AGRICULTURAL.

Starving Trees.

Drought often kills trees the first summer after they are planted, but if a tree has been for some years firmly rooted it may lose all its leaves in midsummer, and yet be revived by the rains of the next winter and spring. A tree which is supposed to be killed by drought had better be nursed than mourned over, and should not be cut down as a hopless case before the summer of the next year, according to *Garden and Forest*.

A tree which gives signs of perishing by drought ought to receive, sympathy and assistance. The wilting, turning yellow and falling of the leaves are signals of distress. Usually the tree is starving. It cannot assimilate and appropriate, solid substances, and as there is no water to dissolve its food it can neither eat nor drink.

But a tree of vigorous constitution, growing in its native soil, will endure a long and severe fast. Of course it will grow while it is starved, and in time it will die. But it should not be cut down because it is having a hard trial.

The trees that are soonest injured by drought have in most case nearly exhausted the soil in which they stand.

The treatment required is not merely a supply of water, but an improvement of soil. Grass and weeds should be removed from the ground about the tree as far as the roots extend, and a rich loam or suitable fertilizer should be copiously applied and partially incorporated with the surface soil.

If enough water is then given it from time to time to dissolve the new supply of food, the tree is likely not only to live, but to grow much more vigorously than before.

Great numbers of trees in our towns grow very slowly, become enfeebled, and perish at last, not on account of the drought alone, but because of exhaustion of the soil and an inadequate food supply.

The people of a town ought not to remain comfortably indifferent while the noble trees which embower their daily walks are starving to death. They should take measures for their relief. Very often it would be better not to plant so many trees unless they are taken care of afterward.

In many instances, Arbor-Day planting is the ceremonious murder of beautiful young trees, which are put into the ground with songs and orations, and apparently not thought of afterward.

He Fed Them.

A Cleveland correspondent sends to *The Companion* a story of a boy in that city who is commendably kind hearted and ingenious.

He had some chickens of which he had made pets. He and his father went to their work early in the morning, and while the rest of the family were away for the summer, it became a question how the chickens were to be fed with proper regularity.

The boy was equal to the occasion. He took an alarm-clock, and fastened it securely to one side of the barn by means of two spikes. Next he hung a bucket of corn to a rafter, and connected it with the clock by a stout cord.

He wound up the alarm and set it at four o'clock. At that hour the alarm went off, wound up the string, and tipped over the bucket. And so the chickens were fed by clock work.

The Management of Water in the Soil.

On of the most interesting subjects of investigation on which scientists have scarcely yet entered, is the best methods of controlling the water supply in the soil, or, in other words, how to get rid of a surplus of water when a surplus exsists, and how to conserve and use for the support of plants, the existing supply when it is deficient. This involves several questions of great interest; the depth of the soil that will transmit water, or in other words, the depth of an impervious subsoil beneath the surface; the capacity of the soil itself to hold watar without saturation, varying with the relative proportions of sand and clay; the amount of water any given soil is capable of supplying to growing plants by capillary action depending on its texture, and the proper method of manipulating the surface in order to get rid of superfluous moisture, and check the capillary action on the surface while allowing free action of the capillaries immediately beneath the surface. We will deal at present only with the last of these problems.

There are a few facts with which every farmer is familiar. He knows, for example, that in the month of July in a dry time he will have to dig down quite a distance in the meadow to find visible moisture, while in a well cultivated corn field adjoining he can find moist earth by scraping off a couple of inches of loose dirt with his foot. Why is this? He knows that if he goes into a clover field after a heavy rain the soil is thoroughly saturated with moisture—almost muddy—and that in a few days it has become wonderfully dry, that it is wetter in a wet time than a timothy meadow, and dries out with more rapidity; he knows that harrowing land after a rain dries i tout rapidly, and that harrowing or cultivating in a dry time gives the growing corn an increase of moisture. Why these well known results follow are not fully understood, and are interesting and important subjects for investigation. The most investigation that has ever been made on this subject, was by the Wisconsin experiment station in 1889. We have not space to go through these experiments in detail, but give only those conclusion which bear on the farmers' work for the next three months, with the caution, suggested by the auther, Prof. F. H. King, that further investigations are needed for their confirmation, as follows:

(1) A tool like a disk harrow, or like a curved-toothed harrow, which cuts narrow and comparatively deep grooves in the soil, leaving undisturbed ridges between them, tend to dry the ground rapidly and deeply.

(2) Tools like the plow and some forms of cultivators, which cut the whole surface of the ground, leaving a loose layer of soil on the top, tend to dry the loosened soil, while the loss of moisture from below by capillary action and evaporation is diminished.

(3) Deep plowing in the spring, especially if the soil is heavy, and if coarse material is turned under, would tend, unless prevented by early, heavy rains, to produce a deficiency of moisture for shallow-rooted plants, and for deep-rooted plants during the early part of the season, by partially cutting off the water supply at a depth below the roots.

(4) Shallow plowing or surface stirring would tend to diminish surface evaporation, and at the same time allow capillary action to lift water from below to the roots of young and shallow-rooted plants.

(5) Fall plowing and early spring treatment with tools like the disk harrow would tend to draw the water to the surface with the minerals held in solution, and thus concentrate the fertility at the surface for later use, thus preventing so much being lost by underdrainage.

The place where these suggestions are most profitable is in the corn field. There are times in the practical management of corn that it is very desirable to get rid of water but often in late years it is most desirable to store it. The first object is accomplished when it is needed by the use of the harrow or disk cultivator. That the result follows is known to every farmer who harrows a piece of land, a little wettish, and compares it the next day with the unharrowed land adjoining.

When it is desirable to conserve moisture in the corn field in a dry time, the farmer provides by the use of his cultivator, a mulch of dry dirt, below which he will always, except during hot winds, find moisture. In other words, he breaks the capillaries two or three inches below the surface, and by the loose dirt prevents the evaporation of water pumped up from below. The capillaries drop the water where it is needed for plant roots. When he plows ground for wheat in the fall, he harrows and rolls to make a solid seed bed, and by the use of the drill in sowing wheat breaks up again three inches of the upper surface, so as to have the ideal wheat bed, a solid bottom and loose top. It is on the same principle that some farmers harrow their winter wheat in the spring, to break off the top of the capillaries and preserve moisture below for the young plant. The whole subject is of very great importance, and it is to be hoped that in a very few years it will be so thoroughly investigated that the conclusions will be absolute, and not merely tentative. When this is done, principles underlying the old question of deep and shallow plowing will be so fully understood that there will be less room for discussion on that and kindred subjects.

When coal ashes are sifted they make the best material for the dust bath, and the coarser portion thrown on the yard assits in hardening the surface and protecting against mud, as well as providing gritty material; but when wood ashes are used they cause sores on the fowls by reason of their caustic propertfes, especially in damp weather. During very dry weather wood ashes may be used, as the hens will shake out all the dust from the feathers, which, however, is difficult when the atmosphere is humid.

The aim of the horticulturist, should be, of course, toward producing fruits of the very finest quality, but until buyers are better educated in this respect the man who grows fruit for profit must be sure to have such products as are attractive to the eye. If quality and appearance can be combined so much the better; but quality is as yet second to appearance in selling.

Shade has influence on the formation of humus in the soil. On all shady and moist places the earthworms are usually numerous which is a sure indication of an increase of plant food. A farmer who left a crop of clover on the ground an entire season, through carelessness, found, on plowing it under, that the land had greately improved, and as he had other fields for comparison, he attributed the benefit to the shading of the soil.

"I am not a vegetarian," says a correspondent of the London *Agricultural Gazette*, "nor likely to become one, still I feel convinced that if we wish to preserve our bodies in a pure, healthy condition and keep our minds bright and clear we must introduce vegetables far more largely than we do at the present in our every-day bill of fare."

Chivalrous Devotion.

At the most extensive aquarium in England, the Brighton Zoo, the female lobster recently cast her shell. She screwed herself up together on the toes and tail, and suddenly bent her body. Snap went the shell in its center, and the case of the back came away in one piece. The claws were her next care, and she worked away at them for a long time.

It was a proceeding of extreme delicacy, considering that all the flesh of the great claw had to be passed through the small base. During the operation one claw came off altogether, and this must have seemed to the lobster lady a serious misfortune, as it will not grow to its full size again until the second year. The tail and legs gave very little trouble, and the body, when thus undressed, proved to be of a pale blue.

The shell-casting over, the lobster sank on the sand, and this action seemed a signal for the attack of every creature in the tank.

The defenceless victim bide fair to succumb to the fury of her enemies, when the male lobster suddenly came to the rescue. Standing over his shell-less better half, he fought her assailants relentlessly. Day and night did he watch over her, until her shell was sufficiently hardened to protect her in fighting her own battles.

When this happy moment arrived, he deliberately picked up the old claw, broke it in his nippers, and ate the meat. He then dug a hole in the sand, placed in it the broken bits of shell, buried them, and piled a number of small stones above the grave.

Viticulture.

Grape culture in the United States and its industries represent a capital of $155,661,000 and employ 200,000 persons. In 1889 there were over 400,000 acres of land in vines, three-fourths of which were bearing, and produced nearly 600,000 tons of grapes; of these 267,000 tons were table grapes, 41,166 tons were used for raisins and 23,526 tons for dried grapes. The raisin product of California was 1,372,195 boxes of 20 lbs. each at $1 60 per box. Total value $2,195,510. California already produces 74 per cent. of the raisins needed for the United States. In 1890 the raisin crop was 2,197,463 boxes. In five years there will be vines enough in bearing to produce from 8,000,000 to 10,000,000 boxes. The average labor employed is one person to two acres of land to raise the fruit, the others are employed in the curing and manufacturing of the various productions from the grape. California has now more than half the vines. New York State and Ohio are the next. The average yield in New York State is 1¾ tons per acre, value $122.50 per acre. For table use $60,187 for wine $15,172.

The above is from a carefully prepared article in the April number of The American Agriculturist by H. Gardiner.

A CLERGYMAN'S TEMPTATION.

He Had to Allow a Young Man to be Arrested, But not in His House.

A prominent clergyman who is the representative in New York of a large publication society in Philadelphia recently found two strange men waiting for him in his parlor. They had a letter of introduction from the head of the Philadelphia society. The clergyman read it, and found that his visitors were detectives, and that their mission was to arrest a young man who had obtained employment in the office of the society in Philadelphia on the strength of a letter of recommendation written by the clergyman, and, a few days after he was put to work, had disappeared with a sum of money belonging to the society. The letter writer asked the clergyman to assist the detectives in finding the whereabouts of the thief. The clergyman was nearly overcome by the discovery of the young man's crookedness. He even ventured to doubt that it could be true. He recalled the young man's mother, one of the most devout and sweetest members of his congregation when he was pastor of a church up town six or seven years ago, and he remembered that she was now a widow. He pictured the boy—or rather one of the boys, for they were twins, and so near alike that only their intimate friends could tell one from the other—and he felt tempted to give the detectives no information. Then he decided that it was his duty as a clergyman and a good citizen to help carry out the laws of his country. He told the detectives to wait awhile in the parlor and he would go up stairs and try to find in some old letters the address of the young man's mother. He had not seen her for several years and had forgotten her residence.

While he was overhauling his papers there was a ring at the door bell.

Presently the servant came up and told the clergyman that a young man in the back parlor wanted to see him. He came down and was dumbfounded to find himself face to face with one of the twins. He fervently hoped that it was not the one that the detectives in the front room were looking for, and he asked with some hesitation, "Are you George or John?" The young man answered, "I am George." Then a great temptation came up in the clergyman's mind. Should he open the back window and let the son of the widow escape into the yard? No: he would do justice. But he was determined that the young man should not be arrested in his house. He excused himself to the young man and went into the front parlor. He walked up to the detectives and said impressively, because he felt that he was now acting as an agent of God, who, he believed, had sent the young man to him: "The one you are looking for is in the other room." Both detectives sprang to their feet as if dynamite had been set off under their chairs, and wanted to go immediately into the back room and arrest the young man. But the clergyman motioned them back to their seats, and said: "You may arrest him, but you must not do it in my house. Go out on the street and wait for him there. He will be the first person to come out of the house." So the detectives went out, and the clergyman, pale with suppressed excitement, returned to the back parlor and talked for a few minutes with the young man about his family and home. Then the young man left.

One of the detectives had stationed himself a few hundred feet east of the house, and the other stood about the same distance west of it. The young man walked eastward, and the detective quickly followed him. At Lexington avenue both detectives, without letting the few observers who were around know that they were making an arrest, simultaneously approached the young man from the rear, and quietly slipped their arms, after the manner of sportive friends, under the arms of the young man. He was as good at simulation as they were, and nobody guessed that they had told him the moment they locked arms with him that he was their prisoner. The clergyman says simply that it was a case of Providence. The young man may not look at it in that light.

THE DESTRUCTION OF ROMAN LONDON.

It was so Complete that Nothing Remains.

Later, when another kind of Roman influence began, London learned much, and took much, from Rome; but from Augusta—from Roman London—nothing. Roman traditions, Roman speech, Roman superstitions, linger yet among the southern Spaniards, though the Moor conquered and held the country for six hundred years. They linger, in spite of many conquests, in France, in Italy (north and south) in Roumania, in Anatolia. In London alone, of all the places which imperial Rome made her own and kept for hundreds of years, no trace of ancient Rome remains. When London next hears of the Eternal City, it is Rome of the Christian Church.

Compare the conquest of London by the men of Essex with that of Jerusalem by Titus. The latter conqueror utterly destroyed the city and drove out its people. One might have expected the silence of Silchester or Pevensey. No; the people crept back by degrees; the old traditions remained and still remain. Behind the monkish sites are those familiar to the common people. Here is the old place of execution—the monks knew nothing of that. Here is the valley of Hinnom, here that of Kedron. These memories have not died. But of the old Augusta nothing at all remains. Not a single tradition was preserved by the scanty remnant of slaves which survived. the conquest; not a single name survives. All the streets have been renamed; nay, their very courses have been changed. The literature of the city, which, like Bordeaux, had its poets and its schools of rhetoric, has disappeared; it has vanished as completely as that of Carthage. All the memories of four hundred years have gone; there is nothing left but a few fragments of the old wall, and these seem to contain but little of the Roman work—an old bath, part of the course of an ancient street, and the fragment which we call London Stone. Perhaps some portions of the Roman river wall have been unearthed, but this is uncertain.—*Harper's Magazine.*

A Matter of History.

A little girl who had heard her family talking about hysterics was present when a story was told at which her mother laughed immoderately. The child seemed much im pressed and looking anxiously at her mother-she said very gravely:

"Mamma, ain't you afraid if you laugh so much you will get historical?"

A BAD YEAR FOR WICKED AFRICANS.

Tribes that have been Hostile to White Enterprises Severely Punished.

The past year has been a very bad one for a number of tribes in Africa who have long been noted for their hostility to the whites. One tribe, the Kishobo, a couple of hundred miles inland from Zanzibar, have earned a very bad reputation on account of the roberies and violence of which commercial caravans have been the victims. For the first time in their lawless career they were much astonished three months ago by Major von Wissman, who sent an expedition against them, and gave them a very severe drubbing. His force confiscated 6,000 head of their cattle, a good deal of ammunition, and a large quantity of ivory. Two hundred of their warriors fell in the fight, sixty were wounded, and fifty were taken prisoners. The robber tribe was so completely humbled that they begged for the German flag, and asserted most solemnly that never again would they molest traders.

Less than ten years ago the Masai warriors of the lofty plateau extending north and north-west of Mount Kilima-Njaro were almost unknown. No white explorer had yet ventured into their territory. Native caravans trading between the Indian Ocean and the Victoria Nyanza would not pass through their country unless they were at least 1,000 strong. At a large meeting held in London to discuss the proposed exploration of the Masai country, Archdeacon Farler and other missionaries who lived a little east of Masailand, expressed the opinion that it would not be safe to go among this treacherous people, except in formidable force. The impression derived from the speeches of these whites, who knew most about the Masai, was that the natives were probably the most formidable in Africa, and that their country would probably not be thoroughly explored for many years. Joseph Thomson, an explorer of great resources and tact, did succeed, however, in getting through Masailand without any sacrifice of men.

During the past two years, however, the Masai have had some very severe lessons, and it is likely that they will be better behaved in future. In the recent expedition of Dr. Peters to Victoria Nyanza he went through Masailand by the exercise of pure brute force. He fought and captured food whenever he could not persuade the Masai to present it. He boldly faced the Masai, and in the end brought them to their knees. The book he has just published contains several pictures of battles between his force and the Masai, and he expresses great contempt for the pacific methods of Joseph Thomson, and says that he would never have submitted to such humiliating conditions of travel as the natives imposed upon the English explorer. He had at least twenty battles with the Masai.

The people who have given explorers more trouble than almost any others are the Ugogo, who inhabit the main caravan route between Zanzibar and Lake Tanganyika. They have tried to rob every white caravan that ever came among them, and the indignities inflicted upon many an explorer, and particularly upon Speke, are well-known. They never have been called to account for their inhospitable and rapacious treatment of the whites until within the past two years, during which time both the Peters, the Stanley, and the Emin Pasha expeditions have had hard battles with Wagogo, choosing rather to fight than submit to their exactions. The result is that the power of this people, who have lived largely upon the blackmail levied upon strangers, is almost completely broken. Hundreds of them have been killed in battle with the three expeditions referred to, and it is not at all likely that the Wagogo will again be a serious menace to commerce.

THE CANADIAN SHIP RAILWAY.

One of the Most Important of Modern Engineering Enterprises.

The present year will probably witness the completion of the ship railway across the isthmus of Chignecto, which connects the provinces of Nova Scotia and New Brunswick and separates the Bay of Fundy from the Gulf of St. Lawrence. The enterprise is one of the most significant in modern engineering and its importance to commerce is inestimable. By its use, ships sailing between American or Bay of Fundy ports and Montreal or ports on the Gulf of St. Lawrence will be saved a journey of 400 or 500 miles around the most dangerous coast of eastern North America, with a corresponding gain in time and expense. As the traffic between the ports mentioned is very extensive, this will mean a saving of several millions of dollars annually.

The railway is being built by a company of English capitalists and the work of construction has been going on since 1885. The railway will be 17 miles in length and at each end of the line will be constructed a receiving basin, with a dock, 240 by 60 feet. Within each of these docks a lifting apparatus will be placed, to be operated by hydraulic power, by means of which vessels will be raised from the water to the railway or lowered from the railway to the water.

A ship-canal across the isthmus was advocated for many years but was given up as impracticable, on account of the inequality in the ebb and flow of the tides on opposite sides of the isthmus. The tide in the Bay of Fundy is the highest in the world, sometimes rising to 40 feet, and comes up with amazing rapidity. On the opposite side, in the Gulf of St. Lawrence, it seldom rises to a greater hight than three feet. With the flow of the tide, the waters of the bay, being so much higher than those in the gulf, would naturally rush through the canal, and with the ebb flow back again. This would result in an almost continuous rise and fall in the waters of the canal and make navigation impossible. It was for this reason that the idea of a canal was given up in favor of the ship railway.

Wouldn't be Without it.

Mr. Alfred Roberts, Manager of the Dominion Railway Advertising Agency, 79 King St., W. Toronto, Ont., June 1, 1888, writes as follows: "I desire to testify to the efficacy of St. Jacobs Oil as a sure remedy for sprains, bruises, rheumatism, etc., having had occasion to use it in my family for some time past. In fact I would not be without a bottle of the Oil in my house for double the amount charged.

Hood's Sarsaparilla

Is a concentrated extract of Sarsaparilla, Yellow Dock, Pipsissewa, Juniper Berries, Mandrake, Dandelion, and other valuable vegetable remedies, every ingredient being strictly pure, and the best of its kind it is possible to buy.

It is prepared by thoroughly competent pharmacists, in the most careful manner, by a peculiar Combination, Proportion and Process, giving to it curative power

Peculiar To Itself

It will cure, when in the power of medicine, Scrofula, Salt Rheum, Blood Poisoning, Cancerous and all other Humors, Malaria, Dyspepsia, Biliousness, Sick Headache, Catarrh, Rheumatism, and all difficulties with the Liver and Kidneys.

It overcomes That Tired Feeling, Creates an Appetite, and gives mental, nerve, bodily, and digestive strength. The value of

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Is certified to by thousands of voluntary witnesses all over the country whom it has cured of diseases more or less severe. It is sold by all druggists. $1; six for $5. Prepared only by C. I. HOOD & CO., Apothecaries, Lowell, Mass.

N. B. If you decide to take Hood's Sarsaparilla do not be induced to buy any other.

100 Doses One Dollar

Nicely Put.

"What ever became of that tall handsome valet of yours, Lord Noodleby?" asked Miss Hobbs.

"Oh I had to dischawge him. Strangers would mix us up, ye know, and take him for Lord Noodleby, and me for the valet," returned the peer.

"Oh, dear me!" said Ethel. And doesn't that prove the truth of the old saying, 'Never judge by appearances?"

"August Flower"

Biliousness, Constipation, Stomach Pains.

"I have been afflicted with biliousness and constipation for fifteen years; first one and then another preparation was suggested to me and tried but to no purpose. At last a friend recommended August Flower. I took it according to directions and its effects were wonderful, relieving me of those disagreeable stomach pains which I had been troubled with so long. Words cannot describe the admiration in which I hold your August Flower—it has given me a new lease of life, which before was a burden. Such a medicine is a benefaction to humanity, and its good qualities and wonderful merits should be made known to everyone suffering with dyspepsia or biliousness

Jesse Barker, Printer, Humboldt, Kansas.

G. G. GREEN, Sole Man'fr, Woodbury, N.J.

The Little Grown Folks.

Said little Grace to little Bess,
"I guess I'll make my doll a dress."
Said little Bess to little Grace,
"I think you'd better wash its face!"
"Wash its face, indeed!" cried Grace—
In conscious wisdom she grew prouder—
"I'll do like grown up ladies do,
Just put on grease and lot of powder!"

ST. JACOBS OIL

TRADE MARK

THE GREAT REMEDY FOR PAIN

SPRAINS, STRAINS, INJURIES.

It is an erroneous idea to suppose that great force is required to produce a strain or sprain. There are so many delicate muscles and tendons which hold together the ankle and foot, and direct the vehicle of locomotion, that a very slight thing often causes not only a very painful, but a very serious sprain, which St. Jacobs Oil will cure

SURELY AND PERFECTLY.

Weak Spots.—A large number of cases is reported of accidents to the ankle or foot, more than to all the rest of the body. The knee is also a very delicate centre of action, and injuries thereto very frequently result in acute pains, enlargements, stiffness, and sometimes permanent stiffness, unless St. Jacobs Oil prevents, and its

BEST CURES ARE CHRONIC CASES.

Definition.—Sprain or strain is to weaken, as a joint or muscle, by sudden and excessive exertion; to stretch muscles or ligaments without dislocation, and St. Jacobs Oil cures

EASILY AND WITHOUT RECURRENCE.

Treatment.—Rub with St. Jacobs Oil freely and thoroughly the part affected. Protect the body from cold and draft.

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