

specialists in theriogenology, (2) the encouragement of scientific investigation and research and the reporting of these, (3) the development of continuing education methods and programs for disseminating information to and increasing knowledge of all veterinarians, especially practitioners, (4) the development of graduate study and residency programs, (5) the establishment of high standards and guidelines for professional attainment and specialization.

“Section 2. The College shall evince a dedicated commitment toward the practitioner of veterinary medicine and shall develop special procedures for evaluation, recognition, and certifica-

tion of competence of veterinary practitioners in theriogenology.”

Special attention is called to the very specific constitutional commitments toward the practitioner of veterinary medicine which are intended to fulfill the intent and desire of recognition and certification of competence of veterinary practitioners in theriogenology.

It is the sincere hope of the Charter Diplomates that the College can be made a useful and actively functioning organization, that it will unify our area of veterinary medicine, and that “theriogenology” will become a more readily recognizable and definable specialty within veterinary medicine.

## The Future of A.I.

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Artificial insemination of all species has a future of continual expansion and enlargement from what we have today. Since this is a “bovine practitioner” conference, we will confine our thoughts of the future to the bovine species. The first 35 years of progress have provided a firm foundation on which future changes and improvements can be made. The relatively new science of cryobiology will make possible the storage of germ plasm in different ways than we know today. The only reason for A.I. and its main objective is bringing about genetic improvement of larger numbers of herds than can be accomplished by natural service, due to the relatively limited number of females that can be mated to the few genetically superior males. Here is what I see as some of the developments.

Future superior germ plasm will be located by means of blood type records and analysis. Future matings will be made by matching blood type patterns to concentrate the desirable characteristics for type and/or production. This “tool of the future” will eliminate the transmission of undesirable recessive characteristics if the A.I. industry and the breed organizations will recognize and exercise their responsibilities. The information necessary to accomplish this will be computerized and available to all people involved. This is in contrast to our present day “hit and miss” or “personal preference” methods that result in relatively few superior individuals and thus results in slow genetic progress.

Sex ratio control of the sperm accompanied by super-ovulation of the female will further

increase the number of offspring produced by the superior parents. Fertilized eggs from these matings will be recovered from the superior female’s oviduct and preserved for future transplant into less desirable females who serve only as incubators.

Estrus synchronization and/or ovulation control will be a common practice. Fertility of these inseminations will be equal to present day fertility at natural estrus; thus, a more economical and efficient use of A.I.

The emphasis for the future will be on performance records and economically important characteristics, with minor emphasis on breed lines or bloodlines. Crossbreeding will become more common and will be based on blood type records and sound genetic principles rather than our present day “printer’s ink,” “pie in the sky” promises and “eyeballing.” New breeds economically superior to the ones we know today will result.

Artificial insemination must provide equal fertility to natural service, with semen containing relatively few sperm, with semen readily available regardless of the location of the donor sire, and be produced by a sire known to be free of diseases transmissible by the semen.

Fertility of sperm produced by a given bull will be tested chemically or cytologically to predict the fertility of each ejaculate before it is used. This will make possible the culling of substandard samples with the result of higher fertility per insemination.

Freeze dried sperm, for resuspension prior to insemination, will utilize fewer sperm for each

insemination, and the availability of the semen will be on the "drugstore shelf" or a common home storage item. This is in contrast to our present cumbersome and expensive storage of sperm in liquid nitrogen. The science of cryobiology will expand and bring greater efficiency in storage and utilization of germ plasm.

Disease testing programs of sires housed and owned by bull studs will become more sophisticated. The *NAAB-AVMA Minimum Standards for Bull Health and Hygiene of Bull Studs* will be updated to include additional diseases not now listed. USDA animal health laboratories will make these additional test programs possible. The A.I. of the future will continue to be the most reliable method of controlling disease transmission between herds.

These positive improvements and developments will be made by the organized bull studs in the A.I. industry by our educational and research institutions and by our Animal Health Division of the USDA. The semen producing businesses have been, and will continue to be, the pacesetters and will establish the guidelines to achieve these objectives and goals.

However, I predict that the future of A.I. can become a howling mess.

The training, by the bull stud organization, of the herd owner and his family to do their own inseminations as a means of selling more semen at a greater profit is a common practice today. While there is nothing difficult or wrong with learning the insemination technique (in fact, it is a necessity in many geographic areas), it is, however, only the first step in a long chain of demands to come in the future. Many of these training programs are good and follow the *NAAB Recommended Minimum Standards for Training Herdsman-Inseminators*. But, too many are "quickie" sessions done in a few hours (four or five) on two or three open cows in the farmer's own herd. The sole objective is to sell more semen. The result is very limited training, poor

insemination technique and poor fertility of the cows inseminated. The herdsman immediately attributes the poor fertility to poor semen. The future will bring more of this.

Future demands by these herdsman-inseminators involve training in pregnancy determination, treatment of follicular cysts and other fertility problems, and hormone availability now reserved for veterinarians only. These demands by well organized groups will, in the future, establish an educational program in colleges of agriculture and vocational schools involving subject matter previously taught in third and fourth years of veterinary colleges. A survey and study of this nature is presently in progress in Wisconsin.

Collection and freezing of semen from privately owned herd sires on a "custom collection" basis is a useful tool to the large herd. However, in the future we will see an increasing amount of traffic between herds and interstate of such semen being sold, shipped and used. The donor sire in these cases is usually being used for natural service between collections and the disease testing program is questionable or non-existent. The *NAAB-AVMA Minimum Standards for Health of Bulls* will be ignored and the resulting transmission of disease between herds and interstate will become more common. These negative developments can be reduced or corrected for the future if we in the A.I. industry, the veterinary profession, educational institutions, our State Departments of Agriculture, and our animal health regulatory people are aware of the potential problems.

To close on a positive note, the A.I. of the future will be a most important method of genetic improvement of large numbers of cattle and other livestock. It will be the best way of controlling transmission of disease. If we can work together to fully exploit these tremendous advantages and minimize the potential problems, the future will indeed be bright.

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## The Veterinarian's Potential Role in the Future of Artificial Insemination

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In discussing the veterinarian's role in the future of artificial insemination of farm animals, I believe my subject should be relatively non-controversial. I certainly know nothing about the future, but then who does. I am sure that I cannot

prove one or all points of this short dispatch but then who can disprove them.

The future is full of unknowns and what little we can predict, must by necessity come only from our meager knowledge of conditions of yesterday