

# ABOUT "GROUNDING" LIGHTNING RODS

By A. R. Sawyer, Professor of Elec. Engrg.

An interesting experience in connection with the protection of buildings from lightning by means of "lightning rods" has just come to my attention.

In the southern part of the state a barn was rodged and some time later (probably) the rod was pulled out due to the fact that the barn was struck. The severed lightning rod was discovered this spring and repaired and struck again and set on fire and four pigs outside the barn, but near the rod were killed. The way in which the barn was rodged will throw some light on the cause of this.

In order to protect the copper cable from mechanical injury an inch and a quarter from pipe was allowed over the rod and allowed to extend into the earth six inches or a foot, the pipe not being well grounded. The agent who put the rod up in the barn was one who had a rod under the roof two and six inches below the top of the iron pipe, supposedly by a stroke which had struck that fall. Several conditions not being found until this spring. The short piece of rod was taken out and soldered. This piece which was taken out tells the story which is of considerable interest. Upon examining the broken piece it was found that the rod was broken in two places; there is no indication of any burning of wire. On the other hand the part that was in the upper six inches of the pipe was drawn out and expanded which put a tremendous pull on the lower part of the rod, and below the hook the copper wire was reduced in diameter from seven-eighths to three-eighths of an inch in diameter, which shows the tremendous pull that it took to break the cable.

The question of why the rod was pulled in two needs to be explained. In general, most lightning strikes consist of an attempt to get down with high frequency and this current in trying to go down the cable induced in the iron pipe by transformer action. The two reacted in such a way as just as often occurs at the time of a short circuit in connection with commercial circuits.

As stated before, after this was repaired the barn was struck again this spring and the discharge instead of going down the pipe made of wire jumped over to the iron track from which a door was hung and went to earth another way, setting fire to the building. At the same time a discharge going down the cable hit the diagonal opposite corner with similar difficulty in going down through the iron pipe.

The lesson to be learned from all this is just what a tremendous force which is acquainted with the action of alternating currents and, just the mistake that is forthwith made by the writer in writing a house, that it is not allowable to run a single conductor in an iron pipe.

# VALUE OF SANDY SOILS EXPLAINED

By J. A. JEFFERY, Professor of Soils, Michigan Agricultural College.

At the present time considerable areas of sandy soil are being offered for sale in Michigan. These soils range from the coarse dune sands to the finer Miami fine sands. The greater part of the soils offered for sale are properly embraced under what is known as Miami sands.

The dune sands possess little or no agricultural value. The Miami sands vary from soils that possess much intrinsic agricultural value to soils that are not otherwise richly productive under ordinary methods of management.

# ECONOMIC FEED FOR STOCK

Certain Nutrients Are Required for Every Animal to Perform His Work—Maintain Protein Supply.

It is not always the heaviest feeders who get the best results. Every animal requires certain nutrients that enable it to perform its best work. If these nutrients are not present in the proper proportion, it means that the animal must consume and adjust larger amounts of some of the elements that it can use, in order to get enough of the others. Economical feeding requires that nutrients be supplied to animals in the proportions which they need. As a rule, farm feeds are lacking in protein. If one is feeding cornmeal, or wild hay, the farm will supply what is needed to meet the animals' needs for best work. This is especially true of dairy cows and young stock. When the amount of roughage must be fed, some such feed as bran, middlings or oil meal must form a reasonable proportion of the ration, in order that the protein supply may be maintained.

# THE GREAT MIDWAY POPULAR SYMBOL OF VALUE

## GRANGE'S POWER IS SHOWN

Striking Example of the Organization's Influence in Legislative Matters Is Demonstrated

A striking example of the Grange legislative influence was recently furnished in Massachusetts, where the Grange demonstrated its power in a legislative cause. Appropriations from the legislature, in behalf of the state stock market in Massachusetts, had been secured to the extent of \$250,000. This provided for many enlargements in the college work and the equipment, and the farmers of the state were everywhere jubilant at the big appropriations secured.

Then Gov. Eugene N. Foss appeared on the scene with a veto of the whole appropriation. The friends of the college were stunned, but they were not deterred. They immediately set out by the state to deal with the situation. A bill was called into action and the co-operation was instantly secured of Grange members in every section of the state. They were everywhere active in the legislature. Letters, telegrams and telephone calls poured in upon senators and representatives of the state, and the vote of the legislature was changed. The bill was passed. The Grange members were everywhere active in the legislature.

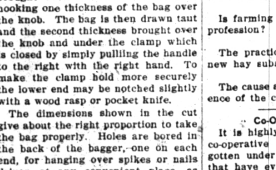
## GRAIN BAGGER IS CONVENIENT

By H. H. MUSELMAN, Instructor in Farm Mechanics.

A bag is presented here which is a grain bagger, which may be easily constructed by one at all familiar with the hammer and saw. The advantage of its use is reduced by being obliged to fill bags with grain and without assistance.

The bagger is designed to be used at any convenient place, as on a farm, or at a mill, or on a ship.

## GRAIN BAGGER



# THE GREAT MIDWAY

Young Man Evidently Was Lacking in His Appreciation of the Country's Statements.

There is plenty of food for cynical thoughts in the national capital, as is shown by the following incident: A young man, evidently lacking in his appreciation of the country's statements, was sitting at a table in a restaurant in Washington. He had ordered a beefsteak and potatoes. The waiter brought the food, and the young man looked at it with a cynical expression on his face. He said to the waiter: "This is the best of the country's statements."

The young man evidently was lacking in his appreciation of the country's statements. He had ordered a beefsteak and potatoes. The waiter brought the food, and the young man looked at it with a cynical expression on his face. He said to the waiter: "This is the best of the country's statements."

# CHILD'S FACE ALL RED SPOTS

632 N. 5th St., Terre Haute, Ind.

"My little boy has had for about four years, had a breaking out on his face. It was little red spots at first, then he would rub and scratch and water his face. Max of the day was hurtled nearly 30 feet from the right of way.

# STATE BRIEFS

Farmers in Hamtramck township and Marfoni county have struck for pay.

At a meeting of the Grand Rapids millers and millers of western Michigan, the subject of a grain trust for the state was discussed.

# CO-OPERATIVE MOVES

It is highly significant that Grange co-operative movements are being gotten under way in many states, that have every appearance of being substantial and permanent.

# Wheat as a Food for Horses

Concerning wheat as a horse food Shepperd of North Dakota writes that the horse is one of the best of the north-west, contracts for bladders are annually placed by the State Grange in Michigan for the patrons every year.

# Killing Thickets

The common methods of killing out Canadian thicket in Michigan and North Dakota last year and the greatest success was obtained by frequently cutting the plants.

# Watering Cows

Watering cows is not a new thing, but one that is often neglected.

# Valuable Collection of Buttons

A collection of buttons, dating from the ninth century, left by a man who was buried at Ghent, France, is valued at \$40,000.

# ON THE BEACH.

"What a lovely day," said the young man, "I have never seen a day like this before. The water is so blue, and the sand is so white. I am going to go down to the beach."

# Mother's Lingual Attainment

The mother of a little boy in Kansas City, Kan., who is a very clever little fellow, is a woman of extraordinary linguistic attainments.

# THE OTHER WAY 'ROUND.

A good idea which is being carried out in England, is just now gaining American circulation. It is for leading characters Rudyard Kipling and Doris Gray.

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# HARD FOR THE HOUSEWIFE

It is hard enough to keep house if it is in a healthy condition, but it is even harder to do so in a condition of weakness and suffering all the time with an aching back and a swollen to carry. Any woman in this condition has good cause to suspect kidney trouble, especially if the kidney action seems disordered at all. Doan's Kidney Pills have cured thousands of women who have been in this way. It is the best-remembered special kidney remedy.

# Doan's Kidney Pills

Swollen Varicose Veins, Painful, Knotted, Ruptured, Bad Legs, Mills, Thrombosis, Edema, Phlebitis. It takes out the inflammation, soreness and pain and tiredness; reduces the swelling, gradually restoring part of normal strength and appearance. ABSORBINE, JR., is a mild, safe, pleasant antiseptic liniment, heating and soothing. Severe cases where veins have ulcerated and broken have been completely and permanently cured. First few applications of ABSORBINE, JR., will give relief and prove its merit. \$1.00 and \$2.00 per bottle at drug stores or by mail. Detailed directions, reports on recent cases and Book 6 G free on request. W. F. Young, P. O. 210 Temple St., Springfield, Mass.

# Legs raw with itching, burning eczema

Frances D., May 2, 1912: "A friend of mine had raw hot blotches from all over his legs, body and arms. It was probably very bad case of eczema. After two months' treatment he was suffering untold torture, and would awake at night and bleed from itching, with hands all over raw blood. His legs were like a piece of raw meat, itching and burning. For two months he tried several agents, but would get up and walk the floor. He says he simply felt as if he were burning all over. After he had used a month's supply of your Remedy Soap and Ointment, he was cured, and his skin was as clear as crystal." (Signed) W. D. DEWANE, 20 DeWitt St., Resinol samples mailed free.

# The Army of Constipation

In Growing Smaller Every Day, CARTER'S LITTLE LIVER PILLS are the only gentle purgative that is perfectly safe and pleasant to use. They are the only pills that are not only gentle, but are also the only ones that are perfectly safe and pleasant to use. They are the only pills that are not only gentle, but are also the only ones that are perfectly safe and pleasant to use.

# CURE FOR PILES

Colo's Carbolite stops itching and pain, cures piles. All drug stores, 10¢ a bottle.

# DEFIANCE STARON

W. N. U. DETROIT, NO. 34-1912.

# Children Cry for Fletcher's

The Kind You Have Always Bought, and which has been in use for over 30 years, has borne the signature of Dr. J. C. Fletcher, and has been made under his personal supervision since its infancy. Allow no one to deceive you in this. All Counterfeits, Imitations and "Just-as-good" are but experiments that trifle with and endanger the health of Infants and Children—Experience against Experiment.

# What is CASTORIA

Castoria is a harmless substitute for Castor Oil, Peppermint, and Sassafras. It is Pleasant. It contains neither Opium, Morphine nor other Narcotic substance. Its age is its guarantee. It destroys Worms and allays Feverishness. It cures Diarrhoea and Wind Colic. It relieves Teething Troubles, cures Constipation, Stomach and Bowels, giving healthy and natural sleep. The Children's Panacea—The Mother's Friend.

# GENUINE CASTORIA ALWAYS

Bears the Signature of Dr. J. C. Fletcher

# The Kind You Have Always Bought

In Use For Over 30 Years THE GUINNESS COMPANY, NEW YORK CITY.