SPRAYED SPUDS PAY BEST.

Spraying potatoes is no different from painting a house. The job is not complete until all the exposed surface is covered. Unless the entire surface of the leaves is covered, both top and bottom, the job is not complete.

In fact, the bottom of the leaves contains the breathing pores and air spaces of the plant. Of the two surfaces of the leaf, the underside is the more important. Insects deposit their eggs on the under surface of the leaf. Plant lice attach themselves on the lower leaf surface. The lower surface of the leaf remains moist longer than the upper surface, therefore making conditions favorable for infection from disease germs. In fact, many ills befall the lower surface of the potato leaf which do not affect the better protected upper surface.

SPRAY WITH BORDEAUX MIXTURE.

One of the most widely used materials for spraying potatoes is Bordeaux mixture. The first step in preparing Bordeaux mixture is to place two fifty-gallon barrels close to the water supply. Weigh out fifty pounds of copper sulphate in a clean burlap sack and hang it in a barrel. Fasten it near the top of the barrel by drawing the top of the sack over the edge of the barrel and nailing it there. Fifty pounds of copper sulphate will not dissolve in fifty gallons of water unless the copper sulphate is kept near the top of the water.

Next fill the barrel with water. The above operation should be done at least several hours before you are ready to spray, so the copper sulphate will have time to dissolve.

Weigh out fifty pounds of good stone lime and put it in a fifty-gallon barrel. Now sprinkle water over the stone slowly until the lime begins to crack. Then add water rapidly enough to prevent formation of dust. Stir to prevent the lime from caking in the bottom of the barrel. Use a seasoned hickory stick for stirring, for nothing is worse to clog spray nozzles than fibre that comes off a soft wood stick. When the violent boiling is over, the material should be about as thick as mush. The lime in this plastic condition should be stirred until it is a smooth as butter. Fill the barrel with water and stir until all the pasty mass has completely disintegrated. With a good grade of lime this operation can be done in about half an hour.

The two barrels will contain enough stock solution to make 625 gallons of Bordeaux, which is enough to spray six acres once.

TO MAKE BORDEAUX 4-4-50.

One hundred gallons of Bordeaux mixture, 4-4-50 formula, is made as follows: Fill the spray tank half full of water. Stir the lime solution and dip out eight gallons and pour it into the tank through the twenty-mesh wire screen which comes with the machine. Add water until the tank is about three-fourths full, stir the copper sulphate and pour eight gallons into the tank. Then add water until the spray tank is full.

To get best results from spraying, spray every week or ten days. If the small leaf is sprayed when seven days old, it does not mean that the leaf is protected from insects and disease seven days later, because a lot of new tissue has been added. Also new leaves have been formed during this period. Therefore, it is necessary to spray potato leaves often. One or two sprayings will not do. Spraying must begin before any damage to the leaves has appeared and continue every seven to ten days until the vines are dead, if maximum returns are to be secured. Spraying is a preventative and not a cure.

CARE OF THE SPRAYER.

After using the machine it ought to be washed thoroughly by pumping water through it. The pump packings ought to be tightened up or replaced as needed. A farmer known to the writer saves the drainings from his tractor and automobile engines and at the last of the season pumps this used oil through his spray rig, after washing it thoroughly. He says the oil forms a coating over the metal parts and prevents rusting.

All liquid ought to be drained from the machine before freezing weather. The hose should be taken off and placed away where rats won't get at it.

Any potato sprayer which will maintain a pressure of from 200 to 250 pounds puts on 100 gallons of spray solution per acre, and with nozzles adjusted to cover the lower surface of the leaves is an efficient spray rig.

The traction type machine is cheaper in first cost than power outfits, but the power machine can be used with lighter horses and can be used for fruit trees.—R. B.

Is Your Child Comfortable?

Naughtiness Is Frequently Caused by Discomfort.

BY DELLA T. LUTES.

The other day I chanced to be visiting in a home where there is a lovely little child of about three years. It was a hot and humid day. The child fretted, cried and was obviously unhappy. The mother scolded and even spanked, with no effect.

"I know he isn't hungry," she said despairingly, "and he can't be sleepy." It was hardly noon. "He isn't sick, he's just plain cross."

Being an old friend of the family, the mother asked if I would look after little Tommy while she went on an errand. I was glad to do it for I wanted to try an experiment. I took the child to the bathroom and undressed him. He had on rompers with long sleeves, a waist, shirt, stockings and shoes. The straps of his waist were too long and slipped down over his arm. If there is any one thing more than another that will make me want to cry—or worse!—on a hot, sweaty day, it is to have a shoulder strap slip down over my arm. The grip of a garter was worn out, so one stocking hung by only one garter and the elastic was out of this. At every step the stocking slewed around and pulled. His shirt was woolen and too heavy. Someone had told the mother not to take off woolen shirts until he was four years old, so, hot or cold, she left on a woolen shirt. His rompers were too small and drew in the crotch. A saint would have been "cross," wearing those clothes.

A TRANSFORMATION.

I took off all the child's garments, put him in the tub and let him stay there while I did some repairing. The straps to the waist were shortened. The band was taken off the rompers and a piece stitched on to make them longer in the seat.

When Tommy was taken out of the tub and dried, I sprinkled talcum powder generously over back and chest where the prickly shirt had irritated the tender flesh. A thinner shirt of silk and wool was substituted for the woolen, with later advice to the mother to change this to cotton. A healthy child of three years doesn't need a woolen shirt in hot weather any more than a cat needs an overcoat. Socks were put on instead of stockings and the sleeves of the romper were cut off above the elbow and hemmed.

When Tommy was dressed, he had a drink of cool fruit juice and went kicking his joyous little heels into the yard to play. The transformation had taken exactly half an hour.

After his mother had been home a few moments, she remarked on how happily Tommy seemed to be playing and wondered what had occasioned the change. I told her. He was simply made comfortable.

"I just didn't *think*," she said, "that he might not be comfortable."

DISCOMFORT CAUSES IRRITATION.

A normal child is not cross unless he has reason to be and that reason may be either sickness or discomfort—discomfort oftener than sickness.

A baby wearing diapers is most uncomfortable unless the diaper is carefully adjusted. With young girls sometimes taking care of the baby and with the mother hurriedly changing the diaper many times a day, carelessness often brings great discomfort and consequent irritability. If the diaper is pinned to the shirt, there is danger of dragging the shirt down on the neck until the neckband of the shirt positively hurts. If it is not pinned in the back, it will slip down and bind the legs.

Usually a smaller diaper or pad is worn inside the square and unless this is pinned up front and back, it slips down into a bunch between the legs. I have seen a baby waddling about like a little duck with a great wet pad of diaper between his legs. The rubber pants are good to use in necessity but are too often the device of a lazy nurse or mother to protect outer garments and leave inner ones wet.

The little rompers may very easily be too small and although they *can* be buttoned on over the diaper, it is done only by bunching the diaper up and restricting the freedom of the legs. It is such restriction and irritation of delicate parts of the body that often engender bad habits.

The diaper should be loose and comfortable, not too thick and both outer and inner cloth pinned securely front and back. And, better yet, the child taught to go without a diaper just as early as possible.

Stockings pulling on the legs or wrinkling down over the shoes are uncomfortable. Shoes must be plenty large and with firm but not too heavy soles. Rubber diapers should not be so small in the leg that they leave a red mark. And they should *not* be worn except when absolutely necessary.

APPEARANCE IS SECONDARY.

In dressing a child, remember his comfort as well as his looks. The day of starched, embroidered, white picture dresses is about gone by, thank heaven. The colored rompers and little chambray and gingham romper suits are so attractive that even the vainest mother is willing to have her child wear clothes in which he can play. Children used to be so fearfully "dressed up" on Sundays, afternoons and visiting days that they had to be set upon a chair to be looked at, or decide between stealing off for a good time with certain punishment to follow, and miserable, unhappy, immaculate doing nothing. Invariably the wisdom of child nature chose the former.

Do not forget to give the child too small to ask for it, *frequent drinks of water*. I have seen a child's frettings instantly stopped by a drink of cold water. Little children get just as thirsty as big ones or grown folks, and yet we "forget" to give them a drink and scold them when they cry for it. And the body needs water. Thirst is Nature's warning and should be heeded. Babies and dogs often suffer by thirst just because those who are responsible for them forget to give them a drink.

In summer, keep the children out of doors pretty much all of the time, and in winter as much as possible. When they sleep see that their rooms are of comfortable temperature, neither too hot nor too cold. A child is often fretful and wakeful simply because his room is too hot. Let the covering be ample but light.

If the skin shows rash in hot weather, use carbolated vaseline after cleansing with warm water and pure castile soap. A good healing talcum powder after the bath, even if there is no rash, is comforting.

If there is severe chafing after bowel trouble, use zinc ointment. The effect is magical. In winter when the skin gets rough, use healing cold cream, mentholatum or honey and almond cream.

Do *not* put coarse wool or heavy fleece-lined underwear on children. Many a child has developed seriously wrong habits on account of irritations produced by rough underwear. Sacrifice elsewhere to give them soft underwear that will not scratch or irritate. School rooms are often so illy ventilated that children suffer from too heavy clothing. They get dull and then the teacher scolds. Put more outer wraps on and dress them so they will be comfortable indoors.

The mental development depends greatly on the physical well-being. If a child is well and comfortable he is disposed toward goodness. The mental, moral and spiritual training should begin in infancy but unless a baby's body is healthy and feels comfortable, his mind is not in a condition to receive training.

The Sunday School Lesson

JULY 8

Mary, the Mother of Jesus, Matthew 1: 18 to 2: 12; 12: 46-50; Luke 1: 26-56; 2: 1-52; John 2: 1-11; 19: 25-27. Golden Text—Thou shalt call his name Jesus, for he shall save his people from their sins.—Matt. 1: 21.

LESSON SETTING—Our last lesson was a study of manhood. This is a study in womanhood. John's ministry was a national ministry. Mary's was the ministry of the home. John serves in the forefront. Mary serves in the background. John was a faithful herald. Mary was a true mother.

I. A MOTHER'S GUIDANCE, 41,42.

Vs. 41, 42. *His parents went to Jerusalem every year.* This law of Moses required the attendance of all male Jews at Jerusalem at three great feasts,—Passover, Pentecost and Tabernacles. But practical circumstances made this no longer practical, and now the devout Jew went once a year. This Joseph did every year and took Mary with him. *The feast of the passover;* the great feast instituted on the eve of the departure of the children of Israel from Egypt. The Sacrament of the Lord's Supper in the New Testament corresponds to this great feast. Christ is called "our passover," 1 Cor. 5:7. *He was twelve years old;* no longer a child, but a lad more mature at that age than a Western boy at that age. At that age the boy became "a son of the law," and a member of the Jewish church, so his parents take him with them to the Passover at Jerusalem. It was like his first communion.

II. A MOTHER'S PERPLEXITY, 43-50.

V. 43. *Fulfilled the days.* The Passover lasted seven days. Joseph and Mary stay the full time. Their religion leads them to seek not the irreducible minimum of duty, but the maximum of love and true worship. *The child Jesus tarried.* Even seven days did not suffice him. Something holds him like a magnet. *Joseph and his mother knew not of it;* no need of explanation to free the parents of any carelessness.

V. 44. *After three days;* first day journeying from Jerusalem, second day returning and searching in Jerusalem, third day, finding him in the Temple. *In the Temple . . in the midst of the doctors.* There were rooms in the Temple where the teachers of the law gave instruction. *Hearing . . and asking.* In the quietness of Nazareth, questionings had come that could not be answered at his mother's knee. These answers he seeks from the teachers of the law.

Vs. 47-50. *Astonished at his understanding and answers.* Deep truths had come to him which astonish the doctors. *When they saw him, they were amazed;* amazed to find their son in such company and making such an impression; amazed also to find their son exercising such independence of action in staying behind. *Why hast thou dealt thus with us?* They are thinking of the anxiety which Jesus' independent action had caused them, without understanding the motive that actuated Jesus. Mary knew the divine secret of his birth, but did not know that secret would manifest itself in his consciousness and conduct. *Wist ye not that I must be about my Father's business;* better, "In my Father's house." Jesus implies that there are deeper things for him than the magnet of parental love and the obligations of filial duty. *They understood not.* They cannot enter into the consciousness of Jesus.

III. A MOTHER'S REWARD, 51, 52.

Vs. 51, 52. *Went down with them . . subject unto them.* The awakening of Jesus to the divine relationships of his life does not mean a repudiation of the earthly relationship of his life. He obeys the call of his Father in the Temple. He obeys the call of his mother in the home at Nazareth. *Jesus increased in wisdom . . stature . . favor with God and man.* Mary pondered day by day over his strange conduct and words in the Temple. But she has the deep joy of seeing him respond to her love and growing under a mother's love in all these respects which comfort her heart. Her much pondering does not prevent her from giving a mother's love and receiving a mother's reward.

APPLICATION.

Mary Prepared for Motherhood. When we have escaped from the great collection of legends which have grown up about Mary, we have the New Testament picture of a mother; a woman of retiring disposition, shrinking from observation and with all the tender solicitude of a true mother. It is a matter of little moment that Mary was only a village maiden, or that she was not learned after the manner of the scribes. It does not matter, either, that she lived in a very small house. What does matter is that she was sensitive to the highest and the best, and that her mind was filled with holy thoughts.

An Ideal Mother. Mary kept herself in the background. There are only four occasions upon which we know what Mary said (Luke 1:26-28; Luke 1:46-55; Luke 2:41-50; John 2:1-11). The incident in the Temple illustrates not only Mary's solicitude for Jesus but also her perplexity over his words. No doubt all mothers are perplexed as they watch the new viewpoint of young children. In Mary's case there seems to have been many things which sorely puzzled her. Verse 50 makes it clear that Mary and Joseph were quite unable to grasp the full significance of what had happened. When many years after this, Jesus and his mother were present at a marriage feast in Cana, and the wine gave out (John 2:1-11), Jesus seems to have rebuked his mother; her perfect faith in him led her to direct the servants to do whatever he directed.

Mary's Great Sorrow. Mary had had her full share of sorrow. Bravely she bore in secret the shame of being misunderstood when Jesus was born. Often through the intervening years she loved and trusted, when there was little light for her to follow. The death of her husband had left her to bear heavy burdens alone. At last came the greatest sorrow of her life when Jesus was crucified. Mary stood at the foot of the cross, with her sacred memories of the mystery of his birth crowding upon her. Her hopes had been cruelly dashed to the ground and instead of the honor which at times had seemed imminent, she now saw him in the hands of wicked men, ending in shame and abject humiliation, the life which was to have saved the world. Then came that crowning act of love. Before taking his farewell of the world, Jesus committed his mother to the care of John. He thought of her comfort amid his agonies. This, surely, shows his deep appreciation of her mother love and his own love in return for that which Mary lavished upon him.

Mary and Motherhood. More attention has been paid of recent years to motherhood than ever before, but no one imagines that the subject has been overdone. Napoleon is said to have remarked that what France needed most was a generation of good mothers. France was no exception in that regard. All motherhood is exalted by the story of Mary's deep reverence, her humility and her devotion. She possessed those qualities which, whenever they are found in a mother, never fail to leave an abiding impression upon her children.

Thinning.

Reports of fruit conditions in Ontario indicate that there will be a heavy set of peaches, pears, European plums and fall and winter apples. This will mean in many cases far more fruits per tree than the tree can bring to maturity as No. 1 grade.

Past experience has shown that there is most profit in a No. 1 product, and in years with a good crop the lower grades do not more than pay handling and package charges, if they do that. The low grade fruit materially injures the market for the better grades.

Thinning, or the taking off of the surplus fruits, other things being equal, will give a high percentage of No. 1 and fancy grade when, if all were left on the tree the individual fruits could not develop beyond No. 3 or No. 2 in size. The fruit must be picked at some time and how more easily or at what cheaper time could this be done than when it can be removed in handfuls and dropped on the ground? The number remaining will give as large a volume of fruit and, per package, bring a far better price at less harvesting cost.

Thinning should be done after the June drop before apples and pears are larger than walnuts or the pits of plums and peaches harden. It is the growing wood, not size of fruit, which takes the strength from the tree, so the earlier thinning is done after the June drop the better.

For spacing a safe rule is to allow enough so that when fully developed no two fruits will touch. Naturally this will vary for fruit and variety. Do not be afraid you are removing too much; the man who will go to that extreme has never been found.

Regular thinning shears are manufactured much the same as grape cutting shears. However, after a little practice quicker and just as satisfactory work can be done on most fruits by grasping the stems between the thumb and forefinger, and squeezing the fruits off. In this way none of the twigs or fruit spurs are broken off, as they would be if a pull or jerking movement were used, thus losing the whole cluster.—Ontario Agricultural College.

Keep all blossoms picked from the newly set strawberry plants. They should not be allowed to bear fruit the first season, except the everbearing varieties which are usually allowed to bear a crop of fruit during the fall months.

Poultry

Disease, vermin, and rats flourish in makeshift coops. The sign "chickens don't pay" will invariably be found hanging on miserable, unsightly hen-houses.

The duck's weakest part is its legs. Care must be taken that ducks do not get too fat, as is likely to occur when fed too much corn.

A fat chicken is always desirable, and a full, plump body and limbs will go a long way towards finding a customer. Most of the chickens sent to market are lean and lanky.

A good duck-mating is four or five females to one male, in the early part of the season; and six or seven ducks to a drake during the summer.

Turkey raisers make a mistake when they sell off all their older birds and retain young ones for breeding purposes. The turkey is not fully matured until two years; is at its best at three years, and nearly as good at four.

The richer the food is in protein, the more water the fowls will drink, because water is required in digestion. The warmer the weather the more they require, and the more eggs a hen lays, the more water she will need.

Utility must come first; we must have eggs and meat. If it is possible to combine utility and beauty, so much the better. Beauty apart from utility is a costly affair, which very few poultry keepers can afford.

The gander is heavier, and has a longer neck and larger head than the goose. The goose has a low bass voice while the gander's is sharp like a whistle. In marching, the gander is always in the lead and holds his head more erect than does the goose.

Prevent Harvesting Delays.

Delays in haying and harvest are largely preventable. For the most part they occur because some worn or loose part of the machinery has been overlooked. Thorough inspection and repair beforehand, and a daily "once-over" during the season, will forestall most of the break-downs. I have found it pays to have one man go over all the machinery in use, daily, to see that all bolts are tight, that the moving parts run freely, that the oil-cups work, and that any worn parts are still sound and serviceable. Fifteen minutes so spent means freedom from worry on the part of the "boss," and a full day in the field. And this latter item, at the present cost of labor, is something worth thinking about.—H. J. H.

Pumping Water for the Stock.

The windmill on a substantial derrick is a farm asset, and with a large supply tank is a most economical source of water supply.

With the big tank located upon a slight rise of ground so that water will flow by gravity to the stock tanks, is ideal. There should be a small gasoline engine to supplement the windmill; but the main service in such cases should come from the wind power.

Centrifugal pumps require more power than ordinary pumps. They are also short-lived. But when in good working order they raise the water much faster than cylinder pumps.

The capacity of the centrifugal pump is often too great for the inlet of the average well, and may prove unsatisfactory for this cause. The ordinary screened well point will coat over with a scale of lime and iron, and greatly restrict the inlet of water. Mildly heating the point in a blacksmith's forge or an open fire, and tapping with a hammer will remove the scale and give as good service again as a new point.

Where a large amount of water is required an extra or duplicate pump is advisable, just like the extra tire for the automobile. The farm water supply always seems to go wrong or fail at the most inopportune time.—J. McBride.

Sheep Notes

The advices regarding the docking and castrating of lambs at the ideal tender age oftentimes causes the sheep owner to neglect these operations entirely. No serious results happen, however, to the six or eight-weeks-old lambs by these operations.

Docking is done easily by heating to a dark cherry heat (not a red heat) a docking iron, and cauterizing the stub with this iron at the same operation required to remove the tail.

Any piece of steel with a heavy back, like an old drawshave, will meet the requirements of a docking iron. This year we used old drag shoes. These were heated in a forge, and not one lamb in a hundred lost a drop of blood.

The iron must be sharp enough to cut and draw with some pressure across the tail. A neat, clean cut without the flow of blood is the result.

The advice to make the cut between the points is well-meant, but unimportant. The operator and the lamb do not seem to agree long enough to locate the in-between joints.

Tools and Stock.

I was in a hardware store recently and just ahead of me at the counter was a carpenter who was purchasing tools. I did not think a man could ask so many questions about a hammer, or a chisel.

When he had selected what he wanted, I asked him why he was so particular about the tools he bought. The man was of foreign birth and had not fully conquered the English language. He replied:

"Poor tools, he do no good vork. Good tool, good man, good vork."

I happened to know that this man was a most excellent carpenter, and that his services were in demand by those wanting high-class work done.

What is true of carpentry work seems also to be true of the stock business. Good results are as impossible with scrub stock as with scrub tools, and the man who is seeking to improve his live stock business will go to every pains to make sure that he is getting good individual animals to go into his herds or flocks.—F. W.

Insects have been known to eat rock salt while others eat lead pipe.

When you photograph live stock, always stand the animals with their heads uphill.

Seeds of many biennial and perennial flowering plants such as Foxglove and Canterbury Bells may be sown now for flowers next summer.

Horse Sense

We are expecting the arrival of a couple of new little colts in a short time. This is no uncommon thing with us, but among the dozens of them that have arrived in recent years, we have twice made the mistake of having the foaling on dirt floors with resultant losses.

Dirt floors are satisfactory for many purposes but they are not good for baby colts to lie on. The soil around barnyards and stables is full of the deadly germs of tetanus and joint ill. These germs gain ready entrance to the circulation through flesh wounds of horses or the unhealed navels of new-born colts.

To guard against such infection we shall arrange to have the colts foaled on clean board floors heavily bedded with straw, or on clean pastures away from the buildings, and as a further precaution, secure from our veterinarian a preparation that we can apply to the navel as a disinfectant and an aid to healing. We consider this a measure of prevention, which in the case of new-born colts is the only satisfactory treatment, and in the absence of which thousands of them are doomed to a brief existence.

Be sure to pinch out the tips of all new black raspberry canes. This should be done when the shoots are eighteen to twenty-four inches high, to insure low, stocky, well-branched plants.

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