which the Miniceiver sweeps the narrow band of frequencies in search of satellite signals, and, upon locating one, sounds an audible alarm. As a result, it is not necessary for the Miniceiver's user to have a schedule of satellite passes. This feature was engineered to use minimum current from the batteries so that the Miniceiver could operate in the alert mode for long periods of time without the necessity of recharging its batteries. Normally, the maximum search period required with the present satellite configuration would be four hours.

Another feature of the Miniceiver is its narrow band filter, tuned to the frequency on which the time signal is transmitted. This arrangement emphasizes the signal and thus provides more reliable operation under adverse conditions. The Miniceiver is also equipped with a small audio output amplifier and speaker so that no headphones or other external equipment is required for operation.

For certain operations it is desirable that time be obtained with a considerably higher accuracy than can be done auricularly. This can be accomplished by feeding the output of the Miniceiver's phase comparator to a decoder unit that processes the signal transmitted from the satellite and recovers the required time information electrically. This device would not be part of the Miniceiver.

In addition to its use for recovering time, the basic design principle of the Miniceiver could be used for other functions. A typical function would be for the reception of phase-modulated or narrow band frequency-modulated telemetry information. Within the present Miniceiver case size, a small discriminator could be readily built that would be capable of driving a small recorder. The Miniceiver could also be used for any other function that required the decoding of a phase-modulated signal that is transmitted on a frequency within the Miniceiver's tuning range.

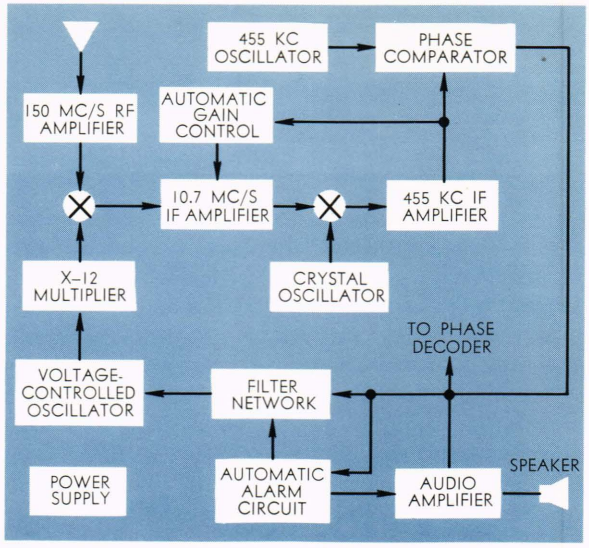


Fig. 2—Block diagram of Miniceiver.

To date, the Miniceiver has shown an unusual ability to operate under a variety of conditions. Its designers are optimistic about other applications, including the possibility of integrating the unit with additional equipment to form a complete satellite tracking station.

ADDRESSES

The listing below comprises the principal recent addresses made by APL staff members to groups and organizations outside the Laboratory.

F. T. McClure presented a series of lectures at *Trinity College,* Washington, D.C., during February-March 1966: "Particles and Quantum Concepts" (Feb. 17); "Bohr Atom and Atomic Structure" (Mar. 3); "Gas Kinetics and Thermodynamics" (Mar. 10); and "The Impact of Physics on Modern Society" (Mar. 15).

R. M. Fristrom, "Fundamental Research in Fire Extinguishment," *Fourth Annual OCD Fire Research Contractor's Conference,* Pacific Grove, Calif., Mar. 10, 1966.

V. G. Sigillito, "Pointwise Bounds for Solutions of Parabolic Equations," *Mathematics Colloquium,* University of Notre Dame, Indiana, Mar. 11, 1966.

J. A. Schetz and S. Favin, "The Ignition of Slot-Injected Gaseous Hydrogen in a Supersonic Air Stream," *Conference on Aerospace Engineering,* University of Maryland, College Park, Md., Mar. 15, 1966.

F. K. Hill, "Chemical Non-Equilibrium Effects on High-Speed Flow," *Conference on Aerospace Engineering,* University of Maryland, College Park, Md., Mar. 15, 1966.

PUBLICATIONS

The following list is a compilation of recently published technical articles written by APL staff members.

R. P. Rich, "Information Handling," *Methods of Information in Medicine,* **IV**, No. 4, Dec. 1965, 159-163.

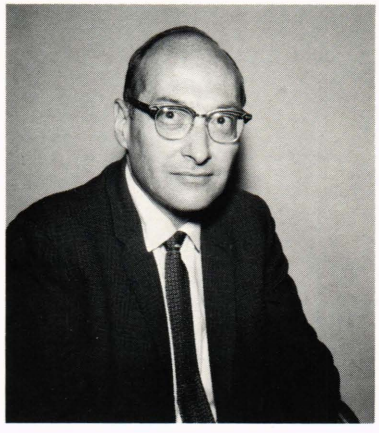
I. Katz, "Wavelength Dependence of the Radar Reflectivity of the Earth and the Moon," *J. Geophys. Res.,* **71**, No. 2, Jan. 15, 1966, 361-366.

V. O'Brien and F. E. Logan, "Velocity Overshoot within the Boundary Layer in Laminar Pulsating Flow," *Phys. Fluids,* **9**, No. 1, Jan. 1966, 214-215.

L. S. Glover, "Approximate Re-Entry Velocity and Heating Equations," *J. Spacecraft and Rockets,* **3**, No. 1, Jan. 1966, 156-158.

WITH THE AUTHORS

S. N. Foner, co-author of "Mass Spectrometry of Free Radicals and Metastable Molecules," was born in New York, New York. He received B.S., M.S., and D.Sc. degrees in physics from Carnegie Institute of Technology. A specialist in mass spectrometry, electron-spin resonance, molecular beams, free radicals, electron impact phenomena, telemetering, and sonar, Dr. Foner joined APL in 1945 as a physicist in the Aerodynamics Group. Later, as Supervisor of the Mass Spectrometry Group in the Research Center, he was concerned with research on appearance potentials, detection of free radicals, and reaction kinetics. Concurrent with these duties, Dr. Foner supervised a joint APL-Armed Forces Special Weapons Project which was involved in telemetering of shock wave data from atomic explosions. In his present position as Supervisor of the Electronics Physics Group. Dr. Foner is directing research in mass spectrometry, electron-spin resonance, solid propellant combustion instability, geomagnetic studies, and underwater sound. Dr. Foner is a fellow of the Washington Academy of Sciences and was recipient of its Physical Sciences Award in 1954. He is also a member of the Cosmos Club, the Combustion Institute, the Philosophical Society of Washington, and is a fellow of the American Physical Society and of the American Association for the Advancement of Science. Dr. Foner has been associated with the *APL Technical Digest* since its inception in 1961 and is currently serving as Chairman of the Editorial Board.



R. L. Hudson, co-author of "Mass Spectrometry of Free Radicals and Metastable Molecules," is a native of Indianapolis, Indiana. He holds a B.S. degree in physics which he received from Indiana University in 1942. A specialist in mass spectrometry, free radical research, and instrumentation, Mr. Hudson joined APL in 1943 and has worked on various aspects of the proximity fuze program, including test instrumentation, quality control, and fuze development engineering. As a member of the Electronic Physics Group, he has participated in the development of mass spectrometry instrumentation, research on free radicals by mass spectrometry, and the study of propellant instability by acoustic methods. Mr. Hudson holds a patent on a Special Potting Compound and is a co-holder of patents for a Mechanical Design for Proximity Fuze and for a Mass Spectrometer. He is a member of the American Physical Society, the New York Academy of Sciences, and the Philosophical Society of Washington.

R. B. McDowell, author of "Improved Detection of PCM Waveforms," was born in Washington, D.C. He received a B.S. degree in electrical engineering from Tri-State College in 1955 and has done graduate work at American University and The Johns Hopkins University. Mr. McDowell came to APL in 1956 as a specialist in data processing instrumentation. He assisted in the operation of the APL Telemetry Ground Station and in the design and development of the Automatic Recording Wave Analyzer for the study of missile vibration data. A major participant in the design of the Data Processing Facility, Mr. McDowell conducted the necessary liaison with manufacturers for the purchase and installation of the data processing equipment for the facility. As Project Supervisor, he is responsible for the technical direction of analog computer missile system simulation, vibration analyses, decoding of various modulation forms of telemetry signals, and digital data processing.