

STENOGRAPHIC NOTES



No. 16 Soda Springs

From Friday July 3 1944

To Monday November 6 1944

No. 26-G

Friday, July 14, 1944.

Harry Dukes provided auto transportation for Jeff Boardman and myself to Soda Springs and Tahoe. 8 am to 8 pm.

Brought new bedding to Soda Springs and took sleeping bag and personal bedding to Tree House. Check over → bills of purchase to see whether I have left some of new Tree House bedding at Soda Springs.

Only a few snowbanks left. Sleep on the old highway.

Reset Friday Instruments

12:10 barograph.

Hotel - 12:35

Temp. 72°F

H-T 71.5°

Wet bulb 54°F

Dry bulb 74.5°

H-T reset 12:45 pm Pens cleared.

Stevens S. W- 6.88 in.

July 2 W- 6.88

Precip. + evap. 0 in.
→ The frame-work needs tightening up.
Horizontal neighbor bar needs larger knobs

Ps. Sunshine Recorder

"records in moonlight and
even in dark night - all night"
Coulter's adjusted too high.

No. 5. July. June 30 - July 7 - "No precip."

→ Stevens W. Still no advance in pen
but a tiny backward movement
about July 12. amount .02 in. Why -
Pen should be refilled.

Pasture 1:40 pm.

Temp. 84°F! but min. defective.
Coulter has tried to unite
column.

H-T. Temp. 74°

Wet bulb 54°F

Dry bulb 74°

Temp. for period

Min 9°F! Reset 34°F!

Max. 76° " 73°

Min. thermometer defective.

H-T reset 2 pm.

No. 7 - Stevens R.

Pen cannot be found.

Repairs promised.

Black paint for all gages Nos 2 and 7

But no mention of guy cables.

→ Jeff proposes a line fence beneath each cable to keep horses away, yet permit grazing beneath. Plan good.

Bills for rent and electric lights.

Saw Dennis Jones. "Bill for July 7 not yet paid." He had paid the electric bill to Kay 2 for \$55 to avoid penalty deposit and forwarded statement to Station for reimbursement.

2 pm Lunch at Donner Summit Lodge

Kindness Frances.

Probable periods of employment of
Arthur Guillaud by U.S. N.S.

Dec. - May @ \$20 monthly.

June - Nov. @ \$10 ..

Station therefore pays him \$10 monthly
for June - Nov. But overpaid him \$10
last year. So his time will not start
this year until July 1.

4 A.M. Left for Tahoe.

Wednesday, July 19-

Professor Boardman has received
a C card for goodline to serve
the Soda Springs project.

Left Reno 8:30 am. Fine sailer
from Salt Lake City a ride. He had
ridden and partly dinner all night
and now enjoyed sleeping.

Donner Lake is very high with
scant beach.

at Soda Springs recent evidence
of the Gendels. They had come up

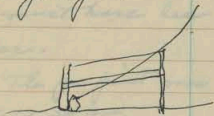
Monday evening and left on Tuesday
for Tee House. "They were very
happy at the opportunity" - Francis.

Pasture

Grass very tall and abundant.

Boardman undertook the fenders
of fence paralleling the guy cables
of the trestle.

2x4^s and 4x1^s were found in
the garage.



The fence will prevent running
into the cables but will not fence
out any grass.

The turnbuckles, however, were
so rusted that only by long effort
could they be turned. The turnbuckle
on the west side was left to soak
in kerosene. Next time we hope
to tighten all cables and level

the floor of the recorder, Stevens Q.
Stevens Q. not fully restored.

Oil tank refilled. Chanced to look down
and saw gleaming brass in the
grass 2 feet from where I had looked
before! Jeff retrieved it. It was
the missing pen! Uninjured but sandy.

Easily cleaned and refilled and
rehung. It must have received a terrific
jerk to be thrown from its place.



It must have been thrown against the
door.

The pen point was reset at 1.0 in
at 12:30 pm.

→ at 4 pm, pen failed to trace. apparently
the capillary feature will not work
unless the pen is against paper.
I had drawn it away during hammering
on the fence panels.

To start the flow, press thumb
firmly down on bowl of pen to force
the ink through the tube.

Bowl refilled several times and

left brim full. Will it now run
two years as before untouched and
unreplenished.

Hotel

Dennis Jones on 17th received
checks for rent of "Palusa" to July 7 \$40⁰⁰
and reimbursement for electric service
Feb 7 to Mar 7(?). [\$55.-]

Stenens is running steadily - Only
one tiny step of pen to left. Why?
Otherwise trace is straight line.

Respective Instruments

Sunshine recorder records both
day and night.

The minimum in pasture has
column broken. Caillard has
been unable to adjust either.
Have written Berner regarding
the thermometer.

Siedentopf is inspecting and
servicing only the instruments at

the Hotel. Has no inventory of these
in the Pasture. - Quillard.

Flowers

Flower Picture exhibit and Flower
Gardens in miniature by the teachers
in summer school at Donner Summit
Lodge by Miss Rich of San Francisco Teachers
College.

The flower pictures are as exquisite
as art pieces. Some the old-fashioned
massed bouquet, others ^{are} themes in
form and color. The gardens are
cross-sections of the plant kingdom.

5x7 Camera

Forgot to bring it back for
Walter Herz - now the second time!

Left 6:30 pm - Reached Reno 8 pm.

Tuesday August 1

Trip by Boardman, Becky and
Marsha To, and myself.

Stopped at Forest Station to
see Marshall. Becky had been blue
but was elated at Marshall's growth
in weight and height.

Soda Springs 11 am.

Becky likes Soda Springs in winter
better than in summer.

"Palace" very clean and neat. Gerdel
has done it.

Pasture

Fences at guy-wires solid. Stevens
& running! Tumbucals twisted off.
→ Must oil everything hereafter.

Page No. 6

Slat of wind shield on lip of can.

W. 3.67 D. 3.2

No. 8

W. 3.605 D. 3.04ⁱⁿ

No. 7 Stevens Q

12:25 pm.

New and heavier turnbuckles installed
all guys tight. Instrument re-bailed.

Precip. July 26 0.59ⁱⁿ (Wed. 4 pm)

Rem 1.59ⁱⁿ. Set at 1ⁱⁿ. when recharged.

July 25 0.03ⁱⁿ.

2:15 pm (after lunch)

No. 9 W. 3.75 D. 2.8ⁱⁿ.

No. 10 W. 4.48 D. 3.3

"Min. therm. has disappeared"
Canilland. Gardel has probably taken
it to Sacramento for replacement.
Later: No. Who could have taken it?

Hotel

No. 1 -

Stevens S

W. 7.99

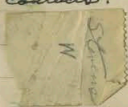
D. 4.32ⁱⁿ

The grooves in the bail-rod of
the balance are too shallow:



Sunshine Recorder

Column 1 in. above contacts.
Far too high.



No. 2. Stevens W.

July 29. Reversed 0.49ⁱⁿ = 0.98ⁱⁿ.

One straight line

Why?
Because pen is
at end of chain drive
and is reversing.

Remand

Test of sensitivity by washers.

- 1 point = 0 movement of pen.
- 1+2 " = 0 " " "
- 1+2+3 = 0 " " "
- 1+2+3+3 = 0 " " "

Place for gas heater for orifices

Only spot available is under the
recorder case, and case must be
removed to gain entrance.
12 in. long.
6 in. tall
8 in. wide.

No other room. Only 4 in. space by
side of tank.

No. 3. Army Gage
D. 27.2ⁱⁿ

No. 4. W. 3.98 D. 3.32ⁱⁿ

Plastic (light bail)
W. 4.375 D. 3.8ⁱⁿ

Reducer D. 10.9ⁱⁿ x — =

Prestone-Nit
W. 14.5' D. 13.6ⁱⁿ

Finished 4:18 p.m.

Friday August 18

Dr. Leipson is testing thermos bottles and will write a report for the Project.

Jack Ryan is making a lead counter-weight for our thermos balance.

Card from J. B. Paulson Aug. 16, 1944.
"We plan to go to Soda Springs"

Friday AM. The 18th to weigh the
charge of the Engineer Luge and
make a reconnaissance of the
Soda Springs area. Will send
you a copy of the data if you
are not there.

Best wishes

J. B. Paulson.

Should have gone to post office
yesterday afternoon.

Called Arthur Quillard to explain
my failure to be present. He had
heard nothing regarding my request
for the lead slug and I had not
received his request for H-T
sheets. None there to be found.

Called up Prof. Boardman. He could
drive me up. So a second phone
to tell Paulson when he arrived
at Danner Summit Lodge.

Left Reno 10:30 am. Arrived
Soda Springs 12 Noon.

Found Army car and Paulson,
Linsley and Gerdel at lunch. They

had not stopped at Donner Summit Lodge. So phone calls futile.

No. 3 (Army Engineers) gage had already been drained.

Amount approx. 34ⁱⁿ. Paulson will send figures as soon as rewritten.

Paulson says that the "curve is poor but one point more has been put in. Give up interim measurements.

Amount is too large. Use for total catch only."

May change gage to another location. "Too many blind spots need measurement" - Lindley. So tent was left uncharged.

Gendel happy to be coauthor of MS on Precipitation Gages.

Has also a MS on Snow Quality for Transactions. Will gladly submit it.

Merrill Bernard on a secret mission outside the country. Will be absent 60 days. Gendel has stack of assignments

* But I do not recall seeing it August 1 when I
visited Stevens S. Perhaps Michel assumed that it
was the old open can. Couillard made the change
at request of Siedentopf, who was following instructions in the circular.

To answer for Bernard on Advisory
War Weather Committee. So we have
extra reprieve for completing annual
report.

Gardel's share already sent me
for reading.

Page No. 1 - Funnel

Argument about evaporation rate
possible from No. 1. 3 ft from Tahse in
12 mos. Twice the monthly average
during summer months.

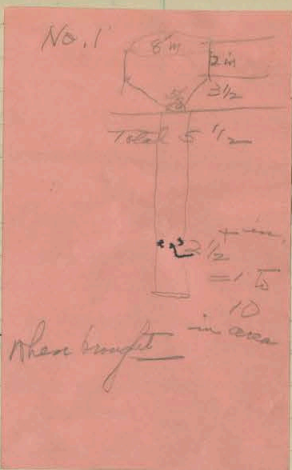
Limbley agrees that open 8-in. can
would be inaccurate. "Too much water
wasted in pouring into small can.
beside loss from evaporation of
contents."

"But funnel is now in No. 1"

Arthur says that Siedentopf was
here June 6 approx. and sent the
inner tube and funnel, which he
thinks he put on the outer
can about July 1.*

Then why the divergence
→ July 14 - Aug. 1? Write Siedentopf.

Herdell delighted. Sent a picture of float and
 wind vane to Instrument Division of Western Bureau
 saying if it could do anything.
 No. 1 an inclosed drum anerometer has been
 received. Ever found made. Hope that float will
 now cease shorting it.



Lindsay feels that shallowness of
 funnel does no cause loss of
 catch. But in Denmark, funnel
 is double(?) the depth and has
 baffle-plates to prevent splash.
 On other hand, he says that the
 measuring stick raised the level
 in small tube by 2%.

So believe that weighing-gage is
 more accurate if spring balance has

a correction card.

Experimental Watersheds

Paulson is inspecting Norden watershed and another small one downstream from Soda Springs.

For Sinsley or Gerdel or self?

Donner Lake:

→ Sinsley approves of a snow station at Donner Lake to determine density of ripe snow. Gerdel in discussion of Larstra's paper suggested that the density must be 50%. Believe from Takel surveys that density may be 35-40%.

Lunch at Donner Summer Lodge 1-2 pm.

Pasture

Gerdel has placed a new red-column minimum thermometer in pasture.

Caillard found old minimum fallen thru the shelter and standing against a leg(?) quite unharmed in the grass. U.S.N.B.

I brought it to office for ultimate return to Bureau. A queer case of lost and found.

Guard Fence Down -

Fence down - Haree evidently come here to stamp or rub their necks on the cables.

For past week (except last two days) Stevens Q shows long oscillations of the pen. Why not when fence was down?

Boardman recreated two fences and strengthened them.

2 p.m.

H-T clock has run past and stopped. No sheets. So not reset last week.

The present sheets must be made by or for the Weather Bureau, Frey does not have them. General has requested emergency sheets from Bureau.

Meantime will use summer sheets +10 to +11.5? and lower the numbers 30°.

For period Max 81.8°F (Reset 62°?)
Min. —

Max.

Returned 6:10 pm

H-T reset. Pen corrected by -4.5°F
to 65.5°F

Max. on old sheet appears to have
been 86°F or very top of sheet.
all the H-T can record without
lowering the pen. During hot spell
at Pens of 102°F?

6:15 pm.

Stevens Q

Pen at 1.70 in.

{ Set July 19 at 1 in. (?)

Aug. 1 1.59 in.

" 18 1.70 + 0.26 July 15 =

0.96 in. July 14 to Aug. 1

No. 1 only 0.35 in.

Reround - Cable half-down.

Inx settled but abundant.

→ Pen Pumps

Pen is pumping because of air

→ suction overhead, not because
of vibration of tower, try barograph
inside of orifice.

Query: Could opening of door have
any effect by permitting draft.

Dennis Offers to Fence Shelters

If necessary, Dennis Jones suggests
building fence around trestle to keep
horses from cables. But Mrs Jones
and I want to save the grass for
the horses. "Hay there is \$36 a ton!"

→ But we may be forced to build
a double guard fence on the
two sides of the two long cables
to keep the horses away. HxH^s
best for strength and snow-load.
Need braces and central support also.

X Hotel

4 pm.

H-T reset. Current min. 69.2°F.

Shields No. 4 and Reducer Collar gages
have shields. Nos. 1, Stevens S,
Plastic and. Pristone have none.

1" dp water in 8" diam Cyl
= 50.3 cu in
& weighs 1.82 lbs
= 29.1 oz

4:15 pm.

Stevens W Pen at 8.02ⁱⁿ Reversing.
Line straight.

Sensitivity.

Pen records when tank is
pushed. So no cable broken.

Test. 0.09ⁱⁿ washers + 7 small
washers + 1 big washer + 12 nuts + 1 T-pipe.

No sound of motor but found
pen moved 0.14ⁱⁿ = 0.28ⁱⁿ water equiv.

But Saturday, Aug. 19, following test
was made:

Weight and Water Equivalent of Weights

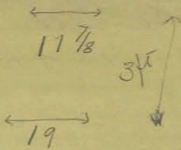
Total spec. 0.09 ⁱⁿ	2 ⁺ oz = 0.09 ⁱⁿ .
" ind. Washers.	4 ¹ / ₂ oz = 0.20
" " Nuts	9 ¹ / ₂ oz = 0.43
" " T-pipe	12 oz = 0.54.

Pen moved total 0.14 = 0.28ⁱⁿ. but
reversed only slightly when weight was withdrawn.
Stevens W is plainly stiff. Can the
fulcrum be gummed up? Will
gasoline be sufficient?

Pen moved only one-half of
total load.

* See later figures by H.P.B.

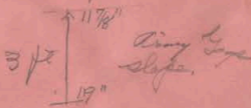
12 oz = 0.412ⁱⁿ. Catoh. Pen 0.28ⁱⁿ.



Stevens S. 8.0 in. Aug. 1 7.99 in.
 Gain for Aug. + 0.01 in.

No. 3 Army Engineers

Army Gage



Callan flares much more.



Total height approx. 57 in.

Have taken the dimensions and slopes to make a dummy gage, if the original is taken, in order to test the adhesion of snow to the steeply-sloping surface.

Lease of Entire Living Quarters

Dennis is offered \$100 mo. for
3 mos ^{or longer} for quarters in Filling Station
for Coffee Shop or \$25 mo. for
3 mos for each of upper rooms.
\$300 + \$150?

But will accept \$20 mo. from
us for total of \$150 tho better
satisfied with \$20 mo. for entire
year. Ashton can probably pay
\$20 for 6 mos, leaving \$30 possibly
to be paid by University.

He feels that he also should be
repaid for the oil used for heat,
"not the entire amount but at least
a part of the cost." ^{Don't want to lose too much.} "We can determine
how much". He suggested \$8-10 mo.
as fair estimate. I offered \$8.⁰⁰.
Agreeable to him.

We pay the entire electric bill.

Started home 6:30 pm. Arrived 8:30 pm
despite running almost amok and
landing belly-down on rocks and
brush. Drugged off and dimmed home.

Weather for August

Precip. 1-18 0

→ Stub pen is Sangbusch Tuesday 9.
Get one if possible.

	Max	Min	Precip	Wind	Clouds
Aug. 1	65	39		NW	clr
			71		
			2		
2	61	31		NW	clr
			71		
			2		
3	71	37		E	clr
			71		
			2		
4	76	42		NW	clr
			71		
			2		
5	75	43		E	clr
			71		
			2		

Aug. 6 72 38 NW clu

#1 354

2 326

" 7 69 40 N clu

#1 445

2 433

" 8 66 34 E clu

#1 540

2 534

" 9 70 33 SE clu

#1 605

2 605

" 10 75 39 SE clu

#1 673

2 678

" 11 82 40 SE clu

#1 758

2 770

Aug. 12 84 51 SE chr
#1 837
2 847

" 13 83 48 NW chr
#1 929
2 944

" 14 79 44 NW chr
#1 34
2 56

" 15 74 41 NW chr
#1 117
2 142

" 16 74 37 NW chr
#1 190
2 223

" 17 75 36 SE chr
#1 254
2 294

" 18 72 37 chr
#1 321
2 380

18	72	30	NE	gr
19	74	31	NW	gr
20	74	31	NW	gr
21	74	34	NW	gr
22	75	35	NW	gr
23	73	34	NW	gr
24	69	31	NW	gr
25	76	39	E	gr

Aug. 19 71 34 NW clu
 #1 400
 2 455

" 20 72 35 NW clu
 #1 482
 2 553

" 21 74 34 NW clu
 #1 564
 2 641

" 22 75 35 NW clu
 #1 640
 2 720

" 23 73 34 NW clu
 #1 730
 2 823

" 24 69 31 NW clu
 #1 802
 2 908

" 25 76 39 E clu
 #1 900
 2 10

Pasture (4hr Period) max. 76°F Reset 76
 Min. 29°F " 75

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Aug. 26 82 47 E clr
 #1 0
 2 108
 " 27 82 46 NW clr
 #1 83
 2 203
 " 28 81 42 E clr
 #1 170
 2 296
 " 29 86 43 E clr
 #1 255
 2 387
 " 30 83 41 NW clr
 #1 337
 2 472
 " 31 73 44 NW clr
 #1 431
 2 577
 Sep 1 67 33 NW clr
 #1 520
 2 667

Friday September 1

Reno 8:30 a.m.

The few extra in the aisle were almost an overload up grades. My old friend Walt (Doe?) was driver.

Bug Station 28°F last night.
Dinner take still full.

Soda Springs 10:20 a.m.
Cold inside.

Reset barog. and H-T's
Trains shake the windows even in summer. So frozen ground not essential.

Hotel 10:50 a.m.

Min. last night 32.5°F

H-T Wet 46°F

Dry 56° Current min. 55.3°

Sunshine $\frac{1}{2}$ in above contacts.

[Faint, mostly illegible handwritten notes at the top of the page, possibly including dates and measurements.]

Pasture.

Pasture not well grazed down.

11:10 am.

Wet 46°F

Dry 56.2°

H-T has stopped. Pen has skipped in spots.

Temp. for period

Min. 31.7°F Reset 56°

Max. 82.1 " 56.6

→ Clock needs cleaning.

Precipitation Gages

No.1 Gage was used Aug. 18.

Prob. in place July 1.

No.2 11:45 a.m.

Pen 7.88 in.

yes, a weight is pendest from the bar.



But has been on for a year.

Bar sluggish. Pushed bar down; pen went to right. i.e. in reverse. This is O.K.

Pen-barrel 1/3 empty -

[Faint handwritten notes and diagrams at the top of the page, including a small sketch of a rectangular object.]

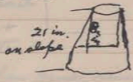
Stevens S W. 7.97ⁱⁿ D. 4.2ⁱⁿ
 PC (Plastic Collar) W. 4.35 D. 3.78ⁱⁿ

No. 3 Army Engineers
 Oil residue in bottom 0.38ⁱⁿ.
 Covers 3/4 diam. of bottom east to west.



Total height of tank i.e. gage, base to orifice, 5ft.

Collar

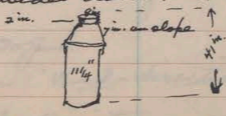


Outer slope 21ⁱⁿ long.
 Depth Height of inner vertical tube 8ⁱⁿ.

No. 4 W 3.99ⁱⁿ D. 3.3

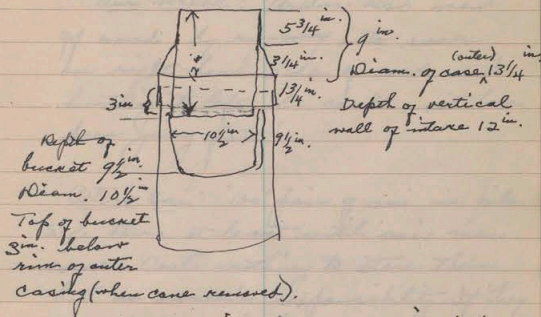
RC (Reducing Collar) D. 10.8ⁱⁿ.

Total height of gage 41ⁱⁿ.
 Outside diam. 11 1/4ⁱⁿ.



Air squall on of 8 widespread
and fast-going east.

No. 5 (Fitz)



Intake 8 in wide and 12 in deep
projects below rim of bucket to
assure catch from orifice to bucket.

→ Note vibration on pen by measuring
can and walking on tower.

Lunch 1:30 pm.

Author: "Wind-direction pens of
Triple-Register not recording
for 3 days. Batteries near?"



When were they recharged?"

→ Better get a storage set.
Bring Emil Mack up soon.

Our wreck: "Arthur also went off road by running into rock on right-hand side of road and hurtling to left. He could not have been going fast."

Peter's Ski: "100+ pair of ski in pile. Safe there at least until ski-men come. Costs nothing to store them but on owner's responsibility. If they can be recognized, we can take them. Many have no tags."

Pasture

2:35 pm.

Weather - Windy yesterday, some wind this morning. Almost calm at noon. "Expected thundershower last evening at sunset. Clouds heavy" - Walt (Rose)

Snow film on mountains? Fear it is too spotted. It is rather seen on granite sand and rocks.

Precipitation Loges -

No. 6 W. 3.68 D. 3.18⁺ in.

Splashed bit of oil onto my cuff and sleeve. But reweight still 3.68^{in.} Possibly a trace less, but still only 3.68^{in.}

No. 7 Stevens Q

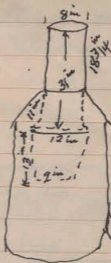
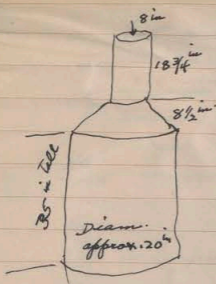
→ Pen (i.e. clock) stopped when rewound Aug. 18. Winding might have taken pressure momentarily from clock. Failed to notice it.
Pen at 1.73^{in.} Sep. 1
" " 1.60^{in.} Aug. 1
0.13

→ Pen pumps in wind when door is open. Should have glass in door for observation when closed.

Bucket



Diam. top 12^{in.}
bottom 9^{in.}
Height 13^{in.}



No. 8

W. 3.61^{in.}

D. 3.05^{in.}

Evaporation in summer with No. 10 oil?
apparently a matter of 0.01 to 0.02^{in.}

Precipitation Excess at Nos 9 and 10.

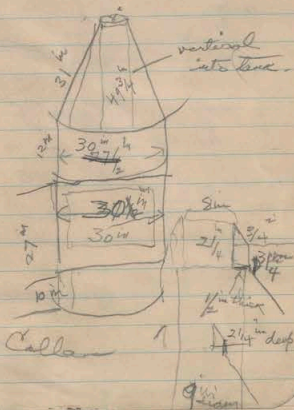
Lower elevation? It could be the dam (dike) that shelters the lower gages.

The line is straight across the meadow. Nos. 6, 7, 8 seem high above Nos. 9 and 10 as viewed from trestle. In summer there is also willow bushes and rough sod.

No. 9 W 3.75 D. 2.8

No. 10 W ^{4.49} 4.405 D. 3.2

No. 2 - Storeroom W



→ Get anemometers. also study wind direction. What proportion of wind from east over dice?

No. 9 W. 3.75^{in.} D. 2.8^{in.}

No. 10 W. 4.49^{in.} D. 3.2

No. 2 Storeroom W.

Tank diam. 18^{in.} x 30^{in.} high.

In measuring height of tank, I lifted it slightly and started motor.

Orifice 8^{in.} but intake pipe approx. 9^{in.} diam. with vertical wall 49 3/4^{in.} from upper edge of orifice
Total height of tank 80^{in.}

Visit on platform by kitten.

Snow Disappearance as seen from highway. by Arthur Caillard.

On Mt Lincoln June 23/7 1943.

[max. depth for season 98^{in.}]

" " Aug. 3, 1944.

[max. depth 104^{in.}] This season calder.

Lv. Soda Springs 6 pm. Train late.
 Purchased ticket Soda Spgs - Reno at
 Truckee. "Too much report detail
 for conductor." Must lay a supply
 ahead.

No Rain
 Report

Clear and rainless thruout August
 at Soda Springs. But today high
 cumulus over Donner Pass, and at
 Boca ran into rain that continued
 to Verdi with sprinkling at Reno.
 Sky overcast.

Aug. 1	No. 1	Steno S	No. 3	No. 4	Plastic
		W. 7.99 (4.32)	D. 27.2	W. 3.98 (3.32)	W. 4.375 (3.8)
Aug. 18	0	W. 80	?		
Sep. 1	0	7.97 (4.2)		W. 3.99 (3.3)	4.35 (3.78) [†]

	Reduex	Prestone
Aug. 1	D. 10.9	W. 14.5 (13.6)
Sep. 1	D. 10.8	Emptied Aug. 18?

Lv. Soda Springs 6 pm. Train late.
 Purchased ticket Soda Spgs - Reno at
 1.00 + detail

No
 day

	No. 6	No. 7	No. 8	No. 9	No. 10
Aug. 1 -	W 3.67 (3.2)	1.59	3.605 (3.04)	3.75 (2.8)	4.48 (3.3)
Aug. 18		1.70			
Sep. 1	3.68 (3.18)	1.73	3.61 (3.05)	3.75 (2.8)	4.49 (3.2)

Saturday, September 2.

Battery for Triple Register

by A.P.B. and J.E.C.

Trip to U.S. W. B. at airport to
advise with Mr. Prucha.

In use there is a Philco; 2 cells
(glass) @ 3 volts each.

It is a storage, lead-acid, pasted-
plate type in sealed glass jars.

Cell-type 74 H-T, 2 cell container
with built-in charge indicator.

\$6.80 Gort contract price.

At Nome and Juneau (1929-1939)
primary cells used all the time,
but failed about every 3 months.

Hooked elements up separately:
wind direction 4 cells or volts; wind
velocity 2 cells (2 volts); sunshine
2 cells (2 volts). Total 8 volts.

But also used ordinary
storage battery from auto, with

trickle-charger.

Stronger than Philco, here at Reno, but not too strong for electric points on triple Register. Only trouble was that it went to pieces and could not hold charge. So Leyden jars were used instead.

#

Thursday, Sept. 7, 1944

Batteries

Eric Mack to Soda Spgs with Boardman, Becky, and myself to check batteries. Left Reno 7 am 60 mi. per hour.

Stevens W

- (a) 32 small batteries on test were found to drive the recording motors
- (b) 17 large batteries (top 5x7") were the heaters

(a) were Edison Type 75 primary cells. all were worn, 5 were dead. Normally 1 volt each or 32 volts,

but with 5 dead batteries out out
the total voltage was 24-25 by
test. Motor runs on 1-25 volts.

Need a new set, some terminals rotten.

(b) 17 heater batteries have a total
power by test of 15 volts. Shunt show
17 volts. Accuracy ^{of meter} in doubt.

→ Balance of ^{the} weight seem sluggish. Eric
suggests oil smell at fault.

Insulation - Rain coat was hot in
the sun.

Triple Register

Triple charger gone. Was it
taken by someone during the
occupation of the Hotel by the Military
Police?

Two auto storage batteries (new)
installed beneath the register.

6 volts each battery. "6 volts seem
sufficient for the 3 units", so the
batteries were hooked in parallel
No burning of contacts. "Only voltage

→ Get a battery hydrometer and 1 gal. distilled water.

(b) Metal tray for the two batteries combined.

9 x 30^{in.} square x 1 1/2^{in.} high.

used by Weather Bureau - Gendel.

Each battery has 170 ampere hours or a combined ampereage of 300^{hours}. Actual test is 6 1/2 volts.

Old batteries only 2 1/2 volts total. All plates below 1/2 volt. Should be 1 volt. Plates not bad but some perforations.

Acid poor? [Gendel later suggested "poor mixing and shorting. Will tear mixing down when Ashton comes."] But it may be in the cable.

"Since trickle charger sulphates the battery ultimately," Eric suggests a heavy duty 5 ampere commercial charger that can recharge one of the batteries from the light circuit in a single day. Ask Brown & Milberg or Nevada Auto Supply.

Returned to Reno 12.25 pm

Later letter from Gendel that he now has bill of lading for a Philco battery and trickle charger, evidently similar

Becky found Pitt's one and brought them to Reno. Dennis Jones found light turned on in office about 7:00.

To the standard battery at Weather
Bureau office at Camp Air Post. Better
delivery than Prucha obtained?

Can keep auto batteries as reserve
or trade them in.

Stevens W-

Long letter from Stevens & Gudel.
Fulcrum not at fault for it consists
of a sharp, hard knife edge on spher.
He suggests the heavy pendant weight
used to counterbalance the weight
of the calcium chloride.

But how can this be different
that the load in the tank and
traveling weight? The sensitiveness
was fair even after the weight
was attached.

Make a series of the per steps
to see if they have become larger and
fewer. The oil may have grown
heavy.

Sept 13 -

Opportunity to measure contents of Stevens
W.

Charge July 26, 1943

Total Weight 30.89^{in.} by 8-in. spg. balance.

Total Depth 4.8^{in.} diam. tank 18^{in.}

Depth x 5.0625 = inches precip. (water equiv.)
area can be multiplied 5 times.
So be very careful.

Army Engin Layer

Total W. 29.66^{in.}

Total D. 4.45^{in.}

But Nov. 17

Orig. charge 29.66^{in.}

Added 60.84^{in.}

or total 90.50^{in.} (33.4% concn
centrations in
90.0^{in.} charge)

Depth Nov. 18 by Jackson 15.2^{in.}

Sensitivity of Stevens W.

" Reno, Tues. Nov 9

" Washer weights from Stevens & test
responsiveness of Stevens W.

" Responds presumably at 0.06^{in.} water.

See his letter.

Compare ice during last winter in No. 2
(Stevens W) and No. 3 (Army Engin)

Danner Hotel - caretaker

Dick Reese (Passy).

Probably can room there at times
this winter.

October 1

Cooperative Contract with
U.S. Weather Bureau signed by
Director, Doten and now sent
forward to Washington. So plans
are now going forward on basis
of last year.

Lv. Reno 8:15 am, Boardman,
Marshall Humphreys and self.
aspens golden, brush crimson.

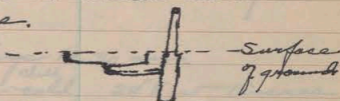
Sub-station at Truckee

Conference with Hobart J. Snider,
Ranger Forest Service Truckee.

Snow course laid out east of
office in shade and sun.

He suggests drip pan in sail

beneath frost line to catch
snow. melt as check on use
of Fuchsine.



Would like to have Hygrothermog.
and would change the sheets.

They already have a weather
station.

Danner Lake Caves

Just west of Danner Hotel
an old road in grave. These
snow markers.

In afternoon visited Danner Hotel
caretaker, Dick Reese (Pasay). The
S.P. Co. contractors have moved
in from Vanderford Lodge recently
burned down at Danner Summit
and taken all of his rooms except
one small one.

But he has bedding and food.

~~So~~ must write the Division Superin-
tendent at Sacramento for permission.
Will come only occasionally to observe.

ripening of snow.

Donner Lake still bare full,

Soda Springs 10:30 am.

Wind ^{chill} cold. 28°F at Truckee
last night.

Triple register busy but E
wind direction pen held down and
sunshine not recording tho mercury
column is above contacts.

Rain pan placed beneath storage
batteries. 1 gal. distilled water
and hydrometer installed for
later use.

H-T sheets -20 to +80°F arrived.
A fair supply from Gerdel.

Pasture

11:45 am. Jeff and Marshall
installed springs in cables.

Cables now are not so stiff as
→ before. Are the springs stiff
enough? Will the frozen snow
have any effect. Springs about 1 ft.

from ground. No ice and snow
only about 50% density at maximum,
a series of failures, mostly mine.

H-T found without pens on sheets,
tho duly mixed. Arthur says that
I failed to start the barograph
clock after winding. And also to
start the Stevens Q clock after
winding.

No. 6 Vanes from W and SE of wind-
shield on lip of case.

W	4.28 ⁱⁿ	D.	3.8 ⁱⁿ
Sep. 1	<u>3.68</u>		<u>3.18[†]</u>
Gain	0.60		0.62 ⁻

No. 7 Stevens Q

Sep. 1 reset 1.73ⁱⁿ

Oct 1 2.2
0.47ⁱⁿ.

But line curved by temperature?
So difficult to read
Revised.

No. 8

W	4.20	D.	3.6
Sep. 1	$\frac{3.61}{0.59}$ in.		$\frac{3.05}{0.55}$ in.

No. 9

W.	4.38 ⁺	D.	3.3
Sep. 1	$\frac{3.75}{0.63}$ ⁺		$\frac{2.8}{0.5}$

Jim Sherritt introduced himself.
and Chandler Church (family from
Albion, Michigan).

Jim was in my art class about
1928 - from Sigma Phi Sigma.
"Got lots of fun out of it" in after
years.

Lunch

Precip. in September

20th. 0.02 in.

21st 0.65 Snow 1 in.

$\frac{0.67}{0.67}$ in.

Got broken anemometer for
repairs. Badly twisted and torn
by heavy snow load.

Failed to ask for Climatic Data
ordered for the Co-operative Snow
Project's files.

"Gendel and party came up for
a day about two weeks ago;
probably Codd, Light, and perhaps
Barnes and Simley."

Barnes is urging early opening
of stations at Glanbrook, Al Tahoe,
and Echo Summit.

Boardman suggests a permanent
snow course at Truckee Forest
Service Headquarters. Phil Conzill
can combine it with Donner Lake
as a ^{second} day's task, Boca and
Truckee No. 2 requiring a day in
themselves.

The network will be valuable
to both the Weather Bureau and
the Snow Survey.

Two or more carloads of
snowmobiles painted white. Large,
massive.

They looked amphibious at a
distance, but Marshall doubted it.

Saga readings for #1, 4-10, hds in folder

2:30 pm.

No. 10

Query: What is the least diameter of collar of No. 9 and 10? Larger than No. 1? Has band? Catch still larger.

W. 5.15	D. 3.8
4.49	
<u>0.66</u>	<u>3.2</u>
	0.6

No. 1 Sep. 20-21 0.67 in.

Series S

W. 8.63	D. 4.8
Sep. 1 7.97	
<u>0.66</u>	<u>4.2</u>
	0.6

Spring balance supports found raised



Plastic

W. 5.05	D. 4.4
Sep. 1 4.35	
<u>0.70 x 1.06</u>	<u>3.78</u>
	0.62 x 1.15

No. 4

W. 4.65	D. 4.02
Sep. 1 3.99	
<u>0.66 in</u>	<u>3.3</u>
	0.72 in

Reducing Collar

D. 11.2

Sep. 1

10.8

0.4 x 1. -

No. 3 Army Engineers

Oil only in bottom

Prestone-Nit.

Dry.

Stewart

No. 2 Pen at 7.97 in.

Sep. 1

7.88

hit reversing

Does 7.97 in. represent advance caused by test of motor Sep. 72

D. 12.5 in.

Checked several times,

July 27, 1943 D. 4.8 in.

Increase 7.7 in

diam. of receiver 18 in. (?)

orifice 8 in.

Factor 5.0625 (or reverse 0.1975)

Put motor dead. Bring Eric West up to reconnect wires to heater-set of batteries. "Came up Oct 4."

to meas. depth of can. Place block under pin of traveling weight and the weight bears squarely against block. Then mechanism is held rigid.

[Faint handwritten notes and calculations at the top of the page, including numbers like 0.1, 3.3, 4.8, 7.7, 10.8, 11.2, 12.5 and various mathematical symbols.]

Gage readings 1943-1944 to folder

Stevens W.	July 27 - 1943 to Oct, 1944	38.98 in. [?]
Standard No. 1	Same period	34.46 in.
No. 5 - Friez.	"	40.97 in.

Did snap of snow occur in W?
 Doubtful - or slight.
 → Stevens W 4 in. better than No. 1
 but 2 in. less than Friez.
 Chemical solution much weaker
 than in No. 3 Army Gage.

No. 3 Army Engineer
 July 26, 1943 to Aug. 18 44.55 in.
 Sep. 20-21 0.67 in.
 Total... 45.22 in.

Query: Can expansion in orifices
 of Nos 3 and 5 have ~~been~~ cut down
 eddy and so increased the catch?
 Depth of vertical collar No. 3, 8 in.
 " " " " No. 5, 12 in.
 " " " " No. 2, 49 3/4 in.
 [8" collar 2 3/4 in. deep
 then 9 in. diameter
 for 47 1/2 in. to 18 in. tanks.]

[Over] Back of sheet.

depth of vertical collar No. 7, 31 in.
 " " Reducing collar, 2 in.
 [Then slope 6 3/4 in to 11 1/4 in diam.]
 " " Nos. 9 and 10 - 3 ft (36 in)

[Faint, mostly illegible handwritten notes and calculations, possibly related to the collar specifications above.]

Weather Record for September

Date	Max	Min	Precip.	Snowfall	Snowd	Wind	Sky
1	67	33				NW	clu
			#1	520			
			2	667			
2	72	43				NW	clu
			#1	610			
			2	774			
3	76	42				NW	clu
			#1	690			
			2	850			
4	78	44				NW	clu
			#1	775			
			2	930			
5	81	44				NW	clu
			#1	855			
			2	25			
6	81	43				NW	clu
			#1	930			
			2	110			

Sep. 7 82 45 NW ch
 #1 20
 2 192

8 82 46 NW Pt cldy
 #1 90
 2 263

Field - Weers
 Max. 79 Reset 75
 Min. 42 " 74

9 81 49 NW Pt cldy
 #1 155
 2 333

10 82 44 SE ch
 #1 230
 2 417

11 81 42 SE ch
 #1 300
 2 498

12 77 43 NW ch
 #1 384
 2 586

9 28 43
 #1 438
 #2 300
 11 31 45
 25 97

10 32 44
 #1 431
 #2 350
 12 33 46
 #1 432
 #2 321
 13 34 47
 26 98

Min 43
 Max 47
 Avg 45

8 35 48
 #1 473
 #2 30
 14 36 49
 27 99

12 37 50
 #1 465
 #2 30
 15 38 51
 28 100

13 72 39
 #1 460
 #2 672
 17 73 40
 29 101

14 70 34
 #1 535
 #2 749
 18 71 35
 30 102

15 72 40
 #1 698
 #2 913
 19 73 41
 31 103

Final

Max 80 Reset 68
 Min 33 67

16 69 36
 #1 760
 #2 5
 20 70 37
 32 104

17 63 37
 #1 870
 #2 125
 21 64 38
 33 105

18 58 33
 #1 950
 #2 201
 22 59 34
 34 106

18 21 33 22 9
 19 22 31 21 210
 10 23 30 22 100

33 21
 80 100 28

12 24 30 22 90

14 25 34 22 90

13 26 35 22 90

Sep. 19 61 32 SE ch
 #1 53
 2 335

20 67 32 0.02 SE cldy
 3:30pm
 #1 140
 2 432

21 56 32 0.65 Snowing NW ch
 4 to 5:30pm
 #1 195
 2 506

22 66 38 SE ch
 #1 315
 2 625

Field:

Max. 68 Reset 64
 Min. 32 " 63

23 70 48 SE ch
 #1 490
 2 840

24 77* 49 SE ch
 #1 570
 2 931

* On 79?

24 71 41 SE 70
 5 860
 #1 410
 25 70 48 SE 70

26 76 40 SE 70
 5 860
 #1 410
 27 78 39 SE 70

28 73 37 NW Pt cldy
 5 860
 #1 410
 29 67 36 NW Pt cldy

30 51 30 SE Pt cldy
 5 860
 #1 410
 31 75 42 SE ch

32 76 40 SE ch
 5 860
 #1 410
 33 78 39 SE ch

34 73 37 NW Pt cldy
 5 860
 #1 410
 35 67 36 NW Pt cldy

Sep. 25 75 42 SE ch
 #1 650
 2 18

26 76 40 SE ch
 #1 726
 2 100

27 78 39 SE ch
 #1 800
 2 180

28 73 37 NW Pt cldy
 #1 886
 2 280

29 67 36 NW Pt cldy
 #1 990
 2 391

30 51 30 SE Pt cldy
 #1 110
 2 517

Field:
 Max. 76 Reset 45
 Min. 29 " 44

Tuesday, Oct. 3

Ernie Mack advanced the date for return to Soda Springs from Wednesday to Tuesday. Left with Boardman and me at 1:30 pm.

Lodges:-

Highway Station at Donner Pass, Kiski Lodge midway between Donner Summit and Norden. Is not ^{Summit} Course No. 1 near it?

3 pm Stevens H.

Motor dead, but due to accidental throwing ^{up} of cutout switch Sep. 7 when Ernie siled the fulcrum. I noticed it at the time but did not know whether the mercury tubes should be vertical or horizontal. Keep it horizontal. One more thing banned. It required many tests to

Trace it down to the ground wire.

Cut out the "32 small cells" and connected motor to the "17 large cells". Voltage of motor 17 volts (17 cells in series)

"Cut out switch on rear end of weight thrown off and stopped machine. Evidently hit in checking" - Eric Mack.

Battery box closed. Instrument removed 3:45 pm.

Oil in damping cup seems clear and not too heavy.

→ Need roofing tacks.

Triple Register

Wind direction and sunshine recording O.K.! Write Gendel.

Storage batteries tested. Both cells 1.240 spec. gravity. What gravity when purchased?

Still strong but should have the trickle charger.

#-T in Pasture stopped again.
Arthur Caillard says that the
drum sticks on shafts, but that the
clock always starts of itself when
relieved of the tension.

→ So send him Carborundum
cloth - as fine polishing paper as
can be got - to smooth the shafts.

Hotel - Diameter of Interiors of Gages

No. 1 8ⁱⁿ but squeezed slightly on
one side.

No. 2 Stevens W 8ⁱⁿ. Sharp edge
on $\frac{3}{4}$ ⁱⁿ. thick ring.

No. 3 Army Engineers $7\frac{15}{16}$ ⁱⁿ. Heavy
16-to-18-gage band.
No turn over edge.

No. 4 8ⁱⁿ. Metal turned over
and inside.

Stevens S $7\frac{14}{16}$ to $7\frac{15}{16}$. Everywhere
less than 8 in.

Plastic $7\frac{12}{16}$ to $7\frac{15}{16}$ and in one
place $8\frac{1}{16}$.

Reducing Collar 8 in. Edge turned out.

Prestone Hit 8 in. turned out.

Pasture -

No. 6 $7\frac{12}{16}$ to 8 to $8\frac{3}{16}$.

No. 7 Stevens Q $7\frac{15}{16}$ to $8\frac{1}{16}$
Rev at 2.24 in.

No. 8 $7\frac{14}{16}$ to 8 to $8\frac{1}{16}$.

Nos 6 and 8. Copper. Turned in.

No. 9 $7\frac{15}{16}$ to $8\frac{1}{16}$.

No. 10 $7\frac{14}{16}$ to $8\frac{1}{16}$ to $8\frac{4}{16}$.

Both Nos. 9 and 10 turned out.

Returned Sep. Weather Record to
Arthur Couillard.

Dennis Jones has received rent
and electric light payments due
Sep. 7. Assured that we would
keep Rooms another year. But
he would like to know soon
whether the apartments rooms
will be wanted.

Reno 6:15 pm.

Sep. 26 - Ground water Conference
at State Engineer's Carson City.
at my suggestion, Barnes, Codd,
Gundel were present with U.S.G.S.,
Grazing, Forest, Land officials.
Jeff, Prucha and I went.
Planned a state-wide survey of
ground water.

Sep. 27 - Mount Charleston Conference
at Experiment Station: Stamburger,
Maxie (U.S.G.S.), Supervisor Briggs, George
Hardman, Barnes, Codd, Gundel, Prucha

Winnifred, and J. Barnes agreed
to send Codd to erect precip. gages
at 7,000 ft. on Charleston.

"Residual snow best basis for
estimating streamflow but total
precip. best indicator of ground-
water rise."

Sendel sat on a box stooped
over to ride, but enjoyed coming.
Happy to be member of Committee on Snow

Wed. Nov. 1 - Boardman and I to
Soda Spgs to recharge precip. gages.

Called on Harrison & Kundsén at
Trusree. W.A. Clegg is Supt but was
out.

Danvers Lake Hotel will be abandoned
in December. So should see the caretaker
for winter shelter. WOK. will move back
to Cafe at Danvers Summit that
was not burned. Can probably get
meals there from the trusreekeeper even
if Clegg should turn down my formal

request.

Ran into rain at Donner Lake. So turned back to drain water pipes at Tahoe. Left water in tank and toilet

at 5 pm reached Air Ways Station at Donner Crest. The chief, B.V. Andrews, was home at Truckee. But the observer on duty was greatly interested in seeing a shielded gage with the unshielded standard. No extra beds but welcome to spend the night during storm.

Fixed up the oil stove at Soda Springs for the winter. Cost of fuel oil \$8.00 monthly. Box full of wood. Grey color of buildings not bad.

Spent evening till 10:30 pm estimating the monthly charge of calcium to keep double precip. from freezing.

Tuesday night had obtained a table of the freezing points of Calcium Chloride at various temps and dilutions from

Dr. Sears, Table by Dow Chemical Co. 1929 for purposes of refrigeration.

Freezing Point

lbs per cubic foot (plus water) - 62.4
 8 lbs per gallon of water (73.1 lbs of solution) at 60°F

Freezing Point °C	°F	lbs per cubic foot (dry)	lbs per gallon of solution	%
0	32	0	62.4	
-15.6	4.1	13.56	73.1	= 22.8%
-4.8	23.4	6.19	67.4	= 10.1%
-9.9	14.4	10.28	70.6	= 12.0%
-19.0	-2.2	15.2	74.3	
-25.1	-13.2	17.71	76.2	= 30.8%
-32.1	-25.8	20.25	78.1	= 35.0%
-38.0	-36.4	21.93	79.3	= 38.2%
-51.0	-59.8	23.79	80.5	= 42.0%

74.3 - 15.2 = 59.1 = 25.7%
 15.2 + 59.1 = 74.3

Dow Chemical Co. 1929
 for purposes of refrigeration.

at 50% initial density of calcium chloride, the precipitation gages of 24 in. depth will scarcely contain double present charge of 1.6ⁱⁿ cal. chl + 3.2ⁱⁿ water and double normal precipitation during months of max. precip.

Therefore, it seems best to recharge gages each month rather than for seasonal periods.

Precip at Soda Spgs.

(a) — Normal Seasonal —

Nov - Jan. 4.62, 6.80, 9.09 = 20.51^{in.}

Feb. - Mar. 7.92, 7.55 = 15.47

Apr. - July 2.94, 1.76, 0.66, 0.57 = 5.95

Aug - Oct. 0.28, 0.87, 2.30 = 3.40

(b) Nov - Dec. = 11.42

Jan. - Feb. = 17.01

Mar. - July = 13.50

Aug. - Oct. = 3.40

Feb 9 - Change of Plastic Stage.
by Gurdil.

1.6 in. Calc. chlor. } Total 4.8 in
3.2 in. Water
? Oil

Most resistant (i.e. freezing point highest) at 30% density by weight

1.6 in. = 33.3% of total 4.8 in.
or mt of water twice that of calcium chloride.

With 4.62 in precip., density becomes 17 sp. [Prec] 22.5% weight,
at double charge of 3.2 in. Calc + range of
water, 4.62 in precip. causes density of precip.

or Calc solution

* At double change
 of calcium + water
 double weight of 9.24 in
 (Mason) reduces the
 calcium chloride to 20.5%
 of the water.
 The freezing point of 22.8%
 is +4.1°F.
 If calc. ch. double weight
 only 5% or 0.16 in
 total deficit in can of
 double normal precip.
 would equal 19 in

If cal. ch has a density of 22.8 lbs weight,
 its volume is only 4.8%. The change of
 water, therefore, is the chief problem in
 leaving space in the can for precip.

If CaCl solution
 solution is
 22.8% and #
 wt per c.f. = 73.1
 Then and this solution
 contains 13.56 # of
 CaCl then
 $73.1 - 13.56 = 59.54$ # of
 water are involved
 $\frac{59.54}{62.4} = 95.4\%$ of i.c.s.
 * Swelled to 100% of i.c.s.
 Next by adding the CaCl.

$$\frac{13.56}{59.54} = \frac{\text{CaCl}}{\text{original H}_2\text{O}} = 22.8\%$$

$$* \frac{100 - 95.4}{95.4} = 4.82\%$$

i.e. the original water
 volume is increased only
 4.82% by the addition
 of 22.8% (by wt.) of CaCl.

Thursday, Nov. 2

Puddles greater, light snow on the ground.

Called Air Post at Reno. New storm off Oregon Coast. So decided to return to Reno.

Snowing - Temp.	Teletherm	34.8° F
	H-T	32.0°
	Min.	32.0°

But snow melts on pavement as it falls, but shows white on vegetation.

Truckee -

Called on the Andrews, but found that Mr. Andrews worked at Donner Summit every day except Monday. We had just missed him at Observatory yesterday. Mrs. Andrews believes that there will be no difficulty in obtaining the gage measurements desired.

Reno at 11:30 am.

Head - weather strips for "Palace".
Window pane in.

Weather Record for October

<u>Date</u>	<u>Max</u>	<u>Min.</u>	<u>Precip.</u>	<u>Snowfall</u>	<u>Snow on ground</u>	<u>Wind</u>	<u>Obs</u>
Oct 1	59°F	33°F				NE	cls
			#1 260				
			2 713				
2	71	31				SE	cls
			#1 364				
			2 842				
3	72	33				NW	cls
			#1 435				
			2 926				
4	67	34				NW	cls
			#1 505				
			2 11				
5	67	32				NW	cls
			#1 584				
			2 101				
6	72	29				SE	cls
			#1 658				
			2 180				
Pasture	Max. 70°F	Reset	69°F				
	Min. 28	"	68				

Oct 7	70	32	Shiners Regen	SE Pt cldy
			#1 735	
			2 322	
8	55	39	0.25 ended DN	NW Pt cldy
			#1 790	
			2 344	
9	62	39	Shiners T Regen ended DN	SE cl
			#1 930	
			2 514	
10	62	36		SE Pt cldy
			#1 11	
			2 615	
11	59	31		NW cl
			#1 55	
			2 673	
12	55	28		SE cl
			#1 102	
			2 —	
13	52	38	Shiners 0.02 Regen ended DN	N Pt cldy
			#1 190	
			2 825	
Pasture	Max.	68	Reset	47
	Min.	28		46

13 53 33 SE
 14 52 33 SE
 15 52 33 SE
 16 51 32 SE
 17 51 31 SE
 18 50 30 SE
 19 49 29 SE
 20 48 28 SE
 21 47 27 SE
 22 46 26 SE
 23 45 25 SE
 24 44 24 SE
 25 43 23 SE
 26 42 22 SE
 27 41 21 SE
 28 40 20 SE
 29 39 19 SE
 30 38 18 SE
 31 37 17 SE
 1 36 16 SE
 2 35 15 SE
 3 34 14 SE
 4 33 13 SE
 5 32 12 SE
 6 31 11 SE
 7 30 10 SE
 8 29 9 SE
 9 28 8 SE
 10 27 7 SE
 11 26 6 SE
 12 25 5 SE

Oct. 14 . 58 29 SE Pt cldy
 #1 253
 2 900

15 60 36 SE cld
 #1 372
 2 45

16 63 29 SE cld
 #1 448
 2 120

17 67 30 SE cld
 #1 518
 2 184

18 66 33 SE cld
 #1 600
 2 262

19 65 28 SE cld
 #1 673
 2 346

20 62 29 SE cld
 #1 740
 2 420

Pasture Max. 65 Reset 51
 Min. 28 " 50

21 53 38 Showers 0.43 SE stormy
 began DN
 Ended 4pm
 #1 780
 2 473

Oct. 22. 63 32 Shamers T SE clr
Began and ended
DN
#1 847
2 534

23 63 29 SE clr
#1 930
2 626

24 68 29 SE clr
#1 10
2 675

25 69 32 SE clr
#1 77
2 763

26 70 30 SE clr
#1 146
2 835

27 67 33 SE clr
#1 224
2 981 (3/20)

Pasture Max. 69 Reset 65
Min. 30 " 64

28 66 32 Shamers 0.20 SE cldy
Began 2 pm
#1 270
2 989

Oct. 29	56	34	0.02	SE	pc cldy
			Ended DN		
	#1	330			
	2	62			
.. 30	49	38	0.21	SE	stormy
			Begin 1 pm		
	#1	412			
	2	172			
.. 31	48	36	2.60	NW	stormy
			Ended DN		
	#1	560			
	2	338			
Nov. 1	42	32	0.17	NW	
			#1 680		
			2 461		

October Precipitation

Oct. 7	Showers 9 pm		
8	0.25 in	0.25 in	
9	Showers during N.	T	
13	DN	0.02	
21	Begin DN		
	Ended 4 pm	0.43	
22	Showers DN	T	
28	" 2 pm	0.20	
29	DN	0.02	
30	1 pm	0.21	
31	Begin DN	2.60	
	Total	3.73 in.	Normal 2.30 in.
Nov. 1		0.17	

Weather Record for November

Max Min. Precip. Snowfall S. on Ground Wind Clouds

Nov. 1	42	32	0.17			NW	Partly
			#1	680			
			2	461			
2	43	29	0.32			NW	Stormy
			#1	732			
			2	515			
3	46	41	0.56			SE	Stormy
			#1	790			
			2	600			

Pasture

Max 65 Precip 45
 Min 29 " 44.

AM

4.	45	31	1.77	2		NW	Stormy
			#1	912			
			2	—			
5	40	27	0.16	2	2 on ground.	SE	do
			#1	990			
			2	820			
6	41	21	0.31	3	4	NW	Stormy
			#1	30			
			2	880			

Nov. 7	43	24	0.95	9	12 ^h angl	?	clr
			#1 87				
			2 920				
8	43	14	0	0	12 ^h	SW	Pr cloudy
			#1 120 ^{mi}				
			2 980				
9	35	31	1.95	11	22	SE	storming
							Began 10 pm - Still coming
			#1 203				Snowed & iced up
			2 100				

November Precipitation

Nov. 1	0.17 ⁱⁿ
2	0.32
3	0.56
4	1.77
5	0.16
6	0.31
7	0.95
8	0
9	1.95
	<u>6.19ⁱⁿ</u>
	Normal 4.62 ⁱⁿ

{ snow S* 2.03ⁱⁿ.
Snow Survey 1.5ⁱⁿ

* Factor of correction
(Jan 29) by #PB for 7¹⁵/₁₆ diam
= 1.0156

Change of Storage Layers
with Calcium Chloride
(Dewflora 77-80%)

Chrg in.	Ca Cl ₂ in.	H ₂ O in.	Chrg in.	Ca Cl ₂ lb + oz.	Water lb + oz.
1	42.75	57.25	1	12.4	1 0.6
5	2.14	2.86	5	3 14.0	5 3.2
10	4.28	5.72	10	7 12.0	10 6.3
20	8.56	11.45	20	15 8.3	20 12.6
30	12.84	17.18	30	23 4.6	31 2.9
40	17.10	22.90	40	31 0.8	41 9.2
50	21.38	28.62	50	38 12.9	51 15.6
60	25.65	34.35	60	46 9.1	62 5.9
70	29.92	40.08	70	54 5.2	72 12.2
80	34.20	45.80	80	62 1.5	83 2.5
90	38.48	51.52	90	70 4.0	93 8.8
100	42.75	57.25	100	77 9.9	103 15.1

1 inch = 29.05 oz.
1 oz. = 0.034375 inch

R.H. Corda

1 lb = 16 oz
 1 qt = 32 oz

100	23.72	23.72	100	31	0.8	103	0.1
80	20.62	20.62	80	29	0.4	89	0.2
60	17.52	17.52	60	27	0.2	67	0.2
40	14.42	14.42	40	25	0.2	47	0.2
20	11.32	11.32	20	23	0.1	27	0.2
10	8.22	8.22	10	21	0.1	17	0.2
5	5.12	5.12	5	19	0.1	9	0.2
1	2.02	2.02	1	17	0.1	1	0.2

Charge of Storage Tapes
 with Calcium Chloride
 (Dampness 78-80%)

Chrg. in.	Ca Cl ₂		Water		
	lb	oz.	gal	qt	pt.
1		12.4			1.0
5	3	14.0		1	1.0
10	7	12.0	1	1	0.5
20	15	8.3	2	2	0.8
30	23	4.6	3	3	1.2
40	31	0.8	5	0	1.5
50	38	12.9	6	2	0
60	46	9.1	7	3	0.3
70	54	5.2	9	0	0.7
80	62	1.5	10	1	1.2
90	70	4.0	11	2	1.5
100	77	9.9	13	0	0

R. W. Getzel

578 50273

100	23	24	13	0	0
80	20	20	11	3	12
80	25	12	10	1	13
70	24	23	8	0	0.2
70	40	21	8	0	0.3
70	38	15.6	9	4	0
60	31	0.8	2	0	1.2
50	33	4.0	3	0	1.2
30	12	8.3	7	4	0.8
10	1	15.0	1	1	0.2
0	0	4.0		1	1.0
1		15.4			1.0
0.7	0.05	0.05	0.05	0.05	0.05
0.5	0.05				

(Dawchem 12-202)
The Daw Chemical Company
Midland, Michigan

The Daw Chemical Company
Midland, Michigan

January 6, 1944

Mr. R. H. Gerdel
Weather Bureau Office
P.O. Box 2002
Sacramento 9, California

Dear Sir:

I am enclosing a copy of our "Dawchem Calcium Chloride for Refrigeration" booklet which contains the information you requested in regard to the solubilities of $CaCl_2$ in water of various temperatures. On page 24 of this booklet is given a Calcium Chloride Solution chart showing density-temperature-freezing point composition.

This chart shows ^{that} the composition of calcium chloride solution with the lowest freezing point is 30% $CaCl_2$ by weight. If you could operate at the strength of 30% $CaCl_2$ it would eliminate one of your troubles, that is the formation and settling out of $CaCl_2 \cdot 6H_2O$ hydrate crystals and at the same time give you

a solution with a much lower freezing point. Any freezing of a solution lower in concentration than 30% CaCl_2 results in formation of slushy ice crystals, thus tending to concentrate the solution and lower the freezing point. Upon warming up, the ice crystals would melt without trouble.

We suggest, if it is at all possible, that you have a gage which would hold more solution, thus getting less dilution per inch of rainfall and thereby a small rise in the freezing point. This might be done by using the same size top (i.e. 8" diameter) but a larger bottom, then filling with 30% CaCl_2 solution up into the 8" diameter area of the can.

We are not sure whether the use of NH_4Cl would help in preventing the formation of the insoluble hydrate film or not, but recommend that you do not

use it, as a solution of CaCl_2 with NH_4Cl in it is quite corrosive and would attack your copper cans.

We believe the above suggestion will aid you in solving your problem and in the future we will be glad to furnish you with any information that we can.

Yours Truly,
The Dow Chemical Company
W. R. Bennett
Chemical Eng. Laboratory

Nov. 6.

Rain. Snow falling at Blue Canyon but rain at Auburn.

Boardman doubts the safety of driving. So I am planning to take the bus, for it is unsafe to delay. From Soda Springs some way can be found of going to Donner Summit to see Director Andrews of the Observatory.

Recharging Gages.

July 27, 1943.

No. 3. Total wt 29.66 in.
" dpth 4.45 in

[6 in. chloride] "80% density"
[7 in. water] = 85.7%

Total 29.66 - chlor. 14.23⁺

Water + oil 15.43⁻ ^{concentr.} Dens. chlor. 82.7%

[See Nov. 17, 1943]

No. 2. Stevens W.

Total ^{sol.} 30.89 Chlor. 13.28

Water ^{+oil} 17.61 ^{concentr.} Dens. chlor. 75.4%

Total wt. 30.89 in
dpth 4.8 in.

Nov. 17/43 Army Gape No. 3.

Orig. chge. ^{water} 16.14 ⁱⁿ chlor 13.35 ^{Canct.} ^{Band.}

July 27

82.7₁₀

Suppl. chge. ^{water} 33.78 ⁱⁿ chlor 26.73 ^{Canct.} ^{Band.}

Nov. 17

79.1₁₀

No. 4 W. 9.13 July 25/43 D. 20.13
 9.12 Sep. 1 D. 20.12
 9.15 Oct 1 D 20.15
 9.09 Oct 4
 2.90 12.03 Nov. 1

Rechgd 5.80 "
 8.35 Dec. 1
 11.40 Jan 1
 16.10 Jan. 17
 22.13 Feb. 4

16.33

Rechgd 6.48 "
 8.07 Feb 10
 10.06 Feb. 22
 12.89 Mch 1

Snow 2 in. below rim.
 3 in. down. Ice slush

10.37

16.05 Mch 6
 Mch 14 Frozen
 16.85 Mch 16

Rechgd 5.40 "
 9.29 Apr. 16
 10.65 Apr 21
 11.56 May 7
 15.67 July 2

10.27

Rechgd 2.85 in. "
 3.98 Aug. 1
 3.99 Sep 1
 4.65 Oct 1
 12.70 Nov. 7 / 44

9.85

Rechgd 7.25

Total 49.72 in.

No. 9 0.63^{in.}
 10 0.66
 No. 1 0.67
 Stevens 0.66
 No. 4 0.66
 Reducer 0.4 x
 No. 6 0.60
 No. 7 0.47
 No. 8 0.59
 No. 5. July?

From notebook 16, Oct. 1, 1944 "2130pm"

1943 July - DT944
 July — 0
 Aug. 0 No record?
 Sep. 0
 Oct. 2.74
 Nov. 2.42
 Dec. 2.55
 Jan. 8.12
 Feb 9.92
 Mar . . . 3.84
 Apr 5.14
 May . . . 2.71
 June 1.83
 July . . . 1.03
 Aug. 0
 Sep. [0.67] No. 1
 Notebook 16, Oct. 1, 1944 40.97