

Foreword

The Central Radio Propagation Laboratory

Radio propagation research at the National Bureau of Standards dates back to the very earliest days of radio communication when measurements were first made by Austin and his colleagues on very long radio waves which are channeled around the earth between the ground and the ionosphere—although at that time the ionosphere had been only recently postulated by Kennelly and Heaviside. Since that time the interest and effort in radio propagation research has increased greatly, both in the National Bureau of Standards and elsewhere. However, the emphasis in radio propagation research has not enjoyed the support and recognition given to the engineering development of equipment and practical techniques of radio communication, broadcasting, and radar.

The transmission of intelligible information via radio waves depends on the quality of the equipment at both the transmitting and receiving ends of the communication link, on the interaction of the medium with the waves, and on the presence of other radio waves, either natural or manmade, which give rise to interference or noise. Radio propagation research is concerned primarily with these latter two effects rather than the terminal equipment.

Radio propagation research encompasses a wide range of scientific disciplines which go far beyond the usual training of our radio, electronic, and electrical engineers who have been primarily responsible for the present state of the art in radio communication. Radio propagation research requires basic studies of the upper and lower atmosphere, the sun, relationships between phenomena on the sun and in the earth's atmosphere, and studies of planets and stars which are emitting radio energy. Such basic studies involve extensive observations on a worldwide scale using both optical and radio techniques and will undoubtedly make increasingly more extensive use of satellite and space vehicles.

In radio propagation research, the basic objectives of improving radio communication are so closely associated with acquiring a basic understanding of our physical environment that one often cannot really say whether the specialist in this field is primarily a radio communication specialist acquiring a knowledge of the physical environment to improve communication or whether he is primarily a meteorologist, astronomer, astrophysicist, or geophysicist using the powerful radio techniques to better understand our physical environment. Furthermore, the results of radio propagation research have always been published in a wide variety of journals, encompassing the many scientific disciplines. We believe that the science of radio wave propagation has now reached sufficient stature and recognition in its own right that a journal devoted solely to the field is both desirable and necessary.

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