

## Contributors to this Issue

J. G. FERGUSON, B.S., University of California, 1915; M.S., 1916; research assistant in physics, 1915-16; Engineering Department of the Western Electric Company and Bell Telephone Laboratories, 1917-. Mr. Ferguson's work has been in connection with the development of methods of electrical measurement.

J. J. GILBERT, A.B., University of Pennsylvania, 1909; Harvard, 1910-11; Chicago, 1911-12; E.E., Armour Institute, 1915; instructor of electrical engineering, Armour, 1912-17; Captain Signal Corps, 1917-19; Engineering Department, Western Electric Company, 1919; Bell Telephone Laboratories, Inc., 1925-. Mr. Gilbert has worked primarily on submarine cable problems.

A. A. CLOKEY was employed before the war in the Engineering Department of the Western Union Telegraph Co. During the war, he served as captain in the Signal Corps working on experimental investigations to improve cable communication. In 1919, he joined Bell Telephone Laboratories and has since been in charge of the development of terminal equipment for permalloy loaded cables.

A. M. CURTIS came to the Engineering Department of the Western Electric Company in 1913 after having spent several years as radio engineer for the Brazilian Government. During the war he was commissioned and sent to France to serve in the Division of Research and Inspection of the Signal Corps. In 1919, he returned to Bell Telephone Laboratories and has since been engaged with the applications of vacuum tube amplifiers to submarine cables.

E. PETERSON, Cornell University, 1911-14; Brooklyn Polytechnic, E.E., 1917; Columbia, A.M., 1923; Ph.D., 1926; Electrical Testing Laboratories, 1915-17; Signal Corps, U. S. Army, 1917-19; Engineering Dept., Western Electric Co., 1919-24; Bell Tel. Labs., 1924-.

H. P. EVANS, B.S. in electrical engineering, University of Wisconsin, 1923; M.S., 1927. Mr. Evans was with Bell Telephone Laboratories from 1923 to 1925, returning to the University of Wisconsin as instructor in electrical engineering and then as research assistant in physics.

Mr. Evans' contributions to the present paper were made while still a member of the Laboratories staff.

EDWARD C. MOLINA, Engineering Department of the American Telephone and Telegraph Company, 1901-19, as engineering assistant; transferred to the Circuits Design Department to work on machine switching systems, 1905; Department of Development and Research, 1919-. Mr. Molina has been closely associated with the application of the mathematical theory of probabilities to trunking problems and has taken out several important patents relating to machine switching.

JOHN R. CARSON, B.S., Princeton, 1907; E.E., 1909; M.S., 1912; Research Department, Westinghouse Electric and Manufacturing Company, 1910-12; instructor of physics and electrical engineering, Princeton, 1912-14; American Telephone and Telegraph Company, Engineering Department, 1914-15; Patent Department, 1916-17; Engineering Department, 1918; Department of Development and Research, 1919-. Mr. Carson's work has been along theoretical lines and he has published several papers on theory of electric circuits and electric wave propagation.

RAY S. HOYT, B.S. in electrical engineering, University of Wisconsin, 1905; Massachusetts Institute of Technology, 1906; M.S., Princeton, 1910; American Telephone and Telegraph Company, Engineering Department, 1906-07; Western Electric Company, Engineering Department, 1907-11; American Telephone and Telegraph Company, Engineering Department, 1911-19; Department of Development and Research, 1919-. Mr. Hoyt has made contributions to the theory of transmission lines and associated apparatus, and more recently to the theory of crosstalk and other interference.