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February 18, 1930

Methods of Cutting

Stanislaus National Forest, Plot 8

Preliminary Summary for Field Use and
Preparation of Reports.

By

Duncan Dunning
Silviculturist



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I. Objects of study

To determine the growth rate and net growth of the residual stand after a heavy Forest Service cutting in an all-aged forest of the sugar pine-white fir type under optimum conditions, and the effects of cutting, logging and slash disposal upon the survival and growth of advance reproduction, the rate of restocking, and changes in composition of timber species and other vegetation.

One special object of this experiment is to determine whether the proportion of sugar pine can be increased in a stand where the natural replacement by white fir is in progress.

II. Time

Marking was done in June 1928; selection, surveying, and mapping, between July 20 and 30, 1928; preliminary stand tally August 4, 1928; logging in September and October 1928; slash burning about November 20, 1928; remapping, tagging trees and final measurements between June 1 and 15, 1929. Very little, if

any growth had taken place prior to measurement in 1929 so this should be considered a full growing season.

III. Methods of study

The area was marked by the project sale officer, P. D. Hook, in accordance with the usual practice for the sale at that time. About 26 additional trees were marked by D. Dunning, including overlooked defective trees and two large western yellow pines with a view to converting the remaining stand into a sugar pine-white fir mixture as nearly as possible. No effort was made to remove all the incense cedar. No effort was made to leave 30 per cent of the volume of white fir in accordance with the practice adopted shortly after this marking was done.

The area was selected by Dunning after an examination of the surrounding sale area with a view to securing a sample of the sugar pine-white fir type under the most favorable site conditions.

The plot was surveyed with transit and tape by H. W. Siggins and A. L. Hormay. Corners are witnessed by distance and bearings to X's in the bases of trees. A survey ties the plot to the public land survey. (See field notes). Stakes were set at 2-chain intervals at right angles to the boundaries, and the area was mapped with plane table, tape and alidade on a scale of 1 in. to 30 ft. The topography was not mapped. The trees 3.6 in. in diameter and over were mapped

by species, d.b.h., cut and leave. Reproduction was mapped as fully stocked (one or more seedlings per mil-acre), one half stocked ($1/2$ to 1 seedling per mil-acre) and one-fourth stocked ($1/4$ to $1/2$ seedlings per mil-acre). Areas of Chamaebatia, other shrubs, logs, snags, rocks and other detail were also mapped.

A special tally of cut trees was made, enough heights being measured to provide height-diameter curves.

The included photographs were taken from marked locations prior to cutting,

A reproduction transect 0.1 chain wide was established lengthwise through the middle of the plot prior to cutting. It was staked at one tenth chain - intervals on each side. A detailed map shows the location of seedlings, shrubs and other detail.

Following logging and slash burning all stakes were reestablished with transit and tape and the area was remapped to show skidding trails, brush piles, burned areas, logs, etc. The reproduction strip was restaked and remapped. The surviving trees 3.6 inches in diameter and over were numbered with metal tags, the diameters taken with a steel tape and the total heights and heights to base of crown were measured with a Klaussner hypsometer. This work was done by H. W. Siggins assisted by F. Grover and P. Van Huizen.

The height measurements were taken from marked stations, beginning at the NW corner, proceeding along the NW boundary and thereafter back and forth at 2-chain intervals. The interior stations correspond to the stakes of the original survey grid. The tree numbers usually progress in a counter clockwise direction around the hypsometer stations. The station and distance for each tree is recorded on the individual tree sheets. The base setting of the hypsometer was the tag and 5 feet was added uniformly to the instrument reading. Only those trees which could be seen clearly from the established stations were measured for height and these only should be remeasured in the future.

About the end of October 1929, 84 seed spots were sown parallel to the reproduction transect by R. Harlan, (See Mr files). Forty-two of these spots are screened and 42 unscreened. One third of the screened and control spots were sown with western yellow pine, one-third with sugar pine and one-third with white fir. The seed was placed on top of the soil after removal of the litter. The western yellow pine and white fir seed was collected on the plot in September 1928. The sugar pine seed was collected about the same time near Bumble Bee Creek, about 5 miles distant. The seed was tested for viability in the greenhouse at Berkeley.

IV. Description of the area

1. Location (See sketch map). The plot is in the SE $\frac{1}{4}$ of Sec. 20, T. 4 N., R. 18 E., M.D.M. It is about 35 chains S 45°E from the Stanislaus Branch cabin of the California Forest Experiment Station and the same distance and direction from the South Fork of the Stanislaus River. The plot is about 5 chains SE of the Mono Highway and about 2 chains above the main line railroad of the Pickering Lumber Co.

2. Area. The area of the plot is 8.4 acres, 14 chains S 50° W and 6 chains S 40° E.

3. Topography. The long way of the plot lies parallel ~~lies~~ to the contours--The aspect is northwesterly. A shallow draw leaves the plot near the middle of the northwest side. There is a spring in this draw near the edge of the plot, but above this there is no well defined channel, indicating that no water of consequence has flowed through the plot in recent years. In the northeast end of the plot the slope into this draw faces more nearly west and there a few western yellow pines appeared in the original stand. It is not believed that the plot boundaries were extended far enough in this direction to include conditions materially different from the remainder of the area.

The slope averages perhaps 20 per cent. The middle elevation is approximately 5500 ft., and the range about 100 ft.

The surface is generally smooth with very little surface rock.

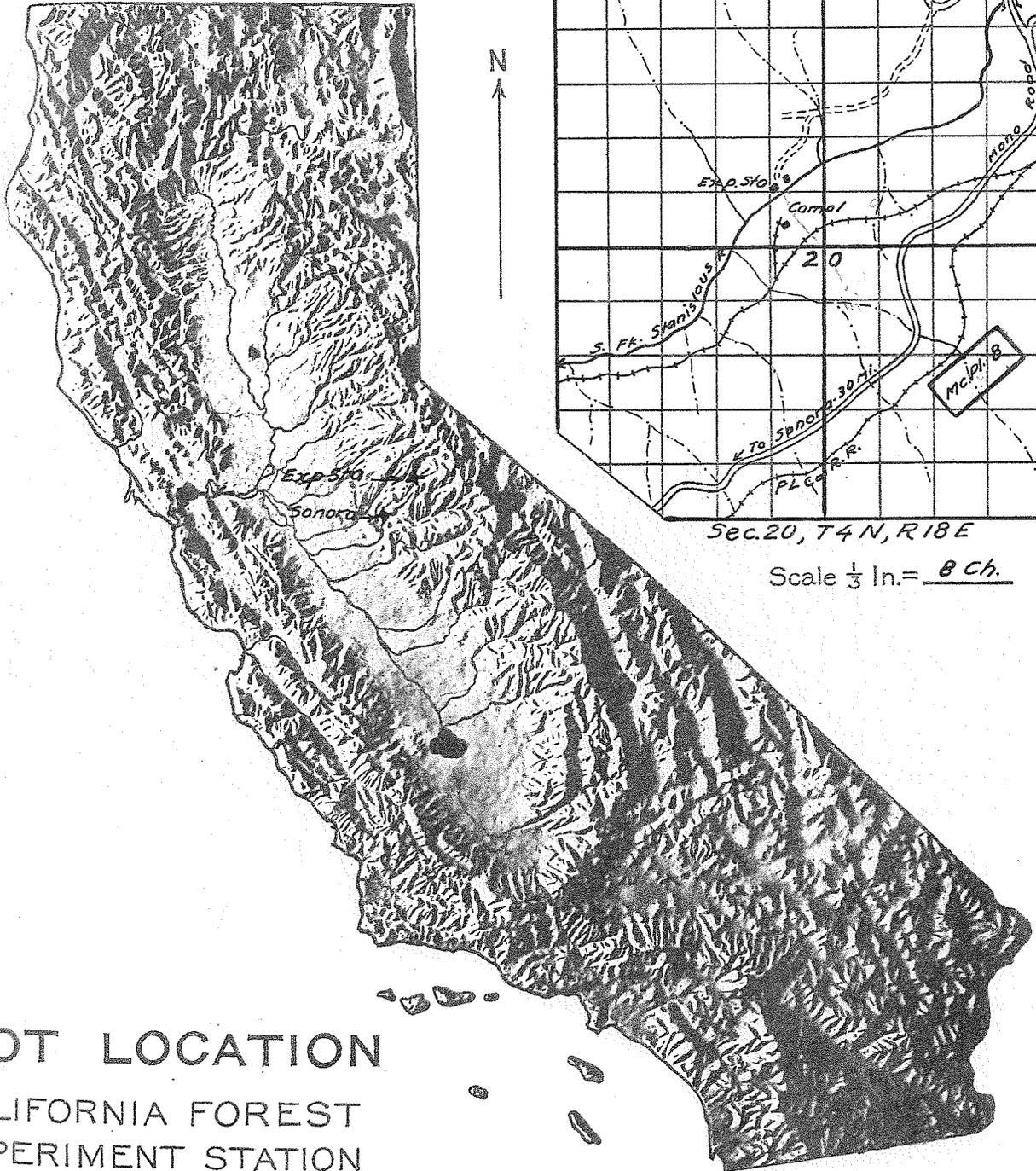
RS, MC

Stanislaus

Methods of Cutting

Plot 8

Strawberry



Sec. 20, T4 N, R18 E

Scale $\frac{1}{3}$ In. = 8 Ch.

LOT LOCATION

CALIFORNIA FOREST
EXPERIMENT STATION

U.S. FOREST SERVICE



4. Soil. The soil probably belongs to the Holland series. The parent rock appearing in railroad cuts is granite or granodiorite. The remnants of a lava cap appears along the ridge just above the area, however. This is in the form of loose boulders and smaller fragments of (andesite?). Most of this seems to have been eroded from the area itself but the soil is undoubtedly mixed to some extent with material from this lava cap.

The depth of soil varies, naturally, but is nowhere so shallow as to materially influence tree growth. The upper layer of about 12 inches is a fine sandy loam, gray in color and loose in texture. Not over an inch or two is dark with humus. At 18 to 30 inches pale yellow clay is found. The parent rock is weathered and fissured to considerable depth. The cover of litter is thin except around the immediate bases of the larger trees and in the denser groups of fir.

5. Weather. No weather records of much value have been kept near this area. A record kept by the Pacific Gas and Electric Co., at Pine Crest, about $1\frac{1}{2}$ miles northeast at an elevation of ⁵⁶⁵⁰~~5620~~ ft., gives the average precipitation for the 7 years ending with 1929 as 29.3 inches. These years were all far below normal. Interpolation from rainfall maps and more distant stations with long records, indicates that the normal precipitation is probably 45 inches or more. Practically no rain falls between May 15 and October 1. Much of the precipitation is in the form of snow. The average snow-fall for

the above record of 7 years is inches, but this is doubtless low. Snow accumulates to depths of 4 or 5 feet in late winter. In 1929 the last patch of snow disappeared from north slopes in this vicinity on May 22. This was a late spring.

Winter temperatures rarely, if ever, go down to zero. Spring frosts, severe enough to destroy the seed crop of nearly all shrubs and to injure the growing tips of conifers, occurred on June 1, 1927, and June 1, 1929. Short records at the Experiment Station cabin indicate that summer temperatures probably rarely exceed 90° F. Temperatures as low as 18° F. were recorded in October 1929. The normal growing season is probably May 1 to September 1.

6. Site. The site is Class I. The tallest trees in the original stand were about 220 ft. high. Just above the plot the timber becomes shorter in the neighborhood of the lava cap, but it is believed that there are no important site differences within the plot boundaries.

7. Forest type and subordinate vegetation. The vegetation is typical of the upper Transition Life Zone. In the more shaded locations near the plot traces of Boreal vegetation are found, such as Jeffrey pine, Lodgepole pine, aspen, *Viola blanda* etc. The original forest consisted principally of sugar pine, white fir and incense cedar with a few western yellow pines, (See Table 1). White fir was the

dominant tree in all size classes forming 63.5 per cent of the trees 4 inches and larger, and 50.5 per cent of the trees smaller than 4 inches. Incense cedar was next in number of trees, forming 20.4 per cent of the trees 4 inches and over, and 39.9 per cent of the smaller trees. Sugar pine formed 15.0 per cent of the trees 4 inches and over. It was relatively more numerous in the larger size classes. The number of western yellow pine trees was only 1.1 per cent of the larger trees, and 2.3 per cent of those below 4 inches.

The evidence indicates that the more tolerant fir was gradually replacing the pines. This process has been favored in recent years by the apparent absence of fire since the extensive burn of 1890.

Larger shrubs were few and scattered because of the density of the original stand. Ceanothus cordulatus, Ceanothus integerrimus and Castanopsis sempervirens were the most common. Amelanchier alnifolia was represented by a few individuals. Arctostaphylos patula is abundant just above the plot and a few individuals may occur inside. The commonest shrub was Chamaebatia foliolosa which formed dense patches in all openings in the stand particularly on the westerly aspect in the northeast end of the plot. Intermingled with the Chamaebatia numerous individuals of Rosa gymnocarpa were found. Symphoricarpus (mollis) was fairly common in the more shaded locations.

Table 1.

Composition of the original stand by species and size classes

Species:	D.B.H.								
	Below: 4"	4-11:	12-17:	18-23:	24-29:	30-35:	36-41:	42+ :	4 in. and over
	Per cent								
WYP	2.3	2.4	1.0	1.0	2.7	2.3	4.5	4.5	2.2
SP	7.3	14.5	11.1	15.1	10.7	14.0	18.2	31.3	14.8
WF	50.5	63.9	69.7	63.7	60.0	46.5	50.0	49.3	62.8
IC	39.9	19.2	18.2	20.2	26.6	37.2	27.3	14.9	20.2

Ribes species had previously been eradicated by the Office of Blister Rust Control (about 1927). After logging many seedlings appeared on newly exposed soil. These were apparently Ribes nevadense.

Herbaceous plants were few in number of individuals but many species were represented. These are mostly shade enduring perennials. An incomplete list of species includes Hieracium albiflorum, Adenocaulon bicolor, Pyrola picta, Pterospora andromeda, Sarcodes sanguinea, Corallorrhiza maculata, Peramium decipiens, Iris hartwegii, Lilium washingtonianum, Fritillaria (pinetorum).

V. The original stand.

1. Composition. In the original stand there were 156.5 trees per acre 3.6 inches and larger, with a basal area of square feet, and a cubic foot volume of . The board foot volume of trees 11.6 inches and over was 87900 ft. per acre. (No allowance for cull or breakage. Scribner Rule, General 1911, D-5 tables, Curved total heights for cut trees, measured total heights for trees left). The board foot volume consisted of 4.2 per cent western yellow pine, 30.2 per cent sugar pine, 54.7 per cent white fir, and 10.9 per cent incense cedar. (See Table 2).

Table 2.

Composition of the original stand. Acre basis.
Trees 3.6 inches and over, Bd. Ft., volume trees
11.6 inches and over.

Species:	Trees		Basal area		Volume			
	No.	:Percent:	Sq.Ft.:	Percent:	Cu.Ft.:	Percent:	Bd.Ft.:	Percent
WYP	1.7	1.1			3680			4.2
SP	23.4	15.0			26470			30.2
WF	99.4	63.5			48140			54.7
IC	32.0	20.4			9610			10.9
Total	156.5	100.0			87900			100.0

2. Distribution/size classes.

Table 3.

Distribution of trees by size classes, original stand

Species:	D.B.H. Class							
	4-11	12-17	18-23	24-29	30-35	36-41	42+	
	Per cent							
WYP	21.4	14.3	7.2	14.3	7.1	14.3	21.4	100.0
SP	59.4	11.2	7.6	4.1	3.0	4.1	10.6	"
WF	61.6	16.5	7.5	5.4	2.4	2.6	4.0	"
IC	57.7	13.4	7.4	7.4	5.9	4.5	3.7	"
Total	60.0	15.0	7.5	5.7	3.3	3.4	5.1	"

3. Distribution by tree classes.

Table 4.

Distribution of original stand by tree classes

Species:	Tree class							
	1	2	3	4	5	6	7	
	Per cent							
WYP	21.4	14.3	14.3	-	28.6	21.4	-	100.0
SP	26.4	15.7	4.6	1.5	12.2	39.6	-	"
WF	22.0	15.9	2.0	1.6	5.6	52.2	0.7	"
IC	20.4	19.0	6.7	1.5	5.2	46.1	1.1	"
Total	22.3	16.5	3.5	1.5	6.8	48.7	0.7	"

4. Distribution by area. The distribution of the original stand was quite irregular as everywhere in the region. The larger trees were most numerous in the northeast half. The southwest half had the largest trees, particularly sugar pines. The smaller trees of sapling and pole size were grouped complementary to the mature and over-mature trees, the larger, denser groups being in the southwest end. Reproduction was patchy, occurring where larger trees were fewest, (see p.19). This arrangement is doubtless correlated with slight differences in aspect. The comparative scarcity of younger trees on westerly aspects in the northeast end is probably a result in part of greater intensity of early fires there.

5. Condition. Crowding and fire damage had resulted in rather poor condition of the stand prior to cutting. Of the 258 trees marked, 29 per cent had bad basal fire scars, 12 per cent had broken or dead tops, and 21 per cent were infested with mistletoe. Nine of the trees cut showed evidence of rot, and probably many more of the larger cedars and firs were infected to some extent. The mistletoe was most serious on white fir, both *Phoradendron* and *Razoumofskya* occurring on this species. The former doubtless caused most of the dead tops.

Insect damage was slight. One 18 inch fir was attacked by the white fir engraver beetle. Several other small firs had been killed prior to 1928, probably also by this beetle.

No cutting of consequence had been done prior to 1928. In this year before logging started 14 vigorous young firs of the type ordinarily reserved were cut for bridge timbers for the logging railroad. These were included in the estimate of the original stand and the stand cut.

The last fire was apparently in 1890. In August of that year a fire was started from burning trash at an old mill below Cold Springs about $2\frac{1}{2}$ miles distant. This fire spread over an enormous area and its marks are everywhere evident in the vicinity.

The area has been grazed by cattle for many years. Because of the dense stand forage is scanty and few stock frequent the area. In past years thousands of sheep have been driven along the Mono Road to and from the higher ranges. In recent years only 2 or 3 bands pass over this road. Possibly some sheep drift through the plot occasionally.

VI. Methods of cutting and treatment

1. Marking. The sale contract required removal of at least 80 per cent of the board foot volume. The original marking was similar to that on the remainder of the sale. The object was to remove all overmature and defective timber leaving a reserve in Class 1, 2 and 3 trees of sufficient

volume and value to provide a second cut in 30 to 40 years. No effort was made to favor one species over another. It was intended that a somewhat larger proportion of sound firs and cedars, which would survive until a second cut, would be left, but the policy of leaving 30 per cent of the fir and cutting no firs less than 16 inches was not followed. After selection of the plot 26 additional trees were marked including overlooked defective trees, several which had to be cut to get at larger trees, some to improve distribution and two large western yellow pines to remove them from the stand.

The number of defective trees and the large portion of the volume in overmature trees resulted in leaving only 16.4 per cent of the original stand, or 14,440 bd. ft. per acre. Thirty two unmarked trees 12 inches and larger were cut. In addition 235 smaller trees were cut or destroyed. Seven marked trees were left, the latter being firs and cedars.

Table 4.

Original stand and portions cut and left.
Trees 12 inches in d.b.h. and over, average acre.

Species	Number of trees				Volume-Bd.ft.			
	Orig.	Cut	Left	% left	Orig.	Cut	Left	% left
WYP	1.3	0.7	0.6	46.2	3680	3370	310	8.4
SP	9.5	3.7	5.8	61.1	26470	21200	5270	19.9
WF	38.2	18.0	20.2	52.8	48140	40260	7880	16.4
IC	13.5	8.3	5.2	38.5	9610	8630	980	10.2
Total	62.5	30.7	31.8	50.9	87900	73460	14440	16.4

Percentage of trees marked and cut by species and size classes.

Marked

Species:	Size Class							Total
	4-11:	12-17:	18-23:	24-29:	30-35:	36-41:	42+	
Per cent								
WYP	0	0	0	0	100.0	100.0	100.0	42.8
SP	0	0	0	12.5	33.3	75.0	85.7	13.7
WF	0	12.3	38.1	46.7	85.0	91.0	100.0	15.8
IC	0	11.1	35.0	65.0	93.8	100.0	100.0	22.7
Total	0	10.6	31.3	46.7	81.4	90.8	95.5	17.2

Cut

Species:	Size Class							Total
	4-11:	12-17:	18-23:	24-29:	30-35:	36-41:	42+	
Per cent								
WYP	0	0	0	0	100.0	100.0	100.0	42.8
SP	22.2	9.1	13.3	12.5	33.3	75.0	85.7	28.9
WF	30.1	21.7	42.8	53.3	85.0	91.0	100.0	36.6
IC	34.8	33.3	40.0	65.0	93.8	100.0	100.0	46.2
Total	29.7	22.2	37.4	50.7	81.4	90.8	95.5	37.5

Percentage of trees cut by species and tree classes

Species:	Tree class							Total
	1	2	3	4	5	6	7	
Per cent								
WYP	0	0	100.0	-	100.0	0	-	42.8
SP	19.2	9.7	55.6	66.7	79.2	23.1	-	28.9
WF	23.9	29.3	94.2	92.3	95.8	33.1	100.0	36.6
IC	29.1	49.1	94.5	75.0	100.0	37.9	66.7	46.2
Total	23.8	30.9	87.0	85.0	92.1	32.6	88.9	37.5

2. Logging.

The timber was felled and bucked in September 1928. Yarding was completed probably about the middle of October. Caterpillar tractors (60 HP) were used in yarding. The landing was about 2 chains from the middle of the lower, or northwest side. A few trees had previously been skidded out by tractors for bridge timbers. This may have had some slight affect on the original reproduction count.

Trees destroyed in felling or yarding, damaged by falling and later cut for lumber, or damaged by felling or yarding and cut by slash pilers.

Species:	D.B.H.							Total
	4-11:	12-17:	18-23:	24-29:	30-35:	36-41:	42*	
	Number of trees							
WYP	-	-	-	-	-	-	-	-
SP	26	2	2	-	-	-	-	30
WF	155	13	3	3	-	-	-	174
IC	54	8	1	-	-	-	-	63
Total	235	23	6	3	-	-	-	267

Percentage of area with reproduction which was covered in yarding

Stocking	Per cent destroyed
Full	6.2
1/2	16.7
1/4	23.6
Total	8.1

Skidding trails covered 18.6 per cent of the plot area. The area covered in yarding was distributed as follows: In fully stocked reproduction, 13.3 per cent; 1/2 stocked, 4.6 per cent; 1/4 stocked, 2.5 per cent; total in reproduction, 20.4 per cent; outside reproduction, 79.6 per cent.

Number of seedlings before cutting and after cutting and slash disposal, by species and size classes, (from transect), 0.14 acre.

Species:	0-1/2:	1/2-1:	1-2:	2-3:	3-4:	4'-3.5":	Total
WYP	Before	3	1	3			7
	After	1		1			2
SP		6	8	3	1	-	22
		2	1	-	-	-	7
WF		68	14	25	17	3	153
		4	1	12	2	2	35
IC		61	40	11	4	-	121
		20	6	5	1	-	34
Total	Before	138	63	42	22	3	303
	After	27	8	18	3	2	78

Area covered by slash.
 Proportion of area of slash at each year.

3. Slash disposal.

The slash was piled in the usual ~~way~~ way after yarding in October. Burning was completed about November 20, 1928.

There were approximately 210 piles of slash, or 25 per acre. This is approximately one pile for every 3 m.b.m., cut, or at the rate of one pile to $1\frac{1}{2}$ trees cut 12 inches in diameter and over.

The piles were not very well placed. Only 28, or 13 per cent, were in skidding trails, 87 per cent being between trails where reproduction might have survived. Fifty six piles, or 27 per cent, were placed in areas stocked with reproduction and outside trails. Thirteen piles were placed on logs. Sixty-one piles were within 10 feet of remaining trees, only 23 of these remaining unburned. In all 41 piles, or 19.5 per cent, were left unburned.

On this area, as on all sales where piling has been observed in process, the pilers followed the practice of choosing a convenient location for the pile and then cutting nearby seedlings and small trees which were piled with the slash. Appearances are thus much improved for the sale inspector's benefit.

At the time of slash burning there was about 18 inches of snow in the shaded places, but openings and SW aspects were bare or nearly so. The fires spread considerably, particularly on the westerly slopes at the northwest end of the plot. Many small trees were killed outright. Unfortunately these trees were not distinguished from trees killed in logging, but probably a goodly portion of the 267 unmarked trees found dead were killed by slash burning. These records will be cleared up in the spring of 1930.

There was considerable damage to trees which survived. There were 93 trees scorched by brush burning, or 11.3 per

cent of those tagged. Thirteen of these were sugar pines, 54 firs, and 26 cedars. Crowns were injured in 82 instances and trunks scorched in 11.

The area covered by slash piles and slash fires was 0.50 A or 6.0 per cent of the total, 21.4 per cent of this area was in reproduction.

Percentage of plot area with reproduction
Before Log. After Log. & Slash Burning
 Per cent

Fully stocked	39.7	36.5
1/2 "	5.1	3.9
1/4 "	1.9	1.3
Total	46.7	41.7

Distribution of area covered by slash disposal

	<u>Full</u>	<u>In Reproduction</u>		<u>Total</u>	<u>In skid trails</u>	<u>Outside reprod. & trails</u>
		<u>1/2</u>	<u>1/4</u>			
Slash piles	13.6	5.6	2.8	22.0	24.7	53.3
Burned spots	12.5	5.7	3.1	21.3	4.4	74.3
Total	12.6	5.7	3.1	21.4	6.5	72.1

Percentage of area with reproduction which was affected by slash disposal.

Stocking

	<u>Full</u>	<u>1/2</u>	<u>1/4</u>	<u>Total</u>
Slash piles	0.2	0.7	0.9	0.3
Burned spots	1.7	6.0	8.8	2.5
Total	1.9	6.7	9.7	2.8

Summary of area after logging and slash disposal

Reprod. full	36.5%
" 1/2	3.9
" 1/4	1.3
Stumps and trees	(-)
Slash piles	0.6
Burned spots	5.4
Skid trails	18.6
Rocks and logs	(-)
Chamaebatia	(-)
Other shrubs	(-)
Remaining area	(-)
Total	<u>100.0</u>

Appendix

Field notes.

Tie Survey - July 28, 1928, H.W.S., A.L.H.

With compass and tape
Var. assum. $18^{\circ} 30'$ E. (True var. $16^{\circ} 52'$ E.)
Begin at the corner of Sec. 19, 20, 29 and 30, T.4 N.,
R. 18 E., M.D.M.

N 33° E	- 192 ft.,	SE side of Mono Highway
S $82\frac{1}{2}^{\circ}$ E	- 700 "	NW " " " "
N $73\frac{1}{2}^{\circ}$ E	- 300 "	S " " " "
N $85\frac{1}{2}^{\circ}$ E	- 468 "	Middle " " "
N $47-1/3^{\circ}$ E	- 300 "	S side of Mono Highway
N 62° E	- 200 "	Middle " " "
N 72° E	- 516 "	S side " " "
N 47° E	- 672 "	N " " " "
N 69° E	- 150 "	S " " " "
N 42° E	- 500 "	N " " " "
N 58° E	- 400 "	E of gulch
S 71° E	- 250 "	" " "
S 58° E	- 69 "	Stake 8-0 on NW line of Mc Stanis. Pl. 8.

(Thence S 50° W - 8 ch. to stake 0-0 (Cor.No.1).

Plot Survey

With transit and tape
Var. $18^{\circ} 30'$ E. (True var. $16^{\circ} 52'$ E).
Cor. No. 1 (St.0-0) to Cor.No.2 (14-0), N 50° E - 14.0 ch.
2 (14-0) to 3 (14-6), S 40° E - 6.0 ch.
3 (14-6) to 4 (0-6), S 50° W - 14.0 ch.
4 (0-6) to 1 (0-0), N 40° W - 6.0 ch.

Witness to Plot Corners

Cor. No. 1 (W,0-0)	N $62^{\circ} 30'$ E - 23.5',	x on butt of 51.8" SP
	N $87^{\circ} 45'$ W - 20.7',	x on bole of 13.5" WF
Cor. No. 2 (N,14-0)	S $11^{\circ} 00'$ W - 12.3',	x on butt of 8.2" SP
	S $34^{\circ} 00'$ E - 10.1,	x " " " 7.5" WF
Cor. No. 3 (E,14-6)	N $65^{\circ} 00'$ W - 8.5',	x on but of 12.1" WF
	S $24^{\circ} 00'$ E - 22.8',	x " " " 11.2" IC
Cor. No. 4 (S, 0-6)	N $45^{\circ} 30'$ E - 8.0',	x on butt of 23.5" WF
	N $5^{\circ} 00'$ W - 15.0',	x " " " 10.3" WF

Note. Level distance. Possibly others are slope distances, DD.

Witness to boundary stakes

0-0	Cor.	
0-2,	N 3° W - 3.2'	x on 13" WF
0-3,	S85° E - 9.6'	6" SP
0-6,	Cor.	
2-0,	S31° E - 8.7'	18" WF
4-0,	S40° E - 0.5'	6" WF
6-0,	N74° E - 9.3'	31" WF
8-0,	N25° W -24.3'	14" SP
10-0,	S88° W -13.2'	57" SP
12-0,	N56° W - 3.9'	32" SP
14-0,	Cor.	
15-2,	N80° E - 5.4'	19" SP
14-3,	N79½°E -11.0'	51" IC
12-6,	N39° E - 6.0'	53" IC
10-6,	Not witnessed	
8-6,	N11°E -25.0'	26" IC
6-6,	S33°20'W-4.4'	6" SP stump
4-6,	S33½°W -10.0'	15" WF
2-6,	S34° E - 7.1	52" WF

Witness to reproduction transect stakes

Compass (?) and tape, slope dist. Var. 18°30'E, A.L.H.

Stake 1-2	(Btw. 1-2 and 2-3)	N 9°E - 15.8'	29.9" IC cut.
2-3,	N 9°E - 6.0'	18.9" WF	
3-3,	N38°E - 7.1'	35.2" SP	
4-3,	N26°W -17.6'	52.9" SP cut	
5-3,	N30°W - 1.8'	10.8" WF	
	S23½°E-16.5'	22.7" WF	
6-3,	S11°W -20.4'	40.7" WF cut	
	N46½° - 7.2'	12.4" WF	
7-3,	N15°W -11.9'	9.9" WF	
8-3,	S21°E - 7.0'	11.9" WF	
9-3,	N52°E - 0.8'	29.0" IC cut	
10-3,	N72°W -11.4'	44.5" WF cut	
11-3,	N 3°E - 6.7'	SW cor. of rock 7'x9'	
12-3,	S39½°E-25.9'	43.0" WYP cut	
13-3,	S62°E -25.9'	31.8" WYP cut	

Things remaining to be done in the office

Calculate basal areas and cubic foot volumes for stand cut by species, size classes and tree classes.

Planimeter from map, area covered by logging, reproduction, shrubs, Chamaebatia, and slash burning.

Data for the stand left have been tabulated and summarized on standard forms.

Summaries for the number of trees and board foot volume by species, size classes and tree classes for the original stand, the stand cut and the stand left have been made and will be found in the file of original notes. These summaries should all be checked when the first progress report is prepared. Certain doubtful trees listed below have been disposed of as indicated in the notes. Corrections should be made after the data are cleared up in the field.

The reproduction quadrats were originally mapped on ordinary coordinate paper. The data should be transferred to the regular quadrat forms on which the maps after logging were made, using a different colored ink.

The plot map should be traced and black line white prints made. Put in location of photos, transect, screens, corner ties, and hypsometer stations.

Things to be done in the field in 1930

✓ Check up the following trees not tagged or marked dead. These trees are circled with blue pencil on map. Tag and take diameters of any trees found alive. The next tag set should be number 826.

<u>Spec.</u>	<u>D.B.H.</u>	<u>Loc.</u>
WF	5	0.3 - 0.5 <i>no tree</i>
IC	5	0.2 - 2.5 <i>D-F</i>
IC	4	2.0 - 0.0 <i>-D-yeast</i>
IC	9	2.4 - 3.6 <i>D-F</i>
WF	9	2.4 - 5.7 <i>D-F</i>
IC	5	4.4 - 3.4 <i>partly cut - broken</i>
WF	4	3.9 - 2.2 <i>-too small</i>
WF	4	5.2 - 2.8 <i>D-F</i>
WF	4	5.7 - 1.0 <i>agg. cut</i>
IC	4	5.9 - 3.4 <i>cut by log</i>
*WF	44	6.1 - 3.5 <i>-snag, not high roller</i>
WF	4	6.2 - 3.1 <i>D-Y</i>
WF	4	6.3 - 3.3 <i>D-Y</i>
IC	6	6.2 - 5.0 <i><70 - 40 - 50% - small cut</i>
WF	12	7.0 - 5.7 <i>marked cut</i>
WF	6	8.2 - 3.7 <i>-small p. cut</i>
WF	5	8.4 - 5.7 <i>D-F</i>
WF	4	10.3 - 0.2 <i>Tree top</i>
*IC	28	10.3 - 4.4 <i>marked cut</i>
*IC	20	10.4 - 4.5 <i>marked cut</i>
*YP	41	10.3 - 5.3 <i>marked cut</i>
WF	5	10.6 - 0.4 <i>D-F</i>
*IC	21	13.5 - 5.5 <i>marked cut</i>
WF	4	13.5 - 5.5 <i>cut by snags - probably dead</i>

Note. *Added to marked cut. Remainder added to unmarked cut or destroyed.

- ✓ Separate trees killed in slash burning from those destroyed by logging if possible by checking over map in field.
- ✓ Map areas of partial damage along skidding trails if still possible especially in areas mapped as fully stocked.
- ✓ Check over map to see that all shrubs other than *Chamaebatia* are mapped.

✓ Map herbaceous vegetation on every fifth quadrat of the reproduction transect.

Map all vegetation on about 5 quadrats where slash was burned. Note especially Ribes seedlings.

✓ Remap reproduction quadrats.

✓ Check over screens and control spots in spring; check and reseed in the fall.

Make cone-counts about July 1 and September 1.

Take elevations on established stakes, including the reproduction transect with the Abney.

Complete list of herbs.

✓ Stake with iron pipes the corners, boundaries at 2 ch. intervals, the reproduction quadrats and the hypsometer stations.

✓ Repeat photographs.

Put up a trespass sign on the boundary nearest the rail-road.

Check up fire history from stumps.

Things to be done annually

Reexamine reproduction and vegetative quadrats, screens and control spots. Reseed screens and controls.

Count cones.

Things to be done June 1, 1934

Remeasure all diameters; take heightson trees previously measured. Revise tree descriptions. Tag and measure any trees which have grown to 3.6 in. in diameter.

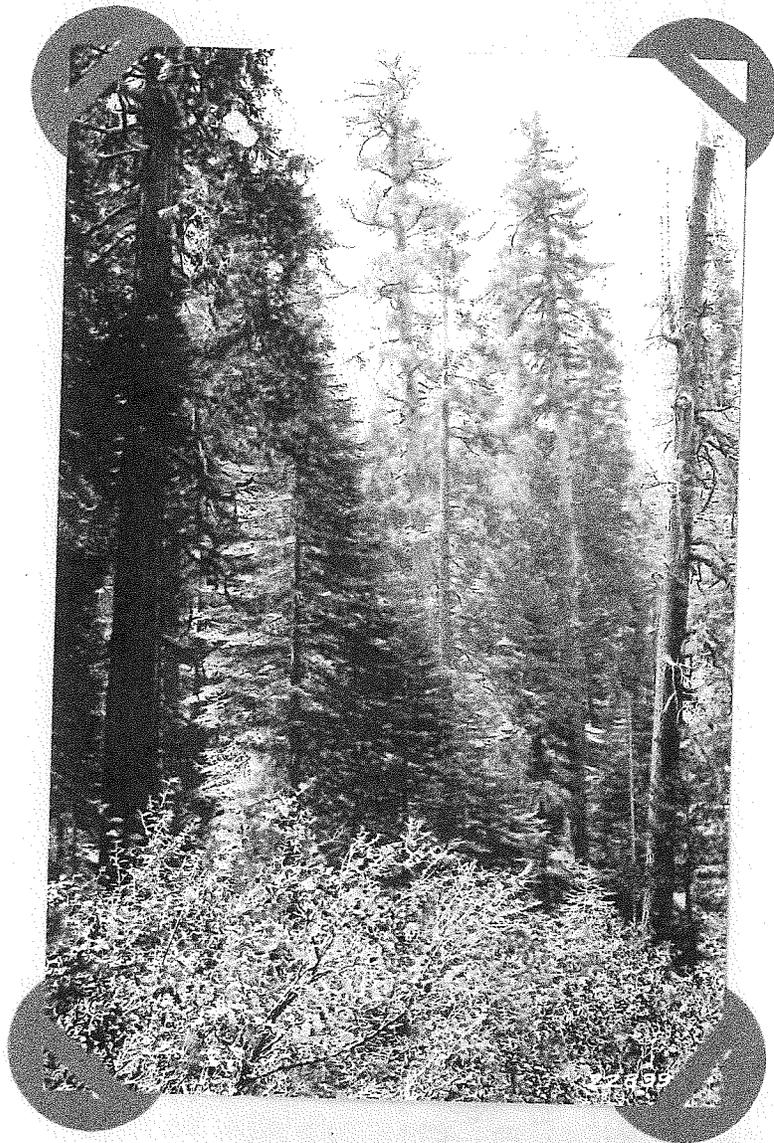
The first new number should be 826 unless additional trees were tagged in 1930. (me new tree from called 826. next tag should be 827. 11/22)

Revise map to show changes in shrubby cover.

Repeat all photographs.

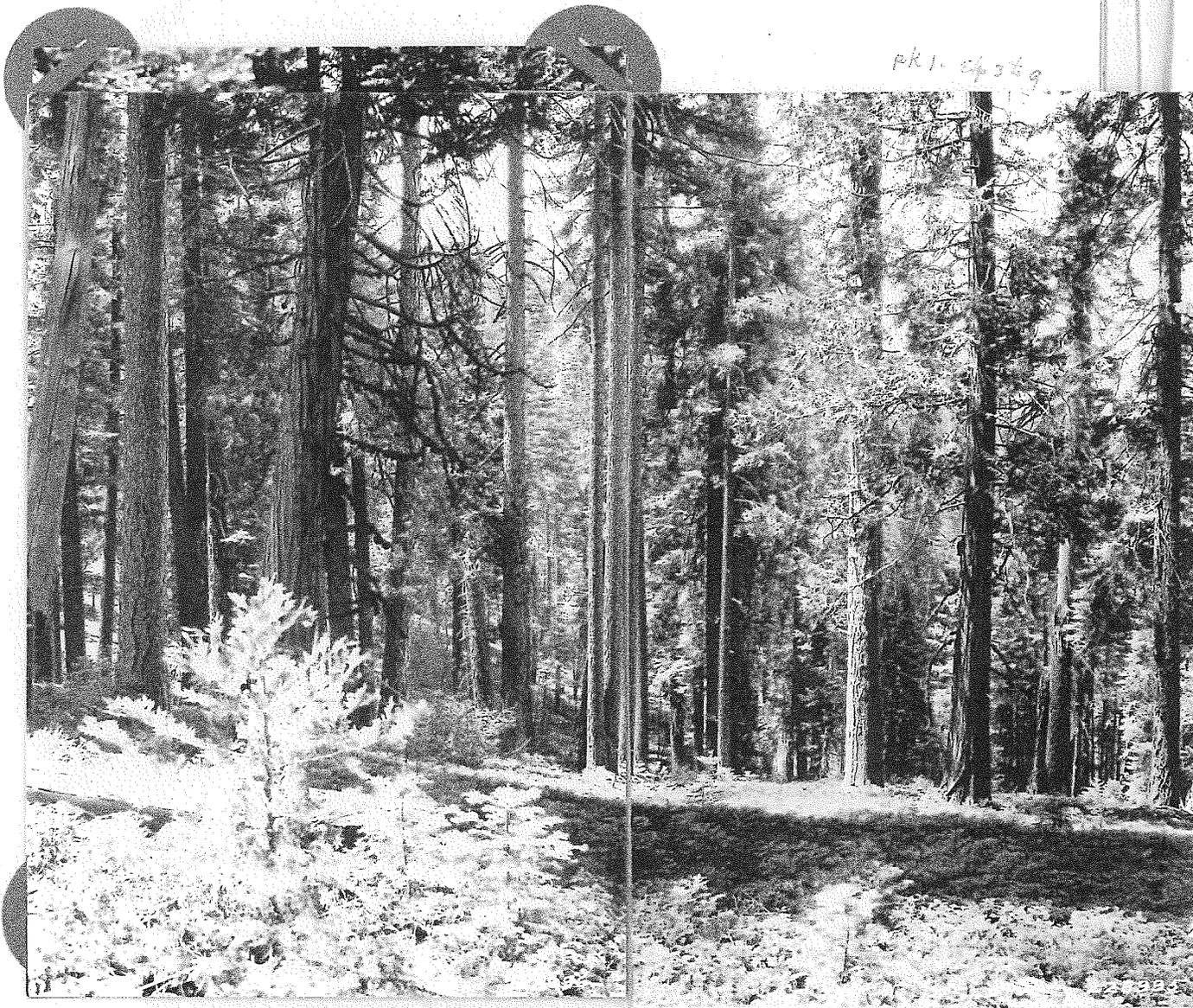
Reset any missing boundary stakes.

Prepare progress report.



No. 228992.

Mc-1, Stanislaus, Plot 8. Taken from point 20 feet northeast of stake 0-10 on northwest line of plot. Shows large over-mature timber, Aug. 1928.



Mc-1, Stanislaus, Plot 8. August 1928.

No. 228993. Taken from stake 14-3 facing NW. Northeast line on right edge of picture. First of panorama of six pictures, swinging camera from northwest to west to southeast, showing mature timber on eastern end of Plot 8 (SW slope).

No. 228994. From stake 14-3 facing west

No. 228995. From stake 14-3 facing southwest by west. Left edge of picture along reproduction strip.

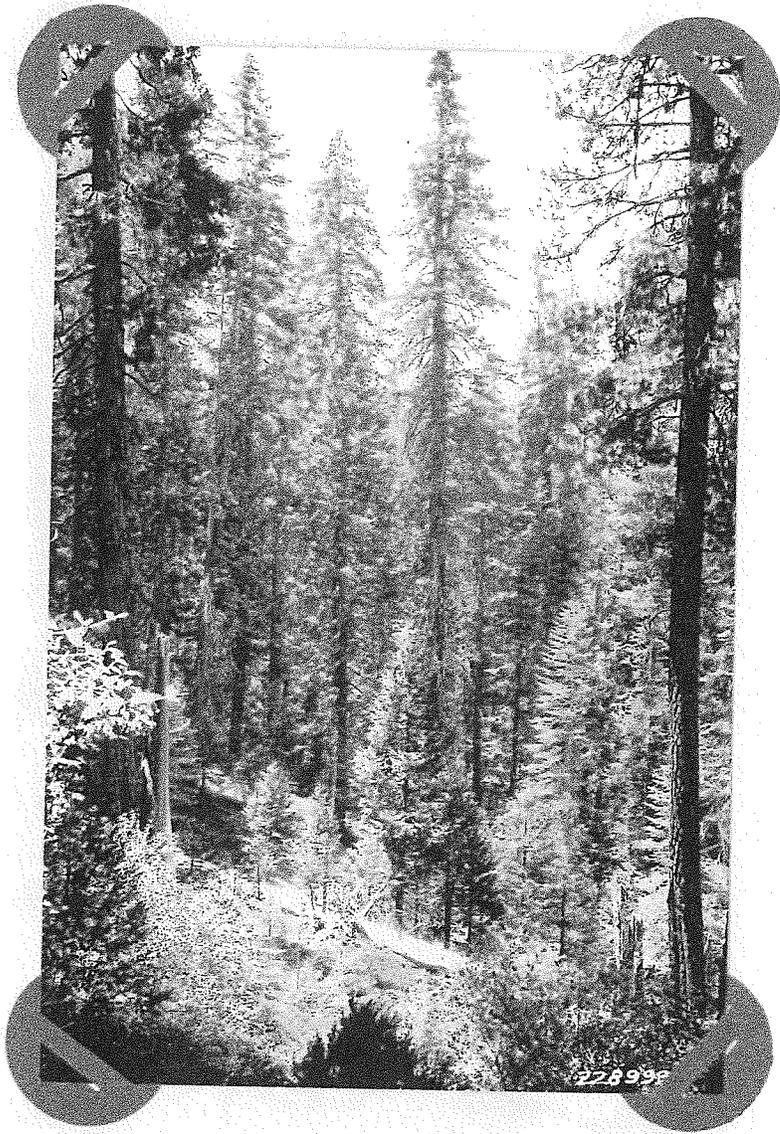
No. 228996. From stake 14-3 facing southwest by south.

No. 228997. From stake 14-3 facing south.

No. 228998. From stake 14-3 facing southeast by south.

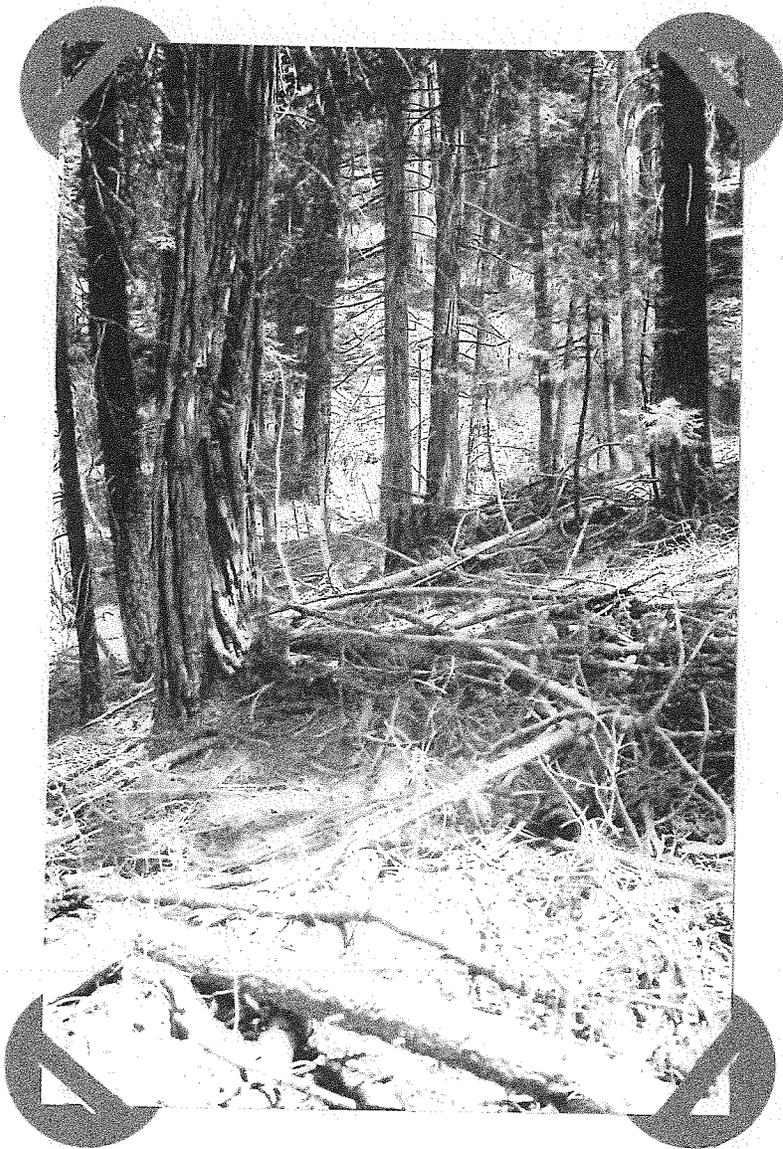
Northeast side of plot on left edge of picture.

X Plot 1 - 246 10
246 11 (near)



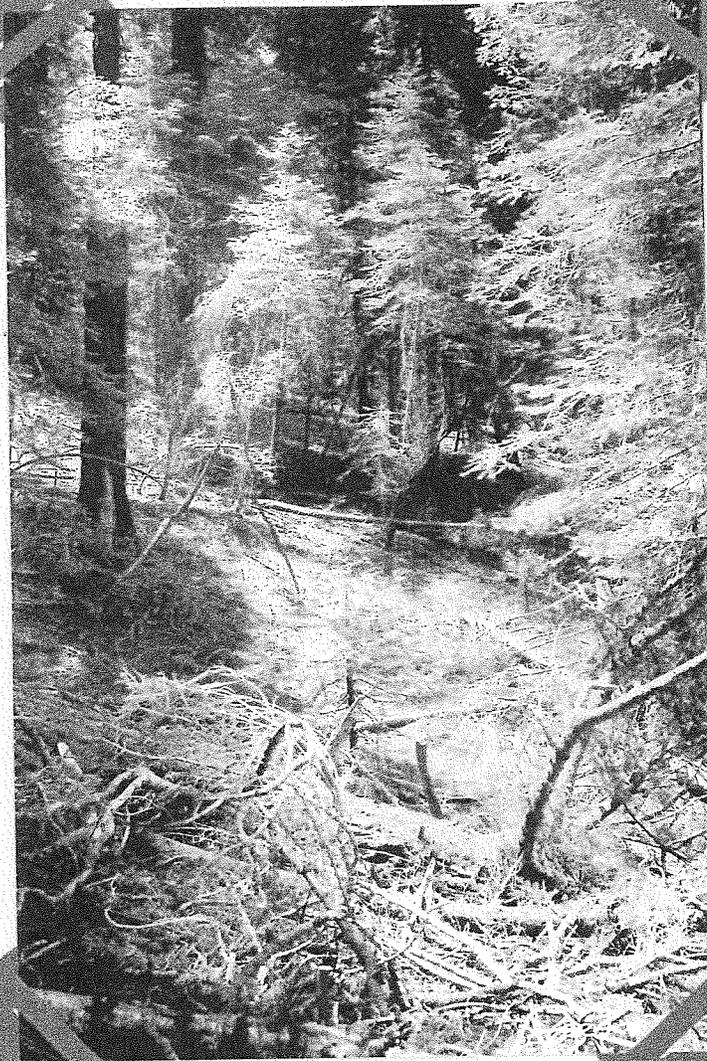
No. 228999.

Mc-1, Stanislaus, Plot 8. August 1928.
Taken from stake 12-6, facing southwest. Southeast line
in left edge of picture. Full reproduction in foreground.
Note mistletoe in top of big white fir.



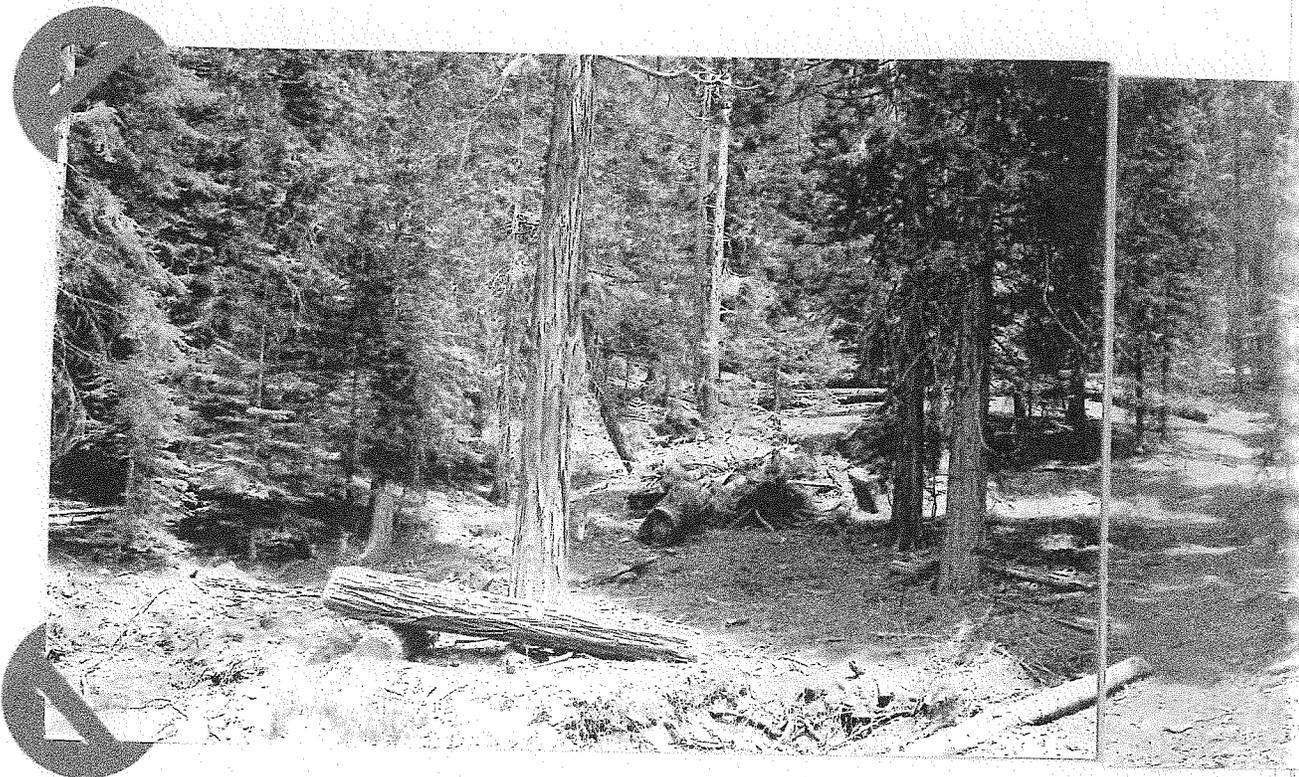
No. 229000.

Mc-1, Stanislaus, Plot 8. August 1928.
Taken from reproduction strip stake 7.5, facing north-
east along the reproduction strip.



No. 229001.

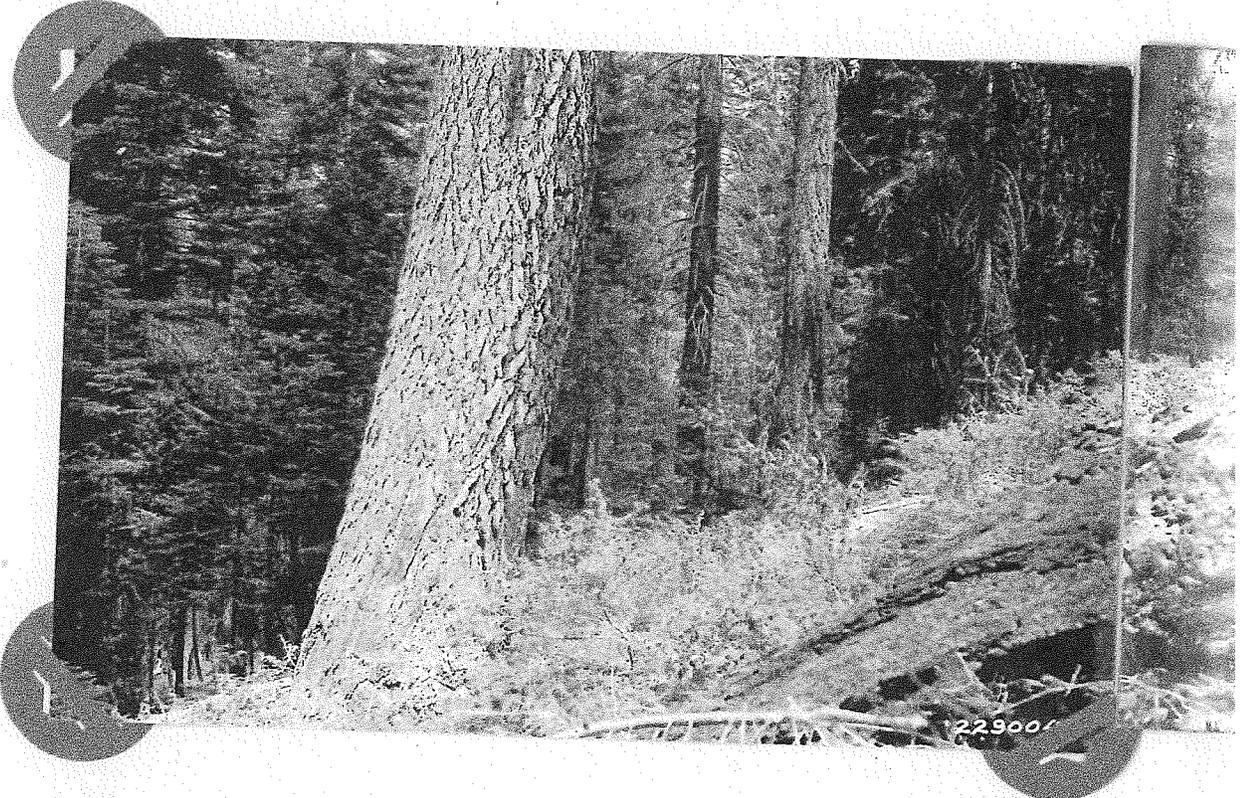
Mc-1, Stanislaus, Plot 8. August 1928.
Taken from stake 7.5, facing southwest along the re-
production strip.



Nos. 229002, 229003.

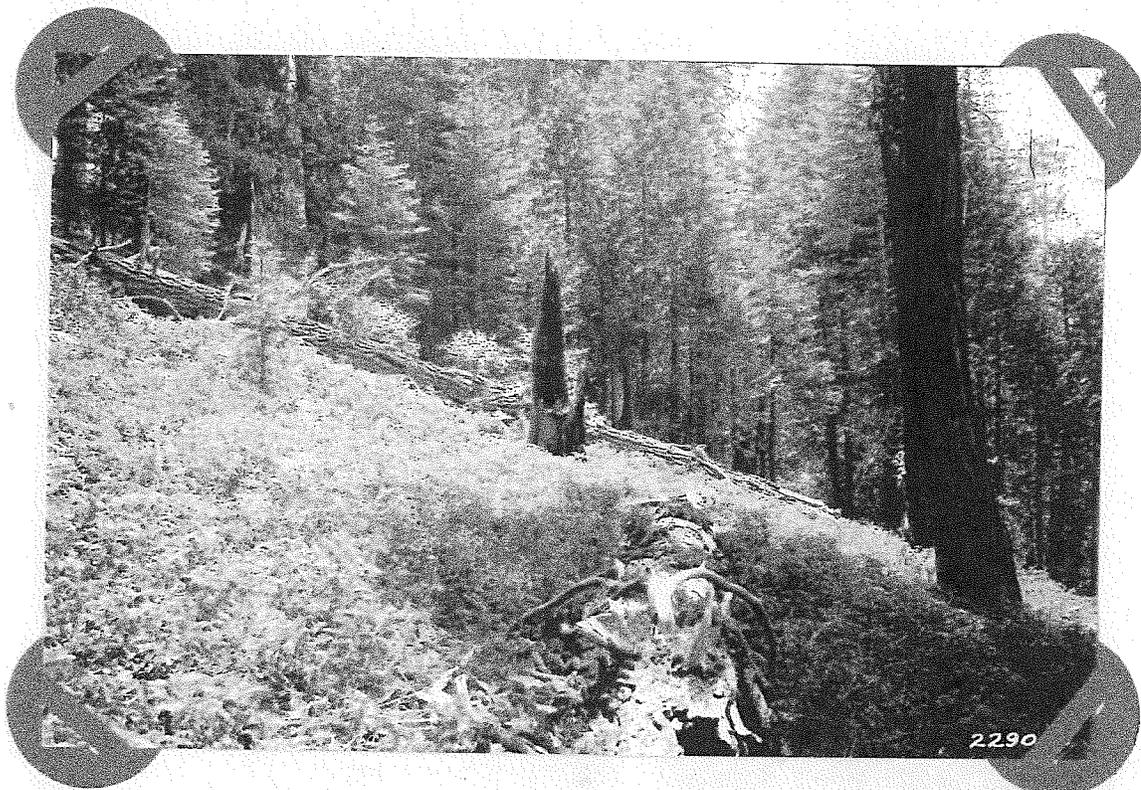
Mc-1, Stanislaus, Plot 8, August 1928.
Panorama. Taken from south end of railroad bridge,
100 feet west of stake 7-0, facing southeast. This
picture and #229003 form panorama of probable site
of landing for logs from the plot.

Plot 8
no picture
taken



Nos. 229004, 229005.

Mc-1, Stanislaus, Plot 8, August 1928.
Taken from stake 0-0, facing east, Panorama.



No. 229006.

Mc-1, Stanislaus, Plot 8. August 1928.
Taken from stake 2-3, facing southwest along the
reproduction strip.

pl. 2 exp 6



No. 229007.

Mc-1, Stanislaus, Plot 8, August 1928.
Taken from stake 2-3, facing northeast along the
reproduction strip.

Pl. 22908



No. 22908.

Mc-1, Stanislaus, Plot 8, August 1928.
Taken from reproduction strip stake 3.6, facing
northeast along the reproduction strip.



- No. 229009. Mc-1, Stanislaus, Plot 8, August 1928. Taken from stake 4-6, facing southwest by west. First picture of a panorama of five with camera swinging from southwest to west to northeast. Southeast line of plot along left edge of picture.
- No. 229010. Taken from stake 4-6, facing west by north.
- No. 229011. Taken from stake 4-6, facing northwest.
- No. 229012. Taken from stake 4-6, facing north by west.
- No. 229013. Taken from stake 4-6, facing northeast. Southeast line of plot in right center of picture.