

ments alone, to conclude that infection is more likely to follow when virulent material is swallowed than when it is introduced by the vagina. With regard to infection by the mouth, however, it is a natural method of infection which until recently did not enter into anybody's calculations regarding the spread of abortion, and, knowing, as we do, that the food, including the pastures, and even the feeding trough, may more or less easily be contaminated on an infected establishment, it seems highly probable that infection by ingestion often takes place. In fact, we are inclined to believe that the disease is more frequently contracted in this way than in any other. Presumably, the bacilli are absorbed from the intestine, and gain the blood stream, whereby they reach the uterus. In the case of a ewe, the microbe of cattle abortion was found in the cotyledons six days after infection by the mouth.

"Infection by the vagina has always been supposed to be the most frequent natural method partly because it is thought that the gutter, which in most cowsheds runs behind cows standing in line, often bring the discharges from an aborting cow in contact with the tails and external genital organs of her companions. In considering the relative importance of infection resulting from the more or less accidental admission of infected material from the floor or dirt of the cowshed, it must be borne in mind that even when discharges from an infected cow do reach the floor or become mixed with the excreta in the channel behind the cows, the chances must usually be against the bacilli gaining entrance to the genital passages, and that the number of bacilli which could be so admitted to the vulva or vagina under ordinary conditions must generally be small.

"In the experimental attempts to infect with natural virus by way of the vagina, three were followed by positive results, and three by negative, in spite of the fact that the material was deposited in enormous quantity right on and around the os uteri by means of a long tube.

INFECTION BY AGENCY OF THE BULL.

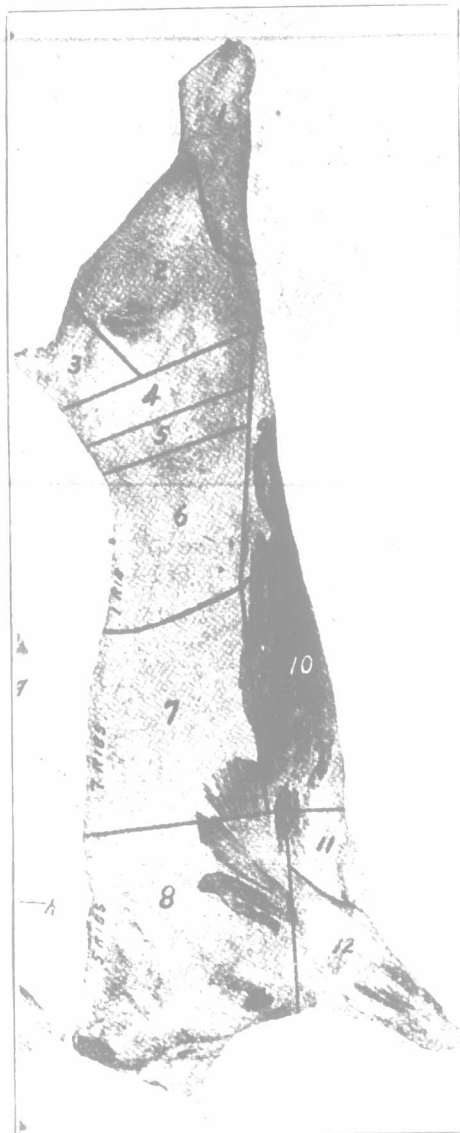
"This must be viewed as a special form of infection per vaginam, since it is supposed that the bull, by means of his penis, transfers the bacilli from the vagina of one cow to that of another. There are apriori reasons which compel one to admit that such an occurrence is possible, and there is a certain amount of circumstantial evidence to show that, in particular cases in actual practice, the disease has been spread in that way. We have scarcely been able to approach this question from the experimental side, and for the following reasons: It is obvious that, in order to test the ability of a bull to transmit the disease, each experiment must be planned so that a diseased cow, with her genital passages still infected, and a healthy cow, shall be served in succession, and with only a short interval, by the same bull. But, owing to the moderate number of diseased and healthy animals at our disposal, we never had available for experiment a recently-aborted cow and a healthy heifer which were both in oestrus on the same day. In one experiment of this kind, an interval of thirteen days elapsed between the service of the cow which had aborted and that of the healthy heifer; the result was negative, but little importance can be attached to the fact (1) because the interval between the services was too long, and (2) because a single experiment with a negative result carries very little weight. It has to be observed that, with the discovery that infection can readily be brought about by ingestion of virulent material, most of the circumstantial evidence which seemed to establish the bull as a factor of the first importance, admits of another and more probable interpretation. For example, it was held that, when heifers which had never been in the infected byres aborted at pasture, they must have been infected by the bull, but in such case we are now in a position to say that, if recently aborted cows have grazed on the pastures, the heifers may have been infected by swallowing grass or water contaminated by the discharge from the genitals of the former, or that virulent material may have been conveyed on artificial foodstuffs from the buildings. Without denying that the disease may sometimes be spread by coition, we think that nothing more than a quite subsidiary role in the spread of epizootic abortion can now be assigned to the bull.

CURATIVE MEASURES.

"On account of a somewhat prevalent idea that carbolic acid given internally will cure animals affected with abortion, or prevent the infection of healthy, pregnant animals, it was considered advisable to put this alleged remedy to an experimental test. A heifer was infected with virulent material 43 days after becoming pregnant, and 30 days after infection she received every other day two drachms of carbolic acid in a mash, by the mouth, alternated every fortnight by subcutaneous injections of one drachm in glycerine and water, given every other day. This treatment was continued for ten weeks. She aborted 102 days after infection, and in the

tenth week of treatment; abortion bacilli were found in the discharges. From the first, it seemed unlikely that carbolic acid, or any other disinfectant, administered even in a poisonous dose, would be absorbed and reach the uterus in a sufficiently concentrated form to have any action on its bacterial contents. There are many farmers who have had no success whatever in the field with the carbolic-acid treatment for abortion, and the evidence on which the alleged successes are based will hardly stand analysis. In the first place, the animals put under the treatment are not known to be infected, and yet every one which does not abort is regarded as cured by the advocates of the method. In the second place, the treatment is usually adopted towards the end of an outbreak; that is to say, at a time when abortion is practically confined to a proportion of the animals recently brought into the herd, and the reduction in the number of cases is attributed to the alleged remedy, whereas it is more open to a totally different explanation, viz., that, after the third year, the disease practically confines itself to some of the new animals brought in, with the result that, since these form only a small proportion of the whole, the opportunities for infection are greatly diminished.

"The usual history of an outbreak of abortion is that for the first two or even three years it claims many victims in the original herd, and after this one gets only a few odd cases a year, unless many new animals have been introduced. This is owing to cows becoming immune, as a rule, after two, or, at most, three abortions."



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|--------------------|---------------------|
| 1. Hind shank. | 7. Rib. |
| 2. Round. | 8. Chuck. |
| 3. Rump. | 9. Flank. |
| 4 and 5. Loin end. | 10 and 11. Brisket. |
| 6. Pin bone loin. | 12. Shank. |
- Note. In Canada, No. 6 is known as the short loin.

PREVENTION AND ERADICATION.

The methods which have been relied upon in the past for the prevention of abortion and its eradication from a herd, are disposed of by the report, briefly, as follows.

"1. Spraying the external genital organs. We think that this method is useless, so long as the animals remain in an infected byre, and that it may be discarded. Immediately before removing an animal from infected to clean premises, however, we think it would be advisable to thoroughly wash the posterior portions of its body with a disinfectant solution, such as corrosive sublimate, 1 in 2,000, or carbolic acid, 3 per cent.

"2. Isolation of animals as soon as they show signs of abortion. Isolation of the infected animals must be complete before and after the act to be of any real value.

"3. Internal administration of carbolic acid

As a preventive agent, by internal administration, we believe carbolic acid to be useless.

"4. Irrigation of the genital passages after abortion. Almost immediately after abortion and expulsion of the membranes, the uterus contracts, and its internal surfaces come into apposition. Its condition is such that it would not be possible to force fluid into it with a pump from the vagina.

"5. The keeping of a special bull for cows which have aborted. We think there is something to be said in favor of this, and, when this is not possible, of disinfecting the external genital organ of the bull after he has served such cows."

The committee do not consider this, their first report, by any means exhaustive of the subject, as their experiments so far have been but partial, and the work will be continued on a more extensive scale, with the hope of making additional discoveries.

Beef Cuts.

The regular cuts of meat as handled in most markets are: Loins, ribs, rounds, chucks, flanks, shanks and briskets or plates. Just where these cuts are taken from in the carcass of beef is readily seen from the accompanying illustration. The loin is separated from the round at the hip joint; the flank is cut from about the middle of the thirteenth rib to the opposite lower corner of the loin. The shank is sawed off just below the second knuckle (or shoulder joint); the brisket is cut off on a line extending from the middle of the twelfth rib, through the point at which the shank is removed; the rib and chuck are separated between the fifth and sixth ribs.

These cuts are graded into No. 1, No. 2 and No. 3, according to the thickness, covering, quality and weight. Cuts that are too deficient in thickness and quality to be used in the retail trade, are made into boneless cuts, barreled beef, sausage, and such products. Thickness of lean flesh is of prime importance. Lean beef has a much higher market value than fat or bone. The depth of the flesh usually indicates the source of the beef, and affects the general appearance and shape of the cut. Covering or depth of fat is most essential in the more valuable cuts. The highest quality of lean can be secured only at the expense of a liberal amount of fat. Those who usually buy round or chuck steaks expect little fat, but those buying loin steaks expect a liberal amount. In second-class retail markets it is not uncommon to see ribs and loins, as well as the cheaper cuts, devoid of fat. Quality refers to the grain and firmness of the lean, the marbling (i. e., the distribution of the fat through the lean), and the proportion of bone and other waste in the cut. The grain of meat consists in its fineness of fibre and the smooth, velvety appearance of the cut surface, as opposed to stringiness or coarseness. Firmness indicates maturity, in contradistinction to the washy appearance of immaturity. The proper distribution of fat through the lean greatly affects the tenderness, juiciness and flavor. In color, the fresh-cut surface of lean meat should be a rich bright-red, and should turn brighter, rather than darker, after exposure to the air at cool temperatures. Exposure in a warm atmosphere will produce a dark color on the surface of even the best beef. A very pale or pink tinge indicates immaturity. The fat should be clear white; in the lower grades it varies from white to yellow.

These cuts grade in price in the following order: Loins, ribs, rounds, chucks, briskets, flanks, shanks, and suet, the loin being the highest-priced cut.

Several different cuts of the loin are used extensively. The regular short loin is the portion between the thirteenth rib and the hip bone, and contains from 45 to 55 per cent. of the full loin. It contains porterhouse or T-bone and club steaks. The remainder of the full loin is called the loin end, and is used for sirloin steaks. The tenderloin is a long muscle lying between the kidney fat and the backbone, extending from the thirteenth rib to the butt end of the loin. The tenderloins required to supply the trade are taken from No. 3 and stripper loins, and practically never from the better carcasses. Loins from which the tenderloin has been removed are called strip loins, and are used for cheap restaurant and hotel trade, to be cut into small steaks.

The rib cut contains the best roasts. The various grades of ribs differ in thickness, covering and quality, as do the loin grades. No. 3 and stripper ribs are made into rolls.

The cut surface of the full round being identical with the butt end of the corresponding loin, the conditions as to grain, marbling, covering and color at that point determine the grade in each case. Three wholesale cuts are made for fresh trade from rounds, viz., buttocks, rumps and shanks. The buttock is wholly suited to cut as round steaks, those nearest the rump being of best quality. The rump, when used fresh, is sold as rump butt, or boneless rump, but is generally used for corned beef. The hind shank consists of the lower part of the round and boiling meat.

The preference for loin and rib cuts renders it