

## THE PRESIDENT'S MESSAGE

It is with great regret and sadness that I write this month's article. Due to unexpected prolonged traveling, I feel it necessary and proper for me to step down as your President for 1970. I feel this decision is for the better interest of our club.

I had planned to do so much this year for our club and carry on the many years of her work that went into the formation of a truly fine organization. However, under the present circumstances, if I were to remain President little would be done by me to improve our status. In fact, it might prove deleterious. I will, in fact, do all I can as a member to aid your new president and help make this a banner year for the GCARC. With much disappointment I step down so that I may one day step back up.

Thank you.

Paul Callaghan  
WB2WAK

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WHOSE - WHO - IN THE GLOUCESTER COUNTY

AMATEUR RADIO CLUB

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PRESIDENT - PAUL CALLAGHAN, WB2WAK  
 VICE PRESIDENT - KEN NEWMAN, W2FBE  
 SECRETARY - PAUL BIRNER, WA2IOY  
 TREASURER - JOHN STULL, WB2JZX  
 CORRESPOND. SECRETARY - DELLA PARKER, W2AFZ

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 BILL BACHMAN, WA2VEE  
 JOHN KULL, WB2GKH  
 JACK BOWEN, WB2WKV  
 BILL FRAMBES, WB2FJE  
 BILL SHAW, WB2PVI

TRUSTEES

GORDON COOPER, W2PAX  
 BILL BILLS, W2CDZ  
 DOUG GEHRING, WA2NPD

CAUSE OF FAILURE OF TV CAMERA ON MOON

We all know that the camera failed on the Apollo 12 flight at the most crucial moment, but very few have known the full story. We have had a look at the Top-Secret report, and can reveal the story.

The ground crew told the moon-boys to take the lid off the camera. The spare parts box contained an ordinary screwdriver, Phillips screwdriver, hex wrench, spline wrench, and Bristol wrench, but the case screws unfortunately were pentagon like a hex but only five sides. The only wrench that would fit was locked up in the desk of the President of the company that made it. We won't reveal how the boys got the lid off because the can-opener put in the spare tool box was a mistake. Investigation showed that one tube was not in the socket. Unfortunately it was in the corner of the case, hemmed in on both remaining sides by large IF cans, and there wasn't any way to get ahold of it to push it back into the socket. In looking over the spare parts they found: A six-pin tube base, a seven pin (large) socket, a one-fourth pound bar of solid solder (no iron or flux), four pieces of #36 bare wire, 3 inches long, a typewriter ribbon, one miniature diode, enveloped in seven successively larger envelopes, one 6-2B flat head screw, and one instructions for square-dancing. The cable from the camera to the landing craft was fitted with a PL-259 plug, with left handed threads, which had pulled loose and had to be soldered back. Spare PL-259's were found but with right-hand threads.

It is expected that a new spare parts box will be specified for the next trip. The old ones, of which 123,549 were requisitioned at \$3,295 each, will be placed on surplus for Mars members.

December 1969 Auto-Call

ITEM

The color film produced for the League and mentioned in my column in the September issue of AUTOCALL has been shown to the FCC on November 5 and was greeted by hearty applause and a number of complimentary comments. It also received a bronze medal at the recent New York Film Festival. Modern Talking Pictures, Inc. has been selected as the distributors of some 50 prints, 20 of which will be available to commercial TV outlets, and the remaining 30 to high school and college youth groups. Each Director also will have a copy available for showing on request and the National Association of Educational Broadcasters has copies for distribution on request to member stations.

Van, W3ECP., Asst. Director, Atlantic Div.

NOTE

When a series of "incentive petitioners" was filed, including not just one from A.R.R.L. in October, 1963, but petitions from many other amateurs, the Commission took not only months but years to come up with a proposal, as set forth in Docket 15928. Comments on Docket 15928 were solicited, and more amateurs filed comments than had ever been received by the Commission on any proposal; a response from over 4,000 licensees!

The FCC could not possibly please everybody. No right-minded person expects them too. What the Commission did was not entirely pleasing to the writer, who has never felt that radio-telegraph excellence should be demonstrated to obtain radio-telephone privileges, and vice-versa. But no one was put off the air; no one was evicted from any band (except Novice Phone Operators); and the door to every last kilohertz (ugh!) remains open to anyone who demonstrates his ability.

Auto-Call

OFFICIAL BULLETIN NR 257

Australis Oscar 5 was successfully launched at 1131 GMT, January 23. It began transmitting on 29.450 and 144.050 MHz at 1237 GMT. Australis Oscar 5 is in a circular orbit at 790 nautical miles with an inclination of 102 degrees and an orbital period of 115.1 minutes. Each equator crossing will progress westward by 28.8 degrees. W1AW will transmit orbital predictions Monday through Friday at 1345 and 1900 GMT on regular cw bulletin frequencies in addition to all regular official bulletin schedules.

AR

OFFICIAL BULLETIN NR 255

An exciting new challenge for award minded amateurs officially came into being on January 1, 1970 with the inauguration of the ARRL Five Band Worked All States Award. Contacts with the 50 United States made after that date count towards this achievement. Full rules for the 5BWAS appeared on page 51 of October, 1969 QST. A WAS outline map and Operating Aid number eight, which contains an alphabetical state listing, are available to aid your 5BWAS record keeping. When requesting this material, please send an addressed stamped envelope to ARRL, 225 Main Street, Newington, Connecticut 06111 AR

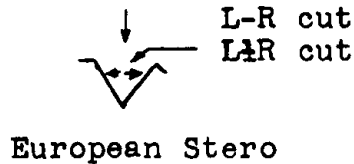
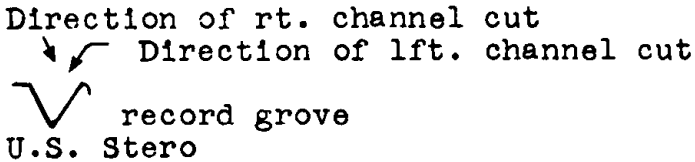
OFFICIAL BULLETIN NR 256

FCC has now taken final action in Docket 18508. Following up an ARRL proposal of some years back, the two meter cw subband will change from 147.9 through 148.0 MegaHertz to 144.0 through 144.1 MegaHertz. Additionally, the F-1 subband on ten meters which is currently 29.0 through 29.7 MegaHertz will change to 28.0 through 28.5 MegaHertz. These changes become effective March 2. Details will appear in March QST AR

STEREO BROADCASTING AND RECORDING

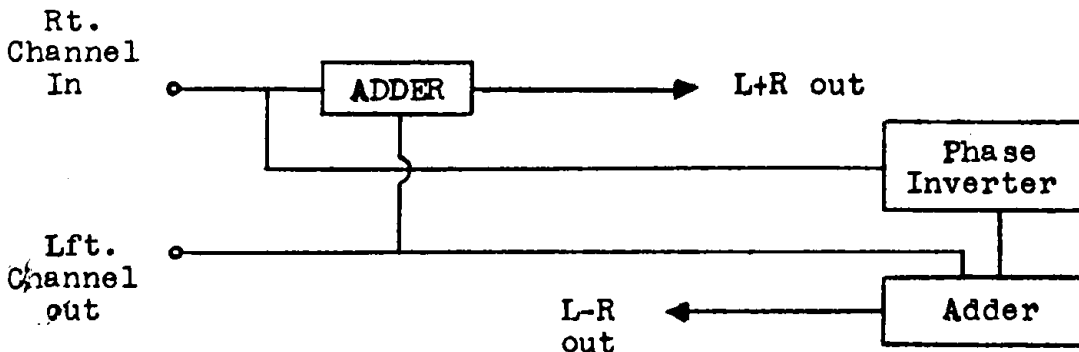
Stereo, (short for stereophonic), a trademark of RCA, is the adding of a second channel to a sound system. When one mentions stereo, one usually thinks of an expensive hi-fi system, but in reality, it can be much more. For example, we as music lovers add a second channel to give more "depth" or realism to recorded music. The military, on the other hand, uses such a system to enhance their surveillance technique.

Stereo recording techniques have been with us for over 25 years. Originally, all stereo recordings were on a two track magnetic tape. About 14 years ago, the recording companies devised a standard disc recording technique allowing stereo records as we know them today. The disc recording technique used in the United States today is non-compatible. i.e. - A stereo record may not be played on a monoral turntable if a monoral pickup stylus is used. In the United States stereo recording, the two tracks are cut into the record laterally as shown below.



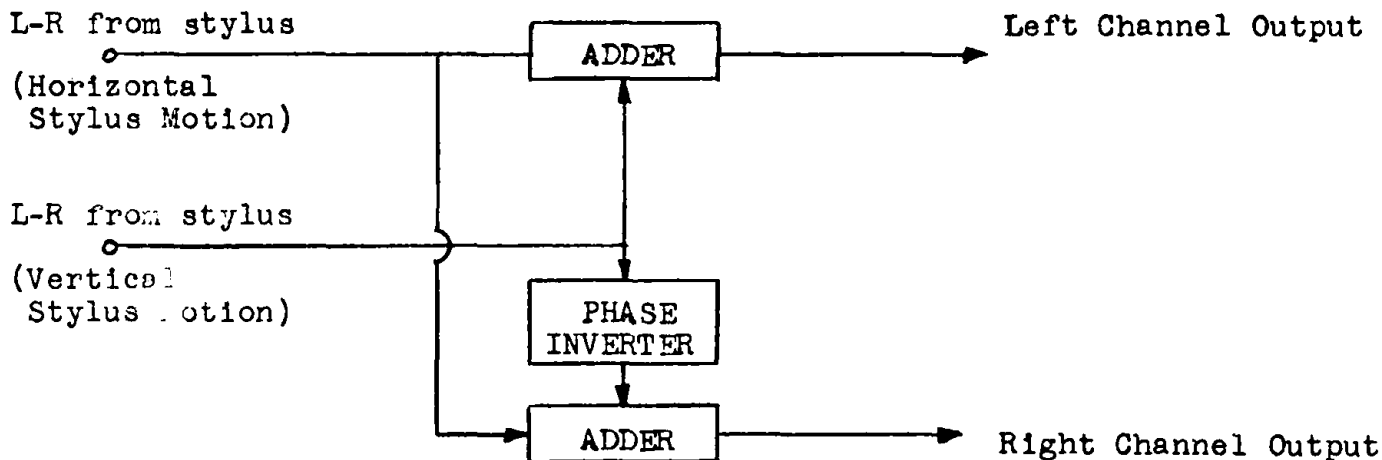
The original disc recording is made on a recording lathe using a "record" made of hot wax. The cutting mechanism resembles the tone arm on your home turntable, and its principal of operation is the same, only the procedure is reversed.

In the European stereo recording system, the left and right channels are mixed together electronically, and this audio is fed to a horizontal-plane cutting lathe. At the same time, the right channel audio is fed to a phase inverter. At the output of the phase inverter, it is mixed with the left channel audio. This signal is then fed to a vertical-plane cutting lathe.



In the European recording system, stereo records can be played on a monoral turntable without damaging the record. With the U. S. recording system, repeated playing of a stereo record on a monoral turntable would eventually destroy the record.

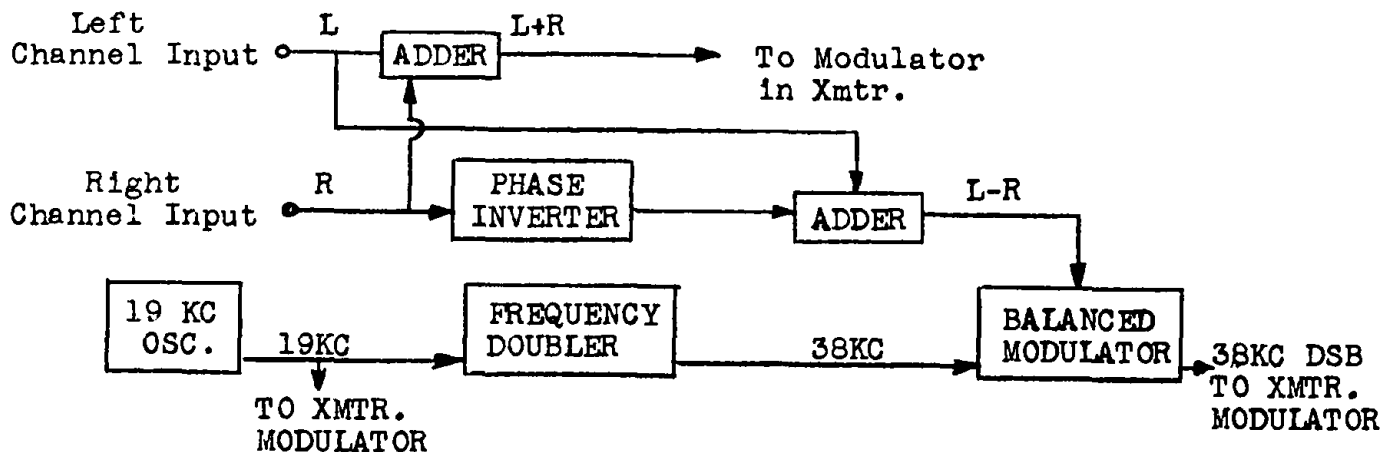
### European Stereo Playback System



An additional advantage of the European stereo recording system is that it is completely compatible. When an European stereo record is played on a monoral turntable, both channels will be present (in combined form) and no program material will be lost. If an American stereo record is played on a monoral turntable it will sound distorted, and the record grooves will gradually be destroyed.

### FM Stereo Broadcasting

The technique employed in making European stereo records are very similar to those used in FM Stereo broadcasting.

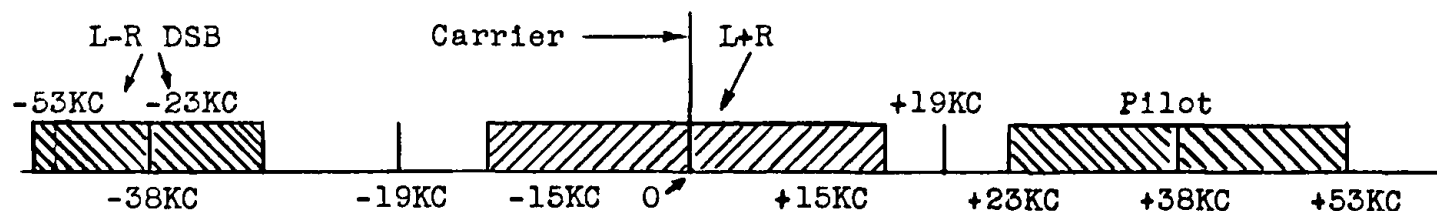


The L+R and L-R signals are derived exactly the same way they were in European stereo recording. The L-R signal is fed into the transmitter modulator.

A crystal controlled oscillator, operating at 19KC (- 2 cps.), is used to generate the "pilot". A small amount of the 19KC signal is fed to the transmitter's modulator. When transmitted, this 19KC signal modulates the carrier at 10% and is called the stereo "pilot". This pilot is used to synchronize a 19KC oscillator in the stereo receiver.

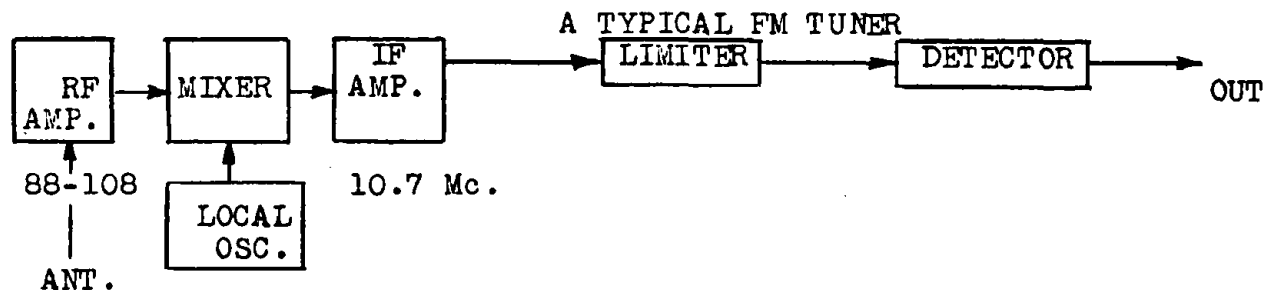
The 19KC signal is also fed into a frequency doubler with an output of 38KC. The 38KC signal is fed to a balanced modulator where it is modulated by the L-R signal. The output of the balanced modulator is double side-band with no carrier.

This DSB signal is fed into the transmitter modulator, where it is mixed with the L+R and 19 KC pilot signals. A panoramic view of and FM broadcast channel is shown below.



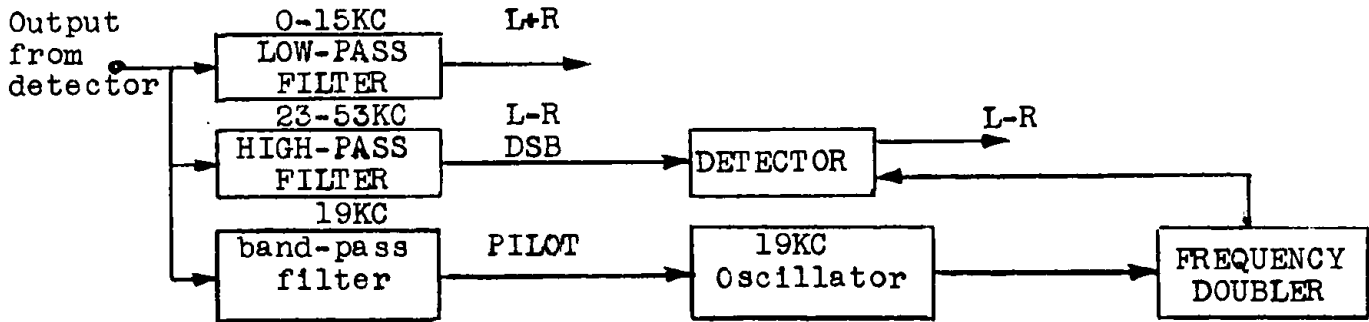
The L-R signals modulate the carrier to a maximum of 45% and the L+R signals modulate the carrier 45% with the pilot modulating only 10%. This gives a total maximum modulation percentage of 100%.

A standard monoral FM receiver detects only the L+R signal and feeds it to a single audio channel.



In a stereo receiver, the signal is detected as before.

TYPICAL STEREO DETECTOR SYSTEM



The signals are then passed through a filter network, which separates the three signals. The L+R DSB signal is demodulated and it and the L-R signal are fed to a splitter network identical to that used in European stereo record players. FM stereo reception is plagued by noise due to the fact that the L-R signals are AM and relatively high in frequency.

Bob Spain, WB2RVE

Ed. Note:

Many thanks to Bob for this excellent article as he has handled a complicated subject with the greatest of ease and translated it into simple words making it easy for the average ham to understand and digest. Your editor would like to have more articles like this.

William Thomas Kelvin 1824 - 1907

William Thomas Kelvin, better known to the world as Lord Kelvin, applied his inventive genius to many areas within the fields of physics and mathematics - both theoretical and practical. Born in Belfast, Ireland, Lord Kelvin entered the University of Glasgow at the age of 11, but did not remain to get his degree. Even at that point in his youth, Kelvin recognized the shortage of facilities for the study of experimental science in Great Britain and headed for Paris and the laboratory of Henri Regnault. His experiments on the mechanical properties of heat led to a reconciliation of two previously conflicting theories on the mutual relation between heat and work and the formulation of a dynamical theory of heat. The two great laws of the thermodynamics - the law of equivalence and the law of transformation - are based on Lord Kelvin's conclusions. He completed his thermo-dynamic work by enunciating the doctrine of available energy. In 1853, he laid the foundation for the theory of electric oscillations which formed the bases of wireless telegraphy. He became a director of the Atlantic Telegraphy Company and served as electrician aboard the ship "Agamemnon" in the abortive attempt to lay an Atlantic cable in 1858. For the next eight years, Lord Kelvin strove to overcome the problems of a standard metrical system of electrical measuring units and was responsible for the invention of improved instruments for electrical measurements. He further introduced the Kelvin or absolute scale of temperature. Although his contributions to thermodynamics may properly be regarded as his most

important scientific work, it is in the field of electricity especially as applied to submarine telegraphy, that Lord Kelvin is most widely known.

from the book: Telecommunication Pioneers of Radio Eng. Lab.

Ed. note:

From time to time we as hams should acquaint ourselves with all of the most interesting biographies and history of these great scientists who laid the ground work for our hobbies today. If one considers the primitive methods and equipment they had to work with, one can realize the "greatness" of their accomplishments and should be an inspiration to everyone interested in electronics. There are just as many opportunities or more so today for the young people coming up than there ever where. This is where your radio club comes in, and you as being a member to it, have the advantage of learning about electronics from your fellow members. Experience is the best teacher and you are able to absorb a lot of knowledge from the work and failures of your fellow members. I have never met a member yet, who when approached, failed to lend a helping hand when it was needed.

NOTE

When the members receive this month's issue of "CROSSTALK", I your editor, expect to be in Florida for one month's vacation and therefore will have to miss the meeting of the club. I hope that I have made this issue of "CROSSTALK" interesting for you. Needless to say that while I am down Florida way, I will be on the lookout for any material suitable for use in this paper. I do not know just how successful I will be, but I want to see if they are doing anything different than we are up here. If any problems come up during my absence concerning the club's paper, please contact Doug Gehring, WA2NPD, and he being a writer of fame and long standing, should be able to help you out. I hope that you fellows have a lot of news for me when I get back home so that it won't be so difficult for me to fill up these pages.....

Your Editor, Wally, W2PLD.....

tear off here

Date \_\_\_\_\_

Enclosed please find \$\_\_\_\_\_ for the payment of my dues for 1970 covering my membership in the Gloucester County Amateur Radio Club. I understand that you will return my membership card by mail.

Signed \_\_\_\_\_

Address \_\_\_\_\_

Call Letters \_\_\_\_\_

Send to John Stull, Cohawkin Rd., Clarksboro, N. J. 08020

IT IS IMPORTANT THAT YOUR CLUB GETS IN YOUR DUES AS SOON AS POSSIBLE.



Scuttlebutt

Congratulations to W2KE on his recent appointment as assistant to W3EPC, the ARRL Middle Atlantic Region Director. Even better is the fact that Van's hat still fits his noggin! Also, Van came through in fine style presenting a FB program on CD at our last meeting. His (quote) extemporaneous talks are better than most guys who spend hours in preparation. Many members missed a good show in January primarily due to the horrendous WX.

See that former club member K2PQD is now the new GCAREC EC with our own WB2JFE and WA2WOD continuing as assistant EC's. Even though Charlie is currently inactive in our club this cannot be construed as reason for half-hearted support. So let's pitch in and make the job easier for Charlie, Bill and Phill.

Great News Dept.!! - Don Thomson, former club member, underwent a successful (to date) kidney transplant out in Denver, Col., and is on the mend. In fact, it appears that his recovery is progressing so nicely that he may come home in early spring of this year.

More Great News Dept.!! - W2FBF is now able to operate 20 M CW all night long, every night! He takes time off every hour or so to pace the floor walking his new baby daughter. Mother is doing well, also. (She sleeps while Ken walks) Many congratulations to Martha and Ken.

All of us wish the speediest possible recovery for Harry Maxfield's Dad.

Good to see WA2FFZ out to the last meeting. I don't believe Bill pulled up in his Honda (unless it has runners attached).

Would expect to hear the call for another tower raising in the near future. The former Wenonah Fire Co. tower is now situated at the WN2LWC QTH. Gotter ready yet, Jeff?

Also, good to see WA2DNL out to the last meeting. We hope that Jim's school days are over ---at least on Wednesday nights.

Looks like a good contingent of members are planning to participate in the up-coming DX contests. See W2FBF for log sheets, etc. From reports exuding from the W2SUA QTH, it looks as if the long wait to get that tower up was well worth it. Woody has worked over 200 countries in about 2-3 months (?) including some real rare gems.

W2CKX reported to be in Florida until spring. Real tough life, Tad!!

Now prexy WB2WAK didn't realize, when he purchased his rig, he was getting twice the value for the price of one Galaxy. He gets dual channel transmission - hence is one of the few hams around who can work 20 and 10 M simultaneously. Paul claims the tough part is listening and deciphering the other ends when they transmit simultaneously. (P.S. It's probably just a minor bug, Paul).

de WA2NPD