

E. O. ELECTRONICS, INC.
MOUNTAIN LAKES, N. J.

July 16, 1959

Mr. E.K. Gannett, Managing Editor
Proceedings of the Institute of Radio Engineers
1 East 79th Street
New York 21, N.Y.

Dear Mr. Gannett:

Concerning the origin of negative feedback and the interesting application of it by Sargent, brought to light by Grote Reber*, there is a prior conception which I think merits a nomination for Inventor of Negative Feedback.

On Jan. 9, 1923, a patent application (later to become Ser. No. 1,723,719) was filed by Stuart Ballantine on a two-tube electrical communication circuit which embodies a feedback network adjustable in phase so as to provide "an audio frequency bias voltage in phase with, or exactly opposite in phase to, the modulated radio frequency voltage ---- passing through to the detector." The primary purpose of this circuit was to reduce the distortion produced by the detector in this reflexed two-tube radio receiver but the patent proceeds to state "that the invention is not limited to a radio receiving circuit of the type shown since a correcting bias voltage of substantially the same wave form as an audio frequency wave or the modulated envelope of a radio frequency wave may be applied to an audion or other amplifying circuits for the purpose of reducing or eliminating the distortion normally present in such a circuit."

Granting that this early picture is complicated by the rf-af ramifications and the terminology, e.g., audio frequency bias; neutralizing correction, I would still say here was negative feedback in 1923.

Very truly yours,

Edmund Osterland

cc. Dr. Grote Reber

* Letter to I.R.E., Feb. 21, 1959

Dear Dr. Reber,

The patent (No. 1,723,719) referred to was granted Aug. 6, 1929.

Application for re-issue was filed June 13, 1930 and the re-issue (No. 18835) is dated May 23, 1933

Originally assigned to Radio Frequency Labs. of Boonton, I believe it was subsequently assigned to RCA

Very truly yours

Edmund Osterland