audio record

PUBLISHED BY AUDIO DEVICES, INC.

Vol. 4, No. 4 | 444 Madison Avenue, N. Y. C. | April, 1948

Recordings . . . and How They Help The Red Cross

By Ray Richmond

Pancake flour and pancake make-up, Ronald Colman, horoscopes, the California Chamber of Commerce, and cough drops bestow their largest of entertainment and education on the American public by transcription every day. What better way to reach the people? None. Then why not instruct concerning humanitarianism in the same tried and true way? Red Cross does. And who but Red Cross has its finger closer to the pulse of the populace? No other; not even the Gallop Poll.

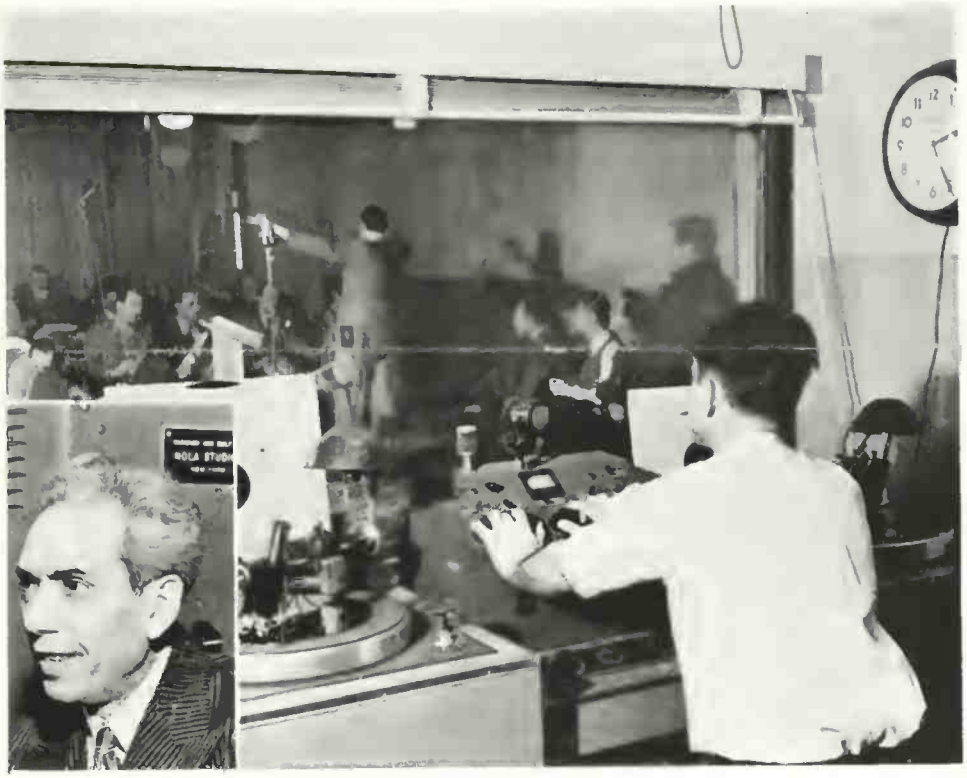
Always needed, always there, the National Red Cross is asking for 15 million dollars more this year than last. Remember the Texas City disaster; the floods in the Midwestern States; and the forest fires in New England? Not counting the hundreds of smaller calamities that never hit the front pages. Millions of victims were cared for, and this kind of Brotherhood costs money. Hard working, honestly devoted volunteers are only biped. They can reach but a small group of us. Radio reaches more people more easily.

To appeal to this large audience for the Red Cross 1948 Fund, six 15-minute capsule versions of top network radio shows were prepared on discs in the format of their regular weekly features. These shows star Bob Hope, Bing Crosby, Dick Haymes, Frank Sinatra, Jack Benny and Kay Kyser, but they include "Red Cross Commercials" as inserts instead of the usual sponsor plugs. During March, the traditional Red Cross Month, these recordings were played on more than 1,000 stations in the United States.

Also, four-and-a-half minute dramatized spots featuring screen stars Ella Raines, Robert Montgomery and William Bendix will be heard during the 1948 Fund Drive with eight 45-second straight announcements by Hollywood "name" announcers on the reverse side of these two-sided transcriptions.

There is still another use for Red Cross recordings. Mutual Broadcasting System used a portable recorder to record the inaugural Manhattan campaign luncheon at the Waldorf-Astoria in New York on February 13, at which Bop Hope was one of the principle speakers. To the listening audience that night, the network played back a part of the Hope speech on its Radio Newsreel program.

(Continued on Page 4)



Irv Kaufman (back to camera), one of Nola Studios two chief engineers, is pictured at the controls during a recording session in the New York firm's spacious Broadway studios. Such outstanding "name" bands as Bob Crosby, Art Mooney, Xavier Cugat and Benny Goodman have used Nola's recording and rehearsal facilities. Inset: Owner and founder of Nola Studios, Vincent Nola.

Vincent Nola's 20,000 Sq. Ft. Studio Largest In U. S.; Top "Name" Bands Use Its Facilities

Several months ago, Audio Record ran a story on the operations of, what its owner claimed to be, "the *smallest* recording studio in the United States" (after viewing a photograph of the establishment it was impossible to dispute this gentleman's word). So now, we believe it only fitting, that we feature an article on the *largest* recording studio (under one roof) in this country.

This distinction belongs to Nola Studios, located at 1657 Broadway in New York City, where some forty orchestras have been known to rehearse and record during a twenty four hour period. The fourteen individual studios that comprises Nola Studios covers an area of 20,000 square feet.

Nola Studios is owned and operated by one of the true pioneers in the recording field, Vincent Nola. Vincent Nola was born in Sicily in 1895 and 10 years later, with his family, moved to the United States and to a home in Buffalo, New York. It was in Buffalo that Vincent got his start in the musical world. With pennies saved from a

(Continued on Page 4)

ABC's Daylight Saving Time Plan To Start On April 25

Net To Use Tape Recorder For DST Operations; Lower Costs — Improved Program Fidelity Is Anticipated

A noticeable improvement in quality of rebroadcast programs and a substantial reduction in costs to its affiliated stations is anticipated when the American Broadcasting Company sets in motion its vast plan for Daylight Saving Time Operations on Sunday, April 25.

Operating only during the 22 weeks of Daylight Saving Time, the plan which ABC initiated in 1946 and expanded last year to the network's full program sched-

(Continued on Page 2)

audio record

VOL. 4, No. 4 APRIL, 1948

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.

ABC's Daylight Saving Time Plan to Start on April 25

(*Continued from Page 1*)

ule, through the use of special broadcast lines and recordings maintains all ABC programs in all time zones at the same time the year round.

Improved program quality and lower costs to ABC affiliates stem from the fact that the web this year plans to use Ampex Electric Corporation's tape recording machines to record its entire program schedule for playback directly from the tape. The machines are based on designs and specifications prepared by ABC engineers. The machines also are expected to be used year-round for all regional repeat broadcasts by the American network.

This will mark the first time in radio history that a network program has been rebroadcast directly from a recording tape. Heretofor, programs that have been recorded on tape were transferred to recording discs and then broadcast. ABC, during the past two years that it has been using its special plan of Daylight Saving Time operations, has utilized disc recordings to play broadcasts back at their accustomed time to local audiences.

Based on engineering tests conducted earlier this year, which indicate a noticeable improvement in program quality and tone fidelity through use of the Ampex tape recorders, ABC has placed an initial order for 12 of the machines and delivery is expected shortly.

Savings anticipated by ABC from lower operating costs through use of tape recorders and the direct play-back of programs from these machines will be passed along to the networks affiliated stations which share in the cost of the Daylight Saving Time plan.

Basic mechanics of ABC's Daylight Saving Time plan of operations, developed by the network through the cooperation of its clients and affiliated stations involves the acquisition of special broadcast lines by ABC. Through the use of these special broadcast lines, programs are broadcast live to ABC stations operating on Daylight Saving Time and recorded in Chicago and Hollywood for rebroadcast one hour later for stations operating on Standard Time.

The recorded plan is used only on ABC's regularly scheduled programs. Special events, such as a Presidential speech, a major prize fight or the coverage of conventions, etc., will be heard at the time they take place.

SCRIPT CONTEST WINNERS TO BE ANNOUNCED IN MAY

Winners in SCHOLASTIC MAGAZINE's Script Writing Competition (sponsored by Audio Devices) for high school students and the 1948 National Script Contest (co-sponsored by Audio Devices), conducted by the Association for Education by Radio, for college students, will be announced in the May issue of Audio Record.

The four national winners of the recently concluded "Voice of Democracy" contest, sponsored by the U. S. Junior Chamber of Commerce, the National Association of Broadcasters, and the Radio Manufacturers Association, are congratulated by Attorney General Tom C. Clark in his Washington office. In the capitol city for a four-day tour and entertainment, which, in addition to $500 scholarship awards, was part of their prize, the four high school girls are: left to right — Rose Allen Mudd, Missoula, Mont.; Janet Geister, Cuyahoga Falls, Ohio; Laura Shatto, Hagerstown, Md.; and Alice Wade Tyree, Lawton, Okla. The contest the girls won with their broadcast on "I Speak for Democracy" was entered by more than 20,000 students in 39 states and Alaska. Before the national winners were decided each individual state selected their own champion by having the outstanding contestants record their addresses on discs and from these recordings a state winner was determined. Then, recording discs came into play again when the national winners were judged in Washington. All in all some 500 discs were used nationally in the contest.

disc-data for the Recordist

By C. J. LeBel, Vice President AUDIO DEVICES, Inc.

DISC and TAPE

We have had a large number of inquiries on the comparative merits of disc and magnetic recording for professional use, and, since we make media for both methods, a preliminary survey has seemed desirable. Unfortunately, at the present stage of the art the answer seems to be more in terms of the associated equipment's limitations than that of the medium itself.

Physical Differences

Tape is easy to edit with scissors and a roll of adhesive tape. This is one of the reasons why it has replaced wire for professional magnetic recording, for wire splicing is neither convenient nor durable. For example, for shortening the record of a political convention from eight hours down to thirty minutes there is nothing as good as tape.

C. J. LeBel

Tape can be erased and reused, and for the programs incident to daylight saving time adjustments, programs mainly of transitory value, this is a real feature. Programs can be "assembled" on tape.

Recording on tape requires less mechanical skill than does disc, for there are no styli to wear out and replace. Editing requires *very great skill*. On the other hand, magnetic recording heads wear and lose quality — so that head wear-tests and replacements become necessary.

In reproducing, the mechanical skill for disc is negligible, but tape requires care and attention for correct threading in many machines. Tape may break in starting, and splices may pull apart in reproducing or rewinding. Such a failure may create a veritable "bird's nest", and if during reproduction can ruin a program. This may be one reason why the BBC for years has rerecorded from tape onto disc for program use.

The factors governing the durability of lacquer discs are well understood. Lacquer will be comfortable under any condition where a man will be normally comfortable. However, little is known about tape, particularly under exacting professional standards of performance. Severe dropping,

heavy vibration, or exposure to strong magnetic fields can cause erasure, noise and distortion increase. Magnetic fields are invisible, and not noticed unless strong enough to affect a watch. All magnets lose magnetization strength with time, and so we would expect tape recordings to change with time. Whether they will simply grow weaker, or whether the strongly magnetized portion will fade faster than the weakly magnetized (producing distortion) is something that no one can presently answer with certainty. It must also be remembered that scratching of the tape will deform the coating, and hence create distortion. Conditions affecting the base material are not too perfectly understood, either. Shrinkage due to age or atmospheric conditions can spoil accurate timing, and change the musical pitch quite detectably. Excessive reproducing machine tension can stretch the tape, with equally bad results. We can be reasonably certain of the sustained strength of a plastic base, but not of a paper base. Paper used today is generally made from wood pulp, whereas older paper was generally made from rag stock. We have only to look at newspapers a few years old to realize that the life of a wood pulp paper is not too long.

At professional tape speeds, programs can be filed away more compactly on disc than on tape, for a half hour on disc requires 10 cubic inches, while a half hour on tape at 30" per second requires about 35 cubic inches. Also, a disc can be replayed immediately after, or even during recording, while tape requires an appreciable time to rewind or spot.

Finally, facilities for playing tape are by no means as plentiful as those for disc. Nor do we yet have standardization on the all important matter of tape speed. In common use today we have the following: 7½, 15, 18, and 30 inches per second. This has special significance to the educator, for speech correction and dramatic work have been helped greatly by the motivation afforded by a chance to take a disc home. The educator will wish to use a tape speed of at least 15 inches per second to get fidelity adequate for educational purposes —but such few machines as his students may have at home will undoubtedly be limited to 7½ inches per second. The professional will be bothered by this situation as soon as he begins to ship tape recordings to various parts of the country.

Electrical Performance Characteristics

The frequency response of a recording *medium* is a hard thing to evaluate, for it depends so heavily on conditions of operation and on associated equipment, that in the case of lacquer no upper frequency limit for the material itself has yet been found. Up to a short time ago, the cutting head constituted the chief limitation on frequency response, but the advent of units using the head as part of a negative feedback loop—"feedback cutters"—has removed this obstacle, and recording in the supersonic region has been so made. Smaller radius recording and reproducing styli are, of course, desirable to reduce tracking loss at very high frequencies when working at normal rotational speed, but test has indicated that our lacquer is strong enough to be entirely satisfactory at such higher needle pressures. It may also be desirable to reduce the length of the burnishing facet of the cutting styli.

The frequency response of tape is limited, basically, by the tape speed and by the minimum attainable slit width in the recording and reproducing heads. The latter presently stands at about ¾ mil, physical width, but the effective magnetic width, considering fringing, is not the same. The slit width limitation can be overcome by running the tape at higher speed, but this raises the cost and operating problems.

Distortion is also a hard problem to evaluate. In disc recording the chief bottleneck used to be the cutting head, but the newest

OFF THE RECORD **By Ed Reed**

"Shyness compels Mr. Winterbottom to deliver his speech from a home recording."
The Register and Tribune Syndicate

cutting heads are so good in this respect that the present distortion limit is set by approximately equal contributions from the recording and reproducing amplifiers, the cutting head and the pickup. *We have not yet produced systems so free from distortion that lacquer distortion, if any, becomes a factor.*

On tape we also have recording and reproducing heads, recording and reproducing amplifiers, but the recording medium itself definitely is a factor. Since the bias for minimum distortion depends on frequency and on level, optimum bias is a compromise. It is not easy to pick a distortion value which everyone would agree on as representative. A comparison of disc and tape is further complicated by the fact that disc system distortion drops rapidly as levels are reduced below maximum, while tape distortion (depending on the bias chosen) may even increase. We have to accept intermodulation distortion figures cited as representative by those engaged in these fields, on which basis disc is somewhat better than tape. Whether it will remain so is a question, of course. We are inclined to feel that it will, for this reason: The electromagnetic part of a system operating at high level is likely to be the part creating the worst distortion. In a disc system, this would be the cutting head, but we have already succeeded in reducing cutting head distortion by including the head in a negative feedback loop. On the other hand, we can see no present way of including the tape itself within an effective feedback loop! It would appear, therefore, that there should be an inherent difference between the two systems, though possibly a small one.

We have not touched on tracking distortion in disc reproduction. This, the failure of the reproducing stylus to follow the groove faithfully, exists only at peak levels at high frequencies, and can be reduced to insignificance by using sufficiently small radii on recording and reproducing styli. In short, with intelligent engineering such distortion occurs only at overload—exactly as tape can be overloaded with ensuing complete distortion.

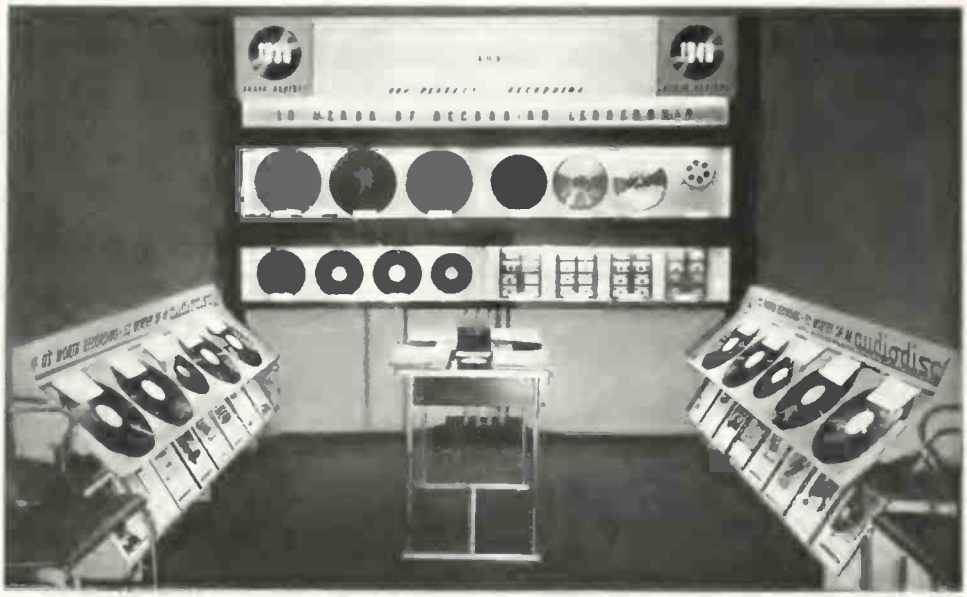
Signal to noise ratio, judging by ear, is fairly similar for both media, though both depend heavily on equipment perfection for best results. Some of the early postwar figures out of Germany suggested fantastically good ratios for tape, but it was soon found that these were weighted figures. American practice is to use unweighted noise data, whence the initial misunderstanding. If we compare practical equipment under practical conditions, we find that the ratios, on a weighted basis, are not greatly different.

Tape has a curious defect which does not show up in *ordinary* methods of measurement, yet which is rather important. This is undersignal noise, which can be best described as noise cyclically modulated in intensity by the signal. It has had only a limited amount of attention because present methods of determination are very laborious, yet the figures so far presented are not to be ignored. The ear does not hear such undersignal noise as noise, rather does it consider it as a kind of fuzz on the tone. In short, the ear is as annoyed by it as by intermodulation, and it exists at all signal levels. The analogous (but not identical) defect on disc can occur only at the extremely high *peak* levels used in some phonograph recording. Cook, who first discovered this effect on disc, has shown that by the proper design of cutting stylus the effect may be reduced to insignificance even at phonograph recording peak levels. In any case, it is not existent at transcription recording levels, or at average phonograph levels.

Duplication

Tape is an instantaneous recording medium, just as is lacquer. Hence we have to

(*Continued on Page 4*)



IRE SHOW HUGE SUCCESS; RECORD REGISTRATION

The 1948 National Convention and Show of the Institute of Radio Engineers, held March 22-25 in New York's Grand Central Palace and Hotel Commodore, was the most successful venture in the Institute's history, IRE officials advise. During the four day meeting, approximately 15,000 persons registered and viewed the show's 190 exhibits — one of which was the Audio Devices' booth (above) displaying the various types of Audiodiscs, their applications, and each step necessary in their production from raw material to finished blank; and the process involved in making phonograph records from Master discs. In addition, engineers stopping at the Audio booth got a glimpse of the company's latest contribution to the sound recording field, magnetic-oxide Audiotape. But perhaps the most interesting part of the Audio exhibit were the history-making recordings lined on the booth's sidewalls. Cut on Audiodiscs during the last ten years (Audio celebrates their 10th anniversary this year) these recordings featured, among others, the following important nation-wide broadcasts: Attack on Pearl Harbor, President Roosevelt's speech in French on North Africa landing, D-Day, Radar to the Moon, Secretary Marshall's "Voice of America" address, and President Truman's recent message to Congress. (This exhibit will also be seen at the Radio Parts Show in Chicago May 11-14 in Booth #83).

Vincent Nola Studios

(*Continued from Page 1*)

paper route, he studied voice under the tutelage of well-known Buffalo and, later, New York teachers.

Young Nola's first professional singing job was in Niagara Falls (he doesn't remember just where in Niagara Falls or just what he did besides sing) at the age of 16. Later, in between professional engagements, Nola taught voice in New York City. Then, Vincent Nola got an idea.

Vincent Nola's idea was to open a large rehearsal studio in New York for bands and other large musical groups. Up to this time, a studio of this type was unheard of. In 1930, Nola put his idea to work when he rented several large rooms in Steinway Hall. Within eight months he had eight studios in this famous old building and many of the top talent of the day were using his facilities. Then Nola got another idea. Why not equip some of these studios with recording equipment so the "big names" could put their renditions on record.

Nola, at this time, knew nothing at all about the engineering aspect of sound recording. But he decided to learn. Nola studied hard, day and night, for three months acquainting himself with the art under the guidance of one of CBS's most talented engineers. Then, after he felt he knew *something* about the recording business he opened two recording studios in the same Steinway Hall. This was in 1934.

The operation was a success from the start and in the years that followed the Nola Studios became a "by-word" with famous popular and classical music artists, "name" bands and other musical aggregations. Both as a rehearsal studio and as a recording studio Nola's became more popular as the years went by. In fact, too popular, with the big bands. For in 1940, the management of Steinway Hall decided that Nola's clients, the fifty and sixty piece variety, were making too much noise for the conservative residents of 57th Street. Nola would have to move.

But Vincent Nola solved the problem by opening the present Broadway studios for his "noise makers" and keeping his 57th Street location open for his less disturbing or "long hair" clientele (opera singers, concert pianists, etc.). This arrangement proved a good move and even today the bands still use the Broadway studios.

Then, as now, seventy-five percent of Nola Studios recording work is done for music publishers for "song plugging" purposes. But in addition such outstanding orchestras as Bob Crosby, Art Mooney, the Dorsey Brothers, Xavier Cugat, Benny Goodman, Frankie Carle, Raymond Scott and Charlie Barnett have used the Nola Studios for their rehearsal and recording sessions.

The secret of Vincent Nola's success in the recording field probably lies in the fact that all six of his recording engineers possess a musical background. As a matter of fact, Nola himself has taught each of these engineers his particular techniques so that they record from the 'musician's' not the 'professional recordists' ' point-of-view. As Vincent Nola explains it: "the average listener wants to hear something pleasing to the ear from a musical standpoint. He is not remotely interested in the technical phases involved." All told, Nola employs sixteen people in his two studios.

Naturally, Vincent Nola is as interested in the outcome of the present recording ban edict as everyone else in the business. When asked what his thoughts were on the matter, Mr. Nola smiled and said: "well, I hope a solution will soon be found that will make us all happy. Yes, I mean Mr. Petrillo, too".

Disc Data

(*Continued from Page 3*)

compare them on that basis; i.e., both have to be individually recorded. Likewise, either could be rerecorded onto a processing size lacquer blank, and duplicated as pressings. In so doing, of course, distortion and signal-to-noise-ratio would suffer. Some comparisons have been made between tape and pressings. This is not valid, because an instantaneous material like tape has to be duplicated by rerecording, a high cost process.

Summary

We are sorry to have to say "it all depends" so often, but both disc and tape are going through a quality revolution, and it will be hard to issue any publishable figures until affairs stabilize. In the meantime, we would be disposed to view much of the material published on tape as too superficial. A great many more studies will be necessary before we fully understand the vagaries of the medium. To uncritically assume that a new medium can have no faults is to treat the matter as a layman rather than as an engineer.

Recordings . . . and the Red Cross

(*Continued from Page 1*)

An additional project to be initiated by the Red Cross this year will be the collection and processing of 3,700,000 pints of blood for the 65% of the hospitals in the country who are in no position to supply blood plasma needed in emergencies. This, too, will cost money. John Public must underwrite his own future.

If the past experience of the Red Cross is any indication, however, the American people will again generously respond to the call of these *potent platters*, for funds and for volunteers for its many services. Yes, Red Cross knows the true value of the recorded appeal.