



STENOGRAPHIC NOTES



No. 19

From Friday, January 12 1945

To Sunday, April 1 1945

No. 26-G

Mr. Blevins 602  
Harry A. Wierssema -  
Mr. Frye 705  
Captain Murray,  
astronomer

at [unclear]  
New Cross [unclear]

Letter from Am. Geophysical Union, June 2, 1945 to folder

Friday, Jan. 12, 1945

H-T Reset

Clear, quiet day.

11 am.

Hotel	Wet bulb	32°F
on platform in snow	Dry "	36°

Current min. 36.4°F  
" H-T 36.0

11:25 am.

On snow in shade	Wet bulb	31.5°F
	Dry "	35.6°

Current min. 34.7°F

For Period { Min. +6.9° Reset 36°  
Max. 59.0 " 37°

Temp. not rising rapidly in 40° of.

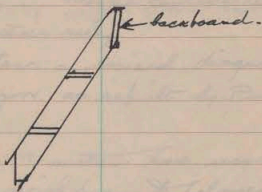
Steps for H-T

Ladder to shelter too awkward.  
Steps preferable but necessary

movable.

at least 3ft or preferably 4ft tall  
over all.

3ft wide at steps but top  
backboard 3ft 4" wide.



Need - Ink dropper for tall bottle.

### Crust

Crust 2" or more.

Yes, 2" also at Hotel but older  
crusts below.

### Stevens W

12:20 pm. Restarted by Gendel earlier this  
morning. "3 contacts and 1 relay  
found loose". "Probably due to  
vibration from railway trains".  
Ernie Macer suggests heat and cold



STATUTES & Bylaws of National Research Council  
Am. Geophysical Union in folder

effects as preliminary to vibration effects.

Voltage: Ernie Macx: "18 jars of 1 volt each, but originally  $1\frac{1}{2}$  volts each"

Serial: "Voltmeter now indicates 14 volts". "4 loose contacts (terminals) and 1 stuck relay".

→ Do there a revised diagram of circuit of N. as rebuilt by Range?

Reading: W. motor has now brought the weigh-beam to balance.

Previous pan-reading  $6.008 = 12.016^{\text{in}}$

Present "  $7.70 = 15.40$

Precip. since stoppage  $3.38^{\text{in}}$

### 2x8" Gage

Present 11" gage expanded at the throat to  $11\frac{5}{16}^{\text{in}}$  is unsatisfactory both in catching and measuring.

→ Get new can 36" tall &  $11\frac{5}{16}^{\text{in}}$  diam. with basket support and down pipe with valve.



### Triple Register

"Frequent stoppage due to high voltage, Gardel, "which is too intense for the 1 minute contact."

"So do not recharge batteries too high with trickle charger. Lower strength sufficient to drive the wind-direction keys."

He doubts any shorting in the exposed terminals of the sunshine recorder due to bridging by snow.

### Needs

→ sprinkling tubes for Fuchsine

2 more medium successors.

### Towers without Shields

The two new towers being erected near Norder are without shields. Thus necessary comparison of shielded and unshielded gages can be made.

I have urged Ashton to leave the shields off.

### Mount Shasta Tower

Three more towers remain to be erected.

I have urged Ashton to get Whittaker to demonstrate his sus-cat on Mt Shasta by hauling a tower to the Sierra Club timber-line lodge. Supervision could be assured there.

### Water in Basement

The Niagara in the basement was found by Ashton to be coming from the public toilets next the gas station. So pipes were cut and plugged. Did Curley fail to drain them last autumn?

### Resource Project

Waiting for bus at 2:15 pm. but must have been too late, for Guider met three buses that must have preceded me.

Picked up by Mr Howard at 2:30 pm in a Ford truck loaded with 5 tons of steel plates. He had played with the

boys in our yard and is a brother of Harlan Howard.

"How old was I?" "What were the happiest years of my life?" Thus we eased the heavy load leisurely over Donner Grade. He stops where night overtakes him.

4 Jan

H-T

Mr Snider greatly interested in measurements.

A considerable difference in humidity and temp. between his standard instruments and the H-T on the flat in the forest. Sling psych. = 61%

Must take up therm. and sling psychrometer to check them.

He prefers to reset H-T on Monday mornings for fear that they may not return during the week.

Dye

No. 1 station has board approx. 2" deep due to effect of sun on dye.



Better to bury dye beneath surface.

Snow must have melted, but dye has not penetrated deep everywhere. Must bring a snow-sampler for easy testing, and also for surveying.

### Drip Pan

Painted bowl of drip pan matt white to reduce melting.

Pan has become slightly tilted but should not affect accuracy of results.

Equation: Had hoped for 10:1 between drip pan and catch tank, but they seem to be 25<sup>in.</sup> diam to 8<sup>in.</sup> diam.

Equation thus 9.8:1 or 9.77:1

### Precip. Gage substitute

When not holding snow, drip pan can become a rain gage.

Thus, Rain gage Jan. 10 . . . 0.10<sup>in.</sup>

Drip pan  $3.3 - 2.1 = 1.2 = 0.123<sup>in.</sup>$   
[9.77:1]

For practical purposes the equation 10:1  
 will be satisfactory and the redwood  
 stick reading .1, .2 instead of 1.0, 2.0  
 will give the reading without recomputing

Catch Can Meas.

Set Jan 5	2.1 <sup>in.</sup>
4 pm Jan. 12	3.3 <sup>in.</sup>
Rain gage 0.10 <sup>in.</sup>	1.2 <sup>in.</sup> (redwood 0.12)

Saturday Jan. 13

State Engineer Smith at Las Vegas.  
 Called Hugh Chamberger at Carson.  
 He and State Eng. will meet Merrill Bernard  
 and party from 2 or 3 pm for an afternoon  
 session Monday, Feb. 5 or for an evening  
 meeting.

El Cortez Hotel will hold a single  
 room for Mr Bernard for Monday night  
 Phoned results to U.S. Weather Bureau  
 Sacramento for Ashton Todd.

Saturday Jan. 20

## SNOWSTORM COVERS WIDE NEVADA AREA

Semitropical Las Vegas Gets Snow  
As Storm Develops East of Sierra

A snowstorm, developing east of the Sierra, covered most of Nevada today.

From northern and western Nevada, which take such disturbances as a normal occurrence at this time of the year, to Las Vegas, where the chamber of commerce boasts of a semi-tropical climate, a light snowfall covered the ground this morning.

While snow was falling in most parts of the state, the higher Sierra regions reported cloudy skies but no snowfall, while clear weather prevailed west of the summit.

Reno's share of the storm was an official 9/10ths of an inch at the airport, but the weather man said the fall in Reno proper was slightly over two inches. Official precipitation, measured at the airport rain gauge, was .05 of an inch.

The weather man explained that the storm developed from cold low pressure that developed high in the atmosphere over the state. Snow was reported this morning over a wide area. Across the northern part of the state, there was snow at Humboldt, Winne-

mucca and Battle Mountain, while Elko was expected to catch a few flurries later in the day.

From the central part of the state came reports of snow at Fallon, Austin and Ely, while Gabbs valley also had a few flurries. Hawthorne and Tonopah escaped the snow this morning, but farther south, Las Vegas awoke to find frozen crystals decorating the Joshua trees, palms and cactus of that desert region.

Las Vegas had rain Friday night, and at 2:30 this morning, the temperature dropped to the freezing point, and snow began falling. At 10:30 a. m. the snow still was drifting down.

Cloudy skies will continue over Reno tonight and Sunday, with occasional snow flurries predicted. The storm will taper off Sunday, with clear weather expected to follow. The rest of the state can expect occasional snows tonight and Sunday, although southern Nevada may warm sufficiently to get rain instead of snow.

Clear skies are expected over the main Sierra range, although squally weather is likely on the east slope, the weather prophet declared.



summary Jan 30

### Snow Cause at Mt Shasta

By California -

"The (Sierra) Board approved Mr. Blaxie's action in giving permission to the State Engineer for the installation at Shasta Alpine Lodge of a locker for winter equipment of the snow surveys" - Sierra Club Bulletin Dec. 1944

Why not have a precipitation gage and tower? Not far for Truckee Snow-Cat to travel to haul in equipment.

Thursday, Feb. 1, 1945

Yesterday delivered <sup>equipment</sup> 11  $\frac{5}{16}$  in. can and steps to Valley Express Co for Soda sfgs and tank pump and spring balance staff to Railway Express Co. for Truckee.

Holding Truckee sampler for new cutter but bringing ice-cutter designed by Jack Ryan to Soda sfgs.

Weather and Trip

away at 8:30<sup>am</sup>, only 5 min. late!

Bug Station 9:25<sup>am</sup>

Raining from Reno to beyond Big Station. But slush on pavement at Boca and wet snow on brush and trees.

Truckee River yellow even to Truckee. All tributaries yellow.

What rise in stream at Mystic and Reno?

Rain must have been heavy, for rocks large and small on road. A push-plow truck met coming evidently to shovel them off. Suggests Theodosia Grunbeck's rolling stones from road into Death Valley after a thunder storm.

Snow on passing trains.

#### Snow

at Truckee heavy wet snow on trees. Slush and wading in street. Yesterday snow 7" at Tahoe

Snow on wires at Donner Lake but falling. Then none. Entering a rain belt? Yes, raining still.

Donner Lake completely unfrozen. Merely ripples on water.

Snow plow throwing slush in geyser. Chains now put on.

3 Snow survey charts for Jan. 30, 1945 in folder

### Snow Surveys

Eddy and Chase took snow surveys at Lake Lodge and Terrace Hut Dec. 30 just ahead of storm. High density 36-38%. Water equiv. 16 1/4 lbs.

At Donner Lake Hotel snow as high as first strand of wire fence

Above 6,000 ft. snowflakes but they burst into water upon striking the wind shield of bus.

Half-way up (one-half mi. below bridge) slush on road gives way to hard pack.

### Donner Pass

Rotary Snow Blower (Snow Shovel) at Pass. Snow storm and rough road west of Pass.

### Soda Springs

Fendel took our bus to Sacramento. "You keep house. I'll be back Friday." Needed repair parts for temps at Pasture, says Conillard.

### Rainy Day

Accumulated snow, but snow storm of last night turning to heavy rain. Too rough weather for all except brief ventures.

Blair Eddy and Newt Chase here on schedule but will return for snow surveys when I call except Sunday. "Water at Kingsdale is above the snow."



Lights off. Twice today. A slide of snow tangled the wires and blew the big fuse. Stopped lunch at Hotel for electricity is used to blow the oil stove and furnace.



### Rain on Snow

2 pm. Dye penetrated only 5" in.

H-T Current 38°F steady

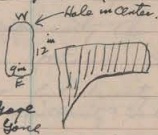
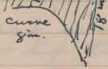
Humid. 82%. Hard rain.

→ Reads too low as compared with Pasture H-T.

Need a thermo test of all.

### Snow Caps

Russian  
Gage.



Gage  
Gone

→ The curve forms perfect catch for snow. tho it may deflect wind.

No. 3 Army Engrs. Snow cap remnant on lip of can.

No. 2. Stevens W.

Snow on west lip

No. 4 Wind slats caught on lip of can.

Others are clear.

But all contain slush.

2:30 pm. Dye

Dye has descended in sampler hole. Water of slush 6 ft. downhill is pink.

→ at corner of Hotel slush and water now one-third kneedeep. The snow fell at  $32^{\circ}$  last night with rain at  $35^{\circ}$ - $38^{\circ}$ . What free water is it? What density? The dye was immediately red. apparently the rain penetrated rapidly in afternoon. Should have sampled snow but density plainly high. How high the capillarity? Some water kneedeep.

→ Dye on slush and gray water is brilliant red. On rainbeaten surface is 75% as bright. Pool of water not so red because of dilution of dye is too great.

Dye No. 2 at door of Office. The put on with a can gently, dye was → carried 15 ft. by wind.

at 5:45 pm. Dye at Nos 1 and 2 stakes had sunk to bottom. Even water dyed.  
6:30 New dye at stake No. 3 on header snow fallen from roof.

Records

5:00 pm. Pasture.

Snow stake . . . 56<sup>in.</sup>

No. 2 Anemom. 837<sup>in</sup>

H-T

Hft. Current temp 38°F, humid 77%.  
Max. for day 90%

Treads 38°F, humid. 96%  
Max. for day 98%  
Max. temp.

Min. therm. 38.5°F (current).

NB. SE guy line broken at threads of  
upper hook of upper turnbuckle ?

Gages Nos 6 and 8 slush

No. 7. thin icepan.

Nos. 9 and 10 slush.

Anemometers

at No. 9 can 10344<sup>km</sup>

" No. 10 " 01090<sup>km</sup>

5:45 pm

Teletherm . . . 38.2°F.

Hotel

H-T Current 38°F Humid. 80%  
Min. therm. 38.8°F (current).

Stevens S . . . 16.67<sup>in</sup>



Comparison of No. 1 and Stevens S

Jan. 6 - Feb 1

No. 1 4.85<sup>in.</sup>

Stevens S (11.33-16.67<sup>in.</sup>) = 5.34 x 1.016 = 5.42<sup>in.</sup>

Divergence 0.57<sup>in.</sup> for the month.

Normal No. 1 (Jan.) 9.09<sup>in.</sup> or app. 50%  
of normal this year

Comparison of Temperatures

The close agreement of thermometers at 38°F is due to the storm that stopped radiation. See H-T Records of the storm.

Rain and Snow

"Gerdel said not much moisture in air. So it couldn't precipitate much." - traces.

"He hoped for 10 ft for the visitors."

9 pm. Wet bulb 38°F

Telatherm 38°F

→ Air saturated? Raining hard. Temp. of rain also 38°F? How much could it melt the snow?

Donner Observatory

Talked by phone with Mr Anderson at Truckee. Will hold records till I come up. Suggests giving direction of wind with reports. May have caught 1 in. today. Our No. 1 2.32<sup>in.</sup>

Friday, Feb. 2

Rain, Sleet, Snow

10 a.m.

Sleet frozen on door knob. Rain in night turned to snow, now drifting from roofs. After midnight → the temp. dropped from  $40^{\circ}$  to  $30^{\circ}$  F.

Dye

Dye No. 3 set last night descended 24 in. to granular ice on ground. Spread somewhat.

Dye brighter nearer surface where more water-soaked.

Dye No. 4 - on new snow at noon. Green the sub filters thru slightly.

Pages

11 a.m.

Nos 1, 2, Stevens, 3, 4 have ice on NW face outside and ice on SE side (inside) of their throats. Sleet last night.

→ Vertical sides have more but even slanting sides have some.

Russian Shield - Snow has melted thru and out of shield.

No. 4. Shield on lip of can again  
and S. half lifted from socket at  
Wend.

Some ice, slush, pellets of snow  
accumulating above ice.

No. 11  $\frac{5}{16}$  - Slush <sup>on floor</sup> frozen hard and slippery

But under the snow on platform  
the slush is still wet and very plastic.  
Protected here from radiation by wood  
and snow. Slats open on 11  $\frac{1}{16}$  catwalk.

H-T<sup>2</sup> Reset

Hotel 11:45 am

H-T cover sleeted up.

Min. last night 27°F; current 28.5°F

Pasture

12:15 pm.

Dye

Dye No. 3 by Nos 1 and 2 just within

Pasture fence. Green.

H-T<sup>2</sup>

12:30 pm

Trestle - reset. Current min. 28°F

For Period { Max. 42.7°F - Too stiff to whisk,  
Min. -1.4°F Reset 29°F

4 Ft. H-T reset.

Shields, Wind etc

Pasture

5 pm.

Snow stake 58<sup>in.</sup>

Trestle 61<sup>mi.</sup>

Gage No. 6 W side of shield on lip,  
E side lifted from S. socket.  
and fin slipped loose from rod.  
H-T's O.K.

Gage No. 9 S side of shield lifted  
off W socket.

Anemom. No. 9 1373.1<sup>Non</sup>

No. 7 Stevens Q. Flecks of snow or  
sleet half way down intake.

Gage No. 10  
N. side of shield off at W end.

Anemom. No. 10 0418.2

Hotel H-T O.K. 30°F current.

6 pm.

Stevens S 19.9<sup>in.</sup> Glaze on can.  
Required hot water to melt glaze  
and free masts, but No. 1  
required 2 tubes of hot water to  
melt contacts.



6:20 pm. Teletherm 30.6°F.

Thus temp. at Pasture 5:30, Hotel 6:00,  
all 30°F. Uniformity due to the  
storm and lack of radiation.

Wind Movement at Gages in Pasture

5 pm, Feb 1-2.

No. 9	1034.4 <sup>10m</sup>	3280 ft
	<u>1373.1</u>	in mm.
	338.7 <sup>mm</sup>	
	<u>210.4</u>	
No. 10	0109.0 <sup>10m</sup>	1 mi. = 1.61 <sup>km</sup>
	<u>041.82</u>	
	309.2 <sup>mm</sup>	
	<u>192</u>	
Tristle	837 <sup>mm</sup>	
	<u>61</u>	
	214 mi.	5280 ft
		in mi.

Wind SE ?  
Ice fin on cans indicates  
NW.

Difference is slight

No. 7 214 mi

No. 9 210.4 "

No. 10 192 "

Wind heavy but from NW rather than  
SE across the dam. So no blanketing  
by dam.

Precip. by No. 1 and Stevens S

No. 1 - 3.22<sup>in.</sup> Started empty.

Stevens S 3.28<sup>in.</sup> Reservoir 8<sup>in.</sup> (?)

$$\left[ \begin{array}{l} 19.9 - 16.67 = 3.23 \times 1.016 = 3.28^{\text{in.}} \\ \text{(Feb 2)} \quad \text{(Feb 1)} \end{array} \right]$$

Barometer falling today but steady tonight.

Saturday Feb 3.

Snowing. Accumulated after 9 pm  
12 1/2<sup>in.</sup> on porch.

Barometer rising rapidly.

Thermometer at 11 am. 38.4° F.

"Clear now at Reno - In cloud cap here" - VanEvera.

a Wide Storm:

Picked up by autoists last night from Utah.

Thurs. storming at Alta, Utah. Friday morning raining heavily at Elko.

Storming still here.

Snow would have been deep here except for rain.

Today at 11 am. Sun!

Noon - Snow Melt

Snow melting on road

Temp. ?

2 pm. Dye on snow.

3 pm. Dye has penetrated 3 in.

Survey:

D.  $3+3+3 =$  Total 2<sup>in</sup> Water Equiv.

Dens 22.2 %.

Query: Does snow of 22 % have capillarity? Or has sun penetrated 3 in? and dye has merely penetrated moist zone?

Dye in ski-pole hole red snow in semi-shade. Penetration also fully as deep.

→ Will see whether dye stops at 3 in. limit of sun's penetration. Try this in sheet spreading in fine snow under semi-crust.

Fred Paget

Called at noon to get data on snow cover above 7,000 ft.

On basis of Fardye Snow Survey and recent storm: 54/8% or normal Feb 1.

But much rain. So probably not over 50%. He is going to Summit Valley to find source, if possible, above rain line effect, tho it actually rained at Donner Observatory.

Size of Home-snap  
for Spring Balance

On basis of Jan 3 survey  
average of Nos 4-7 and 10-14 was  
15.2 in. as compared with 14.9 in.  
for Nos 1-14. So difference  
slight,

There  
right No. 1



But much rain. So probably not over 50%. He is going to Summit Valley to find course, if possible, above rain line effect, tho it actually rained at Donner Observatory.

Size of Home-snap  
for Spring Balance

Percentages Too Close!

at 6 p.m. Fred gave me following Snow Survey Report. Nearly same as my estimate, apparently no loss there from recent storm. [But 1.62" tonight No. 1 not included]

FORM 130

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF WATER RESOURCES  
401 PUBLIC WORKS BUILDING  
SACRAMENTO

CALIFORNIA COOPERATIVE SNOW SURVEYS  
SNOW SURVEY NOTES

Drainage Basin Yuba

Snow Course Donner Summit No. 1

Party Carter & Pagot

Date Feb 3, 1945

*Description or Number of Course (1)	Sample Number (2)	Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Density 100 x 100/60 (7)	Remarks
	4		70	59	23		
	5		72	60	24		
	6		71	57	22½		
	7		72	60	24		
	10		72	60	24½		
	11		70	57	23½		
	12		71	55	22		
	13		67	50	21		
	14		63	47	20		
Total (9)			628		204½		Weighted 22.4 See next sheet
mean			69.8		22.7		53% ±
Annual 70 in					41.5		54.0%
					54.7%		Normal

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

[Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated by the circles. Particular care should be taken to note any irregular spacing between samples.]

No. \_\_\_\_\_ of \_\_\_\_\_ sheets. Comp. by \_\_\_\_\_ checked by \_\_\_\_\_

### Photos

Nos 1 and 2 (oil tank)

No 3. Hotel platform from N.

### H-T

Min. last night 28°F

Max today 38.5°

4 hrs above 32° (12 to 4 pm)

### Gages

Stevens S 8<sup>in.</sup> reservoir

Slush

Nos 2 and 3. Slush

No. 4 Ice

To water 5<sup>1</sup>/<sub>4</sub><sup>in.</sup>

To ice 4<sup>7</sup>/<sub>8</sub><sup>in.</sup>

New Snow since 5 pm Feb. 2

Platform 14<sup>in.</sup>

In road near Pasture 16<sup>1</sup>/<sub>2</sub><sup>in.</sup>

at office porch since 9 pm 12<sup>1</sup>/<sub>2</sub><sup>in.</sup>

Snow Stake 70<sup>in.</sup> (Others 67<sup>in.</sup>).

### Incipient Crust

1/4<sup>in.</sup> below <sup>late</sup> afternoon snow, crust is forming. Soft snow on top. Bottom snow evidently sunwarmed. So crusting.

HFT H-T 35°F (Max 39.5°F)

3 hrs above 36°F in sun.

Bernard, Gerdel, Codd, Barnes, Sawyer, Paget and Carter had arrived in Pasture.

# Bernard and Barnes recognized the fact at once. Indeed to E of trestle the crust was approx.  $\frac{1}{4}$  in. thick. and sky was still part cloudy.

Note - at 9 pm tonight slush is as solid and brittle as glass. Even at 7 pm. highway surface was a glaze. Sky at 7 pm. clear.

### Gages.

#### Pasture

No. 6 Ice

To water 6 in.  
To ice 5  $\frac{1}{2}$  in.  
Diam. 4  $\frac{1}{2}$  in.

No. 7 Floating ice - slush.

No. 8 Snow on ice

To liquid 8  $\frac{1}{4}$  in.  
To snow on ice 7  $\frac{3}{4}$  in.

No. 9 Slush

No. 10 Slush

anemometer 140 mi.

No. 9 1515.3 <sup>km.</sup>

No. 10 0544.2 <sup>km.</sup>

H-T Current temp. 32°F

Max. Today 35°F

4 hrs above 32°F

Min. last night H-T 28.5°F

Thermometer 27.8°F

Sunday Feb 4

### Parties

Cadd took Bernard and Barnes to Narden to visit the pairs of towers. Bernard enjoyed web snowshoes. Had traveled with Cullings in New York State on snow survey when he took quality measurements of snow.

Willing to have the two tests of gages with and without shields but felt that the literature was convincing.

Gerdel wanted to omit shields because of high cost ( $\frac{1}{4}$  of total cost) at least in the timber but Bernard preferred to continue shields.



Gendel, Sawyer (Army Engg) and I recharged gages. "all were iced up."

Crust

Min. temp. last night +6.0° F

1.1" thick + 0.4" frost on new snow above. Broke or fractured under ski and webs. Webs sank in light snow under the crust and <sup>toes</sup> caught under crust slab. Difficult to keep toes from hoaving constantly - a tripping trip.

Gages weighed by Gendel.

Pasture

Red Tower No. 1

Only frost on liquid.

No. 9 - Frozen.

Can too heavy for spring balance. Broke ice. Weigh by bucket W. 22.15

No. 6 Full and frozen

W. 19.2<sup>in.</sup>

No. 8 Frozen solid

W. 16.95<sup>in.</sup>

No. 7 - Date marked. Remained.

Hotel

No. 4 Frozen solid

Later: No. 10 W. 22.50

W. 20.10<sup>in.</sup>

2x8 Frozen - "Wait till it melts"

Stevens S. Frozen.

Weights and Depths

No	PT.	Depth	wt
3 Army Engg.	38.5	21.0	—
4	—	—	20.10
6	—	—	19.20
7 Stevens	—	—	16.4
8	—	—	16.95
9	—	—	22.15
10	—	—	22.50
W	56.6	11.5	East side

Recharge  
By Gardel and Codd.

2 pm.

Recharge Feb 4

No

4 — 8.35

5 — 8.35 ? <sup>11.14</sup> reweigh with correct scales  
By spec. scale <sup>11.74 in.</sup>  
(correct)

9 — 11.00

8 — 5.05

6 — 8.20

10 11.00

### Dye + Melt

Under wide test by Sawyer  
in sun, semi-shade, shade.

In sun dye changed to red only at  
11 a.m. In shade continued green.  
at 6:30 or earlier turned purple.  
Max. at 45°C H-T 42°F

Potency: 1 part in 5,000,000 (?) Gerdel  
had learned from a chemical firm.

→ Good at detail but not at dreams.

### Scale of Color:

Top crystals had drained almost  
colorless. In fact one looked white,  
but Sawyer got slight stain on his  
finger from it. But crystals below  
were visibly red.

→ So possibly the intensity of stain  
corresponds to proportion of water.

Demand suggested tests thruout depth.  
I explained our test of cores by pander.  
Only need to shelter cores from cold or sun.



### Snow Quality

Ashton cannot obtain a consistent Fixed Factor or "Water Equiv." for his two thermos bottles.

Gerdel is trying out Bernards' "volume method".

Ashton wonders whether bottles of hot water can be carried down the road. He wants Leipsen's report.

### Section of Hydrology a. t. u.

Bernards had violent difference of opinion with Glenn Parker regarding M. W. Thomson's appointment as Chairman of SW Regional Committee. This accounts for Thomson's loss of enthusiasm.

Suggested now that the center of direction be moved from Atlanta to Knoxville where the T.V.A. is very active and interested. Ackerman who won honors with Linsley is interested and might accept chairmanship.

Hoyt is trying to readjust periods of administration of Section of Hydrology to correspond with A.G.U. One other section also is irregular.

Proposes that our administration hold over 2 years more. It would afford opportunity to launch section after the war. If new president held for only 2 years, he would not have a chance to attain momentum. Fine of

Hoyt to trust in me for so long.  
Bernard, Barnes, Sawyer left about 3 pm. } Visited Tucker's 2nd Cat in  
Gardel and Codd " " 4 pm. } Garage.

Snow Survey

4:30 pm.

Wind rising. Clouding over.  
Barometer falling.

Marshall and Bob down from Vanderford to catch 5 o'clock train. Report wind strong there.

Decided to attempt the snow survey of Soda Springs No. 1 -

Crust very breakable tho  $1\frac{1}{4}$  in thick.  
Webs caught repeatedly under it.  
Hardest trek for its distance in years.

**FEDERAL AND STATE  
COOPERATIVE SNOW SURVEYS**

State California  
 Drainage Basin S. Yuba River  
 Snow Course S. S. Simpson No. 1  
 Party J. S. Plumb  
 Date Feb. 14, 1945

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	62	55.5	66	84.5	18.5		Wet ice
	2	53	39.8	66	81.8			Wet
	(a)	54	44.8		81	15.0		4" in water at bottom
	3	—	—					
	4	61.5	45.2	66	83.8	17.8		Wet
		5.3	3					
	5	62.0	47	66	85	19		Wet part at bottom
	6	67.3	46	66	86	20		Water none at
	7	68	53.6	66	87	21		Wet
		2.5	1.5					

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

\*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

No. 1 of 2 sheets. Comp. by J. S. Plumb Checked by \_\_\_\_\_

U.S. GEOLOGICAL SURVEY  
 WATER RESOURCES DIVISION  
 WASHINGTON, D. C.

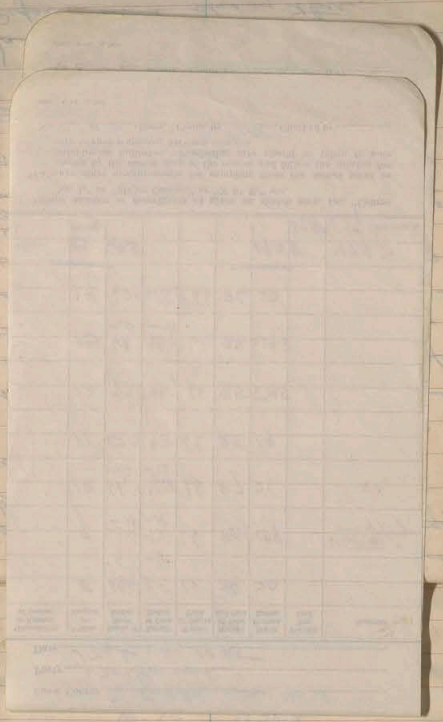
No. of Samples	Depth of Snow	Length of Core	Weight of Empty Tube	Weight of Tube and Core	Water Content	Density	Remarks
8	68.4	55	66	86	20		
	-1	-1					
9	66.5	42	66	85.9	19.9		Wet Griff
	-4	-4					
10	66.3	57.2	66	87	21		11
	-3	-12					
11	63.2	53	66	85	19		
12	70.5	48.7	66	85.5	19.5		
13	68	46.5	66	85.6	19.5		
	-3	-3					
14	62.9	55.5	66	86	20		
Av.	64.5				19.25	49.9%	
	range					29.8% of Normal	

State California  
 Drainage Basin S. Yuba River  
 Snow Course Soda Springs No. 1  
 Party J. S. Church  
 Date Feb. 14, 1945

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	8	68.4	55	66	86	20		
		-1	-1					
	9	66.5	42	66	85.9	19.9		Wet Griff
		-4	-4					
	10	66.3	57.2	66	87	21		11
		-3	-12					
	11	63.2	53	66	85	19		
	12	70.5	48.7	66	85.5	19.5		
	13	68	46.5	66	85.6	19.5		
		-3	-3					
	14	62.9	55.5	66	86	20		
Av.	13	64.5				19.25	49.9%	
	range						29.8% of Normal	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.  
 \*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.  
 No. 2 of 2 sheets. Comp. by J.S.C. Checked by las





Water runs from snow samples  
or snow is wet.

Gages

6 pm Anemom. No. 9 1622.5<sup>mm</sup>  
" No. 10 0634.9<sup>mm</sup>  
" trestle 212<sup>mi.</sup>  
  
Snow Stake 66<sup>in.</sup>  
Crust 1/4<sup>in.</sup>

Monday, Feb. 5

Barometer fell last night and has risen again by this evening.

Snow and wind all day. Blizzard. Yet this afternoon skiers enjoyed Beacon Hill much. A rugged immigrating day.

Snow Survey Attempt

at noon Blair and Newt arrived. Had worked over week-end on ditches needing emergency attention.

Hesitated long but finally drove to Kiski Lodge. There the snow blew in sheets. So turned back. They cannot come again this month but Ralph will take me to Truckee and back.

NB: Hereafter call up Colfax or Blair if weather is too rough. This will save repeated trips.

\* 5 pm. Wet Snow

Pasture 7, 11, 10, 7, 6, 7, 9, 8.5, 10, 7, 5.5,  
10.5<sup>in</sup> = aver. 8.2<sup>in</sup>.

Snow Stake

71 or 72<sup>in</sup>.

Anemometers

No. 9 1889.7<sup>mm</sup>

" 10 0890.2<sup>mm</sup>

Treble 389<sup>mi</sup>.

Gage No. 8

Sleet in lower part (inside) of can  
Melting of snowfall complete

H-T

H-T Current temp. 26.5°F

H-T " 30.0°F

Hotel " 27.5°F

Stevens S

W. 12.11<sup>in</sup> = 0.97<sup>in</sup>. No. 1 ... 0.83<sup>in</sup>.

Crust

No crust. Too cold today.

→ Snow perfect now for sleds and ski.

to make surveys at all courses.  
as soon as sun and calm return.  
His snow-cat will still work.

In return for Blair's efforts, he was  
given copies of Paget's and my snow survey  
records and some of following analyses.

Summit No. 1	Feb. 3	D. 69.8	W. 22.7	Dens. 33 <sup>±</sup>	% of Norm. 54.7	
Soda Spgs No. 1	Feb 4	64.6	19.25	29.8	49.9	
Precip. Nov.-Feb 4	Water	22.93 <sup>in</sup>			% of Norm. 63.7	

Loss by Rain and Runoff

Snow Surveys		1. Summit No. 1		Normal. 41.5 <sup>in</sup>
Dec. 4	D. 43.4	W. 12.3	Dens. 28.3% Pot of N. → 29.6%	
Jan. 3	44.6	14.9	33.4 Gain 2.6 <sup>in</sup>	35.9
Feb. 3	69.8	22.7	33 <sup>±</sup> " 7.8 <sup>in</sup>	54.7

2. Soda Springs No. 1

				Normal. 38.2 <sup>in</sup>
Dec. 4	37.2	10.2	27.4	Pot of N. 26.4%
Jan. 1	41.2	12.0	29.1	Gain 1.7 <sup>in</sup> 31.1
Feb. 4	64.6	19.25	29.8	7.25 49.9

3. Precipitation Soda Spgs No. 1

			Pot of N. 33.2%	Normal Nov.-mch. 35.98
Nov. 1-Dec. 4	Water	11.96 <sup>in</sup>		
Dec. 4-Jan 1		5.87	49.6	
Jan. 1-Feb 4		9.76	76.7	
Feb 5		0.93		
		28.52		79.3

### Gain and Loss

Months	Snow [in.]		Precip. No. 1 Soda Spgs	Loss by Rain
	Summit No. 1	Soda Spgs No. 1		
Nov. 1 - Dec. 4	12.3 (29.6%)	10.2 (26.4%)	11.96 (33.2%)	slight
Dec. 4 - Jan. 1	2.6 (35.9)	1.8 (31.1)	5.87 (49.6)	3 to 4 in.*
Jan. 1 - Feb. 4	7.8 (54.7)	7.25 (49.9)	9.76 (76.7)	2 to 2 1/2 in.**
				Total 5-6 1/2 = 13 to 16% of N.

\* Dec. 18-23

Rain T, 1.30, 1.02, 0.35, 1.44, 0.28 = 4.39.

Contained Dec. 22 and 23 total net snow 4 in  
= 0.5 to 0.8 in. water equiv.

Died snow cover of 32 in. depth lose all the rain? Dye penetrated to ground in sun at Summit but not in shade and to ground at Soda Spgs.

\*\* Jan 30 - Feb. 3

Snow Jan. 30-31.

Rain and Snow Precip. Feb 1-3 2.32, 3.22, 1.64 = 7.18 in.  
+ snow fall 12, 12, 14 in = 38 in. but 11 in. accum. =  
4.5 in. water(?) Net rain 2.68 in.

Water ran from sampler Feb 4 while all cores were wet. Dye penetrated 2 ft. and permeated slush. Slush water near Soda Spgs Hotel half knee deep but was the result of damming.

#### High Water at Sacramento

High but not flood stage. How high? Snow line high. Will bare ground absorb or release more water than feather snow? Paget believes the first to be true.



1 mi. = 1.61 km.

Wind at Gages No 7, 9, 10  
 - 5th daily -

	No. 7.	No. 9	No. 10	
Feb 1-2	214 <sup>mi.</sup>	338.7 <sup>mi.</sup> = 210.4 <sup>mi.</sup>	309.2 <sup>km.</sup> = 192 <sup>mi.</sup>	Wly*
" 2-3	79	142.2 (88.3 <sup>mi.</sup> )	126.0 (78.3 <sup>mi.</sup> )	Wly*
" 3-4	72	107.2 (66.6 <sup>mi.</sup> )	90.7 (56.3 <sup>mi.</sup> )	Wly*
" 4-5	177	267.2 (166.0 <sup>mi.</sup> )	255.3 (158.6 <sup>mi.</sup> )	Wly*
" 5-6	56	77.4 (48.1 <sup>mi.</sup> )	68.3 (42.4 <sup>mi.</sup> )	Wly*
" 6-7	48	74.6 (46.3 <sup>mi.</sup> )	58.0 (36.0 <sup>mi.</sup> )	calm
" 7-8	120	188.8 (117.3 <sup>mi.</sup> )	167.5 (104.0 <sup>mi.</sup> )	SE

Weigh gages also after each storm and compare with wind velocity at each.

Feb. 8-9 (11am)	131	196.7 (122.2 <sup>mi.</sup> )	189.2 (117.5 <sup>mi.</sup> )	E
July 7.3 <sup>mi.</sup>		6.8 <sup>mi.</sup>	6.5 <sup>mi.</sup>	
18km				

\* Westerly at Donner Observatory.

## Weather for February

Date	max	min	Precip.	Snowfall	Snow on Ground	Wind Dir.	Clouds
Feb. 1	41	31	2.32	12	56	SE	Stormy
	Rain 40°	38°	Raining				
			#1 856		#9 1034.4		
			2 837		10 0109.0		
" 2	40	27	3.22*	12 <sup>in+</sup>	58	SE	Stormy
Pasture	max 47 <sup>°F</sup>	min -1 <sup>°F</sup>	Rain 29				
			#1 70		#9 1373.1		
			2 61		10 0418.2		
* Contents frozen in hand. Required 2 tubes of water to melt it. A.C.							
" 3	40	28	1.64**	14	67*	SE	PT cldy
			#1 140				
			2 140				
* My reading 70 in; but snow survey Feb. 4 gave for 13 meas (avg) only 64.5 in.							
** Stevens S. 1.22 in, but reservoir only 8 in. and snowfall 14-16 in.							
" 4	41	6			67	SE	PT cldy
			#1 204		#9 1622.5		
			2 216		10 0634.9		
" 5	34	21	0.93	8	71	NW	Stormy
			#1 360		#9 1889.7		
			#2 389		10 0890.2		
			Stevens S 0.97 in.		(12.11 in dial.)		

Feb. 6 42 1

71 NW cl  
[69?]

#1 420 #9 1967.1<sup>km</sup>  
2 462 10 0958.5<sup>km</sup>

" 7 50 12

66 Calm cl  
[67?]

#1 477 #9 2041.7<sup>km</sup>  
2 490 10 1016.5<sup>km</sup>

" 8 45 30 1.02 2

66 SE Stormy  
[69?]

#1 585<sup>km</sup> #9 2230.5<sup>km</sup>  
2 604<sup>km</sup> 10 1184.0<sup>km</sup>

" 9 39 21 0.16 3  
Ended 10am

65 NW cl

#1 725  
2 802

" 10 59 14

64 NW cl

#1 842  
2 912

" 11 54 31

62 NE cl

#1 871  
2 952

Feb 12 48 21 61 E clr  
#1 935  
2 32

" 13 47 26 Prec. 59 E PE cldy  
DN  
#1 42  
2 123

" 14 41 21 0.90 7 65 SE PE cldy  
#1 162  
2 274

" 15 34 16 64 E clr  
#1 396  
2

" 16 45 13 Prec. 62 NW clr  
DN  
#1 530  
2 683

Pasture

Max. 54°F

Min. 14°

Reset 40°

" 39°



Feb 17. 41 26 0.47 3 65 SE Stormy  
#1 643  
2 801

" 18 32 19 0.56 9 72 NW Pt cldy  
#1 704  
2 865

" 19 31 18 71 N clz  
#1 967  
2 167

" 20 41 -4 70 E clz  
#1 64  
2 274

" 21 40 12 69 NE clz  
#1 272  
2 528

" 22 45 6 67 SW clz  
#1 383  
2 650

Feb 23 43 0 66 N Pt cldy  
#1 428  
2 693

Pasture

Max 42°F Reset 30°  
Min -8° " 29°

" 24 31 13 0.02 T 65 E Pt cldy  
#1 683  
2 30

" 25 31 11 65 E clu  
#1 990  
2 367

" 26 41 -5 65 SE clu  
#1 146  
2 544

" 27 35 3 0.23 5 69 NW Stormy  
Reg. 6am End. 7pm  
\* No. 1 190  
2 594

" 28 30 18 0.08 2 69 E clu  
#1 370  
2 823

↓

Mar. 1 37 2  
#1 530  
2 11

67 NW 66 cloudy

Overcast  
2:30pm

Tuesday Feb 6

Reports Sent

Phoned the following revised report  
to Fred Paget and to Winifred for  
Boardman, Dukes, Devore.

— Snow Cover Donner —  
Feb 5, 1945

Donner Summit

Depth 69.8 —  $\frac{22.7}{0.93}$  Dens. 33% % of N. 56.4  
 $\frac{23.63$

Soda Springs

Depth 64.6  $\frac{19.25}{.93}$  " 29.8 " 52.3  
 $\frac{20.18$

Precip. Soda Spgs

Nov 1 - Feb 5 28.52 in. Nov. 35.98 % of N. 79.3  
Nov. - March

Paget didn't care for precip. What will  
be the effect of snow cover defia. of 25%  
on the runoff?

He was within 2% on Yuba two years  
→ ago. How about the American? The  
Army and Lindley fail on it. Last season  
Fred was 30% off.

To Danner Pass

Ralph (Ranton) took me in pick-up truck, at Kiski the hostess' truck was frozen. She needed food for cow and children. He thawed it out quickly. She promised us a free dinner.

Lunch with cook at Vanderford. Only 60¢ a meal. Gave him 75¢.

Danner Summit No. 1

Dye Station No. 1 depth 81.5" in shade. (Jan.)  
Dye to bottom. Still red tho a bit of purple.

Test of core: New dye sprinkled on core stays green except where touched by sun. Was core chilled by exposure to chilled air in shade?

Sail wet.

New Station

No. 1 b 10 ft farther W.  
(Feb.) Fresh Fuchsia planted.



No. 2. Downhill in Sun. Depth of 1.5 in  
(Jan) Dye red to bottom tho faded.  
Sand moist.

New dye on core turned red.\*  
but not on snow where shaded.  
Partly due to sun. But both cores  
(Nos 1 and 2) moist.

No. 2 a new station 10 yds farther west.  
(Feb) Only Fuchsine today. Oil dye omitted.

### Crust

Will there be crust tonight? For snow  
sticks and turns red quickly. yes at 6:15 pm  
crust  $5/16$  in. thick.

### Photos

Roll No. 1 Exp. 1-6

No 2 . 1-3

\*

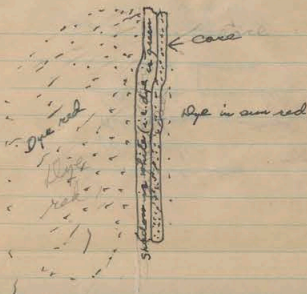


Photo was attempted.

Donner Pass

How different from the gale of yesterday! Now calm.

Survey made.

Dye not found at No. 6 and warmer blown away at No. 7 on cornice, No dye found here. Warmer restored approximately.

New Dye

Dye replanted at No. 6 and at new No. 7. Also 5 ft. N. of telephone pole with double braces.

FEDERAL AND STATE  
COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin S. Yuba River  
 Snow Course Donner Pass  
 Party Ralph Ranton and J. Church  
 Date Feb. 6, 1945

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	49	42.8	66	81	1.5		
	2	47	38.9	66	80	1.4		
	3	72	58.5	66	89.6	22.8		
		.8	.8		.8			water, base
	3A	67.5	47.5	66	83.6			sand
	3B	70.9	61.2	66	89	23.0		wet
	4	61.2	49	66	85.9	14.9		wet
	5	89	65.8	66	94.6	22.6		wet
	5A	48.5	71.3	66	94.7	30.4		
		+7						

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

\*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

No. 1 of 2 sheets. Comp. by..... Checked by.....

Hand  
 yesterday  
 Sun  
 Dy  
 blow  
 No. 0  
 im  
 Dy  
 No. 7  
 with

Snow Course Dinner Pass  
 Party Ralph Rowton and J. Church  
 Date Feb. 6, 1945

*Description or Number of Course	**Sam-ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	6	92	78.4	66	97	31		cut course
		-4						can't uncover
	7	84	80.2	82.2	107	24.8		marker lost
								Core very uniform till top from bottom then slightly crystallized
								dye implanted 1/2 in. feet north of pole with double trace
	7							dye remains green till 1/2 sun dim P.M.
								no dye found at no. 6
av.		70.3				21.9	31.2	

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 \*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.  
 No. 2 of 2 sheets. Comp. by..... Checked by.....

4 p.m. Maintenance Station

Permitted to phone.

"Andrews at Observatory". "Mr Snider at home today or tomorrow". Day now nearly done.

#### Observatory

Guided by gesture and voice from rock above. Climbed directly up rocks bare mostly of snow.

Andrews was shoveling guy lines free of snow load to prevent breaking and stuffing messages to planes. Short handed. Another man coming.

Delighted with pictures. "Could not handle them any larger" (5x7<sup>in</sup>). Had sent in report.

#### Shields

Can copy records when I desire. Has sent wind direction but will add max. wind and daily mean.

Shielded gage catches slightly more but both are overwhelmed by the gales above 30 mi. Cur slats also are too few. Place them edge to edge or cover present slats with continuous canvas.

→ Andrews would like to try smoke



test and will share mutually  
in the project. He shall become joint  
author.

### Photo

at sunset of observatory thru snow-  
patch.

# View of sunset down the yuba full  
compensation for giving up literature  
and art for maintain snow studies.  
(But Andrews has seen it so much that  
he has forgotten to look.

### Records

6:30 pm. Pasture

Crust  $\frac{5}{16}$  in.

anem. NO. 9 1967.1<sup>mm</sup>

" NO. 10 0958.5<sup>mm</sup>

Calms

" Trestle 445<sup>mi.</sup>  
(Not 462).

4 FT H-T Current 30°F

Min. -2.5°

Max 47.5°

Trestle H-T Current 28°F

Min. 0°

Max 40.5°

Boys NO. 4. Shield tip on  
lip of car.  
Demand calls them "obsolete".

Door of shelter fallen open. all three  
doors must be placed down and closed  
securely.

### Sanyer on Route

# Sanyer came to see me at dinner regarding zones of deepest snowfall and points of records "Deepest near airfield below Cisco". Wants to consult with me more. Now on circuit to highway north. Ashton offered him his sleeping bag but he has a companion. So will drive probably to Auburn.

Wednesday Feb. 7

One day's program becomes a full two days' tour. I haven't changed since 1893 on my first trip to Martiney and the Bay.

### Truckee

To Truckee and Donner Lake with Ralph. Road nearly dry. Semi-overcast mild day. Snow moist.

Called on Mr. Clegg of Harrison-Knudsen but he was at Vanderford. Left greetings.

### Ranger Station

# "Snow cover badly melted". all S. slopes below Truckee Lake. "Prospects for water pass because snow and ground unfrozen."

Mr Snider deeply interested. Will take  
→ the leadership of the project. Is keeping  
a complete log of snow and weather.

#### Snow-Melt Tank

Frozen at throat. Heavy rains of 5 in.  
had filled it above top to level of drip pan  
(Base  $10 \times 1$  in = 50 in. Tank 36 in).

Ralph punched hole thru ice. Hot water  
on pipe released plug of ice. Pump emptied  
it.

Present level 1.4 in.

# No further salt used for "tank will not  
freeze beneath snow."

Drip pan cleaned by Snider and  
covered with new section of snow  
cut from introduction cover. To reproduce  
present snow strata and textures.

Pan encircled by sticks on end to  
prevent treading snow.

#### Dye

Dye had penetrated <sup>to ground</sup> at all stations  
including those of Mr Snider.

Fresh dye stream widely on surface  
by him today looked like a slaughter yard.  
Will now try to place it beneath the surface.

→ Dye stick-markers will next be marked with the date of planting.

Idea of H. S. Snider.

He will use dye frequently & placed 3 stations in shade, semi-shade, and sun.

H-T

Test of sling psychrometers gave  
 U.S.F.S. 40 wet 50 dry = 45% humidity  
 Subalps 39 " 49 " = 44%  
 (in free air not in shade)

Connected temp. of H-T by -4°F. to 51°F.  
 Now all H-T's standardized,  
 "Clock stopped during cold spell."

Snider waited snow survey also. Will bring in a sampler set.

FEDERAL AND STATE  
 COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin Tulare River  
 Snow Course Tulare Basin Station  
 Party Ralph Rowton and W. Church  
 Date 1.4 at 10 snow 1st tank

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	23	21.1	66	74.8	9.9		
	2	24	23.2	66	77	7		
	3	29	21.8	66	75.8			
	4	27.8	22	66	72.9	2.8		
	5	25.5	24	66	75	9		
	6	28	19.2	66	73	7		
	7	27.2	25.2	66	75.4	9.4		
	8	20	19.5	66	72.5	6.5		
			24.4			8.11	32.2%	

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 \*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.



Left 59¢ express charges on poles collected instead of prepaid

### Downer Lake

Snow surface wet and sticky. Snow falling in wet flakes from trees and covering snow with icy kernels. Surface facemarked. The forest primitive with its sounds.

Overcast. Does the mild air portend spring or storm? Cool in the old roadway but air suddenly mild as we traversed the thick forest out.

### Snow Survey

One stake missing. Skier has passed by and halted at each stake. Thought that a snow-surveyor had been here.

Ground slightly moist with bottom of crystalized snow stuck to it. Sand mostly.

A new bundle of sticks brought from Trucee and fastened to trees near W end of staked course.

Ralph did the snow sampling. Suggested that he join the Forest Service snow survey with Hjalmer Bengman under Ranger Samson.

FEDERAL AND STATE  
COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin Tulare River  
 Snow Course Donner Lake Hatch  
 Party Ralph Kautman and J.E. Church  
 Date Feb. 7, 1945

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	43	33.5	66	77	11		
	2	42	29	66	74.5	18.5		
	2 <sup>a</sup>	42	38		77.5	11.5		
	3	41.5	26.4	66	77.5	11.5		
	4	40.5	36	66	74.5	12.5		
	5	42	38.5	66	79.2	13.2		Went out on ice
	6	43.5	32	66	76	10		
	6 <sup>a</sup>	43.5	38		77.8	11.8		
	7	41.5	37.9	66	78	1.2		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

\*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

No. 1 of 2 sheets. Comp. by..... Checked by.....

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 1945

State California  
 Drainage Basin Thucassa River  
 Snow Course Donner Lake Hotel  
 Party Ralph Ranton and T.E. Church  
 Date July 7, 1945

*Description or Number of Course	**Sam-ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	8	46	43	66	79.5	13.5		Dist moist
	-1	-1						
	8)	339				97		
		42.4				12.12	28.6%	
Wgs	No. 1			W of No 8				Reel to bott 75%
				in shade				
	No. 2			W of " 1 "				Very acid at bottom 90%
				in sun				

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.  
 \*\*Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.  
 No. 2 of 2 sheets. Comp. by..... Checked by.....

## Dye

4:45 pm.

Old dye.

No. 1 W of No. 8 in shade. Red  
to bottom 75% intensity.

No. 2 N of No. 8 in sun. Very red  
at bottom 90% intensity.

New dye.

3 dye stations in sun, semi-sun,  
shade. All marked "February".

1. In sun dye turns slowly red; also  
in semi-sun.

In shade very slowly.

Surface moist-freezing

Planted all dyes with scalpel under  
crust, by removing and replacing  
crust. Best

## Snow Melt

Dye only snow cover whether  
in shade or sun turns slowly red

when that snow is at melt-freezing. Too

much water in snow for the

→ crust to form dry quickly. Elevation



lower. Similar to Mt Washington base:  
Trees still dripping. Even ice clumps  
moist.

Study density of (a) old snow, (b) new  
snow. The dye penetrated the old  
course snow. Is its capillarity less?  
Low level snow phenomena this year?

### Search for Dye at Donner Pass

Stopped at Donner Pass to sample  
at No. 7 on nose of cornice to pick  
up dye.

Several samplings at 30 ft tape-  
meas. N. of pale but without result.  
New dye of yesterday very conspicuous.  
Observations

6:20 pm.

Pasture

Snow stake 67<sup>in.</sup>

anem. No. 9 2041.7<sup>mm</sup>

" Treble 493<sup>mi.</sup>

" No. 10 1016.5<sup>mm</sup>

Calm

Gage No. 6. Slats on N and SE on  
lip of cav. S. half lifted from  
E socket. Link on N side unhooked.

New dye  
remains green  
snow stuck in sampler.

### Trestle H-T

Current temp.  $35^{\circ}\text{F}$   
Max.  $48^{\circ}$   
Min.  $12^{\circ}$

4 FT H-T Current  $37^{\circ}\text{F}$   
Max.  $53^{\circ}$   
Min.  $11^{\circ}$

Crust  $\frac{1}{4}$  in.

NB. Temp. at 4 FT still higher at formation of crust than on trestle. Even now temps at both are  $37^{\circ}$  and  $35^{\circ}\text{F}$ .

The rule seems established except during rain or storm.

### 2 FT. H-T

Should not set a H-T at 2 ft. above snow surface?

3 louvers in elevator frame on E, S, and N sides with vertical slats above and below to exclude slanting sun but permit circulation. Get dimensions.

Thursday, Feb. 8

The Empirin Compound Tab. prescribed by Dr. Cann are effective. Also used "Ben-Gay" suggested by Rippe. Minor phos. Only slight soreness remains in my wrists.

### Rain

Fortunate to have a wide schedule. Wild wind Monday, sunny and calm Tues-Wed, now snow turning to rain on Thursday.

Ralph is repairing his telephone line today.

all forenoon at my desk. I thought it was merely snowing until I went in rain and shut to lunch.

### Oil in Tank

Tank filled full today from auto tank and trailer.

### Skis-Snow

Some hail or pellets falling today. Johanson says that his fastest skiing was at Aiso when dry hail lay on a hard surface. He calls them ball-bearings.

### The Life of Ice

He is tender of the tiny Donner Summit lakes, providing water for the S.P. reservoir. In one is a wharf and pump house.

→ The heavy rains and melt-water have raised the lakes 30<sup>in.</sup> (3) to above their spillways and the ice has lifted wharf and pump house with it.

When they chopped the ice free around the piles, these settled down 20<sup>in.</sup> into their former holes.

Johanson had the queer sensation that he was rising with the ice.

→ Snow sampling, dye, and spillways are evidence of the predominance of water this winter.

### Improvements

1. The frost-free wind vane has now been installed.
2. The web snowshoes are water-proofed.
3. The store room is in order.

all by Guedel



4. The  $11\frac{5}{16}$ " can is still at Reno and the steps and nest for Arthur's measuring tube.

Have planned off to send them by Railway Express to Truckee in care of Joe Matton who will deliver express or freight to Soda Springs, on Tuesdays and Fridays.

Shall therefore wait until 2 pm Greyhound Friday to meet them.

Due at Reno at 6 pm(?) for "Cap and scroll."

5. Ashton or Gerdal has provided a collar for Arthur's tube. We should now have a box for all <sup>auxiliary</sup> parts of his rain gage No. 1

6. Snow slides from the warmed portions of roofs show how little artificial heat it would require to keep the throats of the gages clear.

5pm. Ralph's Wages

Worked Jan. 5, 6, 7, 8, 11 Feb. 6, 7. + tomorrow	
Snow-surveying 3 days @ \$7. <sup>50</sup>	\$22. <sup>50</sup>
Carpenter work 4 .. @ \$10. <sup>00</sup>	40. <sup>00</sup>
Use of auto 3 trips = 1/2 day @ \$10. <sup>00</sup>	5. <sup>00</sup>
	\$67. <sup>50</sup>
	+ ?

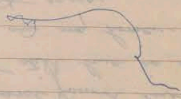
Phone Line

after all day's search found lines crossed in pass but still line is not clear. Will search on my home. Snow had seemed to cease.

a Thunder-lightning Snow Blizzard

In midsummer it would have been a downpour. This evening it was 2 in. deep of matted wet snow. 0.33 in. water equiv. temp. 16.5°f. Repeated Thunder with flashes of lightning, traveling toward the east. Storm lasted fully an hour. I was at Stevens Q in Pasture. Snow was almost blinding and glasses were covered with water.

My first winter thunderstorm since the electrical storm on Mount Rose. How did Ralph fare?



Records

6 to 6:30 pm.

Hotel Stevens S 12.97<sup>in.</sup> = 0.86 x 1.016 =  
[Feb. 5 12-11] 0.87<sup>in.</sup>  
No. 1 1.02<sup>in.</sup>

2x8 Gage Depth N side 20.2<sup>in.</sup>  
S " 20.45<sup>in.</sup>  
top 11 5/16 - Body 11<sup>in.</sup> Correction?

Pasture

Snow stake 69<sup>in.</sup>  
Covillard 66<sup>in.</sup>

Anemometers

No 9 2230.5<sup>Rev</sup>  
No 10 1184.0<sup>Rev</sup>  
Trestle 613<sup>mi.</sup>

4 FT H-T 33.5°F } In thunder-  
Trestle H-T 30.0 } storm.  
at 8:30 teltherm. 32.2°F.

Fog last night. Snowing at 7 am.  
Min. only 30°F. "So must have clouded  
up early" - A.C.

- Dye -

Snow this afternoon whether on surface  
or in upper stratum turned pink but  
this evening at 8:30 dye placed on snow  
remained green. Snow quite wet with rain  
during day. Max. temp. 45°F.

Friday Feb 9.

Clear, E wind, scuds of drift snow. Barometer rising steeply.

Dye

Dye at door still green, but at noon red.

Photos

II 5 Snow plaster on auto and roof of Filling Station.

II 6 Sand on Jam and relative height of anemometers.

→ Out up drift-cups in Pasture.

H-T

Hotel

H-T reset

10 am.

Wet bulb 27°F

Dry " 30.7°

Current min. 30.3°F

Wind Shield

No. 4 On lip of car again.



Pasture H-T<sup>o</sup>

10:35 am. On snow

Wet bulb 27°F

Dry " 31.2°

10:40 am.

4 Ft H-T Reset

10:50 am

Trestle H-T reset.

Current min. 31.2°F

Period: Max. 52.6°F (Reset 32.6°F)

Min. -3.0° ( - 32.0°)

Stevens Q

11 am. approx. 18.33<sup>in.</sup> Windy

Contents semi-liquid.

Reset soon. Capacity still seems good.

Anemometer

Trestle . 744<sup>mi.</sup> = 131.0<sup>mi.</sup>

No. 9 . 2427.2<sup>mi.</sup> = 196.7 = 122.2<sup>mi.</sup>

No. 10 . 1373.2<sup>mi.</sup> = 189.2 = 117.5<sup>mi.</sup>

East wind

Dyes

1. 3 Stations near fence at Snow Stake.  
Dye found at only 1 but at bottom.

2. E of vestibule.

Only one trace found  
→ Search more next trip or even shovel cross-section.

3. New stake (marked Feb. 9) at E end of line near "Old tree".

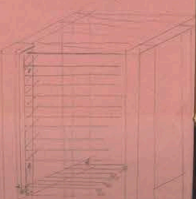
2-FT H-T

Plan another thermometer shelter beneath 4 FT H-T. Use either Fig. 5 or spare H-T.

Four <sup>lower</sup> walls, with slat ceiling and floor attachable to elevator legs.

Front and back  $32\frac{7}{8}$ " wide, 24" tall.

Two sides 16" - " , 24" "



Fred Pearson

Doors of H-T Shelters Repaired

Ralph came over to repair outfit today. Fixed the three H-T doors, rebraced the 2x8 can, planed the door of the office room.

Will set the steps at 4 ft H-T and the 11 5/16 in. can, and the rest of the tiny measuring tube when they arrive.

Expect them this noon.

Hotel  
12:30 p.m.

2x8 in Gage D. 20.5 in N side.

Ralph has leveled can support.

One leg had ~~run~~ <sup>run</sup> into mud.  
Feb. 8 (6 p.m.) D. 20.2 N. Side  
gain 0.3 ÷ 1.155 = 0.26

Stevens S. W. 13.2 in  
[Feb. 9 at 6 p.m.] 12.97 in × 1.016 = 0.234  
0.234

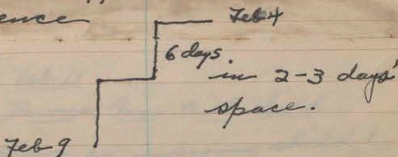
No. 1 Feb 9 / sp ?

new survey on porch 0.23

Stevens II

Clock stopped.

Hence



Clock needs cleaning? Has run 2 1/2 years without servicing.

Have left note for Ashton who comes up tomorrow with his family.

Query: Does stopping of clock account for broad steps in place of tiny ones?

By winding and lifting might slightly, Ashton started the clock. Evidence might caught on rough edge in pipe. But later while flushing the ice in tank he caused a suspension of record. Then another blow when can may pick up. Now (Apr. 1) have double-strength suspenders to repair it.

Saturday Feb 10

2x8 Can and Steps

Caught 2 pm. Greyhound for Reno yesterday. Passed mid-size Valley Express Co. truck of Donner Truckers. According to Company this truck carried over 2x8 ( $11\frac{5}{16}$  in) cans and nests and steps.

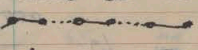
I had sent Ralph to phone Joe Mattos at Truckee regarding more delivery at noon, but Jeff had not rescheduled shipment.

Will Ralph be at Soda Springs when the truck arrives?

Sunday Feb 11

Donner Pass Wind Shield

Two plans for improving shield:

1. Cover present system of slats with canvas laced on three grommets 
2. Place steel fins edge to edge by adding additional fins.

Cotton suggests No. 2 immediately. His best shield at Salt Lake City was such. No. 1 would wear out too soon and need not prove the value of No. 2.



## Weather for March

Max	Min	Precip	Snowfall	S. on Gal	Wind	Sky
Mar. 1	37	2	Req 5pm End 10pm	67	NW	Pt cldy
		#1	530			
		2	"			
" 2	40	13	0.16	2	68	NW clr
		#1	600			
		2	90			
Pasture						
	max	39	Reset	35		
	min	-8	"	34		
" 3	37	20	0.51	12	75	SW stormy
			Req 5am			
		#1	717			
		2	203			
" 4	37	13	0.29	2	75	NW clr
			End. D.N.			
		#1	797			
		2	332			
" 5	35	-12	0.75		75	NW clr
			Req. 7pm			
		#1	884			
		2	406			
" 6	31	13	0.35	6	80	NW Pt cldy
			End. D.N.			
		#1	981			
		2	518			
Note "Wednesday" in folder						
" 7	39	-4			77	NW clr
			#1	65		
			2	590		
" 8	44	-1			75	NW clr
			#1	147		
			2	654		
" 9	55	4			72	NW clr
			#1	214		
			2	726		
Pasture						
	Max.	52	Reset	49		
	Min	-18	"	48		
" 10	51	8			70	NW clr
			#1	290		
			2	794		
" 11	52	6			70	NW clr
			#1	364		
			2	866		
" 12	46	-2	Req. 4:30 End. D.N.		67	NW Pt cldy
			#1	440		
			2	952		
" 13	48	31	Req. D.N.		65	NW Pt cldy
			#1	516		
			2	48		

Mar. 14 38 24 0.48 5 69 NW Stormy  
 #1 657  
 2 183  
 " 15 29 21 0.91 16 83 NW Stormy  
 #1 728  
 2 258  
 " 16 26 12 0.53 4 85 NW Stormy  
 #1 840  
 2 375

Pasture  
 Max 49 Reset 24  
 Min 4 " 23

" 17 29 19 1.14 14 96 NW Stormy  
 End 7pm  
 #1 52  
 2 597

" 18 40 -12 0.47 5 96 W clu  
 #1 134  
 2 673

" 19 48 1 T T 92 NW Pt cloudy  
 #1 183  
 2 712

" 20 43 32 0.05 T 86 NW Stormy  
 #1 285  
 2 846

" 21 53 23 Light Rain 82 NW clu  
 End 7pm  
 #1 390  
 2 967

" 22 43 24 Snow 0.53 4 85 NW Stormy  
 Beg. 5am  
 #1 475  
 2 62

" 23 34 18 0.52 6 88 NW Pt cloudy  
 #1 568  
 2 180

Pasture Max. 51 Reset 29  
 Min -17 " 27

" 24 43 10 85 NW clu  
 #1 670  
 2 313

" 25 39 23 0.72 9 92 NW Stormy  
 Sunday Beg. 5am  
 #1 760  
 2 400

" 26 32 19 1.02 12 102 NW Stormy  
 Monday  
 #1 893  
 2 540

" 27 43 13 0.02 98 NW clu  
 Tuesday  
 #1 946  
 2 601

Mar. 28 40 8 95 NW Pt cloudy

#1 20  
2 662

Thursday

29 36 19 92 E clr

#1 225

2 910

[did Gerdel readjust <sup>ind</sup> W<sub>2</sub> direction? cam seemed reversed in new hanging] SE clr

" 30 49 25

#1 540

2 266

Pasture

Max. 39 Reset 36

Min 3 " 35

" 31 60 11

86 NW clr

#1 670

2 408

April 1 53 17:

85 E clr\*

\* cld cap on Summit. Snow-T

#1 790

2 567

Total Precip. 8.45 in. for March.  
 $\frac{9.75}{.70}$

Feb. 25 - Teahachapi snow

Prec. March 16.1 gm  
7.7 in.

Mar. 1 - Snow Scurry

Ashton in alps  
Gerdel with Army

Delay in office.

Thursday Mar 29, 1945

A Gale: Snow Erosion From East.

Joined the Gerdels and Ashton and Willard Codd on 8:30 am. (Reno) bus.

Snow in jets and clouds over the peaks even west beyond Beacon Hill.

Incipient marks of erosion but Gerdel believes that the delay of the wind after Monday's snowfall gave crust a chance to form and resist cutting.

Wind at Observatory app. 68 mi. per hour? Here at Soda Springs 30 mi.? Branches, cones, a bird nest blown upon Pasture lot. All went to Pass to take pictures

Anemometers in Pasture

5:15 - 5:30 pm Mar 29 11 am. Mar 30

Hotel 251 mi

Pasture 937 mi

No. 9 1773.0 <sup>mm</sup>

No. 10 0304.8 <sup>mm</sup>

209 mi = 262 mi

2158.9 = 385.9 (239.7 mi)

0714.5 = 409.7 (254.5 mi)

Temp. and Crust

5:35 pm

10 FT 34° Min (current) 33.2°F

Sun at 30° above horizon

4 FT 35.5 (By later corr. 9-2° ... 33.5°)

Snow near base of shelter except for erosion beneath.

"On Sait Hill snow was moist this afternoon." Wind acted as ski lift.

On level in Pasture ~~in shade of trees~~ snow was crusted  $\frac{1}{4}$  in. or more. Possibly no snow melt today.

Radiation?

7 pm

all water frozen at edge of snow.

Hotel 34°F. Min. 33.6°

Crust forming.

above 32°F only at 2 pm

Wind Shield

Fins of No 4 on can.

Apr. 1 fins found up on No. 6 possibly from this same wind. Replaced for No. 6 Apr. 1

Ashton and Hillard left for home this afternoon. Ashton will return Monday.

Friday, Mar 30

East wind. "Three days East wind."

H-T

10:15 am.

Hotel 35°F Current min

Pasture 34.8° " "

Max. 39° Reset 36°

Min +3.7 " 35°

10 FT. H-T fragmentary. Ashton reset pens to paper at midnight.

11 am.

Read Anemometers

Trestle 209 mi

No. 9 2158.9 km

10 0714.5 km

2 pm. Weighed Stevens S 16.05 in

Basket for brass precip. tubes too small. Diam. of bottom of tubes (female) 2.7 in. Have basket rim stretched.



## Oscillation of Air of Stevens Q

Smear on sheet for Thurs. Mar 29  
seems the worst I've seen.

→ Compare with Fiez. Get photostat  
of both.

Soon - The Gendels left. He may return  
the second week in April.

Future He and Odd will not return next  
yet but the Bureau may give an  
additional \$550 for support. Johansen  
might be glad to act as assistant.

Still doubts the temperature above  
the snow. Check H-T's in same  
shelter and move shelter free  
from the treble.

3:30 pm. Lining up Snow Course.

Sticks bent over and nearly buried.

Temp. over Snow

4 FT H-T in Shelter with Standard.

4 FT 48°

10 FT 46°

5 pm. 4 FT 48°

10 FT 45.5

Lower shelter level with surface  
of snow but pit below because  
of erosion. yet acts much as before.  
Corrected meas.

10 FT 37-7, 37-19, 34-24

4 FT 41-3, 38-16, 34-22

Plan now to construct another framework  
adjoining and raise shelter to 4 FT,  
with a 2 FT shelter below.

## Dye and Crust

5 pm.

Dye put out at Office.

I. In shade of Tree at Bridge

(a) Crust  $\frac{1}{2}$  in.

Dye green on top surface, but  
red within and below top.

(b) <sup>top  $\frac{1}{2}$  in</sup> Crust green.

On bottom of  $\frac{1}{2}$  in. crust red. Still wet.  
But  $2\frac{1}{2}$  in. down in hole green  
but red for  $1\frac{1}{2}$  in.

Watch depth of crust.

Temp. 10 FT H-T 45.5 [4 FT 48°]

II. In Sun at trestle

Surface of snow red and packs.  
Crust in hole is green.

In Shade of trestle

Crust - Green at top but red  
below for approx.  $2\frac{1}{2}$  in.

5 pm

Wind at Gages

Trestle	267 mi.	58
No. 9	2246.2 Km	54.4 ?
No. 10	0800.4 Km	54 ?

Dye Planted

Between Trestle and Old Tree.

10 FT E of lone marker and toward  
(a) "dead tree". Dye buried approx. 1 ft.

(b) Dye test on snow core 8 ft long.  
Core remains green except where surface  
may have been warmed by driving or  
in the air.

Crust Forming

6:25 pm. Ice rods formed on pools  
by highway.

6:45 pm. Snow freezing even in sun.  
Sun  $10^\circ$  above horizon.

7 pm. Dye in low sun green.

7:15 pm. Sun just down.

Dye on level snow as in holes  
green.

Temp. 10 FT  $43^\circ\text{F}$  (4 FT.  $45^\circ$ )

Junior Therm  $44^\circ$

Min. Current  $43^\circ$

Saturday, Mar. 31

Third day of E. wind fails. Balmey.  
Barometer falling.

Dye

10 am Office.

(a) The thin scattered grains are still  
gray. The brush is green but  
in snow beneath the dye is red.

at dead tree. Crust  $2\frac{1}{2}$  in.

(b) at spot { Crust  $1\frac{1}{4}$  in  
Dye penetrated  $1\frac{1}{4}$  in.

(c) Core of yesterday under dye test.

Dye has not penetrated half way  
thru diam. of core.

## Snow Surveys

P.B. & E. Survey crew arrived.  
Nest Chase and A. Apsley, 45 year veteran  
of two years in South Pacific.

Measured all courses and gave  
me records.

Last meal with Morrison & Knudsen  
(M-K). S.P. is taking over the work.  
Courteous as ever. Shall miss them.

## Danner Pass

Snow Survey Chart for Mar. 31, 1945

Terry Cramer of Pawnee Lodge Inc.  
at west foot of Danner Pass showed  
deep interest.

On Thursday in gale climbed to  
crest of Mount Lincoln. Wind picked  
100 lb girl off her feet.

Dye  
No dye found

New dye 8 ft above pale with  
double braces and 30 ft. N. of pale.

Warm air - Cold snow

Steel sampler better driver than  
duralumin. His drove at No. 7 much  
farther than mine. But even his  
stuck.

Balmy day (60° F max.) So apparently  
frost in snow at 150 in.

→ Better get temp. at this depth.

Snow cold at 6 in by test (dye).

[later: Yet my face was severely burned.]  
Summit Valley

2 Snow Survey charts to folder



## Dye Studies

2:30 pm. In shade of medium forest.

Crust turns red i.e. is just melting in afternoon sun. Even the ice spicules turn red.

But 5 in. down the snow remains green. Dye has sunk  $\frac{1}{2}$  in. only.

### In sun.

Snow cold at 1 in. Has melted i.e. dye has penetrated  $1\frac{1}{4}$  in. and of course deeper when snow is opened to sun.

If too thin, dye not so red at same moisture.

Snow below core hand picks but turns pink very slowly until exposed to air.

→ Snow very sensitive to heat or cold on its surface.

Snow heating up turned deeper red.

→ rest cores in heat and shade from dye sprinkled on them.

## Crust

60°F max today? But crust at 8:30 pm or earlier.

### Caution with Dye

avoid stains of red on exterior of core and rather see the cross section <sup>red</sup> dye i.e. bodies of dye.

The sampler transmits color.

## Summit - Key Course

2 Snow Survey charts to folder



Dye Stations  
Summit Course

Evidently no runoff from upper snow since February 6 and new snow probably protected the lower.

Station No. 1 In shade

Depth 101 in Dye 2 in thick To ground 39 1/2 in

New dye at stick 5 Ft N of old above.

Station No. 2. In Sun

77.5 66.4 82.5 170 29.5 in

Depth 77.5 Dye mostly 25 in thick To ground 16 in

Snow packed. So not frozen

Depth 82.5 Dye 12 in thick To ground 27 in

Pink

New dye 15 in N. of iron pipe.

Sunday, April 1

East Wind. Storm?

9:30 am. Anemometers

No. 9 2577.7 km

No. 10 1137.2 "

Trestle 494 mi.

H-T's

Wind. 18.0 °F

4 FT 20°

10 FT 18°

T. of 19.5

Crust 1 1/4 in.

Spms.

Photos

I 4-6 of Pasture II 1-2 Mar. 29 Blown snow at Pass.

East Wind

New storm. Clouds on crest.

Barometer low but leveling off.

Temp. 23.5 °F

Teletherms 22.8°

Dye

Dye at Office green gray this morning. Red now.

Sampling Difficulties

Sampling easy yesterday, but difficult today. 4 meas. were made yesterday

at Soda Springs No. 1 and a new start was made at No. 5.

Sampled at 7:30 am. Temp. 19° F.

But the sampler at 19° F was so

cold that moist snow stuck  
to it, as at Lucile and probably  
at Trout Creek.

5 Snow Survey charts + rough notes for  
Mar. 31 and April 1 to folder

So gave up.

Called Mr Snider re trip to  
Truckee. But he wants to use  
ski-lift today. So I'll go tomorrow  
and try sampling again here.

2:30 pm.

No. 10 clogged in section 1. Froze.

No. 11 - Bottom cold and dry.

Core fell out readily. Ideal.

No. 12 Sticking in cutter and  
one foot above. But only  
slightly.

No. 13 Clogged - Freezing in tube.

13a. Frozen in pipe.

Snow moist. Froze to cleaner.  
But dye green when applied to core. ~~top green.~~  
Air too cold. However, red beneath  
where sheltered in sun. Only on  
surface is it green.

So gave up.

Dye - <sup>or Hot</sup> Green House effect

at W stake near Snow Pole.

at 2:30 pm. green. But at 4:30  
beneath  $\frac{1}{2}$  in. snow is red for  $1\frac{1}{2}$  in. down.

Hat house effect. Eye on the  $\frac{1}{2}$  in  
snow surface is still green-black.

### Woolen

The woolen mittens are best.  
a cold raw day.

But try thin flannel mittens  
inside the leather ski-mittens

### anemometers

No. 9	2693.2 <sup>mm</sup>
.. 10	1258.9 <sup>mm</sup>
Trestle	573 <sup>mi.</sup>

### Comparison of H-T<sub>o</sub>

Wix.	22° F
4 FT	24°
10 FT	22°
T. Jr.	23.7°

Snow Stake 86 in.

Wind from E. Strong, Cold.

6 pm. approx. Freezing

On Highway

(a) In shade frozen solid and dry.  
but water unfrozen.

(b) In sun, wet and soft.

Snow everywhere pitted.

7:30 pm. at dark  
both sides of road frozen.



STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF WATER RESOURCES  
401 PUBLIC WORKS BUILDING  
SACRAMENTO

CALIFORNIA COOPERATIVE SNOW SURVEYS  
SNOW SURVEY NOTES

Drainage Basin South Yuba River  
Snow Course Lake Fordyce  
Party B. Eddy & A. Chase  
Date 1-30-45

*Description or Number of Course (1)	Sam- ple Num- ber (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Den- sity 100 x (6)/(4) (7)	Remarks
	1	<u>25'</u>	41	38	16		Gravel
Key	2		43	40	17		✓
	3		42	39	16		✓
Course	4		44	40	17		✓
	5		43	40	17		✓
	6		42	40	16		✓
	7		40	38	15		✓
	8		42	39	15		✓
	9		41	39	15		✓
	10		40	39	15		Dirt
	11		43	40	17		✓
	12		43	39	16		✓
Average			42		16	38%	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

§Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated by the circles. Particular care should be taken to note any *irregular* spacing between samples.

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**SNOW SURVEY NOTES**

Drainage Basin South Yuba River  
 Snow Course Furnace Flat #1  
 Party B. Eddy & H. Chase  
 Date 1-30-45

*Description or Number of Course (1)	Sam-ple Num-ber (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Den-sity 100 x (6)/(4) (7)	Remarks
	1	<u>25</u>	50	48	19		Dirt
Key	2		51	48	19		✓
	3		47	45	17		✓
Course	4		49	45	18		✓
	5		46	44	16		Ice
	6		47	45	16		✓
	7		53	50	2.0		Dirt
	8		48	45	17		✓
	9		48	46	17		✓
	10		49	47	18		✓
	11		48	46	17		✓
	12		48	47	17		✓
	13		49	46	18		✓
	14		52	50	19		✓
Average			48.92		17.71	36.2%	

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SNOW SURVEY NOTES

Drainage Basin South Yuba River  
 Snow Course Furnace Flat #2  
 Party B. Eddy & F. Chase  
 Date 1-30-45

*Description or Number of Course (1)	Sam-ple Num-ber (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Den-sity 100 x (6)/(4) (7)	Remarks
Cross	1	<u>25</u>	59	56	22		Gross
	2		58	56	22		✓
Section	3		52	50	19		✓
	4		50	49	18		✓
Key	5		50	48	18		✓
	6		51	49	19		✓
Course	7		51	50	19		✓
	8		50	49	18		Dirt
	9		51	50	19		Gross
	10		48	46	17		✓
	11		52	50	19		✓
	12		49	47	17		Dirt
Average			51.75		18.91	36.54%	

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Wednesday

Humidity

Dye at Hotel

Snow Thermog.

Jack Ryan - 4.10 in.  
Cutters.

Rag for H-T shelter.

Glass tubes

Wind shield wires

Fire Dept.

MS - Portland.

Los Angeles

Photostat of Precip. rec.  
of Q and Conical files

Muslin

From Notebook 19, Feb. 11, 1945 "Weather  
for March"







STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF WATER RESOURCES  
401 PUBLIC WORKS BUILDING  
SACRAMENTO

CALIFORNIA COOPERATIVE SNOW SURVEYS  
SNOW SURVEY NOTES

Drainage Basin South Yuba River

Snow Course Summit Valley E1

Party A. Chase & E. Casley

Date March 31-45

*Description or Number of Course (1)	Sample Number (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Density 100 x (6)/(4) (7)	Remarks
	1	<u>301</u>	97	92	37		Dirt
	2		98	93	38.5		✓
	3		101	95	40		✓
	4		86	84	35.5		Ice on Both
	5		84	80	34		✓ ✓ ✓
	6		83.5	80	35.5		✓ ✓ ✓
	7		83	80	33.5		✓ ✓ ✓
	8		84.5	80	35		✓ ✓ ✓
	9		102	97	41		Dirt
	10		100	96	42		✓
	11		103	99	42.5		✓
	12		96	93	37		✓
	13		93	90	37		✓
	14		95.5	89	38		✓

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

§Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated by the circles. Particular care should be taken to note any *irregular* spacing between samples.

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CALIFORNIA COOPERATIVE SNOW SURVEYS  
SNOW SURVEY NOTES

Drainage Basin South Yuba River

Snow Course Summit Valley E2

Party A. Chase & E. Casley

Date March 31-45

*Description or Number of Course (1)	Sample Number (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Density 100 x (6)/(4) (7)	Remarks
	1	<u>357</u>	89	84	36		Dirt
	2		92	86	36		✓
	3		98	94	39.5		✓
	4		92	88	38.5		✓
	5		82	79	32		✓
	6		88	87	33.5		Grass
	7		96.5	92	39		✓
	8		92.5	87	35		✓
	9		97	93	37.5		Dirt
	10		94.5	90	36		✓
	11		98	93	38		✓
	12		98	96	39		✓
	13		97.5	92	37		✓
	14		99	95	38		✓

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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## COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin S. Yuba  
 Snow Course Soda Springs #1  
 Party J. S. Church  
 Date March 31 and April 1 total 14

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
								201 13-
Mar 31	1	71	54	83	106	23		
	1a	71.5	67	83	108.2	25.2		
	2	83	76	82	117	35.1		
	3	82.5	72.5	82	116.4	34.4		Continued surface
	4	80.5	73.2	92.5	114	31.5		stopped to go to house
Apr 1	5	58	56	82	104.8			Pass
	5a	84	60		110.5			
	5b	82	72.3		116.3			3pm Fence in center of bottom ice deposits and moist, but dry is green.
	10a							10a on surface green

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\*\*Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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From Notebook 19, March 31, April 1 "Called Mr. Snider"

## COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin S. Yuba  
 Snow Course Soda Springs #1  
 Party J. S. Church  
 Date April 1 145

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	6	90.8	77	82	119	37		Bottom of core slightly red
		-1/2	-1/2					
	7	90	73.6	82	118.8	36.8		Views 4-2 - 5-1 - 2 but fine in when seen & hollow flat snow green
	8	88.3	69.5	82	115.6	33.6		
		-3	-3					
	9	91	76	82	117.2	35.2		
	10							clipped in sec. 1 - 10a
	10a	92	76	82	117.2	35.2		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

\*\*Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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FEDERAL AND STATE  
COOPERATIVE SNOW SURVEYS

State.....  
 Drainage Basin.....  
 Snow Course.....  
 Party.....  
 Date.....

FEDERAL AND STATE  
COOPERATIVE SNOW SURVEYS

State California  
 Drainage Basin S. Yuba  
 Snow Course Soda Springs #1  
 Party J. S. Church  
 Date April 1/45

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
	11	87	69	82	113	31		Bottom solid dry
	12							Core felt and readily break
	12	93.5	77	82	118	36		Slaking in gutter + part of core But only slightly
	13							Clay color freezing in tube
	13a	88.2	46	82	109	2		Freeze in pipe
								Short waist. Freeze to cleaner. But dye greenish is too cold but red beneath rocks where

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*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of Tube and Core	Water Content Inches	Density Per Cent	Remarks
app 2 16 Apr	13	85	79	82	117	35		Reg Creakles Dye green throat No adhesion
	14							But snow frozen to sampler when latter lay on surface in air
						30.6		
	14	74.5	64	82	112.6			Perfect release
				5	5			
	14a	74	55	82	111.7			adhesion + packing Some freezing eyes hard in gutter, an observed greenish wet base of core
				4	4			

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yesterday snow moist today  
dry. Why? Descent of temp.?



$76.1 \overline{) 35.90} \quad \underline{471}$   
 $\quad \quad \quad \underline{3044}$   
 $\quad \quad \quad 5460$   
 $\quad \quad \quad \underline{5327}$   
 $\quad \quad \quad 1330$   
 $\quad \quad \quad \underline{761}$   
 $\quad \quad \quad 569$

8th. 0.72  
 9th .10  
 11 .07  
 12 0.16  


---

 15 1.05 in

Wed. 9 hrs  
 Clean.  


---

 Razor blades  
 13 days



91  
 Wch 26 AG+R.  
 Apr 2 (prec)  
 Precip.  
 " 15

- Soda Spgs -

Dist	89.5	Water	35.5	39.7%
	85.0		33.6	39.5%
	12.0		1.05	
	76.1		35.9	47.2%

---

Truckee R. S.

Apr. 2 (prec)	Dist	32.3	Water	12.8	Dens. 39.6%
Precip.				0.84	
15 "		24.0		10.1	42.1



Summit Valley.

Mar. 31

96.3 - 39.7

41.2

Survey

Apr. 15.

4, 5, 6

D. 89.5 W. 38.5 D. 43.6



$$\begin{array}{r} 3) 268,5 \\ \hline 89,5 \end{array}$$

$$\begin{array}{r} 96 \\ 15 \frac{1}{2} \end{array}$$

$$\begin{array}{r} 89,5) 38,50 \\ \hline 3580 \end{array} \quad \sqrt{430280 \frac{1}{2}}$$

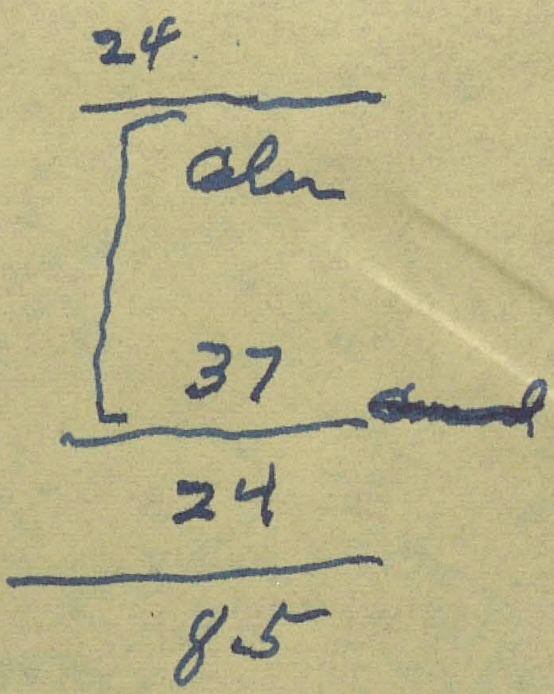
$$\begin{array}{r} 24 \quad 2700 \\ \hline 2685 \\ 1500 \end{array}$$

$$\begin{array}{r} 85 \\ 37 \\ \hline 48 \end{array}$$

$$\begin{array}{r} 37 \\ \hline 61 \end{array}$$

Surf.

$$\begin{array}{r} 85 \\ 61 \\ \hline 24 \end{array} \quad \begin{array}{r} 24 \\ 37 \\ \hline 61 \text{ in.} \end{array}$$





71.5	25.2
83	35.1
82.5	34.4
80.5	31.5
82	34.0
90.3	37
90	36.8
88'	33.6
91	35.2
92	35.2

87	31
93.5	36
<del>88.2</del>	<del>27.2</del>
85	35
73.6	29.7
<u>1189.9</u>	<u>469.7</u>

No. 13

sum in.  
850

Water = 39.5%  
= 33.6

14)

11	13	70	58
12	94	89	37

sum.

107.4  
89.5

35.5 ~~37~~ Col. N. 38.6  
39.7 = 92.0%

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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DIVISION OF WATER RESOURCES  
401 PUBLIC WORKS BUILDING  
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CALIFORNIA COOPERATIVE SNOW SURVEYS  
SNOW SURVEY NOTES

Drainage Basin South Yuba Basin

Snow Course Soda Springs #1

Party A. Chase, J. S. Ed. Agency

Date March 31, 1952

*Description or Number of Course (1)	Sample Number (2)	§Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Density 100 x (a)/(b) (7)	Remarks
		—					
<u>Course No. 2</u>	1	25	80	76	32		Ice on bottom
	2		84	81	33		"
	3		88	83	35.5		
	4		86	82	34.5		Dirt
<u>Key</u>	5		83	78	31		Ice on Bottom
	6		90.5	84	38		Dirt
<u>Course</u>	7		94.5	89	38		✓
	8		96	90	37.5		✓
	9		96	89	36.5		✓
	10		87	85	35		✓
	11		95	90	38		✓
	12		94	89	37		✓
<u>summ.</u>			107.4				
			89.5		35.5		Cal. N. 38.6
					39.7		= 92.0%

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

§Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated by the circles. Particular care should be taken to note any irregular spacing between samples.

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**SNOW SURVEY NOTES**

Drainage Basin South Yuba River

Snow Course Joda Springs #2

Party A. Chase & E. Ardsley

Date March 31-15

*Description or Number of Course (1)	Sample Number (2)	Distance Between Samples (3)	Depth of Snow Inches (4)	Length of Core Inches (5)	Water Content Inches (6)	Density 100 x (6)/(4) (7)	Remarks
	1	<u>25'</u>	86	83	34		Dirt
	2		88	85	35		✓
	3		90	88	37		✓
	4		93.5	91	39		✓
	5		90	87	38.5		✓
	6		89	87	35		✓
	7		90	88	38.5		Rock
	8		88.5	86	37		✓
	9		91	89	39		✓
	10		93	91	40		✓
	11		94	90	39		✓
	12		93	90	39		✓

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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From Notebook 19, inside front cover

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WASHINGTON, D. C.

5241 Broad Branch Road, N. W.  
 Washington 15, D. C.  
 June 2, 1945

## TO MEMBERS OF THE EXECUTIVE COMMITTEE:

In accordance with the action of the meeting of the Executive Committee on June 1st, Dr. Adams is calling a meeting of the Executive Committee to be held in the Board Room of the National Academy of Sciences, National Research Council Building, 2101 Constitution Avenue, N. W., Washington, D. C., at 9:15 a.m., Saturday, June 16, 1945.

This meeting is being called primarily to consider the draft of the revised Statutes and By-Laws, copies of which were distributed to those in attendance at the June 1st Meeting, and are herewith distributed to others. Various matters which bear upon the revision of the Statutes and By-Laws must also be considered and decided upon.

In addition it is anticipated that there will be:

- (1) Further consideration of the matter of free distribution and exchange of the Transactions
- (2) Decision as to increase in the annual dues rate to \$5.00 for the calendar year beginning with January 1, 1946, or whether this should be postponed to January 1947.

The Executive Committee decided that suggestions and comments concerning the revised Statutes and By-Laws be received by the General Secretary not later than June 10th in order that the suggestions and comments may be suitably collated for the discussion of June 16th.

Full attendance is urged, especially because of the importance of these matters. Section Presidents who find it impossible to attend should designate a representative. It is possible that this meeting may extend into the afternoon, and it is hoped that all members of the Committee will arrange their affairs so that they may be in attendance throughout the full session. Arrangements for luncheon at some nearby point will be made.

It is to be recalled that at the meeting of the Executive Committee on December 12, 1944, authority was given for the payment of transportation expenses for members of the Executive Committee for such meetings as the one now called.

Sincerely yours,  
 John A. Fleming  
 General Secretary