

OUR CANYONS ARE SOIL FACTORIES

Warning and Instruction From Recent Floods of Ogden River.

NATURE'S FIELD LABORERS

Include Floods, Snow and Land Slides, Rains, Sunshine, Frost and the Burrowing Animals.

This is a good time for visiting any of the canyons of Utah, in order to observe the processes of soil making. Our canyons are great soil factories. They are nature's mills for the breaking, grinding and pulverizing of the rock, into soil, and for carrying it into the valleys for the service of man in agriculture. A flying trip through Ogden canyon, since the recent heavy floods caused by the interest to the river, was so full of interest to the writer that something of it might be written herein as one topic on the soil of Utah.

A SCENE OF BEAUTY.

As you enter the canyon from the north, the morning sun strikingly illuminates the vast snowfield that has higher valleys, a snowfield that has everywhere disappeared from the lower areas of the state. The contrast between the brilliant white of the snow and the dark, rugged, and craggy rocks of the canyon walls, makes a beautiful picture. The snow is not only on the high peaks and ridges, but it is also in the deep, dark, and shadowed crevices of the canyon. The snow is not only on the high peaks and ridges, but it is also in the deep, dark, and shadowed crevices of the canyon. The snow is not only on the high peaks and ridges, but it is also in the deep, dark, and shadowed crevices of the canyon.

WORK OF THE RIVER.

Below, in the bed of the canyon, is the restless river, still grumbling, foaming and roaring somewhat, as a reminder of its late irresistible fury when it hurled along boulders weighing

tons and swept away bridge after bridge in its plunging torrent. As the river rolls on, still swollen, the sound of colliding stones is occasionally heard, and the stream seems to be talking in a noisy and impressive monotone. But it is only the sounds of its action; the river is at work; and most important to us and vast beyond our belief, the amount of the work that it is now doing in our behalf. It is making, shifting, and transporting the elements of a rich and fertile soil that it will presently deposit in its bed, on its banks, or in the swamps at its mouth. With every slight increase in its velocity, it picks up hundreds of tons from its bed; with every decrease in its velocity, it deposits like amounts. The law of its carrying power is that if the velocity be doubled, the transporting power will be increased 64 times, or as the sixth power of the velocity. It is this fact that explains the carrying of enormous stones in times of floods and freshets, or even of high water. And so the stream works on, almost as with conscious purpose, to make and transport soil.

WORK OF THE SNOW AND FROST.

Here and there were the gravel beds and stones which it had deposited on the banks as it overflowed; occasionally yawning the chasms which it had cut into the banks and the macadamized road though protected by heavy masonry. But everywhere were the evidences of the snow-frost, the landslides, the rock-slips, and the rock-rolls that had covered the road in places and had filled the swollen river with the earth, sand, gravel, and stones, which it swept so easily and so swiftly to the lower levels and on into the valley and the lake below. These landslides and snow-slides would have been fewer in number and far less terrible if the destructive power of the canyon sides had been covered, as they once were, with the magnificent "God's first temples"—which the people have so thoughtlessly and so ruinously cut down for firewood. As we drove along, little balls of earth started trembling from the mountain side and rolled down into the water or upon the road. Small stones seemed to be falling from the sky, and streams of the frost had just been doing its principal work. The water from the thawing snow had run down the cliffs and had filled their crevices with the most destructive of all the forces of nature—water. That night, it had been very cold. As we drove up the canyon, the breeze had met us face to face and we were chilled by it. Despite our wraps and overcoats, almost, to the bone. The water froze into ice in a thousand crevices on the face of every cliff, and as it did so, the expansive force of the freezing water split off thousands of chips of almost every size. These fell at the base or rolled into the river. This crumbling of rock is the beginning of soil making. The river at flood time carries these fragments bodily outward, but at all other times it merely shifts and rolls sand and silt that form the body of the soil in lower lands. The soil rolls, floats, or rushes onward, carried by the river. Each particle of earth, each grain of sand, each piece of gravel, and each larger stone, awaiting its chance, swims or rolls onward, with every increase in the volume and velocity of the busy and tireless stream that works on with its thousand hands, arms, and levers, to supply the valleys with its ground-up product.

As the sun shone upon the dry banks of soil, clay, and gravel, the expansive force due to heating caused numerous particles to roll down as they passed. The process that goes on all day long, all night, and from season to season. As the land alternately heats and cools, the unequal expansion and contraction among the particles, clods, and the banks, causes them first to shift uneasily among themselves and finally to break off in pieces and roll down the hillside. The amount of this expansive force is very great, and its results, when carefully observed are often truly astonishing. Not only is the clay bank or the gravel bank loosened and disintegrated by the sunshine, but the solid rock is opened, sometimes with explosive force, by the unequal heating and cooling of different parts of the rocky mass at different times in the day. This is especially true in dry and hot summer like our own.

WORK OF THE WIND.

As the keen wind swept along the mountain side, its sound was accompanied by others, due to the shifting of leaves and debris, and the continued rolling down of the earth particles loosened by frost and sunshine. And we can imagine the vast work in soil making done by the moving air masses when we recall how the dust-storms carry the finely ground particles from the hot plains in summer and scatter them everywhere as this fine dust, or utilizing material; or when we read of the sand storms of the desert, and how the winds, when they blow in one direction more than another, gradually bury forests, villages, towns, obliterate the ruins of ancient cities, and fill ponds, lakes and shallow bays, change the course of rivers and cover the bed of the ocean itself with a fine powder that is one of the most curious discoveries of deep sea soundings.

WORK OF THE ROOTS.

At the Hermitage, where the river has cut into the land, masses of tangled roots are to be seen, forming a network that had so bound the earth together that the cutting of the river was stopped by them. This is what the roots generally do—they bind the earth together and prevent the rain and the flood from washing away the soil. But they do more than this. As the trees stand on the mountain sides, their roots grow in thin films of soil, and the roots of the most curious discovery of deep sea soundings. The roots of the trees are to be seen, forming a network that had so bound the earth together that the cutting of the river was stopped by them. This is what the roots generally do—they bind the earth together and prevent the rain and the flood from washing away the soil. But they do more than this. As the trees stand on the mountain sides, their roots grow in thin films of soil, and the roots of the most curious discovery of deep sea soundings.

THE LEAVES MAKE HUMUS.

Along the river, the boughs and

branches dipping into the stream, were covered with fringes of lichen; the bushes of knobby-leaved, but bright red, as were also the wild roses and haws; the maples and cottonwoods were gray and the remnants of the virgin's bowers were still silky in the sunshine. As the leaves fall, they are carried down the stream, and the main part of that black soil of the canyon which is sought for lawns and flowerbeds, this mould is so fertile and so valuable that it is highly prized in the production of expensive vegetables or the growth of the finest ornamental trees and shrubs. This black soil is called humus. The oak bushes in the canyon make it in large quantities, and all the trees and bushes produce more or less of it. The black mould lies there till a flood in the river bottom or a heavy rain on the mountain carries it into the river, to be deposited finally on the delta or river bed lower in the valley. It is held upon the mountain sides as long as the latter are not melted by oak brush and similar vegetation; but when these shrubs and undergrowth have been removed, this fine food of the pine and balsam is washed into the river and worse than washed into the river, so caused for it is lost in the lake, or strewn in disorder over fields and highways where it is not needed.

WORK OF THE RAIN.

As to the soil work of the rain and snow, everyone has observed and it is hardly necessary to refer to it. But wherever the trees and the undergrowth are removed from the mountain, destruction begins and is carried forward at an enormous rate. First the rich loam of humus is washed away and carried into the lake by the river. Then the soil is attacked. As the trees and the shrubs decay, they no longer enable the soil to resist the action of the rivulets formed by the falling rain, and away, and only the bare rock remains, upon which no trees can grow. The soil layer, the result of the work of centuries by natural agents, is washed into the river, and the desert-like, unfit for animal shelter, robbed of its beauty, and deprived of its rain-forming power of cooling the atmosphere in the daytime. This work of destruction is everywhere going on in the mountains of Utah. Every patriotic citizen should strive to arrest it. Hundreds of square miles may already have been rendered barren and desolate. The destruction of our forest trees in the mountains is the crime of our western civilization. Hills formerly green, food-producing, game-supplying, resort-providing, and moisture-producing, are rapidly changing into dry, blistering rocks. Barren cliffs replace the verdure covered slopes, the impressive groves, the shady woodlands. The springs dry up, the birds cease to sing the animals disappear, the summer air grows hot as the blast of a furnace, desolation, silence, a scene of death and horror, replaces a scene once as beautiful as it was useful, and as glorious in our western lands as the bowers of Eden or the oases of eastern deserts.

WORK OF THE AVALANCHE.

Where the mountain is steep and a hollow permits the snow to accumulate in drifts, its weight may cause it to rush down the mountain side, carrying shrubs, trees, rocks and soil with it. The presence of trees will prevent the smaller slides from getting a start and will thus often prevent the larger ones from beginning their course of destruction. These slides are agencies of soil

transportation, frequently sweeping down the surface soil and leaving the bedrock exposed and barren. The light, dry snow may be plied high when swept and drifted about by the winds, and may roll downward in great, loose masses; but the kind we saw here had evidently been of the more destructive variety. The snow masses became water-soaked from the three days' rain, and the damp, cohering snow, perhaps beginning with a small rolling ball, soon gathered such force as to sweep down the soil, gravel, rocks and trees, leaving the bare rock exposed. The rolling snowball changes into a sliding avalanche, which carries down every movable object. When the soil is loosened with rain, the avalanche of ice and snow may become a landslide, carrying hills of gravel or whole surface areas of soil along with it. Landslides on a small scale had apparently occurred at various points along the canyon. The impression made upon the mind of the observer is that this vast soil factory has lately been shipping its product to market in enormous quantities; and that if future slides with all their dangers are to be guarded against, systematic forestry and tree planting should be resorted to in Ogden canyon. This is true, in some degree, of all our canyons, but it is more noticeable just now where people have been put to inconvenience by the destructive action of the snow everywhere removing the soil from our mountain sides.

WORK OF ANCIENT WATERS.

We noticed the masses of conglomerate rock that must have been formed by an arm of the ancient Lake Bonneville, which reached far up the canyon. The gravel was carried into the lake, mixed with fine sediment there, and compacted under water into a concrete. Many stratified rocks stand in layers on their ends, running upwards for hundreds of feet in the air, and some of them twisted and curled into shapes and distortions wonderful to see. These strata must have been formed under water far more ancient and then stand on end by the crumpling of the earth's crust which reared them into mountains. As the mountains slowly rose, the river cut slowly down, exposing the tilted strata as a remarkable open chapter of earth-history. The lower part of the canyon is of metamorphic rock, still more ancient, no doubt, and formed by the combined agencies of heat and water probably in archaic times. The story of these rocks is an interesting one, but cannot be told further in this place.

WORK OF THE BURROWERS.

The work of the chipmunk and squirrel, the rabbit and badger, and other burrowers, deserves a further comment. These not only shift but also pulverize the soil till it is fit for immediate use. At first sight, their contribution to the total result seems inconsiderable, yet it is not so. In the earth, we must reckon these creatures among our most important field laborers. Upon their usefulness we can find an unanswerable argument for their preservation. They should not be destroyed in the canyons, but may be kept out of the valleys if necessary for the protection of root crops or orchards.

ANIMALS TILL THE SOIL.

The animals which till the soil for the use of man are rarely considered as his co-laborers and helpers. Yet they give him a vast amount of aid, and without their patient industry it is doubtful whether or not man could expect an existence on the earth's surface.

All animals benefit the land by manuring it, and the deposits of guano remain today as our most valuable fertilizers. The bones and bodies of animals likewise enrich the soil. In addition to these benefits, burrowing animals plow the land for man's advantage, draining it, adding leaves, grass and remnants of their food—acorns, nuts, grains, etc. They aid in the disintegration of rocks into soil. The soil is like a film of dust spread over an immense, solid rock; for the soil is only a few feet, the crust of the earth at least hundreds of miles in thickness and composed of solid rock, beneath which is the vast and unexplored interior. Rain and air are admitted into the soil and rock by the burrows of animals; and these agencies cause the decay and crumbling of both these materials.

GOPHERS AND PRAIRIE DOGS.

The ground squirrels of our own country burrow and lay up stores for the winter. They live in villages and plantations, and make extensive excavations in proportion to their size, and lines its nest with leaves and grass, storing in one burrow a quart of nuts, a peck of acorns, two quarts of grain and smaller quantities of other vegetable food. The prairie dogs, whose villages cover many square miles, undermine the ground with their burrows, and expose the soil to the fertilizing agencies of weathering. The gopher, too, takes possession of certain prairies, almost to the exclusion of other animals, and thereby provides the ground in some places for hundreds of square miles. Each lives in a burrow of his own, and there are separate burrows for the storage of winter food.

WORK OF BEETLES.

It might not be suspected that the smaller animals have any part in this industry of preparing the land for tillage. But even the beetles contribute to the total result. They cover decaying animal excretions with soil which they bring up from the earth, and thereby provide a suitable, well manured bed in which grasses and certain flowers may thrive. The Dumble Dor beetle, instead of bringing up earth to cover the droppings of animals, sets to work to remove them altogether. It carries down into the grass roots as much as it can in a hole a foot deep and there lays one egg. Then it crawls up again for more, and so continues. As many as 40 or 50 of its burrows have been counted in one square foot. Beetles of the carrion order are plentiful in temperate countries. Some of them bury the bodies of small dead animals, in which to lay their eggs. Some species of burying beetles are found almost everywhere, working sometimes singly, sometimes in companies, wherever they find dead bodies, scraping away the earth from beneath the carcass and then covering it up. Then they lay their eggs in it. One beetle has been known to bury a mole 40 times its own weight, while four together have been known to bury a crow. Four beetles which were kept and watched for 50 days buried in that time four frogs, three small birds, two fish, one mole, two grasshoppers, the carcass of a fish, and two pieces of ox liver. Such beetles are not found in tropical plains and deserts where the heat quickly dries up the flesh of dead animals; but in the temperate regions where most needed, there they most abound.

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I Will Mail Free to All Who Write a Trial Package in Plain Wrapper.

I am saving thousands of drunkards every year and restoring them to their loving wives and families. I will save many more as a result of this advertisement. To all who write me, I will send free by



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The Drunkard Cannot Save Himself—You Women Must Do It for Him.

Mail in plain wrapper, so that no one can know what it contains, a trial package of Golden Remedy for the Liquor Habit. Though absolutely harmless, it never fails to cure the worst cases of drunkenness, no matter of how long standing. It can be administered without the knowledge of the subject in coffee, tea, soup, milk, etc., and he will be cured in a few days and cured so he will never drink again. Golden Remedy contains no dangerous drugs or minerals. It does not ruin the digestion or destroy the tissues of the vital organs and endanger life and health. It counteracts and expels from the system all alcoholic poisons and puts an end to all craving or appetite for liquor. Under its influence the subject regains his health, will-power and self-respect. His eye becomes bright, his brain clear, his step elastic, his vigor returns, and he once more feels and looks like a man.

If you have a beloved husband, son, brother or father who is afflicted, send your name and address to me at once in the coupon below.

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If you fill out the blank lines below with your name and address, cut out coupon and send it to me, I will send you absolutely free, by mail, in plain wrapper, a trial package of my Golden Remedy. You will be thankful as long as you live that you did it. Address: Dr. J. W. Haines, 903 Glenn Bldg., Cincinnati, Ohio.

FIRST WHITE WOMAN TO CROSS AFRICA.

Mme. Cabra, the brave wife of one of the leading officers of the Belgian army, has recently completed a journey of eighteen months across the dark continent. In company with her husband Mme. Cabra left Belgium in 1905



for German East Africa, traveling thence through Zanzibar, Mombasa and Entebbe. From the capital of Uganda she took the route followed by the Duke of Abruzzi and was several weeks going down the Congo. While traveling Mme. Cabra adopted the costume in which she is pictured herewith.



WOMAN MAKES REMARKABLE BID FOR LAND.

It required a roll of paper 90 feet long to contain the bid of Mrs. Adele French of South McAlester, I. T., for 1,820 tracts of government land, and it took the force of recording clerks four days to transcribe the records. The lands were on the old Kiowa and Comanche reservations, and Mrs. French was the highest bidder on six tracts. She will make her home on the lands, and begin farming it this coming spring.

A CARD.

This is to certify that all druggists are authorized to refund your money if you are not cured by using Dr. J. W. Haines' Golden Remedy for the Liquor Habit. It cures the cough, heals the lungs and prevents pneumonia and consumption. It cures the headache, restores the appetite and gives a yellow package. Refund substituted, sale by F. J. Hill Drug Co.

"Perrin's" long gloves.

They're the best, that's why Walkers handle them. The line is confined exclusively to us in this city.

In the ready-to-wear section, style and elegance go hand in hand with economy—The suits and costumes this season are very reasonable when the excellence of fabrics and making are taken into consideration. Splendid assortments of fetching styles in tailored jackets and Eton suits are now on exhibition, the popular checks and stripes predominating—then there are the pretty Eton shirt waist and jumper suits, destined to great popularity this season.

Our selection of tailored suits will range in price from \$17.50 to \$150.00 each. Silk suits at \$27.50 up to \$75.00. The jumper suits start at \$22.50 and go up to \$60.00.

Interesting at this time of year is our fine line of silk and satin rubber coats—Very dressy and useful—priced from \$30.00 to \$45.00 each.

Fancy goods.

A splendid new line of bracelets, collarettes, beauty pins, pearl beads, buck combs, barrettes, jeweled belt buckles crosses, etc., in all the newest conceptions. Great range of prices. Kinds to suit any one.

Fine assortment of new spring styles in belts also on exhibition, beaded and plain elastic belts, gilt belts, silver belts, leather belts, etc., in newest imported ideas.

Souvenir salve boxes worth 75c each; very special 40c

Seal envelope bags in black, tan, grey and brown. Worth \$1.75 each; choice \$1.19

Daily arrivals keep things interesting in the knit underwear department.

Among the splendid lines for spring are the women's silk vests priced at \$1.25, \$1.50, and \$2.50 each; Lisle vests, the hand crocheted kind at \$1.00 and \$1.25; also a handsome line of Lisle vests with fancy crocheted yoke at 50c the garment.

Light weight merino union suits with high necks and long sleeves, or low neck and no sleeves; both styles being ankle length. These per suit \$1.50

Light weight cotton union suits, lace trimmed, white only. A very good value at 75c

Swiss ribbed union suits, white only, low neck and no sleeves, knee length—suit \$1.25

We highly recommend Ruben's infant's shirts for the little folks. All the current qualities and weights in stock.

Children's white cloth and serge tam-o-shanters and auto caps, with beautifully embroidered emblems, they're worth \$1.50, \$1.75 and \$2.00 each—Monday and week you select at \$1.10

Patent leather fairs, faced in red, blue or brown cloth. Splendid values at \$1.75 each. Choice Monday and week \$1.10

Juvenile section—first floor—annex.

Trade compelling wash goods specials for Monday and Tuesday only.

Embroidered flannels, hemmed and hemstitched, worth up to \$1.00 the yard. Monday and Tuesday choice 59c

Shrunk, linen finish, white duck suiting, worth 18c the yard Monday and Tuesday 12c

Roller towels, made of Barnsley linen, 2-1/2 yard lengths; worth 50c each. Monday and Tuesday 29c

Roller towels made of Barnsley huck, worth 65c each. Monday and Tuesday 39c

French nainsook, yard wide, worth 25c the yard, in twelve yard bolts; Monday and Tuesday, the bolt \$1.85

Fancy white Swisses, embroidered dots in colors and black; worth 25c the yard. Monday and Tuesday 13c

French linen lunch cloths and scarfs, worth up to \$4.50 each. Monday and Tuesday \$1.98

French linen lunch cloths up to 54 inches square, worth up to \$1.50 each; Monday and Tuesday \$3.95



We've certainly "started something" in the go-cart and baby buggy business

Such a collection as we are showing would interest anyone and at the prices quoted they're wonders—Many we could not get set up before, will be on exhibition Monday and the reductions will continue as they were last week.

Everyone remarks on the beauty of the designs and the excellence of the construction. They're made to last as well as to look well.

Prices a third less than you see them quoted elsewhere. Sale in the "Busy Basement"

Excellent black Heasterbloom petticoats, made with wide umbrella flounce and trimmed with tucks and double ruffle—A very extra value at each \$1.75

Undermuslin section—first floor—annex.

Handsome plaids are the latest in men's neckwear.

Beautiful examples of these now shown in our "Men's corner." They are full French four-in-hand style and the prettiest plaid combinations you ever saw. Choose while the assortment is good 75c

The new "dinner shirt" interests the men just now. It's all white with pleated bosom, cuffs attached—the price \$2.00

Handsome shirts of fancy madras in light colors; negligee style, cuffs attached. Patterns neat and small. \$1.75

Our "dollar" shirts are becoming more popular every day. A splendid line—cuffs attached or detached. Big range of colors and patterns to choose from.

Handsome shirts in plaids and stripes, big assortment of patterns; cuffs attached; \$1.25

Pajamas and night shirts. Comprehensive assortments. Pajamas \$1.25 to \$3.50; night shirts 50c to \$4.00

Dent's gloves, \$2.00 the pair. Boston gloves, 25c and 50c. Shawl knit hose, 25c the pair. Brighton gloves, 25c the pair.



NOTED ENGLISHMAN BELIEVES SOCIALISM A DREAM.

The distinguished English writer and lecturer, W. H. Mallock, now in this country, delivered a discourse recently at Columbia university, in New York City, in which he derided Socialism as its adherents now promulgate it and said that it is "an intellectual mare's nest." Socialism, Mr. Mallock contended, proposes to alter the economic arrangements of mankind's affairs and of the great wealth controlled by the many. Society, according to the socialists, must be reorganized and the many holding less than a balance of wealth, receive, without any real exertion, an indefinitely increasing share of that wealth. Mr. Mallock disavowed the argument and formula of Karl Marx, the great Socialist, who maintains that "all wealth belongs to the laborer," and says that the premise is incomplete and that the end is all wrong and can never be put into effective operation. Mr. Mallock will make a tour of the United States in exploitation of his ideas regarding this doctrine.

FOR BILIOUSNESS AND SICK HEADACHE.

Take Orin's Laxative Fruit Syrup. It restores the stomach, aids digestion and acts as a gentle stimulant on the liver. Orin's Laxative Fruit Syrup cures biliousness and habitual constipation. It is a natural and safe remedy. It is not a cathartic or gripper and it is mild and pleasant to take. Remember the name Orin's and refuse to accept any substitution. For sale by F. J. Hill Drug Co.

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No streaking and no dirt. Wall paper, fresco, frieze, and etc., cleaned by new Orin's Schramm's Drug Co. both phones.

Be sure and visit the Chamber of Commerce, 54-55 Third Street. Permanent exhibit of Orin's Remedies and products. Free admission.