

31 December 1957

TRIP REPORT

To: Mr. R. A. Webster  
cc: R. J. Henderson, S. G. Hasler  
From: R. H. Edgerley ✓ Mail No. H-3092 Ext. 9233  
Subj: Trip Report - Discussion of Animal Experimentation to be  
Performed in an orbiting space vehicle with Dr. L. I. O'Kelly,  
Professor of Psychology at the University of Illinois, Urbana, Ill.

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The possible objectives of animal experimentation needed to explore man's capabilities in space, and a wide variety of possible animal subjects were discussed. Dr. O'Kelly felt that a simple set up in which untrained behavior was observed for several months or the longest time possible would be the best approach. He suggested that a group of animals, if carefully chosen for favorable interactions, would be especially informative. Such animals would be monitored by television and the simplest kind of vital activity such as body temperature, heart beat, or respiration. Such a preliminary experiment would tell us whether more specific experimentation (and the exact kind) would be needed to justify putting a man in an orbit. Dr. O'Kelly strongly advised us against committing ourselves to any particular animal subjects in a proposal. He said the proposal should indicate that the exact choice of animals would depend on considerable experimentation to be performed on the contract.

If a single kind of animal is to be used, Dr. O'Kelly said that dogs would be able to furnish more information concerning man's capabilities for our purpose than any other animal. He made the point that despite its chosen relationship to man, an ape's ability to turn a dial is no more indicative of man's ability to do the same thing than is a chicken's ability to eat in its normal fashion.

Dr. O'Kelly showed us rats bearing electrodes implanted in the brain 4 months after the operation. The rats were obviously healthy and content. He attaches wires to the electrodes to stimulate the brain directly in certain of his experiments. He told us of other experiments in which transmitters or receivers could be attached to the animals' brains so that, for example, brain waves could be transmitted without the use of wires. The brain signals are strong and very easily picked up from a distance of 20 feet or so, he told us. He offered to teach us these techniques whenever we so desire.

Dr. O'Kelly showed us one of his experiments on thirst in which rats obtain water by pressing a bar under certain conditions, which then allows them to drink from an inverted glass tube. He said they learn to do this in about an hour. He expressed the opinion that obtaining water is such a strong instinct in animals that he felt any animal could quickly learn to obtain water in a wide variety of difficult ways. This means that supplying water to animals in an orbiting vehicle will probably not present much of a problem except for storage space and weight.

Altogether Dr. O'Kelly talked with us for about 6 hours and did this without charge. Should the Martin Company get this contract, it is strongly recommended that Dr. O'Kelly's consultant services be purchased.

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