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FARM AND HOUSEHOLD.

THE ADVANTAGES OF IRRIGATION IN CROP GROWING.

Water Available When Needed—To Keep Milk From Souring—How to Manage Cut Worms—About Tomatoes, Sheep Shearing and Household Helps.

Irrigation.

The more we observe the effects of irrigation as relating to farming and the production of crops the more we become convinced of its advantages, and that it might be profitably employed in many sections where such assistance is unthought of. One point must be conceded and that is, that moisture is an absolute necessity in crop growing, not only to start the seed into vital activity, but as a medium whereby the soluble elements of nutrition are conveyed to the plant itself. While it is true that an excess is objectionable and hurtful, it must at the same time be remembered, that the want of it, is also fully as damaging to the growth and development of a crop.

The advantage of using irrigation water is that its office can be regulated to meet the actual requirements, and if there is sufficient moisture in the soil to answer the demand of the crop and hold it in a condition of healthy growth then the irrigation supply need not be drawn upon, this is usually the case in the spring after the melting of snow and the fall of spring rains has occurred, but how often is it the case that as the summer months come on with the attendant hot weather, the supply of moisture diminishes and at the same time the demand is rapidly increasing with the increased growth of the plant; this is the time when an incalculable amount of benefit could be conferred by an application of water held by storage for that purpose. We do not claim that irrigation can be made available in every instance where it might be needed, but we believe that there are sections where a reservoir might be constructed to prevent the waste of surplus water, and that might by some effort be diverted to points where crops would be greatly benefited. We have seen something of the workings of irrigation in Colorado and also in California, although we are aware that the general conditions of climate in both states are unlike most other sections of the country in the fact of having a longer season of no rainfall; but the effects can be studied equally as well.

Even at the East where rainfall is expected periodically, crops are frequently greatly injured by a want of moisture; this is the case in Colorado and California with this difference, there it becomes a certainty but the effects are wholly warded off by means of a sufficient flow of water from some neighboring canal and because of this crops are kept continually growing and are carried to a state of perfection. It is considered that by a judicious use of water for irrigation, crops of much superior quality and of larger yield are secured, and this is what all farmers desire.

The same rule that applies to cultivated crops, such as vegetables, corn, etc., will apply with equal force to grains and grasses, says Coleman's Rural World; a crop of grass may be very largely increased by a use of water, and this, too, by no addition of fertilizer. In Colorado immense crops of alfalfa are grown through the agency of irrigation and we feel confident that the same means applied to mowing lands of the Eastern, Middle and Southern states, where possible, would tend to a greatly increased crop of hay. There is little doubt but that the improved agriculture of the future will demand the utilization of the surplus water that now goes to waste.

To Keep Milk From Souring.

A man who has had experience in handling milk sent to the Boston market, and who never had any sour milk returned, recently told an Eastern exchange how he managed to keep milk from souring. He says: In the first place the cans need attention, especial pains being taken to thoroughly cleanse cans and stoppers and place them upon a rack outdoors, to air or sun. They are not taken to the barn till milking time, and no empty cans are allowed about the barn. Particular care is taken to have the udders clean, and the milk, as clean as possible, turned from the milk pail to the strainer pail, and poured through a cloth as well as wire strainer, into the cans and immediately set into a trough of running water; the temperature varying somewhat with the weather, from forty-eight to sixty degrees. The milk is stirred with a long handled spoon at frequent intervals, and left unstopped over night, but the lid or cover of the trough is closed. The milk is taken from the trough the first thing in the morning and stoppered, and the morning's milk similarly treated, except the time of remaining in the water has been limited to from two to four hours. By this, to explain, I mean, at one time we had to get it to the depot at 9 a.

m. at another 7 a. m., by change in routes.

It is my opinion that clean milk, placed in clean cans, cooled to sixty degrees at the farm, and placed in a milk car with ice, and reaching Boston that day, so that it will reach the consumer for the next day's use, will be found to be perfectly sweet for all uses, if not tampered with by the milkman.

I do not believe that such milk needs any of the so-called preservatives to add to its keeping qualities. In the absence of running water, where well water had to be used, I should not set the milk into freshly pumped water, because too sudden cooling will separate the cream from the milk while the water of milder temperature will not; but the water should be renewed after the milk has stood an hour or so at night, and for well water, renewing once a day is sufficient.—Journal of Agriculture.

How to Manage Cut Worms.

A writer tells the California Fruit Grower that he thinks the best way to get rid of cut worms is to poison them. He says: "I use syrup or water well sweetened, mix with plenty of Paris green and thicken with flour. I cut papers six or eight inches square with a cut over half way through the center, and a cross cut through that to fit around trees or vines then hold them in place with clods and put a few spoonfuls of the mixture around the trees or vines on the paper. I find plenty of dead cut worms and beetles both on and under the paper. I have not had a chance to try it on canker worms, but I think they would eat it, and it would be cheaper and better than printer's ink around the tree. I also protect my young trees with tins that clamp around them. I have made them six inches high and about three inches in diameter and put them in the ground two or three inches. Cut worms and beetles cannot climb over them, and will not dig under them. Any tinsmith will make them for about two cents a piece. I have used the tins successfully three seasons."

Nonsense About Tomatoes.

An idea has gained currency during the past few years that the tomato as an article of diet is liable to produce or encourage the terrible disease of cancer, and not long ago it was stated the use of this vegetable had been forbidden at the London cancer hospital. So widely spread had this notion become that Dr. Marsden, chairman of the medical committee of the cancer hospital, has thought it advisable to give it official contradiction. He says that his committee has been inundated with letters on this subject, and he begs publication for the following statement, which we hope will settle the matter once for all. It is the opinion of the committee "that tomatoes neither predispose nor excite cancer formation, and that they are not injurious to those suffering from this disease, but on the contrary, are a very wholesome article of diet, particularly so if cooked."—Farmer's Voice.

Sheep Shearings.

Plenty of bells on the sheep will frequently scare the dogs away. If the ewe is not strong and perfect how do we expect a strong and perfect lamb? But some seem to expect it.

It is likely that flockmasters must depend on mutton productions or give up sheep breeding. It looks that way.

It is claimed that sheep that will yield at least six pounds of wool, will double the flockmaster's money in four years.

It would seem that as long as we do not produce enough mutton or wool for home supply, sheep growing should be profitable.

Household Helps.

A raw potato dipped in brick dust is effective for cleaning steel knives. Mildewed clothes may be renewed by soaking the spots in buttermilk and spreading the garments on the grass in the sun.

One pint of buttermilk in which a well-beaten egg is stirred will break up any fever in half an hour if not of too long standing.

A "friendship garden" is the latest fad for the woman who has a country home or lives in the suburbs. A friendship garden is one in which to grow flowers and shrubs that have been planted by friends and relatives of the owner.

A good way to cook liver is to fry it in butter, with an onion cut in small pieces scattered over it. Cook slowly; when done add a lump of butter and a little flour; stir well and turn over the liver. Serve with Saratoga potatoes.

Grease stains on a carpet may be effectively treated by applying a mixture composed of two ounces of ammonia, two ounces white castile soap, one ounce glycerine, one ounce ether. The soap should be dissolved, first in a pint of water, then the other ingredients and two quarts of water should be added. Another recipe for removing grease spots requires the application of four tablespoonfuls of alcohol to one of salt.

ENGLISH TRAVEL EXPENSIVE.

Why Rates by Rail for Passengers and Freight Are so High.

The eminent English railway authority, Mr. William M. Acworth, points out many causes for the difference between railways in his country and the United States, in the Engineering Magazine. The higher rate of charges on English roads are thus explained:

The very large capital outlay of English railways is of course one main reason of the high standard of rates and fares in England. Exactly how high that standard is we have no means of knowing, for our railway statistics, made up in a form that was laid down by act of parliament about thirty years back, carefully suppress the information that it is most necessary for us to have.

Ton-miles and passenger-miles are not here recorded. We know that each ton of goods carried pays the railways on the average about sixty cents. If we guess that the average distance is about twenty-five miles, we arrive at an average rate of 2.40 cents per ton-mile, which is not very far from three times the average rate in the United States. So that in case of passengers we may guess that the average fare is about 1.75 cents per mile, which, though lower than the American average, is higher than in any European country. Such a result is far from satisfactory. High cost of construction might have justified a high range of rates and fares at the outset, but year by year the traffic per mile of line open increases in density, and yet the goods rates hardly come down at all—in the last year or two their tendency has been all the other way—while the passenger fares only come down very slowly.

And yet the explanation is not far to seek. Our services have always been expensive to work; they are becoming more expensive year by year. In America train-loads are mainly limited by the capacity of the engines—ours by the weight of goods or number of passengers that have had time to accumulate in the very short interval between one train and another. Let me illustrate: If a man is sailing from New York to Europe, he will choose his favorite line or his favorite boat, regardless of the time of day or day of the week at which it starts. On the other hand, if the Manhattan elevated were to try to run its trains only once in ten minutes in the slack hours of the day, the street cars would rob it of the bulk of its passengers.

Now, in England our business is all between places which in America would be regarded as close together. We call Manchester "the north of England," yet Manchester is only four and one-half hours from London. Consequently there must be trains between the two points at all hours of the day, to suit the convenience of passengers wanting to go at any time. Consequently, too, each train runs with very much less than a train load of passengers. Then these trains must be run at high rate of speed, for though a few minutes more or less are of little importance in a journey of a hundred miles, a quarter of an hour out of four hours is a very considerable percentage. High speed means few stops, and few stops mean additional trains to serve the second class stations. Then high speed and frequent expresses for passengers mean high speed and short trains for goods—that is half-loaded engines; for an engine loaded to its full capacity moves so slowly—occupies the line, that is, for so long a period—that it is impossible to find room for it.

But it would not be true to say that the goods are worked at a high speed simply for the convenience of the railway management. On the contrary, the demand for speed in the case of merchandise traffic is fully abreast of that in the case of passengers. Broadly, it may be said that the English goods-service is based on the supposition that, between important towns at least, whatever is handed to the railway company at the forwarding station over night will be delivered to the consignee the first thing next morning. Now, a service such as this, in the nature of things can never be a cheap one.

Climate and Plants.

The botanical department of the university of Pennsylvania is making a special study of the effect of climate upon plants. For this purpose collections have to be obtained from the mountainous and lowland districts of the various regions. In this the university is being assisted by many individuals who are interested in the subject. Collections are being made in Alaska, Turkey, Ecuador, Florida and California.

More to the Purpose.

"If this helps you," said the doctor, signing his name to the prescription and folding it, "I should be glad if you would let me know."

"If it doesn't help me, doc," replied the caller, in a clear distinct tone of voice, as he handed over the required fee, "I'll let you know it—you can bet a trunkful of skeletons on that. Good afternoon."

RULERS OF THE JUNGLE.

ANIMALS THAT SELL THEIR LIVES AT HIGH PRICES.

Cave Bears of Ceylon Invariably Attack When Housed—An Adventure With Buffaloes on the Zambesi—The Terrible Bengal Tiger.

Many species of carnivora clearly prefer revenge to flight. In the interior of Ceylon there are mountain forests where the cave bear (*ursus labiatus*) finds a safe retreat from the pursuit of the native hunters, but if wounded, that small relative of our grizzly will invariably turn upon his aggressors, and decline to be satisfied with the triumph of routing them at the first charge. With leaps that would do credit to a kangaroo, he hunts the would-be hunters, and is thus sometimes drawn into an ambush where a reserve force of native sportsmen discharge their spears and then scatter in wild flight, well aware that the bear would make an example of the first prostrate foe. He would tear off his face like a mask, flay his ribs and chew his hands to pieces.

Cingalese travelers who have to cross the haunts of the cave bear provide themselves with written charms, setting forth the meritorious purpose of their journey and the harmlessness of their personal disposition, and Sir Emerson Tennent speaks of a messenger who took the precaution to make a Buddhist priest sign a document of that sort. Prudence, moreover, makes it advisable to cross the perilous thickets in silence, for an untimely whoop may provoke the bear to the degree of flaying the trespasser, with brutal indifference to the indorsements of his certificates.

Mental excitement will operate like an anesthetic, and wounded soldiers have often attested the curious fact that saber cuts and pistol bullets may not only be disregarded, but actually remain unfelt, in the heat of a hand-to-hand combat, and announce themselves only by their incidental effects—the stiffening of a wounded arm or the faintness following a great loss of blood. On a similar theory we may account for the often-repeated assertion that grizzly bears can not be hurt, a bullet failing to penetrate his brain or the heart. The truth seems to be that the effects of wounds, eventually fatal, may be temporarily neutralized by the rage of the vindictive brute.

His is that frenzy of vindictiveness strictly limited to carnivorous animals. Captain Charles Baldwin, in the chronicle of his South African travels, describes a trip to the head waters of the Zambesi river, where the road led through a park-like forest; evergreen leaf-trees scattered in groves over a grassy plateau. Herds of wild buffaloes grazed along the bank of a ravine, and the Kaffir guides cast shy glances in that direction, but had almost passed the last dangerous points when one of the Boer teamsters discharged his rifle at a fat yearling. In a moment the old bulls faced about, snorting and stamping, a second after they made a heading charge. They had caught sight of the caravan. A volley at sixty yards, another at close range, thinned the ranks of the infuriated beasts, but they kept right on, and the stampede of the frightened Kaffirs resembled the flight of a mob charged by heavy cavalry.

There were some fifteen good marksmen in the party, and most of them managed to dodge behind trees in time to receive the troop with a murderous fusillade, but the tramping horses and the zigzag rushes after flying Kaffirs continued till the last bull lay rolling in his blood, for those who had only been stunned would struggle to their legs again and rout the natives who approached to dispatch them with their long lances. One of the captain's companions declared that he had never had so much fun in his life, but after figuring up the expense of the adventure the majority agreed with the guide that it would have been by far the wisest plan to let the herd graze in peace.

In Southern Hindostan, where damage suits are rare, the loss of human life is often not thought worth mentioning, but the price of an elephant varies from \$300 to \$500, and good saddle horses are so rare that a tiger hunt now and then ceases to be a one-sided kind of sport. At a circle-hunt in the jungles of Ramgeer, in the province of Hyderabad, the result of one tiger killed, one cub killed and one captured, was offset by three dead and four wounded coolies, two dead horses and two mangled elephants, besides the loss of a lot of baggage and camping outfit carried by a stampeded elephant in the rear ranks of the expedition, and the hunters had, after all, to retreat without accomplishing their object of killing an inveterate man-eater.

As a rule, however, dogs pay the main share of the penalties incident to the failure of such enterprises. Carnivorous beasts hate man's truest friend, not only as a formidable ag-

gressor, but as a renegade who has betrayed the cause of beasthood by his alliance with their common foe, and their resentment often takes the form of revenge altogether different from his opposition to the encroachments of an enemy, whose superiority they, after all, recognize as that of a semi-supernatural being. Our medieval ancestor could not hope to get even with the arch-fiend, but showed no mercy to his allies; the ruminous witches, and a dog overpowered by a pack of wolves is literally torn to shreds, each participant of the vendetta trying to secure the fragment and rip it as if in the exultation of an opportunity for gratifying a personal spite. The antagonism of dogs and cats, too, may be something more than the jealousy of rival pets.

POWDER FOR BIG GUNS.

It Isn't at All Like the Explosive Used in Shooting Birds.

So much powder was consumed in New York harbor during the naval review that it is in order to present a few facts concerning the thunder-making compound. All men-of-war are provided with magazines and shell rooms. They are situated under the water line, and can be quickly filled with water by opening the flood valves. Each charge of powder is kept in a separate bag and each bag in a separate can, which is composed of copper and hermetically sealed. Well-kept magazines can be flooded scores of times without injuring the powder. Powder that had been submerged for months in the sunken American men-of-war at Samoa was found, upon its recovery, to be as perfect in every respect as on the day it was put aboard those ships.

All implements used in the handling of powder on warships are composed of copper. Persons entering a magazine are compelled to don a suit of clothes and slippers especially made for the purpose. All fires are hauled under the galley stoves and no smoking is allowed about the decks when the powder is being put aboard. Gunpowder is composed of three ingredients—charcoal, saltpeter and sulphur. The proportions of the ingredients vary considerably, according to the use for which the composition is intended.

The charge of powder for a cannon varies from one-fourth to one-tenth the weight of the projectile, says the Cincinnati Commercial-Gazette. With the old-fashioned smooth-bore guns, firing the round shot, it is sometimes as high as one-third, but in modern guns it has been demonstrated that the velocity is not much increased when the charge is greater than one-fourth. The intensity of the force of gunpowder is highly variable at different portions of the path along the bore, being very great along the seat of the shot and rapidly declining toward the muzzle. Equal velocities will be imparted only when at different points in the path along the bore the respective intensities are proportional to the columns of metal.

The size of grain in gunpowder is one of the most important points to be considered as modifying the explosiveness of powder. Although a charge of powder appears to explode instantaneously, yet both ignition and combustion are comparatively gradual; the flame is communicated from one grain to another, and each burns in concentric layers until it is consumed, so that combustion of the grains is not simultaneous. For each gun, or charge of gunpowder, there is a size of grain which produces a maximum velocity with a minimum initial strain. But as each kind of powder has to be employed in more than one piece of ordnance it is necessary to select that size which will best suit all of them.

Told Him the Reason.

Deacon Scrimp—Humph! Think you've got to have a vacation, eh?

Struggling Pastor—Yes, the doctor says I must go away until this cough is cured.

Deacon Scrimp—Well, I'd like to know why preachers are always getting bad coughs.

Struggling Pastor—Well, you see, we have to visit around a good deal, and we are always asked to hold a little service before leaving, and I think our throats become affected from breathing the dust that flies from family bibles.

The Two Spheres.

Little Dick—Papa doesn't have any fun. He has to go to business every day.

Little Dot—That's to get money, 'cause he's a provider, mamma says.

"A what?"

"A provider."

"Well, if papa is a—a provider, I wonder what mamma is."

"I guess she's a divider."

Money In It.

Benevolent Gentleman—My little boy, have you no better way to spend this beautiful Sabbath afternoon than by standing in front of the gate idling away your time?

Boy—I ain't idling away my time. There is a chump inside with my sister who is paying me a quarter an hour to watch for pop.—Life.

A RUSSIAN CAPTAIN.

Merciless Brutality in the Land of the Great White Bear.

One fine winter's morning sleigh-bells jingled in our Russian village. A police captain and his lieutenant made their appearance, wrapped up in furs. Behind them was a mysterious bundle covered with cloth. This all happened before I settled here, but the impression is fresh still. The peasants gathered quickly about the strangers, anticipating nothing good from the appearance of a police officer in their midst, says the Contemporary Review. The captain alighted slowly from the sleigh, eyed his audience sharply while he calculated the amount he could wring from them, then said sternly:

"Where is your village elder?"

"Here, your Grace," answered a white-haired, venerable peasant, bowing abjectly.

"Your name?" continued the police captain.

"Ivan Ivanovitch, your Grace," answered the old man, bowing again almost to the earth.

"Ivan Ivanovitch," said the captain impressively, addressing the congregation of trembling peasants, "a terrible crime has been committed close to this village on your land."

"In God's name, what?" asked the old man, turning pale.

"See, then, for yourself," said the police captain, and with that he threw off the cover and revealed to the panic-stricken gaze of the simple villagers the mutilated body of a dead man. "This is a frightful crime," continued the captain, "and there must be a dreadful retribution. Your community is responsible for this murder and must bear the consequences. There must be a commission sent here; the matter must be investigated."

"Anything but that!" begged the village elder, piteously, stroking and kissing the captain's coat. He knew too well that such a commission meant ruinous fines, to say nothing of floggings for every witness. The peasants with one voice joined in the appeal:

"Anything but a judicial inquiry."

"But the matter is very serious," said the captain. "An inquiry must be held."

"But perhaps you can help us out of the trouble," said the elder persuasively.

"Perhaps," mused the captain, "but it will cost me a lot of money."

"What do you want us to pay?" asked the elder.

"One hundred roubles may do it," said the captain.

"One hundred roubles!" screamed the desperate peasants. "We haven't got so much in the whole place. You want to ruin us."

"Take fifty?" pleaded the venerable elder.

"What, you rascals! Do you take me for a beggar that you seek to dicker with me? However, you seem to be poor; I shall insist only on seventy."

The peasants agreed sadly to the bargain; the money was paid; the captain and his lieutenant climbed into the sleigh once more and drove away with the corpse to the next village. Here they repeated the same performance and as long as the cold weather lasted that corpse represented at least fifty roubles out of every village community it visited. Of course that particular trick will not be repeated in our lifetime, but others just as brutal will take its place, for the peasants are always ready to be fooled and fleeced by anyone who comes along dressed either as a policeman or a priest.

Talking to Herself.

The habit that Southern negroes have of talking to themselves is noticed by everyone in the towns below Mason and Dixon's line. One servant in a Southern family used to carry on conversation with herself, sometimes alleging carelessness and disorder in one tone of voice then defending herself from those charges in another tone. She would upbraid and apply disagreeable epithets to herself when things were not to her mind, while at other times, especially when she was dressed in her best, she would stand before her mirror and assure her reflection that she was just as pretty as white folks.

A Cash Snail.

"An acquaintance of yours, eh?" inquired Brown, as his friend Green lifted his hat to a passing lady.

"Yes, slight acquaintance."

"She smiled very sweetly on you."

"She ought to. The court allowed her \$10,000 alimony."

Brown tried to say something about the weather, but his emotions drowned him, and they didn't get chatty again until Green struck a banana peel.

Proof Positive.

Mr. Beenthere Yale—Well, I guess John has settled down to study for his examinations at last.

Mrs. Yale—Why do you think so?

Mr. Beenthere Yale—He doesn't write home for money to buy books as often as he did earlier in the season.