



## RECORDINGS HELP "VOICE OF AMERICA" PENETRATE RUSSIAN JAM SESSION

Discs and tape play important role in keeping the Voice on the air 24 hours a day

To news-hungry Russians, the Voice of America broadcasts, and those of the BBC, have long constituted the sole link with the world beyond the Iron Curtain. In an effort to weaken this link, Soviet transmitters started jamming the Russian-language broadcasts in February of last year. Up until about two months ago, however, these efforts were only partially successful. But now the Soviet stations are engaged in an all-out offensive to strangle the Voice of America before it can reach any Russian ears. And since the Voice refuses to be silenced, we are in what amounts to an international struggle for supremacy of the air.

The Russian jamming efforts take several forms — broadcasting assorted loud noises on the same wave length; broadcasting on a slightly different wave length, to produce a loud squealing "beat" of audio frequency; and broadcasting on a varying frequency which straddles the undesired wave length, resulting in a loud, pulsating whistle. The noises superimposed on the jamming waves include bagpipe squeals, ducks' quacking, and, more recently, a multi-tone signal of 8 musical notes at high power.

This full-scale program presented some real problems in the way of planning and executing effective counter-measures — a job which is in the capable hands of George Q. Herrick, chief engineer of the Voice of America programs. According to Mr. Herrick, our counter-offensive has so far employed five methods of attack.

**First** — keeping the Voice on the air continuously, 24 hours a day.

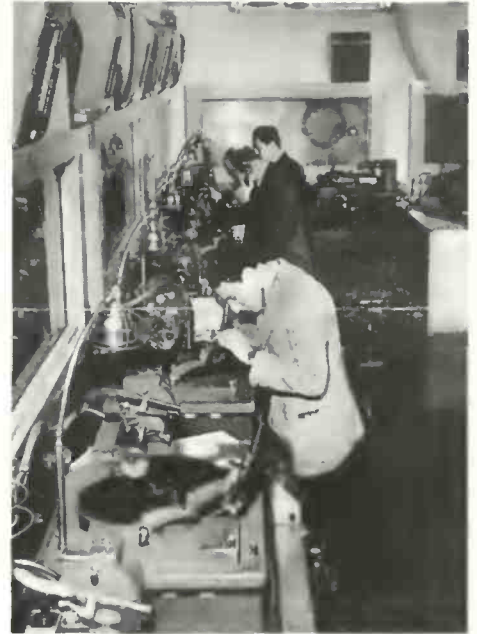
**Second** — using additional transmitters.

and broadcasting on so many different frequencies that it is difficult to jam all of them. The voice now employs a maximum of 36 stations, and the BBC, 25.

**Third** — changing frequencies suddenly and often, at irregular intervals keeping the "enemy" on the jump to catch dodging programs.

**Fourth** — using a new "de-emphasizing" (Continued on Page 2, Col. 1)

Here, in the Voice of America's recording room —→ in Manhattan, 70 per cent of the original program material is transcribed on discs and later broadcast to the Russian area.



## "Ranger Bill" Rides Again

Station WNYE Transcribes Second Series of U. S. Forest Service Programs

Many of the students in the New York City Schools have never seen a real forest. Yet chances are, they know more about forestry than many of their country-bred brothers and sisters. For, thanks to the medium of educational radio, the students in 750 New York Schools have thrilled to the fascinating and instructive adventures of "Bill Scott Forest Ranger." In this

series of transcribed radio programs, Bill Scott, his young niece June Cameron, and two teen-agers, Joe McGuire and Sam Freeman, bring the tense drama and unforgettable lessons on forestry and forest conservation right into the classrooms.

The second series of "Bill Scott" programs, consisting of six fifteen-minute re- (Continued on Page 2, Col. 2)



Cast of "Bill Scott — Forest Ranger" in rehearsal at studios of WNYE, Broadcasting Station of the Board of Education of New York.

**It is timely to remember:**

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humidity resistant!**

(Patent Pending)

# audio record

Published monthly by Audio Devices, Inc., 444 Madison Avenue, New York City, in the interests of better sound recording. Mailed without cost to radio stations, recording studios, motion picture studios, colleges, vocational schools and recording enthusiasts throughout the United States and Canada.

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## Voice of America

(Continued from Page 1, Col. 2)

and pre-emphasizing clipper," developed by Mr. Herrick and his assistants. Although this distorts voices somewhat, it makes the speech much more intelligible and harder to drown out with interference.

Fifth — Altering the program material to eliminate musical features, talks and documentaries, and transmit only news, news headlines, brief commentaries, press reviews and economic round-ups. In this way, if only parts of a program get through, they are sure to be vital and informative parts.

It is in the first of these counter-measures — the round-the-clock operation — that recordings play a vital role, both in the original programing and in repeat broadcasts. Present Voice broadcasts to the Moscow area are sent out from American stations on the following schedule—10:15-10:45 A.M., 2-3 P.M., 5-5:30 P.M. and 11:15-11:45 P.M. This represents a greatly increased schedule as compared to the pre-jamming days. But by the increased use of disc recordings, it has been possible to handle this added work load with existing personnel. Mr. Herrick states that about 70 per cent of the program material is aired from transcriptions, which are



Mr. George Q. Herrick, chief of the Engineering Section for the Voice of America.

## "Ranger Bill" Rides Again (Continued from Page 1, Col. 3)

cordings, is the result of the outstanding success of a similar series originally produced in 1946 — a series which received a special citation (highest award) at the Tenth School Broadcast Conference in Chicago, on October 28, 1947. The contest judges commended the programs for their effective combination of "exciting" forest drama with practical conservation messages.

The "Bill Scott, Forest Ranger" programs are written by Bill Bergoffen of the U. S. Forest Service, and are produced by student actors in New York City's School Radio Workshop, under the skillful supervision of Van Rensselaer Brokhahne, production manager for Station WNYE. New York City offers an excellent opportunity for putting such an educational effort into effect. For the New York Board of Education operates its own broadcasting station, WNYE, and with receiving sets in 750 of the schools, it has an air channel to every classroom. And to help the students get the most out of these U. S. Forest Service programs, 1500 teachers were provided with appropriate instruction material to supplement their own information in this field

Also, more than 6000 students were given special Bill Scott notebooks—collections of short and interestingly written articles on the various phases of forestry, forest conservation, fire prevention, reforestation, etc.

The use of the "Bill Scott" programs, however, is by no means limited to the New York City Schools. Hundreds of transcriptions have been distributed to radio stations, forestry groups, schools and colleges throughout the entire United States. They have been broadcast to homes and schools, and reproduced directly in classrooms and at summer camps. The scripts have also been widely used for local dramatization by student bodies.

Production of the second series of programs was begun early this year, and already, requests for transcriptions have been received from 23 states and Washington, D. C. Readers of Audio Record who would like to obtain transcriptions and complete sets of the scripts of "Bill Scott, Forest Ranger" programs for their own use, are requested to get in touch with Mr. C. W. Mattison, Forest Service, Washington, D. C.

made whenever personnel and facilities are available, and put together later for broadcasting at the scheduled time.

Safeties of all programs are cut and filed for 24 hours. This gives back-up protection, so that if any of the European relay stations should fail temporarily and notify us of such failure, the remainder of the program could be broadcast from the safeties, direct from the Voice's American stations.

The four programs originating here are recorded by the American Relay Base at Munich, and rebroadcast from as many as 4 European relay stations during the periods that the American stations are not on the air. The programs are recorded at Munich on both disc and tape. As soon as the American broadcast is completed, the program is repeated locally by transcription. The disc recording is used first, as this is instantly available, without having to wait for rewinding, as in the case of the tape recordings. Subsequent repeats are made from tape. Duplicate tape recordings are used, so that one can be rewound and made ready for immediate airing as soon as the other has finished playing.

According to the present repeat broadcast schedule, the one-hour program is aired three times, once direct from America and twice by local rebroadcast — two of the half-hour programs are not repeated and the remaining half-hour program is repeated for a total of 20 hours!

As to the effectiveness of our counter-measures in this battle of the air waves,

Mr. Herrick states that results are difficult to measure accurately. One thing is certain, however. Our Voice programs are forcing the Soviets to tie up a large part of their transmitter facilities for jamming operations. On May 25th, for example, BBC monitors actually located a total of 205 jamming stations on the air, and there were probably many more local jamming stations that could not be detected. At the same time, BBC reported that the Soviet Home Service programs were being aired over only 13 transmitters instead of the usual 25. Although it must be admitted that the Russian jamming operations are pretty effective in limiting the amount of Voice programs that actually break through, it is at best a Pyrrhic victory — extremely costly in both rubels and facilities.

Psychologically, it probably has just the opposite of the desired effect on potential Russian listeners — serving to arouse their curiosity and make them more anxious than ever to do a little surreptitious listening. Playing up this aspect of the situation, all of the Voice's Russian-language programs carry this punch line: "Obviously somebody considers it dangerous to let the Soviet people listen to truthful information from a free radio."

This war of the kilocycles isn't over yet — for Mr. Herrick hasn't exhausted his bag of tricks by any means. And even now, the Russians must realize that they are pitting their engineering skill against a worthy adversary.



for the Recordist

by C. J. LeBel, Vice President,  
Audio Devices, Inc.

**NEW METHOD OF MEASURING BIAS**

In keeping a tape recorder in top notch operating condition, and in adjusting a recording room full of machines so that all perform alike, it is very helpful to be able to measure the intensity of the supersonic bias at the tape. It is not enough to measure the bias current through the recording head, for successive heads from the same maker may differ 50% in the effect of a given current. One must measure the effective bias right in the tape itself.



C. J. LeBel

This problem of measuring effective bias first came to our laboratory in the form of a need for data on the bias of various commercial machines. The difficulty was enhanced by the fact that various manufacturers use different core shapes and differing numbers of turns on the cores, in building their heads.

The first method tried was the old one of measuring the erasing effect of bias flux on a tape recorded to saturation. This proved to be somewhat indefinite, because a saturated signal is not as exact as one would think. A 99% saturated signal is markedly easier to erase than one which is 99.9% saturated, yet the difference in output between the two is less than one tenth of a db at the start. Other difficulties make the method still less reliable.

At this point in the research, the laboratory came up with an idea which has proven entirely successful. They spliced a few feet of tape (coated with red oxide) to a few feet coated with black oxide, and used the difference in output between the two (which varies with bias) as an index.

If we record on tapes coated with entirely different oxides, we get a result like figure 1. In making these measurements a mid-range frequency such as 400 cycles may be used, at fixed (normal) recording level. Bias current is varied and the tape output measured.

It can be seen that for bias currents under 7 ma, through this particular recording head, tape A has higher output than

**AUDIPOINTS "Speak For Themselves" Too**

The following letter was received from Station WWL in New Orleans by one of our distributors, Charles A. Levie, Radio Parts, Inc.



This is the point — Recording Sapphire Audiopoint No. 14, magnified 4 times.

"Dear Charlie:—

The attached needle recorded its swan song in a burst of glory. It has been resharpened for the last time but the final resharpening recorded 104 sides of 16 inch records at 33 1/3 revolutions per minute. This amounts to 26 hours of continuous recording before breaking down. We think this is something of a record.

This is an Audiopoint and was used on Audioclips exclusively.

Yours very truly,  
J. D. Bloom, Jr.  
Chief Engineer"

tape B At higher biases, the situation reverses and tape B has higher output.

If we measure the difference between the two curves, we get a result like figure 2. This curve is taken from data on another pair of test tapes.

In order to determine the bias of any tape machine, it is only necessary to run the pair of tapes, measure the difference in output (both magnitude and sign), and refer to the calibration curve. The bias current of these curves is given in milliamperes through our laboratory head, but similar data can be secured on any recording machine equipped with adjustable bias, and a meter for reading bias current.

We have applied a test tape of this sort to a considerable number of recording machines, with results that will interest our readers:

Machine	Equivalent Bias
A (warm)	3
A (cold)	4
B	5
C	8
D	10
E No. 1	4
E No. 2	5
E No. 3	8
F No. 1	5
F No. 2	5.5

Machines A, B, C, D are very light, non-adjustable bias home style machines that have been widely used by broadcasters for portable work. An oxide that has adequate sensitivity on machine A (bias of 3 to 4) will lose high frequency response if run on machine D (bias of 10). An oxide that

has good frequency response at a bias of 10 will distort badly when run at a bias of only 4. It is apparent that optimum results can be achieved by operating a machine with the correct tape for its bias characteristics.

Machine E is a professional type with non-adjustable bias, and the variation between machines is excessive. The designer's intention was to achieve a bias of 5 or 6, but the target has been missed in two out of these three trials. We strongly advocate the use of a test tape on all the machines in the recording room once a week to catch such variations as this. Machine F has adjustable bias, and the tests were run with the manufacturer's own bias settings. Evidently his machines are uniform.

Just one precaution in using one of these test tapes: be sure to use the same frequency for your test as was used for the original calibration of the tapes. A shift from 400 to 1,000 cycles, for example, will shift the current at which both tapes have equal response from seven ma to six ma.

It is possible to make up a test tape pair from any two dissimilar oxides, but optimum results are secured if the two curves are as different in slope as possible. Tapes we have used in our bias research program have therefore been prepared by the laboratory rather than the factory. If there is enough demand to warrant it, we may make test tapes and individual calibration curves available.

Acknowledgment is due Mr. E. W. Franck, Research Director of our Company, who devised this method of test and who has prepared the tapes used.

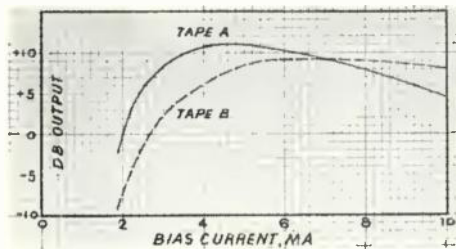


Fig. 1 — Bias Current Versus Output for Different Oxides.

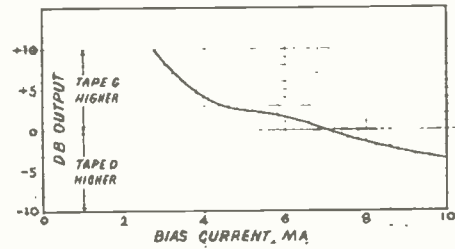


Fig. 2 — Output Difference Versus Bias Current.

## "SELF-SERVICE SOUND" SELLS AUDIO COM- PONENTS BY EAR

Sun Radio's push-button sales room gives instant comparison between ordinary and High-Fidelity reproduction

"Self-Service Sound," an unusual concept in sound demonstration, is featured in the new, 1000 sq. ft. Sound and Television Demonstration Studio of the Sun Radio & Electronics Co., Inc., 122-124 Duane Street, New York 7, N. Y.

By merely pushing a button, the shopper himself may select from 2600 possible combinations of audio components, including radio tuners, amplifiers, microphones, record changers, and speakers. This gives instant comparison between ordinary sound reproduction and full-color, High-Fidelity reproduction.

Behind this effective approach to the demonstration of sound equipment lies Sun Radio's "Sound Demonstration Control Panel," a master switching system designed by Irving Greene, I.R.E., Manager of Sun Radio's Sound & Television Department.

From both the practical and merchandising points of view, it was necessary to design a sound demonstration studio which avoided the usual plug-pulling, wire-raveling ceremonies which would otherwise be required in the demonstration of sound equipment.

High-Fidelity, in which Sun's new studio specializes, can best be demonstrated by instant comparison with ordinary reproduction. The new Demonstration Panel accomplishes this, at the same time making it easy and pleasant for the shopper, whether he be layman or engineer, to select the desired components. Leading equipment in all price ranges is displayed.

The speakers and record changers each have their own illuminating device to indicate which one is in operation. These lights work automatically as the equipment is switched on.

The studio has been deliberately designed to be neither acoustically perfect nor sound-proof. It is "sound-conditioned," that is, there is no attempt to demonstrate sound under such ideal conditions that the customer is disappointed at what he hears in his own home. Wall and ceiling have been constructed to keep external noise out, and to prevent studio noise from disturbing the rest of the organization.



Tuners, amplifiers, changers, and speakers are arranged for easy visibility and identification in Sun Radio's Sound-TV Studio. All can be demonstrated from the push-button control panel which can be seen in the photo. Not visible in this picture are the Recording and Television Sections.



## NO MORE HOT-WEATHER PROBLEMS

... when you

record on **audiodiscs**\*

To the recordist, the hot, summer months have generally meant plenty of trouble—not because of the heat, but due to the accompanying high humidity. For moisture which is absorbed by the lacquer of a recording disc has a serious effect on the cutting characteristics. The noise level increases progressively while recording, and the cut gets greyer and greyer. This problem has affected the entire lacquer disc industry. But, with Audiodiscs, it is a problem no longer. You can now record as well on the hottest and dampest day as you could on a crisp day in fall or winter.

This freedom from humidity troubles is the result of an exclusive Audiodisc improvement perfected in 1947. It is an improvement which goes far beyond the control of atmospheric conditions during manufacture—for that alone doesn't prevent moisture absorp-

tion later on. The moisture problem has been solved at its most vulnerable point—in the lacquer itself!

By the addition of a special moisture resisting agent—without any change in the basic formulation—Audiodisc lacquer has been made permanently resistant to humidity. Its outstanding "all weather" performance has been proved by countless tests in our "weather room", under the most severe conditions of temperature and humidity. But the most conclusive proof of all has come from the field. For, during the summer of 1948, one of the most humid on record, none of our customers have reported any difficulties in recording or reproduction due to moisture conditions.

See for yourself what a big difference this improvement can make in your summer recordings. Ask your dealer for Audiodiscs!

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**DON'T BE BASHFUL!** If you have any recording stories that you think would be of interest to our readers, send them in. Audio Record is now distributed, by request, to 1480 radio stations, 3950 schools and colleges, 3300 recording studios and recordists, and 950 distributors and dealers. Address contributions to: Editor, Audio Record, 444 Madison Ave., New York 22, N. Y.

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