

book review

Ionospheric Radio Communications. Edited by KRISTEN FOLKESTAD. Published by Plenum Press, New York, 1968. 468 pages.

The book records in some detail the proceedings of the 1967 NATO study on ionospheric radio communications in the arctic, organized by Canadian and Norwegian defense research organizations. About two-thirds of the book consist of papers describing the physical condition of the arctic ionosphere, but with little discussion of the associated extra-terrestrial phenomena. The polar-cap and auroral ionospheric disturbances are described, both from the viewpoint of ionospheric phenomena and from the viewpoint of ionospheric communications. Much of the discussion centers round HF communications, although LF propagation and VHF scatter communications are also covered.

The book is not confined to arctic radio communications as seen through the eyes of the ionospheric physicist. Contributions to the latter one-third of the book are mainly from operational personnel and systems engineers. There is an interesting paper describing the current status of radio communications in the Canadian arctic, emphasizing the extent to which they depend on HF systems in spite of the complications of arctic ionospheric disturbances. There are papers dealing with multi-mode propagation and the effects of relative time-delay and Doppler-shift on errors in transmission. The contribution on this subject from the Stanford Research Institute is particularly interesting.

The most striking feature of the book is the renewed emphasis on bridging the gaps between physicists, engineers and operators, particularly in the HF communications. Substantial improvements will almost certainly result, but perhaps at the expense of robbing HF communication systems of some of their simplicity—a most valuable feature under arctic conditions.—*Henry G. Booker*

film review

Sea Surface Meteorology, 24 minutes, black and white, sound, 16 mm.

Principal Scientist: Duncan C. Blanchard, Woods Hole Oceanographic Institution

Produced by Educational Services Inc., Newton, Mass.

Distributed by: Modern Learning Aids, 1212 Avenue of The Americas, N.Y., N.Y.; Universal Education and Visual Arts, 221 Park Avenue South, N.Y., N.Y.

Released: 1968

The film is one of the series of films in the AMS program of educational films. The principal of the film is Dr. Duncan Blanchard, who wrote the script, developed the experiments and appears in the film as narrator. The film does of course reflect the principal's field of interest, as well as the touch of the director, Allan Pesetsky, who deserves a share of the credit for the high level of intelligibility of the film as well as the technical smoothness of the presentation.

The film may have originally been intended to make high school seniors interested in meteorology. As it came out, it deserves a much wider audience, especially among meteorologists.

The film concentrates on the physics of phenomena at the sea surface related to formation of salt nuclei electrical effects in droplet physics.

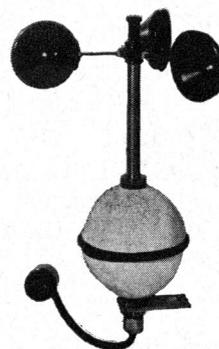
It first explains how salt particles get into the atmosphere via the process of bubbles, bubble breakup, jet drop formation and ejection and then evaporation.

It is then demonstrated that jet drops carry electrical charges and the effects of electrical fields on jet drop breakup and coalescence are shown, while mentioning that the subject is controversial. A passing reference to the fact that water molecules are polar and that sea water contains ions would have been a nice reminder to the viewer somewhere in this sequence.

The subject matter then ranges further afield, showing that salt water sprayed on hot lava generates an electrified droplet cloud, and ends with a spectacular display of lightning at the recent eruption of a volcano near Iceland.

The film displays some very neat experimental techniques, many of them simple enough for an amateur to copy. The physics of the phenomena is clearly explained to the extent they are understood. The film has just the right mixture of facts, good physical explanations and the spectacular to inspire further interest in the subject. The photography is excellent. The film should be useful in courses in sea surface physics and meteorology, it belongs in any science film library and contains material with which all meteorologists should be acquainted.—*Erik Mollo-Christensen*

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