THE CAUSE OF CIRCULATION WITHIN A TREE.

It has been ascertained, by introducing coloring matter into a trunk of a tree that the movement of *the* sap is upward through the wood alone; when the coloring matter has reached the nerves of the leaves, its course is changed, and it is found to be gradually moving down through the bark until it reaches the bottom. The cause of the action was at first supposed to be the force of capillary attraction, but this does not account for the fact that the sap will flow out of a vine when the top has been cut off. The Saussure supplied the defect in this explanation, by supposing that after the action was commenced by capillary attraction, it was continued by the alternate contraction and expansion of the tree, which if true, does not account for the continuous flow. The sap was supposed to return by its own weight, but in drooping branches the return is in an upward direction. A*cording* to Thouars, the rise of sap is due to the expanding *buds and the development of* leaves, which appropriate the justices in the vicinity; to supply the vacuum thus made, the sap is forced up by atmospheric pressure, but this view is erroneous, *because* the sap flows before the buds are formed. Dutrochet, who first opened the path which Graham has successfully pursued, ascribes the flow of sap to that force of diffusibility which causes two liquids separated by a porus sheet of animal membrane to intermingle. He gave the name of Endosmose to the inward impulsion, and Exosme to the outward impulsion. By osmetic force, water will pass through a septum of animal membrane, covering the lower end of a glass tube in which there is a solution of sugar, and the action will continue until the fluid has reached the top of the tube, when it will continue to flow out. Vierodt states that the velocity of the current increases with the initial concentrations of the solution, but in a lower ratio. The numerous experiments of Graham recently made with mineral and animal septa, lead to the inference that osmose is caused by the chemical action of the liquid on the septum. In attributing the circulation of sap in trees and plants to chemical action rather than to capillarity, we may have advanced in the right *direction, but it* must be confessed that the subject is still involved in mystery.

According to Liebig, in annuals no new wood is formed after the month of August. All the carbon which the plant appropriates, after that time, from the carbonic acid absorbed by the leaves, is employed in the formation of nutritive compounds for the following year. Instead of woody fibre, starch is formed and diffused through every part of the plant by the Autumnal sap. The chemical combination of carbon with the elements of water, by a *process which* cannot as yet be imitated by man, forms woody fibre, gum, starch and sugar. M. Heyer states that starch deposited in the body of a tree can be recognized by its known form with the aid of a microscope. When by early cold weather, this provision is not made for the tree, its growth during the next year will be checked.

Why does the saccharine liquid flow from the maple more freely after a frost? This peculiarity is not observed in the birch and other trees which secrete the sweet principle. It would be accounted for, on the Osmose hypothesis, by supposing that the flow was checked by the frost, and during that time the sap, already in the tree, became denser; this difference in density would cause the subsequent flow to be be increased. It might also be suggested that this increased *flow after a frost might be the result of* theromo-electric action. Enough has been said to direct the attention of young American botanists to this subject and induce them to institute many series of experiments in a field of research as yet but partially explored.

Aloes—To Destroy Insects on Plants.—In your journal for May, 1860, you request your readers to try aloes as a protection of plants from insects, and report. As I have been induced to try it by an article in the *Southern Cultivator* for February, 1859, page 37, giving a translation from F. V. Raspail, recommending it, I will give you the results of my experiment on cabbage plants.

I was much annoyed by cut worms, very often not getting more than three-fourths of a stand, even after replanting several times.

When ready to set the plants last spring, (1859) I put from three-quarters to one pound of aloes in a tin pan and poured hot water over it, and stirred it until the water could dissolve no more, I then poured off the water into an empty whisky barrel and repeated the operation until all the aloes were disolved; I then filled the barrel with cold water, and as I planted the cabbage, I poured the solution on and around it, and did not use it any more for the same crop, and out of from 200 to 250 plants I had but about 15 cut, those I had replanted and watered again with the solution and they did not trouble me any more this time.

I tried it again last fall on another piece of ground in the same garden, with about the same result.

I think if the solution, made much weaker, was used once a week, until the cabbage was too hard for them to cut, it would keep them off entirely.

I have not tried it on anything but cabbage.—[Southern Cultivator.

Estimating the Weight of Cattle by Measurement.—Many experiments have been made by graziers and salesmen to ascertain the net weight of cattle by measurement, and a number of rules and tables have been formed from the results obtained. None, however, can be regarded as absolutely correct. With the most accurate measuring is required a practical aquaintance with the points and forms of animals and allowance must be made according to age, size, breed, mode, and length of time in fattening, etc.; conditions which require a practical eye and lengthened experience to correctly appreciate. We have found the following method to lead generally to trustworthy results:

Measure carefully with a tape line from the top of the shoulder to where the tail is attached to the back; this will fiive the length. For the girth, measure immediately behind the shoulder and fore legs. Multiply half the girth by itself in feet, and the product will give the net weight, in stones of 8 lbs. each. For example, with an ox or cow 5 feet in length and 7 feet in girth the calculation will *be as follows:*—

Multiply half the girth by itself itself in feet - - - - -	3.5
	3.5
	12.25
Multiply by the length in feet -	5
Weight in stones - -	51.25

—[Canada Farmer.

Hilling Indian Corn.—A correspondent of the Germantown *Telegraph* speaking of the practice of hilling corn, says: "Constructing large conical hills, on land which is light and dry, must inevitably tend to increase the effects of drought, inasmuch as it exposes more surface to the atmosphere, and consequently increases ærification at times when all the moisture contained in the soil is required for the support and sustenance of the plants. When rain falls, the conical hill conducts the water from the roots to the centre of space between the rows and hills, very little of the fluid being retained about the plants, without which they would *immediately* languish and decay. On light soils, hilling is always disadvantageous to the crop. Every *fresh stratum of earth placed over the roots* causes a protrusion of a new set of laterals, to the detriment of those previously formed. This exhausts the energy of the plant, without increasing, in any great degree, its powers of appropriating food from the surrounding soil, as the first-formed roots cease to grow as soon as those caused by the disposition of new soil are developed, and in a short time will be found to have lost their vitality and become mere worthless appendages"

Music at Home.—*No family can afford to do without music. It is a luxury and an* economy; an alleviator of sorrow, and a spring of enjoyment; a protection against vice and an incitement to virtue. When rightly used, its effects physical, intellectual and moral, are good, very good, and only good.

Make home attractive; music affords a means of doing this. Cultivate kindly feeling, love. Music will help in this work. Keep out angry feeling. "Music hath charms to soothe the savage breast." Be economical. Pleasure, recreation, all must have, and *no* pleasure costs less *in proportion to its worth* than home music. *Make your sons and* daughters accomplished. What accomplishment is more valuable than music? *Fit your* daughters to support *themselves in the future,* if need be. *There has been* no time in many *years when* any young lady having sufficient knowledge to teach music could not pleasantly earn a support in that way.

"But," some may say, "I have no ear for music, nor have any of my family." Probably not one of you has ever tried it faithfully. Perhaps your sons had no natural "ears" for reading, or your daughters natural hands for writing; and certainly unless they had learned these things they would never have been accomplished in them. Music does, indeed, come more naturally to most people than many other accomplishments that are next to universal; yet it does not come to all without much time spent in careful cultivation.

The one best means of introducing music to the family, and inducing its cultivation is to procure a good musical instrument. If none of your daughters or sons can play at all, yet if they have a good instrument at hand, some of them will learn. In almost every family this will be the case. Buy an instrument and try the experiment; if it succeeds only to a very small extent, the cost will be repaid many fold.—[American Agriculturist.

—Every townsman, every villager, thinks his own place the most scandalising one in the universe.

—Words are oftener the substitute of thought then its vehicle.

—The accuser of men to God is no less the accuser of God to men.

—Despair not. The course of God's providence may be as His rivers.

—Of all animals, man is the only one that is upright in his posture. Let him be so in his conduct.

DESERET ALPHABET.

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ᕕ ᑘᗺᓴ8ᓗᒐ ɤə ᒉᑊ ᑘəᑊ ɤ† ᑘ†И6 ᑘᒋᑐᓗᓴᗺᑐᓗᓴᒉ, ᓗᓴᗺ ɤᓗᒉ †ᓴ ᑊ†ᑘᗺᑊᗺ ᒉᑊ ɤ† OL ᔕᑲ ᑘᔕᗺ. ᗺə ᓴᔕᒉ ᑭ38ᒉ† ᒉᑊ ᑘO ᗺᒉ ᔕᑲ ᑭ†6 8ᕕᒉ, 8ᒉᑐᓴᗺ ᓴᔕᒉ †ᓴ ᑐᓴ əᑲᒐ L†И; ᑭᔕᑊ ᑭə DOᓗL ᑭᗺᔕᒉ8Oᓗᑲᑊ ᑊᒐə6ᓗL ᑭ†ᒉ.

ᑭᗺ3ᑊ ɤ† ᗺᒋᑊᗺ ᔕᑲ 3 ᑘ†И †6, ɤ3ᑊ †6 ᑊᗺᑊ: ᓗᓴᗺ ᑭᑫ ᑐ3 83 ᒋᓴᒉᑊ ᑭ†ᒉ, ᑭᗺᔕᒉ ᗺᑘᓗᒉ ɤ8? ᑭᑫ8O ᑘəᑊᓗL ɤ† ᑘᒋᑐᓗᓴᗺᑐᓗᒉ ᗺᓗᒐ ᑭəᒐ ᓴO əᑲᒐ L†И: ᓗᓴᗺ 3 ᗺᕕ6 ᑐᓗᓴ'6 ᑭ8ᑊᒉ ᗺ†6ᒋᑊᓴᓗL ᗺOL ᒉᕕᒉ ᓗᓴᗺ ᑭᒋᑭᒉᑐᓗᓴᒉ.

MISCELLANEOUS.

Purity of Character—Over the plum and the apricott there grows a bloom and a beauty more exquisite than the fruit itself—a soft delicate flush overspreads its flushing cheek. Now, if you strike your hand over that, it is gone. The flower that hangs in the morning, impearled with dew, arrayed as no queenly woman ever was arrayed with jewels, once shake it so that the beads roll off and you may sprinkle water over it as you please, yet it can never be again what it was when the dew fell silently on it from heaven. On a frosty morning you may see panes of glass covered with landscape—mountains, lakes, trees, blended in a beautiful fantastic picture. Now lay your hand upon the glass, and by a scratch of your finger, or by the warmth of your palm, and all the delicate tracery will be obliterated. So there is in youth a beauty and purity of character which, when once touched and defiled, can never be restored; a fringe more delicate than *frostwork*, which when torn *and broken, will* never be re-embroidered. He who has spotted and spoiled his garments in youth, though he may seek to make them white again, can *never wholly do* it, even were he *to wash them* with his tears. *When a young man* leaves his father's house with the blessings of his mother's tears still wet upon his brow, if he once lose the early purity of character, it is a loss that he can never make whole again. Such is the consequence of crime. Its effects cannot be eradicated; it can only be forgiven.

The Result.—Any man who fancies that we are going to get to Richmond without further and most determined fighting, is mistaken. The men we fight are Americans. They are free-born citizens, and of the proudest of the proud. The rebel army of Virginia is composed of the *elite* of the Southern people. It reckons in its ranks men of education and position, full of the pride of family, and accustomed to exalt courage into a God-like virtue. They are burning with a passionate antipathy to a people whom they have thoroughly misunderstood, formerly despised, but are now learning to respect. They are not to be cowed, though, when thoroughly vanquished, they will have the manhood to own it. But, until they are vanquished, they will fight with an energy and a desperation that must command the admiration of every heroic spirit, even while deploring their folly and despising their cause. The body of Lee's army is made of veterans, who are used to exposure, enured to discipline, familiar with hardship, and are unshaken by the thunders of battle. Such troops can be beaten only by a succession of desperate struggles. Nor are they likely to become demoralized. They will yield to an inevitable necessity, only when they recognize it as inevitable. That they will be made to feel this, we haven't the slightest doubt.—[Washington Chronicle.

The Art of Being Polite.—First and foremost, don't try to be polite. It will spoil all.

If you keep overwhelming your guests with ostentatious entreaties to make themselves at home, they will very soon begin to wish they were there. Let them find out that you are happy to see them, by your actions, rather than your words.

Always remember to let bashful people alone at first. Trying to draw them out, has sometimes the contrary effect, of driving them out—of the house.

Leading the conversation is a dangerous experiment. Better follow in its wake, and if you want to endear yourselves to talkers, learn to listen well. Never make a fuss about nothing—never talk about yourself—and always preserve perfect composure, no matter what solecisms, or blunders others may commit. Remember that it is a very foolish proceeding to lament that you cannot offer to your guests a better house, or furniture, or viands.

It is fair to presume that their visit is to you, and not to these surroundings. Give people a pleasant impression of themselves, and they will be pretty sure to go away with a pleasant impression of your qualities.

—He who, in his perplexity, resorts to falsehood, may seem secure for a little while, but is sure to be soon overwhelmed with greater perplexity than before, just as the man who, in a shower, takes refuge under a tree, is protected at first, and then finds himself worse drenched than ever.

—Most murderers die in a very pious frame of mind, expecting to go to glory at once; yet *no man believes he shall meet a* larger average of pirates and cut-throats in the streets of the New Jerusalem than of honest folks that died in their beds.

—For a grand nature in ruins we may have a mournful and tender reverence. For a nature which we thought grand, but which proved to be petty, we have only contempt.

—Every man's heart is a living drama; every death is a drop scene; every book only a faint footlight to throw a little flicker on the stage.

LOST,

A RED COW, with star on forehead, square crop and under-bit in each ear, branded J.S.K on left hip. The finder will be liberally rewarded by applying to KIMBALL & LAWRENCE.
40-tf East Temple Street.

LIME, WHITE LIME,

ON SALE at the City Depot, 17th Ward, and at the Hot Springs Lime Kiln.
WOOD AND COAL WANTED.
F. J. P. PASCOE.
37-5* 17th Ward, G.S.L. City.

BLACKFOOT BUTTE FERRY.

WE take pleasure in announcing to the public that we have the

BEST, SAFEST and CHEAPEST FERRY

on Snake River, and are prepared to transport any amount of Stock, Wagons, Freight, &c., on the shortest notice.

EMIGRANTS and FREIGHTERS to BOISE MINES, EAST BANNACK, and VIRGINIA CITIES

will find the main traveled, nearest and best roads by way of this Ferry. Other ferrymen and their runners say to the contrary notwithstanding.

We return our thanks to the public for their patronage during last summer, and have no doubt but we will merit a continuance of the same, as we are running at PRICES THAT DEFY COMPETITION.

MEEKS & GIBSON,
31-3m* Proprietors of Lower Ferry.

MILLINERY AND FANCY GOODS,

OF THE MOST SUPERIOR QUALITY,

AT

MRS. MARIAN PRATT'S,

One Block North of Union Square, 19th Ward.

Country people are respectfully invited to give her a call.

39-3m* PRODUCE TAKEN.

BATTALION BALL.

THE Members of the MORMON BATTALION will hold their Anniversary Ball, at the Social Hall, on Saturday, 16th day of July.

It is hoped that as many of the Members as can make it convenient will attend.

A Meeting of the Members will be held at the 14th Ward School House, on Sunday, the 26th inst., at 4 o'clock, p.m., to complete arrangements.

Will some person in each Settlement please report to the undersigned how many will like y be in attendance.

EDWARD MARTIN,
38 1mt 14th Ward, G.S.L. City.

AN ORDINANCE

Amending an Ordinance entitled An Ordinance in relation to Crimes and Punishments.

BE it ordained by the City Council of Great Salt Lake City, that Section 22, of "An Ordinance in relation to Crimes and Punishments," passed March 16th, 1860, be amended by striking out the whole of said Section, and inserting in lieu thereof the following, to wit: Any person or persons (except those lawfully authorized) tearing down, mutilating or otherwise defacing any Ordinance, Bill, Poster, Advertisement, or other paper of a business or legitimate character, posted up within the limits of this City by any public officer or any other person or persons whomsoever, shall be liable to a fine of not less than one, nor more than fifty dollars for every such offence; one half to go to the person or persons giving information of such breach of Ordinance, or, the offender may be punished by imprisonment for a term not to exceed twenty days.

Passed June 23, 1864.

A. O. SMOOT, Mayor.

ROBERT CAMPBELL,
City Recorder.

This certifies that the foregoing is a true copy of the Ordinance passed June 23, 1864.

Given under my hand and the Corporate Seal of Great Salt Lake City, this 24th day of June, 1864.

ROBERT CAMPBELL,
40-3t City Recorder.