclusion plots, in order to obtain a measure of the production capacity of the local range. Personnel in Grazing Studies reported to the chief of Range Management in the regional office. The range research group at the Great Basin, Jornada, and Santa Rita centers, and several people who were working on botanical investigations in Washington, reported directly to the Office of Grazing Studies in Washington.

ERM: Did the two years you were stationed in Washington help you get back in touch with the administration of grazing in the national forests?

CLF: I spent a great deal of time traveling in the field during those two years. At that time the Office of Grazing Studies dealt primarily with range research, administration of range studies, and range surveys, including the formulation of range management plans for individual national forests that had been surveyed. The supervisor of each national forest prepared each year what amounted to a grazing allotment report. These summarized conditions in each national forest and set forth proposed changes in number of livestock to be approved for grazing in the forthcoming year, and the season during which the range might be grazed. They were reviewed first in the regional office and then forwarded to the Washington office, along with the region's recommendations for changes.

The chief of Grazing in Washington assigned me the job of reviewing the forest supervisors' annual grazing report and drafting the letters of approval, copies of

which eventually were revised, approved, and forwarded by the chief of Grazing through the regional office to each forest supervisor. That constituted the grazing plan for the forthcoming season.

These annual grazing reports were a great source of information to me regarding conditions of each national forest, major grazing problems, and the progress being made in administering rangelands.

I also dug deeply into regular programs within the scope of the Office of Grazing Studies, and what was needed to improve them.

ERM: By 1920 there had been opportunity to observe the effects of World War I on the national forest administration. Were not some lessons learned from that event which encouraged greater progress in range research?

CLF: Yes. I think we began to realize that there are limits to our natural resources, especially grazing land, and about the use of timber in national defense. There was a great demand for increasing the number of livestock on the range, particularly on the national forests, during World War I. This resulted in serious overgrazing and a setback in Forest Service efforts to improve range use. Somewhat the same situation applied to timber problems, although they were not as acute as they were in World War II. After World War I we began to get more money for research, which started moving toward reorganization.

Earle Clapp really began to push harder for a research program. Before World War I, research was conducted on a patchwork basis. Research in forest products was doing well; it was made more conspicuous during the war. Clapp, who was brought in in 1915 and made assistant chief in charge of Research, began to crystallize his ideas into an overall research plan and program, which he finally got across with the passage of the McSweeney-McNary Act in 1928.

KKB: In the meantime, you had been transferred to the Great Basin Station in Utah.

CLF: Yes. Sampson was leaving that station and joined the University of California. Col. Greeley, then chief of the Forest Service, thought one man could handle the Grazing Studies job from Washington, and that either Chapline or I should take Sampson's place. In the

middle of 1922 I moved, with summer office at the field center and winter headquarters at Ogden, Utah.

We continued to emphasize the watershed investigations and range rather than timber. Some early work had been done in silviculture, particularly in trying to find out why ponderosa pine didn't do better in what appeared to be a good site for pine, but had chiefly scrub oak. That work had slacked off by the time I arrived, and it was never revived.

ERM: Please describe briefly the general nature of the locality where the Great Basin Experiment Station was situated.

CLF: This station work center is located on the west slope of the Wasatch Plateau on the Manti National Forest. It is about twelve miles from the town of Ephraim and is accessible by a winding mountain road. Ephraim lies at an elevation slightly under 6,000 feet; the experiment station's main quarters are situated at about 8,850 feet. At the summit of the plateau, a couple of miles further up the mountain, the elevation is 10,300 feet.

Between the foot of the plateau and the summit, there are five vegetation zones that afford a multiplicity of climatic and vegetative range conditions. The headwaters of the many mountain streams in the general locality had been severely overgrazed and eroded, mostly by transient sheep herds before the area was made a forest reserve. This damage to the watershed lands began early after settlement, and many flash floods occurred there between 1888 and 1910.

ERM: What was the outstanding finding that emerged from that station?

CLF: My choice would be the publication entitled A Study of the Influence of Herbaceous Plant Cover on Surface Runoff and Soil Erosion in Relation to Grazing on Wasatch Plateau in Utah, USDA Technical Bulletin 220, published in 1931, by C.L. Forsling.

This study was started in 1912 by Arthur W. Sampson. I carried through the second phase, beginning in the

*For a complete description of the station and its work, see Great Basin Station -- Sixty Years of Progress in Range and Watershed Research by Wendell M. Keck, USDA Forest Service Research Paper 118, 1972.

spring of 1926 and extending through 1928. This was the first study of its kind, and it brought to light the fact that denudation of mountain watershed by grazing of herbaceous vegetation is a cause of flash floods from torrential rains, under the climatic, geologic, and topographic conditions occurring over much of the western United States.

ERM: Mr. Forsling, earlier you mentioned Carlos Bates. He studied the effect of forest cover on stream flow in Colorado. Were you well acquainted with Bates?

CLF: I never worked under Bates, but I got to know him well after he completed the Wagon Wheel Gap study in Colorado. It dealt with how forest cover influenced runoff and stream flow. We frequently discussed the relation between plant cover and water supply, since we both worked on similar problems.

Before Bates started the Wagon Wheel Gap study, there was much debate on the subject of forests and floods. The study was undertaken, partly, at least, to shed light on the differences of opinion. The Weather Bureau helped plan the project, which consisted of selecting two similar forested watersheds and measuring all the precipitation, runoff, and sediment carried off each. This was done, storm by storm, for several years. The weather was carefully recorded also. Then the trees on one of the watersheds were cut and the logs removed. The branches of the trees were cut, piled in windrows, and, when dry, burned in place. The measurement of precipitation, erosion, and weather conditions were also continued for several years.

The effects of harvesting the timber were disappointing to many foresters, but Bates accepted the results and published them.

ERM: Do you mean that the results were contrary to what those foresters had anticipated?

CLF: In the early days of conservation, it was thought that national forests would prevent floods. There was sharp division of opinion on the subject, especially between foresters on the positive side, and members of the Army Corps of Engineers and the U.S. Weather Bureau on the other side. The Wagon Wheel Gap study was a joint project of the Weather Bureau and the Forest Service. Carlos Bates put in sixteen years on it. He was generally recognized as being completely objective in his approach.

The results, published in the Monthly Weather Review, Supplement No. 30, 1928, were not conclusive. There were some differences in the stream flow from the cutover watershed, but not at all convincing. Bates discovered the significant fact that the nature of the soil of a watershed may have more influence on the hydrology of a watershed than the plant cover.

I should add that research carried on at the forest and range experiment stations of the Forest Service during the last half century has shown that the character and condition of forest cover plays a great part in controlling runoff and regulating stream flow, and also in preventing erosion; even so, the forest cannot prevent floods.

A summary of this knowledge for the eastern part of our country is contained in a publication entitled Forests and Floods in the Eastern United States by Howard W. Lull and Kenneth G. Reinhart, USDA Forest Service Research Paper NE 226, published in 1972. Many of their findings would be applicable to the western part of the country. There are many differences in conditions, of course: in the West, much of the geology and soils are much younger, the mountains more massive, and a larger percentage of the runoff comes in spring from winter snow at the higher elevations. Also, a higher proportion of western floods are of the "flash flood" nature.

More recently, a summary of the influence of forest cover on water supply and stream flow in the West has been published in Forests and Water: Effects of Forest Management in Floods, Sedimentation, and Water Supply by Henry W. Anderson, Marion D. Hoover, and Kenneth G. Reinhart, USDA Forest Service General Technical PSW 18, 1976.

Neither the latter publication nor the Lull and Reinhart report claim that forest cover will prevent floods. But each report points out the many effects forest cover may have in reducing or modifying floods.

- ERM: Have floods originating from overgrazing occurred elsewhere in the West besides central Utah?
- CLF: In the early 1920s, continuing through 1930, flooding from torrential summer rains occurred in the Wasatch Mountains in Utah, between Brigham City in the north and Springerville in the central part of the state. They were mostly from open public domain and other mountain lands that had been left out when the national forests in Utah were established. There had been little or no control of grazing on those lands.

The floods caused loss of a number of lives plus serious damage to homes, farmland, highways, and town property. The governor of Utah stated to a newspaper reporter that, in his opinion, the floods were caused by too much grazing on the watersheds of each affected mountain stream.

After I told the governor what we had found on the watersheds, he appointed a seventeen-member commission composed of leading engineers, bankers, a sheep grower, a cattle grower, botanists, geologists, and two men trained and experienced in range management. The manager of the business affairs of the Mormon church, an engineer, was chairman. The job of this commission was to study every facet of the floods, from the mountaintop watersheds to the mud flows and their damage to the populous valley below.

Only one member of the commission, a geologist, voted not to approve the finding that the cause of the flood was the deterioration of the herbaceous and shrub vegetation on the parts of the watershed where the floods originated. The lands had been almost completely denuded, mostly by heavy overgrazing. The governor was vindicated in the position he had taken.

- ERM: Could anything be done after that to stop a recurrence of the floods?
- CLF: Yes, indeed. Some time afterwards, the Civilian Conservation Corps came along, with the manpower to undertake big jobs. Several companies of the CCC were turned over to the then Intermountain Forest and Range Experiment Station to find the answers. The project they worked on now stands as a monument to the CCC, which supplied the muscle, and the research specialists who designed the practices to stop the floods.

The techniques included putting in countertrenches and restoring a good stand of vegetation in the denuded area. This year, 1978, I happened to meet the researcher who is presently in charge of the project. He informed me that none of the numerous canyons which formerly flooded in 1930 have flooded, despite equal or worse rainstorms.

* * *

- ERM: What were some of the new projects you undertook during the time you were in charge of research in the Intermountain Region?

CLF: Previous to my arrival, the research effort had been confined chiefly to national forest lands in Utah. In that part of the West, it was customary for many ranchers to graze livestock of all kinds on the national forest ranges during summer. In early spring both cattle and sheep used spring-fall ranges, mostly outside the national forests. They consisted of privately owned and open public domain desert range for winter, since range livestock production a year-long operation and no research was being done on spring-fall ranges, or on the desert ranges of the Intermountain Region. The Intermountain deserts were pretty cold in winter, compared to the warmer desert range in the border states to the south.

Much of the spring-fall range in the Intermountain area is characterized by the presence of dense stands of sagebrush. The Bureau of Animal Husbandry had established a range sheep breeding experiment station near Dubois, Idaho. It was in the heart of the sagebrush belt. The Great Basin Station was invited to undertake range management research on the sheep station range-lands. We accepted beginning in about 1924.

In the late 1920s, the Great Basin Station was invited to initiate range research by the Range Cattle Breeding Station at Miles City, Montana. This was in the blue gramma-western wheat grass range country of the Great Plains. It had been carved out of the land in the old U.S. Army reservation at Miles City.

A significant conclusion reached in a study of dense sagebrush range grazed usually in the spring and fall had been converted from an open stand of sage with a fair to good quantity of grass in the openings and under the sagebrush to dense sagebrush with only a sparse stand of grass. The change from grass-sagebrush to sagebrush-grass was a result of overgrazing, especially in the spring of the year.

One project at the sheep station was teaching western animal husbandry men that depleting the grass rangeland and increasing the sagebrush by overgrazing, especially in the spring of the year, really is possible. The animal husbandry men used to attend field meetings at the sheep station annually to see the sheep breeding work. The same group attended the meetings each year, but they were difficult to interest in rangeland, the

foundation of sheep production in much of the West. A set of eight paddocks of range was available for comparison of different seasons and degrees of grazing.

In the third year of this project it was possible to convince the visitors how rapidly a range that formerly was grass and herbs with some sagebrush could be converted. It could be changed to an almost pure sagebrush range, with a loss in grazing capacity. In contrast, a range that was similar at the beginning could be altered by grazing practice to become again a grass range, with a decline in the sagebrush and a higher grazing capacity. The result of the test was to show that a range can either be destroyed or maintained and even improved by the kind of management that is applied.

Another extension of the program that was started while I was head of the Great Basin Experiment Station was the establishment of the Desert Experimental Range, about fifty miles northwest of Milford, Utah, about ten miles from the Utah-Nevada state line. Fencing, drilling a well, and erecting quarters were contributed by the CCC. The land was withdrawn from the public domain during a period when the General Land Office of the Department of the Interior was diligently attempting to prevent the Department of Agriculture, especially the Forest Service, from acquiring any more public domain land.

The procedure was for the secretary of Agriculture to request the withdrawal; in such cases, the application was routed through the Land Office for comment before being acted upon by the secretary of the Interior. This took time. Moreover, the election had brought in an entirely new administration and so a new secretary of the Interior would be taking office in March, 1933. Senator Reed Smoot would not be returning to Washington for another term, so a little delay would kill the withdrawal application.

Some time after the first of January, a friend of Senator Smoot who was interested in establishing the Desert Experimental Range was in Washington and found out that the request for withdrawal was languishing on someone's desk in the G.L.O. This was reported to Senator Smoot, who requested the outgoing secretary to send a messenger to bring the papers over. The

next day, the G.L.O. learned that the secretary had signed the papers and that the land had been withdrawn, to be used by the Department of Agriculture as a range experiment station.

Following the passage of the McSweeney-McNary Forest Research Act, we expanded as fast as we could into other states of the region, especially Idaho, including work in range management, watershed management, and silviculture, and no longer confined ourselves to one small area in one state.

KKB: Where did your funding come from for these other projects? Did the states provide appropriations?

CLF: No, there was cooperation with the states, but they never gave us any money. We were lucky to get some increases in appropriations from the Congress from time to time, but it was not easy. Until the McSweeney-McNary bill was passed, the projects had to be authorized before the money could be appropriated. We were in a situation that, frequently, necessary funds were not granted because the work hadn't been authorized. That was why the McSweeney-McNary Bill was so important. It authorized projects and even spelled out the amount they could spend for the next ten years. From that time on, we began to really expand. The relief programs established by the New Deal were a great help in forest research after March 1933. Also, forest research projects were eligible for financing under the CCC, PWA, and WPA throughout the country.

Of course, well ahead of passage of the McSweeney-McNary Act, Earle Clapp had been working on all of these things, preparing legislation for a real research agency with silvics, range management, forest influences, forest economics divisions. With his characteristic thoroughness and persistence, Clapp finally got his report printed in 1926, A National Program of Forest Research. Credit is given to the Society of American Foresters, which is proper, but it was mostly Clapp's idea. This report became the foundation for the McSweeney-McNary Bill.

KKB: In our background research we came across a copy of a memo from Clapp to station directors, asking for local action in support of McSweeney-McNary. Do you recall receiving that request, or anything you did to drum up support in your locale?

- CLF: I do not recall receiving such a memo from Clapp, but we all worked hard for support. I don't know whether this is of historical interest, but a lot of prominent Utah women belonged to the Women's Child Culture Club. My wife belonged, and I told her I would give her a fur coat if she would get her clubwomen to support the McSweeney-McNary Bill in Congress. She got the coat.
- KKB: We also came across a letter from Clapp to Raphael Zon, in which he expressed particular concern about the section of the bill covering grazing research. Because of the grazing fee, stock limitations, and other controversies, Clapp was afraid that reaction to this section from western interests would stall the whole bill. Do you recall if that fear was well-founded?
- CLF: Well, that is news to me. I don't recall that Clapp ever raised that question to those of us in range research, although range research had been transferred from the Branch of Range Management to the Branch of Research in 1926. As a matter of fact, when the hearings on McSweeney-McNary were held, we enlisted one of the most prominent stockmen in Utah, James M. McFarlane, who had been president of the cattle growers, to testify in support of the bill. As a witness who spoke from the bottom of his heart, Jim McFarlane attracted a good deal of attention on the part of Senator Charles L. McNary. He also had great impact on the entire committee; nobody ever raised any objection to including range research in the overall research program proposal.

The national program of forest research and the McSweeney-McNary Act set up all the experiment stations, but left out a station in the Intermountain Region, which is where I was. However, a proposal for one additional station was included in the act, whether because of fear of the stockmen against the bill, I couldn't say for sure.

There was not much said about grazing in the bill, and the Intermountain Region was not mentioned. This may have been for various reasons: forestry problems would be covered by surrounding stations, and the report was written, except for Chapline, by silviculturists--tree men, we used to call them.

After the bill was passed, Clapp came out to the

Intermountain Region and we spent more than a week traveling throughout the area. I was getting really well-acquainted with him for the first time and going over all kinds of problems that needed attention. Chapline was along part of the time. Shortly thereafter the establishment of the Intermountain Forest and Range Experiment Station was announced.

ERM: Was there a great rivalry?

CLF: No, I don't think so. Silviculture and range research were started in separate branches of the Forest Service. When the Branch of Research was set up in 1915, range management had been left in the Branch of Grazing and wasn't moved under Research until 1926.

KKB: Who was behind the move to put range research in the Branch of Research?

CLF: Well, I think most of us who had been in research, doing work in that field, and even Chapline himself, the head of Grazing Studies, felt that we should go over to that branch because we could then associate with people who had similar thoughts about developing research work, instead of being under range managers.

One of the big jobs the Office of Grazing Studies had at that time was range surveys and range management planning. This was chiefly a management function rather than research, although it had originated in the Office of Grazing Studies. We had a good deal of work going in watershed management, and the Branch of Research under Clapp was handling all the work of that type on forest land. It made for much better correlation with other work, and eventually all watershed work was joined together into a Division of Forest Influences under Edward Munns.

I don't know what Clapp himself thought about range research, because I never had much contact with him until that visit.

ERM: Was that before or after the passage of the McSweeney-McNary Act?

CLF: It had been passed then. We had been under the Branch of Research for a couple of years by then, but there was very little common interest on their part.

- ERM: When one unit of a government agency, or a subunit, as you were in those early days, is moved from within the structure of the bureau itself to another area of the bureau, is there not often a struggle for maintenance of control over that unit by the old unit that had governed it in the past?
- CLF: I would say not, in this case. Everybody went along with the idea that it would lead to better organization and the relations remained good or improved.
- ERM: In other words, there was unanimity among the Forest Service people that it was logical to move into the Branch of Research.
- CLF: Yes, it was almost automatic. The administration regions and the experiment station regions were coterminous, for the most part. After I became assistant chief in charge of Research, some experiment stations were combined and the number of stations was reduced. In such instances, the combined research regions covering two administrative regions were usually kept coterminous. Consequently, there was direct contact between the regional forester and the regional experiment station staffs.
- ERM: What were some of the immediate benefits that you saw after the change took place?
- CLF: There wasn't much change in the program or the work, except I think that those in Grazing Studies and in range management recognized that it was worthwhile to be associated with the other research divisions.

As long as I was at the Great Basin Station, we supposedly covered just a local area, but we had begun to realize we had responsibilities toward other kinds of land -- especially range and watershed land. Under previous administrative organizations, the work was closely connected with the national forests; with the establishment of these regional experiment stations, of which Intermountain was the last, we were involved in straight research. In the old days, the regional forester or national forest supervisor could easily switch us from one job to another.

- ERM: And now you weren't obligated to take on other jobs?
- CLF: No, we weren't so obliged, except when research men were working on a particular national forest, and

then they were subject to call for fighting fires even if other personnel were available.

Another matter affected by the transfer was our contact with the rangers. We would attend ranger meetings more freely and we would be called upon to help inspect bad problem situations. Sometimes I was made the goat, and would have to tell the stockmen why there should be a reduction in the numbers of cattle or sheep being grazed. I always cooperated when called upon.

ERM: How did this change affect your prestige within the community of scholars in the universities where forestry was a subject of major importance?

CLF: It made working with state agricultural experiment stations easier, I think. In the Intermountain Region, such relations were improved when a camaraderie of purpose was evident.

ERM: As a spinoff, was there a greater amount of cooperative research with other scholars?

CLF: Yes, I would say so. It varied, of course, with problems and locations. There was some cooperation in heavy timber-producing states and with schools on range management. As a result, many of the forestry schools such as Utah, Arizona, and New Mexico started range management departments and even began to give degrees in range management.

ERM: What about research funding in the Forest Service? Did it remain at about the same level, increase, or decrease after this?

CLF: There was not much change in that, except that the forest and range experiment stations were better able to entice good prospects to leave the state and transfer to the Forest Service.

The research group had to appear before appropriations committees in both House and Senate to convince them of the need for funds. There was a gradual growth in research. I think that the McSweeney-McNary bill did more than anything else to stimulate interest in research.

ERM: So you had to develop a new capability to sell yourselves as a research group in range management to Congress.

CLF: That's right. It was good for the members of the House and Senate committees to work directly with the man in charge, also. My experience in the Forest Service was that, when I would go before committees to discuss grazing and range research, the members would really find out what the problems were, particularly through "show-me" trips or correspondence from people back home.

KKB: Is that why you instituted "demonstration days" at Great Basin, to show the kind of work the station was doing and convince people of its value?

CLF: Yes. The Great Basin Station was an early bird in that effort. The first such day we had at the station was in 1924, as I recall. It worked out very well.

The Great Basin headquarters is on the west slope of the mountain-like Wasatch Plateau at nearly nine thousand feet elevation. Beyond the headquarters, the land rises almost another fifteen hundred feet to the summit of the plateau. It's a nice place to live in the summertime when the valley gets hot.

Whenever we had our field day for visitors, we told the guests to bring bedrolls and we would give them breakfast, lunch, and supper for one day. Sometimes the meetings lasted most of two days. We always had a big bonfire, a circle of people; some visitors became quite moved by the experience. Once, Dr. ~~1927~~ Brimhall, a retired president of Brigham Young University, found us and was delighted. He gave a speech about the mountains being "God's temple," the responsibilities of good stewardship toward natural resources. He had a good influence on the acceptance of our programs.

We always took the visitors around to show them what was being done and what we were looking for. We tried, often successfully, to get the county extension agents, the people from the agricultural college, and prominent ranchers to be there. They might not participate directly in our work, but they often got ideas to use in their projects.

KKB: There is some evidence that your field days helped muster support for McSweeney-McNary. You may recall an article in the Utah Farmer in October 1927 that reported on a program your station had held the

previous August. The piece concluded with the fact that the stockmen and people who attended the field days resolved to write their congressmen and appeal for more research appropriations.

CLF: Yes, field days did help, I'm sure.

KKB: Let's talk about how you enlisted local support and contributions.

CLF: I think that does not have to involve any violation of the law, if you enlist friends and local interested people who have the power, position, whatever it takes to support you. If these people understand what you are facing and will write their congressmen, eventually the congressmen will see that research gets money.

I mentioned McFarlane before. He was a good example: a prominent cattleman in Utah who was a great believer in research and in national forests. He also realized the results of land abuse and wanted to call attention to the problem.

ERM: What you're saying is that you've got to have good public relations.

CLF: That's what it amounts to, but of course now the name has been changed to information and education. Public relations now has a negative connotation, like propaganda.

ERM: The Forest Service is generally recognized as an agency of the federal government which, from a very early date, successfully used the art of public relations. Pinchot himself was its architect, and Herbert Smith was an extremely adroit lieutenant.

CLF: Yes, indeed.

ERM: Could you point out others who have been influential in Forest Service public relations?

CLF: I don't know whether Clapp was good when speaking before a committee or not. I never heard him speak before one, but at least he always knew who to choose for the job, so I would say he was conscious of the art.

Most of our chiefs have been effective that way. John McGuire is making a big hit with Congress, and

with the people in his department. He has not only charm but also ability. The same was true of McArdle, and, before him, Lyle Watts.

The impression made by the chief of an agency on the members of a committee is very important. I remember an official in the Forest Service who tried to bluff before a House committee, but he didn't fool the congressmen. The chairman finally told him, "You'd better go home and study your lesson, and then come back in a few days."

- ERM: Is it true that Congress has taken great pleasure in its association with the Forest Service largely because the Forest Service, unlike most government agencies, has returned to the public treasury more money than it has expended?
- CLF: Well, that's a pretty good argument which did probably influence a good many members of Congress.
- ERM: When you made proposals to sell range management research to Congress, were those projects offering the possibility of further increasing returns to the treasury?
- CLF: Congressmen asked us sometimes about the relation of the experiment station's work to increased production on the national forests, but I don't know how much that directly influenced whether or not we received research money.
- On the other hand, the chairman of the House subcommittee that handled Forest Service requests questioned me, when I was trying to justify an appropriation for a study of increasing grazing use of beef cattle in the southern piney woods, if that would be objected to by western Congressmen. I responded that it would not, because southerners needed beef and wouldn't buy western beef.
- ERM: What about the Depression? How did it affect your program?
- CLF: Actually, it helped us to get money for research, because research was included in work to be done by agencies like CCC, PWA and even WPA.

- ERM: In other words, the Depression, although it was an economic disaster generally, provided a real impetus to research in money and manpower.
- CLF: Yes, particularly manpower and funds for building research facilities. We used the CCC manpower to help build experimental dams and basins for measuring runoff and erosion from experimental watersheds. We started these jobs in almost every region, and that was a big boost in the watershed investigations. Prior to that time, the heavy cost of putting in dams, sediment basins, and measuring facilities had really stalled our watershed work. We also used the CCC on flood control work, for ditching and terracing with tractors and shovels.
- KKB: Do you think the benefits of having this extra manpower outweighed the disadvantages of the time involved in supervision and organization?
- CLF: Oh, yes.
- As I previously mentioned, Utah had quite some problems with flash floods, gully erosion, deep channeling of valley lands by floods, and bank cutting on the Virgin river. The state of Utah was allotted five CCC camps to supply the manpower and equipment to study and implement various methods to correct these problems.
- The greatest success was the development of techniques for preventing floods from torrential rains in Montana watersheds, and flooding of the valley lands at the foot of the mountain slopes. These procedures have been applied extensively since then, and were well worth the cost of all five camps, plus the training of the participating CCC boys. The results of other projects varied widely, from unqualified success to total loss, but that is not unusual for research work.
- The work and activities of the camps were guided by a planning committee, of which I was a member and chief advisor for many projects. As a result of our work, we gained the respect of Governor George Dern, who became a member of FDR's cabinet.
- ERM: What relationship did your work in Utah during the thirties have to the Soil Conservation Service programs occurring contemporarily under Hugh Bennett?

CLF: They worked on a few similar projects and used some of the same practices in a few cases, but in the main in Utah at that time they were working on farmland, not forest, mountainous, or rangelands. There was coordination between the agencies, and some exchange of personnel. Walter Lowdermilk had been with the Forest Service in forest influences research work, where he learned about floods and soil erosion, before he went to work under Hugh Bennett.

But in the main, the SCS was working to save water and soil for crops, to increase groundwater storage, and so on. My work in Utah dealt entirely with mountainous, forest, or rangeland vegetation and runoff, and out-and-out flood control. Right about in the middle of this period, in early 1935, I was transferred to the Appalachian Station in Asheville, North Carolina.

KKB: Did you feel any great regret at having to leave the Intermountain Station?

CLF: Well, I did miss the Intermountain Station, because I'd started so much of the work there. We built from a small local station to what subsequently became a major experiment station. We branched out into many other areas, like silviculture, enlarged studies of soil and flood conditions, and climatic relationships.

KKB: Why do you suppose you were transferred at that particular time? Was there a special need at the Appalachian Station that you were brought in to meet--a flood control or watershed problem to which your expertise could be applied?

CLF: I don't specifically know for sure why. It is not unusual for people in the Forest Service to be moved, and I had been in the West a long time. They needed a new director in Asheville, but there was a problem because of a difference among the staff at the station about project priorities. I had experience at the Intermountain Station in developing and successfully expanding the work and somebody, probably Clapp, must have thought I would be the right one to take charge in that region.

The Coweeta Experimental Forest in southwestern North Carolina had been set aside originally for both silvicultural and watershed studies.

After sizing up the situation, I decided that we were not going to do any silviculture work there, except when it came time to develop a method of timber cutting that was compatible with the watershed resources. I got the program going in what became the Coweeta Hydraulic Laboratory and it gained a good reputation for developing knowledge of the effect of forest cover on runoff, stream flow, and erosion under Appalachian conditions. It is, I think, one of the outstanding research programs for understanding watershed problems.

I also started some new work in the cutover pine lands, a study of how to get a new shortleaf pine crop without the interference of the low quality hardwoods. Congressman William Unstead from eastern North Carolina, who later became a senator and then governor of his state, was on the House appropriations subcommittee that handled Forest Service appropriations. He asked me what new project was most needed in North Carolina.

He was very much interested in forestry problems, and one of the biggest that faced us then was how to control the scrub hardwoods that came in after cutting shortleaf pine in the Piedmont. If the land was to be converted entirely to hardwoods, that was different, but when the newly cut second-growth pine was left to reseed naturally, the low quality hardwoods that remained never really straightened out when they were left to grow after having been stunted and shaded by the pine. Moreover, the no-good stand of hardwood kept a good pine crop from starting. They have come a long way toward finding a solution to that problem.

I was there as director for about two years, and those were the two most consequential things I did, except for the trip I took to Europe.

KKB: You're speaking of the Oberlander Fellowship to study in Europe in 1935?

CLF: Yes.

KKB: How was that awarded, Mr. Forsling? Did you apply for it, or was it conferred in recognition of an accomplishment?

CLF: Oberlander was a German who came to this country and did very well financially, as a manufacturer of silk stockings. He wished to do something in return for his success in the United States, so he established the Oberlander Trust Fund, money for which was used to send Americans to Europe, especially to Germany and other German-speaking countries, to study forestry, city sanitation, various aspects of flood control, and other practices in which Germany had been a leader.

Previously, these forestry excursions had involved mostly people in the timber industry. This time they chose six of us, all but one of whom was from the Forest Service--that was Aldo Leopold of the University of Wisconsin. Others were Dr. Hardy Shirley of the Northeastern Experiment Station; I, of course, came from the Appalachian Station, now Southeastern Experiment Station; E.E. Carter, chief of the Division of Forest Management in national forest administration; and L.F. Kneipp, an assistant chief of the Forest Service in charge of Land Acquisition.

The decision about Forest Service representatives was made in the Washington office. We were not consulted, but simply told that we had been selected. It was such a great opportunity that there were no refusals. We learned a great deal about forest practices in central Europe, not specific ideas that we could use in the United States, but useful background information.

It was worth the time and effort to get to know the European foresters. I didn't confine myself to the German-speaking countries; I took a couple of weeks and visited Sweden, where my parents were born. In my opinion, there was more for Americans to learn from Swedish foresters than from German foresters. In Germany the most common practice was to clearcut and replant, generally using the same species in planting after planting. We saw forests that were in the third generation of single species, mostly Scotch pine or spruce. The research foresters had discovered after repeated monospecies that planting of conifers was playing havoc with the forest soils by not returning enough organic matter to the soil. The foresters were trying to introduce broad-leaved tree species which annually add leaf fall to the soil. But this gave rise to another conflict.

It was the style of the German foresters to have many game animals, mostly deer but wild boar in some localities. Hunting was chiefly by the higher-ranked army and forestry officials, politicians, and wealthy individuals. Naturally the monospecies coniferous forests were pretty barren compared with mixed hardwoods and conifers. In their sample plots of hardwoods, deer, especially, devoured the hardwood young growth. Therefore, the small experimental planting of the board-leaved species were fenced in with high wire netting to exclude the deer. In fact, throughout Germany the deer stayed back in the woods during the daytime and came out in any available clearing, including bordering grain fields or recently cutover forestlands to feed at night.

We were told that the first tenders of forestlands were the men who were engaged to keep away the poachers so the owners of the forests would have good hunting. In fact, we were informed that after the individuals who were the benefactors of the princes and others who had been given land grants by the rulers began to get short of income, they found out that the standing forests could be exploited to advantage. Eventually the game attendants, after cutting the standing timber, were put to replanting the land. Thus forestry had its beginning.

ERM: Were you able to learn anything useful from the experience of others in such countries as Switzerland and Germany with regard to flood control on mountain slopes?

CLF: Nick Carter and I visited the Emmenthal Watershed Study in Switzerland. They were the first to use the paired watershed method of comparing runoff from forested and cutover forestland land that we were using. They had much the same ideas for checking runoff, i.e. terracing, establishing ground cover, and so on. In Utah we used heavy machinery making terraces on steep land which they didn't use, though.

Carlos Bates had published his report on the Wagon Wheel Gap study in Colorado, and I had prepared the report on the Great Basin A and B studies by the time we visited the Emmenthal Watershed. One thing gave us the advantage: we had much better opportunity to find similar watershed for the pairing process in America. We have also gone much further in watershed studies than I saw in Switzerland.

In one respect, the Swiss were and probably still are ahead of us in the matter of saving the soil. They were farming steep land, too, even steeper than I saw the hillbillies farming in western North Carolina or eastern Kentucky.

Let me illustrate with a little incident. One morning Nick Carter, our Swiss guide who had long been in charge of the study, and I decided to walk cross-country back to the little mountain town of Wassen, where Nick and I were to catch the two-car passenger train which was pulled by a mountain-climbing engine. This would be a start on our return trip to Zurich.

As we started down a little mountain valley, there was forest on one slope and cultivated land on the other. It was probably 200 feet from the bottom to the top of the slope on the cultivated side. At the bottom of the slope was an elderly man with a shovel, apparently placing a final shovelful of soil onto a small two-wheeled cart. An elderly woman stood watching him. At the top of the slope was a young woman, leading a horse along the ridge or edge of the valley. The horse was hitched to one end of a long cable or rope that passed through a pulley tied to a post or stump at the summit and extended down the slope to the cart.

I asked our guide what was going on. He replied that that was evidently a man and his wife, about to turn over the farming project to his son. The daughter-in-law was tending the horse and the son stood waiting for the cartload of soil. When the cart was emptied, the girl would lead the horse back and let the cart run back to the bottom of the hill for another load of soil.

Our guide explained that in Switzerland the youngest son was granted what the parents passed on at the time of their retirement. In return for the gift, the son took care of the old folks as long as they lived. It was the custom that the father would leave the land to his son in as fertile condition as when the father received it. What we saw was these four family members carrying out their responsibility to future generations. I had never seen anything like that in the U.S.A.

KKB: Right about this same time, the Western Range Report, Senate Document 199, 74th Congress, was put together, and you had a part in writing it, along with Chapline and others. Let's talk about the background of that report and your contribution.

CLF: I was in Europe when I got a cable from Earle Clapp saying "Take Europa." He had written me to come home as soon as I could because he wanted me to join the group that would write a range report. I hadn't quite finished my planned trip, though. The Europa, one of the big German ocean liners, was ready to sail in a couple of days by the time I got his cable, but there was another boat in about a week. I cabled Clapp, saying I preferred to stay until the later sailing date, or I could take the Europa. He cabled back "Take Europa."

I was included in the group writing the report probably because I had spent more time on range and forest range problems than almost anybody else in the Forest Service. The report was written by committees, although the chairman of each committee had the major responsibility and determined what each person would write.

I was senior author of two long chapters, one entitled "Conservation the Exception" and the other, "The Administration of Public Lands." There were certainly several other parts I could have done better and probably would have enjoyed more, however. The first chapter dealt with what had and had not been done in the past in range management on national forests, Indian lands, public domain grazing districts and privately owned lands. The other chapter discussed the problems ahead. I was also a member of the review committee, which reviewed all the chapters.

I got deeply into the matter of why the Forest Service belonged in the Department of Agriculture rather than in the Department of Interior. I guess I was not very nice to the latter, so it was a surprise when Secretary Ickes of Interior later asked me to head the Grazing Service. It was no secret that I had been responsible for those two chapters.

KKB: Was it Chapline who assigned your topic, or Clapp? Why do you suppose you were assigned those chapters when you indicate you might have done others better?

- CLF: It was Earle Clapp. He really ran that show.
- KKB: Soon after the Western Range Report, you were called to Washington to head up the Research Division. Were you surprised at the appointment?
- CLF: Well, yes, I think I really was. I even thought at the time that I would have preferred to stay on as director of the Southeastern, or Appalachian, Station.
- KKB: Was it Clapp, do you think, who made the decision to appoint you to head Research? If so, what do you think impressed him about you?
- CLF: I don't know, but I am confident it was Clapp. Silcox died in 1939, and Clapp was associate chief of the Forest Service at that time. Clapp, I am sure, felt that I had done a good job at the Great Basin Station on its small funds. We had grasped the nature of the problems in the Intermountain Region and we had gone a long way towards working out solutions.
- ERM: How did Clapp broach this appointment to you? Did he address you personally about it, or did you receive an official directive through the mail?
- CLF: Clapp first wrote me an official letter asking me to be chief of Research. He could write quite a persuasive letter, but we hadn't discussed it at all. So I wrote him, raising some questions about the job, and I suggested he might find someone else for it since I didn't prefer it. My secretary told me that I should have worded the letter much stronger if I didn't want the job. But of course, when Clapp made up his mind about something, he just went ahead unless he ran into a stone wall.
- KKB: Once you were on the job as head of Research, did you encounter any troubles with Clapp, who was then acting chief of the Service, since he had been so close to research? Did he ever contest decisions or policies you formulated?
- CLF: Oh, no. Clapp and I got along fine. I liked his ability to make up his mind and stick with it. There was only one time I felt I wanted to break his orders, when he sent someone else to a convention in Mexico City. I was at that time mixed up in a lot of war activities.

I was really a great admirer of Clapp. I think he did a tremendous job in organizing forest research. After serving as acting chief for a long time, he didn't get a fair break when he was not made chief of the Forest Service.

It started with the Department of the Interior, of course, when Secretary Ickes tried to get the Forest Service and Clapp was made the goat on that because of his efforts to stop that move. I guess the president thought it would have been too much a slap at Ickes, who had tried so hard to take it away from Agriculture.

And then it "just so happened" that Lyle Watts had contacts with two or three people who were very close to the White House. They called the president's attention to how good a man they considered Watts to be. As a result, Watts was selected to fill the vacancy. It was a great blow to Clapp, who retired shortly thereafter. He had reached permissible retirement age and wasn't forced to retire, but still, there wasn't much else for him to do. I had worked closely with Watts for a number of years and considered that he was fully qualified to be chief.

KKB: Did you notice any immediate differences under Watts's administration as opposed to Clapp's?

CLF: Watts was a fine person to work with, although perhaps not quite as deep a thinker as Clapp. He hadn't laid out his plans for forestry as thoroughly as Clapp had. Clapp had decided that research was his life's work and he planned what the Forest Service should do and what it required. I had enticed Watts to return to the Forest Service and join the Inter-mountain Station staff. Watts had then done very well as an experiment station director in Missoula, but was transferred to be a regional forester. He had good judgment, both as a director and as a regional forester. When he came in as chief, there was no great upheaval in the affairs of the Forest Service.

We knew there would be changes as time went on, and that, after he had the job fully sized up, Watts would implement his own ideas. He was chief during much of the war period, when the Forest Service staff devoted a great deal of work to the war effort. Care had to be taken not to make the same mistakes that were made in World War I, such as increasing the numbers of livestock on the national forest ranges

with the hope of increasing meat production. However, the increase resulted in little more food but caused injury to the range by overgrazing. I transferred to the Department of Interior before the end of the war, but I felt that the Forest Service had fulfilled its responsibility.

KKB: Now, as you say, the war exercised many limitations on research programming, and you had to focus on immediate war-related problems. When you first came in, though, the war had not yet begun. What research programs would you have liked to develop or continue if the war had not intervened in your administration?

CLF: My general plan was to improve the organization and obtain a budget of the size needed to meet the problems. I felt I had a good opportunity to do that when I came in. I started to cut down the number of regional stations and consolidate and redistribute the territory covered by each, so as to even out the area of responsibility. I made the first consolidation by combining the Adirondack and the Northeastern stations. That effort was continued after I left the Forest Service. Other combinations included the Northern Rocky Mountain and the Intermountain stations, the Southwestern and Rocky Mountain stations, the Central States Station was merged with several others and, together with the Great Lakes Station, became the North Central Station. There was also a readjustment of the Southern and the former Appalachian (now Southeastern) territories.

Aside from that, I would have sought to expand the studies of the influence of forest and/or range plant cover on runoff and erosion. Also, I would have expanded studies in range management, forest products, and forest economics.

Then, quickly, we were in the midst of the war effort. We had just begun to move on the program in the various regions; in fact, we had just finished a conference at the Priest River Experiment Station in northern Idaho when the Pearl Harbor attack by the Japanese occurred. I was returning to Washington after that field meeting, when the passenger train I was riding pulled into Glens Ferry, Idaho, at 5 a.m. to do some switching. I was awakened by the trainmen talking about the Pearl Harbor incident.

Then, of course, our plans began to change pretty rapidly. We had to greatly reorient our work and push defense projects up to the forefront. There was not much change in the basic research program, except that it was slowed down considerably. Many research people got engaged in war-related activities; for instance, we sent staff members on expeditions to South American countries to find quinine bark and balsa wood. Some were sent into Mexico to hunt for natural stands of guayule to harvest for rubber extraction, after the Japanese captured the rubber supply in the Netherland Indies. Among other places, we sent technical crews to certain Central American countries to determine if the native trees were suitable for bridge timbers where an international truck highway was being pushed to move war supply materials. Incidentally, this party discovered a new species of large white oak.

Several of us served on War Production Board committees. I was a member of its Log and Lumber Production Policy Committee, whose job was to check that lumber manufacturers received the logs and logging and sawmill equipment necessary to meet war needs. That committee also dealt directly with lumber price control and the Labor Committee. The Log and Production Policy Committee was under the control of the War Production Board, and we met with Chairman James F. Byrnes.

But I believe that the greatest contribution the Forest Service made during the war was that of the Forest Products Laboratory at Madison, Wisconsin. Among other accomplishments, the laboratory staff aided in training army lumber inspectors. Another crew trained inspectors on how to package all kinds of equipment for shipment overseas, from radar and other delicate instruments and blood plasma containers to how to fasten tanks or other heavy equipment securely on flatcars and ship decks. A special job was to check the selection and use of spruce and plywood in the construction of training planes.

We found out an interesting fact when we worked with the army on their inspection projects. The army people would ask to travel under Forest Service regulations instead of army regulations because, under army rules, if a man was serving at one location but was needed to troubleshoot in another place, he had to go back to headquarters and wait for new orders. Under Forest Service regulations, he could finish his job at one place, then go directly to the next location where he was needed.

In packaging, the object was that the equipment or material gets to its destination in one piece. When the Japanese attacked Pearl Harbor, their first round of bombing destroyed most of the U.S. radar signaling equipment. The defense command immediately sent word to Washington to send more radar equipment as soon as possible. These pieces were about the size and weight of an electric refrigerator, and the first replacement shipment of four or five were all broken when they arrived in Hawaii.

So the Forest Products Laboratory was called upon to develop an effective packaging system, which they did, including a slight modification in the instruments so that they could be disassembled for shipping. The new standard for packaging was that no damage should be done if the package was dropped several feet onto a concrete platform. In the case of blood plasma, for example, the flasks were arriving overseas broken, and an entirely new method of packaging was needed. It was also possible to save shipping space because of the compactness of the new packages.

- ERM: As a generalization, would it be correct to say that both World Wars I and II brought about a packaging revolution?
- CLF: I think there is no doubt about it.
- ERM: What other generalizations could be made about World Wars I and II as they affected forestry research?
- CLF: Well, if we had experts in a certain field, we never hesitated to take on the challenge of solving a related problem.
- ERM: Isn't it also true that the wars drew talented scientists and researchers away from the main course of forestry research into peripheral fields of endeavor more specifically related to the country's war needs?
- CLF: That is correct. The guayule project is a good example, because research was very much involved in attempts to grow rubber here in California.
- ERM: But guayule never really provided an answer, since you couldn't produce it in quantity economically.
- CLF: At our stage of knowledge and experience, we could not produce it fast enough in quantity. However, I heard recently that someone at the University of Arizona is promoting the production of guayule again.

Senator Pete Domenici of New Mexico has introduced a bill in Congress to develop the growing of guayule.

ERM: The guayule project cost a fair amount of money yet did not realize, in any important way, its objective. Is there sensitivity among Forest Service people on that score, or feeling that the project should be defended?

CLF: There may be. But that was a small mistake compared to many that were made during the war. It may have been sort of grasping at straws as a means of getting rubber. Many thought there would be a need for rubber to mix in with a potential petroleum substitute. It was fortunate that chemists soon perfected that substitute.

Another substitute for rubber which was under consideration at that time was alcohol derived from the spent liquor in the sulfite pulping process for making newsprint. The Chicago Tribune had several Canadian plants using the sulfite process. One of them was just across the river from Buffalo, New York, at Thorold, Ontario, where the Tribune had a plant with a laboratory working on the manufacture of alcohol to be used in making a rubber substitute. This was known to be technically possible.

Colonel McCormick, head of the Tribune, met an invited group of brass from Washington at their visit to Thorold. The group consisted of William Jeffries, president of the Union Pacific Railroad and "czar" of the rubber program in the War Production Board, one or two of the Jeffries staff, three United States senators, myself representing the secretary of Agriculture, and a squad of newsmen.

After breakfast at a club in Buffalo as guests of Col. McCormick, we were taken in automobiles to the Tribune laboratory, where we spent the day. The chief question that arose was about the capacity of all the existing sulfite mills to produce the volume of alcohol that would be required for a rubber substitute.

ERM: What happens when research results run contrary to established policy, or mythology, if you please, of an agency?

CLF: That has happened. For example, we have greatly improved our knowledge of the effect of forest cover

or certain other native vegetation on flood control. The old idea was that forest cover would prevent floods and conserve the water supply, but much depends on individual circumstances. A given forest or range plant cover will prevent floods if a rain is torrential, unless it lasts for an unusually long time. Forests do reduce flooding until a watershed becomes saturated.

A properly maintained forest cover, or a grass, herb, or low shrubs, or a combination help to retard the rate of runoff and flooding. They can even completely control floods, particularly flash floods, on our mountain slopes in the West, unless the watershed has been burned over or overgrazed. Herbaceous and shrub cover can be restored faster than a forest cover.

But to return to your question of how established mythology has had to bend to recognize the results of new research, it took a long time to dislodge the idea that trees alone could prevent floods.

A research discovery was that the forest ground cover, at least in the forest types above the pinion-juniper zone, consume a larger percentage of precipitation than was generally known. The amount varies with, among other factors, the amount of normal precipitation, the intensity of the rainfall, and the character of the forest cover. In the case of pinion-juniper, the cutting of the tree cover has been found not to materially increase the water yield of a watershed.

On the other hand, clearcutting of a lodgepole forest watershed might increase the yield of water to stream flow by as much as 30 percent, or even more. Grasses, shrubs, and forbs or weeds also consume water. The highest yield of stream flow would come from a denuded watershed, but that would bring other problems, like ruinous floods, destructive erosion of the watershed, and greatly damaging deposits of gravel, sand, and other debris.

Another change in thinking that has taken place as the result of research has to do with a place for fire in the forests. I recall when Forest Service officers and woodsmen considered any fire in the woods larger than a completely controlled campfire a menace.

The Intermountain Forest and Range Experiment Station had difficulty getting the concurrence of the regional office to experiment with controlled fire in order to destroy the dense stand of sagebrush on Idaho spring-fall ranges. This sagebrush had taken over the rangeland following persistent overgrazing. Now, controlled burning is one of the usable methods of clearing sagebrush on the range.

Investigations of how and under what conditions to use controlled fire to reduce the excessive accumulation of litter under stands of immature pine forests in the South were first undertaken without the general approval of forest fire control agencies. This accumulation in itself greatly increased the heat and hence might kill the young growth in the event that a fire would occur.

The place of fire and how to use it is also being tried out in some of the forest types in the West. Here also there is a good deal of apprehension that adequate safety will not be exercised in the use of fire as a tool in forest management. This is understandable, in view of the fact that forest fires can be so destructive. Ignorance or misjudgment in the proper use of fire can lead to real hazards.

Some claim that fire is a natural factor in plant succession and therefore nature should be allowed to take its course with wildfires. These same people feel that letting wildfires burn will reduce or eliminate expenditure for protection against fire. I feel that to allow that false idea to spread would greatly increase the waste and loss of a highly valuable natural resource.

ERM: To what extent do wildfires or hot control burning contribute to accelerated runoff and soil erosion in the western states?

CLF: One example is the hot fires in the brushlands in southern California. There it is common practice to seed with mustard or other species immediately after a hot fire as a "first aid" in getting some vegetation back on the slopes before the winter rains come and create mud flows and floods.

The strips where the brush windrows were burned, leaving only ashes, were the only places where surface runoff and soil erosion were materially increased in the Wagon Wheel Gap study.

There was serious flooding in the summer during the 1940s in Bear Creek, a mountain stream that empties into the South Platt River in southwest Denver. The occurrence of these floods was investigated by Reed Bailey and me a few weeks later. The chief increase in flood runoff was found to have taken place in some young ponderosa pine groves of medium density on moderately sloping lands near the head of the watershed. These groves made excellent campgrounds for tents, trailers, campers or open camping in the shade. They were heavily used, to the extent that the needle fall was nearly worn out, and the soil packed by vehicle wheels and footsteps. Surface runoff had been severe.

It was obvious that controlled burning at some times during the year may be more harmful than beneficial.

ERM: Has the course of forestry education in this country contributed significantly to the growth of forestry research?

CLF: I would say yes. The schools are now turning out graduates or postgraduates who have better training than former graduates in the basics of approaching research. They are ready to undertake research work much earlier than we were.

It is better not to take researchers too old, because an older man or woman acquires inhibitions as a result of too many failures. A younger man is not as handicapped and is more likely to use his imagination to better advantage in formulating hypotheses; an older man usually contributes his share because he has superior judgment. Some individuals, like Dr. Raphael Zon, have both turns of mind.

I think more and more universities are doing good advanced research work and are broadening their fields in forestry and range management to include all of the renewable natural resources. There is more and more knitting together of these aspects, and more dealing with environments as a whole rather than with the individual elements.

ERM: You've seen the growth of research in your special area of concern over a period of sixty years. What have been the major barriers, in your experience, to greater expansion? Conversely, what factors helped foster the growth of research in your area? We've mentioned the impact of the world wars, and I would imagine that population growth has been a factor because of the increased demand for food and resources. Perhaps the more sophisticated

transportation systems have affected range research in subtle ways.

CLF: In my opinion, there were several reasons for the lag in expanding forest research. We already discussed that of requiring most of the available energy to get forest administration under way. Another reason was the lack of full appreciation of the importance and need for research on the part of many people in the Forest Service; they tended to think of it as something for the future. Also, there was no one in the administrative end of the organization who had the responsibility to concentrate on the subject of research until Earle Clapp was made assistant chief in charge of Research in 1915.

There was not the public interest necessary to move Congress to be less than stingy on appropriations for research. One reason Clapp worked so hard to get the report entitled A National Program of Forest Research finished, in 1926, was to be able to present Congress with a basis for making requests for appropriations. But the authorization that came in the McSweeney-McNary bill, when it passed, had to come first.

The greatest surge in forest research has come in the last ten or fifteen years, a long time after I left the Forest Service. But I continue to note the progress. There are probably several reasons for the surge. One is the growing gap between the demand and the supply of forest products as promoted by the forest survey. Another is the greater faith in what research can do, bolstered by such successes as developments in nuclear energy, mechanical and physical improvements in calculators and computers, and the achievement of going to the moon. Even Congress now has greater confidence in continuing research.

In short, there has been more fulfillment of Earle Clapp's three requirements. He used to say, "There are three essentials to do well in research: one, you must work on a significant problem; two, you must have adequate funds, and three, you must have quality personnel." Clapp was a hard driver on the last point. He advised, "Be sure that whenever you find young ambitious persons around, and you are confident that they are above average, get them into research--that's the kind of personnel we want."

I agree that these are the three basic ingredients of a sound research program. I would add that, along with the ability of your staff, their dedication to the job is highly important.

ERM: Have you seen the role of the research man and woman in the Forest Service gain in importance over the years?

CLF: Yes, indeed. It is not mere chance that four of the last five chiefs of the Forest Service, including Earle Clapp, were researchers. The others were Lyle Watts, Dick McArdle, and J.R. McGuire. The fifth, Ed Cliff, worked a season at the Intermountain Experiment Station. Ed Crafts, who first worked at several experiment stations and was chief of the Division of Forest Economics and then assistant chief of the Forest Service, and I both became chiefs of bureaus in the Department of Interior. One of the outstanding regional foresters of the Forest Service, Charles A. Connaughton, who became director of the Southern Forest Experiment Station, later was transferred to be regional forester in the California Region. He was also elected president of both the Society of American Foresters and the American Forestry Association.

It was probably just coincidence, but Watts, Connaughton, Cliff, and Crafts worked under me while I was director of the Intermountain Forest and Range Experiment Station. I brought three other directors of experiment stations, Raymond Price, Reed Bailey, and Joe Pechanec into Research, and they also worked with me at the Intermountain Station.

I feel strongly that the selection and progress of all these men harks back to Clapp's policy on "getting the right man, the best man available for the position."

ERM: Who were the policymakers when you arrived in Washington, the real policymakers?

CLF: Do you mean in the Forest Service?

ERM: Yes.

CLF: There were only two chiefs involved while I was chief of Research. Watts used assistant chiefs

as a policy committee to get together and discuss how to iron out problems. He was pretty democratic in his approach; Clapp was a little more autocratic, perhaps.

ERM: He was less of a committee man?

CLF: Yes. He would take counsel from his assistants when he felt he needed it, but he didn't work out policy by committee as Watts did. Once he decided on his course, Clapp was more resolute in following his plan. One example would be his determination to get a strong forest research program under way, and another would be his insistence on having government forest regulations established. He probably made some enemies in the latter venture, in my opinion; others might disagree.

* * *

ERM: Clarence, I'd like to ask you a general question at this point. What were the greatest years of your career in the Forest Service?

CLF: The thirteen years that I spent in the Intermountain Region as experiment station director, from 1922 to 1935, were the most creative and constructive.

Another accomplishment that I am proud of was my work to get forestry included in the FAO--the U.N. Food and Agriculture Organization, which was being formed among the allied countries. Watts was chief then and the ad hoc committee made the first contact with him; then he turned the matter over to me.

A man named Egon Glesinger, who had been secretary of an international lumber sales association in central Europe, was very active in the group at that time. At first he was suspected of being a spy, but was thoroughly investigated by the FBI and proved to be all right. He knew a lot about the economics of lumber and he knew many of the foresters and lumbermen in central Europe. Glesinger really sparked the undertaking to begin with. When he learned of my interest, he suggested that he and I take the lead in getting together interested representatives of the various allied countries in Washington. I found him to be a good organizer. The Hon. Lester B. Pearson, later prime minister of Canada, was chosen as chairman of the organizing committee.

Finally a point was reached where the Forest Service, as the participating agency in the United States, had to take a stand on whether or not the United States would join a permanent organization if one were established. Accordingly, I prepared a letter to the secretary of State for the signature of the secretary of Agriculture, explaining what the ad hoc committee was attempting to do and requesting approval of participation by the United States in the undertaking.

The letter soon came back with a "no" from Under Secretary of Agriculture Paul Appleby. He expressed the belief that the Forest Service should not get into things like that, and that the United States should not become involved in forestry all over the world.

After several meetings with the ad hoc committee, I went and talked it over with Appleby, but got no place. I finally asked him, before he turned us down, to ask Dean Acheson, who was then in the office of the secretary of State, what he thought of including forestry in the FAO. I felt that Acheson would have a good understanding about this matter, and he was heading the participation of the U.S. in the FAO, with the help of the under secretary of Agriculture. Appleby sent the letter that I drafted to Acheson, who replied, "By all means the Department of Agriculture of the United States should be involved in that phase of the FAO program." From then on it was clear sailing.

I was about to leave the Forest Service, but I hated especially to leave that project. I telephoned Col. Graves in New Haven, laid the situation before him, and asked him if he would take over the project. He replied, "I have some things planned that I want to do. I'm not going to have very many more years to do them, so I don't think that I should go ahead and undertake another job." But I really poured on persuasiveness. Here, to me, was a chance for the United States to make a real humanitarian contribution. I asked him to come to Washington and talk about it, and offered him transportation. He came, we reviewed the situation, he went in to see Lyle Watts, came out and said, "I'll take it." Col. Graves did a fine job, set up a sensible organization, and deserved all the honor given him.

- KKB: Do you think your experience traveling in Europe helped influence your decision to try to get the forestry program started in the FAO?
- CLF: Yes, I think so. It helped me realize that we should work with the western countries in forestry. The United States has more foresters and does more forestry research than any other country, and we have a greater variety of forest conditions. I was happy to see that the project was going through. I would have enjoyed remaining with it and attending the worldwide meetings and conferences on forestry.
- KKB: Mr. Forsling, you became head of the Grazing Service in 1944. What made you decide to leave your Research position and move into the Department of the Interior?
- CLF: No doubt it was the cowboy in me that led me away from forest research and into the Grazing Service. I thought it was a big opportunity. Dick Rutledge, who was regional forester during the time I was in the Intermountain Region, and who had followed Carpenter, the first head of the Grazing Service, was retiring from duty with the Department of the Interior. He no doubt had put my name into the hat when it came time to find his successor.

I got a telephone call from Assistant Secretary of the Interior Oscar Chapman, asking me to come to his office for an interview. The Grazing Service was in the cluster of bureaus at Interior which were under his supervision. After a long discussion I told him I was interested. In a few days he made me a direct offer.

There were a number of reasons why I was interested. I had grown up on a ranch where, for many years, my father had used open public domain for range cattle and horses in his ranch operation. I had ridden the range since I was five years old until I entered the University of Nebraska. The first "government man" I ever saw came to our ranch in about 1902 and ordered Dad to remove barbed wire fences which enclosed some public domain land. He also asked all other cattle ranchers in that area to do the same.

That meant to me that the sheep men, who were our competitors for the range, would get all the range, because there was no law against "herding" sheep on public land. For range cattle and horses, herding was not practical. Small operators like my dad

really needed to fence in their cattle and horses. Accordingly, I always believed that the open public domain range should be under administration; that was one reason why I was interested in the national forests.

I felt that my knowledge of the public lands, their depleted condition and what could be done about it was as great, if not greater, than any other individual at that time. I believed it was my obligation to accept the offer to become the head of the Grazing Service. I was confirmed as director of the Grazing Service by the U.S. Senate on May 11, 1944.

KKB: Did you ever give any thought to returning to the Forest Service?

CLF: Some. I could have gone back, I think, since I had remained on reinstatement status while I was with the Grazing Service, which was not a Civil Service job. But that would have meant that I would be dumping somebody, and I didn't want to do that. I couldn't have asked for a better group to work with than the Forest Service, though.

ERM: Mr. Forsling, since you specialized in range management long before you became director of the Grazing Service, you may have associated with those who first oversaw range management policy in the Department of the Interior. Can you tell us about Farrington Carpenter, for example?

CLF: Farrington Carpenter was not a range man. He had a ranch near Hayden, Colorado, where he raised breeding stock, chiefly white-faced bulls. He was a graduate of Princeton University and had a law degree. He participated in local party politics, but I do not know if he ever held an elective office. He had a pleasant personality and communicated very well with other people. I do not think he was informed on range management.

ERM: How much impact did he have on range policies?

CLF: I never thought he was very strong in policy. I thought he had done an exceptional job in getting the grazing districts established. He drew from many sources for personnel. It was not Carpenter's policy to be a crusader in carefully selecting personnel with qualities for managing and conserving the range. He did get a few people with range experience from the Forest Service, and people who knew

the land from among those who classified the land open for application of the Grazing Homestead Act. But they knew little about range management. Carpenter indicated he needed men experienced in handling cattle; as a result he acquired a sizable number of former cattle buyers, broke ranchers, and so on.

ERM: Carpenter didn't have any special influence through Ickes's first Assistant Secretary of the Interior Theodore Walters of Idaho, then?

CLF: Not that I know of. He didn't seem to know bureaucratic politics, but he was good at selling the idea that grazing districts should be established. He would make a plea to an audience that they ought to get this land under control, and intimate that they would get the control.

ERM: But he wasn't a big power broker working hand in glove with Ted Walters for the stockmen with regard to rangeland use?

CLF: No. Walters wasn't in the picture then, as I recall.

ERM: Because of your extensive fieldwork experience in the western states, you must have had many close associations with stockmen's organizations. How well did they understand federal regulations and the planned improvement of the public domain's range and forestland? Was the small stock grower for federal rule while the big owners were opposed, in general?

CLF: Some of the more free-thinking big owners who had really studied the problem thought they should have regulation. I worked closely with Congressman Don B. Colton while he was writing the bill that became the Taylor Grazing Act. Much to my surprise, after the bill had been introduced and gone through the House, Senator Smoot missed getting it passed in the Senate by a few hours. Many people in Utah supported Colton and he thought the bill would pass.

As I say, some of the larger operators realized that they had to have control, but there men like McCarran who fought government control of grazing tooth and nail. The small operators were more likely to accept regulation because it kept them from being crowded out by the larger operators.

ERM: In other words, it wasn't a black-and-white situation.

CLF: That's right. In the two years that I was head of

the Grazing Service, I spent over eighteen days before congressional committees concerned with this overall problem.

Senator Patrick A. McCarran of Nevada fathered the setting up of a special subcommittee to investigate grazing on public federal land. It applied to both the Grazing Service and the Forest Service. The Senator dogged the Forest Service considerably, but he spent day after day hounding the Grazing Service. He had a committee employee going around ahead of him to find those parties who were against the Grazing Service and those who were for it. Then, he would ask those who were against to come to the hearings and testify. It had all been planned in advance.

In Salt Lake City McCarran gave me particular hell. They rode me especially about a proposal I had made to increase the grazing fee from five cents a head of cattle to seventeen cents a head, and one-fifth that for sheep. One afternoon three "small" permittees came to me and said, "We want to testify." I said, "I'll see if the committee will put you on pretty soon." I asked Senator McCarran if the three men could testify so they could go home that day.

McCarran told me yes, but then asked a primed witness to come on the witness stand and never said a word to those "little people," because he was afraid they would take my side. I never asked them what they planned to do, but afterwards they told me that they wanted administration of the public domain, but McCarran was trying to destroy it.

ERM: How do you account for the motives of those western congressmen who sought to undermine existing grazing and forest policies? Was it a matter of partisan hostility or economic vested interests?

CLF: I think it was mostly economic vested interests, especially the cattle and the sheep association people in the western livestock states. They had the power and the money. The little stockmen--well, they needed help to get justice. The bigger operators were trying to get control of grazing on the public domain entirely into the hands of the big stockmen, and they really worked at it.

For example, the Grazing Service had refused to give more range to one of McCarran's political supporters at election time, and he complained to McCarran about two Grazing Service employees.

McCarran wrote a letter to Ickes demanding the firing of the assistant regional grazier in Nevada and the district grazier in the Elko district. McCarran sent me a copy of the letter. I was in Washington when the letter arrived, and Ickes called me and said, "Have you seen this letter from McCarran?" I said yes. Ickes said, "I want to know about these two men. Are they carrying out their duties or does McCarran have a case?" I replied, "They are two of the best men we've got in the Grazing Service. They are following regulations and that is a compliment. They are trying to do a good job." "Stop right there," he said, "because that's all I wanted to know."

Ickes then wrote the most scorching letter you can imagine to McCarran, who never said a word about the case again. Incidentally, Ickes was a fine secretary to work for, if he had confidence in you. He stuck with me to the last, and, in fact, he quit before I did.

- ERM: Both McCarran and Senator Joseph C. O'Mahoney of Wyoming were Democrats, but Congressman Frank A. Barrett, also of Wyoming, was a Republican. Big Ed Johnson, senator from Colorado, was a longtime enemy of federal resource and parks policy, but so was Republican Congressman John Rockwell, also of Colorado. So the opposition came from both Republicans and Democrats; would you comment on that?
- CLF: Rockwell was a permittee who in general was against control of the public domain, although most of his range was on national forest land. Senator Johnson didn't want the federal government to reserve any more public land in Colorado. He came as a young man to homestead in northwestern Colorado, a place that was never meant for farming and is not being farmed today. Somehow he managed to get along, and eventually he got into politics, ran for senator, and was reelected two or three times. His following was comprised mostly of poor people who looked to him as their hope for getting things for them.
- ERM: Do you mean he was a populist leader?
- CLF: Yes. He believed that the land should stay as public domain and then eventually the homesteads would be taken up. He was for the "small man" but against range control. He was governor first, then senator, and he loved to spread his philosophy.

ERM: What about O'Mahoney?

CLF: I thought of him as a friend. He was a member of the Senate Public Lands Committee, and was acting chairman at the original hearing when I was confirmed. He was generally on my side unless someone was digging at him.

But at the last hearing I attended, in Casper, Wyoming, O'Mahoney let me down on the issue of raising grazing fees, the subject I was opposed on the most. The House Appropriations Committee insisted that the Department of the Interior raise the fees, and most of the western members of the Senate Appropriations Committee, including especially McCarran, gave me hell for proposing to raise the fees. Senator O'Mahoney was acting chairman at the last two hearings, in Casper, Wyoming, and Grand Junction, Colorado.

I had obtained data from the Production Credit Administration office in Washington for the two states. That was the federal agency that was making most of the production loans to the cattlemen and sheepmen, and there were records for the cost of operation for each loan. These data showed that the cattle and sheep operators were making pretty good money. The Production Credit Administration asked me not to release any of the data, except averages for each state.

Members of the senate committee insisted that I give the committee the names of the individuals who gave me access to the data, but I refused. They pushed me hard on that. Senator O'Mahoney sent word to me before the Colorado hearing began not to present the data. In other words, if they accepted the evidence to the effect that the stockmen had made a good profit during the previous two years, it would refute the general claim that the stockmen could not afford it if the department was to raise grazing fees from five cents per animal unit month to the proposed seventeen or eighteen cents a month.* The fees finally got up to the latter figure, but not during my time. They still have not been raised to the commercial rate, which is the aim of the federal government.

*An animal unit month is the equivalent of grazing one cow or five grown sheep for a month.

ERM: McCarran was probably the most prominent of all those who fought to destroy federal grazing policy as you were setting it up. Was there anyone else in Congress who was on a par with him, or was he the chief spokesman for this position?

CLF: I would say he was the chief contender.

ERM: With whom was he most allied among his peers in Congress in that regard?

CLF: I don't know that he had any real allies in his effort to do in the Grazing Service. In many ways McCarran was a loner. Senator McCarran, due to his seniority, was chairman of the powerful Senate Judiciary Committee. He no doubt had some "trading stock" on that account.

There were half a dozen or more senators from as many western states who depended heavily on the livestock association members for votes and money. These could be reached through the National Advisory Council, a body made up of a sheepman and a cattleman from each state in which there was a grazing district. This council automatically sought control of the Grazing Service, so there was little difficulty for Senator McCarran to reach those western senators through the National Advisory Council. Incidentally, McCarran introduced the bill in Congress to establish the National Advisory Council, and got it passed as an amendment to the Taylor Grazing Act.

ERM: Was the fact that he had so few allies in Congress the reason that he ultimately failed to achieve any legislation to change the policy of the Grazing Service?

CLF: In part, I think, but there were several reasons why he gave up his effort to wreck the Grazing Service. As I said before, the House Appropriations Committee was pushing Interior hard to raise the grazing fees. A few in the Senate committee, chiefly McCarran, were fighting to prevent the department from raising the fees. To punish the Department of the Interior, the House appropriations subcommittee cut the appropriation in the House bill for the Grazing Service until it was almost too little to meet the accumulated annual leave pay that was then permissible.

That cut was approved by the House, and with the cut the Grazing Service would have been out of

business. Senator Carl Hayden of Arizona, the chairman of the Senate Appropriations Committee, sought to restore the cut. He succeeded in getting only a little more than enough to pay for the accrued annual leave that the Grazing Service had accumulated.

I left the Grazing Service before the appropriations bill was finally passed. It must have carried some restorations to carry on with a small force. In addition, however, there were some funds that had been set aside for construction of range improvements in cooperation with the permittees. Not only that, some permittees contributed money out of their own pockets to the Bureau, so altogether there was sufficient money to carry a custodial force. The permittees realized the need for at least a skeleton force to continue range administration. They didn't want the Grazing Service to die.

Something else was in the making. The old General Land Office was running out of land for homesteads, and there was friction between it and the Grazing Service. There were still a few filings on homesteads, some within areas that had been included in grazing districts. The Land Office brought in recommendations that the homestead filing application be approved by the secretary. From then on, all applications like that had to be reviewed and approved by the Grazing Service before the final approval of the application. This ran into disputes which required resolution by the secretary. The solution was obvious: put the two agencies into one bureau. That meant turning it over to one director, which required a reorganization order to combine the two, unless either the House or the Senate objected. One objection would kill the order.

Meanwhile, Secretary Ickes had resigned over a difference with President Truman. And a man named Julian Krug had been appointed secretary of the Interior.

The reorganization order was not objected to in the House. In the Senate, such orders automatically went to the Senate Judiciary Committee, of which McCarran was chairman. He sent word to Krug that he, McCarran, would not object, provided neither Forsling nor Joel D. Wolfson, who had been de facto commissioner of the General Land Office under Ickes, were to be made director of the new Bureau of Land Management.

Krug, who had no political astuteness and had only recently been appointed as secretary of the Interior, didn't know much about what had been going on, agreed that neither of us would head the new bureau. This despite the fact that Under Secretary Chapman, who formulated the plan for the new bureau, had already informed me that I was to be in charge.

Instead, I was given the job of chairman of the Southwestern Field Committee, which consisted of the regional directors of each of the then nine bureaus in the Department of the Interior. The function of the committee was to coordinate the work of the bureaus into one smooth operation. A major objective was to develop a departmental program instead of an independent program for each bureau.

There were two regional coordinators who were persona non grata with President Eisenhower's administration. One of the jobs was in the East and one was in the West. In some of the regions, the coordinator was on a bureau payroll and was not affected. Three of us were paid by the secretary's office; our jobs were terminated by abolishing the positions. The work went on in each region as before, but the coordinators were loaned by the bureaus.

I was terminated on June 30, 1953. I had served a total of thirty-nine years. I had been restored to Civil Service when I left the Grazing Service, for which I was appointed with "approval of the Senate." I decided, because I had worked in the federal government ever since I finished college, that I would "go it on my own." So it might be said that McCarran was finally rid of both Ickes and me.

ERM: In William Voight's book, Public Grazing Lands, you are quoted as saying that Ickes was "the only man I know who could handle McCarran." * You told us a story about how Ickes responded to you on one occasion. Can you cite any other evidence that Ickes could handle McCarran?

CLF: Nothing specific, but then McCarran never attacked Ickes straight on. He'd always go for me, or the

*New Brunswick, New Jersey: Rutgers University Press, 1976.

Grazing Service. He hammered away especially on the subject of grazing fees, when the fact was that I couldn't change the fees if I wanted to. It required the approval of the secretary, who, of course, was Ickes.

- ERM: But you could recommend change, and so that made you the devil incarnate, didn't it?
- CLF: Oh, I guess you could say that. Of course, McCarran knew all the time that I had instructions from the secretary.
- ERM: How did McCarran's supporters in the stock industry make their voices heard, to you, to Ickes, and to Congress?
- CLF: One way was to function together as an association. They would pass resolutions and send them in, but they were always very pleasant when we met.
- ERM: Did any leaders stand out?
- CLF: There were always several who were witnesses or wrote letters and resolutions. One was Vernon Metcalf of Nevada.
- ERM: You said earlier on that some of these stockmen foresaw the realistic likelihood that the fees were going to be increased, that there would be more stringent regulations, and so they jumped in and tried to improve matters.
- CLF: I think that's true, but there were no very good traders on either side.
- ERM: We've discussed the identity and motives of those who criticized and sought to overturn federal grazing policies. Could we now do the same for the friends and supporters of the policy? Would you say, for example, that some support came from the members of the Department of the Interior appropriations committees in Congress? Would you go so far as to say that these men really determined the boundaries of policy, rather than department administrators?
- CLF: Not as far as I was concerned. I felt that some of the department aides let me down and gave the secretary the wrong suggestions without consulting me. Senator Hayden, however, was a straight shooter. He always stood on the right side, even if it was

being supported by a bureaucrat. It would be great if all members of Congress were like Hayden was.

APPENDICES

APPENDIX A

MEMBERSHIP OF USDA ADVISORY COMMITTEE ON FORESTRY RESEARCH

(An incomplete list of members who served one or more years during the period 1952-1966. Compiled in 1976 largely from memory. -- VLH.)

- Bachman, Gus P., secretary of Chamber of Commerce, Salt Lake City, Utah -- long-time exponent of watershed values in the intermountain area.
- Baggenstoss, Herman E., publisher of Grundy County Herald, Tracy City, Tennessee -- tree farmer and prominent conservationist.
- Beale, John A., chief state forester, Wisconsin Conservation Department, Madison, Wisconsin.
- Bercaw, T.E., chief of Forest Management, Gaylord Container Division of Crown Zellerbach Corporation, Bogalusa, Louisiana.
- Bescher, Ralph A., assistant vice-president, Koppers Company, Inc., Pittsburgh, Pennsylvania.
- Dana, Samuel T., dean emeritus, School of Natural Resources, University of Michigan, Ann Arbor, Michigan.
- Dosker, C.D., president, Gamble Brothers, Inc., Louisville, Kentucky -- forest products engineering firm.
- Fox, Kel M., director, Watershed Management Division of State Land Development, Phoenix, Arizona.
- Gabrielson, Ira N., president, Wildlife Management Institute, Washington, D.C.
- Garratt, George A., dean, School of Forestry, Yale University, New Haven, Connecticut.
- Gordon, Seth, director, California Department of Fish and Game, Sacramento, California.
- Gray, John L., director, School of Forestry, University of Florida, Gainesville, Florida.
- Heritage, Clark C., consulting engineer, Tacoma, Washington -- retired director of research for products development, Weyerhaeuser Company.

APPENDIX A (Continued)

- Langdale, Harley, Jr., president, Langdale Company, Valdosta, Georgia -- a graduate forester who manages a large family enterprise involving forest lands, pulpmills, sawmills, turpentine operations and a regional naval stores processing plant.
- Lord, Russell, conservation writer and editor of The Land, a quarterly published by Friends of the Land, Bel Air, Maryland.
- Lyman, Dewey P., tree farmer and maple syrup manufacturer, Breezy Hill Farm, White River Junction, Vermont.
- McCaffrey, Joseph E., general manager, Southern Woodlands, International Paper Company, Mobile, Alabama.
- Nickey, Samuel M., Jr., Nickey Brothers, Memphis, Tennessee -- manufacturer of hardwood forest products and owner of forest lands.
- Partain, Lloyd E., manager, Trade and Industry Relations, Curtis Publishing Company, Philadelphia, Pennsylvania -- later became assistant administrator for recreation, Soil Conservation Service.
- Pomeroy, Kenneth B., chief forester, American Forestry Association, Washington, D.C.
- Richen, Clarence, manager, Northwest Timber Operations, Crown Zellerbach Corporation, Portland, Oregon.
- Stackhouse, Clay H., Ohio Conservation Committee, Columbus, Ohio.
- Squires, John W., manager, Forestry Division, Sears Roebuck and Company, Jackson, Mississippi.
- Williams, George B., manager, Gum Processing Plant, Nelio Chemical Division of Union Bag - Camp Paper Company, Jacksonville, Florida.
- Wolff, Otto J., sheep rancher and breeder, Rapid City, South Dakota.
- Youngquist, C.V., Division of Water, Department of Natural Resources, Columbus, Ohio.
- Zivnuska, John A., dean, School of Forestry, University of California, Berkeley, California.

RESEARCH DIRECTOR FOR U.S.
FOREST SERVICE RETIRES

Mr. BYRD of West Virginia. Mr. President, retirement has caught up with one of our Nation's most able and dedicated public servants. After 38 years of devoted public service, Dr. V. L. Harper has left his position as Deputy Chief of the Forest Service in the Department of Agriculture.

Dr. Harper began his career with the Forest Service in 1927 in the piney woods of north Florida. His personal interest and work on gum naval stores and on the growing and producing of southern pines is reflected in the improved economy of the southern pine country.

Dr. Harper has held a number of positions in the South, in the Northeast, and here in Washington, each increasingly complex and demanding. He served with great distinction, as director of the Northern Forest Experiment Station at Upper Darby, Pa., during 1945-51.

Since 1951, Dr. Harper has been Deputy Chief in Charge of Research for the Forest Service. During his years in this post, until his recent retirement, many of us brushed shoulders with this fine scientist and gentleman. Dr. Harper always demonstrated rare foresight and vision in the programs he planned and developed. His testimony before Senate committees was always outstanding in its depth and clarity; his knowledge of technical details of the Nation's forestry problems, and the Forest Service proposals to solve these problems, was always remarkable in my opinion. His honesty, sincerity, and integrity were above reproach.

The impact which this learned and devoted man has had upon our Nation and its natural resources has been very great. Naturally, I am most intimately acquainted with accomplishments of the Forest Service research program in my own State of West Virginia. Dr. Harper early saw the need—and brought it to the attention of the Congress—to find ways to improve our Appalachian mountain timber and water resources. He played a key role in developing a laboratory and assembling a team of top-notch scientists at Princeton, W. Va., to study these problems. He visualized the need for utilization and marketing research for our valuable mountain hardwoods and diligently sought the will of the Congress in constructing the necessary

February 16, 1966

CC

facilities, staffing with the proper specialists, and conducting efficient research at Princeton. More recently, he had a great deal to do with the development of a forest engineering research complex in cooperation with our fine University at Morgantown. I am sure that many of my colleagues here in the Senate could cite similar accomplishments that have benefited the economy and development of their own States, benefits derived from the knowledge gleaned from Forest Service Research in the management, protection, and use of forest resources.

Dr. Harper's influence and eminence have spread beyond the shores of the United States. In his forestry research field, he has long been recognized as a world leader. He has represented the United States in the Food and Agricultural Organization of the United Nations. He chaired the executive committee for the Fifth World Forestry Congress in Seattle, Wash., in 1960. And, although he is retired from the Forest Service, he will still play a top role in the Sixth World Forestry Congress in Madrid, Spain, this coming summer.

I am happy to say that Dr. Harper's influence on forestry research at home and abroad will not be lost. He has trained a highly capable and respected staff of research administrators and scientists to carry this vital program forward. Dr. George M. Jemison, who served as Les Harper's Associate Deputy Chief for the past 8 years, has just been appointed Deputy Chief in Charge of Research for the Forest Service. I have every reason to believe that Dr. Jemison and his staff will continue to give the same fine full measure of service to the American people.

My distinguished colleague, Senator JOHN STENNIS, the junior Senator from Mississippi, expressed my feelings and, I am certain, the feelings of many of you, in his speech before this body on April 13, last year. I want to paraphrase Senator STENNIS' appraisal of Dr. Harper.

This man has rendered outstanding worldwide leadership in his field. He has contributed a great deal to our forestry, to industry, and to our great Nation. Certainly, he is the personification of a truly dedicated public servant, outstanding in a great profession.

I, too, congratulate Dr. Harper on his record and excellence as a public servant. I, too, commend his entire staff and associates for their splendid work in the past. I exhort them to continue along the paths of diligence and excellence which Dr. Harper so ably exemplified and which seem to characterize the work of the Forest Service generally.

January 13, 1979

Mr. Robert E. Buckman
Forest Service--Pacific N.W. Expt. Sta.
P. O. Box 3141
Portland, Oregon 97208

Dear Bob:

I have been intending to acknowledge receipt of your excellent paper, "Evolution of science policies in the Forest Service" along with some comments on it. However, I have now just gotten around to preparing them. They are in long hand. Perhaps your secretary can help you decipher my scribbling where you have difficulty. Being a professor emeritus (since last August) deprives me of secretarial help. And I am not yet far enough advanced in use of the typewriter--on which I am now; at this late age, practicing--to do my own work.

Some day you may want to elaborate your study--you have already made a good start. In that case my enclosed comments may be useful to you. I know of no published document that includes much of what I have said in the comments.

Last winter I was interviewed by Woody Maunder of the Forest History Society on Forest Service matters, especially in reference to multiple use. Included is a rather long discussion on the origin of the McIntire-Stennis Act; and, too, there are other matters discussed that might interest you. Much of all this is the kind of material one seldom finds in published articles and is the sort of history which I judge oral-history interviews are designed to accumulate. My interview has just been published by the Forest History Society. It is available in microfilm at \$4.00 per copy or in book form at \$32.50 per copy. The title of the book is "A Forest Service Research Scientist and Administrator Views Multiple Use." You might want, at least, a microfilm copy for your Station library.

Best wishes.

Sincerely,

/s/ Les Harper

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
WASHINGTON 25, D.C.

IN REPLY REFER TO

December 1, 1965

Dr. V. L. Harper
Forest Service
Washington, D. C.

Dear Les:

This is a difficult letter for me to write. I don't know how to express adequately my appreciation and the appreciation of the Forest Service for the great contribution you have made to forestry and to our organization. To try to list your outstanding accomplishments would take too long. Your work in foreign forestry has been recognized by the award of the first Fernow medal. Your superior leadership in forestry research was acknowledged a few years ago by the presentation of the Department's Distinguished Service Award. I am not sure that either of these honors adequately recognized your vision in developing the long-range program for research in the Forest Service and moving the program well along the way.

As I think back 13 years, when you and I became Assistant Chiefs of the Forest Service, the research program was small and struggling by comparison with what it is today. Well, you may have been disappointed at the rate at which the program has grown; its growth has really been monumental and sound. I consider your leadership in the development of research laboratories as one of your most significant contributions. This has enabled us to get and hold superior scientists and to build a stronger program. It has gained support for the program throughout the Nation which could not have been obtained in any other way. These laboratories will continue to pay rich rewards to the American people for many years.

Your foresight in recognizing the need, before any of the rest of us did, to reorganize the research structure in the Stations and in the Washington Office was also noteworthy. If you had not done this we would have been in a vulnerable position during the recent management review of the Forest Service. As it worked out, Research came through with flying colors. I know that Station reorganization did not come easy. It met resistance in many places. I am sure that everyone in the Forest Service will be grateful that you had the persistence to see this through.

Without doubt your greatest contribution to the research program has been the development of men. Your insistence on high standards



of performance and your encouragement of people to seek higher degrees have added strength to the Forest Service research program which will have lasting benefits. Again, this has not been popular everywhere, but it has been good for us. For all of these things, thank you.

I also thank you for your personal friendship and for the pleasure of working with you on the Staff during the past 13 years. I deeply appreciate the support you have given me since I have been Chief of the Forest Service. I have had no worries about Research, except that I worried with you that the work was not moving faster. I have every confidence that your program will continue because you have built well.

It is wonderful that you can close out your career by continuing to work in forestry at the University of Florida and that you can continue to contribute to foreign forestry as well.

Kathryn and I have appreciated Elizabeth and her friendship. To both of you we wish great happiness for the future.

Sincerely yours,


EDWARD P. CLIFF, Chief

VERNE LESTER HARPER was born August 13, 1902, in Monroe, South Dakota. University of California, B.S., 1926, M.S., 1927; Duke University, Ph.D., 1943; North Carolina State University, D.Sc. (honorary), 1967. He began his Forest Service career in gum naval stores research in Florida in 1927; Division Chief, forest management, Southern Forest Experiment Station, New Orleans, 1935-1936; promoted to Division Chief, forest management research, Washington, D.C., 1937-1944; Director, Northeastern Forest Experiment Station, Philadelphia, Pa., 1945-1950; Deputy Chief (research), Washington, D.C., 1951-1965. Harper became Professor of Forestry at the University of Florida in 1966. He was a member of the U.S. delegation to conferences of the U.N. Food and Agriculture Organization in 1951, 1953, 1957, 1959, and 1965; Chairman, Latin-American Forestry Research Commission, 1958-1961; Chairman, executive committee, Fifth World Forestry Congress, Seattle, Wash., 1960; Vice-Chairman, U.S. delegation to Sixth World Forestry Congress, Madrid, Spain, 1966. Member, International Union of Forest Research Organizations, 1956-1962; Vice-President, 1962-1965.

As a member of the Society of American Foresters Committee on International Relations from 1953 to 1966 (Chairman in 1956), he obtained funds and grants to assist American foresters in attending foreign schools. He was primarily responsible for establishment of the North American Forestry Commission in FAO. His work with Latin-American officials in 1954 resulted in establishment of the Latin-American Research and Training Institute at Merida, Venezuela. Elected an honorary member of the Finnish Society of Foresters and a Fellow of the American Society of Foresters; awarded the Distinguished Service Award, U.S. Department of Agriculture, and the Bernhard E. Fernow Award for Distinguished Service to International Forestry. Research contribution award of Forest Farmers Association, 1968. Co-founder in 1966, International Union of Societies of Foresters; President of provisional organization, 1966-1969; President of formally launched IUSF, 1969-1975. He is the author of numerous scientific articles dealing with turpentine production of southern pines, forest management, silviculture, timber resources, range management, watershed management, wood utilization, and international relations in forestry.

GEORGE MEREDITH JEMISON was born July 11, 1908, in Spokane, Washington. University of Idaho, B.S., 1931; Yale University, M.F., 1936; Duke University, Ph.D. (tree physiology), 1942; University of Idaho, D.Sc. (honorary), 1967. Entering the U.S. Forest Service in 1931 as a junior forester assigned to fire danger measurement studies at the Northern Rocky Mountain Forest and Range Experiment Station in Missoula, Montana, he continued in research, and was transferred in 1937 to the Southeastern Forest Experiment Station in Asheville, North Carolina, where he engaged in forest fire and forest management research. He was made Director of the Northern Rocky Mountain Station in 1950; then, from 1954 to 1957 was Director of the Pacific Southwest Forest and Range Experiment Station at Berkeley, California. In 1957 he was assigned to the Washington, D.C., office of the Forest Service as Assistant Chief of the Branch of Research, and in 1966 was appointed Deputy Chief in Charge of Research until he retired from government service in 1969. He then became Professor of Forestry Management at Oregon State University.

He was a member of the Council of the Society of American Foresters, 1962-1966, having been elected a Fellow in 1961. He served from 1968 to 1971 as President of the International Union of Forest Research Organizations. In 1959 he was a leader of a group of foresters sent by the U.S. to the USSR to observe forest conditions and forestry practices in Russia. Awarded the Distinguished Service Award, U.S. Department of Agriculture. Honorary member, Italian Academy of Forestry Science. 1971, Society of American Foresters' Barrington Moore Award for outstanding contributions in biological research. In 1971, Jemison planned, organized, and directed a research program in forest engineering at Oregon State University until 1975, when he retired as Professor Emeritus of Forestry in the School of Forestry. His research publications include fifty papers on forest fire behavior, fire control techniques, and the silviculture of pines and hardwoods.

CLARENCE LUTHER FORSLING was born November 7, 1893, in Cheyenne, Wyoming. University of Nebraska, B.Sc., 1915. Entered the U.S. Forest Service in 1915 as Grazing Assistant, assigned to the Cache National Forest in Utah, in charge of a grazing survey party. In 1916 he transferred to the Jornada Experimental Range in New Mexico, where he was in charge of research in range and cattle management until mid-1920. From then until 1922, he was with the Office of Grazing Studies as Assistant Head of Range Studies and Surveys in the National Forests of the Western States. Forsling was appointed Director of the Great Basin Experiment Station in Utah in 1922 and held that post until 1929, at which time he established and headed the Intermountain Regional Forest and Range Experiment Station in Ogden, Utah. From 1935 until mid-1937, he was Director of the Appalachian Forest Experiment Station; 1937-1944, Assistant Chief of the Forest Service in Charge of Research. Member of the Log and Lumber Production Policy Committee, 1942-1944. Director of the Grazing Service of the U.S. Department of the Interior, 1944-1946; member of the Program Staff of the Secretary of the Interior from 1946 to 1953, when he retired from the Department of the Interior. Chief Tax Commissioner of New Mexico, 1955-1956; member of the New Mexico State Parks and Recreation Committee, 1962-1964. Since 1954, Forsling has served as part-time consultant in the conservation and development of natural resources.

He was an Oberlander Trust Fellow in 1935, engaged in a three-month study of forestry conservation practices in Central Europe. Participant in the Eighth (Inter-) American Scientific Congress in 1940. Discussion leader of the Inter-American Conference of Renewable Resources in 1948. Participant in U.N. Scientific Congress on the Conservation and Utilization of Resources, 1949. Forsling is a member of: the Society of American Foresters, American Society of Range Management, American Forestry Association, and Nebraska State Historical Society. He has authored or co-authored many government publications and papers on range management, grazing, and watersheds.

ELWOOD RONDEAU MAUNDER was born April 11, 1917, in Bottineau, North Dakota. University of Minnesota, B.A., 1939; Washington University at St. Louis, M.A. (Modern European History), 1947; London School of Economics and Political Science, 1948. He was a reporter and feature writer for Minneapolis newspapers, 1939-1941, then served as a European theater combat correspondent in the Coast Guard during World War II, and did public relations work for the Methodist Church, 1948-1952. Since 1952 he has been Secretary and Executive Director of the Forest History Society, Inc., headquartered in Santa Cruz, California, since 1969, and founder and editor-in-chief since 1957 of the FHS quarterly Journal of Forest History. From 1964 to 1969, he was curator of forest history at Yale University's Sterling Memorial Library.

Under his leadership, the Forest History Society has been internationally effective in stimulating scholarly research and writing in the annals of forestry and natural resource conservation generally; 46 repositories and archival centers have been established in the United States and Canada at universities and libraries for collecting and preserving documents relating to forest history. As a writer and editor, Maunder has made significant contributions to this hitherto neglected aspect of history. In recognition of his services, the Society of American Foresters elected him an honorary member in 1968. He is a charter member of the International Oral History Association, of which he was a founder. He is also a member of the Agricultural History Society, the American Academy of Political and Social Science, the American Historical Association, the Organization of American Historians, the Society of American Archivists, and the American Forestry Association.

KAREN KREBS BURMAN graduated from Ohio State University in 1966 with a B.A. in International Studies. Since 1971 she has worked for the Forest History Society, three years of that time as Oral History Editor and as Editorial Assistant on the Journal of Forest History.

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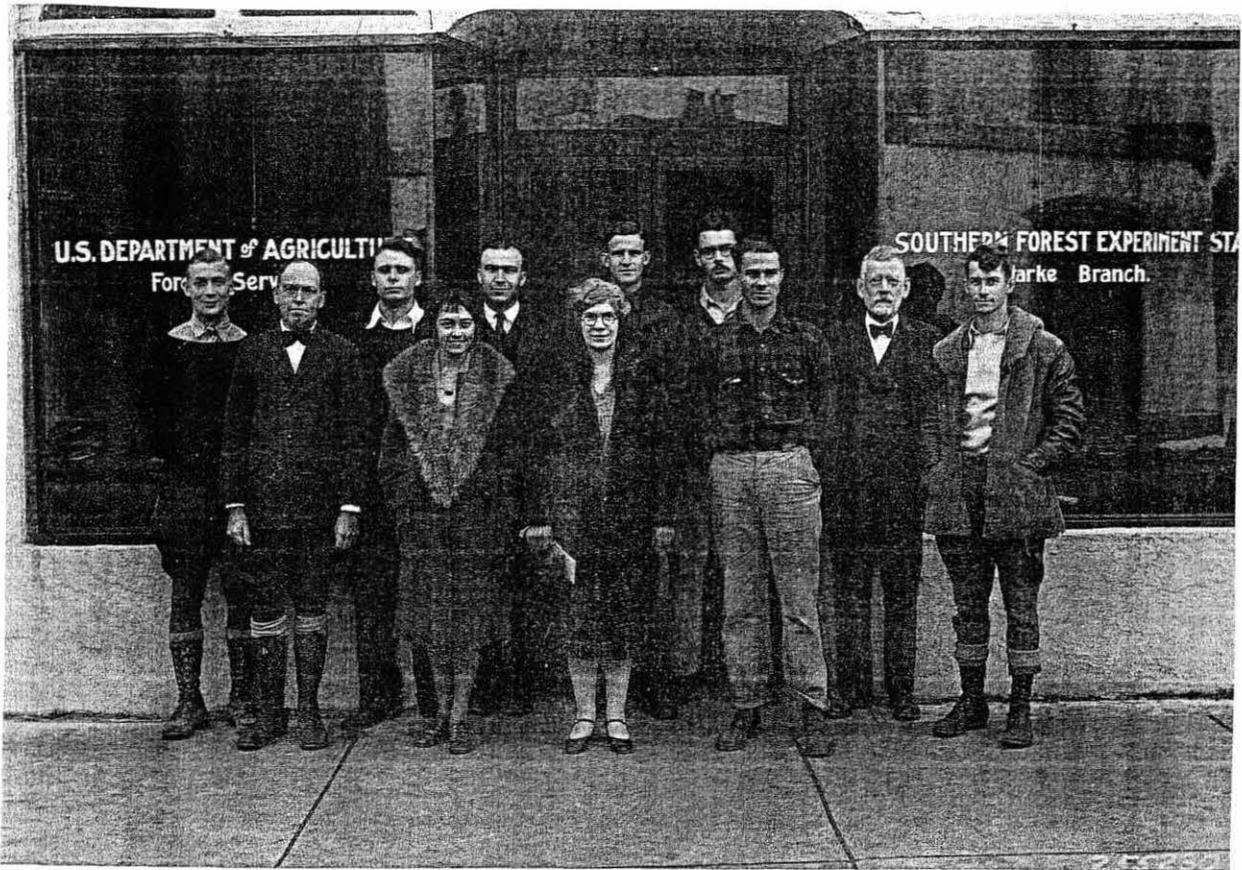
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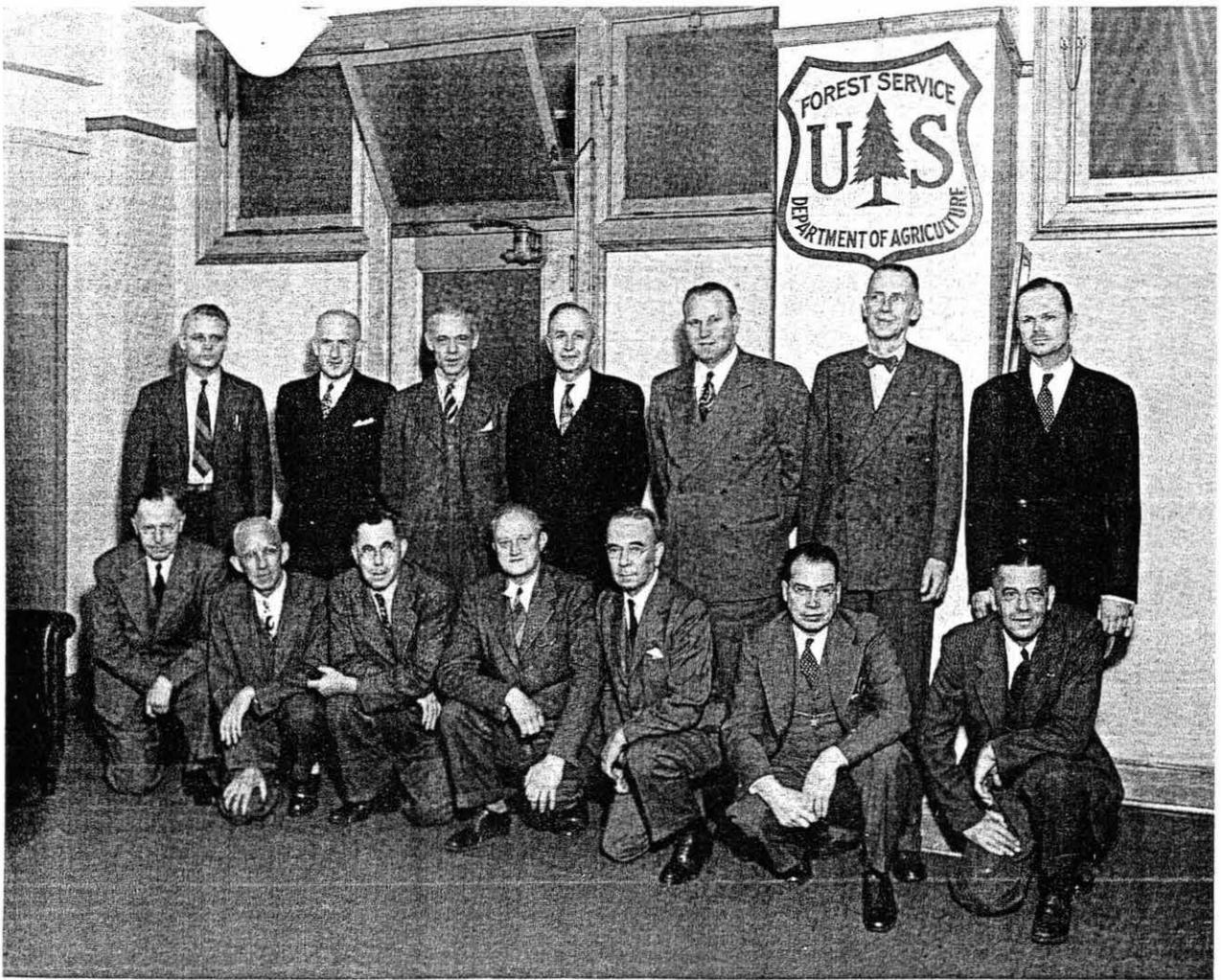
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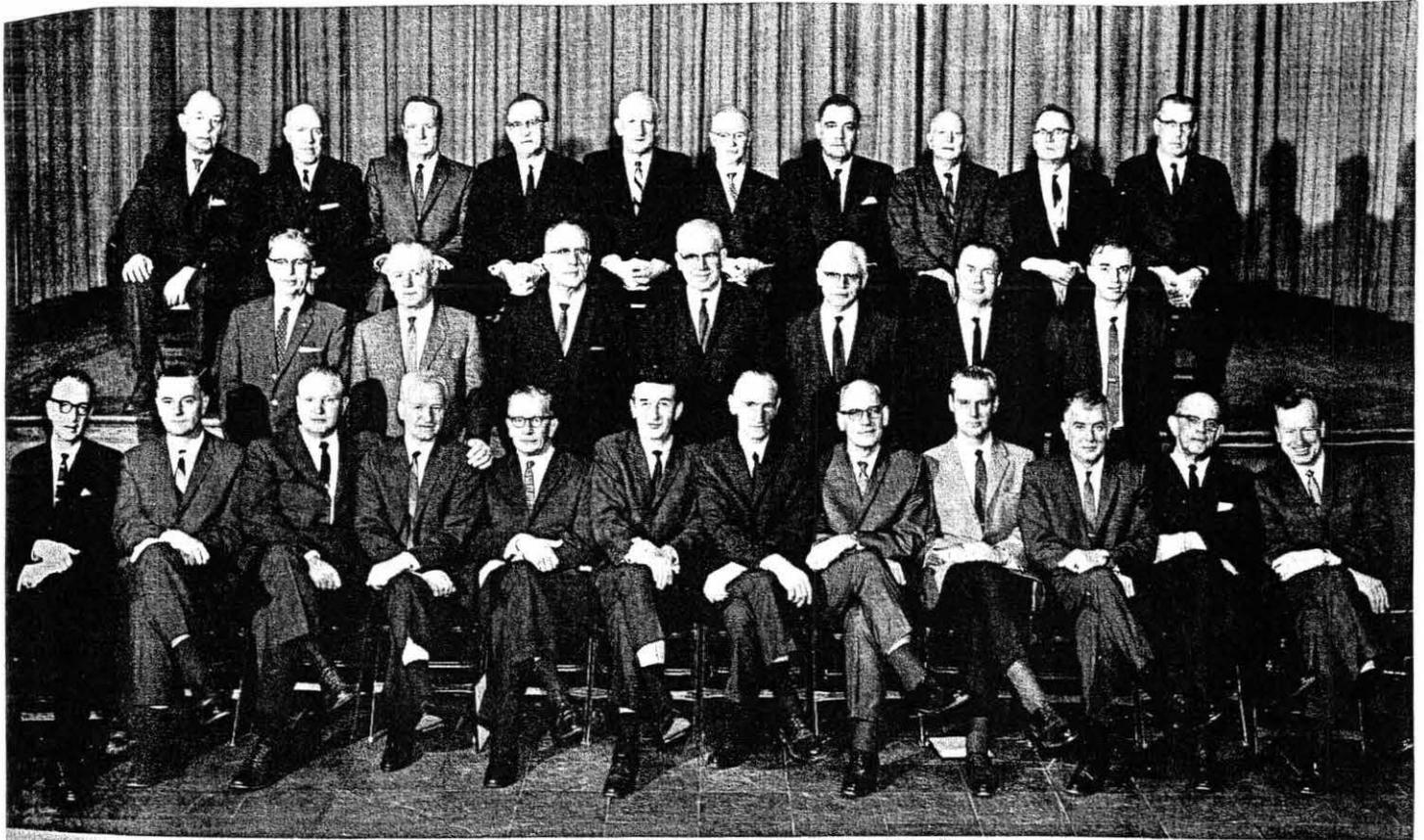
The staff at the Starke, Florida, branch of the U. S. Forest Service Southern Forest Experiment Station in November 1930. In 1931 the Starke branch was moved to Lake City, Florida, where V. L. Harper was in charge of research work at the newly opened office. Left-to-right in the picture are: Carl Olsen, Lenthall Wyman, V.L. Harper, Betty Chamberlin, J.D. Diller, May Patchett, Tom Busch, Frank Heyward, Paul Rudolf, Dr. Austin Cary, and Jimmie Averell. Photo courtesy of V.L. Harper.



The annual meeting of U.S. Forest Service Regional Chiefs and Directors of Experiment Stations from the continental United States, Alaska, and Puerto Rico was held in 1946 with Chief Lyle F. Watts and his Washington headquarters staff, after a three-year hiatus during World War II. V.L. Harper had recently become Director of the Northeastern Station.

Left-to-right (front row, kneeling): George M. Hunt, assoc. dir., Forest Products Laboratory, Madison, Wis.; Arthur Upson, dir., Caribbean National Forest & Tropical Forest Experiment Station, Rio Piedras, P.R.; J.A. Hall, dir., Pacific Northwest Experiment Station, Portland, Ore.; E.L. Demmon, dir., Lake States Experiment Station, St. Paul, Minn.; C.P. Winslow, dir., Forest Products Laboratory, Madison, Wis.; I.T. Haig, dir., Appalachian Experiment Station, Asheville, N.C.; M.I. Bradner, dir., Northern Rocky Mountain Experiment Station, Missoula, Mont.; (back row, standing) V.L. Harper, dir., Northeastern Experiment Station, Philadelphia, Pa.; C.A. Connaughton, dir., Southern Experiment Station, New Orleans, La.; Stephen N. Wyckoff, dir., California Experiment Station, Berkeley, Ca.; Lyle F. Watts, Chief, U.S.F.S., Washington, D.C.; Raymond Price, dir., Southwestern Experiment Station, Tucson, Ariz.; W.G. McGinnies, dir., Central Rocky Mountain Experiment Station, Fort Collins, Colo.; Reed W. Bailey, dir., Intermountain Experiment Station, Ogden, Utah.

Photograph courtesy Forest Service, U.S. Department of Agriculture.



REGIONAL FORESTERS AND DIRECTORS MEETING
 WASHINGTON, D.C. MARCH 1965

RAHM R-1	NORDWALL R-2	KENNEDY R-3	IVERSON R-4	CONNAUGHTON R-5	STONE R-6	DROEGE R-7	VESSEY R-8	JAMES R-9	JOHNSON R-10
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NELSON DEPUTY CHIEF NFP & D	PYLES DEPUTY CHIEF PP & L	CLIFF CHIEF	HENDEE DEPUTY CHIEF ADM	HARPER DEPUTY CHIEF RES	RASMUSSEN DEPUTY CHIEF S & P	GREELEY DEPUTY CHIEF NFRM
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WADSWORTH ITF	PRICE RM	PECHANEC INT	MARQUIS NE	MCQUIRE PSW	BRIEGLER PNW	ZILLGITT SO	MC LINTOCK SE	KING LS	LANE CS	HURD NOR
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Photograph courtesy of V.L. Harper.



At a program conference in the early 1960s, Forest Products Laboratory, Madison, Wisconsin. Left-to-right are Edward Locke, director of the Forest Products Laboratory, E.P. Cliff, and V.L. Harper. By this time, regional pressures for more forest products research at the stations resulted in pressures to establish regional FPLs, especially in the South. Photograph courtesy of V.L. Harper.



During a March 1971 meeting of the International Union of Societies of Foresters (IUSF), of which V.L. Harper was president at the time, an International Forestry Grove was established in the Austin Cary Memorial Forest of the University of Florida. Speakers at the tree-planting ceremony in Gainesville, Florida, were (right-to-left): V.L. Harper; George M. Jemison, president of International Union of Forestry Research Organizations (IUFRO); E.P. Cliff, Chief of U.S. Forest Service; John L. Gray, director, Forestry School, University of Florida. (Others in picture are guests and students.) Photograph courtesy of V.L. Harper.