Soils and Crops

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SOME COMMON CHICK DISEASES—THEIR PREVENTION AND CONTROL.

Chick mortality is something which will always have to be contended with, and no matter what steps are taken there will still be a certain death rate, as in all other classes of animals. What this can be reduced to, cannot be predicted at the present time. It is safe to say, however, that should effective attention be given to some causes, which are easily remedied, there naturally will be a reduction in the number of deaths.

Normal chick mortality.—This varies greatly according to the conditions of flock management. Where the young are reared under comparatively normal conditions, where the flock is small, the range liberal though protected, the food and attention as well as the sanitary and hygienic conditions being all that can be desired, the loss usually is reduced to a minimum. On the other hand when part or all of these conditions are interfered with the death rate frequently increases to an alarming extent.

In many instances the chick's life has been settled before the egg leaves the oviduct; for example, the hatchability varies greatly between eggs handled and incubated in precisely the same manner. Chick diseases with their resulting mortality are due to predisposing and exciting causes.

Predispositions—Predisposition to disease is generally passed over far too lightly and it is regretted that such is the case. If one wishes to see just the part it plays take two hatches of chicks, the one where the percentage hatched has been low and with low vitality, while the other bunch is just the opposite—strong, sturdy and active. As a usual thing it is no matter of conjecture as to which will be the harder to raise, and which will be the more subject to disease.

We should differentiate between a prenatal predisposition, and a tendency to contract disease as a result of environment. It is commonly said that a sick hen will not lay. This is probably true, but a hen low in vitality will lay, and the chicks hatched from her eggs will inherit constitutional weakness. Consider such gross defects as watery whites and chalky shells which probably appear in varying degrees, frequently to pass undetected. Both of these substances must furnish nourishment to the developing embryo, and it cannot build up a normal body from materials which may be lacking in essential substances. Then again there are the unseen components of the egg, such as the newer known vitamines. If a hen has laid heavily for some time, the food supply being deficient in some of these essential substances, and her body supply has been called upon until no longer an available supply exists there, it will naturally follow that the egg must be lacking in these materials. If vitamines are essential to the health and development of a growing chick they must be considered during the twenty days which it spends in the shell. The presence or absence of vitamines in cows' milk has been found to be dependent upon the animals' food. A food supply, though otherwise abundant, but deficient or lacking in vitamines results in a milk product correspondingly deficient. Possibly the same can be said of the hen's egg, with regard to these elusive though essential substances.

Environmental Predisposition to Disease—The normal animal body under natural conditions is not a very suitable medium for the growth and development of pathogenic organisms. When this does take place the parasites are almost invariably assisted by other agents. If a "slums" condition is created there must follow a harvest of chick fatalities as a penalty, just as there is a high infant mortality under similar conditions.

It may not be apparent to many just what constitutes chick slums, nor how near they have permitted conditions to approach this undesirable state. As contributing factors we have crowding, fouled soil, contaminated utensils, bad ventilation, insanitary quarters, insufficient or variable heat supply and unsuitable food.

Of crowding little need be said as it must be apparent to all that the larger the number the greater becomes the hazard from disease. Close cohabitation favors the quick spread of infection and increased virulence of disease.

The soil can, and frequently does, become the source from which many chick epizootics have their serious beginning. Certain protozoa, capable of setting up disease in the alimentary tract, are able to live in the soil. When the soil becomes polluted with feces these lower forms of life become greatly increased in number. This favors a return of the parasites to the hosts' gut in large numbers, resulting in the loss of much life.

Utensils which are left with particles of food attached for anything like protracted periods are excellent places for the colonization of bacteria. While these in every instance may not be pathogenic organisms they frequently are capable of causing digestive disorders resulting in diarrhoea of a fatal nature.

Ventilation must be maintained without producing draughts. The quarters must not be so close, however, that on opening a chicken odor is noticeable, nor must there be sufficient opening to cause the temperature to fall during the colder hours of night. Chills have a most disastrous effect on young chick life. If the chicks appear listless when let out of doors in the morning but soon regain their normal activity when in the open, consider the ventilation inadequate. If this continues the chicks' health will soon suffer.

Chick dietetics has received considerable attention, and the brands of suitable feeds and methods of feeding are almost legion. When chick mortality increase a finger of doubt is almost invariably pointed at the food. When standard feeds are used, and methods followed which have stood the test of time, they should be questioned only after all other predisposing causes of disease have been placed beyond doubt.

The actual cause of chick disease whether it be protozoa or bacterial organisms is of far less concern than the conditions which permit the spread and multiplication of the parasites to the extent of causing disease.

Little hope of treating the subjects should be entertained, but rather every effort should be given to prevention. Time and money expended in sanitation and hygiene are good insurances that will pay well. With the foregoing attended to, unless the chicks are subnormal when hatched, the mortality should be maintained at a minimum.

THE SUNDAY SCHOOL LESSON

APRIL 22.

Moses, Liberator and Lawgiver. Lesson IV.: Exod 2: 1 to 19: 25; 32: 1 to 33: 23; Deut. 34: 1-18. Golden Text —Fear ye not, stand still, and see the salvation of the Lord.—Exod. 14: 13.

LESSON FOREWORD—Moses may be described as the founder of the Israelite nation. Only a gigantic personality could have achieved what he achieved. He found the children of Israel in Egypt reduced to slavery, broken and spiritless. He succeeded in inspiring them to confidence in Jehovah, in the sure hope that he would deliver them out of their bondage. The successive stages of the escape from Egypt, with all its exigencies and dangers, required the leadership of a man of consummate ability and that leadership Moses, through divine grace, was able to provide. In to-day's lesson we catch a glimpse of him in one of the critical moments of the Exodus.

I. *Encouraged*, 10, 13, 14.

V. 10. *Pharaoh;* the official title of the kings of Egypt. All the kings of Egypt were called Pharaoh. Rameses II or his son, Merneptah, have usually been regarded the Pharaoh of the Exodus, but it is difficult to identify with certainty which Paraoh is meant. *The Egyptians marched after them.* Israel had escaped out of Goshen, the marshy lands, northeast of the Nile delta, and had reached a point near the presen Suez, when an Egyptian army suddenly appeared in their rear. The Egyptians naturally would not wish to lose the valuable slave service which Israel rendered in the Egyptian building operations. *They were sore afraid.* With the Red Sea, and possibly strong frontier fortifications in front, and the well disciplined, well equipped Egyptian army in the rear, escape seemed impossible.

V. 13. Moses himself did not flinch. His faith and courage were equal to the most critical situations. *Stand still;* not in the sense of "remaining stationary" but of "continuing firm." The Israelites were not to lose their courage nor to be seized with panic. *The salvation of the Lord;* the deliverance wrought by the Lord. In the earlier portions of the Old Testament, the term "salvation" usually alludes to physical deliverance or material well-being.

V. 14. *The Lord shall fight.* In that age it was believed that each god was obliged to fight the battles of his people. His fortunes were bound up with the fortunes of his people. In their defeat he was defeated, and in their victory he was victorious. Moses believed, however, that Jehovah would be more than a match for the Egyptians, even though they were one of the great military powers of antiquity.

II. *Directed*, 15-18.

V. 16. *Thy rod.* Moses' rod was originally given him by Jehovah, Exod. 4: 17. As he was a shepherd at the time of his call, the rod may have been that ordinarily used by shepherds. It was a club about 2½ feet long, with a large knob at one end, into which were driven large-headed nails. This was used as a weapon against robbers and wild animals. According to the stories told in Exodus, Moses' rod was the instrument by which he worked miracles. Elisha used a staff to do wonders. *The sea.* The Red Sea, or as the Hebrews called it, "the Sea of Weeds" corresponds with the modern Gulf of Suez, opposite a place called Migdol (v. 9) where the Egyptians probably had fortifications to defend their borders against nomadic invaders.

V. 17. *Harden the hearts of the Egyptians.* The Hebrews, with their strong sense of the sovereignty of God, referred things done by man to the direct operation of God. Thus when the Egyptians were emboldened to enter the sea in pursuit of the Israelites, their action was regarded as a part of God's plan for Israel's deliverance. God hardened the hearts of the Egyptians only because they had first hardened themselves. *Get me honor upon Pharaoh;* by overthrowing him. A race of helpless slaves were to be victorious over the powerful Egyptians and the Egyptians themselves would ascribe the victory to Israel's God.

III. *Delivered*, 19-22.

V. 19. Up to this juncture, the angel of God and the pillar of cloud had gone in front of the Israelites, but now they moved to the rear.

V. 20. *Between the camp of Egypt and the camp of Israel.* The cloud served as a wall of separation between the two armies. It is difficult to interpret the Hebrew text at this point, but we may suppose that the dark side of the cloud was turned to the Egyptians and prevented them from seeing what they were doing while the light side turned towards Israel and showed them the way even in the night.

V. 21. It is represented here that a strong wind drove back the waters in such a way as to permit the Israelites to pass through the sea. The miraculous element would then be that God should send the wind at the opportune moment. Geographers maintain that near the Suez the water is shallow and that a strong wind, blowing in the right direction, might lay bare the channel and permit a passage. In modern times Arab tribes have been known to cross the sea under these circumstances. But as Driver says, "the fact of the Israelites' passage of the Red Sea can be questioned only by an extreme and baseless scepticism."

APPLICATION.

The story of Moses and his amazing achievements is so replete with religious teaching that the difficulty is one of selection. The following lessons, however, are of paramount importance.

1. Let us have reverence for the little child,—no one can forsee the vast enterprises that God will ask the young child to carry through for the forwarding of the race. One cannot calculate the influence of a child. The attention of Christian people is being directed persistently in the direction of child preservation and education. Professor Ellwood, writing as a Christian sociologist, declares that "child welfare is the central problem of civilization, and social science shows that it is impossible of solution without a normal family life."

2. Leadership and far-reaching public service do not come by chance, but are the result of patience, discipline, education and the training of the years. One hears of untrained evangelists doing much good. It happens that way occasionally, but it is well to remember that one of Jesus' main ideas was to educate and train the disciples to carry on his work after his death. On the whole, the work of the Christian church will be best carried on by highly trained men and women.

3. The greatness of a leader lies in the clarity of his vision and in his devotion to the cause so that no temptation of the world divides his heart for a moment. Moses set at nought the riches, the high offices that might have been his had he simply acquiesced in the bondage of his people, and the ease that a prince of Egypt might have,—these he tossed to one side as refuse.

4. Moses brought the world "eternal gain" because he led it into a new thought of God, and taught men that while human oppression was a cruel thing, freedom is useless without obedience to divine law. We need to learn this lesson to-day. Of what avail is it to throw off the yoke of Nicholas, and take on the yoke of Lenin without spiritual sanctions?

Putting Away Hams for the Summer.

I have had quite a number of years' experience in putting up hams for the summer. As I have never lost a ham or had one bothered by the insects, I gladly give to others the simple process, I have used.

When the hams are removed from the salt they are smoked for several days. Then I carry them to the kitchen. I make a thick flour paste by dissolving the flour in cold water and pouring into the mixture boiling water until it has come to a starchy thickness. I stir cayenne pepper into this until it has a reddish cast. About two tablespoonfuls to a gallon of paste will be right.

I dip each joint of meat into boiling water for an instant to destroy any insect eggs that may have become attached to it. Then I rub paste over the ham until it is thoroughly covered, after which I wrap it in light brown wrapping paper, taking care to see that the paper adheres to and covers every part of the ham. Thus all flies are excluded from coming in contact with the meat.

As soon as the paper on the ham is thoroughly dried, I place each ham in a canvas sack, tie it tightly, and hang it in the smokehouse to remain until ready for use.—W. D. N.

100 Tons An Hour.

Glasgow recently put into service its first pneumatic grain elevator having a capacity of 100 tons an hour.

A Canadian at Harvard.

Clarence M. Warner, formerly of Napanee, Ontario, is another Canadian who occupies an important post in the United States, as curator of the Canadian section of Harvard University library. Through his keen interest in Canadian history he has secured enormous and valuable collections of records relating to Canadian affairs.

The Food of Pigeons.

Practically all cereals constitute a good feed for domestic pigeons, says a bulletin on pigeons, just issued by the Poultry Division of the Dominion Experimental Farms. The best are peas, wheat, barley, and buckwheat, which should be fed mixed and whole, as they are more palatable to the pigeons. Care must be taken, in order to avoid bowel and digestive trouble, not to feed green or absolutely new and unseasoned grain. All grain should be fed in hoppers, so as to keep it clean and wholesome, and the hoppers should be so constructed that the birds may not be able to turn around on the open front.

As to the value of the various grains that may be fed, the bulletin says: Barley in limited quantities is a good summer feed; cracked corn is a good feed when used in limited quantities, but care should be taken, owing to its fattening propensity, not to use it too freely, especially with birds in confinement; wheat is one of the best grains, but the use of immature or new wheat should be avoided; pigeon breeders look on peas as essential and they generally form from 25 to 50 per cent. of the ration; clipped oats or, better still, grouts, are recommended during the laying season; rye is not a satisfactory feed; hemp is heating, but can be given occasionally in small quantities to add variety to the ration, and is looked on with favor for use during the mating season. A continual supply of pure drinking water should be kept before the birds and in the lofts of pigeons bred in captivity, hoppers containing rock salt, fine gravel, crushed oyster shells, charcoal, and pulverized mortar, in separate compartments, should be constantly replenished.

His Business Founded on Pansies.

When our son was a lad of ten years, I suggested to my husband the idea of raising pansy plants to sell to people living in the nearby town.

We had moved from the city a few years before to a little country place and because of John's impaired health we took up gardening as an occupation and as a means of making a living. We worked at this for several years with increasing success but I wanted also some way for Son to make a little money for his "very own," so that he might learn the value of money and how best to use it for necessity and pleasure.

When I suggested going into partnership with him and growing flower plants for the boy to sell on shares, my husband laughed and said that every one could raise their own flower plants. But just the same he promptly set about making boxes and putting up shelves in the kitchen windows for our experiment.

The first year we sold twelve dollars' worth of the plants. This encouraged us and we increased our stock and more than doubled our sales the second year.

Twelve years have passed. The boy is a young man and a full partner in the business with two greenhouses to manage and a continued growing demand for the products.

Verily, we should not despise the day of small beginnings. In the most wonderful and extensive structure there must be the laying of the first stone.

To Control Striped Beetle.

Here is my recipe for taking care of the striped vine bug, the squash bug and the onion maggot. I save all fine ashes and soot from the stove and pipe during the winter, keeping them dry. Then I take a syrup pail, put a stout bail on same and punch about two holes in the centre of the bottom of the pail with a twenty-penny spike. I have used this dope for twenty-five years and never lost by it. I have raised onions on the same ground for four years, and the fourth crop was the best.—N. M. Crout.

In scalding hogs, do not have the water boiling when the hog is plunged in, but a few degrees below the boiling point. We add a bucket of cold water. If the water is too hot, the hair will set, making cleaning a difficult task. To a kettle containing fifty gallons of water, add a small shovelful of hardwood ashes. These are a great help in removing the hair and black scurf.

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HORSE

As the spring planting season is short, farm operations must be rushed. This entails long hours, and with modern machinery it also means heavy work for farm horses. Horses working in harrows, discs and manure spreaders are pulling heavy loads, and in many cases they are pulling them over broken ground. Because the work is hard and the hours are long the horses must be in good physical condition. This is only possible when horses are fitted for spring work.

If they have been fed a liberal grain allowance they will be fat and soft, and should get regular exercise to harden their muscles. If they have been carried through the winter mainly on roughage, with very little grain, they should be given regular exercise and the grain ration should be increased to one pound per hundred pounds of live weight. Violent changes in either the diet or the habits of horses are injurious, and for this reason the farmer should begin getting his horses in shape a month, or preferably six weeks before heavy spring work begins, gradually increasing the grain and work so that the horse will be in shape to perform a heavy day's work when the rush season begins. The grain ration should be increased to at least one and a quarter pounds per hundred pounds live weight when the heavy spring planting commences.

The hay fed before and during the busy season should be either high grade timothy or a mixture of bright, clean timothy and clover. The grain fed while the horse is being fitted may consist wholly of oats; or a mixture of three parts of oats to one part of bran may be fed. Bran is too laxative for horses at heavy work, and no more than one part of bran to five or six parts of oats should be fed during the busy season except on Saturday night when a bran mash is advisable.

Sometimes a horse does not seem to be digesting his food properly, in which case the teeth should be examined and any that are long and ragged floated smooth. Indeed it is a good practice to go over all the horse's teeth each spring before starting to prepare the animal for spring work.

By properly fitting his horses for spring work the farmer will avoid sore shoulders, his horses will finish the season in good condition and they will render much more efficient service than if they had begun the spring work without being properly fitted for it.

Opals are so soft when first taken from the ground that they may be pulled apart with the fingers.

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