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A STUDY OF THE TRANSPORT OF SPERMATOZOA IN THE  
REPRODUCTIVE TRACT OF THE EWE AFTER  
ARTIFICIAL INSEMINATION

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in Animal Science  
at  
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KERIN HARLE GILES

1975

A million million spermatozoa,

All of them alive:

Out of their cataclysm but one poor Noah,

Dare hope to survive.

---- ALDCUS LEONARD HUXLEY

## PREFACE

This investigation was conducted at the Sheep Production Centre of the Sheep Husbandry Department, Massey University. The experimental work was conducted in July, 1974 and from February till June 1975, and represents original research by the author under the supervision of Dr. M.F. McDonald, Reader, Sheep Husbandry Department, Massey University.

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## ABSTRACT

Two preliminary experiments were conducted with artificially inseminated ewes to examine the considerable variation in counts of spermatozoa recovered in flushings from the reproductive tract. In the second trial, road transport stress immediately after insemination caused a reduction in the number of spermatozoa reaching the Fallopian tubes.

In the third trial, sperm transport after insemination with fresh, undiluted semen at two sites in the tract at predetermined times relative to synchronized ovulation (progestagen-HCG treatment) was investigated. Deposition of semen at the uterine end of the cervix or within the uterus using a specially adapted inseminating pipette, resulted in the recovery of higher numbers of spermatozoa from the uterus and Fallopian tubes 4 hours after insemination, than did insemination at the external cervical os. Twenty-four hours after insemination similar numbers of spermatozoa were found in all segments for both sites of insemination. Deposition of semen before or after the expected time of ovulation, or at both times, had little effect on the numbers of spermatozoa recovered. More ova with accessory spermatozoa were recovered from oviducts containing high numbers of sperm.

The transport of spermatozoa after deposition of fresh or frozen semen into the uterus by surgical and non-surgical methods, was studied in a fourth experiment. The number of spermatozoa recovered from the uterus and isthmus was similar for both types of semen, but only 'fresh' spermatozoa deposited at surgery, reached the ampulla in significant numbers. 'Frozen' sperm deposited by both methods, and fresh sperm deposited non-surgically,

did not reach the ampulla within 4 hours of insemination.

Impaired transport of 'frozen' spermatozoa to the site of fertilization appeared to be a result of reduced longevity of these cells within the female tract, and may involve factors such as breakage of spermatozoa in the uterus, and delayed transport in the oviducts.

The improvement of sperm transport in the ewe through the development of non-surgical, intrauterine inseminations and using either freshly extended or frozen semen, are discussed.

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