

several serious rebellions. Japan naturally has a desire for the possession of the country with its numerous possibilities, and it is therefore but too probable that the life of this Asiatic republic.

PUMPS IN IRRIGATION.

Of late there has been a marked advance in the use of pumping plants as an auxiliary in irrigating methods. The mountain streams and rivers have been largely appropriated as sources of supply by the gravity system, flowing or artesian wells have been adapted to the purpose of increasing the needful liquid, and even in Utah pumping has been resorted to in many localities to aid the cultivator in his efforts to secure sufficient irrigating water. Until recently, however, this method of raising the water to a level where it could be easily distributed has not been very successful, owing to the great expense. The later efforts, therefore, are all the more encouraging from the fact that they are overcoming this serious difficulty, and the most gratifying success has attended them both on the plains of Kansas and Nebraska and the valleys and hillsides of the Rocky Mountain and Sierra Nevada ranges.

The progress with pumping plants in California is specially interesting here from the probable necessity of an extension of their use in this section of the country. The *Perris (Cal.) Record* states that in that section of the Golden state "irrigation by pumping is becoming more contagious than the grip. It has been demonstrated thoroughly and satisfactorily that an inexhaustible supply of water underlies that land, and an unlimited flow can be secured with wells by means of the most modern irrigation pumps, which can be operated at reasonable cost."

With the increase in pumping plants there comes also a necessity of small reservoirs connected therewith; and the California *Cultivator* describes what it regards as a typical plant and reservoir which supplies water for a sixty-acre lemon grove. The reservoir is on the highest part of the land, is of oblong shape, holding 500,000 gallons, and is lined with asphalt and painted inside with a heavy coat of asphalt paint, which renders it completely impervious to gophers and other burrowing animals. It is supplied from a well 280 feet deep, seven inches in diameter; in this the water rises to within 180 feet from the top. An ordinary deep well pump is used, the cylinder being 3½x28, and the pipe is a four-inch; this is operated by an eight-horse power gasoline engine, which pumps the water into the reservoir, which is some fifty or sixty feet higher than the pumping station, at the rate of 1,500 gallons per hour. The cost for gasoline is given as 10 cents per hour.

Of course the expense of pumping is still far above that now incurred here by irrigating canals; yet as more land comes in use for orchards and gardens, and as higher methods of cultivation are employed to secure larger yields, the more costly methods will be resorted to. Hence Utah irrigators may note and keep in touch with methods

that are brought into successful operation elsewhere, with a view to introducing them wherever circumstances render it necessary and profitable.

HUGH McCULLOCH.

One of the famous secretaries of the United States treasury died at Washington on the 24th instant—Hugh McCulloch, aged eighty-seven years. The deceased had been twice secretary of the treasury, his first appointment being made by President Lincoln, about a month before the latter's assassination, thirty years ago. At that time the government was in great financial straits. The treasury was nearly empty and the expenses were enormous. McCulloch's first work was to raise money with which to pay the half million soldiers who were about to quit the service for private life. In less than six months this money was raised, all the national obligations met at maturity, and the work of debt reduction was begun. The conversion of \$1,000,000,000 short-time bonds into a funded debt was also accomplished on highly favorable terms, and in a couple of years the national finances were placed on a satisfactory basis. Secretary McCulloch retired when President Grant took office in 1869, and in 1884 was re-appointed by President Arthur; after relinquishing the office at the later period, he retired from public life, his career having brought him to a high degree of esteem both in this country and in Europe.

Utah people will think of Mr. McCulloch as a man who was willing and had the courage to do them justice at a time when it was popular to condemn without stint the inhabitants of this Territory. He was a warm personal friend of the late Wm. H. Hooper, who served Utah so long and well as Delegate to Congress. Nineteen years ago Mr. McCulloch visited this Territory and mingled with the people. After he departed he related his impressions of those who lived here, and made a statement, the truthfulness of which is receiving recognition nearly a score of years after he gave it utterance; in his letters to the *New York Tribune* he declared that the people of the United States were under obligations to the Mormons for what the latter had done in these valleys. Here is an extract from a letter he wrote at San Francisco March 29, 1877, showing his view of the situation here at that time:

The ride from Ogden to Salt Lake City, over the U. C. R. R., built and owned by the Mormons, is a pleasant one. I forbear a description of this singular and in many respects beautiful city. I have to admit I never gazed upon a scene so charming or so picturesque as the one presented in looking over Salt Lake valley, from the bench behind the city. There are among the Mormons many clever people—scientific architects, skillful artisans, and tasteful landscape gardeners. This is indicated by their public buildings, their workshops and factories, their private dwellings and their grounds. The roof of their Tabernacle (150x250 feet) rests upon the walls without any other support. The granite Temple, when completed, will be surpassed by no building in the western hemisphere in solidity or appropriate or

beautiful architecture. The organ, built entirely by the Mormons, is second in size to only one in the United States, and is excelled by none in tone or beauty. Many private dwellings are handsome, and gardens are models of taste and culture.

Everywhere there are indications of neatness and comfort. The people of the United States are under obligations to the Mormons. They have made Salt Lake valley, once a desert, a garden. One can hardly repress a feeling of admiration for their courage, patience and power of endurance which they displayed in their march (the most wonderful of which there is a record) from Missouri over the trackless desert, with their wives and little ones, the aged, the sick, and the infirm, in search of a home where they could enjoy without molestation the faith they had embraced. They have opened and improved a region which but for them would have been neglected. They have brought to the country many thousands of industrious, peaceable, and skillful people, and added largely to its wealth. Good judges and honest officials should be sent them, and in other respects the Federal government should let them severely alone. Their history will afford abundant material for philosophical speculation, but there is no danger of their being a political or social disturbance.

The work of such men as Hugh McCulloch aids in bringing to Utah the fame it is attaining for the beauty of its scenery, and for its desirability as a place of homes—made apparent by the industry and skill of its people. There has been much of material prosperity here since Mr. McCulloch's visit; but the occupied part of Salt Lake valley was more of a garden then than now, though not more than it ought to be and perhaps will be in the future, when its inhabitants again generally realize the necessity of a more thorough cultivation of their gardens and of ornamenting the grounds about their homes.

THE LEAVEN WORKING.

The process of evolution in the Central American republics goes on steadily. The dispatches from Washington bring news of the most important practical step yet taken for a federation of those states, and the ultimate establishment of a Central American republic, if not, indeed, the creating of one vast nation of North America under the popular form of government. It is only a few years since a leading statesman of the United States worked indefatigably for a pan-American union, but further than getting the parties concerned to admit that such a movement would be of benefit to all, there was no apparent result. The leaven which had been working even before that time, however, kept on operating, and is now making its presence manifest. No doubt the recent action of Great Britain has been contributory to hastening definite action.

The compact between Nicaragua and Honduras is peculiar in its desire to exclude even the friendly offices of European powers on any question with which they have no direct interest, and opening wide the door to all American nations. It exhibits an unusually strong sentiment in favor of complete union and the peaceful settlement of disputes that may arise. This coming from states which hereto-