EFFICIENT FARMING

STABLE DISINFECTION.

The following are extracts from an excellent article upon Stable Disinfection and Milk Hygiene which appeared in the Canadian Veterinary Record under the authorship of C. J. Bousfield, of Charlottetown, Prince Edward Island.

Strictly speaking, stable disinfection is only one small phase of the very much bigger and more complex subject—milk hygiene. However, we should regard stable disinfection as one of the cogs in the big wheel of clean milk production, and if there is anything wrong with this cog, the machine does not work smoothly, and it is only a question of time how long it can run before it must be shut down completely for repairs.

There are many disinfecting agents. They may be divided, for convenience, into three groups, Sunlight, Heat in its various forms, and Chemical substances.

Sunlight—Sunlight is always referred to as the cheapest disinfectant at our disposal. This fact should be kept constantly in mind in the construction of dairy barns or stables of any kind where animals are kept. The maximum window area allowable with good construction should be provided for, and where there is a choice, and there is usually, windows on the south side of the barn are preferable to any other side. This fact was in the minds of the officials who drew up the dairy score card in allowing a generous number of points to the dairyman whose barn was well provided with windows. A minimum of four square feet of window area for each cow stall should always be provided.

Cleaner Stables—Besides allowing the entrance of sunlight, which in itself is always desirable, the illumination afforded by the windows will undoubtedly result in the stable being kept in cleaner condition. Dirt that is rendered visible is much more likely to be promptly removed than the filth which slowly but surely accumulates in the dark corners.

The dirt itself is not particularly harmful or dangerous, but it may, and frequently does, afford either a resting place or a breeding place for disease producing germs.

There are three things that disease producing bacteria require for growth: Food, moisture and a suitable temperature, usually that of the body.

Heat—With other bacteria, not necessarily disease-producing, the body temperature is not actually required, but they multiply at ordinary atmospheric temperature within certain limits. These bacteria are the ones that bring about the decomposition of organic matter, the putrefactive and fermentative groups of organisms. The putrefaction of vegetable matter is usually accompanied by the liberation of gases, many of which have objectionable odors. Such a condition should never be tolerated in or near any place where milk is handled. Heat in its various forms is another disinfectant at our disposal, and one that we should utilize wherever possible. We are depending upon heat as a disinfectant every time we cremate the carcass of an animal that has died from an infectious disease, every time that we scald out a milk pail with boiling water, or every time we sterilize a milk can by inverting it over a jet of live steam. Pasteurization is merely a process of utilizing moderate heat for a given length of time, in preference to higher degree of heat. As a general principle, the higher the temperature the shorter the time required to destroy a given amount of infection.

For example, to destroy the tubercle bacillus in milk, the usual time and temperature combinations given are:

140 degrees for 15-20 minutes.
160 degrees for 5-10 minutes.
176 degrees for 1-2 minutes.

Chemicals—The chemical disinfectants might be divided into three groups, according to their material state, namely, solids, liquids, and gases.

Gases—Certain gaseous disinfectants, of which formaldehyde is an example, are excellent disinfecting agents, but only when the proper conditions are provided. Disinfecting by means of gas is usually spoken of as fumigating, but from the very nature of the process its success depends almost entirely upon our ability to properly confine the disinfecting gas. This is a difficult matter in the average stable and the time and expense of tightly sealing up all the openings in the stable would probably offset any advantages the method might possess.

Solids—Solids almost without exception must be combined with more or less moisture before they are able to exert their disinfecting power. Therefore in looking about for a suitable disinfectant for use in the stable, we are limited somewhat in our choice. Besides the physical nature of the material itself, we must take into consideration its cost and adaptability for the particular purpose in mind.

Care with Poisons—Some very good disinfectants are highly poisonous, and must be used only with considerable caution, notably carbolic acid and bichloride of mercury (corrosive sublimate). The latter substance has one great advantage in that it is practically odorless. Against this we have its poisonous nature, and the fact that it corrodes metals. We might go down the entire list of chemicals that have disinfectant properties without finding a single one that did not have some great drawback to its extensive use as a general disinfectant.

The disinfectants usually spoken of as the coal-tar group, a large number of which are available, are generally regarded by most authorities as the best for general disinfecting purposes.

RUNNING AN EGG FACTORY.

Every flock of hens is an egg factory like any other factory. Like any other factory, the flock may be given the best materials in the world to work on and still fail to produce enough to pay for running the plant.

Good feed in sufficient variety is necessary for egg production, but the ability to manufacture eggs from feed must be there first. It pays to cull out the poor layers any time to save the feed and labor they cost, but to make a profit on them it is best to cull in late summer or early fall before the rush of spring chickens lowers the market price of old hens.

Shut up all the hens and pullets some evening. Count them and decide just how many can be readily kept during the coming year without crowding, for this is very likely to hurt egg production and increase the danger of disease. The next morning the flock is ready to be culled.

CULL:

1. Poor layers and all old hens.
2. Cripples and hens with broken down abdomens or frozen toes.
3. The sick, quiet, inactive hens that spend much time on the roost.
4. All "crow heads" with long, slim heads and beaks.
5. The large, coarse-headed hens with sunken eyes.
6. All very short, stubby hens with feathers extremely heavy for their breed.
7. All late-hatched immature pullets and those that are early hatched but much undersized.
8. All hens that moult before August 1st.
9. The persistent sitter.
10. All hens with solid fat abdomens.
11. All hens having bad habits (cannibals, feather-pullers, egg-eaters).
12. All cockerels not needed for breeding purposes.

KEEP:

1. Strong, healthy, vigorous hens with short neat heads and strong beaks.
2. The hens with long, deep, rectangular bodies and parallel top and bottom lines.
3. The hens with large, bright eyes, active appearance and short, well-worn toe nails.
4. The hens with dusty, worn feathers, especially worn tail feathers, but having a bright, healthy look.
5. The hens that moult late.
6. The noisy, happy, friendly hens.
7. The early risers and those late to roost.
8. The vigorous hens with the faded beaks and shanks.
9. The hens with the soft, pliable abdomens.
10. The hens with the thin pelvic bones spread wide apart.
11. The early-hatched, well-grown pullets.
12. Large, strong, active, quick-maturing cockerels of desired variety type and high-producing mothers.

There are five major factors in profitable poultry production—breeding, culling, feeding, housing, and care. These are the essentials; combined, they will put the poultry business on a practical business basis.

Economy of Skim-Milk in Feeding Hogs.

According to the Division of Animal Husbandry at the Central Experimental Farm, Ottawa, it has been repeatedly demonstrated that the addition of skim-milk to a meal ration for hogs reduces the meal consumption per pound of gain. An experiment recently completed at the Central Experimental Farm, demonstrated that in a ration in which skim-milk and meal were fed, the feed required to produce a pound of gain averaged two pounds per meal and 4.8 pounds of skim milk, with hogs averaging 125 pounds at the end of the test. Assuming that without milk these hogs would have consumed four pounds of meal for each pound of gain, it may be concluded that the 4.8 pounds of skim-milk effected a saving of two pounds of meal. With skim-milk worth twenty cents per hundred and meal worth $30 per ton, a pound of gain would show a feed cost of 3.96 cents as compared with six cents for a straight meal ration, the milk thus effecting a saving of $2.04 per hundred of pork.

So many confuse noise with action. Noise is usually action out of alignment; but the most efficient machinery is that which runs the quietest. The same with men.

Autumn Sown Crops

Results of Experiments Over Ontario.

By DR. C. A. ZAVITZ, Ontario Agricultural College, Guelph.

Winter Wheat—Five varieties of winter wheat have been distributed for co-operative experiments throughout Ontario in each of the past seven years. The average yield per acre of one hundred and twenty-eight successfully conducted co-operative experiments for each of five varieties of winter wheat is as follows:

O.A.C. No. 104 .....27.67 bus.
Improved Dawson's Golden Chaff .....26.46 bus.
Improved Imperial Amber..25.59 bus.
Kharkov .....23.16 bus.
Yaroslaf .....21.77 bus.

The experimenters placed the O.A.C. No. 104 as the most popular variety under test. This new wheat, which was originated at the Ontario Agricultural College through cross-fertilization, will be distributed again this autumn to any person who makes application for the variety experiment with winter wheat.

Winter Wheat and Winter Rye—A leading variety of winter wheat and a leading variety of winter rye have been tested throughout Ontario under similar conditions in each of the past eight years. In seven out of the eight years the rye surpassed the wheat in yield of grain per acre. In the average of forty carefully conducted experiments, winter rye gave 1,976 and winter wheat 1,639 pounds per acre.

Winter Barley and Winter Emmer—In three years' co-operative experiments, winter barley gave an average yield of 2,285 and winter emmer of 1,949 pounds of grain per acre. Barley has about 15 and emmer about 20 per cent. of hull. These grains are both used as feed for farm stock.

Manure and Fertilizers with Winter Wheat—Three years' co-operative experiments gave the following average yields in bushels per acre: Cow manure, 27.2; superphosphate, 27.1; muriate of potash, 26.8; complete fertilizer, 25.9; nitrate of soda, 23.3; and no fertilizer, 19.0. The manure and fertilizers were applied in the spring of the year, the cow manure at the rate of twenty tons, nitrate of soda and muriate of potash at the rate of one hundred and sixty pounds each, superphosphate at the rateof three hundred and twenty pounds, and complete fertilizer at the rate of one-third of each of these amounts per acre. One plot, in every instance, was left unfertilized as a basis of comparison.

CO-OPERATIVE EXPERIMENTS FOR 1923-4.

Material will be supplied, free of charge, from the Ontario Agricultural College, Guelph, to those Ontario farmers who wish to conduct co-operative experiments with autumn sown crops and report the results after harvest next year. The distribution of experimental material will commence in the latter part of August and all farmers interested should apply at once for the circular giving full information regarding these tests.

The Sunday School Lesson

SEPTEMBER

John Mark. Acts 12: 12, 25 to 13: 13; 15: 36-40; Col. 4: 10; 2 Tim. 4: 11; 1 Peter 5: 13. Golden Text—Whatsoever thy hand findeth to do, do it with thy might.—Eccl. 9: 10.

LESSON FOREWORD—This week we study the life of John, whose Roman name was Marcus. John Mark is associated with three great figures in the New Testament story,—Barnabas, Peter and Paul. He was sister's son to Barnabas. It was to the house of his mother, Mary, that Peter came when he was released from prison, Acts 12: 12. This home was evidently a centre for the Christians in Jerusalem. Peter speaks of John Mark as his son (see 1 Pet. 4: 13), which means that the young man had come to know Jesus through the teaching of Peter. Besides being a companion and helper of Paul, he was later the companion of Peter, and the Gospel of Mark was the outcome of this companionship.

I. MARK CHOSEN, ACTS 12:12, 25 TO 13:5

Ch. 12: 13. *When he had considered the thing;* when he had comprehended or grasped the significance of his experience. Peter had just been delivered from the prison by the angel, who left him on the street a free man. Peter felt dazed by the strange experience. *He came to the house of Mary.* This home had an open door for Peter and he goes there to tell of his great experience. *Many were gathered together.* The friends of Peter had gathered there, as often before. Now they were praying for Peter in his great crisis, and their prayer had been answered, although they knew it not as yet.

V. 25. *Barnabas and Saul returned from Jerusalem.* They had brought to Jerusalem the gifts of the church of Antioch, for the relief of their brothers in Judea, in the famine foretold by Agabus. *Fulfilled their ministry;* performed the duty of conveying the money. *Took with them John.* Evidently John Mark's father was dead and Barnabas would naturally feel a great responsibility for his nephew.

Ch. 13: 1-5. *The church that was at Antioch.* Into this church the Gentiles had come in large numbers, and so it was a natural starting point for the great missionary journeys. *Simon . . called Niger;* probably because of his swarthy countenance. *Manaen . . . brought up with Herod;* foster-brother. Manaen's mother had nursed both him and Herod. Herod was ruler or tetrarch of Galilee and Perea, and the murderer of John the Baptist. *As they ministered;* waited on God, praying and fasting. God's answer was a call to appoint Barnabas and Saul to be missionaries. *Sent forth by the Holy Ghost.* Emphasis is laid on the guidance of the Holy Spirit. The persons, the task, the route are all marked out. *Seleucia;* the seaport of Antioch, at the mouth of the Orontes. *Sailed to Cyprus.* Barnabas had been born there. *Salamis;* a port at the eastern end of the island. *Had . . John to their minister;* John Mark, who was to be general assistant in all the duties of the journey. From Cyprus the missionaries had gone to Perga. Here the journey became a real adventure in unknown territory. There were dangers of mountain pass and torrent, and peril of robber and bandit all the way.

II. MARK REJECTED, ACTS 15: 36-40.

Vs. 36-38. *Some days after.* The first missionary journey had been completed and Paul and Barnabas had returned to Antioch. When on the first journey, they had come to Perga on the mainland of Asia Minor. John Mark left them and went back to Jerusalem. No reason is given for the action. *Let us go . . and visit our brethren.* Paul's love for his converts and his knowledge of their need of encouragement, prompted the thought. *Barnabas determined to take . . John;* better "wished." Even if John's departure on the first journey had been desertion, Barnabas is willing to give him another chance. *Paul thought not good.* Paul is unable to overlook Mark's first failure.

Vs. 39, 40. *Contention so sharp . . they departed asunder.* Both were determined, but while they part they both continue working for Christ, and we have two missionary companies instead of one. *Paul chose Silas;* called also Silvanus. He was one of the leaders in the church at Jerusalem and became down to Antioch with Paul and Barnabas on a special mission, Acts 15: 22-32. *Confirming the churches;* giving them new hope and courage. Nothing is recorded about the journey of Barnabas and Mark. But doubtless Mark would be encouraged by the faith that Barnabas had in him. It was more than the partiality of blood relationship which made Barnabas cleave to Mark.

III. MARK COMMENDED, 2 TIM. 4: 11.

V. 11. *Only Luke is with me.* Luke is the beloved physicin referred to by Paul in Col. 4: 14. He was the friend and companion of Paul, joining him in his second missionary journey at Troas, and with him in his third journey. He was also with Paul in his imprisonment at Caesarea and Rome. The third Gospel and the story of the Acts belong to him. When writing this second letter to Timothy, Paul is a prisoner at Rome. Demas has forsaken Paul and his other companions have gone on missions. Paul is lonely. *Take Mark, and bring him with thee.* After many years, Paul, who had refused to take Mark on the second journey, now asks that he be brought to him. The parting roads have met again. This means that Mark had lived down his failure, under the encouragement of Barnabas. He has "come back," as the saying is, and has vindicated himself in the sight of Paul. *For he is profitable to me.* Moffat translates, "Pick up Mark and bring him along with you, for he is of great use in helping me." In Philemon 24, Paul refers to Mark as one of his fellow laborers, and in Col. 4: 10, Paul, writing to the Colossians, says that if Mark comes to them he is to be welcomed. In 1 Peter 5: 13, we get a glimpse of Mark with Peter in Babylon, where Peter refers to him in terms of affection.

APPLICATION.

The Home of John Mark. "What sort of home did he come from?" This was the question an old minister invariably asked in the church court when they were considering whether they would receive a young man as a candidate for the ministry. He knew that the ideals and spirit of that home would most likely reveal themselves in his character and his work. Not always perhaps, but usually.

We do not know much about the character of Mary, the mother of Mark, but we do know that she opened her home to the followers of Christ, in a time of danger and persecution, and that is an indication of conviction and devotion. There are those who think that not only did Christ's disciples meet there after his ascension, but that it was in the upper room of this house that our Lord had the Last Supper, and gave the great teachings that John has preserved for us.

Great Fellowships. Many of the great leaders of our churches, the outstanding preachers, have begun their ministry as the colleagues of older men.

John Mark was peculiarly favored in the privilege of fellowships, for we know that he was the nephew of Barnabas, and his companion in travel and work; and was associated with Paul in his first missionary journey, and again later; and the tradition of the early Church concerning the origin of his Gospel connects him intimately with Peter.

A Sad Failure, and its Evil Consequences. The highest privileges do not always ensure the greatest achievements, or save from shameful failure. Mark lost his courage, and turned back at Perga in Pamphylia, apparently fearing the dangers and privations that he knew the missionary missionary party was facing. It strikes us as rather severe when Chrysostom applied to Mark a Greek word that would be equivalent to "slacker" to-day. But there is at least no doubt that Paul strongly disapproved of him and his course. One of the sad things in life is that our mistakes and defaults embroil other people. Mark's occasioned dissension between Paul and Barnabas.

The Gospel of the Second Chance. "This wise world will scarce believe a man repents, and this wise world is mainly right." Is it, however? The distinctive note of Christianity is God's power to redeem and restore.

Fall Care of the Berry Patch.

During the spring months we are usually quite willing to give the berry patch its needed attention, as we are expecting to soon be repaid with a harvest of delicious fruit. After the harvest is over, however, we are apt to neglect the care of the berry patch. Perhaps we think it will get along without much care until the following spring but this is not the case. There are several things that need to be done during the late summer and fall months, if we would insure a full crop of fruit the next season.

Strawberries, raspberries and blackberries must all be kept clean in order to bear well. Frequent cultivation with some rotted manure worked around the hills and between the rows is what they need now.

If the strawberry bed is past its second year, it is time to renew it if it is to be allowed to bear again. First cut off the top with the mowing machine. Set the knives so that it will cut all the weeds and the top leaves of the strawberry plants. At a time when the ground has plenty of moisture in it, but is dry on top, burn the top over quickly. Leave just enough of the old straw mulch on the berry patch to help carry the blaze quickly across the bed. After this is done, take a breaking plow and throw a furrow from each side of the row into the centre. Leave the plants 6 to 8 inches wide in the rows, cutting out the weakest plants and leaving the others from 12 to 18 inches apart in the row. Level the plowed space with a 5-tooth cultivator. This work of renewing the strawberry bed should be done quite early in the season, generally the earlier the better, as it gives the plants left a chance to get started before cold weather stops their growth.

Probably you set out a new strawberry patch last spring. If so there may be some spaces where the plants have died. Select some of the best white rooted plants which were discarded in renewing the old strawberry patch and set them in these spaces. I do not advocate fall setting of the plants in general but it always seems a pity to throw them away. Not all of them will live probably but some of them will, and they will help fill out the new bed.

After the harvest of raspberries and blackberries the old canes should be cut out and burned. If allowed to remain they harbor various injurious pests. Some of the raspberries and blackberries may also have too many new canes to do well. From 3 to 5 good raspberry canes should be left to each plant, and about 4 blackberry canes to the plant. Now is the time to dig out surplus suckers of the red raspberry.

As soon as hard freezing weather comes the strawberries should be well mulched. This is more necessary in localities of variable climate than in localities where the snow remains on the ground throughout the winter. A thick blanket of snow takes the place of the mulch. Raspberries and blackberries, too, need mulching. An ordinary mulch will protect the roots. In some localities where the winters are very severe, the supporting stakes are removed and the canes allowed to lie on the ground where they are covered with a mulch. Certain varieties, of course, are more adaptable to drooping over than others. If you find it necessary to mulch in this way be sure to set varieties which are not erect in growth.

Testing Varieties of Grain.

Twenty-four of the Farms, Stations and Substations of the Dominion Experimental Farm System are engaged in testing varieties of all kinds of grain. All these experiments are under the control of, and results are reported to, the Cereal Division in Ottawa, of which Mr. L. H. Newman, formerly Secretary of the Canadian Seed Growers' Association, is now chief, as Dominion Cerealist. In his report for the year 1922, just issued, Mr. Newman gives in tabular form statistics embracing the days of ripening, number of days maturing, average length of straw, including head, strength of straw on a scale of ten points, yield of grain per acre, and weight per measured bushel, after cleaning, of eighty-four varieties of spring wheat, of four varieties of emmer and spelt, of thirty-two varieties of oats, of eighty-four varieties of barley, of five varieties of spring rye, nineteen varieties of field peas, of twelve varieties of field beans, of one hundred and thirteen varieties of flax, tested for seed production—all on the Central Farm at Ottawa. In addition, thirteen varieties of barley and a like number of varieties of oats were tested for hay production, the details given being of the date of cutting, number of days growing, average length of straw including head, weight green per acre, weight dry per acre, and percentage of dry matter to green.

Further experiments were carried on in the control of smut in hulless oats, from which it would appear that immersion of the grain for fifteen minutes in water at a temperature of 122 to 124 deg. F., and the washing of grain, were beneficial; that heavy clay soil and shallow sowing were to be preferred, at least so far as the experiments, which are being continued, have gone. The free distribution comprised 15,676 samples of seed grain.

To shirk chores because one would rather work in the field has given us an unbalanced agricultural output—too much bulky stuff having gone to the markets. It would be better to concentrate this bulky material into animal products in the stables on our farms.

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TREES MUST SLEEP

Plants must have their sleep. Winter is the resting time of all perennials, the time when they go into a sort of hibernation as do bears and some other animals, including the unjustly famous ground hog. Busy all summer at their job of turning the oxygen of the air, the hydrogen of water and the carbon of carbonic acid gas into stem and flower and fruit, they must rest in winter. They sleep well, for not even Nature's alarm clock of the springtime can wake them until they have had enough.

This is shown graphically in a recent bulletin of the New York State Agricultural Experiment Station at Cornell University on The Effect of Climatic Conditions on the Blooming and Ripening Dates of Fruit Trees. It is proved that though spring advances at a fairly uniform average rate northwards, the time of the opening of the fruit blossoms does not. Those south of North Carolina and Tennessee open at approximately the same time irrespective of their nearness to the springtime and of the fact that they may have experienced many days of warm weather before all the snow has melted in the North.

The unsentimental scientific explanation is, of course, not that the trees are really sleping, but that they are busy at important life processes which can only be carried on during their so-called dormant period and which are impossible while the more visible processes of growth are being carried on. These less noticeable activities must ordinarily be completed before the tree will put out leaves or blossoms. It has been noted by close observers in the Middle States, where spells of springlike weather sometimes occur in midwinter, that trees are not so quickly affected by them as they are by the same amount of heat in the springtime, the reason being that the work of the winter season is not yet ended.

North of the boundary below which the blooming season of fruit trees is influenced markedly by their need for winter rest, the time of average bloom advances at sea level at the rate of about 4.6 days for every degree of latitude, or sixty-nine miles. Expressed another way, it amounts to about fifteen miles a day. It is not uniform, either for the various kinds of fruit or for the different sections of the country, the rate being slowest along the Atlantic Coast and increasing regularly westward. The figures for the Atlantic Coast are 5.7 days to a degree; for the Mississippi Valley, 4.8 days; and for the Pacific Coast, 3.4 days.

Altitude above the sea has also an important effect upon the date of blossoming, the slowing up from that cause averaging one day for every 101 feet of added altitude. That means that on a mountainside or plateau at 2,500 feet elevation the trees bloom twenty-five days later than they do at sea level in the same latitude.

But the lines of simultaneous bloom do not follow parallels of latitude. They run at a slant from southwest to northeast, so that as we follow the parallels of latitude westward the spring seems to come earlier so long as we do not climb high above the sea. For example, on the 40th parallel, which passes close to New York and Chicago and through Missouri and Northern California, the date of average bloom of all trees reduced to sea level is April nineteenth on the Atlantic Coast, April eleventh in the Mississippi Valley, and March eighteenth on the shores of the Pacific.

Exports of Wheat and Flour.

In the nine months ending May 31 last, Canada exported to the United Kingdom 146,910,332 bushels of wheat valued at $163,711,444, compared with 91,125,687 bushels valued at $111,736,057, in the corresponding period of 1922. To the United States for the same period 10,626,416 bushels valued at $11,430,534, compared with 11,863,660 bushels valued at $13,872,800 last year. The exports of wheat flour to the United Kingdom in the nine months this year were 3,736,310 barrels valued at $20,641,585 compared with 3,576,420 barrels valued at $22,577,364 last year. To the United States this year were exported 380,243 barrels of wheat flour valued at $2,306,222, compared with 548,278 barrels valued at $3,409,711 in 1922. The total exports of wheat in the nine months ending May 31 this year were 183,369,086 bushels valued at $207,112,321, compared with 125,715,932 bushels valued at $152,559,367 in 1922, and of wheat flour the totals this year were 8,732,464 barrels valued at $49,711,852, compared with 6,036,648 barrels valued at $38,720,368 in 1922. It will be noticed that exports to the United Kingdom this year show a gratifying increase, but that in exports to the United States there is a decrease of over twelve hundred thousand bushels of wheat and 168,035 barrels of flour.

The man who follows the other fellow, is always behind.

This summer's dry spell is a test which good farming will survive.

With so much effort being exerted to shorten the twelve-hour day in the steel mills, why not exert a little energy to shorten the sixteen-hour day of the farmer's wife?