

## ABOUT IRRIGATION.

The NEWS is indebted to Professor Samuel Fortier, who occupies the chair of civil and hydraulic engineering at the Utah Agricultural College at Logan, for a copy of the following document, which will doubtless be read with much satisfaction by farmers and others who take an interest in the subject of irrigation:

OGDEN, Utah, Aug. 2nd, 1893.

The President and Board of Directors  
Utah and Salt Lake Canal Co.:

Gentlemen—While collecting information on irrigation development in Salt Lake county in the interests of the Agricultural College of Utah I made a series of measurements of the waters taken through the weirs of the Utah and Salt Lake canal, the results of which will be anxiously expected by the hundreds of farmers taking water therefrom.

My main object was to determine the loss by seepage and evaporation, but I have been enabled incidentally to check the flow through each weir and thus to determine the accuracy of the distribution.

At the time the present system of weirs was put in, which was some six years ago, J. D. H. McAllister, C. E., ascertained the loss in transmission over the 28 miles of canal to be over 50 per cent. Owing, however, to the slow rate at which the water flows and the large percentage of sediment, the bottom and sides of the canal have since become much more impervious. There is still considerable seepage in the upper three miles and also some in the porous materials near the lower end, but the large middle portion is in end, but the large middle portion is in fairly good condition. I measured the canal at its head-gate in Jordan Narrows July 21st, 1893, and found a total flow of 181 cubic feet per second; and in the week following traversed the entire length of the canal making no less than 46 measurements. The sum total of all the weir measurements amount to 146 8-10 cubic feet per second, which indicates a loss of 34 2-10 cubic feet, or about 19 per cent of the entire flow. While the work was being done rain fell in the vicinity of the upper portion of the canal and this rain may have possibly reduced the loss 5 per cent, but not more. It is safe to assert therefore that the entire loss during the months of July and August is from 20 to 25 per cent of the water diverted from the Jordan at the dam in the "Narrows."

In regard to the division of water the results are not satisfactory. The idea that water can be run over weirs of equal widths and vary the depth in direct proportion to the amount of water required is all wrong in principle as the following table shows for a weir 20 inches wide:

DEPTH OF WATER ON WEIR IN INCHES.

1	2	3	4	5	6	7	8	9	10	11	12
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DISCHARGE IN CUBIC FEET PER SECOND.

.133 .380 .697 .107 1.6 .197 2.48 3.63 5.62 8.24 11.89 15.68

By the present arrangement the division of water is entirely guess-work, and that there are not more serious errors is due to the good judgment

and experience of your present superintendent, R. B. Gardner.

The following are the results of the measurements with the number of shares and the amount of water which should flow through each weir according to the number of shares owned. For example in weir No. 15 the actual flow as measured is 34 3-100 cubic feet per second, whereas its pro rata share is only 2 18-100 cubic feet; in weir No. 16 the actual flow is 1 8-10 cubic feet, whereas it should be 2 19-100 cubic feet.

No. of Weir.	No. of Shares.	Actual flow in cu. ft. per sec.	Required flow in cu. ft. per sec.
Weir No. 1	77	1.15	1.16
2	143	1.80	2.19
3 and 4	805	8.50	4.66
5	247	3.09	3.79
6	189	2.92	2.97
7	104	2.50	2.34
8	183	3.39	2.97
9	183	2.50	2.08
10	300	4.02	4.92
11	300	4.01	4.60
12	300	4.01	4.60
13	300	4.01	4.60
14	300	4.01	4.60
15	300	3.43	2.26
16	300	1.30	1.49
17	300	1.63	2.19
18	300	1.67	2.19
19	300	1.67	2.19
20	300	1.67	2.19
21	300	1.67	2.19
22	300	1.67	2.19
23	300	1.67	2.19
24	300	1.67	2.19
25	300	1.67	2.19
26	300	1.67	2.19
27	300	1.67	2.19
28	300	1.67	2.19
29	300	1.67	2.19
30	300	1.67	2.19
31	300	1.67	2.19
32	300	1.67	2.19
33	300	1.67	2.19
34	300	1.67	2.19
35	300	1.67	2.19
36	300	1.67	2.19
37	300	1.67	2.19
38	300	1.67	2.19
39	300	1.67	2.19
40	300	1.67	2.19
41	300	1.67	2.19
42	300	1.67	2.19
43	300	1.67	2.19
44	300	1.67	2.19
45	300	1.67	2.19
46	300	1.67	2.19
47	300	1.67	2.19
48	300	1.67	2.19
49	300	1.67	2.19
50	300	1.67	2.19
51	300	1.67	2.19
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79	300	1.67	2.19
80	300	1.67	2.19
81	300	1.67	2.19
82	300	1.67	2.19
83	300	1.67	2.19
84	300	1.67	2.19
85	300	1.67	2.19
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88	300	1.67	2.19
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90	300	1.67	2.19
91	300	1.67	2.19
92	300	1.67	2.19
93	300	1.67	2.19
94	300	1.67	2.19
95	300	1.67	2.19
96	300	1.67	2.19
97	300	1.67	2.19
98	300	1.67	2.19
99	300	1.67	2.19
100	300	1.67	2.19

The withdrawal of water from the canal in a vertical section by means of gates moving horizontally seems to be a move in the right direction, but it is to be regretted that the weirs are not so constructed as to measure the water accurately giving according to the writer's calculations a continuous flow of about 1 cubic feet per second to every 65 shares.

In view of the immense value of the Jordan river to Salt Lake county it is surprising that no accurate or continuous gaugings have been made. A caretaker has lived in the "Narrows" for years and if a gauging station was once established immediately above the dam there would be no extra cost in keeping the record. Inasmuch as there are five canals taking water from the Jordan and that each is entitled to a sixth of the flow of the river, there should also be rating flumes near the headgates of each canal so that the caretaker knowing the amount in the river could readily and accurately give to each canal its allotted portion.

I am, respectfully,

S. FORTIER.

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## PERDITA AT THE FAIR.

One of the most difficult but important and necessary enterprises confronting the visitor who travels to Chicago with the fixed hope and determination of seeing "all that is to be seen" at the World's Fair, is that comprised in the task of doing the great Liberal Arts building in a thoroughly systematic and exhaustive way. What this achievement implies can only be appreciated by those who have had a glimpse at the acres of space and tons of exhibits which are necessary to be gone over in order to feel that justice has been done the task. The reporter of a Chicago newspaper commissioned to write up the mammoth affair commenced his article the next morning as follows: "I stood and looked around from my station at the side of the great central pyramid in the Liberal Arts building and quietly abandoned hope." The same feeling of despair comes over every one who catches the first glimpse of the world of wonders comprised in the great hall. When it is remembered that the products of every country upon the face of the globe are represented here in multifold variety, lavishment and splendor of display, one can form, perhaps, a faint idea of the sight that lies before one in entering the place.

The best spot of vantage from which to gain a view of the entire place is the balcony upstairs, from which one may look down upon a bewildering array of fanciful pavilions in every conceivable design, from the splendid temple-like structure of Germany to the modest tent-like booths of the smaller countries or islands, and these decorated with brilliant colors and filled with the rarest specimens of exhibits furnished by each, making a picture that will probably never be forgotten by those fortunate enough to view it. Germany's pavilion as well as her interior exhibit take first place in the array—the structure taking up more space in the hall than those devoted to other countries, and the exhibits showing up better perhaps than any other in the building. So far as value and variety are concerned no other country represented in the building can compare with the showing made by the United States. Every product known to the nether ends of the earth are represented in our nation's display, and the showing is such as to fill every American's heart with pride. Industries ranging from the welding of the ponderous iron to the moulding of delicate glass, from the weaving of heavy carpets to the making of filmy hand-wrought lace, are shown in America's domain in the building, comprising some of the rarest and most artistic specimens of each line of work to be found in the entire building.

There is one exception to this statement, by the way, the case of the glass display, the Vienna exhibit holding high pre-eminence over any other at the Exhibition. To justly describe the treasures of art contained in this latter display would perhaps be impossible, for no such collection of exquisite glass work was ever brought together in one place.

The United States has the Libby Glass works display as something of an offset in this department, and the cut glass, and more especially the spun