audio record

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SCRIPT CONTESTS ANNOUNCE WINNERS

Scholastic Magazine and AER Name Winners in Nation-wide Contests for High-School and College Students

The two big student competitions in radio script writing—Scholastic Magazines' 1949 Radio Script Writing Competition for high school students, and the Association for Education by Radio's National Radio Script Contest for college students—announced their respective winners at the annual luncheon of the AER, in Columbus, Ohio, on May 7th.

Both of these contests, which were co-sponsored by Audio Devices for the second consecutive year, drew an all-time record of entries. And, according to reports from the contest judges, entries were definitely up in quality as well as quantity.

Mr. William D. Boutwell, of Scholastic Magazines, reports that high school students entered a total of 440 radio scripts

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WINNERS OF SCHOLASTIC MAGAZINES' RADIO SCRIPT WRITING COMPETITION

First Prize — Original Radio Drama. Richard Jackson, Jr., St. Clair Shores, Mich.

First Prize—General Radio Script. Elena Joan Svagzdys, Brockton, Mass.

First Prize — Radio Drama Adaptation. Margery Schneider, Forest Hills, N. Y.

WINNERS OF CLASSIFICATION 5 IN AER CONTEST

First Prize — Fred A. Brewer, Bloomington, Indiana.

Second Prize — Herbert Rube, Yonkers, New York.

Third Prize — Carl C. Naumann, Passaic, New Jersey.

Audiotape Now Available!

After 2½ years of research and development, Audio Devices offers a complete line of highest quality magnetic recording tape

Audiotape has the unique distinction of being both the newest and the oldest magnetic recording tape in this country. For Audio Devices first started work on the development of Audiotape more than 2½ years ago, at the time when samples of German tape recording equipment were first brought to this country for study and improvement. A plastic-base Audiotape which proved far superior to even the best German magnetic tape was produced well over two years ago. This tape would have been placed on the market immediately—except for one thing.

The product was *good*—but was it *good enough* to bear the "Audio-" trademark? Audio devices' engineers, acting as their own severest critics, felt that there was still some room for improvement, and that Audiotape should not be released until they were thoroughly convinced that it had achieved the highest possible degree of perfection in every respect. So additional

months of research and experimentation followed — to devise a still better, more uniform coating that would assure the finest, noise-free recording in a wide variety of machines, from low-cost amateur equipment to the most costly professional tape recorders. The problems involved in the perfection of Audiotape were more numerous and perplexing than the layman might expect with such a seemingly simple product. The article by Mr. LeBel, on pages 3 and 4, however, will give some idea of the complexity and magnitude of the task.

To meet the most rigid requirements, and to assure premium performance in a variety of different recording and reproducing machines, it soon became evident that two different types of tape would be needed. For the frequency response, output level, and signal-to-noise ratio bear a definite relation both to the bias current used in a particular machine, and to the coercive force of the magnetic oxide coating of the tape. Many non-professional-type recorders on the market do not have a bias adjustment, and as the bias varies in different machines, a tape which would give optimum results with one machine would not give such good performance on a different, fixed-bias machine. Two different types of Audiotape were therefore devel-

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Contest Winners

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in the national contest alone—not counting the hundreds of scripts that were submitted for the 15 regional preliminaries throughout the country. This is by far the largest number of entries ever received for these Scholastic Writing Awards. Mr. Boutwell, who made the announcement of the Scholastic Award winners at the Chicago meeting, stated that there was a very marked increase in both the number and quality of scripts entered in Classification No. 3, General Radio Scripts—including many excellent examples of interviews, continuity, music, sports, and related subjects.

The AER Contest also chalked up substantial gains over last year's competition—with a greater number of entries, many of them of really professional quality. It is reported that the selection of the winners was a difficult one in both contests. And the judges report that most of the contestants show great promise of attaining successful careers in the radio writing field.

An unusual aspect of the AER contest was the fact that the second and third prizes in Classification No. 5 (Scripts for Home Recording—sponsored by Audio Devices) were both awarded to students in the same school—New York University. Still more significant, they were both instructed by the same professor—George D. Griffin, who also instructed the first, second, and third place winners of the same classification in last year's contest!

Following is a list of the national winners of the Classifications sponsored by Audio Devices in both the Scholastic Magazines' and AER Contests.

Prof. George D. Griffin of New York University tutored second and third place winners in Class 5 of 1949 AER Contest — and first, second, and third place winners in Special Class of 1948 Contest.

SCHOLASTIC MAGAZINES' Radio Script Writing Contest (High School Students)

Judges: Mrs. Gertrude Broderick, Director of Script and Transcription Exchange, Office of Education, Washington, D. C. Miss Judith Waller, Director of Public Service, N.B.C., Midwest. Robert P. Heller, Executive Producer, C.B.S.

Award Winners:

Original Radio Drama

FIRST PRIZE — $25; **Richard Jackson, Jr.,** 17, St. Gertrude School, St. Clair Shores, Mich.
"Sometime Tomorrow"
Teacher—Sr. M. Bernita, S.S.J.*

SECOND PRIZE—$15; **Neil Jackson,** 17, Redford High School, Detroit, Mich.
"The Dream"
Teacher—Marjorie Stevens

THIRD PRIZE—$10; **Juanita Pennell,** 15, North Sr. High School, Binghamton, N. Y. "The Janitor's Tale"
Teacher—R. D. Merchant

FOURTH PRIZES—$5

Louis A. Freizer II, 17, Stuyvesant High School, New York, N. Y.
Teacher—Mrs. Dobkin

Winthrop Griffith, 17, Burlingame (Cal.) High School.
Teacher—Fern Harvey

Doris Kummer, 17, Lutheran High School, St. Louis, Mo.
Teacher—Mrs. Constable

Richard McMahon, 17, Johnson City (N. Y.) High School
Teacher—Mrs. Sullivan

Marian E. Tyrrell, 17, Owego (N. Y.) Free Academy. Teacher—Mrs. Turner

General Radio Scripts

FIRST PRIZE—$25: **Elena Joan Svagzdys,** 18, Brockton (Mass.) High School
"An Imaginary Interview with G. B. Shaw". Teacher Ruth T. Cosgrove*

SECOND PRIZE—$15: **Mary Carol Massi.** 16, Union-Endicott High School, Endicott, N. Y.
"High School Psychology"
Teacher—A. Alderson

THIRD PRIZE—$10: **Richard Wallace,** 14, Evanston (Ill.) Twp. High School
"The Story Behind the Label"
Teacher—Pierce Ommanney

FOURTH PRIZES—$5

Nancy Banks Bakke, 17, Montgomery Blair High School, Silver Springs, Md.
Teacher—Mary Wood

Jim Erickson, 15, Roosevelt High School, Minneapolis, Minn.
Teacher—Mrs. Doherty

David Kiplinger, 15, Redford High School, Detroit, Mich.
Teacher—Marjorie E. Stevens

Mary Jane Mills, 17, Union-Endicott High School, Endicott, N. Y.
Teacher—Mrs. Edna A. Finch

Joel Rankin, 17, Brockton (Mass.) High School
Teacher—Ruth T. Cosgrove

Radio Drama Adaptation

FIRST PRIZE — $25; **Margery Schneider,** 17, Forest Hills (N. Y.) High School "Footfalls" by Wilbur Daniel Steels
Teacher—Mrs. Adele B. Tunick*

SECOND PRIZE—$15; **Barbara Kingsbury,** Battin High School, Elizabeth, N. J. "Downfall of the Dalton Gang"
Teacher—Albert Komishane

THIRD PRIZE — $10; **Christine Dolores Dolsen,** 17, Cooley High School, Detroit, Mich.
"The Open Window" by Charles Dobie
Teacher—Leslie G. Carter

FOURTH PRIZES—$5

Mary Catherine Franklin, 18, Ancilla Domini High School, Donaldson, Ind.
Teacher—Sr. M. Lorenza

Myra Lou Hart, 16, Mackenzie High School, Detroit, Mich.
Teacher—Glendora Forshee

Ann Ivester, 16, Wyandotte High School, Kansas City, Kans.
Teacher—Mr. H. A. Billingsley

Enid F. Karetnick, Weequahic High School, Newark, N. J.
Teacher—Mr. I. Goldberg

Mary Ann Wershing, Academy of the Holy Angels, Fort Lee, N. J.
Teacher—Sr. M. Ellen

AER National Radio Script Contest (College Students)

Judge: Henry Lee Ewbank, Professor of Speech, University of Wisconsin

Classification No. 5. Scripts for Home and School Recording

FIRST PRIZE—$100; **Fred A. Brewer,** Department of Radio, Indiana University, Bloomington, Ind.
"*How the Rocking Chair Got Its Squeak*"
Teacher—Dr. Henry J. Skornia*

SECOND PRIZE—$60; **Herbert Rube,** New York University, New York, N. Y.
"*Rendezvous*"
Teacher—Prof. George D. Griffin

THIRD PRIZE — $40; **Carl C. Naumann,** New York University, New York, N. Y.
"*Vallum Hadriani*"
Teacher—Prof. George D. Griffin

*Received 25 Audiodiscs, 3 Sapphire Recording Audiopoints and 3 Sapphire Playback Audiopoints.

Audio Devices will again publish a collection of the prize-winning scripts from both the Scholastic and AER contests, which should be ready for distribution shortly after the opening of the new school year in September. Students whose work is selected for this purpose will receive special awards.

disc·data for the Recordist

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

RESEARCH PROBLEMS OF TAPE

C. J. LeBel

This paper discusses the problems faced by our Research Department in the course of our tape development program. The solution in some cases is visible in the statement of the problem. In the remaining cases a discussion of the answers would take many pages, and we will have to defer studying them until subsequent issues of the Audio Record.

Our Original Tape

About two years ago we brought out our Type A tape. This consisted of an oxide with a coercive force of about 120 oersteds and a remanence of about 500 gausses, coated on vinyl copolymer with a vinly acetate binder. The design was based on German developments brought over by the U. S. Department of Commerce, and was designed for 30 inch per second speed. It was decidedly better than the German tape as regards frequency range and signal to noise ratio.

Marketing experience with this tape showed that there were only about a half dozen professional machines (operating at 30 inches per second) in the whole country, but that there were many thousand amateur type machines, operating at 7½ inches per second, and requiring different bias characteristics. It was also evident that American recording machine design was developing differently than European, and that entirely different tape characteristics would be necessary in the future.

The American Trend

From the experience of those users who were rebuilding home machines into semi-professional jobs, it was possible to make an accurate estimate of the probable trend of design and operating practice.

It was evident that slower tape speed would be required. Thirty inches per second uses up tape very fast, and we guessed correctly that the professional standard would be in the fifteen to eighteen inch per second range. Late 1948 saw an NAB committee settle on fifteen inches.

At the same time we could see that wider frequency range would be necessary: to 7500 cycles at 7½ inches per second, and to 15000 cycles at 15 inches per second. A combination of the change in speed and the change in frequency range made the tape requirement three times as rigorous as European demands.

We could also see that equipment would have to run with less attention to head cleaning and the like.

The Basic Problems

With the basic assumptions made, it was possible to outline the basic problems for the laboratory. These could be allocated to the fields of: base, oxide, binder, dispersion and application.

Base

A plastic base would have to be found, with greater strength than the old vinyl, and which could be made in long lengths without splices. It would have to be perfectly smooth, and the thickness would have to be extremely uniform. It would have to be available in a thickness of .0015".

Paper Strength

We felt that if a very high grade paper base could be made it would be possible to use paper instead of plastic for many more applications, at a substantial saving to the customer. So the development of a special paper was put on the agenda.

Tape paper must have extremely good smoothness, for this improves frequency response and reduces noise and distortion. This smoothness must be inherent—in the type of paper machine and processing. It is easy to make a rough, porous paper, then fill the pores with white pigment. This makes a poor base, however. The white pigment tends to rule off onto the capstan, producing slippage. It is possible to bond the pigment to the paper by adding a plastic resin to the paper pulp in the beater. This tends to stiffen the paper. If too much resin is used, the paper is stiffened so much that it fails to contact the heads properly and high frequency response is impaired. It will also fail to wind compactly and the reel will be overfilled. If too little resin is used, the pigment will tend to rub off. The balance between chalking off and excessive stiffness is hard to maintain, and there really is no optimum compromise.

Knowing this, we decided to do it right —the hard way—and work with a papermaker on an unfilled paper of great smoothness. This would insure best frequency response, lowest noise and lowest distortion. We were correct in judging that this would be a long job—it was. Part of the problem lay in getting adequate breaking strength — five pounds — while still retaining all other desirable characteristics.

Oxide

As everyone knows, recording tape consists of a non-magnetic base coated with iron oxide. A wide variety of oxide chemical compositions and lattice structures are possible. Correspondingly, a wide range of magnetic properties are possible– a coercive force may be anywhere between say 90 and a maximum of 400 oersteds.

As was said before, wide frequency range was recognized as absolutely essential. It was also evident that low noise level would be required, to permit of as wide volume range as possible.

We guessed, correctly, that a wide variety of bias values would be in use, and that it would not be possible to get optimum performance at all conceivable biases with only one oxide. One oxide suited to high bias operation and another optimized for medium bias would be necessary. This raised another problem. Previous attempts at a high bias oxide had not been of professional grade due to excessive noise and modulation noise. The latter sounds like fuzziness to the ear and is highly objectionable. An improved high bias oxide was necessary.

One of the first handicaps in this work was the misleading nature of published studies on the relation of magnetic properties to recording characteristics. As applied to successive batches of a given oxide, coercive force and remanence have significance, but in comparing two entirely different materials the magnetic properties have but little more than a second order effect. Other factors may outweigh the magnetic properties in significance by twenty or thirty db. The need to actually coat and record on every experimental oxide was very time consuming, but in the end it proved worth while.

Binder

The iron oxide is held on the base by a binder. This binder must withstand high temperature without softening, if the tape is to be used on some of the earliest home type machines used by broadcasters. It must not have a tendency to rule off and foul the heads. Finally, it must not have a high coefficient of friction, or its motion over the heads will not be smooth. This coefficient of friction must not increase with time or use.

The friction must be reduced by proper formulation and not by roughening the coating. The slightest shade of roughness will reduce friction (a curious phenomenon), but it will impair output and high frequency response also. Do not confuse smoothness with gloss—a tape which is full of little bumps may still be very glossy.

Dispersion

An oxide works best if the individual particles are separated from one another by binder, just as the particles in a magnetic dust core are so separated. If the particles agglomerate together in clumps, the modulation noise increases. It was necessary to study the problem of dispersing

(*Continued on Page 4, Col. 1*)

One-Man Organization Turns Out Top Transcriptions

Radio-Video Associates, 322 East 55th St., a New York package agency actively engaged in the production of transcriptions for various non-profit organizations throughout the country has an office staff of one, in the person of 26-year-old Jack Lloyd, one of radio's busiest young actors. When not behind the mike, Jack spends most of his time carrying out his duties as R.V.A.'s producer, director, script editor, talent buyer and public relations man. By working as a one-man organization and hiring writers, artists, etc. for each individual project, he is in a position to produce his shows on a budget well within the reach of his clients. Except for a few spot announcements and talks, most of the shows which R.V.A. distributes to hundreds of stations are 15-minute transcribed Madeleine Carroll, Peter Lawford and dramas. Since Jack firmly believes in the power of a "name" to put across a message, he works hard to engage a Broadway or Hollywood star for his shows. Among the stars who most recently contributed their talents on shows for such worthwhile organizations as the Save the Children Federation, The Foster Parents Plan for War Children and The National Conference of Christians and Jews, are Margaret O'Brien.

Recordings are usually made at the NBC Recording Studios, and are processed by RCA Victor. These transcriptions are being broadcast by approximately 600 radio stations, which donate their time as a public service.

Producer-director Jack Lloyd discusses last minute details with film star Madeleine Carroll and announcer Len Sterling, before transcribing a drama for the benefit of the Foster Parents Plan for War Children.

Research Problems of Tape

(*Continued from Page 3*)

oxide in binder very carefully. Unlike the paint and abrasive industries, the problem of dispersion was one of perfection, not of speed.

The importance of the dispersion problem may be realized when we find that a poor dispersion will have 10 db more modulation noise.

The viscosity of the coating solution must be carefully controlled, lest it fail to apply properly in the coating machine. Every coating machine, of any type, requires exact solution viscosity for the most perfect results.

Application

This brings us to the problem of applying the coating. Recording tape coating is a precision job, entirely unlike that of coating sandpaper or adhesive tape. The tolerances are much smaller, for .0001" change in thickness will give over a db change in output.

We found, after checking test runs made on standard commercial coating machines, that none would give us the uniformity we felt was necessary. So we went back to the new type machine we had developed for our first tape, and concentrated on improving it still further. One of the problems, curiously, was that of measuring the tape thickness. When you start worrying about *fractions* of one ten-thousandth, you begin to have trouble with commercial measuring devices used in the shop. Regular measurements of a standard are necessary to check any drift in the gauge setting.

Conclusion

This has been a survey article, designed to show our friends why it took so long to develop the new tapes. We believe the time was fairly well spent, and expect to put a lot more time on still further perfecting the new medium.

Audiotape

(*Continued from Page 1*)

oped—one with a high-coercive, black oxide coating, and the other with a coercive, red oxide coating.

Now—after 2½ years of research, experimentation, and continual improvement --Audiotape is ready for the market. Audio Devices' engineers are confident that it is the finest product of its type available —a product that will, in every way, live up to the exacting standards of quality and uniformity which have characterized Audiodiscs for more than a decade.

Paper-base Audiotape, in both the high-coercive and medium-coercive types, is now in quantity production—in standard 1250-foot, all-aluminum reels designed to fit all makes of machines. Audiotape will be available through Audio Devices' more than 300 distributors, conveniently located from coast to coast. Through these distributors, it will also be available to retail dealers, who can obtain large or small quantities for profitable re-sale to their own customers. Distributors and dealers will be provided with complete instructions on the use of Audiotape—including recommendations on the type of tape which will give best results with all of the various commercial tape recorders now available.

Audio Devices is now working on a new line of plastic-base Audiotape, which will offer certain advantages for professional use. The new tape will be announced shortly.

Audiotape is now a full-fledged, tried and proven product. Its development was a "natural" for Audio Devices—a company with more than 10 years of experience in the manufacture and distribution of recording discs. For the production of recording tape has much in common with the production of recording discs. Both involve a precision coating process—wherein the sound-sensitive material must be applied to a suitable base in a perfectly smooth and uniform coating. Also, both involve the same basic principles of audio engineering, and call for the same high standards of quality control and continual factory testing to assure the most perfect sound recording medium available.

Like Audiodiscs, Audiotape "speaks for itself."