

## WELLS FOR IRRIGATION

Three Absolute Essentials Given for Water Source.

Deeper the Water is in Well the Greater Will Be the Pressure—Casing Should Be Constructed From Top to Bottom.

In giving three absolute essentials for any good artesian or irrigation well, H. M. Madison in the Texas Stockman and Farmer, says:

We say absolute essentials, for we cannot conceive of there being a good well without having these three characteristics. Stated briefly, they are as follows:

First—The well must be completely cased from top to bottom.

Second—The casing must be so set that not only is there no leaks, but there cannot arise any around the outside of the pipe.

Third—With the fewest exceptions strainers should be put in well.

There are good reasons for each of which are herewith given. A column of water one inch square weighs a little over one-half pound to the foot. Water standing two hundred feet in a well would weigh nearly 100 pounds to the square inch, in other words the pressure of water standing 200 feet deep in a well would be nearly 100 pounds to the square inch. This is a pressure fully as great as is carried in any stationary boiler.

It is easy to see that the deeper the water in a well the greater will be the pressure. Where water stands 1,000 feet in a well the pressure is about 500 pounds to the square inch, a pressure so great that no boiler ever built would sustain it, and if applied to the strongest steel boiler now built would blow it into atoms and scatter them for over a mile carrying death and destruction in the path.

Now stop and think for a moment. The pressure at the bottom of a 1,000 foot well is nearly 500 pounds. Suppose there was a hole or vent in the side of the well, wouldn't that water be forced out through it? But here in southwest Texas it is scarcely possible to drill a well without going through sand, gravel and loose soil. If there is no casing put in the well is not the enormous pressure of water going to drive much of it out through this sand, gravel and loose soil? Government and other reports show that an average of one-half of the water of an uncased well is lost by being driven out through the sand, gravel, loose rock and soil in the strata through which the well is drilled. In many wells there is even a greater loss than this.

Let us put it a little differently. As uncased well that will irrigate 100 acres would if cased irrigate 200 acres. Or put it still differently, one cased well will do the same service that two uncased wells will do. It does not cost as much to case a well as it does to drill one, so there is no such thing as saying it will save money to leave a well uncased. It would seem that an absolutely sufficient reason has been given for saying that the complete casing of a well from top to bottom is essential.

It would also seem that on account of this enormous water pressure inside the casing that it is plain if there was any leak around the outside of the casing the water would be forced through this leak and then into the sand, gravel, loose rock and soil around the outside of the casing. There would not be so much forced through to be sure if there was no casing, but there would be a loss. Sometimes this loss is as great as to cause the public to think there is a falling water supply.

There is a way to prevent this leakage around the outside of the casing. It is usually called setting the casing in lead. We are not going into an explanation of this just here, but suffice it to say no contract ought ever to be let or signed for drilling a well that did not fully and clearly specify the casing was to be set in lead in such a way there was and could not be any leakage around the pipe. There are some special cases where flaxseed are used to stop leakages, and there are others where the pipe can be set in cap rock so well there will be no leakage. But set it must be so there is no leakage, this is the second essential of a good irrigation well.

### Colony House for Chickens.

For raising chickens the colony house should be fitted up with a detachable lamp box and a boyer which can be taken out just as soon as the chicks are old enough to roost. A colony house can be made and a detachable brooder can be purchased at the same price. One can buy an out-door brooder complete, and the former can be used from the time the chicks are hatched until ready to go to the regular poultry house, whereas the latter answers the purpose satisfactorily only for the first six weeks.

### Poultry Equipment.

The appliances required to raise chickens are not very numerous. Incubators and brooders, of course, become a necessity where large numbers are hatched and raised, or where early hatched pullets are wanted for winter egg production, but where only a few chickens are raised the investment would hardly be profitable. The brooder is usually superior to the old hen for raising chickens, providing it is properly handled.

## SOIL MOISTURE IS REQUIRED

Where Cover Crops Are Grown to Maintain Fertility at High Standard Much Water is Needed.

Tillage gives such measures of aeration of the soil as to develop plant food. Chemical action liberates plant food by dissolving the inorganic elements and forming solutions containing plant food, writes E. F. Stephens in the Denver Field and Farm. The more complete the aeration the stronger the solution of plant food contained in the soil moisture. We all know that the larger the amount of plant food available the less soil moisture is required to produce a pound of dry matter. In other words, a tree can grow and bear fruit in a well aerated soil with less soil moisture than is required to produce the same result with the tree feeding on a soil less effectively cultivated.

Aeration therefore sets free increased quantities of plant food and enables the tree to get along with less water. A pint of very rich soup is more nourishing than a quart of thin gruel. The average planter will perhaps irrigate his orchard three or four times in a season. Each irrigation is preceded by running a corrugator or some other method of opening furrows. This requires a team once over, after men have been employed to spread the water. Within forty-eight hours some efficient implement must be run to get the soil under cultivation or the land will crust, bake, crack open and soon be in worst condition than before.

To get the soil back into as good a state of tillage as before the watering, we find ourselves compelled to cover it two or three times, usually once with the Planet Junior and then each way with some implement like the Acme pulverizer or the Tower cultivator. Three and possibly four team operations will be needed with each irrigation to recover the loose, lively, mellow soil condition in which we had the soil before watering, therefore three periods of irrigation will mean covering the field nine times with a team. In our experience add these nine cultivations to seven to nine regular cultivations and we have sixteen to eighteen cultivations, which following a winter and spring rainfall such as we have had this season will in suitable soil go a long way towards conserving moisture for the summer.

There seems to be no question that a tree that is efficiently and thoroughly cultivated finds more favorable conditions for vigorous growth and early fruitfulness than the orchard that is sometimes too wet, sometimes too dry, and handled in the manner oftentimes noted. This applies especially to young orchards. This method is not applicable in the same degree with the older or bearing orchards since an orchard aged sixteen to twenty years needs probably seven or eight times as much soil moisture as does the one up to the age of five years. To maintain soil fertility requires cover crops. To grow a crop of clover, vetch or alfalfa in the orchard and thus keep its fertility at the highest standard needed for productiveness will doubtless require several inches of water. It is hardly practicable to maintain the same high state of tillage in the old orchard that can be given in the young one and water must either be stored in the sub-soil or applied at suitable times by sufficient irrigation to maintain an ample supply of moisture in the aged bearing orchard.

## GENERAL FARM NOTES

Weeds rob the soil of moisture. Kaffir corn is not as good for laying hens as wheat is.

Farmers should raise their own hay, grain and meat, as well as fruit and garden vegetables.

You don't have to wait till the incubator is in the mood. It's ready to set whenever you want it to.

In trying up cauliflower heads be sure there is no moisture in the center, or the head will certainly rot.

For best results in buttermaking it is well not to have the churn over half full, and it is better to start with less.

By cutting cabbage instead of pulling it, you stimulate a growth of small shoots that are deliciously tender and mild.

The flaring milk pail is being done away with in all sanitary dairies and the hooded pail with small opening is taking its place.

Bacteria do not thrive in the cold but in heat only. If you keep your milk below 40 degrees the bacteria will have small chance.

Beans are not as good a feed for live stock as peas, simply because they are not as palatable; the cows don't like them so well.

To keep a cow from switching her tail nothing is so convenient as a hoop made of five or six feet of heavy rope thrown over the rump.

The average milk cow drinks from 80 to 100 pounds of water a day. The more a cow can be induced to drink the better for the milk flow.

If one extra potato were added to each plant grown in the United States the actual increase in the annual yield of the crop would amount to 21,000,000 bushels.

Just how deeply the corn and other spring crops should be cultivated and just how long the cultivation should be continued is a matter upon which farmers differ widely in opinion.

The Cow's Production. If you do not know what the cow produces you cannot feed her intelligently.

# HAPPENINGS IN THE CITIES

## Goat That Leads Sheep to Slaughter



KANSAS CITY, MO.—The goat is not a beautiful animal in the face. He hasn't a sweet disposition. He isn't playful. He won't cuddle. But he has his uses.

Frank E. Essex of a local grain and milling company, who raises thousands of sheep and goats on his farm near Raytown, says a goat is the most contrivance animal ever invented. Everything goes contrary with him—like Mrs. Gummidge. But like Mrs. Gummidge he has a pretty good heart if you can get on the right side of him.

Mr. Essex has one particular goat on his place that is the best and the worst goat that ever lived. Sometimes Mr. Essex gets so affixed mad at him that he longs to take a club and kill him. But every time he raises his hand to slay him he thinks of the many kindnesses the goat has done him, and his heart relents.

The goat, Mr. Essex admits, is not pretty to look at. He is bald, he has a wicked eye and his whiskers are full of cockleburrs. His disposition is so mean that he spends all his time

thinking up things to do which his perverse mind tells him Mr. Essex doesn't want him to do.

"But, really, I hadn't ought to knock that goat," Mr. Essex said. "Sheep, you know, haven't a lick of sense. If it wasn't for that goat I don't know how we'd ever get them into a stock car. But the goat knows how. Frankly, I don't believe he does it to help me—I think he does it because he knows the sheep are going to the packing house to be made into broth, and it fills his wicked heart with gladness.

"Anyway, this is what he does: When the car is placed and the chute run down to the pen he takes the lead and marches up into the car, the sheep following. He marches all around the car and back to the door, where he stops. There he places himself in such a way as to block the exit, leaving only enough room for the sheep to enter. They crowd in until the car is full, and then the goat leaps nimbly out and we shut the door.

"If you could see the wicked gleam in his eye when he has thus trapped his trusting followers and saved his own skin you would appreciate how nearly human is his duplicity.

"Some time when I am vexed with him I suppose I shall shut the door on him and let him go to his deserts. If I don't get his goat sooner or later he will get mine."

## Expected Spanking, Acclaimed Hero

ATLANTIC CITY, N. J.—The troubled conscience of Harold Isaac, twelve years old, of 23 Bartlett avenue, led him to make a confession to his mother the other day. He fully expected to be spanked. Instead, he was acclaimed a hero.

Harold went over to Linwood park, ten miles from here, on the annual picnic of the St. Nicholas church. Before he left his mother admonished him not to go near the water. He gave his solemn promise.

The youngster is an expert in the water and later in the afternoon he left the picnic grounds and strolled about to Bargaintown lake. Several of his boy chums were sporting in the water. Harold, although he cast longing eyes at the cool water, remembered his mother's warning and his promise. He sat down on the bank as near the water as he could without touching it, resolved not to violate the promise.

A few minutes later, George Kloris, a boy of twelve and his particular "pal," got into deep water and could not make land, despite his game fight. He started to drift away and the other youngsters, badly frightened when they saw he was drowning, scampered ashore, grabbed their clothes and started on a run to summon help.



The drowning boy called to Harold to save him.

Then he could stand it no longer. He kicked off his shoes, plunged and battled for ten minutes and had just succeeded in dragging the unconscious form ashore when some of the other boys returned. Then he led the work of resuscitation and was finally rewarded. George opened his eyes and gradually became himself once more and by the time Harold's clothes had dried he was almost recovered. Right there young Isaac made every one of his chums swear that they would not tell about his plunge in the water. They promised and kept "mum." But finally the youngster's conscience troubled him, and he could hold in no longer. He told his mother he had been in the water, and stopped there ready to take his punishment. But young Kloris overheard the confession and told the real story. Now Harold is the happiest kid in town.

## Eat? Wasted Time, Say Keep Wellers



CLEVELAND, O.—Why eat?

Members of the Keep Well club, who told their experiences at a foodless picnic the other day in Wade park, declared a man can go without nourishment for thirty days and feel like a bear cat, and that it is simple and delightful to exist for eight months on a daily ration of eight quarts of milk.

The club members advise any one with a stomachache to quit eating for awhile. It is fun after three days, declared Dr. C. M. Swingle, who has tried it.

How to be strong as a bull moose and still eat nothing was told at the picnic by A. G. Freeman, who once went without food for eighteen days straight. S. P. Brooks is the milk diet fiend.

If you backslide, you may do as some of the Keep-Wellers do, and de-

your a hearty lunch. The menu might be:

- One peanut.
- One orange.
- One lettuce leaf.

"Once I went eight months without nourishment except eight quarts of milk a day," said Brooks. "I gained forty pounds. Since then I have lived on milk for varying periods. Now I am taking two quarts a day, in the morning and evening. The only other nourishment I receive is at 11 o'clock in the morning, when I eat a light lunch of nuts and occasionally an orange. But on Saturday I omit the lunch, because Sunday is a day of rest."

Swingle said that it is easy to go without food for short periods. He said that after the first three days the appetite leaves. He advised, however, that anything but a short fast should be taken under the direction of a physician.

"I went without food for eleven days and could carry a market basket without being tempted to eat," said Swingle.

Swingle said milk and lemons is a diet that is good for tuberculars, under the direction of a physician.

## Cat Shatters Governor's Resolution

INDIANAPOLIS, IND.—Gov. Thomas R. Marshall's resolution to spend July 4 behind the locked doors of his offices in the statehouse were shattered early in the morning on account of the governor's admiration for "Tom," a big, black cat, the capitol mascot.

Tom was not responsible directly for the governor's throwing open the doors of his executive offices. A friend of the Democratic nominee for the vice-presidency, knowing that the cat was admired by the governor, imitated the sound of a cat scratching against the door of the private office until Marshall was greeted by a crowd of late arrivals from the Baltimore convention. They gained access to the room to congratulate the governor by imitating the scratching of a cat when loud knocking had failed.

The governor was engaged in dictating his decisions on the numerous petitions for pardons, when a crowd



began to congregate at the doors of the executive offices. Frequent poundings and shouted requests for entrance were unheeded.

The crowd was asked to remain quiet. The governor, seated at his desk, with large pile of congratulatory telegrams and letters before him, became aware of the silence in the corridors and believed the crowd had dispersed. Then came the gentle scraping as if of claws against wood, and the governor, desiring the presence of Tom in the room, threw open the doors, only to be greeted by the shouts and laughter of more than a score of his Hoosier admirers.

Can't Afford To, Friend—You and your husband seem to be getting on well together just now. I thought you had quarreled.

Wife—Can't do that these days, when our dresses fasten down the back.

Goodness does not more certainly make men happy than happiness makes them good.—Lander.

Mrs. Winslow's Soothing Syrup for Children teething, softens the gums, reduces inflammation, allays pain, cures wind colic, &c. a bottle.

The Cheerful Color. Gabe—Do you ever get the blues? Steve—Not if I have the long green.

Liquid blue is a weak solution. Avoid it. Buy Red Cross Ball Blue, the blue that's all blue. Ask your grocer.

People who live in clean houses shouldn't throw mud.

Smokers like LEWIS' Single Binder cigar for its rich mellow quality.

A woman's mirror is always a peer glass.



FOR Luncheon—or picnic sandwiches, nothing equals

Libby's Veal Loaf

Or, serve it cold with crisp new lettuce. It is a tasty treat and economical as well.

At All Grocers

Libby, McNeill & Libby Chicago



Here's The Road to Comfort

A vanished thirst—a cool body and a refreshed one; the sure way—the only way is via a glass or bottle of

# Coca-Cola

Ideally delicious—pure as purity—crisp and sparkling as frost.

Free Our new booklet, telling of Coca-Cola vindication at Chattanooga, for the asking. Demand the Genuine as made by THE COCA-COLA CO., ATLANTA, GA.

Whenever you see an Arrow think of Coca-Cola.

## MADE BIG PROFIT FOR STATE

Purely Business Argument for the Establishment of Sanatoriums for the Tuberculars.

According to figures contained in the annual report of Dr. H. L. Barnes, superintendent of the Rhode Island state sanatorium, the earnings of the ex-patients of that institution during the year 1911 would amount to over \$266,000. This is a sum three times as large as that spent each year for maintenance of the institution, including four per cent. interest and depreciation charges.

The actual earnings in 1911 of 170 ex-patients were obtained by Dr. Barnes. These ranged from \$2 to \$31 per week, the total earnings for the year amounting to \$102,752. On this basis, Dr. Barnes computes the figures above given. He says, however: "While institutions for the cure of tuberculosis are good investments, there is good reason for thinking that institutions for the isolation of far-advanced cases would be still better investments.

Out of a total of 46,450 hospital days' treatment given, 39,147, or 84 per cent., were free, the treatment costing the state on an average \$200 per patient. Out of 188 free cases investigated, 56 had no families and no income on admission to the sanatorium. Out of 132 patients having homes, the number in the family averaged 5.2, and the average family earnings were \$5.46. In 59 cases the families had no income, and in only five cases were there any savings, none of which amounted to as much as \$100.

### Pittsburg Chivalry.

"What's going on here?" demanded a man as he came upon two little boys battling in a vacant lot on the South side. The lad who was on top was rubbing weeds over the face of the under one.

"Stop it," said the man, grabbing the victor by the neck and pulling him away. "What in the world are you trying to do to his face with those weeds?"

"Do? Why, he swore in front of some girls, and I rubbed some smartweed in his eyes to become a great man like Abraham Lincoln."—Pittsburg Sun.

### Persuasion.

"What made Mr. Chuggins buy an automobile?"

"His wife persuaded him by calling his attention to the economy of having gasoline on hand to clean gloves with."—Washington Star.

It isn't every woman who will make you a good wife who will make you a good husband!—Satire.

### The Middle-Aged Woman.

Of the many ways in which the middle-aged woman may vary the effect of her afternoon gowns none is simpler than the use of a collar and cuffs of white voile edged with scalloping and embroidery in a floral design. Another change may be the frock set of white chiffon with border of black malines, and still another is the one of black net hemstitched with silver thread. Some of these collars are so long in front that they terminate only at the waist line, where they cross in surplice effect and are tucked away under the girdle. An excellent model of this sort is of light blue lawn embroidered with black dots, and a second is of white agate trimmed with tiny folds of broadcloth, alternating with eponge.

### The Giveaway.

"Jane," said her father, "how does it happen that I find four good cigars on the mantelpiece this morning? Did Henry leave them for me?"

"No; he took them out of his vest pocket to avoid breaking them last night, and I guess he forgot all about them afterwards."

The laugh that followed made her wish that she had been as careful with her speech as Henry had been with his cigars.—Detroit Free Press.

### Her Affections Dampened.

A little girl was playing at the table with her cup of water. Her father took the cup from her and in so doing accidentally spilled some of the water on her.

"There," she cried, as she left the table indignantly, "you wet me clear to my feelings."—Everybody's Magazine.

### Laying a Foundation.

Little Bobby (the guest)—Mrs. Skimper, when I heard we were going to have dinner at your house I started right in trainin' fer it.

Mrs. Skimper (the hostess)—By saving up your appetite, Bobby?

Little Bobby—No'm. By eatin' a square meal first.

### Between Girls.

"I believe I'll break my engagement to Cholly. He can't really love me."

"Why not?"

"He writes such short letters. Look at this—only seven pages."

### The Writer Who Does Most.

That writer does the most who gives his reader the most knowledge and takes from him the least time.—C. C. Colton.

Many a girl strives to make a name for herself rather than attempt to make a loaf of bread.

Old Michigan's wonderful batter Eats Toasties, 'tis said, once a day, For he knows they are healthful and wholesome And furnish him strength for the fray.

His rivals have wondered and marvelled To see him so much on the job, Not knowing his strength and endurance Is due to the corn in TY COBB.

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One of the 50 Jingles for which the Postum Co., Battle Creek, Mich., paid \$100.00 in May.