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"HEARING SENSATIONS IN AMPLITUDE MODULATED RADIO FREQUENCY FIELDS"

THESIS

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By

William Tarver Harvey, B.S.
1st Lt USAF

James Page Hamilton, B.S. E.E.
2nd Lt USAF

Graduate Electrical Engineering

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Preface

This thesis has been an attempt on our part to establish, as conclusively as possible, that the phenomenon of hearing in an amplitude modulated radio frequency field is nothing more than bone conducted sound produced by the electromechanical pressures in the field.

The first experiment discussed in this paper is an investigation of the phenomenon of feeling threshold in a radio frequency field. This was done for the following two reasons: (1) to check out the operation procedure for the equipment, and (2) to develop safety procedures and operational methods to be used in the hearing experiment.

There are three people to whom we owe a great deal in the preparation of this thesis: Henry Sommer, Dr. Charles Nixon, and Dr. Henning von Gierke.

We should like to thank Henry Sommer for his valuable aid in conducting these experiments, and Dr. Charles Nixon for his helpful advice on the psychological aspects of our work.

We are most highly indebted to Dr. Henning von Gierke who has taught us most of what we know concerning electrophonic hearing, and who has given us much of his valuable time in answering what have all too often been trite and hastily conceived questions.

Contents

Abstract

When the head is subjected to an amplitude modulated radio frequency field, a hearing sensation results. This sensation was investigated by holding a small circular metal probe close to the skull. The probe was then excited at a radio frequency of 3.5 megacycles. The audio frequency components of the field existing between the probe and the head produced the threshold electromechanical pressures necessary for hearing. These electromechanical pressures were computed and compared to the pressures on the skull which were necessary to produce bone conduction hearing. These pressure values fall within the same limits, and produce a similar characteristic threshold curve. This leaves little doubt that the investigated hearing phenomenon is caused by the bone conduction mechanism.