

Item	Description
201.850a-1	Calibration of loop antenna at one frequency, 30 Hz to 30 MHz.
201.850a-2	Calibration of loop antenna at frequencies additional to item 201.250a-1, 30 Hz to 1 MHz.
201.850a-3	Calibration of loop antenna at frequencies additional to item 201.850a-1, 1 to 30 MHz.
201.850z	Special calibrations not covered by the above schedule.
201.851a-1	Calibration of dipole antenna at one frequency, 30 to 1000 MHz.
201.851a-2	Calibration of dipole antenna at frequencies additional to item 201.851a-1, 30 to 400 MHz.
201.851a-3	Calibration of dipole antenna at frequencies additional to item 201.851a-1, 400 to 1000 MHz.
201.851z	Special calibrations not covered by the above schedule.
201.852a-1	Calibration of input attenuators at one frequency, initial step.
201.852a-2	Calibration of additional steps of input attenuator in addition to item 201.852a-1.
201.852b-1	Calibration of the over-all linearity of receiver and output circuit at one frequency and the one attenuator setting, initial point.
201.852b-2	Calibration of over-all linearity of receiver at other points in addition to item 201.852b-1.
201.852c-1	Calibration of the receiver as a two-terminal RF voltmeter, 1 to 10,000 μ V, 0 to 400 MHz, at one frequency.
201.852c-2	Calibration of the receiver as a two-terminal RF voltmeter at other frequencies additional to item 201.852c-1, 0 to 400 MHz.
201.852c-3	Calibration of the receiver as a two-terminal RF voltmeter at other frequencies additional to item 201.852c-1, 400 to 1000 MHz.
201.852z	Special calibrations not covered by the above schedule.

Engineering Division
Radio Standards Lab.
National Bureau of Standards
Boulder, Colo.

Contributors



Morris E. Brodwin (A'49-M'55) was born in New York, N. Y., on July 14, 1924. He received the B.S. degree in electrical engineering from the University of Nebraska, Lincoln, in 1947, the M.S. and Dr.Eng. degrees from

The Johns Hopkins University, Baltimore, Md., in 1951 and 1957, respectively.

He was a member of the Martin Company in 1948. In 1949 he joined the Radiation Laboratory of The John Hopkins University where he was appointed Research Scientist in charge of microwave research. In September, 1958 he joined the faculty at Northwestern University, Evanston, Ill., and is presently Professor of Electrical Engineering. He is currently engaged in the study of microwave physics.

Dr. Brodwin is a member of Sigma Xi, Eta Kappa, Nu, Pi Mu Epsilon, and the Physical Society.

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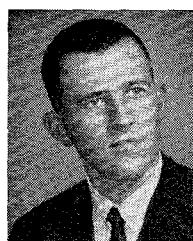
O. R. Cruzan was born near Cushing, Okla., on July 4, 1914. He received the B.S. degree in physical science from Oklahoma State University, Stillwater, in 1947.

In 1941 he joined the staff of the Na-

tional Bureau of Standards as a Physicist in the Field Test Section of the Ordnance Development Division. In the same organization, he worked as a Mechanical Engineer from 1945 to 1948. From 1948 to 1952 he worked again as a Physicist, and as a Mathematical Physicist from 1952 to 1954. In 1953 he became a member of the staff of Harry Diamond Laboratories, Washington, D. C., through the transfer of the Ordnance Development Division to the Department of the Army. From 1954 to the present, he has worked as an Applied Mathematician.

Mr. Cruzan is a member of the American Physical Society.

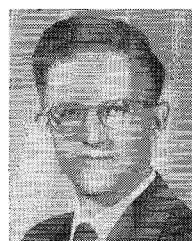
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Clay S. Durrett (S'60-M'61) was born in Tuscaloosa, Ala., on November 15, 1939. He received the B.S. degree in electrical engineering from the University of Alabama, University, in 1961.

While undertaking graduate study at the University of Alabama during the academic years 1961 to 1963, he served as a Research Assistant with the University's Bureau of Engineering Research. In 1963 he joined Space Craft, Inc., Huntsville, Ala., where he has worked with solid-state signal sources.

Mr. Durrett is a member of Eta Kappa Nu.

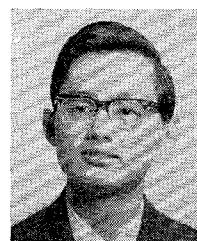


Robert V. Garver (M'57) was born in Minneapolis, Minn., on June 2, 1932. He received the B.S. degree in physics from the University of Maryland, College Park, in 1956.

In 1956, he became affiliated with the Microwave Development Section of Diamond Ordnance Fuze Laboratories, Washington, D. C., where he has been working on microwave semiconductors.

Mr. Garver is a member of the American Physical Society.

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Jin-Twan Lim (S'64) was born in Rangoon, Burma on October 29, 1936. He received the B.Sc.(Eng.) degree in electrical engineering from the University of Rangoon, Burma, in 1960.

From 1960 to 1962 he was trained as a graduate apprentice in electronics and telecommunications with the General Electric Company Limited of Great Britain in their laboratories at Coventry and North Wembley, England. In 1962, he joined the Electrical Engineering Department of Leeds University, England as demonstrator and has been doing research for the Ph.D. degree on broadbanding of microwave amplifiers.

Mr. Lim is a graduate member of the IEE, Great Britain.



Odis P. McDuff (M'57-SM'64) was born in Gordo, Ala., on May 16, 1931. He received the B.S. degree from the University of Alabama, University, in 1952 and the M.S. degree from the Massachusetts Institute of Technology, Cambridge, in 1953, both in electrical engineering.

After spending a year at Bell Telephone Laboratories, Murray Hill, N. J. as a member of the technical staff, he was called to active duty in the Signal Corps and served from 1954 to 1956 as Assistant Project Officer, Signal Corps Engineering Laboratories, Ft. Monmouth, N. J. From 1956 to 1958 he was a Circuit Development Engineer with the General Electric Company, Owensboro, Ky. and in 1958 was named Supervisor, Circuit Development Engineering. Since 1959 he has been Assistant Professor of Electrical Engineering at the University of Alabama where he has taught courses in electronics, electromagnetic theory, and microwave measurements and has done research in applied electromagnetic theory. He is currently on leave from the University of Alabama as a National Science Foundation Science Faculty Fellow attending Stanford University, Stanford, Calif.

Mr. McDuff is a member of the American Society for Engineering Education, Sigma Xi, Tau Beta Pi, Eta Kappa Nu, Theta Tau, Phi Eta Sigma, and Pi Mu Epsilon.



high-speed automatic weighing equipment. From 1954 to 1960 he was an Instructor in the Electrical Engineering Department of North Carolina State College. Summer positions since 1951 have been in the radio broadcast industry; with the Western Electric Company, Winston-Salem, N. C.; at the Oak Ridge National Laboratory, Oak Ridge, Tenn.; and with the Boeing Company, Seattle, Wash. Since 1960 he has been Associate Professor of Electrical Engineering at the University of Alabama University, where he is currently teaching and studying problems connected with antenna pattern ranges.

Dr. Mott is a member of A.S.E.E., Eta Kappa Nu, Phi Kappa Phi, and Sigma Xi.

Assistant in the Engineering Research Department, North Carolina State College, studying low-frequency navigation systems. From 1953 to 1954 he was with Wright Machinery Company, Durham, N. C., working on

graduate Research Assistant. His research interests have included problems in megavolt electronics, linear accelerators, and Cerenkov radiation. In 1963 he joined the Research Division of McDonnell Aircraft, St. Louis, Mo.

Dr. Rosenbaum is a member of Eta Kappa Nu, Sigma Tau, and Sigma Xi.

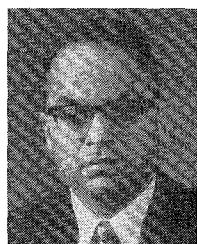


Sean O. Scanlan (M'62) was born in Dublin, Ireland, on September 20, 1937. He received the B.E. degree from the University College, National University of Ireland, Dublin, in 1959.

Until 1963 he worked at the Mullard Research Laboratories, Surrey, England, on circuit problems associated with transistors and tunnel diodes, and on general network synthesis problems. In October, 1963 he joined the staff of the Electrical Engineering Department of the University of Leeds, Yorkshire, England, as a Lecturer, where he is continuing his research in the same fields.



Bernard M. Schiffman (S'51-A'53-M'57), for photograph and biography see page 264 of the March, 1964, issue of these TRANSACTIONS.



S. R. Seshadri (SM'61) was born in Madras, India, on October 25, 1928. He received the M.A. degree in physics from the University of Madras, India, in 1951, and he earned the diploma in electrical communica-

tion engineering in 1953 from the Indian Institution of Science, Bangalore. He received the Ph.D. degree in applied physics in 1959 from Harvard University, Cambridge, Mass.

From 1954 to 1955 he served as a Lecturer in electronics at the Madras Institute of Technology, Chromepet, Madras, India. He was a Research Fellow in electronics at Harvard University during 1959. In 1960 he joined the Electronics Research and Development Establishment, Bangalore, as a Senior Scientific Officer, and in 1961 was made a Principal Scientific Officer and transferred to the Defence Electronics Research Laboratory, Hyderabad, India. He rejoined the Gordon McKay Laboratory, Harvard University, where he served as a Research Fellow from July, 1961, to July, 1963. Presently, he is at the Applied Research Laboratory, Sylvania Electronic Systems, Waltham, Mass.

Dr. Seshadri is a member of Sigma Xi.



plied physics from Harvard University, Cambridge, Mass., in 1955 and 1962, respectively.

From 1958 to 1960 he was a Research Engineer at Sylvania's Applied Research Laboratory, Waltham, Mass. During 1962 and 1963 he was a Research Fellow in Electronics and Lecturer in applied mathematics at Harvard where he taught numerical analysis and studied electrical force effects in dielectric liquids. He is presently a Postdoctoral Fellow of the National Institute of General Medical Sciences and is conducting research in cellular neurophysiology at the Massachusetts Institute of Technology, Cambridge.

Dr. Pickard is a member of Phi Beta Kappa, Sigma Xi, and the American Physical Society.



Fred J. Rosenbaum (S'57-M'63) was born in Chicago, Ill., on February 15, 1937. He received the B.S., M.S., and Ph.D. degrees in electrical engineering, from the University of Illinois, Urbana, in 1959, 1960, and 1963, respectively.

He joined the Ultramicrowave Group at the University of Illinois in 1959 as a Grad-



Donald A. Miller (S'57-M'65) was born on January 13, 1931 in Chicago, Ill. He received the B.S., M.S., and Ph.D. degrees, all from Northwestern University, Evanston, Ill., in 1958, 1961, and 1964, respectively.

From 1950 to 1954 he served in the Air Force as a Radar Instructor. He was a Research Assistant, supported by the Materials Research Center at Northwestern University, while engaging in research for the Ph.D. degree. In 1964 he joined the Faculty of the Department of Electrical Engineering at the Illinois Institute of Technology, Chicago, first as an Instructor and later as an Assistant Professor.

Dr. Miller is a member of Tau Beta Pi, Eta Kappa Nu, and an associate member of Sigma Xi.



Harold Mott (M'54-SM'60) was born in Harris, N. C., on June 16, 1928. He received the B.E.E. degree in 1951, the M.S.E.E. degree in 1953, and the Ph.D. degree in 1960, all from North Carolina State College, Raleigh.

From 1952 to 1953 he was a Research