



Audio's Research Department Vital To Company's Success

Research Director Franck Introduces Staff to Audio Record Readers

It wasn't long after the first Audiodiscs were made, back in the late thirties, that Audio Devices realized the importance of, and the need for, a fully-equipped and fully-staffed Research Department. "To progress, one must explore" was the philosophy of William Speed, Audio's president, and soon the young company was laying plans for what is now, possibly, the most modern, up-to-the-minute research department in the recording disc field.

One of the very first steps in creating such a department in any company, of course, is the hiring of an outstanding man who not only possesses the ability to delve deep into the unknown qualities of your product and its competitors, but a man who can mold together a fine staff of capable and creative assistants who will work as a "team" to further the progress of your organization. The Research Director that Audio Devices engaged to set up their Research Department had all of these qualifications . . . and more.

Ernest W. Franck was Audio's man. And Ernest W. Franck has justified his company's choice time and time again. Ernie Franck has been a well-known figure in the sound recording field since almost its infancy. Considered an authority on the art, he is not only a demon for work but an inspiration to others working with him. Ernie Franck is not a desk executive, not by any means. He is "right in there" with the boys on every project, on every problem.

Besides his vast knowledge of discs, their components, etc., Audio's Research Director, it is safe to say, knows as much, or more, about magnetic recording tape as any man in the country. Actively engaged at the present time in furthering Audio's development work with Audiotape, Mr. Franck spends countless hours exploring into the possibilities of this new sound recording medium.

In assembling his staff of chemists, technicians and so on, Mr. Franck has taken time to "be sure" in his selections. Each time an addition was made, the "Franck Stamp of Approval" usually guaranteed a sound and profitable investment to Audio Devices. Believing in the theory that only "interested" workers make good researchers, Ernest Franck is justly proud of his

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AUDIO DEVICES' RESEARCH STAFF



Above 1. Harold J. (Andy) Southcomb, Pressings Expert; 2. Ernest W. Franck, Research Director; 3. George M. Suthem, Chief Chemist; 4. Stephen Schettini, Department's "Godgeteer"; 5. Frank Radocy, Production Analysis; 6. David S. Gibson, Lacquer Specialist; 7. Allison B. Randolph, Radio Technician.

Tape and Disc Recorder Prize Assets in Saint Frances College's Speech Training Department

Speech has been a *required course* at Saint Frances College, Brooklyn, New York since 1920. As William T. Howle, Professor of Speech at the New York school puts it: "Speech is a *tradition* at Saint Frances".

Big Radio Script Writing Contests End This Month

Scholastic Script Writing Awards — National Script Contest Close Soon

SCHOLASTIC MAGAZINE'S Script Writing Competition (co-sponsored by Audio Devices) for high school students and the 1948 National Script Contest (also co-sponsored by Audio Devices), conducted by the Association for Education by Radio for college students, close this month.

Widespread interest in these national contests is evidenced in the tremendous volume of mail arriving at both SCHOLASTIC and AER Contest Headquarters. Script after script are pouring in from all parts of the United States.

According to William D. Boutwell of SCHOLASTIC MAGAZINES, scripts

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When asked what part recording equipment played in Saint Frances' speech training program, Professor Howle replied: "We use both disc and tape recording equipment and to say that they haven't been priceless assets to the Speech Department would be like saying that this country had nothing to do with winning the war. We are *sold* on the recording medium and believe it deserves much of the credit in improving and perfecting speech."

The Catholic college offers five speech courses—Voice and Diction, Extemporaneous Speaking, Oral Interpretation, Discussion and Debate and Pedagogical Speech. (The first two courses are required study for graduation.) In the required courses the student makes a disc recording of his voice at the beginning and again at the end of the school term for comparison and study. For everyday classroom recording a magnetic tape recorder is used.

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audio record

VOL. 4, No. 3

MARCH, 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.

I. R. E. Show Opens March 22; 10,000 Engineers To Attend

Record Number of Radio Engineering Exhibits; 183 Firms to Participate

Tremendous interest in "Radio-Electronic Frontiers", which is the timely theme of the 1948 I.R.E. National Convention, is proven by the vigorous increases in both numbers of exhibitors in the Radio Engineering Show, and the space taken in three floors of Grand Central Palace's huge exhibition area. The Show opens Monday, March 22nd, and runs four days through March 25th.

One hundred eighty-three of the headline firms of radio and electronics are participating in the Show with displays ranging from single booths to areas large enough to duplicate an entire transmitting studio. The latest developments in instruments, components and complete transmit-

ters will be shown. Every phase of electronics and communication equipment, and some of the latest methods of aircraft guidance will be presented to the 10,000 radio engineers coming to the convention from every part of North America. For the first time, 22 exhibits will be placed on the third floor, adjacent to session halls for technical papers. Exhibit space is 30% ahead of 1947.

More than 120 technical papers, skillfully organized in 28 related sessions will comprise the lecture program of the convention. Three social events, a cocktail party, Monday; the popular President's Luncheon on Tuesday, and the Annual I.R.E. Banquet on Wednesday Evenings add color to what has grown to be one of the world's greatest assembly of engineers.

Audio Devices will display its products in Booth #233.

Covering Four Special Events In Two Hours Time No Problem To Alert California Station

Thanks to the ingenuity of staff members, plus recording equipment, the task of covering four community-interest special events from four different spots all within a little more than two hours time was performed recently by KBLF-Red Bluff, California.

KBLF's problem was to cover (1) ceremonies at the Business and Professional Women's meeting, celebrating the centennial of the discovery of gold in California; (2) a basketball game; (3) a presentation of medals to veterans of World War II; and (4) a March of Dimes Skating Party. Here's how the California station did it:

KBLF's station manager, Bill Murphy, emceed the Women's broadcast, and after introducing the main speaker of the evening, Murphy left the banquet room to go to the next broadcast — a basketball game. When he arrived at the gym, the broadcast was already on the air with the station's play-by-play announcer at the mike. Murphy did the "color" between the quarters giving his cohort time to wipe his brow.

In the meantime, KBLF's commercial manager, Wayne Thorton, Jr., was at the city's Veteran's Memorial Hall, recording the presentation of Victory and American Defense Medals to World War II vets. Thorton, recorded speeches by various dignitaries as well as interviews with the recipients of the medals. This program was aired the following evening.

And twenty miles away, announcer Sherman Guill, with a recorder, covered the March of Dimes Skating Party in Los Molinos. The program mainly musical, plus interviews with the March of Dimes officials, was broadcast the next afternoon.

The box score for the night: four community service special events. The time: two hours and twenty minutes.



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

PHONOGRAPH RECORD MANUFACTURE

Recent correspondence has made it apparent that many of our readers are not in touch with phonograph record manufacturing methods of today, but would like to know more about the subject. We will sketch a typical procedure, without at-

tempting to cover every possible variation. It will be found that the durability and permanence of lacquer recordings have permitted many changes from methods of the old wax days. The NAB standard terminology¹ will be used where it fits in.



C. J. LeBel

Lacquer Original

The selection is recorded by usual methods on a lacquer disc. This is often done on a 16" blank so that several takes may be recorded on a single disc.



Fig. 1 Cross-section of lacquer original

Lacquer Mother

The best take is selected for processing. This take is re-recorded by conventional methods on to the correct size master disc for the pressing to be made: 12" for a 10" pressing, 13¹/₄" for a 12" pressing. The eccentric circle common to most phonograph records must also be cut. The final result is known as a lacquer mother.



Fig. 2 Cross-section of lacquer mother

Processing

The lacquer surface is coated with a conductive film of metal by either chemical deposition of silver (*silvering*) or by electrical discharge deposition of gold in vacuum (*gold sputtering*). A very difficult problem which we had to solve in formulating our lacquer was to make it take silvering and sputtering with consistently



"Whodunit" on Record

In Michael Curtiz's latest mystery thriller, "The Unsuspected", Claude Rains, the unsuspected villain in the Warner Bros. release, employs the services of 16" recording discs to blackmail fellow actors and to divert suspicion that he himself might be guilty of committing the photo-plays' murders. The "perfect crimes" fail when Rains' recording activities are discovered.

good quality. A heavy layer of copper is plated on top of the conductive layer by conventional electroplating procedure. The result, stripped off the mother by mechanical means, is known as a *shell stamper*, and if attached to a heavy sheet of backing material becomes a *backed stamper*.



Fig. 3 Cross-section of stamper

The stamper center hole is bored out concentric with the grooves, the rim is trimmed to size (removing the oversize portion, often marked by plating clamps), and it is then ready to be used. In many cases it may be given a flash layer of chromium to enable it to better withstand the wear and tear of use.

A lacquer mother may be coated, electroplated, and stripped several times, producing an equal number of stampers.

One operation can seriously injure quality: polishing. It has been claimed that the dirt adhering to a stamper may be removed by a high pressure jet of clean air, but it has been customary to use more drastic means. Emory Cook has shown that even a heavy rub with a rag is enough to polish off all traces of 25 kc. H. E. Roys has shown² that overpolishing can introduce serious intermodulation distortion. In any case, there has been steady disagreement between recording room and processing department on the tendency to overpolish, for many years.

Pressing

The stamper is then fastened to a record die on one platen of a molding press, and another platen is fastened to a record die on the other platen. Labels are placed at the centers. Steam is passed through the record dies, a hot biscuit of pressing stock is placed on the lower stamper, and the platens are closed under pressure. Shortly thereafter the flow of steam is cut off and cold water is circulated thru the dies. When the disc is cool and hard, the press is opened and the *pressing* is removed. The edge is trimmed and the record is then ready for shipment.

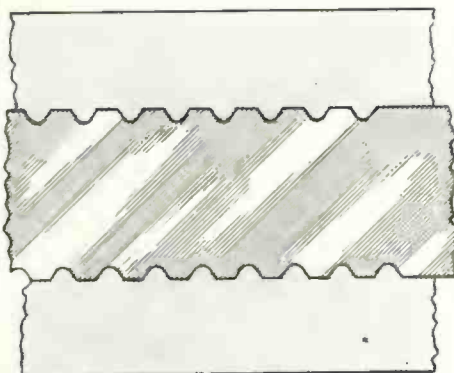


Fig. 4 Pressing action of stampers



During a classroom recording session in one of Saint Frances College's speech courses, a student speaks into a microphone while a magnetic tape recorder records his voice. Fellow classmates at the Brooklyn, New York school listen eagerly with their instructor for possible flaws in delivery.

Tape-Disc Recorder Aids College

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Saint Frances is the only Catholic college offering the Pedagogical Speech course in the New York Metropolitan area. This intensive course for future teachers is designed to qualify students to meet the requirements of the highest standards. Special emphasis is given to the requirements of the New York City Board of Education.

Aside from the compulsory speech courses at Saint Frances every student who enters the Brooklyn school must take a speech screening test to determine if he has any speech defects. (This is an oral examination and does not involve the use of recording equipment.) If it is found that the student does have speech difficulties he is assigned to what is known at Saint Frances as the 'speech clinic'.

Under the direction of Ray H. Abel, the speech clinic, modeled after the clinic at the New York Post Graduate Medical School and Hospital, helps the student to overcome his speech weaknesses by having him record his voice time and time again

so that he can hear and have analyzed his own errors. The tape recorder is employed for this recording operation. Professor Howle humorously refers to the speech clinic as a "remedial course for Brooklyn provincialism".

A further use of recording equipment at Saint Frances is by the school debating team. A member of the New York State Debate Conference, Saint Frances records all of their debates on standard 16" discs.

Script Writing Contests Close

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have also been received from regional winners in such major centers of school radio activity as Detroit, St. Louis, Pittsburgh, Hartford and Birmingham. (According to contest rules regional winners are also eligible for prizes in national competition.)

Mr. Boutwell also confides that 1948 will far outshadow last year in total entries. He believes that this is due to two factors; wider publicity for the competition (we hope Audio Record helped) and the rapid growth of high school radio workshops. "Every day," he says, "brings news of an additional high school radio workshop."

Dr. Sherman P. Lawton, AER Script Contest Chairman, also reports that student interest in the National Script Contest is far greater than anything he had expected. And, although this is the first year such a contest has been conducted for college students, Dr. Lawton advises that he is more than satisfied with the results.

Contest winners in both the SCHOLASTIC and AER competition will be announced in the May Audio Record.

Comment

The interesting thing to note is that the process of going from the original recording to the mother is done electronically rather than electrochemically. The saving in time, if enough mothers are needed, may amount to several days.

References

1. GLOSSARY OF DISC RECORDING TERMS, *Audio Record*: Feb., March, May, June, July 1946.
2. H. E. ROYS, *Intermodulation Analysis as Applied to Disc Recording and Reproducing Equipment*, Proc. I.R.E., vol. 35, no. 10, pp. 1149-1152, October 1947.



George M. Sutheim, Chief Chemist, at work in Audio Devices' Research Laboratory.

Research at Audio Devices

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six-man staff. Ernie would like Audio Record readers to know these men, so we take pleasure in introducing them here. . . .

George M. Sutheim (#3 in photos—Pg. 1). Mr. Sutheim is Chief Chemist at Audio. A graduate (Chemical Engineering) of the Institute of Technology in Vienna, he is a chemist of long standing in the field of varnishes, lacquers and emulsions. From a chemical standpoint, Mr. Sutheim rigidly controls the components that go into each and every Audiodisc. Improved formulation of Audiodisc coating is always on his agenda. Authored "The Introduction of Emulsions" and contributed to Dr. J. J. Mattiello's "Protective and Decorative Coating". Also author of many articles on coatings and film, etc. in both French and English periodicals.

Harold J. (Andy) Southcomb (#1 in photos). Andy (as he is affectionately known to his co-workers) Southcomb's contribution to Audio Research is his wealth of knowledge of phonograph records, materials, techniques, etc. Formerly with RCA Victor and Decca Records, Mr. Southcomb is currently working on special products at Audio, including magnetic tape, etc. His experience in the field of paper, plastics and adhesives makes him a particularly valuable man in this development work.

Stephen Schettini (#4). Steve Schettini, it can be said, would be lost without the Research Department gang, but not half as lost as they would be without him. For Steve carries a mighty big load for Ernest Franck and Company. You might, and you should, call him an experimental machinist and technician. Mr. Schettini is responsible for the construction of special equipment used in the department's experimental work. Steve has the ability to interpret someone's idea and put it into a physical reality. For example, if the Research Direc-

tor wants to test a particular material and needs a special device to accomplish this end, Steve retires to his special workshop and designs and builds the contraption. Also, Mr. Schettini has been involved with the magnetic tape development.

Frank Radocy (#5). Former Captain in the Army Air Corp., Frank Radocy is in charge of the department's production activities. Responsible for lacquer formulation on production basis. Frank makes up special formulation cards on a batch-by-batch basis. Also, he is doing magnetic tape production, being responsible for individual cards on each tape lacquer batch and the mechanical operations necessary for them.

David S. Gibson (#6). Thirty one year old Dave Gibson is a recording lacquer specialist. His work in the department, besides lacquer experimental formulation and

quality control, includes styli and groove shape studies as well as special development work. In the recording lacquer end, Dave in addition to testing the lacquer coated discs on a turntable, also makes humidity tests to determine how well the lacquer holds up under varying temperatures and humidity. In these recording tests both styli and grooves sections are examined with a special projection microscope which magnifies five hundred times. Additional playing tests are also made for surface noise and wear.

Allison B. Randolph (#7). A radio technician, Mr. Randolph has had a number of years experience in the technical end of radio. He is the maintenance man on all electronic equipment in the laboratory.

That's it. That's Ernest Franck's Research Department line-up. And a qualified crew it is, too.



Voice of America!...
... ON **audiodiscs***

The Voice of America gives to other nations a full and fair picture of American life, aims and policies, plus factual news of the world and the United States.

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Of the thirty-two hours of daily broadcasting, approximately one-fourth of the time is devoted to

news items, one-half to additional comment and informational programs, and the remainder to music and entertainment.

A substantial part of these daily programs is recorded and, due to the excellent quality of these transcriptions, such recorded portions cannot be distinguished from the live transmissions.

Today, as from the beginning, the recorded parts of these world-wide broadcasts are on Audiodiscs.

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*Reg. U.S. Pat. Off.



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