

ARTIFICIAL IMPREGNATION IN DOMESTIC ANIMALS.

The subject of this paper has been attracting more or less attention in breeding establishments during the past few years, and as there seem to be some features which have not been already discussed, I have been requested to bring the question before you, and also to present a few points which I gathered in various ways as years rolled by.

By way of introducing the subject, it may be well to follow the example of those investigators who have given so much attention to the etiology or cause of disease during the past twenty or thirty years; and in doing so it will be in order to review some of those conditions which prevent fecundity in the natural way; for, if we do not understand the cause of an evil, it is hardly possible to adopt intelligent measures in its removal, and thus more harm than good may be done by laboring in the dark.

To begin with, sterility or infecundity may be regarded as the unfruitful result of copulation, and may be discussed under two distinct heads; viz., permanent sterility and temporary sterility. The former is, unfortunately, beyond our reach as far as overcoming it is concerned, in most instances, for example, hermaphrodites, or those animals which possess so many of the characteristics of the opposite sex to which they really belong—a stallion looking like a mare and such like animals of this description are invariably barren.

In cattle, when twins are born, the one a male, the other resembling a female, the latter is called a "free martin" and as a rule these will not breed because they are usually hermaphrodites. Those free martins which I have examined after death have always been so defective in the make up of their generative organs that it would have been impossible for them to have conceived.

Hybrids are usually barren, although there are some cases reported in which the female mule is said to have produced offspring. It is also the result of disease of the generative organs, such as fatty degeneration of the ovaries, or some other disease. I once saw a case in a bull which I attributed to tuberculosis of the testicles, and another case in a cow to general tuberculosis of her generative organs; her entire womb was little more than an indurated mass of tubercular deposit. Other cases, in stallions, have been the result of inability on the part of the testicles to form spermatozoa; at least I failed to find them in the fluid collected immediately after copulation and examined with the aid of a microscope.

The temporary causes of sterility are numerous, but not always difficult to overcome, it is sometimes the result of premature or late coition, when the generative organs of the female are not in proper condition for conception in other words, when she is not in season.

Some breeders believe that for mares accustomed to hard work, active exertion before service is favorable to conception; and the Arabs for this reason are said to gallop their mares to such an extent as to bring them breathless before the stallion, and when the act is accomplished, leave them for a few hours to cool down; but I have seen the opposite to this procedure, both before and after copulation, so often practiced with satisfactory results, that I have yet to be convinced that one method has any real advantage over the other. Change of climate also seems to have a marked effect upon fecundity, sometimes putting it indefinitely in abeyance. I have known cases where even removal from one state to another seemed to have a baneful effect on the fecundity of the cow.

I think there is one cause of fecundity in the female which is often overlooked, and the failure to conceive is often attributed to a wrong cause and male animals are condemned as not being sure "getters," when really the fault, if it may be so called, is with the female. In an effort to make myself clear upon this point, let me say that the mental picture which I have drawn in my mind's eye, in connection with the bursting of the Graafian vesicle and the discharge of the ovum is, that the pavilion of the fallopian tube, joining the ovary and the womb, is conveyed around the surface of the ovary by its fimbriae and surrounds it in a proper manner the ovum (egg) is collected, and if other conditions are favorable, the process of reproduction is soon set agoing; but the movements of the fimbriae are under the control of the sympathetic nervous system, and we have abundant evidence that the operations of this system are very fickle, for which reason I think it is fair to assume that it often misses or fails to select the right spot upon the ovary to collect the ovum, and as a consequence the female fruit of oestrus escapes into the abdominal cavity, where it may soon perish; although the oestrus may have come on in the regular manner and other things have been conducted in a regular way, but the service fails to impregnate and the male is wrongly blamed for the failure. A strong argument in favor of this theory is, that artificial methods of impregnation sometimes fail for one or more trials, and again we have that peculiar condition of extra uterine pregnancy demonstrating most conclusively that the ovum sometimes escapes into the abdominal cavity.

Again, temporary sterility may be due to constriction of the mouth of the womb, the result of spasmodic contraction or organic disease of the tissues forming it; the former condition may sometimes be overcome by inserting a suppository of belladonna or some other antispasmodic, but the latter requires more positive and energetic treatment, which consists in some mechanical means for opening it up; such, for instance, as spreading it with the fingers or one of the many instruments designed for the purpose, and on theoretical grounds that would seem to be all that is necessary; but my own experience, as well as unsatisfactory results from the operation which have been reported to me by other veterinarians, cause me to believe that more heroic measures should be adopted; and an operation which I performed in a cow a few years ago tends to verify my suspicions and also shows that considerable liberties may be taken with the oestrus without doing permanent injury to the animal.

For the purpose of a clearer understanding of the matter, it may be well to relate the various circumstances which led up to the operation, which, in the way, I now regard as a compromise between artificial and natural impregnation.

One of my patrons, a Shorthorn breeder, purchased a cow, several hundred miles from his farm, and after bringing her home, subsequent efforts failed to produce impregnation, and it was finally arranged that I should visit the farm on a day when the cow would be in season. I did so, but was informed by the owner that he had telegraphed me not to come as the cow had come in season the day before the appointed time; but I did not get his message, and when I arrived all evidence of the oestrus had subsided. After a short parley with the owner, the cow was handed over to me with permission to do as I pleased with her. I forthwith made an examination and found the os so firmly contracted that it would not yield to pressure of the index finger, although it was pushed against it until the cow exhibited her discomfort by a moan, at which signal I decided I had gone far enough with that part of the operation. I then introduced a concealed bistoury, which had been prepared for the purpose, and made a slight incision across the circumference of the organ, but it was not sufficient to permit free passage of the finger, although I had gained some ground. Whereupon, I made incisions until I could get the finger all the way through to the last joint; then, by manipulation, I finally got my entire hand, as far as the wrist, through the opening and into the womb. I then concluded that the limit had been reached as far as operating was concerned. The cow was then, with much difficulty, served by the bull, though, as might be expected, the service was of no avail; but, anticipating this, I left instructions to have her served the next time the heat came on, and without any artificial interference. This was done, but somewhat to my disappointment the cow did not hold, as the heat came on a second time, and I had some visions that I might have carried the operation too far and possibly set up an inflammation which had again closed the mouth of the womb. However, I wished to give the work a thorough test, and more gave instructions to have the second or, rather, third service performed in the natural way, and as a consequence the cow held this time, and in nine months produced a fine, vigorous calf.

I doubt very much if cases like the foregoing could be impregnated by the ordinary artificial means which are now adopted, without, first of all, breaking up the occlusion.

Another cause of sterility is undue protrusion of the cervix into the vagina and misplacement of the os uteri; the treatment is obvious.

Turning for a few moments to that which may be regarded as purely artificial impregnation, I venture the opinion that if this operation is properly performed, the percentage of fecundated mares and cows will be materially increased, and we will hear little more of shy-breeders, while the offspring, as far as my observations have gone, are just as vigorous and perfect as those produced in the natural way, and the fecundating fluid of the male may be administered to a remarkable extent. In the literature of the subject I find mention made of fecundating two or even three mares with one discharge from the stallion, and a Kentucky breeder informed me recently that six mares had been impregnated from a single discharge at his farm. Then the risk of service is a good deal less than other things of minor importance but still in favor of artificial impregnation.

The technique of the operation is simple in the extreme, especially for those who are familiar with the anatomy of the parts, and who observe due cleanliness in their operations. The instruments required are simply a suitable syringe and a glass beaker, or some such vessel warmed to about 100 degrees Fahr. I have used a water-bath for keeping things warm (a sand bath might be more convenient), and when a number of animals are to be fecundated from a single discharge, I think the chances of success are greater when the fluid is kept at about the temperature of the body.

The animals to be operated upon should be close at hand.

The service is conducted in the usual way, and immediately after, the fluid is collected from the end of the penis, from which a considerable quantity will usually flow, and this may be augmented with that which comes from the vulva of the female; a clean syringe is then charged with the required amount, which in its turn is injected into the os uteri, and the operation is completed.

The remarkable things which are transpiring in the scientific world these times, in transplanting specific fluid cultures for certain soils and crops, and work of that kind, have caused me to think that there is a good, and unexplored field for experimentation in transporting the male fruit of impregnation hundreds if not thousands of miles.

E. A. GRANGE, V.S., before the Veterinary Medical Association of New York City.

THE TONGUE.

"The boneless tongue, so small and weak Can crush and kill," declared the Greek.

"The tongue destroys a greater horde," The Turk asserts, "than does the sword."

A Persian proverb wisely saith, "A lengthy tongue—an early death."

Or sometimes takes this form instead, "Don't let your tongue cut off your head."

"The tongue can speak a word whose speed," Say the Chinese, "outstrips the steed."

While Arab sages this impart, "The tongue's great storehouse is the heart."

From Hebrew wit the maxim sprung, "Though feet should slip, ne'er let the tongue."

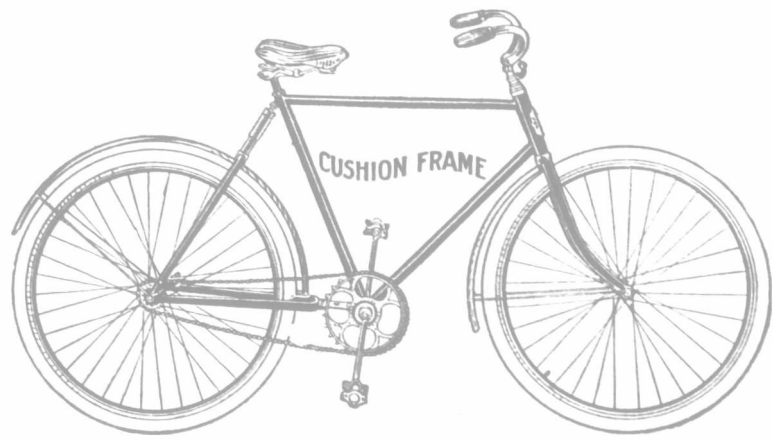
The sacred writer crowns the whole, "Who keeps the tongue doth keep his soul."

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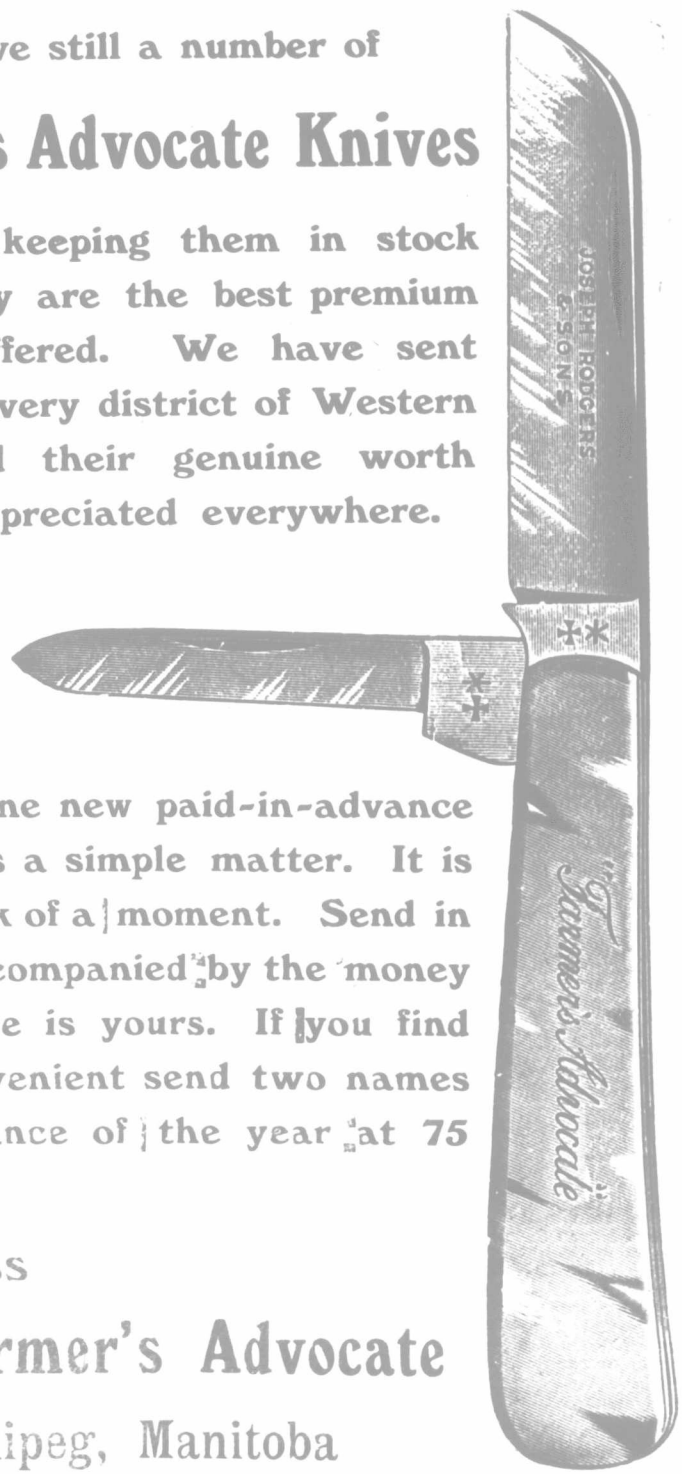
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