EXCELLENT STUDY FOR FARM BOYS DURING WINTER MONTHS

Plant Growth in Its Various Stages Described Especially for the Benefit of Our Youths Who Wish to Make it Object Lesson During Severe Cold Months-Needful Things.

(By MRS, L GRIMES.)

long time to a boy, especially if he plant's lungs. Through them it gets has a choice lot of seeds that he is the air it needs to live on. anxious to put into the ground. But ing the time of waiting.

need before he is even ready to pre- above them before they come up. pare his ground.

stand something about the make-up of the experiment. the seed itself. As seeds are quite studying one closely will give a fair understanding of others.

The common white bean is easy to get, and to study, so we will take in as an example.

Soak a few beans in water overnight. Then take one and cut the tough outer covering around the edge with the point of a pin. The halves can then be easily spread apart, and it moist and warm.



Seeds need air for germination. The beans in both bottles were soaked 24 hours and then were put in dry bottles. Bottle A contained sufficlent air to start the few seeds. Bottle B had not enough. The water in the tumbler C did not contain

sufficient air for germination. the tiny plant discovered. It lies snugly cradled in one end of the bean. You will see that it has two parts, a small waxen point, and a tiny, yellowish, lolded leaf. The point is the

root, and a tender, delicate thing it is. This little root must work its way down into the ground, both to feed and to hold in place the little plant. If the ground is not well prepared, if it is too hard and cloddy, the little root may become so broken and bruised as to hinder, or perhaps en-

tirely check, its growth. The tiny leaf, too, which must push upward, needs a soil that is soft and

loose, if it is not to be injured. Plant a few seeds in a bed of wet sawdust, and you will soon see, branching out from the main root, many little rootlets, A little later, a set of fine hairs, called root-hairs, will appear on the rootlets.

It is through these that the plant They take up all the elements that the profit on your season's work. plant needs, and send them up through little veins to the stems and leaves, as your food is taken through HANDLE MANURE your body by the veins, in the shape

The plant's blood is called sap. The tiny mouths can only use the food in the soil when it is "in solution." that is to say, when it is thoroughly dissolved. You can see that it will need considerable moisture to do this. If the ground is too light and loose,



How the Bean Plant Gets Up.

the water will all drain and dry away, and no matter how rich the soil may the plant will die for want of

So an important thing to keep in mind, when preparing the seed-bed, is that the top soil, to the depth of geveral inches, should be worked up lightly and loosely enough so that the root can readily push through, and atill be pressed firmly enough so that the moisture can not all escape,

All over the stem and leaves are

takes a microscope of quite high From fall till spring seems like a power to detect them. These are the

If you cover a plant so tightly that there is a great deal to be done dur- it cannot get air, it will smother just as surely as you would with a blan-The boy who does not mean to ket over your head. That is what will waste his time and labor must learn happen if you get your seeds in too something about what his plants will deep, or if you let the ground get hard

If you wish to be sure just how The first thing needful is to under- deep to plant your seeds, try this lit

Take a tall glass tumbler, or a pint similar in general characteristics, fruit-jar, and fill it with earth. Press down into it, next the glass, three seeds of any kind you wish to test.

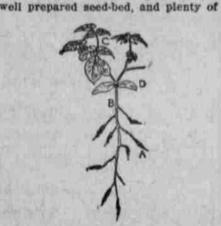
Press the first clear to the bottom, the second about half way to the bottom, and the third leave within an inch of the top. Do not put them directly over one another. Wrap a heavy paper around the glass to keep out the light, and keep the earth in

note how the seeds are doing. Which- it touched the earth, and the goddess ever one thrives the best is the one you want to take as your guide in the matter of depth. What do you think will happen to the one at the bottom?

You have noticed that there is a creat part of the seed that is not part is filled with food upon which the plant lives until it gets roots long

enough to feed itself. After the food in the seed is all used up, there must be other food in the soil ready for it to live on. This is the critical time in a young plant's life. If it is starved and stunted now,

it will never make up for it. Remember, then, that good seed, a



Showing Root Hairs On a Young Plant. A, Root Hair; B, Hypocotyl, Between Seed-Leaves and Root; C. True Leaves; D, Seed-Leaves or Cotyledons.

food in the right shape for the young plant to use, are the first things to gets its nourishment from the soil. look after, if you wish to make a good

DIRECT IS BEST

Prof. Gilmore of New York Station Finds Much Loss Where Allowed to Be Exposed to Weather.

On the subject of hauling manure, Professor Gilmore of the New York experiment station, says:

"We think, all things considered, it is better to haul manure directly from the stable to the fields than it is to pile it up for any length of time.

"If well-rotted manure is desired for trucking purposes or for top dressing for hay lands, then it must be stored, but under ordinary conditions for this purpose losses from 25 to 45 per cent, in the fertilizing value of manure occur, and if it is not kept reasonably wet and stirred from time to time, excessive fermentation results, to say nothing of dry burning and leaching. Losses amounting to 37 to 57 per cent, have been recorded when manure has been exposed to weather.

This loss refers mainly to the fertilizing material in the manure. It is still available as humus or organic little openings, called "pores." It matter when applied to the soil."

For the

LEGEND OF THE MISTLETOE

Bome Claim Goddesses Kissed Al Who Passed Under Plant as Symbol of Love.

(By E. R. GAILLARD.)
According to Scandinavian mythology, Loki (the god of evil) was the sworn enemy of Baldur (the god of light), and tried by every means in his power to kill him, but failed because he was invulnerable to everything that came from earth-air, fire, or water.

Loki, at last, conceived the idea that the mistletoe, springing from neither, would serve his purpose, and, having an arrow made from that wood, he helped Hodi (the blind god of darkness), to aim it, and Baldur fell dead shot through the heart.

All the gods and godesses prayed for his restoration to life, and when the prayer was granted it was decreed that the mistletoe should never-Every day slip off the paper, and more have power to do harm unless of love was appointed to guard it.

Some legends claim that the goddess kissed all who passed under the plant as a token that it was no longer a weapon of death, but a symbol of love, while others assert that she exfilled up by the baby plant. This acted a kiss from each as a propitiation, or the bough should be allowed to work harm.

Another reason for the kissing privilege conferred by the plant is said to be that a lovely maiden preferred death to the kisses of an old monk who pursued her, and her prayers for deliverance were answered by transforming her into a mistletoe branch and placing her in a tree.

The monk waited for her return. but rather than that, she clasped the tree and remained clinging to it, leaving the waiting monk to kiss whom

ever he could catch. The custom of "kissing beneath the mistletoe" is so old that no one knows when or how it originated; but when young people are found selecting the branches that have the



Mistletoe.

most berries on, it is fair to suppose that they know a kiss must be given for each berry plucked, and that the ceremony is never complete until every berry is off the branch.

There was once a common, though mistaken belief that the mistletoe by an Ohio man. A horseshoe magnet grew on oak trees only, but that was with unusually long poles has the ends so far from true that the Druids, who of these poles rounded. A single wheel, held the oak as absolutely sacred be- with a round steel bar running through cause they believed it to represent the One Supreme God, deemed the mistletoe doubly sacred if found on one, and carefully guarded it until the sixth day after the first new moon of each year.

When this time arrived, priests robed in white surrounded the tree and held solemn ceremonies, among which was the sacrifice of two white

After the ceremonies, a priest in spotless robes ascended the tree and, with a golden knife, cut the mistletoe and let it fall on to a white cloth held by other priests.

The branches were then formally 'blessed" and divided among the people who believed the sprays given them to have miraculous powers.

The common belief in the efficacy of the plant was such that it was called all-heal; but according to an old legend, a certain lover searched many days for a specimen growing on an oak tree, that he might secure its branches for the cure of his betrothed, who was sick unto death, but when he found it he touched the sap while cutting the branches, and fell dead near the tree, indicating that the sap was a deadly poison.

The plant thrives in America from New Jersey southward and westward. trees to the extent of being a nuisance.

Appropriate Locations.

The place for baby carriages-

The place for bank savings-Port Deposit.

The place for politicians-Boss-ton. The place for an auto center-Mo-

. The place for a laundry town-Washington. The place for the national game-Balltimore.

The place for earthquakes-Cleve-A place for connoisseurs of rare old

wine to avoid-New-port.

SNOWBALL BATTLE.



See the soldiers all in line! Now the battle's on! Every man will have to test His mettle and his brawn.

Ammunition's piled up high
To use throughout the fray
Which just begins when school
And ends at close of day.

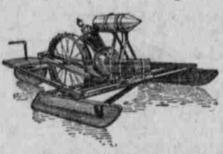
The Big Snow Fort is near at hand, And soldiers great and small, Will strive to win the victory With the powerful snowball.

HOME-MADE MOTOR ICEBOAT

One Constructed to Take Place of Regular Sali Iceboat and Used With Success Last Winter.

This motor-driven iceboat was constructed to take the place of the reguar sall iceboat, and the one from which the accompanying Illustration was made was used with success all last winter.

The boat is 41/2 feet wide at the widest part and ten feet long. The



Iceboat Propelled by Engine.

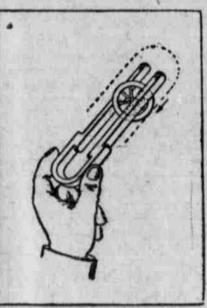
runners are about ten inches high, shod with steel ground concave the same as a skate runner. The motor is a three-horsepower air-cooled engine which was taken from an old motorcycle. The power is transmitted by a belt to a spiked driving wheel, giving a reduction of about 71/2 to 1, says a writer in the Popular Mechanics. The rear wheel of the motorcycle was also taken and an iron band shrunk on for a tire, and steel horseshoe calks attached at four-inch intervals for the spikes. The two pieces that support the spiked driving wheel are binged so as to allow the wheel to rise and fall over any bumps on the ice and to let the engine run free when desired. The entire boat with its propelling equipment weighs 120 pounds.

The boat is operated from the rear with one lever for controlling the spark, another for the throttle and the third for directing the course of the in the hot sun after being sprayed.

EDUCATIONAL TOY IS QUEER

Wheel Rolls Round Ends of Magnet, but Doesn't Fall Off-Amusing Plaything Patented by Ohloan.

A toy that is both amusing and of educational value has been patented it for an axle, rests upon this axle on the poles of the magnet, which form an endless track for it. The wheel, of



An Educational Toy.

course, is made light enough that the attraction of the magnet keeps it from falling off, yet the wheel can roll about easily on what is practically an endless track. To a child this toy brings and those who know it only as a part home more forcibly than any lecture any desired point on the blade, and of Christmas decorations can have by his school teacher the power and little idea of how often it overruns principle of magnetism and he will delight in "fooling" his friends with it. The uninitiated will naturally expect the wheel to roll off the arms of the horseshoe and will be amazed to see it merely roll down the ends and back on the upper side.

> Served Two Purposes. "George, my son, don't you think it is rather extravagant of you to eat

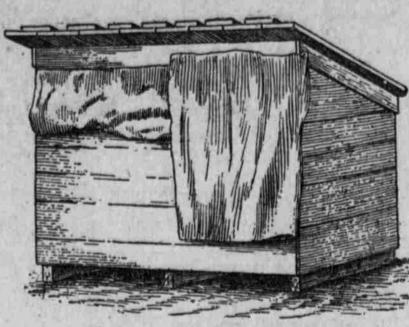
butter with that delicious jam?" "No, mother; it is economical. The same piece of bread does for both."

Every Letter in Sentence. This sentence contains every letter

in the alphabet: "A quick brown fox jumps over the lazy dog."

TREMENDOUS LOSS WROUGHT BY PESTIFEROUS LITTLE LOUSE

Many Farmers Do Not Realize That Lice Cause Much Damage to Swine-Parasites Worry Animals and Prevent Feeding and in Many Cases Cause Sores Retarding Natural Growth.



A Simple, but Satisfactory, Hoghouse.

(By R. G. WEATHERSTONE.) bunch of hogs in western Illinois we cause every louse will multiply and observed that most of the animals soon spread all over the animal's were afflicted with little sores, red body.

sores to break out.

day but at night slept in houses which fectant.

were used for the winter quarters. I suggested that the trouble might be caused by lice, and the farmer caught two or three pigs and found the old quarters for several weeks, and them almost alive with parasites. He a second spraying or even a third bewas astonished and admitted that he fore the hogs are turned in is adhad never examined one of his ani- visable.

lice are a source of tremendous loss year after year, which are not frein the raising of hogs. They worry quently cleaned and sprayed as above the animals and prevent their feeding suggested, lice will surely get into the well, and in many cases produce sores herd. or eruptions which naturally retard growth.

It is not difficult to rid the pig of lice by dipping or spraying, but these their thrift will be impeded. remedles are of no use unless the pens and sleeping quarters are rid of mal, but devotes his entire time and the lice as well.

tar solutions, as they are harmless. still a moderate application of dips animals will blister if allowed to run ly put him out of business.

When a bunch of hogs is badly inportion of the body. It is no use to a finer finish.

| spray the upper part of a hog and Not long ago in looking over a leave the under side untouched, be-

spots, on the thin places in their After the hogs have been dipped or sprayed they should be turned into These eruptions were particularly clean lot that has never been used for noticeable back of the ear and on the hogs and the old quarters should be flanks. The farmer complained that abandoned, or if this is not practichis hogs were not eating well and he able, every particle of bedding and could not understand what caused the litter in the yards must be raked, swept up and burned, and every foot This bunch of hogs of all ages, from of ground in the yards and the fences three-months-old pigs to three-year-old and sleeping quarters, as well, thorsows, ran on a pasture during the oughly sprayed with a strong disin-

Kerosene emulsion, which is cheap, can be used in this way to advantage. The hogs should not be returned to

If the hogs are allowed to occupy Many farmers do not realize that the same pens and sleeping quarters

As this parasite multiplies with tremendous rapidity it only takes a short time to thoroughly infest hogs so that

The hog louse affects no other aniattention to the swine. While he The best dip to use is some of the is quite tenacious in the efforts to live, We do not believe in kerosene emuland sprays and the burning of old sion because unless great care is tak- bedding and whitewashing of the inen to keep the solution very weak the teriors of sleeping quarters will quick-

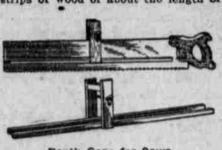
For Mixing Concrete.

fested the animals should be dipped, For mixing concrete there has been although spraying may be used, pro- invented a spade with long oval holes vided the hogs are tied and thrown in the blade, through which the finer so that the spray may cover every cement will flow and give the surface

SPECIAL DEVICE FOR DEPTH SAWS

be Found Useful When Cutting to Any Uniform Depth.

It is frequently necessary to make a saw cut of uniform depth, and unless a special device is provided for the purpose the task is an extremely difficult one, says the Scientific American. The accompanying illustration shows a small gage which may be applied to any saw and may be adjusted thereon to prevent the saw from cutting deeper than desired. Two thin ground. strips of wood of about the length of



Depth Gage for Saws.

the saw blade are fastened to a pair of arms secured to a block at the upper end. A thumb screw below this block may be tightened to clamp the two strips against the blade of the saw. These strips may be secured at thus provide an easily adjustable depth gauge.

Horse Susceptible to Cold. Horses are exceedingly susceptible to cold on the chest, and a horse will oftentimes contract pneumonia or other ills if left standing unprotected. which he would escape if provided with a thick apron of carpet or oilcloth suspended from the hames and reaching to the lowest portion of the chest. It is a little thing and inexpensive, but it is worth attending to.

Italian Cotton Imports. Italy now imports more than \$50, 000,000 worth of cotton each year. native crop.

PROTEST MADE **AGAINST HUNTER**

Gage Shown in Illustration Will No Reason Why Farmer Should be Found Useful When Cut- be Expected to Tolerate Band of Trespassers Every Fall.

(By BESSIE L. PUTNAM.)

A few years ago, when the pioneers along the line commenced to object to the depredations of the hunter, they were charged by hunter and surrounding farmers alike as stingy and unaccommodating. But more and more is there a growing sentiment against having one's farm used as a hunting At this season it is very easy to

start a fire, very difficult to check one that has once commenced. Even though the majority of hunters are careful never to toss aside a lighted cigar, never to strike matches in improper places, one never knows when the careless one may come along and do untold mischief. There is the annoyance to stock.

The old saying, "One might as well be killed as scared to death," is appheable with peculiar force. Sheep, worried by hunter and dogs, soon become so wild that not even the owner can approach them readily.

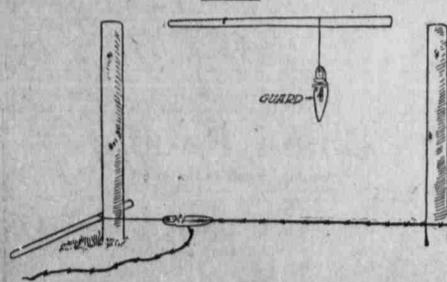
Cattle have been known to stampeed when a gun was fired in close proximity. Such treatment is ruinous to the dairyman, to say nothing of the frequent accidents, when a valuable animal is sacrificed, the hunter making off with his game and leaving the owner of the land that much poorer for his generosity.

Finally, the game is rapidly being exterminated, and much of it is really. the farmer's friend. The quail, the clear note of which fills all bird lov ers with joy, is one of the best insecand weed destroyers.

A flock of quail in the potato patch renders the use of Paris green unnecessary, and the detested cut-worm is their favorite dessert.

The farmer "feeds the world" but there is no reason why he should be expected to tolerate a band of trespassers every fall, endangering the Hence the government is carefully life of his possessions. In many comfostering all attempts to produce a munities farmers are banding together against the hunting nuisance.

WIRE STRETCHER IS POWERFU



My wire stretcher is made out of an old mowing machine guard, writes Willie Ballard, rural route 5, Weston, W. Va., in an exchange. Get a pole shout four and a half or five feet long, fasten the wire, which should be about two and a half feet long, to the guard, and then about two feet from the end of pole, and you have a stretcher that is a dandy for stretching barbed wire.