TRU-LINE

WIRE-O

STENOGRAPHIC NOTES

No. 8 –

From January 30 1943

To February 18 1943

No. 18-G

Jan 23 -	Present	Reclamped
No. 4	18.72	5.94
Jan 24 No. 6	17.26 Gain ~~14.06~~ 11.22	Forgot to record wt.
No. 7	16.78 = 12.98 in.	
No. 8	15.88 = 10.33	3.87
No. 9	19.60 = 12.90	4.67
No. 10	19.35 = 13.03	4.65

5.0 in
4.72 "
4.58 "
—
4.02 "
3.93 "

— Vol. 3 —

Jan. 24 Ground was watersoaked.

Saturday January 30

Friday (yesterday) second storm followed heavy storm predicted by Prucha.

Sky yesterday seemed clearing but lenticular clouds in the east. Last night storm (Reno rain, snow, rain), clearing today at Soda Springs.

"Yesterday wind variable, today east" - Curley.

Snowplows at work along Donner grade and west. Present snow depth at Soda Springs 93 in. Skiing difficult because soft. Trails being worn. "To your waist" if off trail without snowshoes. Lift working and hill active in afternoon.

Vanderford - Warm tho rough - Lieut. Pront at Auburn - Lieut. — read my Quartermaster letter. and ordered a truck to take "this fellow" to Soda Springs. He and Pront will come down to see the station.

Hotel —

Shoveling the Platform

11 a.m. Not negative of Platform and Frig Tower Buried deep tho lots free.

Photo of Soda Springs Platform in photo archives

Dec. 30 Orig. Present

	Orig.	Present
No. 4	2.19 in	10.31
		Gain 8.12
No. 6	3.76	11.37
		Gain 7.61
No. 7	1.20	8.20
		Gain 7 in
No. 8	4.03	10.60
		Gain 6.57

5.0 in
4.72 "
4.58 "

4.02 "

3.93 "

— Vol. 3 —

Jan. 24 Ground was watersoaked.

Saturday January 30

Friday (yesterday) second storm followed heavy storm predicted by Pancha.

Sky yesterday seemed clearing but lenticular clouds in the east. Last night storm (Reno rain, snow, rain), clearing today at Soda Springs.

"Yesterday wind variable, today east" – Cisley.

Snowplows at work along Donner grade and west. Present snow depth at Soda Springs 93 in. Skiing difficult because soft. Trails being worn. "To your waist" if off trail without snowshoes. Lift working and hill active in afternoon.

Vanderford. Warm tho rough. Lieut. Pront at Auburn. Lieut. — read my Quartermaster letter. and ordered a truck to take "this fellow" to Soda Springs. He and Pront will come down to see the station.

Hotel —

Shoveling the Platform

11 a.m. No 6 negative of Platform and Frig Tower Buried deep tho sets free.

Photo of Soda Springs Platform in photo archives

Jan. 10 –

	Present	Recharge
No. 6.	11.5	2.7
No. 8	10.59	3.27

Jan. 11

No. 4	10.54	6.25
No. 9	12.85	6.7
No. 10	14.13	6.32

Jan 12

No. 6		6.04
No. 8		5.55
No. 7	Rem 3.8 in above bottom	

Jan 16

No. 7	3.75 in

5.0 in
4.72 "
4.58 "
4.02 "
3.93 "

— Vol, 3 —

Jan. 24 – Grand was waterboarded,

Saturday January 30

Friday (yesterday) second storm followed heavy storm predicted by Rucha.

Say yesterday seemed clearing but lenticular clouds in the east. Last night storm (Rain rain, snow, rain), clearing today at Soda Springs.

"yesterday wind variable, today east" Cooley.

Snowplows at work along Donner grade and west. Present snow depth at Soda Springs 93 in. Skiing difficult because soft. Trails being worn. To your waist "if off trail without snowshoes. Lift working and hill active in afternoon.

Vandenford – Warm the rough – Lieut. Pratt at Auburn – Lieut. — read my Quartermaster letter. and ordered a truck to take "this" to Tahoe" to Soda Springs. He and Pratt will come down to see the station.

Hotel —

Shoveling the Platform

11 am Note negative of Platform and Fire Tower Buried deep the Sats free.

Phot. of Soda Springs Platform in photo archives

11:45 a.m. Reset hygro-thermograph. 12 Noon

Min 32°F; H-T 34.5°; Psych. 34°

Dry 34(33.6)°F

Wet 32

Wind changeable yesterday; but steady E today.

Snow in shelter soft; thin shell ice on floor. Snow hood on shelter 21 in. deep.

Temp. from 20°F - 33°F during period.

Rel. humid 67 to 100%.

→ Almost no rime; wind probably moderate. little adhesion and no snow on hairs or thermog. unit.

Sunshine Recorder -

Buried almost entirely in snow. But at noon when exposed, the merc. column was below contacts even while disk could be seen round thru the clouds. Hammer shadows were faint and disk just visible. Is the slope of recorder tube too steep?-

Precipitation Gages

No. 1. Snow hood on shelter is 6½ in. above top of gage. East wind would deposit spindrift from it in the can.

No. 2. Stevens W.

snow overhang on orifice

All slats clear but snow built up from platform and railings.

When undercut, snow and cones readily

slipped down, and the intermittent sun cleared practically all orifices.

1:30 pm.

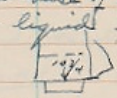
Snow at throats of all cans has melted the earlier projecting above them. Have shoveled platforms clean. Snow slides readily down.

Gage No. 2 (cont.)

Snow adhesion in throat has fallen in. But contents of tank still frozen. Double wall a drawback for resulting thin initial check on freezing.

Depth to top of snow - - - 31 1/2 in.
" to frozen liquid - - 59 3/4 in.

Height from base of case to top of frozen liquid - - - 10 3/4 in.



Cone only one-half the diameter of the orifice and projects on one side (east) only.

Recorder has evidently stopped. The [illegible] has tipped at far right end of spiral drive and blocked. Then weighing beam is moved by the hand with difficulty. Has something clogged?

Have all batteries been exhausted? The weight still swings in the well and the sheet moves.

High time to act.

No. 3 - Engineers Gage.

Contents are liquid - 9 3/8 in. deep but soft slush is floating on top. It should melt and be absorbed if the temperature rises.

Swaying collar rusty. Some snow still adheres. Paint it black. Shall the under cone be left white?

Strange that the frozen liquid should have revolted. Snow drifted highest on the lags of No. 3. 45 in.

No. 4 - Shielded Standard.

Wt 10.94 in. Gain since Jan 24, 5.0 in.

Rotten shell ice floating on top.

Stirred contents with glass sealed tube and wiped oil back into can.

Foam full of snow. Did X cross-braces catch it? Little erosion on platform; snow on roof of shelter 21 in. above all barriers. Some drifting as at No 3. Lower frame of No. 4 approx. 3 feet high; full. Drift to No 3 45 in.

No. 5. Frisky.

Now clear of snow except floor and railing. Railings should be kept at

a distance from receivers.

Pasture Sat—

Gage No. 10 · (3 ft. high can).
Weight 9.37 in. Gain since set 4.72

Base of can now beneath level of snow

Consequently ice film frozen to surface of can. Snow scalpel a splendid general utility instrument for cutting snow and scraping ice loose. Adhesion caused by snow and freezing in snow. Like sampler.

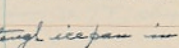
When being weighed, the mouth of the can was below the level of the snow. Made a snow well to hang it in. Deeper than shovel handle.

Core.

Ice film frozen and slush in can.
Ice tough. Kept cold by snow pack.
Kept cold by snow pack?
Ice strips into small pans floating in liquid.
Stirred liquid. Wt still 9.37 in.
(possibly 9.36 in.) No. 9.37 in. No appreciable loss in weight after loss of oil on tube by stirring.
So stir with impunity.

Gage No. 9 - (3 foot-high can) north end of ray course.

Weight 9.25 in. Gain 4.58 in.

Some erosion 

Can still in full sun and clear of ice.
No ice film on outside as with No. 10.

Core.

One small tough icepan in center.
After stirring, weight still 9.25 in.
Ice pan broken up into 2 or 3 pieces.

Trestle Gages.

Thin loose ice on floor. Snow on railing 17 in. high; on roof of shelter 18 in. and level except rounded at edges. Max. depth 18 in.*

Snow eroded below trestle. yet distance to floor is only 39 in.
From floor to orifice of Standard Gage 78 in (6 ft 6 in.). Standing on the floor I can feel spindrift snow in my face.
→ a problem of over-catch to be guarded against.

* Erosion of snow on trestle probably greater than on platform of hotel! (on roof of shelter in pasture 18 in.; on platform 21 in.) or is precip. less at trestle?

Floor under No. 6 has caused much storage of snow and stairs at both 6 and 8 aid accumulation. Tower is

free beneath No. 7. Board floor could be removed from below No. 6 and the thermom. shelter to advantage. The snow does not reach gage nor shelter.

4:40 pm. Hygro-Thermograph.
H-T 33°F; ~~mine~~; 32.7°F; sling psych. 32.8°F
Dry 33°F
Wet 32°F
Reset 5 pm.
Temp. for Period
Min 20°F (reset 32.1°F)
Max 33.5°F (reset 32.1°F)
} Range remarkably ~~low~~ narrow.

Some ice-snow on floor and some behind H-Therm. Set it out in the middle.

→ By prefolding sheet, it entered slot readily. But sheet became moist immediately and started to swell and wrinkle.

Sheets + clips.

Sheet taken of bulged  , so pen of thermometer caught on edge and was being pulled to a flat angle and would have been broken off eventually.

The other H-T fastening is safer as done by Curley 
on beneath the folded end of the sheet. The other end is flat on the drum.

Rime on west side of shelter sealing entire side.

Gage No. 6 (2 ft. high can)
Weight 8.08 in. Gain — forgot to

Small pan of ice in center.
Stirred thickly. Drags in bottom.
Ice breaks up.
No adhering snow inside or out.

Gage No. 8 (2 ft. high can)
Gain 3.93
Weight 7.8 in. Forgot to record weight when refilled —

Projections of bracket support and edges of box in which can sits have permitted building up snow around can until it projects 3/4 in. above rim.
Snow sheet also adheres to lower part of inside wall.
Solution, however, is liquid. No frazil apparent. Stirred it.

Gage No. 7 Stevens Q.
Outer can quite clear of snow and ice, but snow in intake pipe.
Top of snow 22 in. below rim of pipe, and apparently frozen to wall.*
Pan at 6 pm. is 20.8 in.* above bottom. The pan has been higher and has

* Gain +1.02

moved by right angles. Release of snow adhesions and resucking of moisture?
The bucket now swings loose. Is the snow detached. Observe pan tomorrow.

One more week to run. Ice is plastiful but can the dam absorb the snow? The capacity of the intake is now only 22 in. This means storm was (93-69) 24 in.

Snow Stake - - 93 in. (Near the store 88 in)
6 pm Jan 31.

Wind Shields

Not a shield has failed this week.
Has the wind been light?
How about Fritz trace? Still a bend?

Ice Covers.

Temperature has been continuously below freezing but not below 20° F and then only briefly there.
Even this temp. tends to cause freezing of the charges.

Drift Snow

Snow drifting heavily along surface at 6 pm. Snowshoe tracks originally fully + in. deep are filling rapidly with snow

Crust appears to be forming. Slight sublimation on snow surface today.
Does the wind have any effect? See

Seligman.

→ Observe gages No. 7, 9, and 10 to see if any of them aspec. 9 and 10 accumulate snow during wind.

- Gage Gains during Week -

Hotel: Unshielded No. 1 . . . 3.78 + .04 in = 3.82 in.

Shielded No. 4 . . . 5.00 "

Pasture: " No. 5 . . . 4.55 "

On Treate " No. 6 . . . — "

15% " No. 7 Q . . . 4.02 + 0.45 = 4.47 in.

Unshielded No. 8 . . . 3.93 "

Lower Shielded No. 9 . . . 4.58 "

10% " No. 10 . . . 4.72

Heat Burned

Weather at Soda Springs

Jan 25 - 31

Date	Max	Min	Precip. in.	Snowfall in.	Snow on Ground in.	Winds	Clouds
Jan 25	30	19	.09	1	71	LNW	Cldy
" 26	33	25	.58	7	78	LN	Cldy
" 27	32	24	.69	8	86	LNW	Cldy
" 28	34	23	.15	2	87	LNW	Cldy
" 29	32	25	.51	5	88	LN	Cldy
" 30	31	25	1.76	20	100	LN	Cldy
" 31	42	17	Trace 0.04		96	BE	Pt Cldy

Sunday, January 31, 1943.

Sampler

A clear day with strong east wind drifting snow from very exposed slope or point. Will the sampler stick? Too weary to survey before sunrise. Besides there was no time last night to shellac the tubes. Was copying Saturday's notes until midnight.

Therefore, after breakfast the sampler was leisurely and thickly covered by a film of shellac in several applications.

Gages and Apparatus

Platform:

No 3 - Gage (Engineers)

Solution starting to congeal but center with sucker load is still soft.

No. 4 - Standard (shielded)

Solution liquid

All shields clean and rattling in the east wind. Erosion has cleaned platform to bare ice.

Banners on hills. Snow drifting over pasture. Skiers hailing up the hill. Abbot & Costello are now filming on the

mountain top. Abundant action at least by nature.

Sunshine Recorder -

Wire found pulled out at post. Mercury does not rise to contact points and close circuit even when the sun is two-thirds toward the zenith. At 11 a.m. tilted it more toward the horizontal.

Recently it failed to record on triple register when the sun was shining. Was this due to ice-cover or broken wire or steep angle of tilt?

Triple Register -

At noon, when circuit was closed, found clicking but no stepped  movement of sunshine pen. A loose nut, loosened by lifting the pen while changing the sheet, was the cause, by obscuring the continuity of the mechanism.

The tension of the wind-velocity arm was increased by tightening the butterfly nut, thus causing the bar and pen to jerk back to its maximum and making a more pronounced point, as  etc.

Curley is now happy.

Oil for calcium chloride

Have now finished 3 cans Veedol from Shell.

Stevens W - Gage No. 2

Solution frozen as before - Lock also frozen. Used hot towel. Then oiled its insides.

Tension roller also found loose from its supporting bowls and lying beneath the sheet on the floor of the case. How possible?

No tracing except a straight line by the pen parallel to the base line caused by the movement of the sheet. The clock still runs.

Can the failure of the batteries - both heating and motor - be due to the continuous temperature of frying caused by the enclosement of the battery box in snow. The warming effect of the sun can no longer penetrate to the box and the black color has lost its earlier warming effect.

[over]

From previous page.

But what caused the reverse movement to block at ~~that~~ and tilt? Had it anything to do with the forcing out of the tension roller?

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State California

Drainage Basin S. Yuba.

Snow Course Soda Springs No. 1

Party

Date January 31, 1943

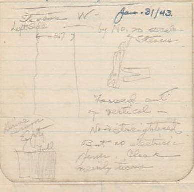
*Description or Number of Course	†Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
No. 1	3	90 -1.5	79.5 -1.5	82.8	111.8	29		Soil pass
	4	78	61	"	108.2	25.4		Coarse ice crystals
	4a	77	68.7	·	107.2	24.4		
	6	91	79	"	111.6	28.8		
	7	94 -1	69.2 -1	"	107.8	25		Crusts. Sampler jumps. Soil moist.
	8	92	67	"	112.6	29.8		Sod wet. Sampler jumps
	9	96 -1.7	81.3 -1.7	82.2	112	29.8		Wet sod.

*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.........of.........sheets. Comp. by................Checked by...............

From previous page.



Drainage Basin ....

Snow Course ....

Party ....

Date ....

*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
~~Passing train east - has 20 coaches~~								
~~Troop train west - has 15 coaches~~								
10	10	82	71.5	82	106	24		Coarse ice crystals
	11	96 −1	85.1 −1	82	115.4	33.4		Moist soil
	12	91.5 −1.2	72 −1.2	82	105.9	23.9		Soil moist
	13	100.5	84.5	82	114.9	32.9		Soil somewhat frozen
average .10/mean		90.5				28.7	31.2%	

Percentage of April Normal 67.1% (for Stevens R.)

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

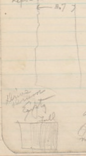
†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

No.......of.......sheets. Comp. by.............. Checked by..............

From previous page.

Stevens W- Jan. 31/43.

Left Side



by No. 70 scale of Stevens

Forced out of vertical — Now straightened But no electric jesser. Clock merrily ticking —

~~Snow Survey~~ PG & E -

Feb 2 Soda Springs

	D.	Dens.	Water Equiv.	Norm.	% of normal Equiv.
Soda Springs	90.5	33.1	30.0	(42)	71.4
Donner Summit	89.0	33.8	30.1	47.8	63.0

Finished snow survey 4:30 pm
Max. temp. for day by H-T . . . 34°F.
Min. temp. by min. therm. 19°F.

The only adhesion of snow to the sampler was at Gage 10 in powder drift-snow. An easy survey. The jamming of the sampler was due to crusts that bore rather than cut smoothly.

Crusts:
Only a slight crust of snow, if any. Too cold. The snow is still dry powder. 34°F is scarcely warm enough even by insolation to warm the drifting snow? Compare with snow-slab that is drift snow cemented by moisture. Had one case earlier in season. On Jan. 31 no melting and no freezing.

End

Gages -
Solutions in Nos 8 and 9 fluid.
No. 10 resting in snow is congealing.
Query: Will a constant temperature of 32°F. cause calcium chloride to freeze? The other gages, not in snow, will warm up in the sun. Is this why the Army Gauge has thawed out since the snow around it was removed?

Gage No. 7 – Stevens Q

Set	Jan. 12 ...	3.8 in.	above rim
	" 24	16.78.	Gain 12.98 in.
	Jan 30 ...	20.8 in.	Gain 4.02 in.
	Jan 31 ...	21.25	0.45 in.

Solution absorbing snow tho some snow still projects upward into intake pipe. Snow now loose from wall.

— Jt Recovery of weight. Good for meas.

Gage No. 6.
Liquid contents.

Drift Snow

Loose ice crystals uniformly 1 mm in diameter. Dry, non-cohesive yet – even 1 foot down.
Old snow 3 mm in diam.

Snow Density

	D.	Case	Samp.	Total wt.	In. Snow Water Equiv.	Dens.
Recent Snow	32.0	comp	80.8	89	8.2	25.6%
Older Snow	56.5	53	82	104	22.0	38.9%
Total depth	88.5				30.2	34.1%

[Note – Av. 10 meas. – Dens. 31.2%]

A good day.
A rich alpineglow on Mount Lincoln.
Castle Peak looks like a snow mass —
bombarded with snow.

Saturday Feb. 6, 1943. To Soda Springs

Snow in canyon but it is thin.
Fog at Boca and continues to
Donner Lake. Frost on trees
half up Donner Pass.
Thin ice on Donner Lake except
near north shore.
At Summit no fog nor frost
on the trees. But fog close at
Norden. Lake Norden white with
snow. No open water.
Road ice and snow free except
at one spot on east side of Boca.
Two snowballs (or slides) on
Ski run halfway down Beacon Hill.
At Soda Springs air is calm the
call. Sky is clear. 4° F last night.
Flowers and ferns in abundance.
No bed except a very special cot for me

in the Office.

Propnip. Sunshine recorder encased,* likewise wind vane. Cups has some burden but are turning slowly.
Frost feathers 5/8 in long. But shaving from slats of windshields.
Forgot to bring my camera.

Triple Register.
Wind direction points do not record. Why the numerous points . . . . . and then sparser points . . . or none at all? Why uneven?
Only times that points do not appear in calm. Points also appear uneven? Why? Ask Brucke.
Yesterday drum stopped at 10:30 a.m. the clock was still running. No set-screw loose.

Hygro - Thermographs (Hotel)
10:10 am.
Min. 20.1; H-T 22°F; psych. 23.8°F.
Dry Bulb 18.8°F (H-T. 21°F)
Wet Bulb 18.2°F

Is frost due to 50°F yesterday? H-T case frozen shut. Max & min would not turn for Curly. Use hot wet towel. Oiled locus turn easily.

* Column still down in black chamber. See if frost clears away without assistance. Registered at 11:15 am

Frost on hairs of hygrometer and thermal units

No shade but that of body for whirling → psychrometer. Is relative humidity the same on snow surface in shade of platforms? Test this. Fog is thickest near ground and thins upward. Is temperature also lowest near ground?

Hygrothermograph (Pasture)

Min. 31°F; H-T 31.5

Max. temp. for period 51°F } Reset 31.6°F.
Min. " " " +1.6°F }

Dry temp.	36	39	35.6 °F *
Wet "	31	32	31.0

Meas. on snow in shade of trestle. On trestle most face sun.

Hairs of hygrometer stuck in strands. Parted them with knife-blade. Pen dropped slightly. Due to combing of hairs or rising temperature? Rising rapidly in halfahour.

Feathers on grouse 1 in. long. All feathers dripping in sun. Temp. now 42°F. Hot beneath my black overcoat.

Skiing all over Pasture espec. down the dam.

By creasing record sheet sharply, the marks will alter the alt readily. But a sharp, firm crease is left. The pen may again [illegible] catching [illegible] be permitted to run across. [illegible] the movement [illegible] altitude.

Reweighing Gages

Hotel - (Forenoon with revisit in midafternoon)

No. 2. Stevens W.

Oil in damper cup so stiff* with cold ~~that weigh bar had to be forced~~ upward. Here is explanation of tilted rider? End of bar so low that rider struck lower prong of reverse and blocked the motor instead of riding into the open prongs. [?] and reversing. Did the battery then run down?

But the heat unit? Collar has tiny frost on its inside and outside. The noon air (shade) temp. is 21°F, there seems to be no heat. Probably insulation has warmed collar above 32°F.

Contents of receiver is sponge ice with only a trace of liquid, but abundant room for snow if it falls.

No. 3. Army Engineers. Depth of liquid above bottom 9.51 in.

Thin slab of ice on solution at 10 a.m. Broke it with a stick. At 3 p.m. ice is now floating and rotten. Not over 1/8 in. thick! Punched it to floating fragments.

Not so much [?] as at No. 4 apron (collar) [?] sways gently in the

* Why not use an [?] chamber instead of oil for low temps?

Note: Was the steady eight-angular [?] tracer until earlier due to the thickening of the oil in the mill?

light wind. But a pendant rod if attached to the collar would freeze in the liquid and even make the collar rigid.

Stirred contents with glass tube.

No. 4. Shielded Standard. Wt. 11.57 in.

Thin shell of ice at 10 a.m. Both rubbery and slightly slushy. Broke it with a stick. Stirred.

At 5 p.m. only a wafer (in diam. and thickness) of ice remains. Melted during the day. Max. 52°F. Sunshine, after 4°F at night and some frost on structures and cans.

No. 5. Never more than slush on surface of can. Recorded wt. 0.55 in Jan 31 – Feb. 6.

No. 1. Standard Unshielded. Daily. Total 0.41 in

~~Snow plow~~ ~~making~~ passways. Is shooting snow over lower roof of saloon and twice as high. As ~~eruption~~ cascade of snow.

The snow dust drifts in the form of moist vapor even to the path from boiler-room (in rear of hotel) to weather platform. Power! I never believed that Donner Pass could be kept open in winter.

Sunshine Recorder

The mercurial column of recorder was slowly rising from block chamber at 10:20 am even beneath frost feather and closed the circuit at Triple Register at 11:15.

But about 2 pm the column fell below contacts while the sun was in cirrus cloud the shadow thrown by sun was still black.

So flattened the angle to 10° from horizontal. Almost too flat for column to be thick enough to rise to contacts when it floods by.

Better raise the column next trip. and use hot towel to remove frost.

Curley will observe behavior in frost and at present angle.

Pasture.

Reweighing and Beating Eggs.

at 2:30 Curley and I brought up from station the sack of fresh calcium chloride (110 lbs) and placed it on concrete shelf in carpenter shop.

No. 6 Present weight 8.51 in Fluid. Shook, then stirred

No 7 - Stevens Q.

Jan 10 - Feb 6 ... 17.98 in.

Jan 30 - Feb 6 0.52 in.

Recharged 5:10 pm (3 cartons) 3 in. (above bottom).

Oil in well fluid. Just started on 4th month. Long period test.

Siphon just starting to flow.

Faults.

Bucket frozen to plate. Required scalpel to pry it loose. Danger of spilling water. Need lugs on bucket and handles to cling to it and lift it.

Observer's step too low to raise bucket when heavy without slopping as it did today. One must lift it above his head at an awkward posture. Cant have steps as for Nos 6 and 8.

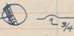
Contents

Snow already fluid and settled down in bucket. But bucket still adhered slightly to hook and had to be broken loose, changing gage from 21.63 to 21.78 or 0.15 in. water.

Core of ice - 11 in. diam x 2 in. thick. Solid throughout but porous or crystal-line

around edges. A ridge traverses the core. Probably snow residue.

Thus,

Ridge  $3/4$ in. above general level of core.

The oil is still in the water around the core but not in it.

→ A very successful test without re-adjustment or aid for the month. But snow adhesions affected curve locally - These, however, can readily be identified and smoothed out.

No. 8. Standard Unshielded Av. Height 7.47 in. Gain −0.33 in.!

At noon has slush or almost sherbet on surface. Is it a mixture of oil and water rather than calcium? [a silver plane dunes most].

→ At 5 pm. contents have become fluid. Stirred.

No. 9 Pres. weight 9.82 in Gain 0.57 in

At noon had rather thick crust floating on top. Can mean to but not sitting on snow

Core is 1/2 diam. of can but so rotten that it breaks up by tapping it with a yard stick. Stirred.

Bottom of can approximately 10 in. above snow but a tiny drift at west edge of town is level with it. No snow contact.

No. 10 Pres. weight 9.88 in. Gain 0.51 in

at Noon, Core heavy - considerably more so than in No. 9 the south side of can is entirely exposed & even with only north side in 2 inches of snow.

At 5 pm can clear of snow. On south side, snow 10 in. below can. Drifts on NW, N, and NE but not in contact.

Core 5 1/2 x 4 1/2 in ○ and 1/8 in by 4 in. Coarse but not too tough to break by stick.

Stirred.

* also rain (0.29 in) Feb 4. 7 his should be a thing factor.

Crust

10 a.m. Can almost walk on ski tracks. Max. 51°F on Feb 4 and 45°F, 45°F, and 34°F on days since. Yesterday 50°F, today appx. 52°F.* Some melting and freezing, particularly yesterday.

The pinched balls halfway down Beacon Hill are real and resulted from the break-off of the cornice (built by recent heavy wind?) stopped midway by friction?

Snow stake 80 in.
Settled 8 inches in week.

Melting

Snow feathers (pure white) on snow in pasture have melted today only enough to make sparse pin-points (hardly visible) on the hard after it has been pressed against it.

But on railroad tracks melting is rapid. Snow is black or gray there.

Melting also on side of highway and in paths. Sporadically there.

Begin

Snow feathers

Aven

Freezing (Pasture)

at 5:45 pm crust starting to freeze. Daily max. Temp. appr. 52°F. Old crust 1/4 in. thick. Formed yesterday? at 6 pm crust practically dry.

6:30 pm

Temp. H.T 39.8°F; min. 39.1°F

Crust dry and brittle.

What temp. an hour?

Darkening (on way to Hotel)

Crust damp to hand but firm, that is, soft granules on surface are moist.

9 pm. (Hotel)

Melt water has filled ruts in front of postoffice and is freezing.

End

Density

Sampled Point No 9 on Course No 7.

D.	Core	Sampler	Total Wt	Water Equiv.	Dens.
82 in	71.2	82.2	109.2	27.0	33.1
-.5	-.5				

Coarse ice crystals at bottom.

Evidently failed to reach the bottom. I stopped because the reading was that of soil.

2.8 in. less than Jan. 31.

Too dark to sample again. Had brought flashlight from Reno but had not brought it to the Pasture. Hereafter must place it in the knapsack of tools.

At Point No. 9 Jan. 31, results were

D.	C.	Sampler	Total	Water Equiv.	Density
94.3	79.6	82.2	112	29.8*	31.6

Density has increased only 1.5% during week but water content as measured is 2.8 in. less.

Estimated density.

If 29.8 is used as base (Jan 31), dens. 36.6 %

If 29.8 + 0.52 precip during period is used 30.32 in. = 37.2% density.

But some evaporation may have occurred. → Bring flash next time. avoid surprises.

The max. increase in density for week is therefore 5.6%

Evening

Airplane with lights going east. Mammato-cloud sky mottled with scarlet. White foreground of snow, background of green forest, scarlet sky. What fiend to stay your steps? Crescent moon appears as color fades.

* Feb. 2, Course No. 1 as meas. by PG&E was 30.0 in. water equiv. Prec. Feb 2-6 was 0.41 in. = 30.41 in.

Comparison of Catch in Gages

— Jan. 30 - Feb. 6 —

Hotel —

No. 1 (unshielded) . . . 0.41 in + T(.04 in Jan 31) = 0.145 in

No. 2 —

No. 3 Frozen Jan 30 ; Feb. 6 Depth 9.51 in = ? in

No. 4 10.94 to 11.57 in. = 0.63 in

No. 5 - Recorded 0.55 in + T(.04) = 0.59

Pasture No. 6 8.08 in. to 8.51 in. = 0.43

No. 7 Recorded (Stevens Q) 0.52

No. 8 7.8 in to 7.47 in. −0.33*

* Unshielded - Snow eroded?

Yet snow cleared away Jan. 30 and solution (which was fluid) was stirred. Only ½ in. precip. (water equiv. and mostly rain since that time.

No. 9 - Near ever -

9.25 in. to 9.82 in. = 0.57 in

No. 10 - In drift area.

9.37 in. to 9.88 in. = 0.51 in

Drift Catch

* → No apparent excess from drift snow. Study wind movement, surf, and rain during period to yet try 4 cocoa cans in vertical determine effect of drift catch. Fasten cans to slender rod fastened to treadle.

Divergence in catch at gages very slight. Two failures - Gage No. 8 above deficiency and snow survey at Station No. 9 was incomplete.
any Engels Gage . . . ?

Weather Record at Soda Springs

	Max. °F	Min. °F	Precip. Water equiv. in	Snowfall in	Snow on ground in	Wind	Clouds
Feb 1	36	5			95	LE	Clr
" 2	51	4			93	LNW	Pt Cldy
" 3	45	10			92	LE	"
" 4	45	10	0.12	1	93	LNW	"
" 5	34	11	0.29*		92	LNW	Cldy
" 6	50	4			90	LN	Clr
			0.41				

" 7 Report from Donner Summit . . . fog and snow: at Reno rain. Evening moonglances.

" 8 at Reno film gone on ground. Snow sends during day. Air crisp but invigorating in sun. Wind fresh.

* Rain

Army.

George Stiles has returned.
"Papers have been sent to Salt Lake three days ago. May be days or even three weeks on course, but change in tenancy will be sudden. Appraisal will come later." Hotel for Mil. Police.*

Lieut. Frame has been transferred to Auburn. The Jones' house burned after they had vacated.

Lieut. Prout had been here asking Allie about me – my office and work. Wants to see me. Phoned him at 2 p.m. He suggests that I stop at Vanderford next trip up from Reno and he will then have me taken on to Soda Springs.

[Feb. 8 Prof. Blahn came to arrange a date for his class to visit Soda Springs and observe snow surveying. Monday March 1 was set. Gas rations can be had but the exact day of use must be given in application.]

*Hotel was also being considered as canteen, but expense would be high for water and sewerage system; [illegible]

Fires

Watchman's cabin at foot of Donner grade burned.

Then Jones' cottage across from Hotel. Finally Tourist (Swanson) Lodge near Sierra Club Lodge. Impossible to

present or save anything. Defective mining after the storm? Mrs Jones wonders, What next?

Personnel

Margaret and her girl waitress gone. George is retaining the two men — husky and fast, and Todd has been given bus-boy job clearing tables. I miss the girls, "good waiters, too" agrees Ollie. "Beds full but I can sleep on a cot in the office." Some boys are taking the night bus to Truckee to sleep.

At dinner 60 soldiers from Marysville for week end.* They ate at 6 pm. The guests at 7:30 but some had to wait. I went in at 8:30 pm. Vegetable dinner. Even minced chicken gone. But I had sufficient.

Abbot & Costello.

The white igloos were halves of mammoth snowballs 8ft in diam. and had been taken up the hill.

There was also an ice rocking-chair on skis "shot thru a door". Then a pony in a truck brought to draw the cutter. and a mammoth

* They will have breakfast and lunch but planned to camp out. Instead they will sleep in Legion Hall at Truckee as invitation.

St. Bernard, who menaced the carpenter shop to Amy's threat of leaving if the dog didn't.

Finally a gas motor with handles — to be attached to what? A toboggan? What else? Did not ask nor look.

<u>Need</u> -

Shellac, first aid bandages, wiping cloths. Forced to use handkerchief to mop up slopped contents of bucket in Stevens Q (No. 7)

<u>Study</u> -

1. Absorption of moisture (a) by dry powder of calcium chloride and (b) by calcium chloride in solution. Must a correction factor for overweight be applied to weights of gages?

2. Drift-catch by gages of near the ground.

The road was dry, bus fully half hour late. Saturday night traffic? An unknown but apparently veteran driver was aboard and he was driving carefully — much to the disgust of a Herndon from Portland for Tonopah who "loved to drive at 90 to 95 ~~hours~~ miles per hour". Reno 11:15 p.m.

Saturday - February 13.

Log and pogamip from Mystic to Truckee. None at Truckee — because lakes frozen over and no rising vapor? There it was clear, calm, warm.

Lieutenant Pratt at Vanderford.

Wind 105 miles per hour on Rock during the heavy storm. The house was swaying in the gale. But no safety outside for the wind started to carry them away.

Therefore, the regular Soda Springs Hotel where repast and caravansing prevailed.

No orders yet to leave Soda Springs Hotel over.

Quite contrary to rules to have civilians with soldiers — injury by fire or bullet would involve the Government in damages. He suggests that I write Major Cassidy a formal letter. He himself will abide by any orders. He has no doubt about my genuineness. The four forces have been arrested by the MP and F.B.I. this winter.

He was a sergeant in W.W.I and is now overage like most of the others recalled to service. He is a traveling salesman but has trained down to military force. No hot water — pipes take frozen — but he shaved in cold.

The morale of the men is 100%, for he is human. Even his boys in tents at Ephrata do not want to cause me.

One boy absented himself without leave because his mother had turned his wife and baby in Los Angeles into the street. Lieutenant Peart refused to call a Courtmartial and gave him instead a week of hard labor — or his usual routine duties. We need more officers like him.

I was taken to Soda Springs in a jeep.

We enjoyed the perfect day but dreaded the crowds of civilians that clogged the roads like the French peasants when the German army invaded France. We also dreaded civilians with cameras who shot every bridge and tunnel.

He felt knowing that my camera would do no harm if it did not

take pictures up the railroad

– Soda Springs –

Hotel. No geysers except in depression near railroad. But crust

11:15 a.m.

Dry 44.2°F
Wet 84.2
} on Platform

Dry 42.8°F
Wet 33.2
} on snow 6ft lower.

11:20 Reset 46°F.

→ Humidity gun does not sit close to sheet – Need a spring on hinge. See sheet just taken off.
Sheet also too abrupt a — for pan to follow surface.

Pasture

11:50 a.m.

For period { Min −17.3°F (Reset 52.8°F
Max 54.1 (" 54°F; min. now 54°F)

On snow in part. shade	Dry Bulb	52	51	47.2	46.2 °F
	Wet Bulb	37.2	37.8	36.4	37.2 °F

H-T. reset 12:10 pm 52°F

Crust and Melting

11 a.m. Temp. 39°F

Snow surface moist and packs slightly

But at 10 a.m. snow still hard.

Ice on cement and on white platforms melting at edges

Query: Does it take longer to have old snow to melting (11 a.m. today) than for falling from melting to freezing (32°F)? The temperature range is much greater in the former.

1:40 p.m. 58°F. Calm

The former (last night's) crust has been 1¼ in. and is still 1¼ in. in shade.

No hole seen in cornice on Beacon Hill. Herbert had not noticed snow balls.

Crust or rather snow now is sufficiently consolidated to permit bearing thereon at boiler-room door bottom melted out by cesspool water. Here snow forms bridge that occasionally gives way.

3:20 pm

Toboggan outfitted for trip to Pasture. Sun burns. Dark inner coat too hot. So is scarf.

Barometer is very high.

Ice glaze on snow especially where skis have pressed it down.

Snow stake 83 in. — 83 in.

For 2-hour period (2-4 pm maritime)
58°-63° F [Max. therm. 63.2° F]

60+ skiers on Beacon Hill.

① moon in east this afternoon

Stream purls constantly. Two girls on cross, then a boy and a girl, then two small boys have borrowed toboggan. Friendly voices and laughter everywhere. If only time did not follow in the evening. a summer day on snow

Seen below Beacon Hill:

crust forming. "Joy", cry from toboggan party on dam.

5:55 pm.

38°F (H-T and min.)

Crust has formed. Where very porous, crust already 3/4 in. deep; another 5/8 in.

Temperature of crust — (H-T 34°F; min 33°F)

5 in. deep 1.2°C; +1°C; +4°C

Surface −0.2°C; −1°C

30 in. deep +0.6°C

6:25 pm

Crust 7/8 in. thick

What in the morning?

Sunshine Recorder

Readjusted column of mercury. Curley was watching triple register in house. Response immediate. Trace started at 10:15 a.m.

At 7 pm in early evening column 1/2 in. below contacts.

Observe it in morning.

Precipitation Gages

at noon

Stevens Q perfect.

Contents of No 8 frozen deeper than of No 6. Is the box shielding No. 8 from the sun the cause? Both of copper. Safety. Sunburn.

afternoon

Hotel—

No. 2 - Stevens VT.

Brace thru tiny hole on NW side. Depth of liquid (post. incl. ice) 10.08 in. But frozen elsewhere and dry when penetrated an inch.

Weigh beam responds slowly but positively. Oil in damper cup is now more mobile. Got too stiff.

But battery is inactive.

Weight swings free and drum is still turning.

Collar of intake (brass part) hot in sun. The galvanized iron is warm.

Test tomorrow — Triple register batteries too.

No. 3 Army Engineers

Depth of liquid above bottom <u>10.05</u> in

Ice retracted 1 in. from edge. Floats and can readily be punctured by redwood measuring stick. Slight hollow in center. Thickness not over ½ in. apparently.

Collar warm.

<u>Did not stir</u> for it is a seasonal gage.

No. 4. Standard Shielded.

Weight . . . <u>13.95</u> in (or 2.95 in)

Ice solid this morning. This pm. it was merely a doughnut in shape. approx. 6 in. diam. and ⅛ to ¾ in thick but rotten in the middle. What if snow fell while the crust was frozen? Metal of upper part of can <u>warm</u>.

<u>Stirred</u> contents again.

No loss on No 4 by stirring with maple dowel stick.

No. 5

Curley says that liquid never freezes solid tho slush often found!

1 carton at each resetting, and resettings 4 to 10 days apart. 2.25 in.

Gustave —

No. 6

Weight 10.75 in (or 21.75 in)

Crust not 3 in. in diam x 1/4 in. thick.

Top of can warm. Has melted slightly

No. 7 - Stevens Q.

Feb. 6 - 2.95 in.

Feb 13 - 5.20 in.

Precip. Gain 2.25 in.

Bucket entirely free of ice.

Pan still contains 1/2 reservoir of ice.

Air damper well very mobile.

Yet the same as in Stevens M.

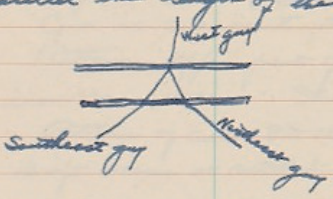
→ Swaying of weight in damper can cause pen to go up and down. Possibly this swaying is the cause of the up and down movement of the pen (see sheet and trace 4 pm Feb 13). At Feb 13 it was calm but I touched weight to test its mobility.

Test pen vibration (a) imparted by blow of mind on instrument and (b) by swaying alone.

The ever load on gypsires seems

now to be uneven, for the level indicator is now

The west guy is aided by no brace while the other two guys parallel the length of the trestle.



Level the gage later after further observations.

No. 8. Standard unshielded.

Weight . . . 9.20+ (20.20+ in)

Dia 5 in. x app. 1/8 in., but very rotten. Frozen at 11 am (See note above). Stirred Nos 6 and 8 but not No. 7 which is under monthly test.

In place of glass tube, which was broken, we have substituted maple dowel rods 1/4 in. diam. This rod can be driven on metal to displace

oil and liquid, adhering to it,
→ and will not break. Perfect.
No loss in weight of contents.

No. 9.

Weight 1.48 lbs. (12.48 lbs.)
Cake is crescent 2 in × 6 in.
Pattern. Upper part of galvanized iron cans warm. Stirred.
Pattern of can 8 & 10 in. above snow. Drift warm or settled down.

No. 10.

Weight 1.42 lbs. (12.42 lbs.)
Cake 2 × 4 × ½ in. thick but has been down diminished to 2 × 2 × ½ in.
Can 2 to 6 in. above snow. At north edge of towers, drift 4 in. above bottom of can.

Snow Cores

Snow stake . . . 83 in.

Course 1 - Station No. 8

	Dft Core Sampler		Total Wt	Water Equiv.	Dens.
No. 8	87	70.8	82.4	113	30.6
	−1.6	−1.6			
	85.4				

Dirt moist, but does not pack.

No. 9	82	72.5	82.0	114.6	32.6
	−0.3	−0.3			
	81.7				

Could not penetrate ice.

Remen.	87.7	71.1	82	113.6	31.6
	−1.3	−1.3			
	86.4				

Dirt, moist.

Average . . . 31.1 in.

Weather Record at Soda Springs

	Max.	Min.	Precip.	Snowfall	Snow on Gd	Wind	Clouds
Feb 7	54	6	0.38	4	94	LN	Pt Cldy
" 8	30	15	1.02	15	109	BNW	Cldy
" 9	25	−16	0.36	4	112	LNW	Pt Cldy
" 10	25	−12			110	LSE	Pt cldy, warm
" 11	45	+1			104	LSE	Clear warm
" 12	55	+6			98	LSE	Clear warm
" 13	47	9			92	LSE	Clear warm
" 14	52	6			89	LSE	Clear warm "Snow melting fast"
			1.76				

31/5 7

Comparisons of Prec. Gage Meas.
Feb 7 – 13, 1943.

No. 1	. . . . 1.76 in.	1.76 in.	unshielded
No. 2	~~Stevens~~ W.		
No. 3	Depth 10.05 in.; Feb 6 .. 9.51 in.	= 2.0	
No. 4	11.57 in. to 13.95 in.	= 2.38	} see also Nos. 6 and 7.
No. 5		= 2.25	}
No. 6	8.51 in. to 10.75 in.	= 2.24	
No. 7	~~Stevens~~ @ 2.95 to 5.20 in.	= 2.25	
No. 8	7.47 in. to 9.20 in.	= 1.73	unshielded
No. 9	9.82 in. to 12.48 in.	= 2.66	drift?
No. 10	9.88 in. to 12.42 in.	= 2.54	drift?

Snow cover Feb. 6 ... 27 in.* ; Feb. 13 .. 31.6 in = 5.6 in.* [1.28 in]
Or P&E. 30.0 (Feb 2) + 0.41 (Feb 2–6) = 30.41 ; Feb. 13 .. 31.6 in = 1.19 in.

* But Feb 6, sampler did not penetrate a stratum of coarse ice crystals at bottom. Jan. 31st 29.8 in. Prob. water equiv. Feb. 6 ... 30.32 in. Gain Feb. 13 ... 1.28 in.?

Sunday February 14 Valentine Day.

H-T +8°F (Min, +6°F)

~~Trace~~ zigzagged all night. Frost and tiny foganip. Wind light from east.

The ski crowd is here — on morning train. Happy crew. A sailor came to breakfast with suspenders! "What navy?"

My birthday tomorrow!!

Snow Crusts and Melting

Temp. on snow −8°C.
Cork covers graduations.
Need wider range, min. is only −10°C (= +14°F).

8:50 a.m.
Temp. in shelter Min +10°F; H.T +12°F
" on snow −12°C+ ; −13°C.
" under snow
2 in. −13°C (Scale only −10°C)
30 in −2.2°C
−1.8
−2.0

61 in. −3.0°C
−1.1
−1.6
−0.8
} Why?

8 in. −3.2°C
−2.8
−2.6
−2.2

9:30 a.m.
62 in. −0.2°C
69 in. −0.3°C. Dead shoots on ground

10:30 a.m.
On surface of snow in shade −5°C
11:00 a.m. " " " − +1°C

In snow, the snow is moist in pinpoints from highest crystals.

11:00 a.m.

Air over hut in sun . . . +1.9°C
Wet bulb sealed tight; air temp. in shelter 34°F (H·T 34°F)

11:30 a.m. - Aug thermo. . . . +17°C
Another thermo. . . +10.4°C
Heat up unevenly; greenhouse effect?

Radiation -

The steel blade of the clearing hook (opaque) has cooled itself 3/8 in. beneath the snow by side-slipping.

snow ////////

Crusts -

Major crust (yesterday's melt-water) 1¼ in. But there is a series of thin frozen crusts to the next old snow crust at 8½ in. This 8½ in. layer represents the past week's snowfall of 2.25 in.

The snow was moist yesterday, it refroze last night.

Query: ~~How~~ long did it take to heat up the snow today?
at 11:30 a.m. surface has softened 1/2 in. but breaks from 1 to 4 1/2 in. under weight of foot.
11:50 a.m. air temp. Min 42°F; H-T 42°F.

1:30 p.m. air temp. Min 59.5°F; H-T 60°F.
Snow melting 7/8 to 1 1/2 in. and faces into snowballs.
H:25 p.m. Max. temp. for day 1/2 hr (?) 64°F, Trace 1/4
but 60°F for two hours (?) * Trace 62
* check from H-T. trace.
Snow moist and will pack, tho dry, as deep as old snow 8 1/2 in. below.

Slow warming up this morning, quick freezing tonight? Andy will note when frost forms in shade and in sun.

→ "Observed from 5:45 to 6:10 p.m. in various places. As soon as sun went down, it started to freeze. Of course, no sun then, only shade." — Andy.

Sunshine Recorder

9:50 a.m.

Mercury at lower* edge of contacts. Sun finally above thin vapor in basin. But frost is still on the glass of the recorder tho thin.

Before sunrise, column was about 1 in. below contacts but showed above black bulb.

The disc of the sun could be seen thru vapor. There was heavier fogging nearer the railway.

* Contact as showed by triple register occurred at 10:15 a.m.

"9:30–10:30 a.m. light intensity increased 800 times." – Ennis Mack. Still some frost on bulb.

Cases in Precip. Gages

No. 4. Sponge ice this morning.

No. 8 – Army gage fluid.

Stevens Type X

Ernie Mack came up to make a complete examination. I had borrowed an ammeter from the College of Engineering and he brought his voltmeters.

The batteries were strong and active. Heating unit 55 amperes. Blew fuse in test. Replaced but need another fuse for emergency. Voltage 18*, but cut down by resister coil.

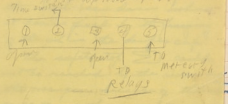
* 12 volts on one circuit and 18 on the other = 30 volts on one test.

The friction roll is in place. How or why did it leave the sheet before and arrive on the floor of case? It could roll upward slightly and then down without striking stylus. But again, why?

The rider on the weight-beam had traveled far to right and collided with magnet switches ~~too~~ forcing them forward out of contact with the batteries. This saved the batteries from being deflated, or the motor burned out, in a vain attempt to bring the weigh-

beam to level.

Hook up now 3/18/43



installed. The safety-stop was therefore advanced one hole to bring it within reach of the rider and the magnet switches were repositioned in their former position.*

* Now the rider
1/4 in. before the
and hits beam
the motor idle

But there is no reverse on the weigh-beam and the recorder had plainly run its limit. A considerable extension of the beam would be necessary to allow the rider ever to bring it to balance. The reversing carriage for the stylus was, however, in perfect condition.

To continue recording, it

beam to level.

The pressure may have forced the weigh-beam down where it became fixed by the freezing of the oil in the damper cup.

The safety stop could not be reached by the rider on the wormgear because of the outward projection of the magnet switches beyond the mercury cups originally installed. The safety-stop was therefore advanced one hole to bring it within reach of the rider and the magnet switches were refastened in their former position.*

But there is no reverse on the weigh-beam and the recorder had plainly run its limit. A considerable extension of the beam would be necessary to allow the rider even to bring it to balance. The reversing carriage for the stylus was, however, in perfect condition.

To continue recording, it

* Now the rider reaches the safety stop 1/4 in. before touching the contacts, and had been placed there to keep the motor idle while recorder is emptied.

Precip. Seale Gage		
Nov.	12.81	12.81
Dec. 1-9	1.62	
10-18	0	
19-23	3.31	
24-30	4.62	
31	.22	9.77
Jan 1-6	0.32	
7-11	0	
12-16	0	
17-24	11.69	
25-31	3.82	15.83
Feb. 1-6		0.41
		38.82

+ ? Contents of calcium chloride soln:

would be necessary to drain
... the tank, but
...e. The double
...nd outer case
...t thermos tank
...ontents from freezing
...t ultimately, when frozen,
...again, as in the
... Seasonal Gage.
... the orifice, Ernie
...that the contents of
...about 4 in. below.
... rubber rods hanging

...occurred to me
...t of capacity of the
... only 40 inches precip.
...ment had been
... the following record

→ V See attached report by Ernie Mack.

Triple Register

Battery strong tho can see breath under the house. 11 amps, 6.1 volts. 4.5 volts sufficient.

Wind velocity trace sometimes looks  . Extra marks due to

would be necessary to drain the contents of the tank, but there are fudges. The double walls of tank and outer case make a perfect thermos tank protecting the contents from freezing for a time but ultimately, when frozen, from thawing again, as in the Army Engineers, Seasonal Gages.

On looking in the orifice, Ernie Mack reported that the contents of the tank were about 4 in. below the top of the 6 rubber rods hanging on the sides.

It had not occurred to me that the limit of capacity of the recorder was only 40 inches precip. or that this amount had been caught. But the following record justifies the precip.

→ See attached Report by Ernie Mack.

Triple Register

Battery strong this can see breaths under the hasp. 11 amps, 6.1 volts. 4.5 volts sufficient.

Wind velocity trace sometimes looks ||||||||. Extra marks due to

Letter from Ernie Mack to "Gentlemen" 3/5/43
in folder

overpowering of magnet by spring and the former's quick and sudden recovery as optimum tension of spring is exceeded. It is in reality a flutter.

Have reduced spring tension slightly.

Wind Direction

Posts at vane fairly tight but have been drawn tighter.

The time hammer falls every minute and records for 10 minutes while being watched. But on yesterday's sheet there is a long gap. Long observing by Curley necessary.

→ Pascha suggests that contacts in anemometer and vane may require filing or polishing to improve better flow of current.

Need shellac.

Feb 18 ordered 2 quarts.

Telethermoscope

February 15 - 16

Dr. Baldwin assisted me in setting up the telethermograph and developing a thermoscam for determining the latent heat of melting snow.

The San Francisco Telethermoscope was misconnected and excessive and defective. Useless. But the Los Angeles instrument considered defective was perfect.

Pierson is making a weatherproof shelter to contain dials and a carrying box for the once necessary battery. Three thermals units with an extra air unit to testing accuracy. Ennis Mack will hook it up.

Latent Heat of Melting

A thermos can was constructed with 2 in. orifice by setting a glass coffee jar (1 quart or less) in a tin cantaneen lined inside with rock wool and capped with battery sealing. A cork with thermometer in Centigrade scale completes it.

A 10-gram double balance has been borrowed from the Department of Chemistry. The thermos can will be set on left-hand scale pan with a counterpoise weight on the pan right & bring empty can and also when half-filled with hot water into equilibrium. By adapting gram weight to one sufficiently heavy to weigh ozs (i.e. inches of water for Utah snow cores), it is

possible quickly to weigh the water and the snow cores in water inches. By using the centigrade thermal scale, calories per gram can be measured in place of BTU (British Thermal Units).

The equation is:

$$\frac{(M_H + W)}{M_I}\left(t_H - t_c\right) = F$$

M_W = inches of hot water in jar.

W = heat constant of can(?) determined in the laboratory.

M_I = inches of ice & snow (water equiv.)

t_H = temperature of hot water at beginning.

t_c = temperature of water (when cold) at completion of melting i.e. the min. temp. of the falling column.

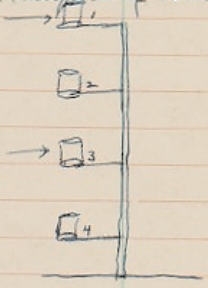
The fall is rapid at first, then eases off before it may start rising again. The minimum must be read and used in the equations.

Drift ~~Snow~~ Gages

A series of tin cans in vertical tandem on a pole, sufficiently spaced to be unaffected by the others.

If drift snow is borne and deposited by the wind, the lower cans should catch more than the higher.

The catch of the cans should be compared with each other and height above surface of snow noted.



As Nos 1 and 3 can be placed on the opposite sides of the pole to provide greater free space for each.

Prof. ~~Sandstrom~~ is providing the cans.

data sheets for snow survey Jan 31, 1943 to folder

43

1	36	5			95	LE	clear
2	~~54~~	4			93	LNW	Pt Cldy
3	45	10			92	LE	"
4	45	10	.12		93	LNW	"
5	34	11	.29		92	LNW	Cldy
6	50	4			90	LNW	Clear

41

8	30	15	1.02	15	109	ENW	Clear
9	25	-16	.36	4	112	LNW	
10	25	-12	—		110	LSE	Pt Cldy
11	45	+1			104	LSE	Clear
12	55	+6			98	LSE	Cl.
13	47	9			92	LSE	Clear
14	52	6			89	LSE	Clear Snowmelt from
7.	15						

OFFICE TELEPHONE
7920

HOME TELEPHONE
4506

ERNIE MACK
RADIO ENGINEER
23 WEST PLAZA ST. RENO, NEVADA

3/15/43

Gentlemen:-,

At the request of Dr. J.E.Church of Reno I went to Soda Springs yesterday and made an examination of the snow and rain recorder there.

The wiring does not follow the blue print you sent as the No. I and No.3 terminals on the board are not being used at all. However on tracing I find it is hooked up O.K. the feed wires being connected direct to the relays. There does not seem to be any 7½ volt line at all but one 18 volt line and a resister is hooked across this to reduce the voltage on the heater circuit.

On checking I found the machine to be dead on the motor circuit. Examination revealed that the sliding weight on the beam bar had been driven to the end of the screw, and that when the magnetic switch at the end of the bar and screw had been installed there was no clearance left between the magnets and the sliding weight so that when the weight came up to the switch it hit it and drove the bar holding the magnets completely off the mercury swithes. I removed this and reset and soldered it back only to find that it is impossible to get clearance for the magnets and the sliding bar withoout moving the board holding the mercury switches back . Dr Church did not want to do this until he had written you. On repairing the switches I checked the motor circuit and found it operated O.K . however for some reason the weight has become so great in the tank that the bar cannot be balanced balanced,so I moved the saftey catch at the end of the screw and

From notebook #3, Feb 15-16, 1943

OFFICE TELEPHONE
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ERNIE MACK
RADIO ENGINEER
23 WEST PLAZA ST. RENO, NEVADA

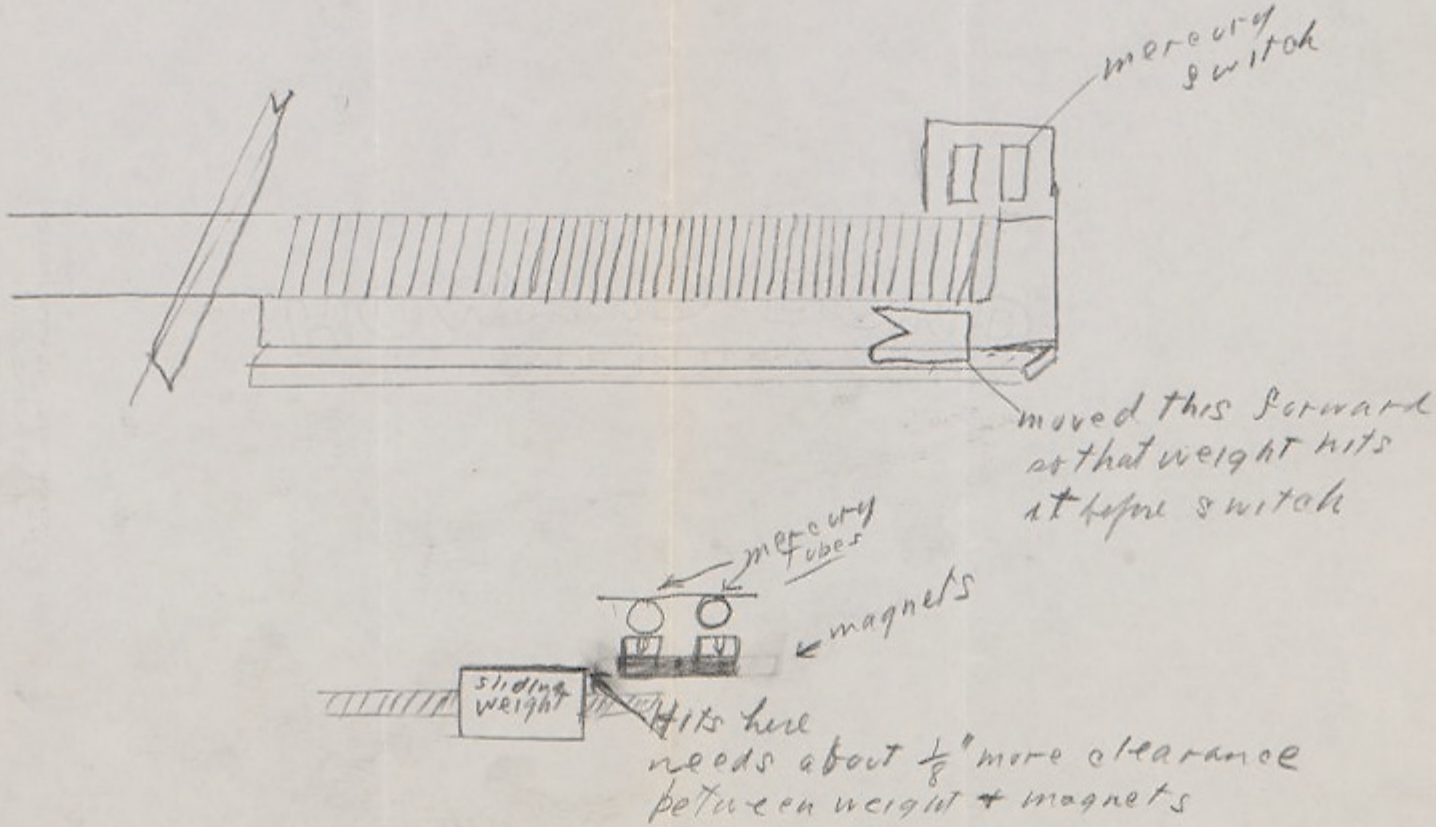
reset if so that it cut out the motor circuit before the ~~b~~ weight can hit the magnetic switch. This renders the machine inoperative until it can be ascertained why the weight will not balance.

The tank is floating freely and the amount of water does not seem to be abnormal as it is about 4 inches from the top of the rubber pads on the sides of the tank. More than likely this will have to be drained to ascertain the cause of the excess weight. Bar and scale operate freely and appear to be operating as they should

I did not try to alter or increase the weights as I was afraid I might change some fixed setting , and we did not have any ~~dat~~ data on this.

Yours truly

E. E. Mack


mercury switch
moved this forward so that weight hits it before switch
mercury tubes
magnets
sliding weight
Hits here needs about 1/8" more clearance between weight & magnets

Notebook #3, back page

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State Soda Springs No 1 –

Drainage Basin January 31, 1943

Snow Course

Party

Date

*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
3		90	74.5	82.8	111.9	29.0		Soil [illegible]
		-1.50	-1.5					
4		78	61	"	108.2	25.4		Dense [illegible]
4a		77	62.7		107.2	24.4		
6		91	79	"	111.6	28.8		
7		94	64.3	"	107.8	25.0		Soil moist
		-1	-1					
8		92	67	"	112.6	29.8		Soil [illegible]
9		96	81.3	82.2	112	29.8		
		-1.7	-1.7					Wet sod

*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.........of.........sheets. Comp. by.................. Checked by..................

Jan 31/43

Platform –

No. 3 Expo. Solution
starting to congeal but
contact with snow load
still soft.

No. 4. Solution liquid.

Sunshine R. –

Wire pulled out of first
Merc. does not rise to
contacts even when arm
is 2/3 toward Zenith –
Tilted it more – 11:00 a.m.

Recently it failed to
record on birds register
when pen was set
Icebound or wire or tilting

All shields clear
and rattling in E wind –
Erosion has cleaned platform
to bare ice –

Barriers on hills – Snow
drifting over pasture

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State ....

Drainage Basin ....

Snow Course ....

Party ....

Date ....

*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
~~Passing [illegible] 20 [illegible]~~								
~~[illegible] off [illegible] west~~								
Get [illegible] series of cups for [illegible]								
X2								
10		82	71.5	82	106	24		Coarse ice crystals
11		96 −1	85.7 −4	82	115.4	33.4		Moist [illegible]
12		91.5 −1.2	73 −1.2	82	105.9	23.9		Still moist
13		100.5	90.5	82	114.9	32.9		Still semi [illegible]

28.2

*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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= 67.1 %

No.........of.........sheets. Comp. by................ Checked by................

No. 2 - Frozen as
before. Hose frozen -
Roller loose. - No
tossing except straight
by pen -

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State ....

Drainage Basin ....

Snow Course ....

Party ....

Date ....

*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

Finished survey 4:30 pm
Max 34 yesterday H.T.
Min then 19°F

Stirring only at Base 10
in powder drift snow
Only slight crust if any
Too cold?
Locked shelter

Solutions in Nos 8, & 9
fluid, No 10 set in snow
congealing.

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No.........of.........sheets. Comp. by.................. Checked by..................

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State _____

Drainage Basin _____

Snow Course _____

Party _____

Date _____

*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

*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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No. _____ of _____ sheets. Comp. by _____ Checked by _____

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State ....

Drainage Basin ....

Snow Course ....

Party ....

Date ....

*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
Recent								
		32	cc	82.8	89	8.2		
				32)	8.2		25.6%	
						64		
						180		
						160		
						200		
						192		
Older								
[illegible]		56.5	53	82	104	22		
				56.5)	22		3	

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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. ..... of ..... sheets. Comp. by .... Checked by ....

Could not find
core at Gage 10
by comp & dopp

Forrest

A fast day

Kerosene [illegible]
All snow 3 mm

Barnstone 88 in

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State

Drainage Basin

Snow Course Soda Springs, No. 1

Party

Date Tues. Jan 12, 1943.

*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	30.5	C	49.8	64	14.2		[illegible]
	7	33.5	32.5	49.8	63.1	13.3		[illegible]
		-.2	-.2					
	8	34	33.2	49.8	62.8	13		[illegible]
		-1.5	-1.5					
	9	30	26	49.8	60.2	10.4		[illegible]
		-17	-17					
	9a	29.5	C	"	63.1	13.3		Soil moist
		-1	-1					
	10	33.5	29	"	64.4			Too easy!
		-.4						
	10a							[illegible]
	10b	37	34.8	"	63	13.2		[illegible]
		-2	-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.........of.........sheets. Comp. by.................... Checked by....................

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State ....

Drainage Basin ....

Snow Course ....

Party ....

Date ....

*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	33	24	49.8	61.8	12		[illegible]
		-1.3						
	12	33	32	"	63.4	13.6		Easy [illegible]
								[illegible]
	13	39.5	26.8	"	61.8	12		[illegible] snow at bottom [illegible]
		-.8	-.8					
			[illegible]					
		Wind [illegible]						
	14	32	28	49.8	61	11.2		Soil [illegible]
		-1.5						
		[illegible]						

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No.........of.........sheets. Comp. by..................... Checked by.....................

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State ____________________

Drainage Basin ____________________

Snow Course ____________________

Party ____________________

Date ____________________

*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
~~Remarks~~								
	2	31.5	30	49.8	61	11.2		[illegible]
		~~-2~~						
	3	29.5	26.3	"	62	12.2		
		+1.3						
								Ice at
S. E. side of road	4	21.2 -.3	C -.3		59.2	9.4		bottom? [illegible]
						3 types. Snow jellyfied on [illegible]		
Cut off [illegible]								
	5	Can't drive more						
		than foot or so. [illegible]						

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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.........of.........sheets. Comp. by.................Checked by.................

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

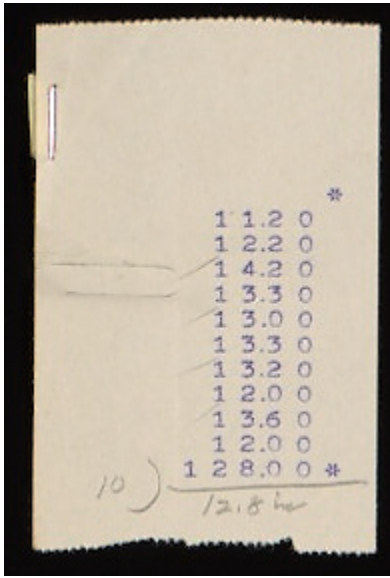
State: No. 4, 9 + 10 – Colum
Drainage Basin: Wyoming, Oil
Snow Course: Lathrop
Party:
Date: Crusts

*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
Spindrift crust still								
only 3/4 in deep								
air 12°F								
Snow shoveled from pit								coarse crystals
frozen 2 in deep								deep
Crusts	1	4 in		49.9	50.2		Sugar	1–3 mm
Bottom also 1–3 mm								
Ice streaks 1–3 mm								but cohere
into agglomerations of over 5 mm								
Entire cover		31 -.7	22.5	49.2	62.9			Bottom frozen to dry grass

*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.____of____sheets. Comp. by______ Checked by______


*
1 1.2 0
1 2.2 0
1 4.2 0
1 3.3 0
1 3.0 0
1 3.3 0
1 3.2 0
1 2.0 0
1 3.6 0
1 2.0 0
1 2 8.0 0 *
10)
12.8 in

Omit 1 → 11.2 2

9.4 12.2 3

Omit 4 — 9.4 4

Omit 5 → 14.2 6

13.3 7

13 8

13.3 9

13.2 10

12 11

13.6 12

12 13

Omit 14 → 11.2 14

Dec. 1 — 11%
Jan 1 — 31%
Feb 1 — 56%
Mch 1 — 80%
Apr 1 — 100%

Omit Nos 1, 5, and 14

Normal (Tonnes) 42 in = 30.5%
39.1 in = 32.7

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State

Drainage Basin

Snow Course

Party

Date Returns for more trace +

*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
	active to study indiv. strata							
Temp 11:45 a			36.2° F					
Pelting rain, base pan corner								
1 pm								
No.	8	Recharged						~~5.49~~" 5.55"
	6							6.04
1:40 pm								
	No 7	Recharged						38" above bottom
		1c+2w						
		pan. 2c+1w						
		=3+3						

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No. ...... of ...... sheets. Comp. by ...... Checked by ......

"No more ski on bus"

"Agent at Sacto turns men from bus even if they have tickets to S. Springs"

Greyhound driver

Trains used to have ski specials but a headache "Must say that they (skiers) are good spenders"

Busmaster?
Cadesy will copy Frisco + hold till Sat.

Hotel bill will accumulate until I return.

Slight melting on the side of road, at least in sun in trees.

Ready for proofs.

Mac does not bring

[illegible]

FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State "In Nevada you can do
Drainage Basin anything you're big
Snow Course enough to do."
Party [illegible]
Date [illegible]

*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

Get graph of Army Engineers
for Parsons

Get graph & calcu—
[illegible] from Codd.
"Fragility of a [illegible]".

Toboggan

Tin Sheet

Play Cooley for a [illegible]
" [illegible] bill.

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No..........of..........sheets. Comp. by..................Checked by..................

Reading at
Ammeter from
Fire contact
to Main line
terminal
55 amps

Triple Register

11 amps
6.1 volts

Eleven N—
55 amps.
18 volts — (12 volts on one, 18 on other) = 30 altogether on one test.

31 cc 49.8 62.8 13 in
-1
30

Snow stake 30 in.