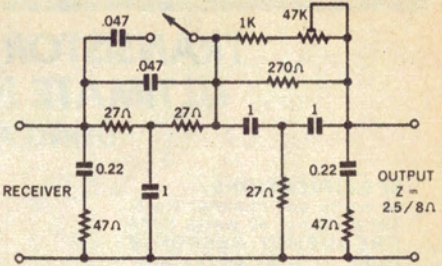
Speech Bandwidth Compression

Some research by K. Kryter, reported in QST December, 1960, in a letter from K3IQU, drew attention to the benefits that might result from the use in a receiver of three 500Hz filters rather than a single 2,700Hz filter; the proposed centre frequencies were 500, 1,500 and 2,500Hz. K3IQU strongly advocated that during alignment of crystal filters no attempt should be made to correct the double-humped response curve, leaving dips as pronounced as 30dB.

It appears from an article in Radio-REF (No 4 1971) that further research has been carried out in this area by NASA in preparation for Apollo communications. This team came also to the conclusion that only three portions of the speech band are really important: 300 to 400Hz and 2,500 to 3000Hz — plus (for a male voice) 900 to 1,700Hz or (for a female voice) 1,100 to 1,900Hz. The audio bands 400 to 900Hz and 1,900 to 2,500Hz seem to contribute little to intelligibility or even to voice identification. These bands can thus be suppressed to improve signal / noise ratio (in the case of Apollo it is suggested that these bands are used for biomedical telemetry).



Radio-REF reprints a NASA filter design shown herewith, which puts nulls at these frequencies and can be included in the low-impedance output (2.5 to 8 ohms) to phones or loudspeaker. P1 adjusts the null around 600Hz and the switch in the first section can be labelled "yl / om"!
(From "Radio Communication".)