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Fire
Low Value Area Policy

A Record From Discussions Held During the Low Value Area Expedition

- September 8-20, 1932 -

Members of Party:

Roy Headley, E.W. Loveridge - Forester's Office
E.W. Kelley, L.C. Stockdale - Region 1
C. H. Woods, - Region 4
S.B. Show, (first 3-4 days) - Region 5
F. H. Brundage, - Region 6
C.L. Forsling - Intermountain Forest & Range Experiment Station
Supervisors Kinney and Farrell - Region 4 end of trip
Supervisors Phillips and Brooks; Assistant Supervisors Romano,
Neitzling and Rangers Poynter, Gutzman, LeVan and Fitzgerald -
one to two or three days each while party was in their ter-
ritory.

Route of Travel:

As shown in detail on maps attached to the original of this statement. In brief, the route followed was: From Missoula up the West Fork of the Bitterroot in Region 1 to the Salmon in Region 4, near Blue Nose Lookout; to Salmon City. To Yellow Jacket Ranger Station via Wilson Creek, Challis and the Red Top Lookout. To Middle Fork of Salmon River, via Middle Fork Lookout. To Rush Canyon on the Idaho via Two Point Lookout. To the Junction of Deer Creek and Monumental Creek, via Lookout Mountain. To Cold Meadows via Big Creek, Crooked Creek and Crescent Meadows. Over Grass Mountain Lookout down Disappointment Creek ridge and across the main Salmon to the Salmon Mountain division of the Bitterroot via Eakin Ridge Trail to the Sweet Lake. Over Salmon Mountain Lookout to Sabe Mountain. On Nez Perce trail to Green Mountain and Meadow Creek in the Nez Perce. Across country to Meadow Pk. L.O. and Warm Springs Bar. Down Selway to Bear Cr. R.S. in the Selway. Up Paradise Creek, through Rock Creek Pass to Como Lake, Bitterroot and back to Missoula.

The Record that follows relates to the discussions held usually in the evenings. It is probably not as complete as it should be; nor is the phraseology used in the transcription identical with that used by the speakers. This is due to the fact that the notes were made in long-hand with the light available from campfires and flashlights and in view of the impracticability of getting notes on numerous discussions held by

as few as two members of the party at any time along the route of travel. In general the remarks are given here in the chronological order in which they were made. Reference to the Index will help to assemble discussions of the more closely related topics. The Appendix includes a limited amount of material that was used enroute. Needless to say, this record does not cover all the subject matter involved in the question under discussion.

Discussion Evening of September 9. This dealt with the retirement policy of the Service and is not being transcribed for this record.

September 10, 1932. At Crandall's Ranch on the Middle Fork.

Headley: What damage was done by the Grouse Creek or Camas Creek fire in 1929?

Super. 15,000 acres burned over, at a cost of \$20,000. I do not know the value in dollars and cents of the timber killed. 2/3 of it crowned out. It might have been logged eventually although it was not worth building a road into at that time. The stand consisted of douglas fir and lodgepole pine of about six to eight M.B.M. per acre. Cutting such a stand would remove from 2 to 3 M.B.M. per acre.

Headley: Has anyone seen a railroad built into such stands?

Kolley & Brundage: Yes, in the East.

Super. The measure of damage cannot be based on the area actually burned, but what would have been burned if the fire had not been fought. The LOON CREEK fire, 1931 shows perfect pictures of erosion. Gulleys are washed 4 to 8 inches deep (my notes give that as feet instead of inches. E.W.L.). The alfalfa fields along the same course are covered up to 4 inches deep with silt. This did not kill the alfalfa. Canyon Creek was washed full of debris which covered the road in places and washed it seriously in other sections. According to the Bureau of Fisheries man who visited the fire area, fishing had been destroyed in the Creek. 500 people come in there each year to fish. Grazing also was destroyed for at least this year.

Brundage: The Columbia River proper is adversely affected in at least three ways by serious disturbance of the watershed in this country.

- (1) In the maintenance of the channel for navigation from Portland to the Coast a distance of 100 miles. Due to silt carried by the River several hundred thousand dollars yearly are spent to maintain jetties and to do the necessary dredging.
- (2) Flooding of agricultural lands from the Columbia Gorge to the Coast, valued at \$300 to \$400 an acre, for a distance of 120 miles. The floods occur in June due to snow run-off; When Longview was built a dyke at a cost

of \$1,000,000 was needed to keep out this high water. Additional dykes have been built below this point. Concurrence of run-off is important, for if all Montana and Idaho were burned off the flood would come sooner.

Headley: Watts says that the Clearwater burn made the flood waters come 17 days earlier. Would that not spread out the flood period?

Brundage: I think there is need for a slow runoff rather than a fast one. The Clearwater is only a small area and would not in itself be noticed below. Continuing with my three points:
(3) The Grand Coulee project. It would cost \$268 an acre to put the water on these lands. Other points to be borne in mind are the effect on river developments below Pasco. It is planned eventually to make slack water transports available on the Columbia and to irrigate from the river. There is the Warrendale Project, a dam at the Dalles and possibly one at the Umatilla. Power developments are also planned at these points. I am not prepared to say what the relation is between these burns and the conditions of the Columbia River. Canadian streams have lakes, in part, that catch the silt from that country. Region 6 never figured on the Columbia proper from a water standpoint because the territory adjacent to smaller streams nearby is of more importance. The timber values anyhow justify protection. Excepting on three areas which we do not aim to protect very much. Part of the Siskiyou drainage flows directly into the ocean. Consequently we do not try very much to protect it. An 18,000 acre fire was manned with 100 laborers at a cost of \$10,000. On the Chelan the Paseton (?) water is used. It has some timber values. However, we figure it we could not put in much protection here. In the Chewac (?) country nearby there is a pure protection type. We would not spend too much money on fires here - would keep them from coming to the south into more valuable country. In 1929, thirty to forty thousand acres were burned in this section. The cost of handling these fires was \$_____.

Headley: You feel that watershed values there do not justify (more complete protection)?

Brundage: We are influenced by Canadian action. We hit all fires hard at the start. Up to 100 men are used while the fires are small. If a fire then gets away we survey it and decide what to do in view of the probable cost. If we had hit the Chewac fire with 100 men at the start - as we should have done - it would have been caught. Use of this policy will result in practically all fires being caught promptly - maybe all of them. The Chelan has no let burn policy. We have crews and others in there during the fire season and have very vigorous second line action.

In Six we prefer to have Supervisors overman small fires to the extent that facilities permit. If we rush in as many as 100 men at first even the more serious situations will be handled I believe. We are not figuring on more roads (in the upper Chelan) but on landing fields. Our policy is to avoid extra period fires but not to use more than 100 men, in these particular sections, without special consideration. Normally we get a little time with fires excepting once in a while. Formerly natural barriers were thought to be frequent but they did not prove to be so in 1929 in Chewac. In this back Chelan country if 100 men cannot corral a fire at once we herd it to the north and west. In the Middle Fork country we cut off one side and let the fire go to the breaks on the other sides. In the Skagit the city of Seattle is spending millions for water development. They will cut 350,000,000 feet of timber to make a lake clearing. A big reservoir ----- . There we are following somewhat of a limited suppression policy. The stand is quite inaccessible although heavy. You want to remember that the Chelan 1929 fires etc. were the result of an unusual cycle. We feel it better to accept a heavy area burned at rare intervals than to have an organization always on the job for these rare intervals. If we can continue to have the emergency guard authorization we can build up as needed to meet these rare intervals.

- Woods: If there is any thought of "let burn" why organize at all, because only in rare years do we have big burns. There is no use in protecting an area for four years and then letting it burn during the fifth season.
- Headley: There are two theories. (1) Put them out regardless of cost. (2) No protection. Is there any point between these two?
- Kelley: The theory of sufferable burn. That is if there is no loss for four years then a loss due to herding, the average total would be within the "sufferable burn".
- Woods: Should we not have a very light organization in good years but put fires out when discovered?
- Kelley; Brundage; Loveridge: A good idea there.
- Show: That is o.k. if the spread between years is sharp, and it rarely is in California.

Brundage & others: That theory is now supposed to be in effect, but it is not actually.

Kelley: As a matter of fact there is no real merit in that idea because the money would be used anyway.

Woods: But needed improvements would be constructed by the contributed time thus made available.

Stockdale: We will not put them on any work until they are actually needed for fire work.

Kelley: We need a five year appropriation. (A lump sum that will limit the expenditures that can be made in the five year period).

Stockdale: What if a bad year comes?

Super. Farrell: In reply to Mr. Headley's question of some time back regarding the Grouse Creek fire. If it had run at will it would have burned by the first fire. If it had been fought on one side it would have jumped, as it did, to the Salmon and on over the Middle Fork. It might have gone six miles south to a Bear Ridge and might have spotted over it.

Headley: How about use of the first line defense after mid-season?

Kelley: It is a good gamble, after a certain date, to fight certain fires with the available first line men and a few men from the second line by the use of extensive methods. That is, fight the lower side where the higher values are to be found and (allow it to run as topography and cover in the higher country of low value may indicate to be the best policy - my notes are not clear on this section that is in parenthesis. E.W.L.) In 1931 this method was used on the Willow Creek fire on the Selway; the suppression force being limited to some 200 men.

A new record for distances jumped through the air by fires has recently come to my attention. On the _____ fire it was clearly evident that a fire that started seven miles from the main fire was due to embers from this first fire.

- Loveridge: I should think that last statement would be a devastating argument against any let burn policy. Has not experience by this time shown us that it is cheaper to put fires out promptly even though a large number of men are involved for a short time than to use a smaller number of men who must stay on the job so much longer that the total number of man days is greater in the long run? According to the report form F-20 on file in the Missoula office the Fish Creek or Otia Creek fire on the Selway this year supports the argument that it is cheaper to put the fires out promptly than to herd them; The first report to the Regional office stated that the fire was spreading before a high wind in low value country. An old burn and a bad snagging job in white fir. Note that the report states that the fire was discovered on the 14th, that on the 15th 80 men were on it, on the 16th it "ran wild", on the 17th 216 men were on it. It blew up and four miles of line were lost. On the 18th 234 men - "camp burned out". On the 20th 305 men - "spread into Otia". On the 22nd, 366 to 404 men trenching completed August 22 in the morning. August 24, 140 men. August 25, 86 men. I do not know but this fire cost some \$20,000, if Stockdale's estimate of \$10 per man day is approximately correct. Instead of handling this as a low value country fire and building up the man power gradually as just described would not the use of the policy of hitting fires hard at the start, regardless of immediate values involved have resulted in a saving of \$5,000 or more? Other cases that have been cited indicate that it would.
- Kelley: I believe every area, when we move it away from the hit it hard policy, should have a plan, modified to current conditions. This requires the highest intelligence ****.
- Headley: In the country passed through since we left Challis do we not need the same degree of protection on all of it?
- Kelley: Yes, most of the way, excepting in some of the minor drainages.
- Super.
Kinney: I have been on the Salmon Forest for six years. The _____ Creek fire of 1927 covered 800 acres in low value country and was suppressed at a cost of \$1800. I got a kick from the Regional Office on account of the high suppression cost. They suggested that similar fires be herded and put out cheap - specifically to take not over ten men in the initial attack. This plan was applied to the Wilson Creek fire of 1929 which I, myself, first attacked with 16 men. I could not hold it and it burned from July 11 to September 11 or thereabouts. It covered 30,000 acres. Costs were \$20,000. It could have been held easily and cheaply if I had made a more vigorous first attack. During the same year another large fire that was herded in the same way came in from the Nez Perce. Fires that have

been promptly attacked have been held with no difficulty. The greatest run in one day after starting was about 1,000 acres. This was an exception. High country fires are practically all lightning. As a rule four to six hour attack is entirely adequate.

Asst.Super. Romano: At Bluenose. Last year we had 30 lightning fires in one day. They were handled with only one 35-acre class C. Rain came with the storm. Another - but dry - storm produced eight fires. Seven were Class C, the largest being 700 acres. I believe that an adequate initial attack is most economical.

Show: The high country seen from the Spring Creek Road around Bluenose and so on is nearly pure lodgepole - open - bear grass ground cover. We saw signs of few recent fires, a large one on the way in. Possibly 2,000 acres. Ridge roads are easy and cheap to construct. Kinney has told us that they cost about \$350 a mile as built on the upper end of the Spring Creek project. There is very easy line construction with just a fair amount of down logs. I would certainly say that this country is a perfectly feasible pulp chance for some time in the future. I should not say that it was really inaccessible country or very difficult logging. We saw no natural barriers that looked as though they would function against crown fires. Surface fires should be a cinch to handle. There was not much evidence of erosion up there but we were not in any recent burns. The whole country in that section is practically solid timber. Very little - possibly 5% out for rock. I would protect it without argument if it were in Region 5.

Super. Kinney: The Wilson Creek fire started on July 11 at 2 o'clock in the afternoon. The wind was not bad. The humidity --

Kelley: That is too early in the season to use the extensive method.

Super. Kinney: I might add that if I had felt that I was allowed to use as many as 35 men in the initial attack on the Wilson Creek fire, and had used them, I am quite positive that it could have been held in its early stages. If it had then broken over I would have herded it with the 35 men. The high country (on the Salmon) is fine, big game country - draws hunters from many States. What effect does smoke from herded fires have on the visibility of lookouts in high value country?

Kelley: Local fires do not bother visibility. The low value country is on the windward side of the high value sections.

Brundage: Our policy puts the burden on the Supervisors to use more than 100 men. They must, however, stop and consider before doing so.

Woods: Why limit to 100 men or to any number of men? Let the Supervisor use his judgment.

Kelley: If a fire starts in back country in Region One the Supervisor uses all the local men available, but before calling for more men he must get the approval of the Regional office. On the _____ fire I told the Supervisor to hold the fire on the east and south sides and to herd it into the old burn on the north and west sides where it was finally mopped up.

Headley: We should not talk in terms of numbers of men because men produce different amounts. Technique is *****. We say "hit 'em hard". What does this mean? It has no static meaning. We used to think that the use of seven men was hitting them hard. But on the Freeman Lake fire we had 1500 men. A more tangible expression is in the number of men sent to Class A *****.

Woods: Would we make money to send more?

Headley: We cannot pick out the fires that will break so we hit heavy many fires in order to get the rare ones, which makes unproductive costs in many cases.

Forsling: We would have the best watershed cover if we had a cover of
to Kelley; loose rocks.
enroute, as
reported by
Kelley:

Kelley to Forsling: If we only had a limited sum, - enough to protect a small area of timber, - would you protect Salmon Canyon or high value country?

Forsling: If these conditions ever came I would protect the northwest, the Lake States and the South. But that extreme not being present, we should protect the watershed in this country.

Kelley: The Government bureaus are apparently headed for tight times financially. Therefore, considering that California is, as Show says, burning three times as much as it should - for example - should we not put our money where values are tangible and very high rather than here where values are low? If the Mono costs as much as two or three cents per acre to protect would you protect it at the expense of the Sierra?

Show: Yes. Also on the Klamath. It is most important to remember that if we do not protect the Klamath it will have an adverse effect on protection in the other sections of California. If Region One lets burn, the people in California are sure to know about it and we in Region Five are in for another fight on light burning.

Headley: The limited amount of winter range accounts, I presume, for the relative scarcity of game in the Middle Fork country?

Woods: The Middle Fork does not snow in entirety, but range is not extensive.

Ranger Gutzman: The snow usually is six inches deep for about two months in the Middle Fork country.

Headley: What has the public won by herding fires instead of piling in more men.

Kelley: On the Lolo fires in 1931 we saved the difference between 50 and 150 men. The same results were obtained on the Selway.

Discussion at Telephone Canyon Camp, Evening of September 11, 1932

Mr. Show: I must pull out tomorrow for the Santa Barbara fire. Before going I would like to outline the major questions and conclusions regarding this subject that are in my mind. (The following statement from the recorder's longhand notes is amplified in Mr. Show's FC-Supervision, Protection Policy letter of September 21, 1932. Copy of this letter and of Mr. Kelley's comments thereon are included in the appendix attached to this report.) Mr. Show continues: The major points which occur to me regarding this subject are (1) watershed protection, including Mr. Brundage's statement concerning the Columbia River watershed. Any policy that leads to large fires tinkers with the balance of that stream. For example, tinkering with the shed waters of the Sacramento (hydraulic mining). The damage did not show up in its most serious form for 35 to 40 years. It resulted in a filling up of the stream channel, caused expensive dredging in the Upper Bay and navigation was stopped above Sacramento. It would take more time probably for a bigger stream such as the Columbia to show similarly harmful results from tinkering with its watershed. We must think farther than the mouth of any particular gulch. (2) Forest influences. When the balance in a cover is disturbed it cannot be stopped at all easily.

Forsling: I agree. That point should not be overlooked.

Show: Both of these soils are erodable. (3) The big game proposition. There are elk, deer, mountain sheep, mountain goat - in this section. All, except deer, are relatively rare as a hunting proposition. Depression or not, there are men who have the means

to go after these big game animals. When landing fields and so on are provided in this country it will be so accessible that big game will be one of the major resources. The way this works out is illustrated by the Steelhead fishing history on the Klamath. The presence of this resource has developed a clientele in the Klamath country of wealthy fishermen. Where unique and high quality game is to be found it eventually will be recognized as a real and valuable resource. What fire will do to game I do not know. We do know that deer have increased within the National Forests in spite of heavy hunting. In the Coast section of California game is decreasing and it is here that more fires of large size occur than in the National Forests. (4) The real reason I wanted to come on this trip was from the standpoint of service policy and from a selfish point of view, the effect that any let burn policy will have within my own bailiwick - California. There have been numerous groups in California who have advocated burning. As a matter of self protection we are compelled to draw a tight line - we cannot say "burn here", "protection there". Anything done to the contrary in Region 1 will have repercussions damaging to Region 5. Such things are grape vined around. For example, the lower standards on sales in Region 1 became known in practically no time down in Region 5. So much of this country ****.

Kelley: You have not seen the corner of it.

Show: How much of an area is involved in your proposed policy?

Kelley: As big a territory as the California, Klamath, Trinity and Shasta combined. Maybe 8,000,000 acres to 10,000,000 acres. In one block is some 5,000,000 acres - in Regions 1 and 4 combined.

Show: We have convinced the world that the placing of lands within the National Forests means that they will be protected. The people do not ask or discriminate. A slacking off of fire control in timber country such as you have here would result in a loss of public confidence. I would be surprised if it did not have repercussions in Regions 6 and 4.

Brundage: It would in Region 6, with our light burners.

Show: Not speaking categorically, is a compromise method workable from the cost side of it? Kinney told us of two or three fires that because of inadequate first attack grew large and expensive. A light attack often results in a few men for many days as compared with many men engaged for a few days under the heavier attack policy. It seems to be a matter of protect promptly or not protect at all. I am sorry that I must leave before seeing the rest of the country.

Mr. Headley: To look at it from the point of view of those who put up the money, note that the total expense of these three forests (Challis, Salmon; Idaho) in 1931 was \$320,000. I believe half of this is chargeable to protection. The cost of protection must have been six to ten cents an acre.

Show: My outlook is radically different. I do not look at it as a profit and expense business but doing what we have taught the people should be done. Big business in California demands it, at the same time it is driving for the economy act. (Here Show cited several cases and groups of individuals involved.) They feel that the National Forests are a pool of resources on which their business depends. They do not distinguish between low value and high value areas, and have expressed no concern at the failure of the Forest Service to show a profit.

Kelley: Cosner put through a resolution at the last meeting of the Western section of the United States Chamber of Commerce to the effect that National Forest protection should not be upset. This was the only resolution favoring government expenditure that was adopted.

Forsling: The recreation, game, and similar clientele is not made up of just the local people. A year ago I met eight men from Kansas City, Great Britain and other distant point who were enjoying trips into this country at a cost of probably \$25 a day. The trail we came over today is a main entrance. What impression would such people have if the country adjacent to the trails were burned out? To one on horseback with its slow travel a small burn is greater than a bigger one is to a person in a car.

Kelley: We have much of that burned country in Region 1. It is possible to ride for hours and see nothing but burn.

Forsling: They are not paying \$25 a day to see it.

Kelley: Many do go into this country for elk. I am not sure but understand that before the Clearwater burned out there was no game. Now there are so many deer not only in the burned but in the timbered sections that the winter loss is very heavy.

Forsling: The Kaibab is forested.

Kelley: Elk are not a timber animal. They originally lived on the plains and their presence in the mountains is due to being crowded into them.

Show: My comment was based on my view of the open forested country seen during the past few days where there is a balance between summer and winter range.

Kelley: Lewis and Clark on the Lolo trail, according to their account, got no game in the fall on that part of their trip from the Bitterroot to the Musselshell and the Foothills. All of the

back country that burned out in 1910 and 1919 is now one of the best elk countries we have. Hundreds of hunters go in yearly for both elk and deer.

Super.
Kinney: The same experience is recorded in the history of the open country to the East. There is now a great supply of game there, due probably to encroaching civilization.

Headley: Even, if you were the General Business Manager of these three Region 4 forests and were required to decide if the public should spend its money protecting this type of country or to build art galleries, battle ships, etc. etc., what would be your decision?

Kelley: Basically, it seems to me that any form of land management must recognize relative values. From this point of view and position we would have to coordinate our protection efforts with the values. If we agree that trees have little to no value for board production in this country we would have to base our plan on other considerations. This would lead to another standard of permissible burn or tolerable loss. What that loss is we do not know. We would probably have to manufacture a figure based on the best information we have and judgment. There would be a different objective for low value as compared with high value country. According to the Committee Report of the 1930 Regional Foresters' Conference, the permissible loss is 6/10 of 1% north of the Salmon and 10/10 of 1% south of the Salmon.

Show: The burn we saw the first day, according to Romano, was about 35 years old. It had all restocked fairly satisfactorily to slow growing lodgepole. Therefore, if we are going to handle this country on a cover basis a long rotation is needed due to the slow growth.

Kelley: Even applying the Committee's allowable burn figure, we have a long way to go before it is reached.

Show: Do the records show that?

Kelley: As the Business Manager I would have to see if expenditures today are justified.

Show: A Business Manager must do what his bosses want him to do.

Forsling: If the justification has to be on a dollar and cents basis, we would have to turn in the National Forests as a whole.

Kelley: If the Committee figures were right, 6/10 of 1% average for a five-year period - we have not approached that -. The people are putting up money to keep losses to 6/10 of 1%.

Woods: On the Idaho our past record of area burned is double the allowable burn. It is 1.11%.

Headley: For the Idaho the record shows that for the five years ending with 1931 inclusive, 1.11% was burned instead of 6/10% which is the Committee figure.

Kelley: The Committee Report allowed 1% for protection forests.

(Woods: Those figures were relative only to determine how to divide
)Brundage: the available money.
(Show:

Kelley: No, they were not. They were absolute.

Woods: None of you would agree to allow these forests to burn over once every hundred years.

Headley: The Committee Report is based upon an assumption of .1 of 1%. Therefore, it is not absolute. (In the discussion that followed there was general agreement with Mr. Headley's statement excepting on the part of Kelley and Stockdale.)

Kelley: If we had reached the objective I would not spend more - as a continuing: General Manager. Mr. Woods, after a Manager has reached the objective in high value areas, do you believe he should come back to increase protection in low value country?

Woods: Exactly, if I thought that the old objective was wrong.

Kelley: If I were within the objective I would not spend more.

Woods: My objective would be higher than to allow the forest to burn over once every 100 years. Otherwise, some spots would burn over several times and would be devastated.

Brundage: --- Would make a second China.

Kelley: I would not in Region 1, spend in capital investment in back country, aside from constructing a few roads to lookout structures to get better work from the personnel and to build a few landing fields. This will give us not more than 8 hours of travel from any landing field or road edge to any point in the occurrence zone -- this excepts rocky areas of infrequent fire occurrence and low inflammability. We need no more money for ordinary guards in Region 1; in fact, I would reduce the guard force if possible. I believe that the back country has burned over at least once in the last 100 years. Current expenditures, I believe, should be carried on at the present rate or less.

Brundage: After this organization is established the probability of burn is less.

Kelley: That is true. As a suppression policy I advocate that we study drainages and site classes and develop plans for each. In case a fire occurs attack it with all the resources present, -

the guard force, trail men, etc. - and those forces that could be rushed in by plane, automobile, etc.; for pinch-hitting second line defense. I would then debate thoroughly before throwing into low value country very large crews of men and big sums of money for additional second line defense. My ideas regarding further capital investments, and hour control from road edge, as well as strength of guard force were expressed a few minutes ago.

Brundage: You figure that your finished organization will hold the area burned to a more or less reasonable figure - maybe 1% - or, with good breaks, much less?

Kelley: Under the old organization ****. Since 1919 the country is restocking very well excepting on double burn. As to silting and flood, since 1910 there has been no disaster. The run off is earlier but this is correcting itself.

Forsling: But each burn over adds to the trouble.

Brundage: Possibly the area denuded years ago is less now due to restocking under protection.

Discussion at Monumental Creek, Evening of September 12, 1932

Headley: Suppose it is 1935 and times have become harder and a National Planning and Economic and Taxpayers' Committee has been created. Also that it has done quite well in building highways, in relieving unemployment, in old age pensions, etc., and has come to these three forests (for example) which are costing the country a quarter of a million dollars a year. They get into a dispute with Foresters and the Isaac Walton League and appoint an arbitrator to tell them what to do from a National point of view. Suppose one of you was on this arbitrating Committee. You start in with knowledge you have now and are called on to tell what to do without further study. Mr. Stockdale, as referee what would you do? Evan said last night he would continue financially about as now.

Stockdale: Based on what I know of these Forests I see no necessity for better protection than they are now getting. There are evidences in spots of some destruction but on a very minor proportion of the whole. Figures quoted last night show that the areas burned on the Challis and Salmon during the 10 years ending _____ The areas on all three Forests in the 10 years ending 1930 were just around the figure given as tolerable or acceptable by the Committee.

Headley: Stay away from the Committee figures or we will bog down.

Stockdale: I mean figures that are generally accepted as acceptable - (continuing) no one has said otherwise. I would spend no more than was spent during these ten years. Even with the 1931 loss on the Idaho, if averaged over big areas and considering extensive use. Probably the next 10 years would be as good. However the protection being given today is probably better than was given it during the past ten years. Therefore, there will be an improvement in the records. The matter of additional investment to plan is a question of balance. If an investment is made - should figure on an annual basis -- to make corresponding reductions in other items. I would keep the current annual true total to what it is now. As to making a possible decrease. I would not feel at all easy about recommending a decrease now. It must be looked into further. If past losses are on a satisfactory basis annual costs might be decreased. I see nothing wrong with the country as it is and see no reason to improve it.

Forsling: Is not the ten year period you use immediately preceded and followed by bad years, 1919 and 1931?

Woods: We lost more in 1931 than in the preceding ten years. This is true also for 1919.

Stockdale: The question is not all hinged on acreage. Take the past 20 years, I see no evidence of damage.

Woods: You have not seen the burns.

Forsling: To answer Mr. Headley's question. Considering (1) the taxpayers, (2) the foresters, (3) the Isaac Walton primitive area enthusiasts. The timber has no immediate market and the future for it cannot be predicted. The watershed for the stream of the only big river in the United States that flows clear at its mouth. Considering also the water power values, the recreational values, fishing, the salmon industry, the class of people who use this area for recreational purposes, and realizing that we do not know what we need to know about the risk we would take, I do not think we should reduce protection. With some small investments in landing fields etc.; the area burned could be held down.

Ranger
LeVan: In my 800,000 acre ranger district I have only 24 miles of roads. The extreme hiking distance to fires is about 3 days to the northeast corner. The average hike is about two days.

Forsling: That should be cut down, for various reasons that I could mention but which I will not take time to give just how. One is the bad effect that a let up in protection would have on public opinion. Some people say we are wrong in our watershed statements. The big watershed problem is on range lands.

For us to give up protection in here where watershed protection is of the most value would immediately throw pressure on us in the range land problem of protection. There is a matter of relative degree of protection.--- I am speaking of the basis for my discussion as "referee".

Headley: As "referee", you would not have to bother about the prestige of the Forest Service.

Forsling: But a dictator would have to base his decision on considerations. I believe a limited amount of investment in plant is needed for protection. This investment would save costs in other lines. On an annual cost basis the average would be no higher.

Stockdale: Costs only - not considering damage.

Forsling: I mean damage would be reduced.

Headley: Damage was not in the question.

Stockdale: If we had losses on a great big scale the public would be affected but not on the scale we would hold to. We have already taken much protection from eastern Montana, with little kick back.

Brundage: Changes there have not raised your area burned. That is the test. It was just good business. You might have had too many men to begin with.

Stockdale: We pulled out 75% of the protection force from 10,000,000 acres in eastern Montana.

Super. Kinney: As to Mr. Headley's question, I would give about the same answer as Forsling gave.

Super. Farrell: In reply to Mr. Headley's question - in the past three to five years some changes have come about such as we have here in the bug killed timber. In the past we could use natural barriers but my experience of the past two years shows that we cannot do so now as fires jump barriers. This is a temporary condition. For the next few years we must expect heavier losses with present improvements. We should have more lookout houses etc.; and equipment and some roads. On the Challis, for example, 40 or 50 miles of motorways. I would then be ready to tackle the job and feel that possibly the reduction in suppression costs would offset these investments.

Headley: All of you agree then that new investments would be offset by savings in other items.

Brundage: The new investments in landing fields etc. should give the protection desired if we use FF guards etc. for changing conditions. It looks as though if we hit fires hard at the

start - with no great number of men - we should hold all but the unusual case. The amount required to protect is not great and is justified by the values involved, such as watershed, recreation, etc. We can probably cut the length of the period of guard employment -- as tied in with improvement work. Therefore, there would be a saving. The thing to do is to give adequate protection with minimum expenditures.

Headley: That does not mean much.

Brundage: I know it doesn't ***. I don't think the country should have much (additional) in the way of road investments.

Stockdale: Do you see any signs of past losses that are too severe here?

Brundage: No.

Woods: I do not want to express myself as yet. The public will probably demand more protection in the future.

Loveridge: The investments needed should result in lower costs plus damage. I feel that we cannot see all of the damage that past fires have done. We should, of course, distinguish between high value and low value country in the matter of protection policy. In value areas we should, if necessary, drop back and burn out the intervening strip. This does not mean that we should drop back very far or indefinitely. We must meet the issue promptly and not let a fire burn for weeks or months. I do not think that further heavy investments for improvements or personnel are needed to obtain adequate protection here. With the skillful management that is now being approached adequate protection can be obtained without any considerable increase in net current costs. I feel that there will be a reduction, even in costs, if some minor investments are made and skillful management is obtained. By "even" I mean without considering damage, although damage should not, of course, be omitted from any discussion of results. In other words a Supervisor should not be condemned if his current costs do exceed past costs providing the results in lowered damage justify the additional costs.

Woods: I do not think we have enough men, etc. on the Challis, as Farrell indicated.

Headley: What else would Region 4 like to do on these three forests? If we get more emergency money, for example?

Super. Kinney: I would house my lookouts. Pastures are needed. Also 50 miles of motor ways at an average cost of \$400 per mile - direct cost, - or \$500 a mile total cost. The Big Creek Breaks roads and the Williams Creek Road are included in that mileage. Some of these roads would have community value. More telephone lines are needed to emergency lookout points, probably 25 miles in all. Trails ----.

Headley: Why are you not building them now from emergency money?

Super. Kinney: We still need six lookout houses.

Woods: I do not handle the emergency funds in general, but do look after the \$76,000 improvement fund.

Super. Farrell: From regular improvement funds I am building five lookout houses, one guard station, two storerooms, reconstructing some telephone lines, building some pastures, (Farrell's statement continues later).

Woods: Of thirty three thousand dollars of the \$380,000 emergency allotment for improvements, 90% is spent on the fire Forests. 75% of that is on protection improvements. None on landing fields.

Brundage: Region 6 has about \$850,000 of the emergency fund. \$525,000 is going on protection roads. \$160,000 on other P. improvements including snag felling. \$115,000 on administrative improvements. Nothing on landing fields. We are going to complete (95%) all of the P. improvements on some Forests such as the Deschutes. On other forests we have taken care of about 95% of all items that we are sure we shall need. We are, however, only putting \$3,000 into the moving of telephone lines, although there is a \$60,000 job of this sort that should probably be handled some day. Of regular improvement funds we have used very little on administrative improvements. All of these figures you will remember are based on my memory of the distribution, and are probably not exactly correct.

Stockdale: The Region 1 emergency allotment was \$839,000, minus the 10% hold back. \$48,000 was allotted for administrative improvements including headquarters. \$93,000 for protection improvements. About \$35,000 for landing fields. About 100% of the protection improvements we now know should be built are provided for. This does not include the reconstruction of telephone line. We had \$30,000 worth of this work lined up but none of it was o.k.ed. Recommended reconstruction or betterment jobs on telephone lines, although we were reasonably sure they were needed, were not included.

Headley: Regions 1 and 6 gave full priority to fire improvement apparently.

Brundage: The Government and Congress has said this is part of our improvement program and will be cut from future appropriations. Therefore we felt we must do what we need rather than relieve unemployment as a main priority.

Kelley: In using our emergency fund we did not figure unemployment as a basis but the need of work to be done. 52 to 75% of trail money goes to local wages. A like percentage for blister rust. On road work 42% is for local labor. Other P. buildings require 50% for local labor, - this does not include the manufacture of lumber. My guess is that 40% of the expenditures for telephone lines goes into local labor.

Headley: Region 4 feels that a higher percentage goes to wages on road and trail work than on other P. improvements. If we had allotted the full \$5,000,000 we would have brought each Region to full parity with previous fiscal year allotments.

Woods: The allotments were not based necessarily on employment needs?

Headley: It so worked in Region 4 where unemployment congestions exists. It did not so work in Region 5. It gave too much to Region 3 even after we had used the formula that gave the smallest amount to Region 3. It gave not enough to Region 2 where unemployment is probably twice that in Region 4. Note that Regions 1 and 6 feel that buildings relieve unemployment more than roads. I do not say which is right. When lumber is bought for an administrative building Regions 1 and 6 figure 50-50 for material and local labor. Region 6 figures that 40 to 50% of the cost of buildings is in local labor including the cutting up of materials by contract. For direct payment on U.S.F.S. payrolls, about 40% is labor on P. improvements.

Kelley: If road crews are of 6 to 10 men, 42% is wages. If more men are hired the percent runs higher. In Region 4 the higher cost of materials would change this proportion. On the Challis a higher percentage goes into transportation. Our labor is from concentrations of idle men such as at Wallace. We have a see-saw in policy in the two Regions. If Region 4 had given highest priority to protection improvements as was done in Regions 1 and 6 there would be no need to ask for an increase in emergency money to build P. other improvements. --- Administrative improvements, - mostly headquarter improvements - contribute as much or more to relieve unemployment as road and trail work. Region 4 has only \$7,000 left for administrative improvements as compared with \$115,000 in Region 6 and \$_____ in Region 1.

Woods: We had to spread our appropriation over much country in which poverty exists and where we have no need for protection improvements.

Headley: In any case put up to the Forester asking for an increase from the Emergency fund I wish you would bring out that Region 4 must have allotted twice as much per non-fire forest as in Region 2 where the need is greater. Why did not Region 4

meet more of its protection needs out of the money it had?

Woods: We put unemployment needs first.

Kelley: We are putting very little money on forests in the Butte, Billings and similar situations in eastern Montana.

Stockdale: For Montana, \$265,500.

Woods: If I had had any idea that the Forester meant that we should build an unusual amount of other P. improvements from the emergency fund, we would have done so. None of us in the Regional Office got any such idea from the Forester's letter.

Brundage : It was very clear to us that P. improvements were to be
and provided for.

Stockdale:

Super. I do not think that the Challis is over-manned. I feel
Farrell: it is decidedly under-manned. We need 60 miles of motor
(cont'ng way at about \$1,000 a mile, two 40-foot towers, three or
with his four lookout buildings for certain, 3 guard cabins, 40 miles
statement of telephone line for emergency lookouts and extensions, _____
as to im- miles of trails, ten miles of pastures, one storeroom. All
provements of these in addition to what will be built up to July 1, 1933.
& other I have had a ranger in a tent for six or seven years when he
protection was not living in a 14 x 16 shack made of salvaged lumber.
needs.) We should reconstruct many roads. It is cheaper to do so than
to maintain them or to rebuild bridges.

Ranger On my district I need 6 lookout houses, no pastures, 1 guard
LeVan: cabin, 18 miles of motorways, 24 miles of telephone lines -
emergency -, _____ miles of trails.

Headley: Our intent was to finish up all of the P. improvements - from
the emergency fund - including road and trail and other im-
provements so that if Congress cuts out in the future we will
not be caught. And if cuts must be made in the future they
could be taken out of construction funds. Our last ditch stand
was to be the 10% of each class of appropriations, including
a cut in improvements down to base maintenance.

September 13, nite spent at Cold Meadows. No "formal" discussions this evening

Discussion at Salmon River Bar - Lantz (?) Cabin - Morning of Sept. 15, 1932.

Mr. Headley read his latest contribution to Kep's "Discussion Course". A copy is attached to the original of this report.

Ranger Fitz- Should we not protect the resource even though we cannot
gerald: see the immediate value?

Headley: Certainly, but do so discriminatingly. What we want is to
find the way to get the maximum benefit from the public outlay.

Forsling: Do you mean on the basis of the next ten or 25 or 50 or 200
years?

Headley: We should make some distinctions - try to classify and look
at expenditures for the future for what they are instead of
lumping them without analyzing them. If we are gambling on
future possible benefits we should have a pretty clear idea
of what we are dealing with.

Forsling: The demand for land will increase.

Headley: When we find this way of obtaining the most public benefits
from an outlay that will determine how to protect this area.
We need to get the proper relationship to expenditures as
for example, in the Coeur d'Alene and the Salmon mountain
country. We would then have proper protection.

Woods: Are we to question the expenditures of other Departments as
compared with - results?

Headley: We must rule ourselves regardless of what other Bureaus may
waste ***.

Forsling: Would we spend \$5 an acre in here?

Headley: We might gradually, easily work up to that figure.

Frundage: I do not think the men of the Service would do so. The men
desire and take satisfaction in doing things that are sound.

Asst.Super. We spent \$30,000 for the Deep Creek Road but allow no tourists
Neitzling: on it. Otherwise there would be many more recreationists in here.

Discussions at the Svet Lake Camp - Evening of September 15, 1932

Forsling: I got two impressiions from that: (1) the measuring of every-
thing in terms of dollars, today. (2) Because we cannot
measure the tangible values in terms of dollars and cents we
had better forget them in protection. We must look farther
ahead than the dollar and cent values of today and where in-
tangibles and unknowns are involved, we had better be on
the safe side.

Headley: We do measure in terms of dollars now - about \$10,000,000 a year.
Estimates of roads (needed) are from 37 to \$55,000,000. In-

creases desired for operating expenses are about a half a million dollars.

Forsling: Those are measures of costs of protection, not measures of what we are protecting. We must measure in terms of values to individuals in the future. The whole basis of Government conservation is in terms of future probabilities. No Nation can expect to maintain its **** unless it maintains its renewable resources and conserves its non-renewable. This may be idealism but ***.

Kelley: Suppose the taxpayer from Indiana asks how much has been spent on this enterprise to date. Could we convince him of the soundness of the intangibles, etc?

Forsling: I do not think so but we must guard the individual against himself. The area here does not have a long enough history to trace it back.

Kelley: Has not damage to countries been due to intensive population and use ****? Cited an area in the south where *** now have only Sumac. Does not a country have to have for its resource something of intrinsic value for its use to be disabused? The Palouse will probably become as sterile as Northern Georgia ***.

Forsling: Therefore, the country to which we will fall back should be protected. It may be necessary to pump water from the Columbia to irrigate other lands.

Kelley: There will be a charge of \$268 per acre on the Big Bend Columbia project. Where in the country, excepting in Southern California and Arizona, is there a possibility of paying on an investment like that? If we go to pumping, the investment becomes fantastic.

Forsling: No more absurd than for the Indiana farmer to think years ago of pumping water on the Boise land.

Headley: The value of agricultural land does not rise up and up. In England land values for agriculture dropped and they have not been able to bring them back. Habits of thought are against it. India, France, China *** standard living ***.

Kelley: Presuming this taxpayer has only so much taxing power, we see these natural resources passing out of the picture. If a limit in taxpaying does exist, there should be a limit of rehabilitating resources and compensation on those actually needed. This (1) ****.

Brundage: The blindness of the people as in the Palouse is regrettable but that is no reason why other areas should be damaged.

Forsling: Two wrongs do not make a right.

Headley: All groups say "ours is the way of salvation", so we will have lots of company.

Stockdale: If we make a cut in protection will we be sure it will result in lower taxes?

Kelley: No, unless we have a comprehensive revision of all classes of activities - National planning.

Headley: No. The question is do we want to do as other groups do or to try to set a different standard?

Ranger The part of this conversation that strikes me is that it is
Fitzgerald: felt that we are doing all this to help ourselves.

Woods: Will this not work out as did the wage cut business - we make one and another one will be forced upon us.

Headley: No. We can ***. ***should not stifle the divine spark of curiosity - think of both sides.

Ranger I still need on my Salmon Mountain District: a few more trails.
Fitzgerald: This work however is practically completed. I do not know if I need any emergency guard buildings. Little else is required here. I hate to see any retrogression now.

Kelley: There is no thought of retrogression. We all agreed to that. The point is how much can further investments be limited.

Woods: The little we could give up would not reduce many taxes.

Headley: Are we to continue asking for more and more?

Stockdale: Instead of talking dollars let's say "no. of guards and amount of equipment annually".

Headley: We are thinking of such a project and are feeling that Stockdale is a promising candidate. He is an engineer by training, a forester at heart, and would have little bias.

Forsling: If the "back country" covers 10,000,000 acres, \$1,000,000 would amount to 10¢ an acre, which is not much. ****. I believe it would be fine to make such a study as proposed.

Headley: Where are we now in tolerable losses? Mr. Kelley, do you see any end of road building in Region 1?

Kelley: I can see a slacking off in road building unless we build utilization roads in the future. If we get for another two years anything like the sum received from all funds this year, we will put behind us all the main stem roads justifiable from a protection standpoint. Any others will be for first

line defense. We do not know if we want this. So far we have "little" for first line defense.

Brundage: In our Douglas fir forests we are figuring only on roads for second line defense.

Forsling: Let's you and I spend six months next year studying the water problem in the Columbia River.

Headley: We are both biased but I would like to do that.

Discussions at Sabe Mtn. - September 16, 1932

Headley: We will now take up the questions prepared in advance of this trip, to the extent that they have not already been covered by discussions. Mr. Shaw's question No. 2 "What total area of National Forest land is involved in the judgment of the Regions (involved in the low-value country protection policy)?"

Stockdale: Region 1 includes only areas with natural barriers on 1 or 2 sides so that if we lose out in the first attack on a fire it "won't go too far".

Kelley: Low value country includes some areas that would have to be excluded because of no natural barriers. There is a gross area "in R-1" of 2-1/2 million acres. This includes 1/2 million acres that would be excluded possibly on account of lack of barriers on 1 or 2 sides. The other 2 million acres have such barriers.

Loveridge: How far might a fire run within those barriers?

Stockdale: It would be within 20 to 30 miles maximum.

Loveridge: That would be ruinous.

Kelley: I do not agree with that mileage statement and do not believe that the extensive system of protection should be practiced on the West and South side of the Selway River or elsewhere, where a fire would get any such run.

Loveridge: Where is your low value country situated?

Kelley: In the Selway, Clearwater, Bitterroot, St. Joe, and Flathead, in areas which have barriers on one or more sides where fires will not run more than *** (20 to 30 miles according to Stockdale - less than this according to Kelley).

Headley: How much of a greater area is there in the low value country

class in the sense that timber production values are non-existent?

- Kelley: West of the Continental Divide, and excluding the Doerlodge, we do not have more than about 5 million acres in the Class A zone of commerciability. West of the (the foregoing probably refers to east of the Continental Divide. E.W.L.) Continental Divide we have about 16,000,000 acres total. Of this, 5,000,000 acres are reasonably good. Therefore, 11,000,000 acres are classified as low value. The class B zone, which is made up of country that might some day have commercial values includes 5,000,000 acres. The Class C zone totals 6,000,000 acres. Is made up of areas which will never have commercial (timber) values. East of the Continental Divide, of 8,000,000 acres, not more than 1-1/2 million acres are in the Class A zone.
- Woods: 2-1/2 million acres of the 8,000,000 in the fire forests in Region 4 have much less value for timber than others, due to inaccessibility. There are no barriers over which fires might not go. (This means that there are no areas comparable to the 2,000,000 acres in Region 1 mentioned above.)
- Kelley: I believe that there are some barriers in Region 4, such as in Monumental Creek, etc. Probably none on the Salmon Forest.
- Woods: There are no barriers there to fires with a large front.
- Headley: Question No. 3 by Mr. Show: "Is a large average number of fires per 100.M acres involved?"
- Kelley: No.
- Woods: No. - Spots are bunched.
- Headley: Mr. Show's question No. 4 is: "Are unit line construction costs abnormally high?"
- Kelley: After men are in the country costs are not abnormally high.
- Woods: Yes costs are abnormally high, considering transportation charges.
- Brundage: I believe that there would be not much difference in costs in this country from the costs in our Eastern Region 6 forests where machinery cannot be used. This is as good plow country as we have, excepting the "breaks".
- Headley: Mr. Show's question No. 5 is: "Do fires commonly spread rapidly from the start? Is heavy initial attack - if made reasonably fast - ordinarily needed?"
- Kelley: The answer to the first part of the question I believe is that it depends more on the weather than on cover".

Woods: My answer to the first part of the question is that most of the fires do not spread rapidly from the start, but in 1930 many did travel fast, and in 1932 some did due to bug killed timber and high winds.

Kelley & Woods: As to the second part of Show's question 5 both men answered "No".

Stockdale added: "No", as compared with Region 5.

Headley: Mr. Show's question No. 6 is "Is the cover generally broken by natural barriers, one-half of a mile to a mile apart?"

Kelley: That has been discussed before. We do have such barriers in the form of double burns and other features. They are of so much greater frequency (in the low value country) than in other parts of Region 1 that they look good to us. If a categorical answer is desired, I would say, "No".

Woods: No.

Headley: Mr. Show's question No. 7 is: "What hour control and intensity of attack are needed to hold fires to small acreage?"

Ranger Fitzgerald: We now have four hour or better control for first line defense in the Salmon Mtn. country.

Kelley: I cannot answer that offhand as there is such a variation in the country. Four to 48 hours might be correct. We now have an average maximum of possibly six hours. (E.W.K. here cited the case of a fire with at least 24 hours elapsed time that two men controlled. Also of a case that had 16 to 18 hours start which was held by 5 men) E.W.K. continues: Current annual weather conditions control. We may have blow-ups on some days in any year.

Headley: I agree with that.

Woods: We had no fires in 1931 that we could not have corralled in the first period. This year, an "easy one", we had at least one fire that could not have been caught in the first period. 4 to 8 hours control in from 4 to 48 hours is good enough. (Not clear. E.W.L.)

Headley: That is all we expect in our most valuable country.

Woods: As to the "intensity of attack" part of that question. A great big percentage can be put out by one man.

Headley: Mr. Show's question No. 8 is: "What additional capital investment in roads would be needed to obtain 12 hours control from road edge?"

Kelley: With roads and airports (including those to be built within the next year or so) none of the Region 1 country is outside of the 8 hour time figure mentioned heretofore, excepting the top of the Bitterroot and other low inflammability country.

Stockdale: It will take 4 hours to 5 hours more on the road to get to the "road edge". When we get the system now under way completed (in one or two years) we will have reached that limitation. In 1932 the Weitas Meadows Road is to be built and in 1933 the Lolo Trail Road at a cost of \$15,000 is to be built. There will be first line defense roads, in addition, to be built. There is country on the Flathead on which this hour control will not be approached. There is nothing there to burn because it is so badly devastated.

Woods: To get 12 hour control from road edge we need the following improvements - we would not want to spend any additional money to get 8 hour control -. Including landing fields \$150,000 to be spent on 2-1/2 million acres. This expenditure would take care of the following projects: On the Idaho - a road to Chamberlin Basin, 35 miles. Roads tributary to the above, 20 miles. On the Salmon - the Middle Fork - Big Creek Ridge Road 15 miles: the main Salmon and Big Creek Ridge Road 10 miles. On the Challis ***.

Kelley & Brundage: Do not think a man can walk 12 hours and be worth anything then for fire fighting.

Headley: Mr. Show's question No. 9 is: "Can we define good fire fighting strategy in this country as involving dropping back to natural barriers from 1/4 to 1/2 mile from fire edge?"

Kelley & Woods: Yes, where the cost of fighting closer would be greater than the additional damage done by going back farther and burning out more.

Headley: Mr. Show's question No. 10 is: "What has been the history of herded fires in the Region? What assurance that runs from herded fires can be prevented?"

(See the Kinney, Farrell and other previous statements)

Woods: There is no assurance that runs can be avoided.

Headley: Extensive methods - herding - means that enough men will be put in to keep a fire from backing down into higher values; and that the sides of the fire will not be worked where it will run sooner or later into a barrier.

Kelley: I do not like that phrase "sooner or later". I prefer to use: Where the analysis of the situation and calculation of the probabilities shows that the fire will reach barriers within 24 hours.

Brundage: We have had fires that started within natural barriers and hurdled them.

Kelley: The Lookout Creek fire - Paradise District - Bitterroot (1931?). After attempting to surround this fire with _____ men and being unable to do so the Ranger asked for 175 more men. This order was disapproved. The attack was then concentrated on the down hill side of the fire which was allowed to run into the rocks. Final size, _____ acres, total cost \$ _____. On the Selway in 1931 there was a concentration of lightning fires. With a limited number of men and a change in weather conditions this situation was handled. We have had disastrous experiences trying to control fires in the Slide Rock Canyons of the Bitterroot. I do not believe we have ever controlled one there with man power.

Stockdale: In the past we had to limit the number of men used on fires. Now we can get and transport men. (Any number of them)

Woods: The answer is to be found in the comparison of cost plus damage of the two methods.

Kelley: Those are the only fires on which we have limited the number of men since I have been here. In 1932 ***** in each case that we have used this method during the past 3 years it has paid - except possibly the Obie Creek fire which I have not yet had a chance to look into.

Stockdale: Many of the fires in the past should have been hit harder. If
Kelley: they had been this back country would not look as it does.

Neitzling: We have fought fires where it did not pay to fight them.

Kelley: That was true as to the Herrington Ridge fire.

Woods: I would answer this question (Show's) as given in my previous statement (see above).

Mr. Headley mentioned the Fitzwater fire on the (Flathead?) and another fire on which he was accompanied by Mr. Kelley which, in his opinion, if they had been allowed to burn to natural barriers would have done no damage.

Discussion at the Meadow Creek Camp beneath Green Mountain, Evening of Sept. 17

Continuing with consideration of Show's questions.

- Super. I believe fires should be hit hard with the men at hand.
Phillips: If it is not caught it should then be herded (all of this discussion bears on low value country). On September 7 or 8, 1931, the Sheep Creek fire which was a spot from the Big South Fork fire on the Idaho, burned 4,000 to 5,000 acres. Only 50 men were used on this fire as it was so inaccessible that we could not work it if we wanted to. There was a light storm about the 8th but it did not storm effectively until the 15th. On the Eakin Ridge fire, if we had built no trail at all on the west side, it would have made no difference in the results obtained. If, however, we had had a crew on the west side of the fire at the beginning it would have made a world of difference. Later it would not have been logical to put a big crew on the west side as the wind was from the west. The line could therefore be held with a small crew.
- Kelley: The Eakin Ridge fire (1929?) started in the evening. Lance got on it early the next day and worked alone all day on it. A guard started to it but did not show up for a second day. It blew up. Ranger Fitzgerald started in and got hurt or sick and men were started about the same time. Lost line **** the Regional office told the Supervisor to back fire it out. This was not done and as a result it went over the lines. The men walked, walked, walked but did no fighting. A case of mismanagement all through. Too much fire for the generalship. (Recorded costs \$36,964) The Running Creek fire - 1919 - (cost \$24,022). The I.W.W. crew quit on Girard and pulled out. It was not fought.
- Stockdale: They had 75 or 80 men on the fire when they pulled out.
- Super. That smoke that was seen up north today was probably from
Phillips: the Moose Creek fire that started on _____.
- Loveridge: Is that not typical of herded fires? There has now been a week of quiet weather during which that fire has probably been burning. Now we are having a wild wind. Why not catch them before the wind comes up?
- Kelley: It is in impassable rims, *****.
- Headley: Mr. Show's question No. 11 is: "What is the history of individual large fires, such as Eakin Ridge and Running Creek? Would modern practice and level of preparedness permit recurrence of such busts?"

Headley: Mr. Show's question No. 12 is: "What has been the experience of Supervisors on these Forests regarding the relative efficiency of early suppression and herding?"

(See statements by Kinney, Farrell and others on preceding papers.)

Headley: Mr. Show does not understand or he would not ask this question.

Headley: Mr. Show's question No. 13 is: "In what essentials does fire behavior differ from parts of Region 5 in which a similar plan was tried out and failed 15 years ago?"

Kelley: The situations are not comparable.

Headley: It did not fail 15 years ago in California.

Headley: Mr. Show's question No. 14 is: "What evidence is there that herding is cheaper than aggressive attack? The contrary?"

Kelley: We went over that ground last night. We decided that until we got to the records we could not discuss that. Mr. Phillips, where would the Sheep Mountain fire, 1931, have gone if you had not herded it?

Phillips: At that time of the year we were not taking any chance. At earlier periods we would have gone in and corralled it. To have put in 100 men would have cost \$15 to \$20 a man to get them there, as the road was one day of foot travel from the fire. We would have used natural barriers anyhow as there are no great values in the Sheep Creek drainage. The fire would have topped out on the Hump and could have been caught there. We have recognized no watershed, game, recreation or other values in that country. It does though have game value in the winter range for 50 to 100 elk. If the fire had occurred a month earlier it would not have been stopped by sheer manpower in the Crags. We put men on the flanks - 25 men up the river and 25 men down the river, i.e.; 50 men.

Forsling: The watershed value of trees in Rocky Bow is low. Farther down the slopes there is a chance for greater damage. The greatest danger from silts and sands is on the fronts that drain directly into the river.

Mr. Headley read from the Region 5 allotment conference letter of December 9, 1915, par. 5, in which is outlined the policy that Show claims failed in Region 5. The figures do not bear this out as to number of man caused fires, area burned, etc. I suspect that Show has in mind some experience on the Squaw Creek district of the Shasta. Also from Lava Bed fires. The official records of Region 5 show that Show's statement is not true. The number of man-caused fires in the year before the year he mentioned was greater. Also the area burned over was lower than in (recent?) years and lower than now. The cost of suppression was a bagatelle as compared with present costs.

Brundage: There is no question as to the desirability of hitting fires quick, but how many men should be sent in later.

Forsling: For some of the Salmon River fires we overlooked the game values. Browse is essential winter feed and it does not come back soon. Ranger LeVan says that there was a heavy loss of deer in Big Creek last year due to congestion from areas burned over in the South Fork.

Super.
Phillips: Deer were driven from the Idaho to the Nez Perce last year.

Forsling: I do not say how much should be spent to protect game range. That is for you fire experts to decide. I point out that values are there.

Headley: How about the Rock Creek fire in 1927, Mr. Brundage?

Brundage: The Rock Creek fire was not reached by me. I do not know if 400 instead of 80 men could have prevented it from blowing up. But if they had had the snags down and pumps on it they may have held it. **** If those fires had been more heavily manned and the snags felled during the several quiet days they could have been held.

Kelley: I would not think of herding fires in country such as R-4 had fires in last year.

Headley: Mr. Show's question No. 15 is: "How can we justify repeated annual investments in protection if we are prepared to sacrifice the accumulated totals in one year, merely because the job becomes more difficult?"

Kelley: That is irrelevant --- It does not pertain to the question we are debating ***. If it did I would not advocate it.

Woods: We cannot justify it.

Brundage: Did we not agree that if necessary we would hit a fire hard, but would not if it is going to rain or if rim rocks are nearby, etc.? The secret of handling this low value country is adequately heavy initial attack. If that fails stop and consider.

Forsling: The damage to winter game range involves the destruction of brush -- its elimination for 8 to 10 years for the better species. Grass comes back soon.

Headley: Evan, think of a fire in some part of the Nez Perce. What would you do between the easy and bad seasons. Earl asks, "If you handle fires with first line defense for 9 years, and in the 10th year try to do likewise you may lose all that has been gained during the other nine years." How would your suppression practice vary?

Kelley: In all fires everywhere I would hit them with the first line defense plus the second line defense in some instances, considering probabilities. The second line men to come in by cars and planes.

Stockdale: We must recognize critical periods - days, weeks or years and modify our action accordingly. If we did only those things in the hard years that are required in the easy years we would lose everything. It is therefore necessary to do more during the bad years.

Kelley: But if a fire then blew up we would not try to hold the area down as values are very low.

Phillips: We had a fire near Dixie - Sams(?) Creek. It blew up noon on Aug. 20 in a white fir, old burn area. It was quite a fire. 30 local men attacked it. By noon of the next day it was going good; so we got 25 more men for daylight the next day. The day before the men came I scouted it and saw that it was foolish to order more as the fire would extend into old lodgepole (green) and out. The lodgepole was heavily bug killed and might have crowned. The men came so we put it out instead. Not over 100 acres more would have burned if we had dropped back to the lodgepole, unless the lodgepole blew up which was a remote possibility.

Headley: An excellent illustration.

Kelley: If we do not use those discretionary steps, can we call ourselves managers?

Brundage: Phillips used good judgment.

Super. The cost was 55 men for two days, probably \$2,000. It would
Phillips: have been a good gamble not to have brought in the extra men. If the lodgepole had blown up the fire would have extended four miles. However, the weather forecast was unfavorable.

Brundage: I believe it was best for you to have obtained the extra men.

Kelley: Numbers of men - do not mean much. The calibre of management is the controlling thing.

Headley: I want to emphasize that. I suspect the additional numbers of men put into the woods in 1926 as a result of Col. Greeley's dictum had no effect on the area burned. Did it, you Region 1 men?

Kelley: I know of one exception - the Slate Creek fire on the Kaniksu. Ranger Potter (?) says if he had had 50 more men he could have caught the fire several times.

- Headley: That was before Greeley's dictum was issued?
- Stockdale: In answer to Mr. Headley's question. The additional men saved very little country. It was too late in the season and no great loss occurred after that time. The season was over on August 20.
- Brundage: If earlier during that year the fires had been hit harder would the record have been any different?
- Stockdale: Oh, yes. Also, if the season had continued bad these additional men ****. We had 1700 men on the Kaniksu. The question was should we organize for 2000 more men? We had not the facilities for it. Thus if it cost \$1.10 for each \$1 man in the first 1700 men it would have cost us \$4 for \$1 worth of work from the other 2000 men. This was quite contrary from the situation in 1932 when we had the facilities and overhead.
- Headley: Your initial attack had to be by men who know the country. Would additional extra men have helped in the first burning period?
- Stockdale: They would have helped later but the inexperienced men ****. The fire that got away - Sullivan Creek - was attacked by two men from the road crew. They were shown the fire in the distance by a man who knew its location. They did not reach it.
- Headley: Mr. Show's question 16 is: "What is the eventual value of this country for the primitive area type of recreation?"
- Kelley: That cannot be answered in a blanket way. Some of it is of growing use; elsewhere it is very poorly patronized.
- Forsling: No doubt, as Mr. Kelley says, it is going to increase. It has increased until the last year or two. It has not really started yet.
- Phillips: You would be surprised at the number of people that come in here from the Red River Hot Springs.
- Loveridge: It does not require much vision to appreciate what airplane, dirigible and other means of fast transportation will eventually do for this country. Stockdale tells me that for \$5 a round trip can now be made into the Big Prairie country at the head of the South Fork of the Flathead. Formerly it was days from Missoula with a pack outfit. All of this country is much more delightful than the hot, dusty and unattractive canyons in Southern California. When the dense population that spills over into those canyons is able to come up here at no great cost, recreation in this section will have a great value.
- Kelley: Recreation has undergone great changes in the past few years. Hotels have suffered because recreationists travel in large part by automobile and by stopping at the automobile camps spend very little money. Air travel is costly. In consider-

ing this question we must consider the great areas available for recreation.

Forsling: Primitive recreation means pack trains -- (a discussion here of primitive areas).

Stockdale: Should we not encourage recreation in our forests? I refer not only to the city people but to others as well. The Palouse farmers go in large numbers into the Kaniksu country *****. There is much to this class of business and activity that has not yet been scratched *****.

Headley: Mr. Show's questions Nos. 17 and 18 are:

Question 17: "What is the eventual intensive use of water in the Columbia?"

Question 18: "Is this country in fact valueless for watershed protection? Is there tangible evidence?"

Forsling: Erosion that has taken place in the past is often not easily recognized because (1) the run-off silt is scoured out of the stream beds by each freshet and carried on. (2) Turbidity is lacking in the water because this soil has so little of vegetable matter in it. (3) Stringers of erosion crumble in, and in a year or more, show little evidence that the soil has been cut and the soil depth reduced. Cloudbursts are not now more frequent than in past years, but the same amount of rain as before now leaves more prominent scars. I.e., it is the amount of damage that indicates the severity of a storm, rather than the amount of rainfall. Damage to the Columbia drainage watershed is important because: (1) a greater amount of silt in the run-off will damage irrigation works and waterpower developments. (2) there are 11 power sites, according to the U.S. G.S., in one minor arm of the Salmon. (3) there are from one to two million acres of land that will quite probably be irrigated eventually by the Columbia. (4) The Columbia is one of the most important breeding grounds of Salmon. No one knows - possibly the Bureau of Fisheries does - how seriously silt and change in run-off period and volume affect fish.

Brundage: Dredging of the Columbia to keep the channel open to Portland is very expensive.

(These two questions are covered by discussions of previous evenings.)

Headley: Mr. Show's question No. 19 is: "What do Gisborne's studies show in regard to super heating of bare ground as to local climate? How about Fitzwater's idea on increased lightning storms from the same cause?"

Kelley: There is nothing on that, other than conjecture.

Forsling: The burned over area surface is much hotter ****.

Kelley: The policy we are discussing will not materially increase the burned over area.

Stockdale: I do not think there is any more reason (to Fitzwater's idea) than to believe that plowing and dust storms to the west have increased lightning storms.

Brundage: I do not think dust storms cause lightning storms.

Forsling: We need more expert advice on both.

Headley: Mr. Show's question 20 is: "Are we sure enough of eventual value in this country to deliberately accept losses because of low present values? Should we play it safe?"

Kelley: There is a danger of unsafe play in expenditures as well as in permitting losses. I am sure enough of the eventual values of this low value country to deliberately accept losses of area. I have discussed this "in my statement of objectives".

Loveridge: The gist of question 20 is: Should strength of attack be based solely on present values?

Kelley: No. Strength of attack should be based not only on present values but on those that can be seen as far into the future as we can *****.

Headley: Mr. Show's questions 21 and 22 are:

Question 21: "What 'intangible values' are involved?"

Question 22: "How can the Forest Service justify publicly a double standard of suppression policy?"

Kelley: I do not grant that a double standard is involved.

Brundage: (agrees.)

Discussion the Evening of September 18, 1932, at Warm Springs Bar.

Headley: We can now take up my list of questions. Question A is: "What difference does protection make in public benefits in the territory under consideration, in connection with:

1. Production of timber which we have any assurance will be used?
2. Production of water which will be used?
3. Prevention of erosion which does any damage?
4. Recreation and game uses.
5. Climatic benefits to people.
6. Mining uses.

Super. It is pretty hard to visualize any commercial value in this
Brooks: country.

Headley: The back country as here discussed is all the country outside
the commercial timber belt.

Kelley: Nehf says there is not enough timber above Selway Falls to
justify logging it.

Super. There is some timber - cedar - above the Falls that he did
Brooks: not see.

Kelley: The cedar type is a very small proportion of the total.

Super. For the future as well as for the present the value of com-
Brooks: mercial timber on the Selway (back country) is practically nil
(continuing) because of the richer soils outside where worlds of timber can
be produced near the mills.

Brundage: How long will the supply of timber in Region 1 last?

Kelley: In Idaho. The Coeur d'Alene can cut 35,000,000 annually, in-
definitely. On the St. Joe, none. On private lands, there is
an 8 to 20 year cut, including the "mix". 8 or 10 years will
take the private stumpage excepting the Clearwater Lumber Co.
holdings. They have about a 25 year cut of virgin timber under
their present cutting practices. They can then cut over again
if the "mix" price is high enough. This cut will last another
10 to 15 years. In Montana. The A.C.M. has enough timber
to give them a sustained yield for their own use indefinitely.
I.e., 15 to 20,000,000 feet a year. The Summers Lumber Co.
has from 25 to 30 years cut. Other Forests in Region 1 have
no large bodies of timber left.

Brundage: How about pulp in the long look ahead?

Kelley: That is anybody's guess. We have large volumes of pulping tim-
ber, water, no limitation in pollution of streams. But we are
in a poor market position. In this whole connection it is
a mistake to go blindly on believing that trees anywhere have
a value. The possibilities in other parts of the U.S.A., even
to plant it in the South, etc., make some trees in certain lo-
calities of minus value. There are, however, some possibilities
as to the pulp proposition.

Woods: In answer, to Mr. Headley's question no. 1:
For the Region 4 side only I would say that there is very little
commercial value now that is intrinsic. I would not attempt to
say that it will not have intrinsic value in 25 - 50 - 100 years.
We are doing things now that people never thought of doing 100
years ago. The doubt should be favored to the extent of pro-
tection.

- Brundage: What does Forest Management say will happen to the lodgepole bugged stands? Will they be converted into white fir stands?
- Kelley: There is some reproduction in lodgepole. White fir, it is believed, will come in where the stand is thinned. The bug experts prophecy that there will be a break this year in the lodgepole infestation. What we have seen does not check with that prophecy.
- Forsling: It may take 2 or 3 years for lodgepole to regain vigor so that one year is no complete criterion.
- Stockdale: The insects in lodgepole started 10 to 15 years ago up north.
- Forsling: That coincides with the length of the acute drought.
- Brundage: This is recognized as low value country. There are insects, Blister Rust, etc. A dark picture of it can be painted, but the topography is not bad; in fact it is much better than much of the coast country.
- Kelley: That is correct.
- Brundage: One needs to be a prophet to foretell what this country will eventually be worth. If a high tariff is placed on pulp there may be a very, very rapid change to production of pulp in this Region.
- Kelley: There will never be a tariff on pulp.
- Brundage: It will only be a few years before the accessible timber in this country is cut over - 15 to 20 years. Even in Washington in the private holdings this is true. I am an optimist about the value of these reserve stands of inferior species. In Maine the operators have gone back time and again over the same country. We had better make an error on the side of possible future use rather than on the other.
- Headley: Are you thinking of the interval before other parts of the U.S.A. can be made productive again?
- Brundage: Yes. The possibility is that the values here are limited to this period, but since we cannot be sure we should play on the safe side.
- Kelley: Much of our country here is also in a producing stage and will be ready for the market about the same time as the young growth now coming on in other parts of the country. When timber becomes valuable enough to utilize this back country stock, it will pay to plant elsewhere.
- Brundage: The time element is the point. Planting is now being done; hence there will be an interval in which the timber may be needed. Play on the safe side.

Virgil Long: 150 years from now I won't need no lumber.
(the packer)

Forsling: That's the way a good many people look at it.

Stockdale: I would go along with Mr. Kelley. Some pulp possibilities exist here. There is too slow a growth for other uses, to compete with lands outside the National Forests which are partly stocked or even if we plant them.

Forsling: I think that Mr. Brundage stated the case very clearly. During the interim, much of this timber will have a market.

Kelley: The Jack Pines, etc. in the Lake States were left but now are in demand for pulp.

Asst. Super. Neitzling: The Pullman Co., General Motors, and others are trying to build houses of steel. If that proves successful the demand for building lumber will be curtailed.

Brundage: They will need an insulating material for steel houses. This will need to be wood.

Kelley: At Libby, Montana, they have an insulating material, so claimed, a mountain of it.

Loveridge: A long look ahead makes it necessary to consider that mining in this country may create a demand for forest products; as may new modes of transportation; cellulose production *****.

Kelley: As to Mr. Headley's question A-2 regarding "production of water" - that has been discussed to death already.

Headley: Will protection produce more water?

Forsling: The condition of the water, storage, regularity of flow, etc.; are parts of this question.

Headley: No, that comes under erosion; question A-3.

Forsling: Quantity and quality of water are inseparable. The greatest total yield comes from land with no soil or cover - as a tin roof - . But to control quantity and period of time and character of flow it may be necessary to sacrifice quantity somewhat. The total quantity of water in the country is not increased, but rather decreased, by the presence of cover.

Brooks: If forest cover does produce more water the cover should be protected for much use is made of the water in this section.

Forsling: Bates' discussion of Hoyt's and Troxyl's paper is very important. The Wagon Wheel Gap experiment was the worst setting possible unless it had been in the pumice soil around Bend, Oregon. D.W. Mead of Wisconsin said of their paper that it was entirely unsafe to draw conclusions from a statement that was so full of loopholes. Mead is one of the leading hydraulic engineers of the U.S.A.

- Kelley: Brooks says much of this water will be used for irrigation. The only place I know of is the Umatilla where it is being used at the present time. It may later be used for irrigation and power, but it will be a long time in the future before it will be needed.
- Brundage: In the fall of 1929, due to the drought, there was an actual shortage of water power (along the Columbia). Even with the few developments that have been made since this time there will be no surplus in normal times. Some new major industries will need to come in to justify new major water power developments.
- Kelley: A U.S.G.S. man has said that with the projects under way and those which are completed producing all that they are capable or will be capable of producing there will be enough (water power) for the needs of the next 50 years. A tremendous increase in population on the Pacific Coast will call for much more water power.
- Headley: What does protection of low value areas have to do with water power?
- Kelley: To regulate stream flows, etc. The storage capacity of the Columbia is low. Protection would regulate stream flow, although protection may not be worth it.
- Stockdale: If the figures quoted on the cost of the proposed dam, west of Spokane, are any index of cost to store water artificially, it would pay to protect.
- Kelley: If the St. Lawrence development goes through there will be more power available in that section than is now available in the entire U.S.A. That factor may attract many factories into the St. Lawrence region.
- Forsling: I wish to emphasize Show's statement. Better take a long look ahead. It was 60 years before the full damage to the Sacramento was felt.
- Kelley: That is not entirely true. I was brought up in that country. In 1894 the Caminetti (?) Bill was passed to prohibit hydraulic mining which was doing damage miles below in the valleys. Therefore, damage was being done currently and did not require a 50 year delay in order to have it become clearly visible.
- Forsling: The Yangtze River is slowly moving silt down stream that will do immeasurable damage in years to come *****. Every study shows a higher flood flow from denuded areas. Also, according to one test and one swallow does not make a summer, a higher flow was obtained from a denuded area. To digress: Bates says that in soil not impervious to water there would be nothing *****. Litter does help the water to percolate into the soil.

Headley: In the Waterman Canyon project in 1911, the higher low stage flow that showed up after some years made the observers feel that the record must be wrong due to faulty insulation of gauges, etc. As continued since this time (with the insulation checked) this project shows, I believe, the same results as was shown by the record heretofore. There are at least three projects which show that denudation increases low stage flow. Have there been any projects that prove otherwise?

Super. There is plenty of water but the problem is to maintain it.
Brooks: Some economists say that the Northwest is to be the future dense population sector of the U.S.

Headley: To summarize the previous discussions of my question A-4: Forsling says that fire destroys winter forage. We disagree on whether game like burned over areas.

Asst.Super. I never found elk in the heavy timber on the Flathead during
Neitzling: winter months. There is little feed there. Practically all of our winter counts were of animals to be found in the open. In the timber there were not even any tracks to speak of.

Forsling: We will always have plenty of burned over country in spite of all the protection we can give.

Kelley: My answer to that question is: No, in so far as we know.

Headley: No one can contend that a forest of tree skeletons adds to its attractiveness.

Kelley: In some places clean burns and grass like parks add charm to a country. In other places it "rules out" the beauty. The Diamond Lake and the Seelcy Lake burns are scenes of desolation. On the other hand the open clean burn parks in Donaber (?) are now charming.

Forsling: A ride through lodgepole stands is monotonous; a contrast is needed.

Headley: Without protection in the past more of the country was green than there is now.

Stockdale: This Region is now greener than it used to be. The country was burned over very heavily about 100 years ago.

Super. Burns would not result in open parks in this country. Brush
Brooks: would come in; excepting in the high country.

Headley: Lakes and timber go well together.

Kelley: There is little timber around the Flathead Lake, Consequently it holds little charm for me. This is true as to Echo Lake also when the timber is gone.

Kelley: The timber stands around Salmon Lake on the Blackfeet are more valuable than those on the Coeur d'Alene and should be protected at all costs.

Concerning Mr. Headley's question A-5 **** Climatic Benefits to the People.

Forsling: That subject is far beyond this group.

Kelley: Walking through an old burn in July is a miserable experience.

Continuing with Mr. Headley's question A-6 **** Mining Uses.

Headley: According to Evan, mining possibilities in this country are poor. After years of prospecting and **** few mines are now operating.

Forsling: Transportation ****

Kelley: I am a miner. There has not been a major development in precious metal mines in the west during the past 40 years despite the combing of the country by prospectors for 80 years. I know but one good paying mine in precious metals that has been developed in that time. A forest is an asset to a mine but a detriment to prospectors. I do not, however, advocate burning over the country for prospectors. Dr. Clapp of the U. of M. says there is little chance to develop a precious metal mine in this country. There is "lots" of baser metal that may be developed in the future when other mines are mined out. The Coeur d'Alene and Metalline Mines are the only two paying mines in this country.

Woods: The Placers at Warren are working.

Packer
Virgil
Long: According to the Assayer there has been more precious metal taken out of this country in the last year than for the previous 40 years.

Kelley: Research should quit investigating Biological problems and go into economics.

Forsling: I do not agree. The watershed problem *****.

Kelley: I agree as to water but as to timber production I feel that *****.

Mr. Headley's question B: "What does true full cost of protection amount to for the territory under consideration?"

Headley: The figures that Stockdale has worked up indicate that for this type of country it is 7¢ per acre.

Stockdale: That figure is made up of the following costs: All costs going into this area using a 4% depreciation of the trails (a life of 25 years): a 7% depreciation on the other improvements - lookout buildings, telephones, etc. (a life of 14 years): costs of maintenance: the entire costs of the rangers (regardless of the work on which engaged): the entire costs of the guards, of transportation, of fire suppression. The foregoing "comes to" 5-1/2 cents per acre. There is an additional indirect charge of 2 cents per acre. If we did not figure on protection we would have no business in this country. Therefore all of the time of these men was charged against protection. (See pg. 53 for revised items.)

Woods: Why do we keep cost records then?

Brundage: Only 10% of the National Forests are valuable for producing timber. Therefore, in accordance with Stockdale's logic we would eliminate 90% of the National Forests.

Forsling: From an outsider's point of view this whole discussion leads me to wonder why you favor even first line defense.

Stockdale: No one says to eliminate it.

Headley: It must be recognized that if the only function in this country is protection, we must charge all E&S, etc. to Protection.

Woods: Let's have such records as we can *** take *** for use in such cases as this. (Not clear).

Loveridge: How much of your 7-1/2 cents per acre is made up of past investments - that is water over the dam? How much could be saved by getting out of here now? We cannot sell the roads, trails and other improvements that have already been built. The depreciation, as I understand it, is 1 cent per acre. According to Stockdale's figures the Govt. would save 6-1/2 cents per acre per year if we pulled out.

Stockdale: The figures are based on a million acre sample plot in the Salmon Mtn. District and the back country of the Selway. The figures do not include Regional Office and Washington office overhead and some other items.

Loveridge: (It is understood that in addition to the full time of the Rangers being charged to protection, the full time of the Supervisory officers, rent, etc. are charged to protection.)

Kelley: The roads will be used by other people, miners, etc. Should not, however, all of the charge for these improvements be listed against protection, because the road was built primarily for protection purposes?

- Woods: The other purposes should carry part of the charges.
- Stockdale: The interest on the money invested is figured at 4%. The other items that go to make up that 7-1/2¢ per acre cost of protection mentioned a short time back are as follows: Suppression, 1-1/2¢ - average for ten years. Charges for Rangers, Guards, Transportation, and Subsistence equals 2¢ additional. Indirect charges equal 2¢. Depreciation of improvements equals 1¢. Maintenance of improvements, other, equals .1¢. Maintenance of trails equals .66¢. Total 7-1/2¢ per acre. This same figure holds more or less for the entire Salmon Mtn. District of the Bitterroot.
- Kelley: Trees are of high recreational value along such roads as the Selway River Road.
- Stockdale: We must get busy and build up our recreation and water values and uses for the public will soon appreciate that the National Forests are of little importance in the National production of lumber. Recreation has great possibilities in this country and should be pushed.
- Super.
Brooks: Possibly the recreation values here would justify our protecting all of this country.
- Kelley: I do not think that any more of the South Fork of the Flathead should be allowed to burn. Other local places never will be visited and need not be kept green for recreational reasons.
- Super.
Brooks: People are going into the roughest places.
- Stockdale: The Anaconda Copper Co. officials say that the Deerlodge Forest is worth \$250,000 to \$1,000,000 to that corporation, as it would otherwise have to provide other forms of recreation for their people.
- Headley: Would that not still be available if the Deerlodge were eliminated?
- Stockdale: No as readily ****.

Discussion the Evening of September 19, 1932, at Bear Cr. R.S.

- Super.
Brooks: The Moose Creek fire in 1932 started about September 5. No look-outs were on duty. It was discovered on September 8 by Barren Hill Lookout. The L&O. was not on duty but was doing other work nearby. It was about 3 acres in size at 10 a.m. Sept. 8. By noon it was about 50 acres in size. There had been a sprinkle of snow on August 28. 18 local men were on their way or at the fire at noon September 8. I planned to have 30 men there by the next morning but Jefferson of the Regional Office suggested (by telephone) that I hold to 15 men. There were actually 23 men on it the morning of September 9. A crew of 4 men were near the fire when it started. Others came from a few to 15 miles. The plow unit started the evening of the 8th. (Team, plow and 2 men, included in the 23 above.) They started in with the idea of running the fire into the rocks where it would probably go out.

It went there "but kept on going". Some of the draws were pretty heavily timbered. They reported that they were herding it; working the lower side and west ends. They got the upper side, too, although it went out in the green timber. The spread was from ***. The crew increased to 27 men finally.

Kelley: If you had brought in 50 men from the outside would you not have got it sooner and therefore cheaper?

Super. On the 9th the size was 120 acres, of solid fire being handled
Brooks: by 27 men. The perimeter was 1-1/2 miles; - 4,000 ft. of line was built by the 9th. Using the same rate of line construction, if we had had 27 more men on the fire by 4 a.m. of the 9th, the total of 54 men might have caught it. The Ranger was tied up on this fire from about the 9th to the 20th. This herding stuff is new to us and we are not exactly sure how to handle it. For this reason the Ranger stayed throughout this period.

Woods: Is it not a good thing to get the fire over with so that the Ranger can be ready for other work?

Super. If I had put on 27 more men I would have brought them in by plane.
Brooks: They would then have been on the fire by - (it would take 4 hours to hire and put the men in to the Moose Creek Ranger Station. They could then walk the 17 to 20 miles in 10 hours additional. This would have brought them to the fire by from 4 to 6 a.m.)

Kelley: The men could have been on the fire for a full day's work, beginning at daylight the next morning.

Super. We would have had 36 men in fair shape the next morning and 12
Brooks: more ready to hit it at noon.

Kelley: You would have forced them into the job at once, I believe.

Super. The fire was in a bad place. I do not believe they would have
Brooks: corralled it the 9th, but by noon the 10th. The weather was not so bad the 9th and 10th. I would then have worked the full crew two days additional on mopping up. (As figured out in detail it was estimated that to hit the fire hard would have required 240 man days. Therefore the labor charge is estimated at \$2400. Airplane transport at \$810. Total \$3,210, using prompt suppression methods - (it was held that the trails and country between Powell and the fire were too rough to hike men in over them. The estimated actual cost of suppression is placed at \$3,180. This being the cost for "herding". It appears therefore that for this particular fire the cost of suppression would have been about the same under either method of attack - no charge being made for damage). After the second or 3rd day they did not build any line but held what they had built and tried to keep up with it while it traveled first to the East and then to the *** north ***. A telegram on the 12th said they had 142 chains of held line, with a total perimeter of 12 miles. "Expect to corral it" next

day. The telegram on the 15th said 211 chains built. 125 chains cold line. 2 miles yet to handle. On the 17th a heavy wind spread the fire in all directions and doubled the acreage.

Stockdale: Since the cost figures out about the same was it not a good gamble on the weather that it would be cheaper to handle it as they did?

Loveridge: There is no charge for the Rangers time, nor for damage in those figures.

Super.
Brooks: There was a chance of winning if it rained or of much heavier expense if the weather got bad. The weather forecast was probably "warm and dry".

Kelley: If I were handling the fire at that time of the year that is the way I would have handled it. We have fought fires this way since we have had our organization, and have had no serious losses. 1919 was before we were organized and had adequate transportation.

Super.
Brooks: The area burned was about 650 acres. The relative fire danger in that section has been reduced for the future. Therefore should not credit be given for having burned it over? It is safer now. There was very little reproduction on the area before it burned and it still has a source of seed. It was an elevation of from 4500 to 5500 ft.

Woods: Why did you fight it at all? How far would it have extended and stayed in the same no value type, and consequently, in accordance with your theory, have added that much more to our capital?

Super.
Brooks: 1 mile to the south. To the East, to the Subalpine type. It would have been necessary however to have had some men in there to catch it at the good country line. I believe it would have been all right to have let it go, and I would have done so if I had used my own judgment, not influenced by habit.

Loveridge: I am glad that someone has frankly stated that point of view. A complete let burn policy.

Super.
Brooks: There are many places that we have thought of control burning
Stockdale: in order to make the adjacent stands safer.

Kelley: If a land owner has a lot of material menacing a grain field would he not eliminate it?

Super.
Brooks: The odds against holding it are too great, quite often.

Brundage: Aside from the safety factor I believe that control burning is all right. That is exactly what we do by broadcast burning in Douglas fir. In our conditions we do not get a clean burn and just increase the hazard.

Super.

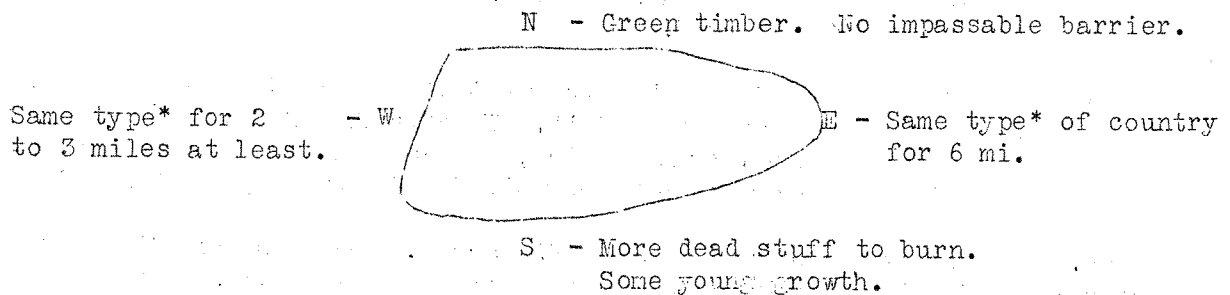
Brooks: The same is true in our experience here.

Loveridge: Did not the Region 5 experiments show that controlled or light burning could not be controlled?

Headley: Mr. Stockdale, you have heard what Mr. Brooks said about his action being a compromise and that he knows no real reason why he should not have "non-manned" it and let it burn. What do you think of that?

Super.

Brooks: Here is a sketch of the general hazard conditions about that fire.



*Same type - of low values
as within the burn.

Stockdale: In answer to Mr. Headley's question: "I agree with the Supervisor".

Brundage: How bad a hazard was it?

Super. It is rated as: moderate spread and difficult of control due
Brooks: to brush and down timber - not jack strawed - . Horses can get through the area on the ridges.

Brundage: Although you will burn the logs by allowing the fire to burn nevertheless brush will come back in several years.

Headley: Mr. Kelley, what do you think of Mr. Brooks' reply that he would have done nothing on the fire and that his action was a compromise between judgment and habit. He said that he did not expect to corral the fire with his crew and that he just did not want it to get too much out of control.

Kelley: My answer is: "If we considered the values at stake and the time of the year and if we were not the victims of the minimum area burned theory and had the courage to credit the benefits of having the area burned up, then I would have had some men on the edge of the fire towards the green timber; otherwise, I would agree with Mr. Brooks' statement."

Stockdale: There was not one chance in ten of its spotting over.

Loveridge: Have you considered the devastating effect on the morale and spirit of the men that will result from such a policy -- that it will provide an alibi for all breaks and will result in slowness in action on fires in big value types?

Kelley: I admit that and have held that it will take a higher type of management to use the "extensive" method of fire control.

Forsling: How much easier and cheaper will it be to get reasonable control of fires after your improvements have been completed using the customary methods (of control) as compared with past methods and costs?

Kelley: If Running Creek were green I would have no particular fear of it under our present organization. That Running Creek fire would not be duplicated under our present organization.

Woods: Forsling means that under your present organization it would possibly be cheaper to handle fires in old burns such as in Running Creek than to let them burn.

Kelley: The fire may get beyond the first control and become a big job. I do not expect any big catastrophies in this country. We can control fires in this back country to any extent we consider is proper. If we set the limit at .3 of 1% we can control it one cost. If at .5 of 1% we can do so cheaper.

Forsling: The Moose Creek fire must have had some values contrary to the statements of the Region 1 men. We saw the Running Creek valley 13 years after the fire and saw the sand and sediment along our route of travel. We cannot expect to have a very large area draining sand into streams without serious consequences. We cannot see the sand in the streambed because the stream sluices itself out in each freshet. If we let the area burn again we remove the erosion check which now exists in the down snags, etc. If we can get some favorable years for reproduction we might be justified in taking a chance. But we have no such assurance. Perhaps erosion has already gone so far that we can do nothing about it, and if we enlarge the area the consequences will be more serious than we can appreciate. I do not know how far we can go or how serious the consequences will be. I do not know of any study that shows where the sand and sediment are going. I do not believe anyone can put a value on ****. It will, however, pay us to play it safe. I would not compare this area with the Boise as to possibility of damage but it is in worse shape than the Boise.

Kelley: There is much still water between Orofino and Lowiston. It is a perfectly clean, not sandy, stream - the Clearwater River - it is a black bottomed, rocky stream throughout.

Super. There are some sizeable sandbars on the Selway - not in the
Brook: Lower waters.

Forsling: The area we saw yesterday morning, which is more easily erodable,
and the area we saw today along Running River and of which there
are large areas in this territory certainly are allowing a lot
of excess sediment to enter the stream. That is perfectly obvious.
Where it is going or how much it will stand before doing serious
damage we do not know. We are not going to burn any reproduction
or timber purposely, but some fires will get away. The Region 1
policy as I see it is to possibly encourage a greater area of
burn. This will add more area to be eroded. It is an insidious
**** which may be upon us before it is too late.

Kelley: We saw the most soil movement where the timber was sparsest. Has
that not been going on for centuries?

Forsling: We have enough of that that we cannot afford to add to it and
thereby tip the balance.

Kelley: The area with any amount of reproduction is not within the area
to which the policy of herding fires will apply. The area of
(bare) burns will actually shrink. Referring to Forsling's
statement about "tipping the balance", what effect may fires
have in such country?

Forsling: I refer to increasing it by exposing additional areas to erosion.

Kelley: There will be no appreciable areas burned under the policy ex-
pressed.

Forsling: I am not clear yet as to your policy. One time you speak of
first line attack; again of let burn.

Kelley: That is because you do not understand. In the rocky bluff country
there is nothing much to worry about.

Forsling: That is true so far as silting is concerned.

Kelley: Elsewhere, if the fire got away I would promptly head it off at
the head and flanks, possibly by backfiring. Specifically: in
the Running Creek, if a fire gets away from the first line de-
fense there would be bound to be a project fire. I would flank
it as promptly as possible and head it as promptly as that could
be done. There is no telling where a fire there would extend to.

Headley: This back country constitutes 1% to .1 of 1% of the whole area of
the Columbia Drainage. Much of the country outside throws a
great volume of silt. This country is now practically as it
would have been if the Forest Service had not been here. Much

of it has burned at times in the past. Much of it is green at one time. The erosion now taking place is a bagatelle compared with the past 100 to 150 years ago.

Forsling: Just because silt is going in somewhere else is not a very good argument that we should allow it to do so here. That the area is no better than before the National Forests were established indicates that we may want to go farther ****. In the Colorado River artificial checks would now be desirable. The alluvial fans to be found in the streams may have been caused by conditions during the past 100 years. We are dealing with the next 100 years. There is some silt from unburned watersheds, but more from the burned ones as shown along our route of travel. I would like to make a brief statement of what we mean by watershed protection in this kind of country, using the Boise River as an example and admitting higher values and useage on the Boise: The Boise watershed above the diversion points covers 1,700,000 acres. The average annual yield is 2,000,000 acre feet of water or something over one acre foot per acre. 350,000 acres under cultivation are dependent on this watershed. The cost was \$150 an acre to put this land under water and ready for cultivation. It has a value of \$53,000,000 plus improvements to farm lands and dependent urban population. Therefore every acre of land on the watershed supports \$31 an acre of land. (This longhand record of detailed figures should be checked before being quoted. E.W.L.) Probably the main yielding acres yield 2 acre feet of water a year. One acre foot of water per year is worth about \$4, making each acre of watershed yield water worth \$8 an acre. We are monkeying with something if we monkey with land that yields \$8 an acre a year. Some damage was being done on the watershed and 7,000 to 10,000 acre feet of silt has been deposited in the Arrow Rock Dam. Part of it is natural and has been accumulating since 1915. The water duty is about 2-acre feet per year. Any year that is slightly below average 4,000 acres does not have enough water. The investment in the dam alone for this 7,000 to 10,000 acre-foot waste is \$100,000. Most of the silt has come from the low public domain area recently added to the Boise. It is over grazed and has been frequently burned by sage brush fires, resulting in erosion. Most of this (silt) has not yet reached the main stream. In 1931 we had the big Boise Basin fire. One fork burned and the other did not burn. In 1932 the snow went off much earlier in the burned area and the water was the highest and earliest in the memory of local people. There was slightly more snowfall during the winter but the melting period was moderate. The main Boise was later than average; on the fire area it was earlier. Material that has sluiced through the dam and previous erosion has greatly filled the Barber Mill reservoir. A power plant has had its value reduced 50% due to silting of its storage area. The silt goes down into the canals and does damage by filling them. These examples and lessons as applied to this kind of territory makes me believe that we need to keep excessive silts out of the streams in view of possible future use.

- Stockdale: At the rate the Arrowrock Dam is filling with silt it will take 560 years, according to Forsling's figures, to fill it.
- Forsling: But each time you take out 2 acre feet you cut out 1 acre of cultivated land *** thus silt coming from only 350,000 acres ***.
- Stockdale: You said there was no less water available but more water available in the low stages.
- Forsling: That is true as to certain localities such as the Wagon Wheel Gap country. We do not know about it elsewhere. In the Boise country the earlier the flow the less valuable it is on account of the natural stream flow which up to 4400 acre feet is used for old prior rights areas. The earlier they have to draw on storage for subsequent right areas the less is available later. Reduction in storage capacity is due to removal of cover plus some natural conditions. The reduction in the Boise cover results in reduction in run off during the low stage period, contrary to the Wagon Wheel Gap results. It is a caution sign of what we ought to do here. We should begin to appreciate that there are water values and that probably much of the silt goes down the Columbia.
- Kelley: I cannot disregard my observations concerning the Lewiston spill dam.
- Forsling: The analysis of this type of soil shows a small amount of organic matter and humus. In the eroded stage it will hold 30% of its weight in water; in the uneroded stage it will hold 80%. There is also a material deterioration in site quality. Sampson's experiment at Ephriam showed that vegetation growing in the second layer of soil was equivalent to reducing precipitation by 25%.
- Kelley: What about on the Flathead Forest; what should be the policy there where the water flows into the Lake?
- Forsling: There is no problem below the Lake as to silt, until the Lake fills.
- Super.
Brooks: The approaching stream overflows only a few roads.
- Kelley: At Pond Orcille Lake there is no delta where the river dumps into the Lake.
- Forsling: That depends on the depth of the lake and the current into it.
- Kelley: There is no appreciable current at that point.
- Headley: The St. Joe channel draining an area burned in 1910 and most of it burned prior thereto, is another example of a channel that is still all right.
- Kelley: I cannot conceive any such freedom of channel here if the con-

Forsling: I do not know if Region 1 has the occasional heavy rains that occur in the Region 4 part of Idaho such as I have seen at Big Creek. A study of Weather Bureau records would give some idea. The process of soil building is one of decomposition or weathering of rock, then the stabilization forces of vegetation hold it from washing into streams. The soil thus builds up on an interdependent basis. Remove the vegetation, the balance is broken and there is bound to be some movement of soil down stream.

Stockdale: The dam cost \$3,000,000 according to Mr. Woods. Could you not afford to build another dam?

Woods: There are no more sites and the dam cannot be raised at Arrowrock.

Forsling: Arrowrock.

Stockdale: Can you not dredge it out cheaper than you can afford to protect it? It must cost \$50,000 a year to protect the watershed. For this or a lesser amount the dam could be dredged out and the material hauled away.

Woods: But watershed protection is not the only reason for protecting the Boise.

Headley: That is the engineers approach. The failure of professional foresters to recognize any means of watershed control other than forest cover is a main reason why they do not have the respect of engineers.

Loveridge: Foresters do not so contend. They claim that both methods should be used. For example, for Mississippi flood control purposes we advocated both cover control and dams and ****.

Headley: It is the extreme claims that do the damage. One case I recall ***** C. Stowell Smith ***** Couert Dubois *****. Extreme claims for watershed control will hurt unless we wish to be propagandists.

Forsling: We do not want conditions to become extreme or to use extreme cases but they must be extreme as a rule for the public to recognize them. The Governor of Utah appointed a committee of 16 (?) of which (8)? were engineers; as was the Chairman. They went out and looked over the area in question and were unanimous in their decision that overflowing (etc.) was due to denudation.

Headley: The damage around smelters could be prevented by removing the smelters and erosion in the Palouse country could be prevented by quitting farming, but we must recognize that land cannot be used in many cases without depreciating it, unless it be done at an unwarranted expense.

Forsling: *****. As to this whole discussion. There are extremists on both sides of this discussion. We ought to get together. No one believes we should prevent each quart of silt from getting into the streams or preventing trees from burning.

- Headley: My question C is: "Which is worth most to the public, the benefits of protection or the expenditures made for that purpose?" We can pass this question unless someone has something to say. We could ask are we delivering any net benefits to the public in protecting this land at Stockdale's 7¢ an acre, on the basis of *****.
- Kelley: That 7¢ an acre charge deserves most serious question and analysis, always with the idea of obtaining a requisite amount of protection at reduced cost. There are ways to reduce it.
- Brundage: We want to reduce costs if we can. But do we want to maintain the present standards of protection?
- Kelley: We can do both. We can also reduce the degree of protection and get adequate results without depreciating requisite standards of protection.
- Stockdale: If we can keep 2/3 of the country unburned at one time, it will be enough. That is an offhand figure. The objective now should be to cut down our costs and not increase the degree of protection without more facts to justify doing so.
- Loveridge: We could all check with you on that objective.
- Headley: In answer to question C, as things stand now, there is grave doubt as to whether benefits balance the expenditures?
- Kelley: Yes.
- Stockdale: Yes.
- Kelley: As a result we are reducing costs and are holding damage down nevertheless.
- Super.
Brooks: We have drawn 7 guards from the back country and put them up front where danger and values are higher.
- Loveridge: The point I have been trying to make is that economics in some lines will result in greater expenditures in suppression. Thus the discovery of the Moose Creek fire was delayed 3 days, due to there being no L.O. on duty. If an expenditure of say \$200 in this section had been made on L.O. there very likely would have been a reduction in suppression costs from about \$3200 to \$100.
- Kelley: But a skeleton guard force all over the Region would have cost more than \$3200.
- Super.
Brooks: The danger from lightning was remote and there was little chance for man caused fires. Therefore, we did not put any L.O. on duty. The L.O. closest to the fire did discover it even though he was

on other work at the time. He may not have discovered it sooner if he had been on lookout duty.

Neitzling: The map shows that most of our danger and most of the organization is located in the Salmon Mtn. district.

Kolley: That is because you can get second line help fast into the lower country.

Headley: My question D is: "What, if anything, should be done to produce a happier relation between benefits and cost?" The Selway is reducing its organization in the low value country. It has also decreased its planned investments in trails and roads.

Kolley: 3 or 4 rangers have been cut from the Flathead. The reorganization of the Clearwater is to cut costs. We have consolidated the ranger districts at the head of the Loosha and have consolidated districts on the St. Joe.

Supr.

Brooks: The consolidations in view are due to roads *****.

Stockdale: I do not believe that the present cost of 7¢ per acre can be reduced below 5¢ without reducing the standard of protection.

Brundage: Does the 7¢ cost include the consolidated ranger districts, the withdrawal of seven guards, etc.?

Stockdale: The suppression charge is the average for 10 years. All organization costs are of the year 1932 excepting for guards. The improvement maintenance figures are for F.Y. 1932. Protection roads are not included. (There are none in this country? E.W.L.) Landing fields are not included. It should also be borne in mind that wages have been reduced (in the 1932 figures that are in use).

Headley: Suppose you reduce standards of protection - not to the point of diminishing returns - but as low as could be done and still maintain reasonably adequate *** protection.

Stockdale: We could not go much below 5¢ an acre and get much of anything in the form of a protection system. If we put protection aside we would still have overhead and improvement which could not be removed.

Headley: 5¢ or nothing, then?

Stockdale: I would like to check and correct my previous statements as follows: In arriving at the 7 to 7-1/2¢ figure I used a 2% interest rate on the money; 2% depreciation for trails; 5¢ depreciation for other improvements.

Headley: We can therefore possibly reduce costs to the extent of 2/7 of the present total?

Kelley: The great loss is not in guards but in men in the woods. Trail crews going out with the job done, *** etc. We may therefore need some suppression squads.

Stockdale: The organization in this country became really effective about 1921.

Kelley: 1923 is better.

Loveridge: I had in mind the 1-1/2¢ FF charge. Cannot that be easily reduced?

Super. That charge is due to a great extent to expenses in handling front country fires.

Headley: Is there anything you want to try in the way of a flat rate? To ask Super. Brooks to protect his Forest at _____¢ per acre? To set up a level for Supervisors to work against administratively?

Stockdale: That would be a good rig but we are not ready to do so until our fire control plans are finished this winter.

Headley: Would not the results justify redetermining your true total costs, present and future?

Stockdale: They certainly would.

Super. The Boundary Peak fire in 1932 was handled with about 200 men.
Brooks: We were limited to this number by telephone from the Regional Office. We could have saved 3 days if we had used 250 to 300 men early in the fight. This fire extended 600 or 700 acres in its last run that was corralled in about 7 days. The Willow Creek fire of about 1500 acres was also handled by about 200 men. Two sides of this fire were reasonably safe and did not have to be worked very much. A very unusual east wind caused many breaks.