Correspondence.

On Manufactures Applicable to Utah.

SALT LAKE CITY,
October 30, 1875.

Editor Deseret News:

I have devoted a great portion of time from my youth up to the study and practical working of chemical industries, at home and abroad, and especially the last six years in attempting to develop the fundamental resources of Utah, not solely for individual aggrandizement, but to induce others with necessary capital to inquire into and practically demonstrate our territorial wealth.

It seems but needful to point out wherein there is hidden wealth, and that then among our people will be found those who can successfully utilize the bases, for that there are men here from almost all portions of the civilized world whose previous engagements in their native land enable them to understand how to produce articles to successfully compete, in a commercial point of view, with the world, or, in other words, who understand the minute practical operations so requisite to success, which are only known to the manufacturer, and never fully given in written authorities, is beyond doubt.

I propose to take, in their natural order, branches of industry (for one is the stepping stone to another) and follow them out in their practical operations, giving the locality from which can be obtained the material, its present probable cost laid down in Salt Lake City, its distance from railroad communication, its home consumption, its consumption in the United States, and when it can be shipped abroad, will give the present rates and profits, finally the cost of successfully putting in running operation the industry. By so doing it will tend ultimately to cause Utah to be an exporting country, and consequently find employment for our people, spreading, among all, wealth. And it is certain no place on the face of this earth can be found that will vie with Utah in its supply of the elements awaiting the labors of man to render them most valuable.

The first subject treated of is sulphuric acid, commonly and truly recognized as the base of manufactures, and so important a part it plays in the laboratory that it has been called the "chemist's fire."

The materials that enter into the composition of this most important chemical are found in this Territory, and are the following—sulphur and nitrate of potassa (saltpetre), or nitrate of soda.

Sulphur is found native about 250 miles south of Salt Lake City, situated on the main road of travel leading through this Territory and on the proposed line of the Utah Southern Railroad, whose present terminus is York, in immense deposits cropping out of the earth. I have been unable to estimate the amount, but some idea may be formed when it is considered that shafts have been sunk over thirty feet in the deposit without piercing it and the superficial area extends several miles, from which I have made several assays averaging over 80 per cent. pure sulphur; it is exceedingly easy of extraction, and sufficiently pure for this manufacture. Teams can drive to the deposits and load. At present it can be laid down in Salt Lake City for $20.00 a ton.

There are also deposits at Soda Springs, about 65 miles from the terminus of the Utah Northern Railroad. The roads are very difficult of travel at present, but no doubt when a demand is instituted for sulphur means will be expended to improve the roads.

Nitrate of potassa exists in several places in the southern part of Utah. The nearest depo-it I have visited lies in a cave in Tintic Mining District, about 18 miles from the U. S. R. R. It can be freighted to Salt Lake City for $6.00 per ton.

No work has been performed upon it therefore, no calculation can be made as to extent.

Nitrate of potassa can be artificially made.

Nitrate of soda has not yet been discovered. It answers in every respect equally as well as the potassa salt, is generally obtained from South America and costs about 4 cents a pound.

Lastly is required vapour of water.

Sulphuric acid varies greatly in price from 2 to 10 cents in gold per lb. Its market value in this city is about 15 cents per lb. To arrive at the amount consumed would be difficult; some idea of the consumption may be arrived at, when it is known that every drum of caustic soda represents nearly its weight in sulphuric acid, that every 40 gallons of coal oil has taken 28 lbs. of acid to purify it, and that every electric telegraph line requires the presence of this acid to promote electricity.

Utah consumes about 300 lbs. of this acid daily, and the amount is constantly increasing.

It is a corrosive poison, charring organic matter. Very dilute it is sometimes used in medicine, and many salts are formed from it, for instance glauber salts, or sulphate of soda.

THE FACTORY

Is composed of a lead chamber, a brick furnace, leaden evaporating pans, and retorts.

The leaden chamber is constructed first by forming a wooden framework lined with sheet lead suspended alternately from roof to floor are leaden curtains, which have a space of one to two feet from their free margins to the ceiling or floor, the object being to procure an admixture of the gases; the floor of the chamber is covered with three or four inches of water. An exit of lead, for emptying the chamber's contents into the pans, is provided.

The brick furnace is attached to one end of the leaden chamber by flues. In the furnace is placed the nitre and sulphur, the former in a crucible, where it is decomposed by the heat generated from the burning sulphur, the fumes of which pass into the chamber. The vapor of water is supplied by steam from a boiler, which serves to agitate the gases, to facilitate their combination and form sulphuric acid, which condenses and falls to the bottom. By listening to the action going on in the chamber you can hear the drops of acid falling, which resemble a rain shower.

When a sufficient quantity of the dilute acid is obtained it is drawn off into leaden evaporating pans, and therein evaporated until the acid shows, by Baume's acidometer, a gravity of 58° or 59°. If you carry it any further in strength the leaden pans are liable to be destroyed. The pans are formed of sheet lead without joints, folded at the corners, the bottoms of which are placed on iron plates, set in masonry, so that the direct heat of the furnace does not come in contact with the lead. It is usual in manufactories to cease the concentration at this point, as most operations do not require a stronger acid. But in the case of refining coal oil the acid must mark 66° Baume's. Again, as freights on sulphuric acid are double first class, it is profitable to bring the acid to the above standard. To do this, distillation is had recourse to, the acid from the pans is, by a syphon made of lead or platina, introduced into glass or platina stills, varying in capacity from ten to twenty gallons when of glass, and if of platina sometimes capable of holding over 100 gallons.

I will here remark that concentrated sulphuric acid exerts no action on cast iron, and particularly on white cast iron is this the case. I am somewhat surprised that this fact has not been universally resorted to. I know that it is practicable, for I had a 600 gallon white cast iron still and used it constantly for many months without any perceptible wear, except in the goose neck, where the dilute acid came in contact with it, which was attached to the still by clamps and could be replaced at pleasure. The cost of glass and platina stills is about the same in the long run, owing to the frequent breaking of the glass. Great care must be taken that lead does not come in contact with the platina, for they immediately form an alloy and melt. Such holes require gold solder for patching, this trouble is entirely avoided in the iron still. The distillation of the acid is carried on until the Baume's scale marks 14° B. in the distillate; it is then found that the acid, on cooling to a temperature of 60° Fahenheit, is exactly 66° B, or standard sulphuric acid. This acid is then syphoned into ten gallon carboys, and sealed with earthenware stoppers luted with plaster of Paris, which is then ready for market; the object of careful sealing is that the acid of this strength has a great affinity for water and abstracts the water from the air to the loss of its gravity. Oil of vitriol has the specific gravity of 1.9 and contains for every pound about 2 or 2½ ounces of water. The reactions that take place in the chamber are, the sulphurous acid gas, formed from the burning sulphur, is converted into sulphuric acid by abstracting one atom of oxygen from the nitric acid, till this is converted into nitric oxide. The nitric oxide formed now acts in a very peculiar manner, coming in contact with the air, admitted with the sulphurous acid, it immediately abstracts from it one atom of oxygen, forming yellowish red fumes of nitrous acid. The nitrous acid again gives up one atom of oxygen and is again converted into nitrous oxide, and continues this action as long as oxygen is supplied by the air. By this reaction it will be seen that it is possible to manufacture sulphuric acid with but one outlay for nitric acid, as the operation is continuous.

The chemical test for sulphuric acid is chloride of barium, which gives a white precipitate, totally insoluble, of sulphate of baryta. This test is so delicate that a single drop of sulphuric acid can readily be detected in a gallon of water.

The cost of erecting a manufactory for sulphuric acid entirely depends on its capacity.

The proportions of sulphur and nitrate of potassa are 2 lbs. of nitrate of potassa to 10 lbs. of sulphur, which will produce 30 lbs. of sulphuric acid of commerce and it will cost at the outside about a cent and a quarter per pound.

The capital required to manufacture three carboys a day will be about $2,000, from which a profit would be realized of about $23 per day.

The various materials, glass carboys, sheet lead, retorts, &c., will be treated of under their appropriate heads. In the next article will be explained the manufacture of nitric and hydrochloric acids.

CLARENCE BARRETT.

Scattering Thoughts.

SALT LAKE CITY,
November 4, 1875.

Editor Deseret News:

A religion which teaches its followers that they have absorbed all that is good is too narrow in its scope to revolutionize social conditions. This belief checks progress in its adherents and unfits them for their supposed mission.

While we think that our standard of right is more perfect than that of others, let us also admit that it is their privilege to think the same of theirs. We should not deny to others the possession of some good, even if we think we have more than they.

It is well to remember the old adage, that "like begets its like," and that a kindly charity to others tends to develop sentiments of good-will and forbearance towards ourselves.

The thoughts, the aspirations of men must be untrammeled to reach their highest development. The old religions have been endeavoring to confine to the beaten track of the past centuries the throbbing impulses of an age which God's providences and the prophetic inspirations of the past declare shall be one of great changes, from which shall be evolved higher conditions of human existence.

The antagonism of Christianity has forced science on to the lead of progress. But, while the developments of science may greatly modify the physical conditions of life, they have but little influence on social ethics. In the same ratio as communities have developed the higher grades of civilization they have departed from the virtues of their ancestors. Not of necessity, but because that knowledge is made to minister to their evil propensities.

The developments of science, and the additions thereby made to the comforts and luxuries of life, have added but little to the weight of moral obligations, or to the social virtues of communities. It requires strong religious sentiments, tending to promote private and public virtue, to perpetuate national life.

The mission of Joseph Smith was not to develop something new, but to re-establish the standard of right, which had been lost to man for ages. Not to check progress, but to give it new and lasting impulses; to gather together into one, and to bring to bear upon the world all that God has made manifest for man's redemption.

Why should inspired records be valued less because they have been buried in the earth for centuries? Why should social customs be condemned because they were practised in patriarchal periods?

Would scientific facts be any less valuable because discovered under the shadows of Vedaic temples, in the far remote periods of Asiatic civilization? Does it depreciate astronomical facts because they may have first been recorded in cuniform characters in the tile libraries of the Chaldeans? Whether Jos. Smith discovered the record of Mormon by accident, or through Divine inspiration, does not of necessity affect the principles taught in the Book of Mormon. If it elucidates the principles of the Decalogue, if it is the embodiment of the holy precepts taught by Jesus and his apostles, it cannot be discarded by those who accept the precepts of the Bible. It is none the less pure in its ethics, none the less adapted to raise man in the scale of intelligence, because it is the narrative of the otherwise unrecorded civilizations of the Western Hemisphere. There is no reason why truth might not be dug from the hill Cumorah, the grave of the ancient civilizations of this continent, as well as from the debris of Asiatic antiquity.

This is a gathering age, an age of careful, persistent research. The polar and tropical regions, the mountain peaks and the lowest valleys, the fertile plain and the barren desert, the planetary worlds and the bowels of the earth are being made to contribute something to gratify man's insatiable desire for something new, or to further gratify his appetites and passions.

To guide the impulses of this impulsive age, to save mankind from the whirlpool of their own passions, to lead them out of present darkness by the high and holy light of Divine Inspiration to universal intelligence, was the mission of the Prophet Joseph Smith.

JAMES A. LITTLE.

NEWS NOTES.

Mr. Bright has declared that in mental power girls are not inferior to boys.

Nebraska's new constitution has gone into effect by proclamation of the governor.

Fifteen cents a bushel is the price of apples in some parts of Pennsylvania.

The Austrian army will have the new bronze-steel cannon, which is noteworthy for the accuracy of its shots.

The old castle at Nottingham, England, is to be converted into an art museum at a cost of £16,000.

The British Museum employs a staff of 326 persons, only eighty-nine of whom are employed in the library.

Congress is going to be asked to appoint a committee of scientists to study up the insects breeding in the Rocky Mountains.

The Boston *Pilot* thinks that if men and newspapers did not let girls know what bad is they would not do bad.

The debt of Alabama is equal to one-fifth of its taxable property, and there is an effort toward repudiation.

The rapidly growing interest in genealogy and family history is shown in the fact that 359 genealogical works have appeared in the United States since 1860.

Mr. James Augustus St John, a voluminous writer of books on history, politics and theology, has just died at the good old age of eighty.

It seems now that Singer had five wives instead of three, and no wonder that the poor man had to get up some kind of a sewing machine. —*Ex.*

The failures for the past nine months aggregated $131 171 0 0. That sum represents exactly the inflation of business for the period specified.—*Ex.*

Under the new English labor law, twenty seven men have been committed at Nottingham for threatening and impeding non-unionist workmen.

General Massey's reported insanity is denied by a personal friend of his, who says that he is now engaged on the greatest literary work of his life.

The castor bean is cultivated in Kansas, and a castor oil factory has been erected at Fort Scott. Even the West is not without this pleasant and exhilarating beverage.—*Ex.*

The Territorial *Enterprise* reports that in Nevada there is plenty of money to loan to those who don't want it. That is very much the case elsewhere.—*Ex.*

The season in London will bring out a perfect flood of new books of travel. Indeed the chief end of the modern Englishman seems to be to gad about over the globe and then write a book about it.—*Ex.*

Thomas Turner, a prisoner, travelling handcuffed in charge of a warder and a policeman, jumped from an express train going at full speed near Chelmsford, in England, October 8.

Henry Stewart, whose employment was feeding animals in French's Circus, had his hands torn to shreds by a lion in Chicago, and died from the injury. The animal caught him as he reached into the cage for a trough of water.

Investigation has shown that not only persons of great mental capacity but also lunatics occasionally possess brains which are considerably heavier than the average brains possessed by ordinary but sane people.

English and German authorities have just discovered that French cooking is the best in the world, not excepting the kitchens of Oceanica, and more over that French women dress with more taste and originality and economy combined than their sisters across the channel and the Rhine.

A Richmond journal furnishes facts and figures to show that the negroes, obeying a law of their nature, are gradually drifting to the tropical or semi-tropical regions of the country. The editor says the black man's "passage towards the Isthmus of Darien is a matter of philosophical certainty."

The most appalling news which has been received from the Old World for a long time is to the effect that the matrimonial newspapers in London are to be suppressed. Old maids and timid bachelors, whose modesty forbids their courting, except through proxy, strongly protest against the contemplated outrage. — *St. Louis G.-Democrat.*

London Bridge is to be widened by the addition, on each side, of wrought iron arched ribs, carried on piers built over the present starlings or cutwaters. By this means twenty-two feet is added to the width, giving fifty-four feet of roadway for carriage traffic, and footways on each side eleven feet one inch wide.

The city of Ahmedabad, the oldest and at one time one of the most beautiful cities in India, is declared by the Sanitary Commissioner to have had no sanitary arrangements for several centuries past, and the earth has become so impregnated with abominations that not a drop of pure water can be obtained within the city walls; even garden plants die if watered with it.

Experiments have been made at Bordeaux for the employment of cork in gas for lighting. The results were so favorable and so economical that it has been decided to fit up works for lighting the town of Nerac on that system. The waste obtained from cork manufactories is distilled in retorts, and the flame thus obtained is said to be brighter and whiter than that from coal gas.

The Los Angeles (Cal.) *Herald* says that at the present rate of increase it is estimated there will be in four years 1,000,000 stands of bees in Los Angeles, Santa Barbara, and San Bernardino counties, which will produce annually 100,000,000 pounds of honey, worth $20,000,000, which is more than the value of the sugar and molasses crop of Louisiana, Texas and Florida combined.

Two merchants at Nashua, N H., were recently running each other on stockings. The first trader marked down the specimens at his door, and after his rival had passed and noted the change, resumed the former prices. The trick was repeated every morning for a week or more, until the second trader was selling stockings which cost at wholesale twenty-five cents for five cents. This was the first trader's opportunity. He engaged the services of several girls and boys, and before the second trader was aware of the fact, his whole stock of stockings had been transferred to the counter of his rival at five cents per pair, and were being sold by him as "a bankrupt lot—at a great sacrifice"—and yet at a splendid profit.