

## CONTRIBUTORS TO THIS ISSUE

**Crabtree, J. I.:** See January, 1931, issue of *JOURNAL*.

**Dutton, W. P.:** B.S. in E.E., Union College, 1924; radio operator, Radio Corporation of America, 1921-22; broadcast station operator at WGY, General Electric Company, 1922-24; radio engineering department, development and design of speech input and transmitting equipment for broadcasting stations, General Electric Company, 1924-28; radio engineering department, development and design of Photophone recording equipment, General Electric Company, 1928-30; engineering department, RCA Victor Company, Inc., 1930 to date.

**Glunt, Omer M.:** Born February 4, 1884, at Union City, Ohio. M.E. in E.E., Ohio State University, 1906; Western Electric Company, 1906-25; in charge of development of special communicating equipment and of commercial radio and sound picture apparatus and systems, Bell Telephone Laboratories, 1925 to date.

**Graham, Frank H.:** Born September 6, 1889, at Landisburg, Pa. B.S. in E.E., Pennsylvania State College, 1914; engineering department, vacuum tube and transmission research, Western Electric Company, 1915-25; acoustical and hearing research, Bell Telephone Laboratories, 1925-29; engineering department, theater reproducing systems, Electrical Research Products, Inc., 1929 to date.

**Hardy, A. C.:** A.B., University of California, 1917; M.S., University of California, 1919; commanding officer, 23rd Photographic Section, A. E. F., France, 1918; physicist, Eastman Kodak Company 1920-21; assistant professor of Optics and Photography, Massachusetts Institute of Technology, 1922-28; associate professor of Optics and Photography, Massachusetts Institute of Technology, 1928 to date. Fellow, American Academy of Arts and Sciences; American Physical Society; Member, American Association for the Advancement of Science; Optical Society of America; Royal Photographic Society.

**Ives, Herbert E.:** B.S., University of Pennsylvania, 1905; Ph.D., Johns Hopkins, 1908; assistant physicist, Bureau of Standards, 1908-09; physicist, Nela Research Laboratory, 1909-12; physicist, United Gas Improvement Company, 1912-18; U. S. Army Air Service, 1918-19; research engineer, Western Electric Company and Bell Telephone Laboratories, 1919 to date.

**Lyford, E. B.:** Born June 3, 1903, at Bridgeport, Conn. B.S., Wesleyan University; sound engineer, Pathé Studios, 1929; engineer, recording division, RCA Photophone, Inc., 1930 to date.

**Matthews, G. E.:** See February, 1931, issue of *JOURNAL*.

**Morrison, C. E.:** Born February 19, 1896, at London, England. A.B., University of Rochester, 1923; A.M., 1925; Scientific Bureau, Bausch & Lomb

Optical Co., 1914-19; instructor in Physics, University of Rochester, 1923-25; assistant in Vital Economics, 1925-27; biophysicist, Research Laboratories, Eastman Kodak Co., 1927-28; Eastman Teaching Films, Inc., 1928 to date.

**Read, Sidney, Jr.:** B.S. in E.E., University of California, 1926; student engineer, General Electric Company, 1926-28; radio engineering department, test and factory engineering on radio receivers, General Electric Company, 1928-29; radio engineering department, development and design of Photophone recording equipment, General Electric Company, 1929-30; engineering department, RCA Victor Company, Inc., 1930 to date.

**Robillard, P. M.:** Born January 30, 1897, at Ottawa, Canada. Communication division, Radio Corporation of America, 1920-28; recording division, development and maintenance of portable and location equipment, RCA Photophone, Inc., 1928 to date.

**Ross, John Franklin:** Born June 19, 1900, Guinda, California. Graduated from the University of Michigan with the following degrees: B.S. (Chem.), 1921; M.S. (Chem.), 1922; Ph.D., 1924. Teaching assistant in analytical chemistry, University of Michigan, 1920-21; DuPont Fellow in Chemistry, 1921-24; research chemist in photographic chemistry department, Eastman Kodak Company, Rochester, New York, 1925-29; director of analytical laboratories of the J. T. Baker Chemical Company, Phillipsburg, N. J., 1929 to date.

**Schlenker, Vesper A.:** B.S., University of Chicago, 1919; meteorological section, Signal Corps, A. E. F., 1917-19; instructor in physics, Culver Military Academy, 1919-20; Massachusetts Institute of Technology, 1920-21; graduate, Officers Field Artillery School, U. S. Army, 1922; graduate, Officers Signal School, U. S. Army, 1923; engineering department, Western Electric Company, 1923-25; supervisor, special electrical and acoustical research, Bell Telephone Laboratories, 1925-27; acoustical research and development, Vitaphone Corporation, 1929-31. Consulting acoustical engineer, 1931 to date.

**Shea, Timothy E.:** S.M., Massachusetts Institute of Technology, 1919; instructor in electrical engineering and physics, 1918-20; manufacturing department, Western Electric Company, 1920-21; engineering department, Western Electric Company, 1921-24; development of sound picture equipment, public address systems, and similar apparatus, Bell Telephone Laboratories, 1925 to date.

**Wolferz, Alfred H.:** B.S., Cooper Union; design and development of electrical measuring instruments, Weston Electrical Instrument Corporation.