Proceedings of the Madras Government, Revenue Department, 17th July 1872.

No. 123. Read the following endorsement of the Under-Secretary to the Government of India, Department of Agriculture, Revenue, and Commerce, (Agriculture and Horticulture), dated Simla, 9th July 1872, No. 286 :—

Memorandum from the Government of India, Public Works Department, to the Secretary to the Government of India, Department of Agriculture, Revenue, and Commerce, dated Simla, 21st June 1872, No. 507-I.

THE undersigned is directed to forward, for information, copies of Reports obtained from the Government of the United States, through Her Majesty's Secretary of State for India, describing the methods adopted by farmers in Utah inreclaiming marsh lands in the neighbourhood of the Great Salt Lake.

From the Secretary of State for India, to the Government of India, dated India Office, London, 30th April 1872, No. 40.

WITH reference to the request contained in the 3rd paragraph of your Excellency's letter, dated the 19th of August 1871, No. 99, I forward a copy of a letter from the Foreign Office, dated the 15th instant, and of its enclosures, containing the replies which have been made to an advertisement issued by the Governor of Utah, asking for information respecting the mode adopted by farmers in that territory in reclaiming marsh lands in the neighbourhood of the Great Salt Lake.

From the Under-Secretary of State for Foreign Affairs, to the Under-Secretary of State, India Office, dated Foreign Office, London, 15th April 1872.

WITH reference to your letter of the 6th October last, I am directed by Lord Granville to transmit to you, to be laid before the Duke of Argyll, a copy of a report which, at the request of Sir E. Thornton, has been obtained by the United States Government from the Governor of Utah, respecting the reclamation of salt marsh lands in that territory.

From His Excellency the Governor, Utah Territory, to the Secretary of State, Washington, D. C., dated Salt Lake City, Utah Territory, 13th March 1872.

SOME time ago I received a communication from you, enclosing a note from the British Minister at Washington, asking for such information as I might be able to give as to the best methods for the reclamation of salt marsh lands developed by experience in Utah Territory.

I submitted your communication, together with accompanying papers, to the Agricultural Society of the territory, with the request that they make a full report.

I have the honour to transmit, herewith, result of their investigations, which I hope may be sufficient to answer the demands of the British Minister, and those whom he would serve.

From the Secretary, Deseret Agricultural and Manufacturing Society, to His Excellency the Governor, Utah Territory, dated Salt Lake City, 31st January 1872.

THE communication of the Honourable J. Melville, the Under-Secretary of State for Her Majesty's Government, forwarded by the Honourable Hamilton Fish, and accompanied by a letter from Your Excellency, asking information concerning the reclamation of lands in Utah, was presented by the Honourable A. P. Rockwood, to the Deseret Agricultural and Manufacturing

Society, and in response to its advertisements in the newspapers, soliciting reports from those farmers who had practical experience in reclaiming lands impregnated with salt and alkali, the following communications were forwarded to the Society, which we respectfully submit to your Excellency.

From J. OAKLEY, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated St. George, Washington County, Utah, 11th December 1872.

In answer to your letter concerning the reclamation of saline and alkaline lands, I will say that, after an experience and observation for nearly twenty years in this territory, in cultivating more or less mineral lands, I find no better way to make them productive than simply to leach them, and to do this most effectually, they should be levelled so that the water will stand on them; this can be most cheaply done by ploughing, throwing the furrow continually down hill, forming terraces.

If, when water is near the surface, land cannot be effectually and permanently leached without deep draining, as in some parts of St. George City site,—the water will recede in summer and rise in winter, bringing the mineral with it,—a few inches of sand spread on the newly leached land will greatly facilitate the starting of seeds and plants, preventing incrustation and breaking contact with the soil, while the plant is yet tender. Many plants will endure a considerable portion of saline and alkaline substances, if they do not collect on the plant while young and tender.

I find that castor beans, cotton, summer squash, melons, onions and lucerne will grow where there is a considerable portion of mineral. They are the vegetation I would recommend to plant on newly leached lands,—castor beans first, and so on, in the order I have placed them.

From W. FAWCETT, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated St. George, Washington County, 12th December 1871.

Permit me to communicate the result of my experience in mineral lands. In 1850 I bought lands near the Great Salt Lake, which proved to be strongly impregnated with salt and alkali, but by liberal irrigation and a heavy covering of chaff, the land so treated became very productive.

My lots in Salt Lake City were so charged with mineral that vegetation was blighted and destroyed, but by draining and manuring, and thoroughly ploughing and hoeing, they were reclaimed without irrigation. Water was within three feet of the surface of the ground.

In 1861, I removed to St. George, where our city lots were so full of mineral the first season that I have known sandstone to be decomposed by [illegible]. We subdue this mineral by terracing our lots about two rods circle, and level our land so that the water will stand all over it. After it has stood so for a short time, the mineral will dissolve, become frothy, and thus swim on the surface, which being drawn off and repeated a few times, the land is thoroughly reclaimed: then apply manure.

From B. F. STEWART, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated Utah County, 7th December 1871.

The best practical way of reclaiming mineral land, with which I am acquainted, is to plough the land the way the water runs the best; make the main ditches not more than ten rods apart for land that is of sandy loam, for clayey soils, further apart. After the ground is harrowed and levelled, throw up back furrows about two rods apart to keep the water from spreading, then turn on a large stream from the main ditches, if the land is level; a smaller stream if it is not level.

This process will dissolve and wash off the mineral.

Fall ploughing is an advantage to land, but it is better to plough just before sowing on mineral lands, as the mineral rises to the surface and ploughing turns it under again, and gives

the grain or vegetable a chance to grow some size before the mineral forms a crust. By irrigating when you discover the mineral so forming, even when the ground appears moist, will save your crop.

I prefer sowing in drills, as it gives better facilities for working the ground and keeping down the mineral.

The best way for the British Government to make irrigation and the reclamation of lands in India a success, would be to engage some skilful labour from Utah.

From G. B. WALLACE, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated Salt Lake City, —— January 1872.

My theory for reclaiming saline and alkaline lands, the result of 24 years' experience, is as follows:—

Saline lands are too rich or fat with the very best fertilizers of the earth, and the question is, can these lands be weakened or reduced in strength so as to be brought under successful cultivation? Take for example ten acres of land that is so strong with salt that nothing can grow; ditch around it, say, three feet deep, and cut ditch through it, then cut a ditch leading off from the ditches that surround it, plough the land and flood it, and when the water has stood upon it long enough to melt the particles of salt, run it off, and so continue from time to time, and the land will become sufficiently fresh to vegetate seed and produce crops.

Sufficient water to wet the ground without running off will never reclaim it. If there is not water sufficient to flood it, plough often, leaving it rough, and plough in such a way that when it rains the water may run off into the ditches.

By frequent ploughing the soil comes in contact with the gas of the atmosphere, and thereby undergoes a change, and is reduced in strength, and will after a time become productive, as I have proved by actual experiment.

Fresh fine sand is excellent to spread in and mix with the soil, it both warms and weakens the saline lands. Barn-yard manure has much salt in it, therefore, it is not good for strong salt lands.

Fruit trees can be raised upon those lands by adopting the following rules:—When your trees are planted, bring sweet fresh soil and put around the roots, well mingling therewith, and specially around the stock where it comes out of the ground, for if the tree be injured in any way by salt, it will be the bark at the surface of the ground.

Pear trees will stand almost any amount of salt and grow well. When fruit trees get once rooted in salt land, they become healthy and yield the best of fruits. There are many grades of saline lands, but the same rule will apply to all.

From the Secretary of the Dairo County Branch of the Deseret Agricultural and Manufacturing Society, to the President of the Deseret Agricultural and Manufacturing Society, dated Farmington, Davis County, 11th January 1872.

I have the honour to acknowledge the receipt of your letter, requesting information concerning the reclamation of salt lands, and, in reply, have to state that the efforts of many farmers who own lands bordering immediately on the shores of the Great Salt Lake have been very successful, in almost every instance, by flooding with fresh water during the spring and winter months, thereby washing the land and leaving a deposit of sand and mud washed down from the land through which the stream passes.

Some of the farmers are now cutting from two to three tons of fine hay per acre, and from fifty to seventy-five bushels of small grain are raised per acre on land raised by this treatment.

Some of our farmers have been successful by hauling sand and mixing with the soil. These are the only modes of treatment of which I have heard in this country that have proved successful.

From J. R. WINDER, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated Salt Lake City, 16th January 1872.

I HAVE experimented on and brought into successful cultivation in the following manner some land so strongly impregnated with mineral that nothing grew upon it, and so situated that water could not be advantageously applied to wash the mineral out.

Put on a good coat of warm manure and plough very deep in the fall of the year, and in the spring before sowing, plough again, but not quite so deep as in the fall. The seed should be sown immediately after ploughing.

For all kinds of roots, furrow out with a small plough or cultivator, leaving sufficient room between the furrows to plough and cultivate the soil. Sow the seed in the drills, haul on and cover with fine sandy loam. Do not irrigate till the plants are of a good size and the weather hot.

In this way I have raised beets weighing ten to eighteen pounds each, on land where nothing grew before.

A few inches of sand, a coating of chaff or fine manure over the whole surface after planting, prevents crusting, becomes mixed with and improves the soil for future crops.

The following kinds of fruit can be successfully raised on such land, *viz.*, apples, pears, plums, currants, and gooseberries.

Plough the ground deep, and for all kinds of trees dig the holes two and-a-half feet square by two feet deep, put in the bottom of the hole six inches of good manure, then six inches of mixed sand and gravel, set the roots of the tree in good loam not too far from the surface. A tree thus planted will grow thriftily.

I have an orchard planted as above, bearing good fruit four years after planting. The mineral does not appear to injure the tree after it gets well started, and as its size and shade increases, so the soil surrounding it improves.

A good coating of rough manure, chaff, or partially rotted straw, over the whole surface, the first year will keep the ground moist and prevent crusting.

Where water is plentiful, and the land so situated that it can be applied, the saline substances can easily be washed out by having the necessary drainage, and the land be made productive either for grass, roots, or grain.

From A. K. THURBOR, Esq., to the President of the Deseret Agricultural and Manufacturing Society, dated Spanish Fork City, Utah, 8th January 1872.

PERMIT me to communicate a few items of information concerning saline lands in this section of country. In 1852 a tract of land in this neighbourhood was enclosed and used for farming purposes, which after a trial of two years, proved to be so full of saline matter that it was abandoned and turned to common.

The same land has since been enclosed as a pasture, and is at this time of great value either for pasturage or for agriculture. Its reclamation from alkali is mostly due to the increased rain of late years, and partly by the mixing of the grass with the earth through the tramping of cattle and its becoming thereby decomposed.

SALT LAKE CITY,
The 1st February 1872.

I CERTIFY that the foregoing are extracts from, and true copies of communications received by, the Agricultural and Manufacturing Society, in response to its advertisements in the newspapers, soliciting reports from those farmers who had practical experience in reclaiming lands impregnated with salt and mineral, to enable said Society to furnish information sought by Her Britannic Majesty's Government in India.

(Signed) R. L. CAMPBELL,
Secretary Deseret Agricultural and Manufacturing Society.

Proceedings of the Madras Government, Revenue Department,
17th July 1872.

COPY forwarded to the Government of Madras for information.

(By Order of the Governor-General of India in Council.)

(Signed) J. GEOGHEGAN,
Under-Secretary to the Government of India.

No. 124. ORDER THEREON, 17th July 1872, No. 1,070.

Miscellaneous.

COMMUNICATED to the Board of Revenue for the information of the Collectors of Districts and of the Superintendent of Government Farms.

(True Extract.)

(Signed) W. HUDLESTON,
Secretary to Government.

To the Board of Revenue.
,, the Agri-Horticultural Society.

Exd. G. A. Turton.

Re 2363.

Revenue 1872. Sept.

DEPARTMENT OF AGRICULTURE, REVENUE, AND COMMERCE.

[Agriculture and Horticulture.]

From Public Works Department.

No. 507 I.

Enclosure 1.

5 *spare copies.*

Dated ~~21st~~ 9th June.

Read. ~~26th~~ 18th July 72

D. No. 190.
L. No. 189.

Progs. *D.* *No.*

1070
17-7-72

SUBJECT.

FORWARDS for information six copies of reports received from the Government of the United States, through Her Majesty's Secretary of State for India, describing the methods adopted by farmers in Utah in reclaiming marsh lands in the neighbourhood of the Great Salt Lake.

No 123-124

14 to the Govt of Revenue Dep 25th July 72
1 to Honorary Secy Agri Horticultural Society "