Foreword

SPECIAL ISSUE ON MICROWAVE COMMUNICATIONS

THE idea for this Special Issue on Microwave Communications grew out of a desire to couple the device and circuit designers within the microwave community more closely to the systems that utilize the outputs of their technologies. Accordingly, this Special Issue has been assembled in order to describe systems either currently operating, or under development, whose concept was stimulated, and existence made possible, by devices and circuits developed by members of the MTT Society and the organizations they represent.

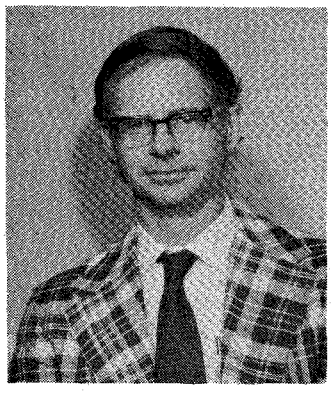
The first four papers report on microwave transmission systems. Abele *et al.* describe a 40–110 GHz TE_{01} circular waveguide digital communications system which is now being field tested. Yamamoto *et al.* report on a 400-Mb/s QPSK repeater for a 20-GHz digital radio-relay system presently under development in Japan. Berceli *et al.* describe the development of solid-state repeaters for Hungarian 4-, 6-, and 8-GHz radio-relay systems. Finally, Risch *et al.* show the design of a low-cost 12-GHz receiver for satellite TV broadcasting with CATV compatible output.

The next four papers show circuit design techniques applicable to microwave communication. Watanabe and Takao describe an optimum modulator design for a homodyne microwave measurement system. Endersz shows how the modulation linearity of microwave FM oscillators may be improved by proper harmonic tuning, thereby reducing channel cross modulation in FM-SSB transmission systems. De Koning *et al.* describe the design and performance of small-signal Gunn-effect reflection-type amplifiers for communications systems in *X*, *Ku*, and *Ka* bands. Degenford and Newman show the analysis and design of an *X*-band MIC mixer and 1-GHz IF amplifier.

The next two papers report on new research. Arnaud and Ruscio describe the guidance of 100-GHz beams by cylindrical mirrors. Liebe shows the measured transmission characteristics of air between 40 and 140 GHz. These results are applicable to forthcoming millimeter-wave satellite systems.

The last two papers deal with new measurement techniques. Stette addresses the problem of measuring and evaluating the linearity of narrow-band nonlinear devices. Ziolkowski proposes a method whereby a microwave phase bridge can be constructed to measure both the phase and amplitude balance of a biphase PSK modulator.

REED E. FISHER, *Guest Editor*



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He joined Bell Laboratories, Whippany, N. J., in 1958. From 1958 to 1964 he was engaged in the design and development of microwave filters and diode switches. From 1964 to 1969 he studied high-speed microwave-carrier pulse techniques exploiting Gunn-effect devices. In 1969 he became Supervisor of a radio design group for the high-capacity mobile telecommunications system. This group has been engaged in the development of new circuit techniques for UHF mobile telephones. He has been awarded seven patents and has published numerous technical papers.