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IMPORTATION OF DEEP FROZEN BOVINE SEMEN

HISTORY was made on January 5, 1955, when a consignment of 100 cc of deep frozen bull semen reached Perth from London. This was the first consignment of deep frozen semen to be imported into Western Australia. It was procured from the Milk Marketing Board in Great Britain by the South-West Co-operative Dairy Farmers Ltd., Bunbury, on behalf of Mr. R. B. Lefroy, of Waterloo, for the insemination of his dairy herd of 50 milking shorthorn cows.

Although artificial insemination has been practised for many years, the deep freeze technique is a new procedure which was developed about two years ago by British veterinarians and it is still in the experimental stage.

After collection, the semen is diluted with the usual egg yolk citrate buffer and cooled to 5°C. An equal amount of the diluent containing 20 per cent. glycerol is then added giving a final concentration of 10 per cent. glycerol which protects the sperm against the otherwise fatal effects of freezing and thawing.

The diluted semen contained in sealed ampoules is then cooled by the addition of solid carbon dioxide or dry ice, at first slowly to -10°C and then rapidly to -79°C at which temperature it is stored. When required for use it is thawed by immersing the ampoule in water at 37 to 40°C.

Observations in Britain have shown that deep frozen semen will retain its fertilising capacity for at least a year. This opens up wide possibilities, since it enables a bull of outstanding merit to be used to the maximum possible extent and even to get calves after its death. It also enables stock breeders in remote countries to obtain the services of an outstanding bull without incurring the heavy cost of purchase and transportation.

It was reported recently that a consignment of deep frozen semen flown from Cambridge to Johannesburg had been used for the insemination of two dairy herds for a period extending over four and a half months with highly satisfactory conception rates.

The semen for Perth was put up in ampoules, each of 1 cc, and packed in a heavily insulated cabinet about half the size of a tea chest with a tray of alcohol in which the ampoules were immersed and a removable compartment or well as a container for the dry ice.

It was consigned by air via Singapore and Darwin and arrangements were made for the replenishment of the dry ice en route.

Upon arrival at Perth the semen was found on microscopic examination to contain only about 1% of motile sperm and although the importer intends to proceed with inseminations it is hardly to be expected that they will prove successful. An unfortunate delay of four days had occurred at Darwin and it is thought that the dry ice may not have been adequately replenished during this period.

Elaborate quarantine precautions were taken against the introduction of disease. The semen was required to be derived from an artificial insemination centre supervised by a veterinary surgeon and licensed by the Ministry of Agriculture and Fisheries. The donor bull was required to be tested for T.B. and brucellosis, to be certified free of vibriosis and trichomoniasis and to have proved of good fertility. In addition the Ministry was required to furnish a certificate that neither the insemination centre nor any of the farms serviced by it had been under foot and mouth disease restriction for six months prior to the collection of the semen or for 30 days thereafter.

Whether or not the venture proves successful, the experience gained should be of considerable value to other importers, and Mr. Lefroy is to be commended for his enterprise.—C.R.T.

(This broadcast script was made available by courtesy of the Australian Broadcasting Commission.)