

THE FARMER'S ADVOCATE AND HOME MAGAZINE.

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step leads to another, while the knowledge that one is progressing is almost as satisfying as the consciousness of being in the lead.

Formaldehyde as a Food Preservative.

III.—EFFECT ON HEALTH.

The word formalin, or formaldehyde (formalin is a 40-per-cent. solution of formaldehyde), has become quite familiar of late years to readers of agricultural papers, more especially on account of its being used in preference to any other substance for the destruction of smut in seed grain. It has many other uses besides that of being a fungicide. It is an antiseptic, a disinfectant, and a preservative. A solution of one part formalin to ten parts water, applied externally to the navel cord, is said to make the best treatment to prevent joint-ill in colts and white scours in calves. For thrush in horses' feet, a dousing with a somewhat stronger solution is said to be the best treatment yet tried. It is also used for disinfecting houses, and is highly spoken of for that purpose.

But it is of its use and dangers as a preservative that attention is drawn at this time. Formaldehyde has largely displaced alcohol as a preserving liquid for anatomical specimens, a fact which prepares us for the statement that, under various trade names, it has been put upon the market as a "harmless" preservative of food products. It has been used to a greater extent with milk, as a simple means of keeping it sweet in hot weather, than with any other class of food. It is generally admitted that there is no known preservative of milk so effective, so readily employed, and in some respects so likely to escape detection, as minute quantities of formaldehyde. Apart from the injurious effects of formaldehyde itself, its use in milk or cream is especially inadvisable, because its addition in dilute solution prevents the growth of acid-forming (souring) bacteria, but has no effect in retarding the growth of many harmful organisms. In other words, the milk is prevented from becoming sour, and thus

indicating its age, while disease-producing organisms present continue to multiply.

The Bureau of Chemistry of the United States Department of Agriculture has conducted an investigation of the effect on digestion and health of various food preservatives, such as borax, salicylic acid, sulphurous acid, and benzoic acid, and have lately published the result of their experiments with formaldehyde, used as an adulterant and preservative in milk.

Twelve young men in good health were found who were willing to be the subjects of the experiment. Great care was taken to have none included who were predisposed to any hereditary malady, or who had had serious illness within a year, or who showed feebleness of constitution, which would make them an easy victim to disease.

The test occupied thirty-five days, divided into three periods, of ten, fifteen, and ten days, respectively. Each man drank daily a quantity of milk to which a carefully-measured amount of formaldehyde had been added. During the first ten days, only half as much of the drug was administered daily as was given for the remainder of the period of test. Very careful observations were made of the physical condition of the subjects day by day. Without going into detail, it may be said that, while no harmful effects were observable during the first period of ten days, nor for a while after the second period, with its stronger dose, began, yet in every case illness in one form or another developed. It is not believed that, though no ill effects were noticed for a few days, therefore the formaldehyde had no effect whatever. The effect is cumulative; the system is able for some time to control the development of conditions which later become pronounced. At the end of twenty days, headache and pain in the stomach and intestines became general, in many cases producing cramps, and in a few cases attended with nausea and vomiting. A burning sensation in the throat was reported in the majority of cases. In four cases a well-marked itching rash appeared on the chest and thighs, causing great discomfort, slight symptoms of this nature being reported in a fifth case. Unfavorable symptoms disappeared on the withdrawal of the drug. The final conclusion, therefore, is that the addition of formaldehyde to foods tends to derange metabolism, disturb the normal functions, and produce irritation and undue stimulation of the secretory activities, and, therefore, it is never justifiable.

HORSES

Development of Bone.

An American exchange has an article, evidently of British origin, on the development of bone in horses, from which we condense a few points.

Plenty of bone is admittedly one of the most important points to be looked for in horses. A horseman judges of the bony development of a horse, in particular, by the size of the cannon bone, a good-sized bone below the knee being an essential point. Breeders should always aim at producing stock with good strong bone, and this is not always easy to do, as the natural tendency of our artificially-created breeds is to lose bone, rather than gain it. If a mare is not quite up to the mark in this respect, she should be bred to a stallion that excels as regards bone. No stallion deficient in bone should be made use of at all. The question is one, largely, of breeding. But the food element enters into it, also. Lime and phosphates are the principal constituents of bones. The nature of the soil has an important influence in determining the percentage of these constituents in crops grown. It has been noticed that horses reared in fertile limestone districts excel in stoutness and quality of bone those raised on soils deficient in lime. Foods themselves differ greatly in the amount of bone-forming elements they contain. Pasture grass, the natural food of the growing animal, is unexcelled in this respect, and, therefore, is more conducive to the development of bone than any other kind of food. According to analysis, meadow hay and pasture grass contain ten times the amount of lime per ton of dry matter than oats do, and oats are three times as good as corn. Bran is a good food for young horses, as, in addition to a fair proportion of lime, it is very rich in phosphates. Oat straw can also be fed to advantage. Though low in nutritive quality, it contains a good percentage of lime. Alfalfa is particularly rich in this constituent, as also in protein.

Dr. Cottrill Essays to Square Himself with the Public.

COMMON COLICS.

Editor "The Farmer's Advocate."

Since reading the letters re the above, and the editor's comments upon the same, which appeared in "The Farmer's Advocate" of September 2nd, I think it is not just to your readers to leave the matter at this point. The subject has proceeded so far that they have a right to demand more, and I, in virtue of that comment, have a right, from a professional point of view, to address them.

My article was written in the West, and for the West. I imagined I was addressing homesteaders, fifty or perhaps a hundred miles from a veterinary surgeon. Knowing the circumstances of many of those homesteaders, I purposely assumed that they had little beyond a bottle of whiskey or a little turpentine in the way of medicines, and I tried to assist them in these difficult circumstances.

Understand me plainly, I do not alter my original article one jot, but I certainly did not mean to say that my suggested treatment was to be followed in more fortunate circumstances, where aid was close at hand, or where drugs could easily be procured.

Had I been consulted before it appeared in the London "Farmer's Advocate," I might have demurred, or at least have demanded that it was due to me to make this explanation. However, what is done cannot be undone. In only remains now to give a treatment which will apply to the East, where all requisites can readily be procured, and that there shall now be no doubt about the ground upon which I stand, let me say at once that I am about to describe the method I use myself when called to a case of flatulent colic.

Having diagnosed the case as being due to flatulency, I at once use the trocar and canula, because there is no time to hesitate. The gas is there, it is increasing, and the life of the animal is in jeopardy. Where do I perform this operation of entero-centesis, or paracentesis abdominis, or, in other words, puncture the bowels? Well, the books say the spot is on the right side, equidistant from the last rib, the point of the hip, and the lateral processes of the vertebrae or backbones. But, practically, I rarely use the same spot twice. Often the above directions are about correct. To make sure, however, I tap with my fingers, and where I think the most gas lies, there is the place, and if I fail to get any gas, or very little, I repeat the operation elsewhere. I have known the same animal to be punctured six times (once being on the left side) and its life saved.

It is especially necessary that every antiseptic precaution be taken over the cleanliness of the instruments. Failure in this respect will result in the formation of abscesses at the seat of operation.

Having released the accumulated gas, I must now do something to prevent more being produced. It is of little use, in some cases, to give medicines per os for this purpose. They have to pass from the stomach, and travel the whole course of the small intestines. The average length of these is about 72 feet, and, probably, during this course, the medicines have been absorbed, taken into the blood, and never reach the seat of trouble—the caecum or colon. But, assuming that no absorption or change has taken place, this long journey cannot be accomplished very quickly, and in the meantime the gas may have accumulated in dangerous quantities again. Therefore, while the canula is still in situ, I generally administer through it, directly into the lumen (or interior) of the intestine, some antiseptic or antizymotic, such as carbolic acid, say 4 drams to a pint of warm water. This prevents more gas being formed (some don't do this, but I am saying what I do).

But the original cause of the trouble is still present, and it is of little use to give a purgative by the mouth. I dare not wait long enough for it to act, so I at once give about a grain and half of eserine, and two or three grains of pilocarpine, hypodermically, although sometimes I use arecoline instead. The seat of operation is immaterial, I believe, but I always use the side of the neck. By this time I have at hand a pail of warm water, and this I give as an enema. Generally in from 15 to 30 minutes the alkaloids have performed their function, and there is a free evacuation from the bowels, with the liberation of much gas.

The trouble is practically at an end now. The animal only requires nursing and careful feeding for a few days, and there is nothing for me to do but to pocket my fees (if it is one of my lucky days), and bid you all "good-day."

J. FIELDING COTTRILL, V.S.

Saskatchewan

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