

CROPS FROM UNDERFLOW.

Results of the Irrigated Farms in South Dakota this year.

Astonishing Yields of all kinds of Grains, Grasses and Vegetables.

Farms the Wonder of the Surrounding Country—Excursions to them.

What Can be Done in South Dakota Can be Accomplished Here.

The first results of the irrigated farming being done in Spink county, South Dakota, at Melette, Frankfort, and other points, are now being published in the newspapers. The press of the state is enthusiastic over these results and the Milwaukee, and the Northwestern railroads are running excursion trains for people to visit the farms and see for themselves what has been accomplished this season. It is the most wonderful and astonishing result imaginable and it is said will stimulate the business of irrigation by artesian wells to such an extent that over 100 wells will be sunk this year in South Dakota. The object of this article is to call attention of Jamestown and Stutsman county people to the feasibility of irrigating land by artesian water and to show that the success attained in South Dakota is all that is needed to prove that results here can be made equally as satisfactory also.

The first settlers in Stutsman county will remember that the "boom times" in the early '80s began with big crops. From 1881 to 1886 there were immense crops and people scarcely dreamed of a failure. The long dry seasons that have followed were surprises to those who first came to the country and witnessed the years of good crops. From 1886 to 1891 the crops were partly failures in this part of the state as well as in South Dakota. In 1891 there was a big crop; in 1893 and 1894 practical failures; in 1895 a big crop. All these big crops have been believed to result from surface rains with some small assistance from snow falls.

It is claimed by those in South Dakota who have watched the results of irrigation during the last three years that the heavy crops of the early '80s were due almost solely to the melting of the immense snowfall that occurred in the winter of '81-2 when the snow fell to a level depth of four feet on the uplands and at Huron and other points the drifts completely covered telegraph poles. This water from melting snows went into the ground as far as the subsoil, and was retained for four years or more before it finally evaporated. This supply yielded the moisture that gave the big crops. No such immense snow fall has since occurred and the water in the ground has disappeared, and in most of the lakes and ponds also in both states.

As a proof of the fact that the soil of Dakota will hold water for a long time when once thoroughly soaked the irrigated farm at Frankfort, Spink county, is shown. Four years ago an experiment in irrigation was made by S. H. Riggs of Redfield. It was the first practical experiment in irrigation in that part of the state. He began in 1890 and carried it on in 1891 and '92. There has been no irrigation done on the Frankfort farm since that year. The wonderful thing is that the effects of irrigation are so markedly seen in the fourth crop of this year, for no water, except what fell from the sky has been put on the farm since 1892. In '92 a wheat crop of 30 bushels was raised. In '94 a heavy grain crop, and this year the wheat crop will yield 35 bushels per acre. The growing wheat stood four and a half feet high while on an adjoining farm it was not more than ten inches.

The strata in South Dakota, according to Mr. Riggs, is perpendicular instead of lateral, which is the case in many of the states. The water poured on the ground went straight to the clay subsoil, which forms a vast natural reservoir for this region, and the water held for future use. In states where the strata are lateral, the capillary lines of evaporation are lateral also, and water poured on the ground or which falls from the clouds disappears and fails to remain as in a reservoir, as it does in North and South Dakota.

With this information irrigation assumed a different aspect to those experimenting in South Dakota, and practical results are now at hand. The most interest has been manifested in the result of the Hunter farm at Mellette, South Dakota. The crop is now harvested and something of the result is known.

The farm contains 800 acres, and is irrigated from one well, 1,065 feet deep. It is common soil, averaging the same as that of adjoining farms. Water is the only thing necessary to produce immense crops from this soil. The flow of the well which irrigates this 800 acre farm is 1,200 gallons per minute, but it is only allowed to flow from 600 to 800 gallons per minute, which is clear water holding no sediment, and is best for the easy working and the proper maintenance of the well. It is a six inch pipe from top to bottom. The well cost \$3,500 four years ago and can be sunk now for

from \$500 to \$1,000 less. It is the same kind of a well in every respect, except in the diameter of the pipe, that exists in Jamestown today.

The reservoir from which the water is carried on to the surrounding lands contains five acres and is built on ground no higher than the rest of the farm. The walls of the reservoir are made by drawing up earth to the height of five and a half feet, from the inside, with a slope of two to one. A number of breakwaters are placed around the inside to prevent the banks from washing. This fall the banks will be ripped and the outside planted with willows. The cost of the reservoir, with all work hired, was only \$750.

The main ditches should be six and a half feet wide and two feet deep and kept full of water. These ditches on this farm, with all the work hired, cost 35 cents a rod, and there should be four to the quarter section. The ditching of one section, at hired help rates, would amount to about \$900. The small ditches are only to be used when there is an odd-shaped piece of land to irrigate, or when it is detached or cut up with draws or lake beds. The small ditches are simply plow furrows. The farmer, working for himself, will, of course, materially reduce the cost of ditches and reservoir.

An artesian irrigated farm in Spink county, S. D., of 640 acres is figured to cost as follows: Six inch well 700 feet deep \$1,500; reservoir of five acres, \$650; ditches \$806; total \$3,046. The total expense, aside from the ditches, which one working his own men and teams could easily cut in half, would be at the outside figure \$2,370. In this county the depth which would be necessary to go would be about 1,500 feet, although the well in Jamestown is 1,476 feet deep, three and a quarter inches at the bottom with a flow of 460 gallons per minute. A half section could be irrigated for one-half the cost of the ditches and reservoir and four farmers owning connecting quarters could club together, share the expense of the well and do their own ditching.

The next question is will this outlay pay? and the success of the Hunter farm and other farms but partly irrigated prove that it will. The Hunter farm obtained the services of H. W. Meserve, a practical irrigation expert from California, who has spent his life in farming by irrigation. He is a man of intelligence, and after investigating the South Dakota possibilities found them far in excess of those in California. He found that it cost from four-fifths to nine-tenths less to irrigate in Dakota than in California.

With the experienced gained in California the following results are given this the first year by the Alexandria (S. D.) Herald, from which this information is obtained: Oats, one field 70, one 90 and one 100 bushels per acre; wheat 35 bushels per acre; potatoes 200, a low estimate; and everything in proportion. The crop on the Hunter farm will bring, at the present prices, over \$17,000.00. The expenses of harvesting, etc., are the same as on other farms. The oats will weigh 40 pounds to the measured bushel. It is easily figured that with wheat at 45 cents a bushel the difference between a 15 bushel yield without irrigation and 25 with irrigation would be clear gain. On a section of land the difference in favor of irrigation would be over \$2,880. In South Dakota, with the small depth necessary to dig the well, this would almost pay for the improvements in one year, and in North Dakota the extra cost of the well would be but a trifle compared with the permanent value of the investment.

With a 35 bushel yield the profits are still more assured. One irrigated field near Frankfort, Spink county, went 45 bushels to the acre this year. The possibilities of an irrigated farm under this sun, with this soil are scarcely realized. A man with a quarter section would be independent, for grains, grasses, fruit and forest trees grow like weeds. Water and experience are all that are necessary. The way to put on the water to make it pay the best, as experience has proved, is to put 12 inches on the field in the fall and from 8 to 10 inches on the crop after it is up high enough to shade the ground. That is all. The soil filled with water down to the subsoil will give back enough to supply plant life and the dews are like rain. Too much water is as bad as none. A 23-acre field was irrigated in 15 hours the first time. Afterwards the work was done in six hours. Experience is only needed to show how to work the water supply best.

Any shape of land, from the level to the slant, from the slant to the hillside, can be irrigated. It requires a bit of water to irrigate a section of soil down to the blue clay, but the well is ample. The ditches are run full and the sides of the ditches are tapped by cutting away four feet in length and a volume of water two feet deep rolls over the land like a barrel. If there is a hollow where the ditch runs, grade up the side with the plow and scraper, the same as a railroad grade, and the water will run along the top. Experience will show how much land the first tapping of the ditch covered, and where to cut the next opening.

The Hunter well fills a five-acre reservoir in 8 days and can be used out inside of 36 hours. The well will irrigate 1,200 acres of land and it is safe to say that a flow of a gallon a minute will irrigate an acre. If the well flows 460 gallons per minute it will irrigate that many acres.

Roswell Miller, president of the Milwaukee road, and Phillip Armour, have visited the farm and as a result are preparing an exhibition car of products to be exhibited in all towns in Wisconsin, Illinois, Indiana and Iowa during the winter. Excursion rates are being made to allow people to visit the farm. From ten to twenty persons are coming to Mellette every day to see the wonderful results. It is said that 100 irrigation plants are being constructed in different parts of the state for irrigation purposes.

The Salzer Seed Co., of LaCrosse, Wis., took \$5,000 stock out of the \$16,000 for which the farm is stocked. The firm have 20 acres on which they are experimenting with seeds. They have tested many seeds, such as corn, grasses, and forage plants, to see which will be easiest to raise and the best adapted to the climate.

The Salzer experiment showed that a great many of the grasses were valueless; that blue grass, timothy, and meadow oat grass as partial successes; also blue joint. The German millet has proved the best, Dakota next, and Hungarian third. Alfalfa, English clover and white Dutch, in the order named, are the best of the clovers.

A wonderful forage plant called the Sand Vetch was raised. It forms a perfect mat, and it is said that an acre of it will keep a team in good order all summer. All animals thrive upon it; cattle and hogs can feed upon it and not hurt it. Three kinds of rye were sown and showed that the St. John's Improved is the best and that it is a fine fodder plant. Two heavy crops of fodder can be cut from it in the same season. Corn is much improved and will average over nine feet high in the field. In the adjoining fields not irrigated corn is as might be expected, eight and ten bushels to the acre.

It is claimed that on the Frankfort farm, a 400 acre tract, oats will give 100 bushels, wheat 40, barley 70, flax 25, corn 50 and potatoes 200 to the acre.

In central South Dakota the James river valley flattens out and is more easy to irrigate than further north and a four and a half inch well can be put down for between \$1,500 and \$1,800. The reservoir and ditches can be built for from \$300 to \$400, provided the farmer and his men give their spare time to the work. On the Frankfort farm there is a main ditch eight by two feet which runs diagonally through the farm. Gates are put in about 40 rods apart, to be opened at will. The best time to irrigate is said to be just after the crop has been taken off, and a light cover of water after the crop has been put in. The great difficulty has been to spread the water evenly. Irrigating engineers are showing how to take water to the highest part of the farm and distribute it from there.

The plan in South Dakota is for farmers to own adjoining lands, to club together and dig a well. Farmers with a quarter section or half section, if the land is unencumbered, will no doubt be able to borrow money to put down a well, as security afterwards will be ample. A loan company for this purpose has been established at Huron. Irrigated land will prevent frost from injuring crops as experience has proved. In '91 Sept. 1st, the fields around the Frankfort irrigated farm were destroyed by frosts. On the irrigated farm millet, flax and corn were not hurt. The theory is that the capillary action brings the moisture to the surface and when the cold wave passes over it this moisture is colder than the air and condenses into a kind of a fog as that which forms over a lake.

\$100 Reward, \$100.
The readers of this paper will be pleased to learn that there is at least one dreaded disease that science has been able to cure in all its stages and that is catarrh. Hall's Catarrh Cure is the only positive cure now known to the medical fraternity. Catarrh being a constitutional disease, requires a constitutional treatment. Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system, thereby destroying the foundation of the disease, and giving the patient strength by building up the constitution and assisting nature in doing its work. The proprietors have so much faith in its curative powers, that they offer One Hundred dollars for any case that it fails to cure. Send for list of testimonials. Address,
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A Good Business.
The flouring mills have recently added to the machinery an additional separator and scourer to clean wheat. This doubles the capacity of the mill in cleaning and scouring from the individual grains of wheat any particles of smut which may adhere to them, and separates from the good wheat all smutted grains and foreign seeds. The machinery is indispensable and assures the high standard of the Jamestown flour.

The mills are now running to full capacity night and day to fill orders which will take weeks to catch up with. The outlook now is for all the business that can be handled. In fact, there is a likelihood that additional structures will be necessary in the near future, to keep pace with the growing business.

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Make note of the following during Fair Week.

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Boys' Heavy Overcoats, all sizes..... \$1.50	Men's and Boys good heavy Shirts..... 25¢	Boys' Knee Pants..... 25¢
Men's good wearing suits, all sizes..... \$3.50	Fine Handkerchiefs, plain and fancy..... 5¢	Boys' heavy grain Shoes, all sizes..... 75¢
Men's Overcoats from..... \$4.50 UP	Men's Heavy Overshoes..... \$1.00	Men's fine calf Shoes..... \$1.75

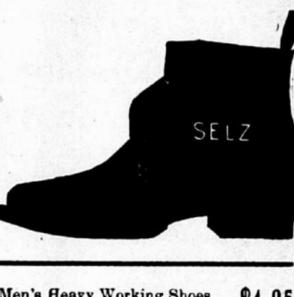
Men's All Wool Heavy Fall Suits, Sacks and Frocks, 34 to 44; others sell them for \$8.00 and \$10; our One Price to all.....

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Corried With a Whale.
SAN FRANCISCO, Sept. 21.—The steamer Schooner *Whale*, which left for Oregon ports Thursday for repairs. At 7 a. m. p. m., she collided with a 50 foot whale, whose tail got tangled up with the propeller, breaking the blades, leaving the vessel in almost a disabled condition.

Big Saw Mill Burned.
GREEN BAY, Wis., Sept. 21.—The mill of the Murphy Lumber company has burned. Loss \$75,000, fully insured. The company's immense yards were threatened, owing to a high wind, and were saved with difficulty. The mill may not be rebuilt, as the company's pine is nearly exhausted and has recently bought extensive timber lands in Washington state.

Welsh Presbyterians.
MINNEAPOLIS, Sept. 21.—The national triennial assembly of the Welsh Presbyterian church convened at the little Welsh church on Seventeenth avenue south and Franklin with a fair sized attendance. The session was entirely devoted to routine business. Rev. John R. Daniel of Wisconsin was elected moderator.

The Gaelic Arrives.
SAN FRANCISCO, Sept. 21.—The steamship *Gaelic*, from China and Japan, arrived at 4 a. m., a day ahead of time. Important cholera news is expected, but as the steamship was placed in quarantine at Angel island, nothing can be obtained for a few hours.

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TIME SCHEDULE.

NORTHERN PACIFIC—West Bound.
PACIFIC MAIL—Arrives at Jamestown at 4:15 a. m.; departs at 4:30 a. m., daily.
DAKOTA EXPRESS, No. 7—Arrives Jamestown 10:20 a. m.
WAY FREIGHT, No. 59—Arrives at 5:55 p. m. daily except Sunday. Carries passengers with permits.
FREIGHT, No. 55—Arrives at 11:58 p. m.; departs 4:35 a. m. daily. Carries passengers with permits.

East Bound.
ATLANTIC MAIL—Arrives at Jamestown at 5:35 a. m.; departs at 5:40 a. m., daily.
ST. PAUL EXPRESS—Leaves Jamestown 4:45 p. m.

WAY FREIGHT, No. 56—Arrives at 5:00 p. m., daily. Carries passengers with permits.
WAY FREIGHT, No. 60—Leaves 7 a. m. Carries passengers with permits.
JAMES RIVER VALLEY R. R.—South Bound

Mixed train leaves for LaMoore and Oakes on Monday, Wednesday and Friday at 9:30 a. m. and arrives Tuesday, Thursday and Saturday at 2:45 a. m.

JAMESTOWN & NORTHERN.
Leaves 7:30 a. m.; arrives 3:40 p. m., daily except Sunday.

For information, time cards, maps and tickets, call on or write Ticket Agent, N. P. R. R. at Jamestown, North Dakota, or CHAS. S. FEE, Gen'l Pass. Agt. ST. PAUL, MINN.



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