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QST Issue: May 1920
Title: QSS

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directional qualities and so would certainly eliminate the strays coming from the sides. We have an idea that the loop, with a stray balancing-out system like those given to the world by Messrs Pickard and Proctor offers the most promise.

It's an important topic, men, and big enough to command our best efforts. Think what laurels await the amateur who can tell us just how to handle traffic through summer strays. That amateur will earn for himself an undying fame in the annals of Amateur Radio.

QSS

HERE'S a new abbreviation to add to your list. It's not international but it's being adopted by the A.R.R.L. to fill a big need. For a long time we have been saying "Your signals fade OM QTA" whereas if the cause of the trouble were anything outside of fading we could convey the information by the use of a single abbreviation such as QRM or QRN. It has therefore been suggested that it would be most convenient if we would adopt some one of the unused "Q" combinations to cover this fading business.

Let's write this down on our lists: "QSS?—Do my signals fade?" "QSS—Your signals fade."

We'll have to pull together on it, for its value depends on everyone knowing what it means, so tell your neighbor, and let us start in using it at once. It will be a big help.

H. F. Amplification

EVER stop to think that our audio-frequency amplification is all wrong in principle right from the start? Audio-amplifiers don't bring in much that isn't at least audible before, and the bad feature about them is that they amplify static and tube noises up to the point where they become distracting and so make operating harder under unfavorable conditions. We have a lop-sided ratio to start with, because the audion detector is like a crystal in that its efficiency of rectification varies as the square of the impressed voltage. This handicaps us from the beginning, as it means that strong signals are going to be made still stronger and weak signals weaker by comparison, and it's the weak ones we're after.

Radio-amplification is the answer—boost the voltage swing of the oscillations before they are impressed on the detector grid, and so get higher efficiency of detection. And with a number of stages we will also find that certain strong signals will swing the plate current of an amplifier thru its entire saturation curve, and more than that it can not do. Then we have a "current-limiting" effect and the weak signals are amplified more than the strong ones—exactly what we want.

But radio-frequency amplification is easier to talk about than to accomplish. Major Armstrong has explained to us how the high grid-to-filament capacity of the ordinary tube makes radio-amplification at 200 meters almost impossible. If only we had a tube with very small capacity between the elements, like the British V-24, we'd be all right; we could go ahead and make an amplifier with resistance repeaters and it would be efficient on 200 meters. But we have no such tubes in America—not we amateurs. Interstage tuned circuits (radio-frequency) are out of the question for us unless some bright lad can get up a scheme whereby they'd all be tuned simultaneously, such as a number of identical variometers on a common shaft, as if we have to retune six circuits every time we change from 200 to 210 meters there won't be much traffic handled.

There's an answer, however, and it's Mr. Armstrong's heterodyne arrangement described in the February QST. Better results are had on short-wave work with this than have ever heretofore been possible. And it is not unduly complicated. An extra detector and the heterodyne tube, and only one extra adjustment—the frequency of the heterodyne. Several prominent amateurs in the east are employing this circuit now. It's the very last word in amplifiers, and with a good tuner provides all the amplification and selectivity we are likely to need for quite a while.

Combination Crystal and V.T. Detectors without Switches.

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series with the Crystal detector on the side opposite the grid lead, the phones may be put in any desired position in the circuits.

When either detector is in use it will the catwhisker should be off the crystal. To change from tube to crystal, merely shut off the tube filaments and adjust the crystal contact—simplicity itself!