

Li-Rite

PATENTED PENDING

Stenographic Notes

No. 101-G

TRADE MARK NO. 1

Soda Springs Project

No. 2

From November 22 1942

To JANUARY 24 1943

Tuesday, Dec. 22, 1942.

Clouds have gathered over Lima. Rain in Peru.

Spent afternoon building waterproof boxes containing linguist's Classification of Types of Lines. As a deposit for recording types. Each day of the month has a deposit.

also mounted a Psychometric Slide Rule for Pressure, 20" sent by Bill. But where are the directions.

Thank you letters written to Dal, Church and the Signal Service detail.

Clinton A. Smith called up to hear about cables. Told him the extra story of miracle and resources.

The transcontinental Tel. Cable is in and all officials are speeding home for California 20 charts.

Our fine weather produced fog on river 1 1/2 mi below Salt Lake City and killed. Snow accumulating on the fog and storm wind broke down the paleominer between the two points but the underground cable remained the extra lead.

Wednesday, Dec. 23, 1942

Raining but clearing.

Got up 7 am. Thought to leave 7:30 am. and had only 1/2 hr to dress and catch bus. Still dark or twilight.

Got on ground at Boise but rain all the way to Soda Springs. Change at Powers but hardly necessary. My father had received the copy of Harold G. ... last summer and now was asking when the next article would appear.

4000 ft in Peru 500 ft. Dec. 18 and study rain and water meter. Snow at Soda Springs.

2) Blush ankle deep but ^{snow} flares above.

Can only a set of Levelquist. Quite simple to reap except that the notes are with be simpler than brackets of an inch or more gaps. Today new snow and rain. Another entry rain or snow and rain desirable. When does new snow become old snow? This new snow will be steady old snow tomorrow. The triple register has stopped at intervals. The N pen sometimes clamps down and stops the drum while the contact point against stops the drum. Will had tightened the latter. It has again been loosened. I shall bring Pucka up if trouble continues.

Revisiting hypothermographs

humidity 97% full depth on road. Shiny pavement at Hotel 36.8°; 36.2° = 94%

Rain falling. Record sheets potted out by moisture. Paper in pens expanding. New sheets lined with moisture, the bought from dry carpenter shop.

Need waterproof clothing, rubber park, umbrella, and paraffin cloth to put over shelter during receding of instruments. My worst day since Mount Snow. A very profane one but I had planned to repair.

Barometer fell yesterday but steady and level today. Lightning during afternoon indicates in being about steady rather than a peaked one. Will it freeze tonight?

What of the Snow?

Decided to give up the 2:30 pm bus and survey the snow. Is the slick runoff at the hotel typical of the entire area? Why melt so quickly to the very bottom? The entire surface is permeated with drainage systems like oil.

is also waterproof at base and surrounding base. (The snow also has been in contact with the ground.)

Dec 12 Mon

Day bulb 36.8°F Wet 36.2°F Depression -0.6°F.
Bar. humid. 94%. Record about 90%.

Bar 11:30 - thermograph in pasture was full 100%. Raining since
was under the shelter.

Snow crystals rapidly leaving lawn. Drainage topography over
entire surface. Washing in water.

Wind shield on Log No. 6 (with aid of tracks in pasture) - not
found blown upwind on west side and lowered by one
shot 8-10 miles of the cam. The chain also had unlabeled.

The shot meters log and will have 8-10 ft more if the
chain does not part. The ends - not they are clipped
as done by Patton on Nov 9 and 10.

Log in stream Q still abundant. Bullfinch not abundant.
All pasture riding record with stream is fully over. The it
has been raining hard since observational photoable gage
at 7 am this morning.

3/ Dec 23

Weather at Soda Springs

Dec.	Bar	Hum	Precip.	Snowfall	Snow Depth	Wind	Clouds
19	48	15			17	LSE	cl
20	61	16			16	LE	cl
21	45	2	1.22	3	19	LNW	PC Cldy
22	43	6	7		19	LW	PC Cldy
23	38	24	2.09	10	29	LNW	Cldy
			Total	3.31 in.			

Cloudy rain fell with the snow on Dec. 21
and was considerably on Dec. 23. The maximum
temperature for the three days fell steadily
because of cloudiness and the minimum
rose. On Dec. 23, when the precipitation was
even heavier (see record for morning of Dec. 24),
the minimum temperature was even higher.

A total snow depth of 13 in. with total
precipitation of 3.31 in represents no more
than half of the entire amount were snow.

Plainly the snow fell very wet or even
accompanied by sleet. The drainage was
improved in one's attention over the
entire surface of the snow; the sleet
was deep, but runoff of water beneath
the snow are convincing evidence that the
snow fell in a saturated state.

The surface of the snow during the driving
rain of Dec. 23 was moist to very wet,
sufficient to wet garments there. Consequent
alarm was being felt that the entire
snow cover might runoff before the
storm closed. The following next-morning
was therefore reassuring!

4)
Dec 23

Snow Survey - (Dec. 23, 1942)
Opt Care 11" g. Simple Pump + Snow

No. 6	25	Comp	50.4	59.4	9.0
" 7	30	28.6	50.2	61.1	10.9
" 8	29.6	28.5	50.0	61.2	11.2
" 9	27.5	25.8	50.6	60.6	10.0
" 10	31.0	Comp	50.0	61.3	11.3
		-0.8	-0.8		
" 11	28.0	25.2	50.0	59.8	9.8
		-0.8	-0.8		
Average 28.3 in					10.45 in
					Dens. 36.9%

Size of crystals:
2-3 mm, occasionally 4 mm
Crystals at bottom of old snow much coarser.
→ Snow survey margins: Snow around sticks retracting, Wind or sun? Every line reads in the wind will the station must hold them from blowing out.
New Snow They are heavy, lumpy.

Opposite and West of No. 8

				Old Snow	
					Dens. 32.5%
Recent snow	10.2	Comp	50.1	52.4	2.3
4 new			50.1	59.0	8.9
Combined					Average 2.23
Old snow below, incl.					
Crust	22.6	21.0	38.0	58.4	8.4
					Dens. 32.4%
					10.63 in
Total	32.8				

Precip. since snow survey Dec. 17... 3.31 in (Dens. 32.4%)
Precip. total on ground Dec. 17 7.60 in (Dens. 30.8%)
Total 10.91 in
+ Snow on Dec. 23 (afternoon) ... 10.45 in (Dens. 36.9%)

5)
Dec 23

Below the new snow is crust $1\frac{1}{2}$ in.

Disintegrating slightly.

Below crust dry granular snow 5 in. deep.

Then icy crust 5 in.

Finally granular snow that pans slightly
but crumbles in the hand.

Ground moist.

NS: No penetration of rain yet beyond new snow.

Snow Cover	}	<table border="0"> <tr> <td>New Snow</td> <td>= 10.2 in.</td> <td>dens. 22.5%</td> </tr> <tr> <td>Crust</td> <td>$1\frac{1}{2}$ in.</td> <td></td> </tr> <tr> <td>dry granular</td> <td>5 in</td> <td></td> </tr> <tr> <td>Crust. icy</td> <td>5 in</td> <td></td> </tr> <tr> <td>Granular snow pans but crumbles</td> <td>10 in. approx.</td> <td></td> </tr> </table>	New Snow	= 10.2 in.	dens. 22.5%	Crust	$1\frac{1}{2}$ in.		dry granular	5 in		Crust. icy	5 in		Granular snow pans but crumbles	10 in. approx.		}	dens 37.2%
		New Snow	= 10.2 in.	dens. 22.5%															
		Crust	$1\frac{1}{2}$ in.																
		dry granular	5 in																
		Crust. icy	5 in																
Granular snow pans but crumbles	10 in. approx.																		
	dens. of crusts?																		
	granular snow?																		

Rain and Snow Balance

~~Receipt~~ Snow cover on ground Dec. 17. 7.60 (dens 38.6%)

Receipt since snow cover 3.31 in days

fall Dec. 23
Total 10.91 in 7 days fall

Snow cover on ground Dec. 23 (after rain) 10.75 (dens 38.6%)
[dens. new snow 22.5%; old 37.2%]

Melting and evap. 1.46 in? 0.46?

None lost by present rain.

Comparison of Layers

Went camp. Dec. 30.

6)
Dec 23

→ * Congelling of Snow (Hotel).

(1) Dusk (5 pm or later)

Hotel. Min. therm. current temp 36.5°F
Sting psychrometer - dry bulb 39.0
Hygrom. therm. 40.0

Raining. No crust.

Temp. $\frac{1}{4}$ in. above snow in rain:
dry bulb 36°F; wet bulb 35°F.

NB: Temp. of rain probably that of wet bulb
36-35°F. Melting of snow therefore slight.

(2) 9 pm.

Min. therm. 33°F
Psychrom. 36° } Oscillating.
H-T. 40°

Wind blew hot off.

→ Thin layer of snow snow on all. All soft.
Rain must be thinning to snow.

In front of hotel, snow looks moist but
congealing. Older there? No, only 36°F. at 9:45p

(3) 10:30 pm. On hotel porch 36°F.

Insipient crust in front of hotel but
snow still makes a well-faced snow-bill.

→ Therefore snow congeals, the more
slowly, at 35°F. (and higher) even when
air is moist and sky is clouded, and
radiation slowed down. The potency
of radiation on congealing is therefore strong.
+ Rain 2 o'clock

* Humidity therefore seems to have no effect on the temperature of freezing but merely retards its coming. ^{Thus} for example, the temperature of freezing in Camp Newburgh is the same as in ^{the} ^{West} ^{Mountain} West. However, the human discomfort in the former is greater.

Test this in laboratory and in the Appalachians. In the lower mountains of the East, humidity may delay the fall of the temperature so greatly that freezing may even not occur during the night. Thus the hours of active melting per day may far exceed the 8 or fewer hours per day usual to the Sierra.

E. D.

7)

December 24

No freezing at Camp all night. Snow clearing. How deep was crust last night at Soda Springs?

December 25 (Christmas)

after midnight heavy rain and occurrences by snow squalls. Later noted rapid fluctuation of barometer.

Clouds broken today but clouded up at times on summits.

Skiing in Blizzard? Cold today, vigorously so. The wet snow of Wednesday should provide a good foundation for skiing with the new snow as a cushion.

Suggestions

New and Old Snow?

Snow is "new" when falling, but may become "old" the next day. Can one speak of "Fresh Accumulations" and "Old Deposits"? How long an interval must elapse between? the aging is continuous and may be accelerated.

Vibration

To reduce vibration in bar thermographs and precipitation registers, the instruments must be set on a concrete base and protected likewise possibly from strong air currents. The gradual and delicate precipitation trace is now hidden by the broad band caused by vibration.

Must return to Soda Springs at least by next Wednesday.

Obtain a flashlight

8) Paul Norbae sent the promised silver pin (promised for Christmas) the same day by truck and gave the truck driver an additional fee for compensation. He offered to send me another.

Take "Organized Matter" to Paul Norbae and copy for Pauline.

Hypo-thermograph from Salt Lake City and placed in Culture Series serial number 1587

Monday

Dec. 28 - By teletype

Danvers Pass 31°F. Snowing.

Probably rain and snow at Soda Springs.

Wednesday Dec. 30

Left Reno at 7 a.m. Overcast toward

mountains.

→ At Danvers Pass film of dry snow on road surface shows interesting patterns in the swirl of air beneath the trucks. A kaskidoscope of changing patterns. Again in emotional effect had the wily-way patterns in the ice of Tassovuska, Iceland.

Temperature exactly just at freezing or slightly below. Hence snow dust in the air but moisture in the warm windshield.

9) Dec 26 No chains necessary.

Snow cover land; some dry snow on tree crowns.

Soda Springs

Below freezing.

Triple register running. ^{right hand} But wind direction from sometimes steers down and stop down, or entire set lifts high in the air. a question of proper tension of the lifting-springs. Make delicate adjustment.

Resetting Instruments

10:30 am
Hotel

Dry bulb 32°F. Wet bulb 32°F ^{humid.} = 100%
Air. reset 29°F; H-T 34°F

Stream W. motor running

Slight deposition of snow in orifice.
Temp. just at freezing. No heat felt.
Radiation effect? Frosting?

11:00 am

Picture

Temp for next Dec. 23-30

Min +1.0°F (reset 32°F); Max. 58.8°F
H-T 36°F

Raining. Humid. trace 100%.

Cold box resetting H-thermographs.

→ Door of therm shelter frozen and swollen tight. Must have a "handle pull" to open it; also a scraper or chisel.

10)
Dec 30

Wind

The wind shield on No. 6 was lifted from one corner and chains loosened at two places. ~~Loose too loose~~. Look place on them to close them tight.

Ice in Cans

Ice possibly 1" thick found in cans No. 6, 7 (Stumps Q), and 8. Practically 0° F. during week. Only one carton in Nos 6 and 8? At least 2 cans in No. 7. However, ice free from sides.

Will not rechange for another week.

Ice also in No. 4 (U.S.V.B.) at west end of Hotel Platform, but Army Lodge (No. 3) has no ice at all. The latter was heavily changed according to formula.

→ Lunch. Last one here? The Army has abandoned Soda Springs Hotel for MP use. All out - probably very suddenly.

Can our work be continued? Can I possibly stay at the hotel? Feel sorry for Herbert and Olga and the rest. All winter plans have been made.

There should also be at least one relaxation center. In total the War

11/30
 Dec. Department order a fader road to be kept cleared of snow to assure driving. Soda Spring Hotel well filled. Dining room tables filled at dinner.

Wet Day.

Fine snow, rain, snow-rain, rain. But all light. Total 7 am to 8 pm 0.22 in.

Hotel Weighing Precipitation Gages 3 pm.

No. 1 - Standard Dec. 30, 7 am - 8 pm ... 0.22 in.

No. 2 - Stevens H. lid not open because of rain. Wonder whether water has dripped onto the case. Water on outside of gage. Water running. Must get light tarpaulin.

No. 3. Army Gage*

Orig. depth of charge 4 in.

Capacity with increase in depth?

Pres. depth 5 ¹³/₁₆ in. 1 ¹⁰/₁₆

From top of surface to surface of water 4 ⁷/₁₆ in. 0.552 in.

No ice. Shall not melt until next week.

No. 4 (U.S.M.B.) clear gage. Ice in can but base. So no recharge until end growth period.

Orig. charge 2.19 in.

Present weight 10.31 in.

Jan 8.12 in

* Ashton is planning to obtain a long rod with paddle to attach to collar to stir solution to keep it uniform.

(12)

Dec 30 No. 5. Freig Edge

Dec 16-23 2.6 in.
" 23-30 4.65 in.

Oscillation of pen extraordinarily great.

→ 2 in. Dec. 23. What was the wind?
Tension must be reciprocity.

Pasture 4:30 pm.

No. 6. Orig. change 3.76 in
Present weight 11.37
Wind shield partly blown down Gain 7.61 in.

No. 7. Stevens Q. Pen wet 1.20 in
Pen at present 8.30

→ Has any loss occurred for his house?
Study corner. Gain 7.0 in.

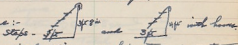
No. 8. Unshielded Orig. slope 4.03 in.
Present weight 10.60
Gain 6.57 in.

Snow Stake 34 in.

Snow Survey.

One mark only - opposite traverse
P. 32.0 One 26.5 meter gain 13 in.

Wind force :-



Width 18 in., enough for two feet to step
too great a strain to lift and out of reach; very useful
Thin tarpaulin (paraffin cloth) with hooks.
About 6 ft. square.
It is chosen and constructed.

13)
Dec 30

Look for thermometer shelter.

2 in wide x 1 1/2 in high.

Flat, screened on back or inside of den



Cross-nest on Staves tower ideal.

Perfect relaxation for nesting gape;
complete safety.

Snow Cover

- New snow (melt) 8 in
- Rest snow now absorbed
- Grains all sand about
- Four new snow to ice crust . . . 8 in
- Coarser, granular, wet
- Ice crust 5 in
- Layers
- From bottom of crust to ground 11 in
- Total 32 in.

all strata moist and porous in hand.
Ripe?

Snow Store 34 in

19)
Dec 30

Snow Survey*

Single point next of trench. (inches)

Depth	Core	Wt of Ice	Total	Water	Density	Remarks
33.5	28	49.8	62.8	13		3rd very moist.
-1.5	-1.5					
32				13	40.6%	

* Core of poles in key course blown away apparently.

Crusts and strata

Stratum	1	6	3.7	49.8	50.8	1.0	16.7%	Remarks
"	2	8	8	"	53	3.2	40.0	
"	3	16.5	16.5	"	59	9.2	53.8	Ind. crusts
"	3 ^a	7?	7	50	53	3.0	42.9	Crusts only
"	3 ^b	12	12	50	55.1	5.1	51.0	Below crusts
		-2	-2					
Total	31					12.3	40%	

→ Snow, moist throughout, ground surface damp. in 15 ft. of snow. No cohesion layer between strata.
Min. moist 34°F; H-T 38°F; humid. 100%.

Hand

Texture
Snow and Temperature

9 pm Temp. before Hotel . . . 32°F

Get rain, slush, water.
No crust.

9 pm. In therm. shelter

Min. moist 33°F; psych. dry 35°F; H-T 38°F, 100%
Depth. 1/4 in. above wet snow 34°F
air full of moisture.
Snow still wet and pans in hand.

Over

15
 Dec 30
 (for Brown 10) (for Brown 10)
 min. took off what snow was on ground in room

→ Snow temp. almost as high as in shelter. Only 1°F lower. Obviously crust formed - low temp. in shelter was 35°F or higher. Why not now?

Query: Can the snow be so wet that latent heat of the water prevents the usual fall of temp? But is it wetter than on Dec. 23?

An Open Season?

So far in rather than snow?
 J.J. & I thought felt that the presence of the snow cover, ^{generally} would chill the air sufficiently to cause snow rather than rain during December.

Weather at Soda Springs

	Max	Min	Precip.	Snow	Surface Temp	Wind	Clouds
Dec. 24	44	29	2.15		26	BND	Cldy
" 25	33	20	0.81	12	38	LW	"
" 26	28	3			38	LSE	Cl
" 27	43	4*	0.16		36	LW	PT Cldy
" 28	41	36	0.22		34	LSE	Cldy
" 29	38	30	1.28	4	38	LNA	"
" 30	42	21	T		36	LNW	"

Rain (trace of snow) Dec. 30, 7am - 8pm ... 0.22 in.
 * Error. Min. Dec. 27 above freezing.

T. ...

16)

Dec 30

Why is snow saturated throughout?

Following the near zero F. temp. of Dec. 26, the temperature was for much of the time above or not much below freezing.

→ Study effect of accumulated warmth or cold on snow melt.

Make further comparison of fluctuation of temperature, as Dec. 9-16, 16-23, 23-30. With texture and temperature of snow.

→ Need lysimeter to measure percolation of water thru snow.

Tahoe Control

Only one foot of capacity left for Lake Tahoe. Judge has granted right of emergency control. Frequent surveys not necessary to avoid overfilling.

Snow cover above 7000 ft. altitude now approximately 30% of Apr. 1 normal. But much melting has occurred below 7000 ft., leaving present snow cover very light.

Study Tahoe's ice, November and December, in terms of current precipitation.

Telethermroscope

The box has arrived at Soda Springs from Los Angeles.

Details must first be studied. Apparently the case must be kept on the platform in another protective case, for there are too many wires from the meter

Passing at Tubes of
+ live glass.

17)

Dec 30

units to parts on the case. Hence still the cover of the case cannot be shut while the connections are on. Must therefore leave cover partly up. Perhaps the set of 6 electric batteries can be carried in a box with a single connection similar to a bottle or flask, which can be adjusted in a moment even with glasses.

Problem likewise whether there is any advantage in sealing the therm. units in glass tubes to keep the snow water from the metal surfaces.

Snow-water will hold the temp. at 32°F . Does the air in the interstices of the snow have a higher temperature? Below 32°F , the unit and snow should remain dry.

→ Ask Dr. Baldwin to make tests and comparison of therm. sealed and bare in water.

Can units be successfully sealed against entry of moisture?

notes for Jan. 6, 1943 in folder

Wed. Jan. 6/43.

^{east}
* Cold, wind. "Snow cover frozen to bottom".
Powder snow on surface; swirling over
surface. ^{Small} ripples on face of slab. Erosion,
wind slab, soft loose crust, pinacles
on the open slopes. Snow sand from
exposed points.

** Trace of moisture on surface of snow in
sun. Crispness has now mostly disappeared
in sun but not fully so in shade.
air temp. H-T. 36°F in shelter; psychrometer 36°F
Temp. on snow (1/4 in above surface)
In shade 32°F
In sun 39°F
Wind brisk.

18
Wednesday, Jan. 6, 1943. Trip with Ted and
Risch.

Soda Springs Hotel:

* 10:30 am. Min. 25.4°F ; H-T 30°F
Standard therm 27°F .
Hygro-thermograph corrected by -3°F .

10:45. Hygro-thermograph reset.
Dry bulb 28°F } rel. humid. 58%
Wet bulb 23.8°F } dewpoint 16.6°F

Pasture: Min. 31°F ; H-T 33°F ; Standard 30°F .
12:10 pm. Hygro-thermograph corrected by -3°F
to 30°F .
Dry bulb 32°F } rel. humid. 46%
Wet bulb 26°F } dewpoint 18.6

Temp. for mice -
Min. $+2.8^{\circ}\text{F}$ (nest 30.8°F)
Max. 48.1°F (nest 31°F)

5:30 pm. Snow Melting
Hotel. Some drip from Hotel. Weather Bureau
flat pan.

3 pm. Pasture
Hygro-therm. (corrected) 33°F
Wind strong. Snow sand everywhere,
sprinkled from every projection.
→ But the powder snow is wet
enough to stick to palm of hand
held on it.

195
Jan 6

Relative humidity per pumping with temperature few.

No trace of melting but moisture may form thin crust or snow-slab.

Precip. Gage No. 10 melting. Ice core has not reached bottom. Core in Nos. 6 and 8 are now loose. How many centners of calcium chloride? 2 centners? see Card.

Wind Shield.

Shield on No. 10 blown partially loose. Two lines were open and allowed hooks to slip out. Slats blown open in one closing about one-third of the orifice. One elbow lifted from its socket.

Lines closed. Guy wires should probably be fastened to bottom of shield to prevent it from lifting too high in a gale.

No trouble whatever with No. 9 which has gage.

Tellurioscope

Brought box containing apparatus to Pens for testing and assembling.

Note about precipitation at Soda Springs,
1948, in folder

20

Weather Record at Soda Springs Dec. 31 - Jan 6.

Day	Max	Min	Precip	Sunfall	Snow	Wind	Clouds
Dec 31	39	26	0.22		34	LNW	cldy
Jan 1	50	12			33	LSE	cl
" 2	39	18	0.32	4	36	LW	PT cldy
" 3	30	1			25	LSE	cl
" 4	44	2			34	LSE	cl
" 5	48	12	T		33	LNW	PT cldy
" 6	37	12			32	SE	cl

Precipitation Log

No. 2 - Stevens H.

Meter moved as door opened and
reversed when door was closed again.
Ice in tank hit shdy and easily broken
up.

No. 3 - Army Engineers Log.

liquid entirely unfrozen.

No. 4. frozen solid.

No. 5. Fritz "over a trace of ice". Recharged
too frequently.

No. 7 Stevens Q

Has only floating ice and 3
more days to melt. Some puffing
in wind. Ice still holds out.

21) No. 9 - Slight water around ice.
Wind shield perfect but has gaps.

No. 10. Frozen solid, Wind shield lifted
from socket with ends over one-third
of arifice. Chain unhooked. Lincs now
closed tight.

Must return to reload cans when they
thaw.

Snow Cover and Crusts

→ Snow in Pasture blowing but moist
(stems) to palm of hand. Wonder whether
snow board is, wind slab will result.

→ Snow cover 13 in. (Wd.) ? Frozen between.
Grains of varying size. Thin crusts.
→ Wonder if crusts are denser than dry
snow between.

Return when MS of Perennial Snow
is finished and reset everything.
Weigh crusts and strata. Also measure
glacis size.

Much, much to be done.

Wind velocity ? Maximum and mean ?

→ Need : (a) more shellsac.

(b) thermometer without metal base
to lay on snow spec. in can.

(c) lens repaired, canvas, rucksack,
calcium chloride, shute for triple
register

Friday
Saturday Jan 8, 1943

22) telethermoscope - the has brought down to Paris is all a mistere. Barnes has written that the telethermoscope designed for Soda Springs has just arrived at San Francisco. Have requested it sent to Paris for study by Physics Dept.

Daily records from Soda Springs to Harry Duels. Army agrees providing sealed envelopes instead of postcards are used. Curly will receive \$5.00 monthly.

Can't have granted permission to regulate tubes. Frequent measurements will be necessary for fine decisions must be reached early.

Conference with Governor Cavilla at age with Boardman. The Governor favors a large appropriation for strengthening but doubts the immediate necessity of a larger appropriation for emergency. But glad to have annual chemical report and the April forecast.

Favors etc at Valley

Archie Miller and Humboldt.

Opinion still now living in Paradise Valley. Ranshaw will give him a stadium income. Leaves the Humboldt now July 1 next.

So carefully doing his work but fails to send in reports. However he has them. Archie and Louis feel that frozen soils and undercurrent of snow caused flood in Humboldt last spring. But hole more snow in 1942 than in 1941. He should visit the Humboldt when it is in action in order to understand. Rearrangement of gaging stations to escape

23

By-pass flow is desirable as from N. D. Tyres
in lower lamella to place where stream
goes under railway, and from Lake Paul
on way to Dault. Better gage station
Humboldt below the entry of each tributary.
Have agreed to take Davidson and
go with him any time for several days visit.

Triple-Register Sheets.

Lucy to mention need of sheets to Drake.
Jan 1 be changed from noon to midnight
and as has a large store of new sheets
to spare. He obtained a year supply.

Human Side of Snow: The Provincial Survey and
Glaciers. Embases most of observations made
at Soda Springs. Fortunately to have been
there - a new world and the answer to
most of our questions.

Soda Springs

Sunday Jan 10/43. 11:10am. hrs.

No snow on road, only a tiny trace of ice
at Donner Lake.

But most of drift of Wednesday has
become a dogging crust like the snow - mostly
of ice-fans and hollow snow beneath.

Harden - "Season reversed; as much snow in
October as now." "New year had biggest crowd
at Sierra Club yet, but season this. So Mac
will join the ranchman train."

Harry Brown has made arrangements with
Walter Brown and Amy to receive daily weather
reports from Soda Springs if mailed and consolidated
every Sunday by 10:30 to 11:00.

24
Jan 10 To Soda Springs a crowd, several times of
soldiers sent from Sacramento. Vandenberg
condemned but decision regarding Soda Springs
still pending.

Postoffice will not be taken over but some
soldiers aid may be provided to run it.

Triple Agiter running perfectly. Curly has
wired two shafts that lighten wind direction
springs to prevent them from tuning and
cleaning the springs. Has a large reading glass
to examine the valve mechanism.

Now has 3 passages of sheets. Barnes has
sent a large and small passage and I have
brought a larger.

Curly says to send reports to Harrold

lunch with three ex-girls. Unsuccessful
as joint bill given me by the waiter.
Had had some delightful friends with him.

Hatch -

2:45 pm. Water running around Hatch.
Snow down, icy, treacherous.

Day almost calm, cloudless, warm

Temp: Min. 53°; max. 56°; H.T. 52

Min. of H-T last night 14°F.

Engines: No. 2 (H) started running after
I came up and circuit closed.
Oscillating as before.

If set on concrete pier, oscillation
would be less but still present probably
in wind.

No. 3. Army engine.

No trace of ice in town.

25

Jan 10

No. 4. Ice core melting.

Posture -

3:45 pm

Temp. Min. 49.4°; H-T 49.5°

Min. last night 10°

Min. for period 9.4°

Max. " " 53° (today?)

Resitting Precip. Cages

No. 7. Stevens Q. Ice Core 129.5" Retention

4:15 - pan 0.95 in. above snow.

with 2 cartons + 1 carton water.

→ Close airtight after full month to the house.

Pan still 1/2 full of ice. So will now

test its capacity to last 3 full months.

Sheets adjusted for expansion or contraction.

Oscillation indicate. Precip. 7.42 in

No. 6 Shielded Cage

Ice core 2.45 in. thick. Oval in diameter 6 x 7 in.

Color?

Why the vertical lip? Base mixture of calcium and water?

How many cartons last time?

Height 11.5 in - Orig. 3.76 Precip 7.74

Refilled 3.7 in

2 cartons + 1 carton water.

No. 8. Unshielded Standard Cage

Color?

Ice core 4 in thick x 7 in diam.

Height 10.59 in. Orig 4.03 Precip 6.56 in

Refilled 3.27 in

2 cartons calcium + 1 carton water.

26) Start
Jan 10 Snow Melting and Crusts
at 2 pm. temp 53°F. ^{crust} Snow, soft but does not pack well.

at 5 pm crust has formed in shade.
Temp. H-T 38.5°F; min 27°F

at dusk crust $3\frac{1}{16}$ in. deep
Max. crust 35°F; Min. crust 35.2°F.
Snow just below crust nearly dry,
but beneath succeeding crusts seems
moister.

Query: Is the moisture slowly migrating
from above?

Radiation because of air spaces?

Snow hardens first, then soil,
then open water, tonight. Was is the
capillary water in snow sec. 23?

What caused slow congealing of snow?

Study refreezing in layers No 9 and No. 10 tonight.
Cores are floating. Cans are of
light galvanized metal, Nos 6 and 8
are of dark copper. No 7 & is gray.

Monday, Jan 11/43

Stations W. Record.

Why not eliminate all oscillation as
neutralizing itself and take only the excess
forward travel of the style?

Curly's morning climb onto platform
at 7 am to take the readings should
cover a 24 hr. cycle for each day - a fresh the
"close system". Wind will be only oc-
casional and unperiodic.

at Hotel

27) Min 9°F. Clear, almost calm

Jan 11 Freezing in Gages

No. 4. Shielded, water of No. 3

Core frozen as far as edge of can.

No. 9 (Pistons) at noon, frozen all but to

edge of can. Was one thawed it?

Ice temp on outside melting, but apparently no loss.

Color of Cores

No. 6 clear.

" 7 a gray with tinge of yellow

" 8 Oil (yellow) in bottom half of core.

Was clear water riddled on oil surface and frozen?

Calcium chloride mystery

Recharged gages No. 6 and 8 are frozen up practically solid. Min temp +7.8°
Cold in dormitory with windows far open!

In gage No. 10 crystals had undissolved and thick in bottom but not solidified.

Why did one antiferrous freeze solid?
in two gages and not in all three?

No. 6 and 8 more exposed.

4 cans calcium chloride dissolved in 2 cans hot water. Possibly in case

of No. 7 a 2 cans were dissolved in 1 can cool water. Is this the cause?

Superheated? The calcium self heats when with cold water. **

All must be recharged again. Have learned something.

* Crystal workings
largest.

** Some frozen crystals in ledge
flattening of
mass of heat
when gages
noticed and tried.

Pasture -

28) Crest and Kelting

Jan 11 Spindrift crest early last evening $\frac{3}{16}$ in.
now $\frac{3}{4}$ in. thick.

2. One still
has
been
blown
out
by
wind
? Temp in shelter now at noon* 34°F; 40° at

Pit west of trough.

Extremely difficult to dig with shovel.
Loose ^{red} ~~blue~~ crystal candy with rock salt
between layers which are thick but
laminated.

Covered pit with canvas for later
sampling. Cold and impervious as usual.

Snow Survey of Day Course

Missing stakes at No. 5 and 8(?) replaced.
No. 5 is in Caterpillar trace to Sugar Bowl,
and probably blown down. No. 8 blown
or thrown out.

Doubtful whether bottom was reached
anywhere. Snow Stake 30 in or at the least
25 in.

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State Santa Fe Springs

Drainage Basin South Fork

Snow Course Day Snow Course

Party _____

Date Jan 11, 1943 Touring

*Description or Number of Course	Stake or Number	Depth of Snow Inches	Length of Core Inches	Weight of Snow Pail	Weight of Snow per Core	Water Content Inches	Density Per Core	Remarks
X	1	19.5 +0.5	153	49.6	55	5.4		
	2	23.5	192	49.9	58	8.1		
	3	20.5	195	50	56.9	8.1		
	4	18	17	50	57	7		staked updown
	7*	22.5	18	50	58	8		"
	5	10 -0.5	16.4	50	55	5		Boring marks core top depth
	6							

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

1. 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.

29) abandoned the effort at No. 6 until
 snow might soften from melting on
 afternoon warmth.
 Tried again about 4 pm. when temp was 48.5°
 Could drive only to 30 in. even by standing
 on handles.
 Brought up loose dry snow crystals.
 Was sampler too warm and all snow
 melted and froze to inside of tube?
 Try again after sun is down or air
 is cold. Also shellac the tube.

Hygro-thermographs reset.

3 pm. Hotel dry temp. 47° ; wet bulb 35.6° F
 3:40. Pasture " 46° ; " " 34°
 (air temp $+8.0^{\circ}$ F)

Need tubes for carrying skater's cloth gloves.

Blow off top right corner of skatter door.
 Door jolt.

Temp. { Max. for Jan 10-11 " ? Reset 48.5° F 3:40 pm
 Min. 7.8° F Reset " " " " 48.5° F

Photo of ice window pane on pasture
 (cupido
 window) 2 pm. No. 1 exposure. 1 exp.

Resetting Saps Nos 4, 9 and 10.

3 pm at 3 pm. No. 4 melted loosely; Nos 6 and 8
 still practically solid.

Handig? No. 4, wt 10.54° (10.545) in. Cir. $2.19 = 9.26$
 Recharged 3 centers + 3 water 6.25 in

* Ice Core: Depth $4\frac{1}{2} - 5\frac{3}{4}$ in
 Core $6\frac{1}{2} \times 7\frac{1}{4}$ in

Hollow below. Fern patterns.
 Oil around core but not frozen into it.



30/
9/11



No. 2. Standard II. Over-energetic

Stations II started running after I had
left platform altho the transit was
open when I was there! A lagover?
Just occurring from over buoyancy?

5:15 pm.

No. 9 - 3 feet high can.

Height 13.85 in. Orig. 4.48 = 9.37 in.

Recharged $\frac{1}{2}$ of 6 centers + 6 protr. (all)
6.7 in.

Ice Core: depth $5\frac{1}{4}$ in; diam $6\frac{1}{2}$ in. Key



No. 10 - 3 feet high can.

Height 14.13 in Orig. 4.58 = 9.55 in

Recharged $\frac{1}{2}$ of 6 centers + 6 protr. (all)
6.315 in

Ice Core: depth $4\frac{3}{4}$ - 7 in; diam $6\frac{1}{4}$ - $6\frac{3}{4}$



Water on one side. Oil stain
around outside.

Why precipitation $\frac{1}{18}$ in more than No 9?
Snow drift? Snow drift accumulation
here about 2 in. more than one
triple and $\frac{1}{18}$ in more than No 9 also

Photo No 3

* This morning the end of the haul
 driving around has not yet to
 support the sampler but in
 some ways it is so heavy that
 the weight is almost
 enough to
 to it.

only 10 feet above ground or 7 feet above
 present snow. All this except despite
 covering me. Kind of surface faults by uplifted
 wind shields.

Weather Record at Soda Springs

	Max	Min	Precip.	Fogfall	Snow	Clear	Wind	Clouds
7	36	19			32	85	Ch	
8	39	29			31	85E	Ch	
9	42	18			30	8E	Ch	
10	47	12			30	13E	Ch	
11	55	9			29	LE	Ch	

Taboggan

By aid of lead in workshop, taboggan was
 has at least 3 heavy casts of shells on bottom

Snow Sampler

Floury shelled for improve-
 test.

(letter draft) to E. King, re folder

Tuesday January 12, 1943.

Snow survey was attempted early
 while snow was still low and
 succeeded. Felt whipped yesterday.

More shells and even heavier
 sub-conductive gravel would aid.
 adhesion made a ~~pot~~ rather than
 a pipe of the sampler.

Only occasional riding on handles
 was necessary - except that the
 snow packed by the Caterpillar tractor
 could not be penetrated deeply.

32
Jan
12

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State: Additional Sheets for South Yuba in Yuba
 Drainage Basin: _____
 River Course: _____
 Party: _____
 Date: _____

*Description or Number of Course	**Sta- ble Point	Depth of Snow Inches	Length of Course Inches	Weight of Sample Tons	Weight of Tide and Ice	Water Content Inches	Density Per Cub	Remarks
Quitting Nov. 1								
5 mi 14					12.8			
								Nov. 1; for Tule River. 42 in = 30.5%
								for S. Yuba R. 37.1 in = 22.7%
5 pi								March of season for Nov. March
Coa								Dec 1 ... 11% dry
								Jan 1 ... 31%
								Feb 1 ... 50%
								Mar 1 ... 80%
								Apr 1 ... 100% dry snow
								Just normal on Jan 1.
								but now slipping badly. 10%

End

*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 2° 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.

43.2%

See sheets

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

Temp. 11:45 am 36.2°F.



32

Jan
12

- Coasts -

Spindrift snow still only $\frac{3}{4}$ in. deep.
Min. temp. last night 12°F .

Coarse crystals shoveled from pit yesterday
are frozen 2 in. deep.

→ Study rate of penetration of fine and
coarse snow (b) of water and dry snow.

Snow Cover at Pit. (west of tracks)

Stratum 1. 4 in deep 0.4 in. water conc. 10%.
Crystal size 1-3 mm

Entire cover 30.3 in deep Conc 28.5 in. 13.1 in water 43.2%.

Crystals at bottom 1-3 mm. but
do not ¹⁻² ¹⁻³ cohere into agglomerations of even 5 mm

Return for more time and color
to study individual strata.

Temp. 11:45 am 36.2°F .

2 photos of drift snow + insulation effect to photo archives

33

Jan 12 Recharging plates ^{Nos.} 6, 7, 8

Took Nos 6 and 8 to hotel to remove plates of calcium chloride no so solid as marble except for oil film around and beneath them.

Nos. 4, 9, 10 were now in perfect condition and filled with oil coating.

Even hot water seemed to have no effect on the plates but finally yielded and slipped out when agitated.

Mr. Laughlin, who had come from Harbor to paint the platform, gave me emergency aid in recharging case. Time was expiring and his work would arrive at 2:30 pm.

1 pm

No. 6 -	Recharged ...	6.04 in.
	3 cells calc + 3 water	
No. 8 -	Recharged	5.55 in.
	3 cells + 3 water	

1:40 pm

No. 7. Storage	Res 3.8 in.
Added 1 calc + 2 water	above bottom of cell.
7 previous 2 calc + 1 water	
= 3 calc. + 3 water.	

Robbers of Calcium Chloride

Rooby from Dr. Sears quiv. glands

Photo. No. 2. Amount of drift snow at top No. 10.
No. 3. Insulation effect of same further on same case.

Photo. No. 2.
No. 3.

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Buy Calcium Chloride with about water.
Seals the covered cartons. But probably
it will not absorb water from the air
after it is in solution.

2. An equal volume of water appears
necessary to dissolve the crystals. There
appeared in Expt 7 to be about one-half
of crystals left as sludge in bottom
after mixing 2 cartons of crystals with 1 carton
of water.

3. The half volume of hot water, succeeded
the best in dissolving the crystals into
a concentrated solution that quickly
recrystallized into a solid block, possibly
→ thinned. Could this have been pulverized
into its original crystals?

Hereafter, volume for volume only.

- Get chart of volume of Expt No. 4 at various
heights from Parsons of Army Engineers, Fort
(b) chart of changes of Calc. chloride from Coll.
Harvey has kept his copy with us.

Lunch with Max at 2 pm.
No time to pay hotel bill nor copy
Friday record sheet nor pay Culy for 2 cans of oil.
Conan forgot telegram left sitting
behind the hotel. But ^{obtained} ~~was~~ to Culy from
Rend.

the original folder
of the records

35
Jan 12 Our Ride to Base

"No more ski on bus. Agent at Sacto
tells men from bus if bound for Soda
Springs each if they have tickets."

England River.

Railway used to be "ski specials"
but they were a headache. But admit
that views were if licensed and good
spenders.

Weather: Slight melting on north side
of roadway. But the effect of sun's
rays striking thru the timber into the
lows was oppressive.

Base uncomfortable.

Need - 1. Bottle and cup to carry water
for sling psychrometer; take to camp later
to Posture.

2. Tubes to hold recorder sheets.
Take powder also

3. Light cloth.

4. Wire to haul up basket at trail in
Posture.

→ 5. Another can of calcium chloride.

6. Box for cameras, field glasses, etc.

→ 7. Glass rod to stir contents to prevent
stratification of calcium. See ice can.

8. Flashlight.

36

Callaphane

If snow is wiped off cover, callaphane is unaffected by water and protects the bituminous and cherts thoroughly. But if exposed to dampness for a considerable time, such as lying on a canvas on the snow all day, the callaphane windses badly and does not dry evenly again.

→ Barograph

Only 18 sheets left.

Form No. 1068 B - Matt Barograph

37)

Saturday Jan. 16, 1943.

Drove up with Harry Durss.

Road everywhere dry.

Abbot and Castello movie group at Soda off for a movie film. Herbert Butler just acting for Castello. Sled, peapier made igloo by railway. Boys carrying table into tent on hillside for lunch!

Hotel - Melting

Min. temp 8°F 11 am 40°F (H.T. 39°F)

Snow hard. Puffs of melting on my hand.

Page 3. Army Engineers

Tank is flat but outlet pipe projects upward 1/2 in. How high of?

How much water below outlet?

Collar swings at right angles to prevailing wind so will not be greatly affected.

Difficult to turn tank 45° from present orientation because of location of outlet pipe.

Even without peapier there is no ice. Did not see Castello. Better to test possible depth occurrence of ice in under situation.

depth of liquid $5\frac{1}{16}$ in. from bottom.

depth of surface from collar of intake

depth by Cameron table: $4\frac{5}{16}$ in $(5\frac{7}{16}) =$ Gain $1\frac{1}{16}$ in

Dec. 9 - 4 in. deep

" 30 - $5\frac{13}{16}$ in deep = Gain $1\frac{3}{16}$

Rating table 4 in to $5\frac{9}{16}$ = 8 in. precip. *

Jan 16 - $5\frac{13}{16}$ in. deep. No further gain? *

* Lugo No. 3 (Army)

38¹/₂ Charged Dec. 9

Water residue not drawn off
(i.e. top of outlet pipe) is datum
level for measuring seasonal catch.
"Measure with stick vertically and
stir thoroughly to break up stratification."

Query: What is height of outlet?

Net weight of solution (excl. of residue
below outlet) . . . 28.65 in

Total depth of charge (incl. residue)

Depth from rim to station $55\frac{3}{8}$ in. ^{4 in.}

(Depth of can $59\frac{3}{8}$ in)

Remarks. Dec 30

Pres. depth $5\frac{13}{16}$ in. Gain $1\frac{13}{16}$ in.

Remarks. Jan 16

Pres. depth $5\frac{13}{16}$ in. " = 8 in.

Estimate height of outlet at $3\frac{1}{16}$ in. = 2 in. precip.

Total in 4 in. depth = $2 + 28.65$ in. = 30.65 in.

Rating Curve = only 22 in. Error 8.65 in.?

Gain $1\frac{13}{16}$ in. = 8 in. ? (incl. 4 in. head to $5\frac{13}{16}$ in. level).

Checking slight. compares over range.
at next hour's level pan for more space.



38) Difficult to use depth instead of weight for
increase in diameter over 8 in. which exaggerates
the error whereas the opening of 8 in. gaps will, in
fact, decrease error greatly.

Jan 16
Log No. 4

Hours of wind shield found loose.
Tightened the open lines of the chain.
Did not stir contents. Shall wait
until Feb 1 when can will be weighed
monthly.

Watch for possible ice.

Query: Will org. solution stratify if not
diluted by further precipitation?

Revisiting Hypothesis - thermographic

Hotel:

12:10 pm Dry bulb psych. 40°F Min 40°F
Wet bulb " 26.2 (37%)
Which is shade of temperature
felt by Duress.

Pasture:

2:45 pm Dry bulb 42°F Min. 42.2
Wet bulb 29.1°F

Temp. extremes for period:

Min. 7.3°F } Root 42°F
Max 55°F } Root 42°F

Stress Q - Ice still plentiful.
Rumors slight. Confused with Feig.
at night hearing lower pen for more space.

39) The thin centers more present
initial setting rather high.

Jan 16 Thomson. Shelter: faces replaced by snow
and handle put on door. Door
cut down to prevent pinching.

Start

Insulation and Walking.

Only slight moisture on surface of snow.
except on upturned down slopes at
hitch where road was trodden by
skins and snow was laden with
dirt.

NB: The max. temp. for the day was
only slightly above 40°F (H-T. 43°F).

Count for the period did not exceed
an inch (that was, not made) but
broken snow should have been into
pit was frozen a foot or more.

Evidently open air channels permitted
deep penetration easily.

End

Strata in Snow Cover

Only 3 strata or zones of crystals remain,
each thicker and more dense than the
preceding. The grain size also increases
and also coherence of crystals into aggregates.

Density 34.3, 41.3, 46.2. Average 43.5
Crystal
size 1.2mm, 1.2mm (range), 2mm to larger.

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

40
gms

State _____
 Drainage Basin South Yukon
 Snow Course Soda Springs No. 1
 Party West of Trench Pit - East Pit
 Date January 16, 1948

112

Description or Number of Course	Time (min)	Depth of Snow (inches)	Length of Core (inches)	Weight of Snow (grams)	Weight of Ice (grams)	Water Content (percent)	Density (g/cm ³)	Remarks
7. <u>112</u>	1	3.5	C	49.8	61	11.2	34.3	1.2 mm crystals with colored inclusions
8. <u>113</u>	2	7.5	C	52.9	31	11.3	41.3	Crystals with inclusions from below
9. <u>114</u>	3	10.0	C	50.5	8	11.2	41.2	3 mm crystals with inclusions
Cutest columns and best. Colorless granular deeper down.								
Total		21.0				11.3	41.3	1.2 mm crystals with inclusions
112		30	2.5	49.8	61	11.2		Depth not as shown
113		7.5						
114		2.5						

20.
20
has
more
ice
much
more
and
more
ill
Drier

112

No. _____ sheets. Comp. by _____ Checked by _____

should in which to show paperometer.
 Stems 8 ft long.
 1 gallon white paint, 1/2 gal. linseed oil,
 1/2 gal. turpentine to complete painting
 of platform at Hotel. Has been done a



40
gms

Drainage Basin _____
 Snow Course _____
 Party _____
 Date _____

N/A

*Description or Number of Course	Station Number	Depth of Snow (inches)	Length of Core (inches)	Weight of Empty Tube	Weight of Tube and Core	Water Content (percent)	Density per Core	Remarks
2		39	235	50	61	11		30.
3		39.7	242	50	61.8	11.8		30
4		30	28	50	62.5	12.5	42.6	30
		-6.3	-4.2					

*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 _____

check in stock to check psychrometer.
 Steins oft long.

1 gallon white paint, 1/2 gal. linseed oil,
 1/2 gal. turpentine & complete painting
 of platform at Hotel. Has been done a



Metric Cross-Section compare with Inches
Kilometers or .05 in.

Width spaces 35 to inch as compared with 20. Therefore somewhat smaller and easier to designate. If only we had 1 Humboldt as here as the last 1 minute. However, I am sure to represent the usual size of smaller snow pellets. A snowflake indeterminate may prove to be larger.

Barometer.

Barometer falling steadily to normal and slightly below. Probably the present stagnant air is being blown up and storms may come.

Abbot & Costello, comedians, are now making a snow film on Casaca Hill and need a snow storm. "Herbert Drier acting as double for Costello."

Need:-
uprights to carry tarpaulin to produce shade in which to shield psychrometer.
Stems 8 ft long.

1 gallon white paint, 1/2 gal. linseed oil,
1/2 gal. turpentine to complete painting
of platform at Hotel. Has been done a

41)

big job. Stopped for a few minutes at Sidra Club but to see him and report conference with your eyes.

Paint hotel for 1 qt of turpentine wash. The old weather on wood doors paint but lower removed.

→ One Curley for 2 qts of kahlial for paper.

Weather at Soda Springs

	Max	Min	Bar	Temp	Wind	Clouds
Jan. 12	53	7		29	LE	Ch
" 13	45	13		29	LSE	Ch
" 14	52	20		28	LE	Ch
" 15	56	14		28	LSE	Ch
" 16	55	8		27	LH? "LV"	Ch

Rent at 7:15 pm. Brought down a plate of the crystallized sodium chloride.

Sunday, Jan 17

Much colder last night despite falling barometer and evening mildness. Today wind rising but continued cold.

Why?

See Bulletin report and trace snow at most ski resorts in Coast except Shasta North Forest and Soda Springs.

Will require low level snow surveys to weigh the snow surveys at the higher elevations.

42) Thursday, Jan 21/43

Low temperatures for two mornings at Reno following the fall in barometer of Saturday Jan 16. A strange reversal of expectation.

There is increase in mildness and weather with fall of barometer on Wednesday.

Wednesday ^{and rain} cloudiness, and Wednesday night rain becoming more rain instead of snow.

Thursday - Heavy rain. River yellow and rising. Flow down stream much heavier than up larger drainage area below. River only 1 ft below top of Winfield Park walls 1900 cfs at Tardal during forenoon and 4700 cfs at Reno.

Old snow at Soda Springs now only 13 inches deep according to record obtained by Harry Davis. The old snow increased to 35 in., then melted rapidly.

Quite natural, for old snow was 43% denser and had little capillarity. Earlier in season most of the rain was caught and held by the snow when it was less porous. The ordinary snow barrier cannot withstand but

Mistaken;
rather wet
snow.

Photo of Gage No. 6, one-quarter of Wind Shield to
photo archives

A3) or rain.

Another storm is following. Will it
also be rain? Quite like a rain storm
and flash about 11:00 or following. Same
is the record? The melted snow
above 7000 feet did not melt.

Small blue notepad "Jan 23-Sat" to folder

* Ben jumped.
No record.
"Wind 60 mi.
per hour?" -
Carley. "Had
to try to
reel in to
avoid being
blown off." C.

→ Carley suggests that wind blew down funnel but
sheet burst down and pins fell off sheet.

But the Ancho believes that a gale over the funnel
produces a vacuum that lifts the bucket and
causes the pins to fall down. In later manner
the roof of the Ancho Observatory lifted in gales from inside
pressure. any effect on Strain Q.

January 24 afternoon till dark.

Page No. 6. (2 ft. high can)

Can has adhesions of ice outside.

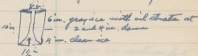
Inside erosion $1\frac{1}{2}$ - $3\frac{3}{4}$ of light dry snow.

Distance from rim to frozen core $7\frac{1}{2}$ in.

Ice thin in center of top of core?

Later in day cakes slid out. Can 2 ft. tall.
Core 10 in. tall and top $7\frac{1}{2}$ in. below rim.

Thick below $6\frac{1}{2}$ in. except approx. 2 inches
of precipitated coarse crystals. Diam of core 8 in.



Coarse crystals of calcium chloride at bottom
of core.

* An open funnel-like shaft found extending
vertically from bottom to top of core. Diam. $1\frac{1}{2}$ in.

Height 17.26 in.

Recharged ? Neglected to record weight
(2 castors)

Wind shield:

a quarter of shield blown away.
Saw it did not hold.

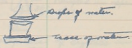
All other (zig) shields unscathed. None of
Stevens. The Stevens has continuous
(interlocking) chains with slots riveted on.
No chance for chains to open or pull apart.

Boye No. 7 - Stars Q

Contents: Snow super-buff floating on fluid breast.

No contact yet between snow and walls.

Some drops of moisture water on back over breast and a trace of water on scale pan



Handwritten note on the left margin.

Some thin snow adheres to inside of throat. It may fall when sun strikes metal.

Outside:



Snow on inside but not on chimney.

Shell ice on housing is retreating because of radiation of heat and some has fallen.

Diels present from date of child.

Jan. 16 - pen 3.75 in. above bottom of sheet.

Jan. 21 - pen 16.78 in. above bottom.

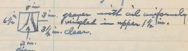
12.98! 13.03 in. precip. (~ 5 days).

Standard Eye at Still 11.69 in.

→ Recharging deferred until end of month period since the capacity of the gage is 1 month. Ink still holding out into third month. Chemical still fairly effective.

Case No. 8 (2 foot-high can) unshielded.
Snow eroded slightly - $\frac{1}{4}$ in. below
rim to $\frac{1}{4}$ in. above - cover like a
watch crystal.

$7\frac{1}{8}$ in. below rim to top of core.



Some precipitate of crystals in bottom
some oil in water.

Weight 15.88 in.

Recharge 3.87 in. (2 cartons)

Case No. 9. (3 foot-tall can)

$4\frac{1}{2}$ in. to top of snow.

$20\frac{1}{4}$ in. to core.



Some precipitate of crystals.

Shield:

Only one hole came out of basket.

No. 9 has gaps from bottom of shield
to legs of table.

Shield from slats.

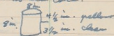
Precip.: weight 19.60 in.

Recharged 4.67 in. (2 cartons)

Photo of page No. 10 to photo analysis

Page No. 10 (3 feet high can) Slets measured!

Core: 5 in. from rim of can to snow core
which is shrunken and tilted over.
20 $\frac{7}{8}$ in. to ice core.



Note: I have failed to sketch an inner funnel
but undoubtedly there was one. It was
late and I was rushing against time
to repair wind shield.

Precipitate in can like blue alder
(collops) with jointed grains.

Weight: Weight 19.35 in.
Recharge 4.65 in.

Core

Wind Shield:

Shield is a tangle of slets, some
of them upside down.

Wind evidently tumbled shield inside out
as a whole while individual slets
tumbled somewhat in reverse direction.
The screen was split into several
sections. Joints of chain were open
often.

A classic example of flimsy construction
in a windy country for which wind
shields were originally designed. As

(over)

flying as the King Lark. Stems
 down and windshield should
 be substituted for ~~the~~ inspection
 of juice.

End

Barometer:

This afternoon barometer is still
 rising. Foggy with slight precipitation.
 Sun breaks thru occasionally. In 3 1/2
 hours, barometer has risen 7/8 inch.

Snow Sampling:

Moisture froze in snow sampler
 and cans. What I use now?

Recalamin is too unreliable.

midday:

at Sunny Point No. 8

Opt	Core	Wgt	Total	Net	Days.
		Wt	Wt	Wt	
71	51	65.9	91	25.1	35.6
-0.5	-0.5				
Total		70.5			

Net Snow	Opt	Core	Wgt	Total	Net	Days.
20	9.7	67.6	70.6	3	11.5*	

Old Snow	Opt	Core	Wgt	Total	Net	Days.
42.5	24*	67.0	81.6	14.6	34.9*	
-0.7	-0.7					
Total		67.8		17.6*		

Total 67.8

17.6*

* Too much clogging. Adhering granular
 to tubes or bits of snow.

Evening:

Survey Point No. 8
Depth Area Tides Volume Net in. Area.
69.7 62 65.2 88.8 23.6 33.9

New Survey

26 22.5 62⁺ 72 18⁺ [5 in. ?] 19.2

+ Pub. 67 (See other notes above). Eye clipped
5 in. down scale. Nearly dark.

Old Survey - computed

69.7	net in.	area.
26	23.6	
<hr/>	<hr/>	
43.7	5.4	
	<hr/>	
	18.6	42.6

Average cover at No. 8

Area. 1 Depth Water
70.5 25.1

69.7 23.6 Part of area used
70.1⁺ 24.4⁺ 58.1

Normal movement Jan. 1 - 31% ; Feb. 1 58%
up to date.

Later: During storm Tides rose 8 in.
less than one-half foot storage space.
all gates being opened. 1500 cfs (approx.)
not being released.

FEDERAL AND STATE
COOPERATIVE SNOW SURVEYS

State Nevada

Drainage Basin Smith Fork

Snow Course Soda Springs Hot Springs

Party _____

Date Jan 12, 1943 - Reno, Nev.

*Description or Number of Course	Tham. Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Core	Remarks
<u> Suit </u>	<u> 1 </u>							
	<u> 2 </u>	<u> 31.5 </u>	<u> 30 </u>	<u> 49.8 </u>	<u> 61 </u>	<u> 11.2 </u>		<u> Soil moist </u>
		<u> -2 </u>						
	<u> 3 </u>	<u> 29.5 </u>	<u> 26.3 </u>	<u> " </u>	<u> 62 </u>	<u> 12.2 </u>		
		<u> -3 </u>						
<u> No. 1 only passed </u>	<u> 4 </u>	<u> 31.2 </u>	<u> C </u>	<u> " </u>	<u> 58.2 </u>	<u> 9.4 </u>		<u> See at bottom! </u>
<u> 1 </u>		<u> -3 </u>	<u> -3 </u>					<u> Ice present </u>
								<u> 3 trays. </u>
								<u> One sample on hand. </u>
<u> Cottonville </u>								
<u> Clarke </u>	<u> 5 </u>							<u> Can't drive more than </u>
<u> Suit </u>								<u> foot on so. road. </u>
								<u> too hard. </u>
	<u> 6 </u>	<u> 30.5 </u>	<u> C </u>	<u> 49.8 </u>	<u> 64 </u>	<u> 14.2 </u>		<u> Road </u>
								<u> handles </u>

*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 _____

Form SWS-40-4, Jan. 17, 1943

* I 4. Ice core
Depth $4\frac{1}{2}$ - $5\frac{1}{4}$
Core $6\frac{1}{2}$ x $7\frac{1}{4}$
Hollow below, some
patterns, oil around core
but not frozen into it:



No. 2. Steams running after I
have left platform this circuit
open when I was there! A hang-
over - 5th Evening?

FEDERAL AND STATE COOPERATIVE SNOW SURVEYS

State _____

Drainage Basin _____

Route Course _____

Party _____

Date _____

*Description or Number of Course	**Sta. Number	Depth of Snow Inches	Length of Core Inches	Weight of Sample Pounds	Weight of Water and Core	Water Content Inches	Density Per Cent	Remarks
	7	33.5 - .2	32.5 - .2	49.8	63.1	13.3		Road handles
	8	34 - 1.5	33.2 - 1.5	49.8	62.8	13		Temp about 40°! Easy, hard snow only.
	9	30 - 1?	26 - 1?	49.8	60.2	10.4		Very easy. 50%?
	9 ^a	29.5 - 1	C - 1	+	63.1	13.3		Soil moist
	10	33.5 - .4	29	+	61.4			Too easy!
	10 ^a							Road handles, but stuffed.
	10 ^b	37	34.8	"	63	13.2		Road: Soil moist

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

River Course _____

Party _____

Date _____

*Description or Number of Course	**Sample Number	Depth of Snow Inches	Length of Core Inches	Weight of Sample Total	Weight of Water and Core	Water Content Inches	Density Per Cent	Remarks
Head: Pit on channel on knife point.								
	11	33 -1.3	28	47.8	61.8	12		Tree leaf in net and.
	12	35	32	"	63.4	13.6		Very thin. Willow.
	13	39.5 -8	26.8 -8	"	61.8	12		Willow. Snow at bottom piece in hand.
								Feathers of leaves; part of crystals. Traps? Wind rising from East
Quit								
Head	14	32 -1.5	28	49.8	61	11.2		Very. Silty.
tail								2 feet from tail.

*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. 23.

Cards -

Ground is water-soaked

1-
Sala Fingers

Jan 23/43. Saturday

Jan 20th rain had
flood. Turned cold
with snow on mts.

Jan 22. Lot snow storm;
storm last night at 2000.

Jan 23. Deep slash at
Base - water with snow.

Stalled sort of Revolving
at station put on duck
chairs for Ramon's traps.

All brush cut far
down by load of
wet sub until just
of Summit.

Traps loaded. Two
trees fallen across
road but cut away.

Snow plastered on

buildings - Hindward
side of trees snow
covered - sometimes
soft, sometimes wet.

Snow flows busy in
Tawcross - Hindward
- wet high.

Soda Springs Hotel

Paths just being broken.
Drift in corner places
partial higher than
windward. Tel. line down
was patrolling to find break.
Heavy gold this morn.

Jan 21-22 electric power
and light cut off.

No fuel for month except
some coal from Tawcross.

As Captain Cassidy con-
sidered the occasion.

an emergency and
took possession. Banks
and Cannon(?) imposed
martial law. Curfew
upstairs at midnight.
All out by next afternoon.
Main colony was moved
to Rainbow Inn.

Then supervisors received
Coffin's orders. But the
Enger Camp is measuring
the list for final occupancy
by M. R. I have ~~not~~ referred
to Quartermaster's office.

Ranger Smider stopped
in. Will accept appointment
of a trustee of Takah
houses by the Board of
Directors or Regents.

Get Sander House?

No gain in writing Washington.
Would only be referred back.
Stopped to see triple register.

Reading Hygro-thermographs
2:00 pm. Wet

HT 30°F Wet, 29.2°F

Dry 30.8°F

Wet 30.0

Shelter sealed in snow
Snow frozen on metal therm,
unit and joint of snow
on hairs.

Snow-ice granules - put
in on cover of thermog.²

An ice storm. Weather
in wires. These are
wires west of trees -
a half mile belt of
branches against green-
white trees.

Anemometer caps full
of ice and snow. Cleared

x. having failed:

them with a jack knife
but triple register
sheets for study.

Insects held in box. Cloud
5:55 pm. Pasture.

H-T 30°F Min. 27.8°F

Day 29.8°F

Nat 27.2°F

Slot should be wider
to get wet sheets in
without crushing and
freezing fingers.

Talrose powder does not
dry the air sufficiently,
use sawdust or sand.

Min. for period 40.2°F (Nat 39.5°)
Max. " " 42.6 (Nat 38.6°)

Weather at Soda Springs

Jan	Wind	Temp	Humidity	Bar	Wind	Temp	Humidity	Bar
17	45	-			27	47	ch	
18	29	-			26	32	ch	
19	40	5			26	42	ch	
20	34	11	94	11	35	40	ch	
21	38	28	4.83		38	38	ch	
22	43	24	3.15	10	38	38	ch	
23	33	25	2.27	28	66	38	ch	
24	33	17	10.45	6	70	40	ch	

11.69 in.

* Snow at bottom full quarter -
Total.

at 10 am. Jan 23, barometer
had risen 1.475 in. since
last midnight? In both
afternoon clouds thier.
but snow still sifting down
in pellets.

Clear Tomorrow?

* Get wind records at Soda Springs
and Pioneer Pass.

Recap. Log

No. 1 - Standard.

Jan 20 - 23 ... 11.24^h

No. 2^H Gun has moved well
to left. Very steady!
Clear running.

Heat possibly. Inside of
funnel clear but outside
of cone and orifice
building above line.

Contents frozen:

8 1/2 in. liquid

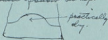
frozen above.

Position not uniform.

Wind shield intact except
that one lower end
tangled in chain and
crossed another. Too
loose?

No. 2 Army.

Practically frozen with
round of snow on top.



No further measurement
possible until contents
melt. Expedient storage.

Occurring color crusts
with ice with surface
partly closed and built up
and some snow adhesion
inside. Camera can
clean it automatically.

So wait for ^{round 9} Part 2 and 3.
next summer when totals
are finally computed.

No. 4 - 3pt. standard.

Filled $3\frac{1}{2}$ in. above
rim.



Height 18.72 in.

Recharge 5.94 in. (plastic)



→ Stir this can nearly length

How much precipitation?
Wind shield apart in
these places, links must
be sealed tight. They still
work. Half of shield lifted
out. Goodbye breeze!

Cigs
No. 5. Icey



Slush in tank the
rest Jan. 21 at 3pm.
only two days ago I
and has been exposed
to minimum temps of
only 24 and 25° F.

Plainly poor accretion.
Snow plants? How much
precip.? See us sheet?

Rim of
Pillar is O instead
of round over ^{shoulder} carries
a load of compacted
snow and adhesion ice.

Precip. Jan 16 (over) to 21 (over)
... 8.52 in.

No. 1 - Jan 16-22 (over) 8.97 in
but possibly 1.8 in. in slush
after 2pm Jan 21.

over

Logos in Pasture a scene of lifted mind shields and snow-filled cover. These packed thru two winters of 0° F.

Must stay over to recharge them and take photos.

Then put in extension means for snow come and sample present strata.

Train size too. Tried to call home, but phone line down both east and west.

Patrol boy on railroad but pushes rather than throws the snow. The highway line for seeds set a few streams of snow.

Ed

Jan 6/43

S.S. Hatch
10:00 am

Wind 25.4 H-T. 30°

10:45

(Stand. 27°)

25 23.8

(Corrected
-3°F)

12:10 pm

H.T. 33°

Pressure 32 - 26

{ Corrected 30°
Stand 30°

Min for max +2.8 (rent 30.2)

Max 48.1 and 31

2:30. some drift from Hatch

"platform"

open pasture

H-T (corrected) 23°

Wind strong - snow and

swirls. Light

But the powder snow is
not enough to stick to poles
& horizontal bars.

Jack. birds jumping with
leaps. No trace of activity
but insects only from the
ground or on ground.

By No 10. nothing. No has not
much better. Cause in the
678 are now down, only 1
bird? Top level down 2/10,

Soda Springs Notebook #2

Jan. 6, 1943

Precip. at Soda Lake,
1993-

Monday 20 Jan 0.94 in
21 4.85 in

Wed

20th. 3.5 in (11 in. wet snow)

21st 10 in.

Amount of rain on
high density snow.

Mr. E. King
Hydrographer

Next Co
55 letters

11
11
11

Dear Sir:

I have been helping
Dr Church with some of his
Humboldt work for the last few
months, including plotting up
discharge curves for the various
tributaries.

There are some rather glaring
inconsistencies evident when
looking at the discharge curve
graph for ~~the~~ Langille Creek
at Power House, based on the
1940 - 41 & the few ^{newer} 1942 gaging.

The curve based for 1941
gives about the following results:

Gage Hts.	C.F. Sec.
.80	9
.86	19
1.00	36
1.25	49
1.50	66
2.00	111
2.50	166
3.00	225
3.50	286
4.00	348

appears to be typical in
This curve, shape and it fits
very well with the
1941 gaging below
gage height 2.3 ft.

Above that the
gaging with dates
are as follows; -

(next sheet)

W	Dry	W.P.	Hum
23.8	28	16.2	58
26	32	18.6	46
34	46	18.4	30.3
35.6	49	18.6	27.3

Notes
Soda Springs Co

✓ P 27 mid H (roof?)
Wind Tunnel (?)
Tests for what?

29) Evaporation (?)
last 2 lines of H Howell Capillary

P 50. Correct the elevation
given for V. Ker, Campus.

