

May, 1958, Vol. 14, No. 1

audio record

Published by
AUDIO DEVICES, INC.
444 MADISON AVENUE, N. Y. 22, N. Y.

audiorecorders
audiotape
audiofilm
audiopoints



**WTP... AN INTERNATIONAL
"PERSON TO PERSON"**

... on tape!



THE TAPE RECORDER AT UNIVERSITY SCHOOL

Excerpts from the
FIRST-AWARD ENTRY
 in the High School Division of
Audio Devices' \$16,000
Educational Awards

UNIVERSITY SCHOOL
 Carbondale, Illinois

For this winning entry, which demonstrated the most constructive use of sound recording, Audio Devices has awarded \$2,750 worth of recording equipment and supplies to University School — including the following items:

- (1) Bell Sound System RT-75 Tape Recorder
- (1) Mohawk "Midgetape" Tape Recorder
- (1) RCA 8STP1 Tape Player
- (4) Magnecord N35-B Tape Recorders

In addition to these machines, University School received over \$800 worth of Audio-tape and accessory items.

The nature and functions of the University School curriculum are considerably different from those of the typical public school. The curriculum in University School includes grades pre-kindergarten through senior high school. It provides special education for the mentally retarded who are educable and special work for the speech and hearing handicapped. In addition, it offers facilities for student teaching. Emphasis is also being placed on research in educational methods. University School is part of the Southern Illinois University system.

Here is how the school would use the equipment in some of its departments:

A. Student Counselling and Guidance:

1. To record data for research in methods of counselling and guidance including diagnostic interviews, therapy sessions, and follow-up interviews.
2. To record clinical sessions to be used in teaching internees procedures and methods for clinical work.
3. To record and play back for students who are in counselling previous sessions in order to let them note changes in attitudes.

4. To record and play back sessions with students in order to understand accurately the implications of a given session; to refresh memory of accomplishments and problems left over from previous sessions.

B. Speech and Hearing Rehabilitation:

(The University is staffed with a competent member trained in educating children with language handicaps.)

1. To record initial speech diagnosis.
2. To record clinical procedures.
3. To record initial and terminal speech performances of students.
4. To record students' performances during drill sessions and play them back to reinforce learning.
5. To record entire process of specified clinical cases to be filed and used for training interneec clinicians.
6. To create a library of usable tapes to serve as teacher training aids in classroom treatment of minor speech defects and also for use of other schools in the area.

C. Foreign Language Classes:

1. To record materials for student listening.
2. To record student performances in pronunciation, inflection, and articulation.
3. To develop an international "Voice Pals" Club.
4. To record classroom activities for rebroadcast over radio stations.

D. Speech:

1. To record and play back for students and student teachers the initial and terminal speech efforts in class.
2. To record specially selected classroom efforts to use as demonstrations in teaching methods to prospective teachers.
3. To record and play back sound effects and incidental music for dramatic and radio shows.
4. To record and play back material for the unit in critical listening.

5. To learn how to handle audio equipment and speak into a microphone.
6. To develop between University School and other schools, at home and abroad, communications by use of *Voice Letters*.
7. To record and play back personal, on-the-spot interviews with judges, lawyers, ministers, police, prison administrators, sociologists, and laymen.
8. To record and play back class sessions in which the group discusses the problem from location and definition to final determination of the answer to the question attacked.
9. To record and play back sound effects for use in the three act play which the class is writing, producing, and directing.
10. To record and play back classroom activities to demonstrate student's characteristics of leadership.
11. To take equipment with students when they go on a trip to neighboring schools and put on demonstrations of "the way in which we conduct our speech class."
12. To make sound recordings to accompany visual projects, such as a slide series, film strip, or even a moving picture.
13. To use devices to introduce student teachers to values of audio education.
14. To develop a radio facility.

E. The Sportscasters' Club:

(University School this year started an activity for those boys interested in athletics but unable to participate in the interschool program of competition.)

1. To tape all games at home or away and play back games for students at noon-hour recreation program, for players, and for faculty.
2. To record and play back for practice sports events on television and radio stations in the area.
3. To record events at home and away for delayed broadcast over the University FM station.

(Continued on Page 7, Col. 1)

audio  record

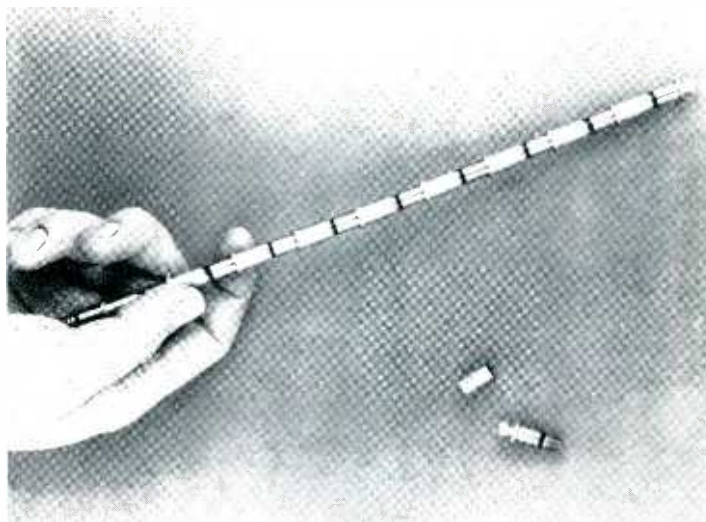
VOL. 14, NO. 1

MAY 1958

Published 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.



New high current silicon power rectifiers introduced by Audio Devices include models with 400 volt peak inverse rating, and maximum forward current ratings from 25 amperes to 200 amperes. Picture above shows extreme compactness of new rectifiers, which are hermetically sealed and individually tested at full load with temperature and humidity cycling. Unit on left shows size of 100, 150, and 200 ampere models; that in the middle shows size of 50 and 75 ampere models; and that on the right the 25 and 35 ampere models.



The "expandable rectifier," made by Audio Devices, provides first high-voltage rectification at mass production cost. The individual A750 silicon rectifier, threaded at each end, has peak inverse rating of 400 volts and forward current rating of 750 milliamperes. Units can be quickly screwed together to form series chain, using Audio Devices' inexpensive threaded bushings. The ten-unit assembly, shown above, has rating of 4000 volts; for higher ratings additional units are connected. Threaded units with current ratings up to 5 amperes are also available and can be similarly assembled.

AUDIO DEVICES OPENS NEW RECTIFIER DIVISION

The idiom of Audio Devices — through-out its history made up of magnetic and disc recording terms like "noise level," "print-through," and "harmonic distortion," — has in the last few months been enriched with a strange new vocabulary that includes "monocrystals," "doping," "crystal puller," "dicing," and other terms from the technology of semi-conductors.

The cause of this enrichment of vocabulary: Audio Devices has undertaken a major diversification of its manufacturing operations, with a completely new division for the manufacture of silicon rectifiers. As a result, the Company is now dealing with an explosively expanding component market that extends throughout the electrical, electronic, and electrochemical industries. How the new Rectifier Division was established, why the new product was chosen, and what it means to the future of Audio Devices are explained briefly here.

After careful study of new product possibilities over a period of years, the management of Audio Devices decided that the silicon rectifier had the most attractive potential for growth, as a broadly-used basic component. Accordingly, in August 1957, Audio secured the services of George Eannarino, one of the best known executives in the rectifier field, to head a new Audio Devices Rectifier Division. His many years of experience in directing the development

and manufacture of a semi-conductor rectifier included executive positions at Motorola, Federal Telephone and Radio, and Sarkes-Tarzian.

A New Plant

Mr. Eannarino chose Southern California as the area in which the Rectifier Division should locate its plant, because the dirt-free dry air and mild climate would be advantageous for the precision moisture-free operations of silicon rectifier manufacture. By good fortune, a just-built steel-and-concrete factory building, with 30,000 square feet of operating space, was found in Santa Ana. It had never been used by the builder because of a change of plans. Audio Devices bought the building, and Mr. Eannarino directed the installation of a million dollar's worth of manufacturing facilities. Starting thus with an empty building, Mr. Eannarino reached regular production in the short time of four months, and rectifiers are now coming off the production line in substantial quantities.

Why did Audio Devices choose the silicon rectifier for its first large-scale move outside the recording field? The near-universal applicability of a rectifier can be seen in the following sample list of devices and systems that must have rectifiers to operate, or that use rectifiers if a suitable type is

available: radio and television broadcast receivers and transmitters; electronic computers, commercial and military communications equipment, home high fidelity amplifiers, motion picture sound equipment, electrostatic precipitators, coin machines, electro-plating, variable speed motor controls and drives in factories, aluminum production, elevator systems, lifting magnets, magnetic ore separation, welding machines, cyclotrons and other atom smashers, electric locomotives, cranes in factories, carbon arc lamps, battery chargers, telephone central office equipment, railway signal systems.

There are dozens of others, but this list gives an idea of the brain-whirling variety of uses for rectified electric power, and also of the tremendous range of power levels involved. To get the full force of this range, consider first the small ac-dc radio receiver, which may draw 15 watts of rectified power; and then consider an aluminum production "pot line" with a power requirement of several million watts.

Unlimited Utility

The exciting fact about silicon rectifiers, that assures them of an immense future, is that they can be made in a range of sizes to handle both of these power levels, and all those in between, far better than any of

(Continued on Page 6, Col. 1)

WTP — AN INTERNATIONAL



World Tape Pals on the cover are: 1. Mr. Ed Tweed, Scottsdale, Arizona; 2. Dr. and Mrs. Louis Baguenier-Desormeaux, Bauge, France; 3. Miss Judy Farkas, Durban, South Africa; 4. Mr. Wilfred Francfort, Couvet, Switzerland; 5. Yaere Yadede, Los Angeles, California; 6. Mr. and Mrs. Eric Channon, Sussex, England; 7. Mr. Kenneth deCourcy Low, Warwick, Australia; 8. Mr. Herbert Braun, Cologne, Germany. Photo 9 is the founder and president of World Tape Pals, Mr. Harry Mathews of Dallas, Texas.

By KATHY HEIDT

The idea of sending tape recorded messages to your friends and relatives in distant cities was probably born along with the first tape recorder. Now the field of tape exchange includes thousands of people exchanging tapes on hundreds of subjects.

When Harry Mathews, linotype operator from Dallas, Texas, bought his first tape recorder in 1952, he was overjoyed to find that he could send a recording to his son with the armed forces in Korea. From this beginning, he became intrigued with the idea of exchanging tapes with complete strangers in distant lands. A printer with a large family will never be a rich man, but he could enjoy the pleasures of visiting other countries vicariously, by listening to music and descriptions of these places by those who live there.

On a Sunday afternoon in November, 1952, Harry and his wife, Marjorie, spread a world map on the dining table and listed the major cities of the world. After his working hours, Harry set in type a letter addressed "Editor, Newspaper," expressing his desire to hear from individuals in other countries who had access to a tape recorder. His idea was to form an organization of people interested in exchanging tape recordings for mutual pleasure and information. Some three hundred of these letters were mailed out in English and Spanish. The letter itself was printed in Dutch, Japanese, German and Spanish, and mention of it was made in newspapers of many countries.

Answers to this appeal began trickling in, and World Tape Pals was begun. The desire to learn about his fellow man seemed universal with Man everywhere.

Tape Topics is Born

Because he was employed in the printing trade, Harry took it upon himself to have a membership roster printed. Then the members began writing, and sending tapes, to Harry with special requests, with news of good friends they had made through tape exchange, with announcements of weddings, births, and deaths. A publication of some sort was needed to give all this news to the members, thus expanding and maintaining interest in tape exchange. And so *Tape Topics* was born in 1953. *Tape Topics*, official WTP publication, appeared three times a year during its first two years of existence, then settled down to a quarterly publication. In 1957, it was changed to a bi-monthly publication in magazine form. It carries general news of the association, news of tape activities in the various countries, tape club news, articles of interest to teachers and students, personals, and stories of new developments in the tape recording and electronics industries.

The current Membership Roster, issued last July, contains 2,100 names of members in 56 countries. Since July, there are over 900 new members. In addition, the countries of Uruguay, Nicaragua, British West Africa, Fiji, Ceylon, Pakistan, Transvaal, the Rhodesias and Nyassaland have been added to the listings.

Everyone Wants to Make Friends

Correspondence from World Tape Pal members in all countries reflected one main interest from the beginning of the organization. Men everywhere were desirous of making friends in other countries in order to better understand those countries and improve international relations. The growing fear of atomic warfare, making us all conscious of the need for free interchange of ideas among nations desiring peace, turns us to any means of communication available. World Tape Pals grew from an individual hobby idea into an incorporated association for the exchange of recorded tapes whose slogan is "World Peace Is Simply A Matter of Understanding." The group has no political nor religious affiliation. Each member selects his own correspondents and discusses whatever topics he feels will be of interest to his pal. Music and photography are common meeting grounds for many WTPs.

From the beginning it was obvious that

some means of financial support was necessary to furnish printed rosters to all members and to publish *Tape Topics*. A membership fee of \$3.00 per year in the U. S. and Canada and subscription of \$2.00 annually for *Tape Topics* were decided upon. Handicapped persons are extended gratis membership in WTP. Tape recorders are especially valuable tools to blind persons, and membership in WTP provides a meeting-ground for these persons.

Actually, the membership fees and subscriptions have never met the requirements of the association. Growth of membership outside the U. S. was so rapid in 1956 and 1957 that finances has become one of the major problems of the association. Bills for printing so far have been personally guaranteed by Harry.

A Tape to Patty

The World Tapes for Education Program sponsored by WTP assists and encourages the exchange of taped programs among school classes of the various countries. This program was begun after an English schoolgirl sent such an interesting tape describing her school life to Harry's daughter, Patty, that she played it for her classmates. Patty's teachers recorded the school choral club's Christmas program, and Patty mailed it to her little tape pal



Alan J. B. Wilson weds Miss Daphne Halfhide, after a courtship that started on tape through membership in World Tape Pals. Alan was a sales representative for Lever Bros. Co. in Singapore, and Daphne was an office worker in Paignton, Devonshire, England when they began their tape correspondence. Upon returning to England, Alan met Daphne and continued the courtship on a more personal basis. The wedding took place in an ancient church in Paignton on Sept. 22, 1956.

L "PERSON TO PERSON" . . . ON TAPE!

in England. Other WTP members found interesting tapes useful to their children in learning about countries beyond the seas. As reports of these exchanges became more numerous, a special section in *Tape Topics* was set aside to report these exchanges and called "World Tapes for Education." Now a committee of educators directs the activities of WTP, listens to and appraises tapes donated for educational purposes, and assists school groups in making beneficial tape exchanges.

The most recent development of World Tape Pals is sponsoring and encouraging local tape recording clubs, which join WTP as a unit. These clubs are especially useful where several people meet together to share use of one or two recorders. Through WTP membership they can participate in tape exchange as a part of a group.

WTP in Action

World Tape Pals means many things to many people. One person is learning Spanish and German through his membership in WTP; another exchanges ideas and information on radio and electronics with an expert five thousand miles away; a third takes his family and neighbors on travel tours all over the world by the exchange of 35mm color slides with taped commentaries. A geography class hears Holland described by a Dutchman one week and listens to the reedy songs of Java sung by children of that country the week following. A journalist and news commentator uses comments from tape correspondents on the subjects of the day as a basis for his radio broadcast.

At least one romance has had its beginnings across many miles via WTP membership. Alan Wilson, young Englishman who was working for Lever Bros. in Kuala Lumpur and Singapore began a tape exchange with Daphne Halfhide, pretty young office worker in Paignton, Devonshire, England. About a year later Alan was transferred back to England. He looked up his tape correspondent, and three months later they were Mr. and Mrs. The Grundig Recorder manufacturers learned that they had met via tape and publicized their wedding in the London *Daily Mirror* Sunday Supplement. They even presented them with a wedding cake in the shape of a tape recorder. Alan later said he would have preferred a tape recorder in the shape of a wedding cake! Alan and Daphne were married September 22, 1956. Last December they announced the birth of their son, Ian Peter Grant Wilson.

Some three years ago, a young Jewish refugee sent a tape recording to his father



Jayneeces (wives of Junior Chamber of Commerce Members) of Oneonta, New York, tape answer to Jayceettes of Warwick, Australia. The exchange was made through the help of WTP members Kenneth deCourcy Low (cover photo No. 7) of Warwick, and Vernon Smith of Hartwick College, Oneonta. (Picture Courtesy of the Oneonta Jayneeces (wives of Junior Chamber of Commerce Members) of Oneonta, New York, tape answer to Jayceettes Star.)

who was ill in a Mexico City hospital. The young man, Yaere Yadede (changed from Ya'ir Yadid Freund), had not seen his father for seventeen years, after the divorce of his parents. During World War II, the father came to Mexico. The mother and step-father came to New York at the close of the war, while Yaere studied at the University of Jerusalem and later worked in Displaced Persons Camps in Italy and France. He was able to come to the U. S. where he married and settled first in California, teaching languages. Upon hearing of his father's illness, he tried to go see him, but was denied a visa because he was not yet an American citizen.

A Father Hears His Son's Voice

Sr. Jose Turu, a WTP member in Mexico City, took his tape recorder to the hospital and played Yaere's message to his ill father. The father died before Yaere received his citizenship and was able to make the trip to Mexico City. And so, WTP brought happiness to a dying man through the voice of his son whom he had not seen for so long. (Yaere's photo is No. 5 on the cover of this magazine.)

Many WTP members have recorded two-way messages for friends and relatives to loved ones in other countries whom they have not seen for years. The Matthews sent two tape messages from their 85-year-old German neighbor, Otto Kruger, to his sisters in West Berlin whom he had not seen for 45 years. A WTP member, Dr.

Joachim Hiller, was kind enough to call them to his home to hear the messages and record answers. Mr. Kruger was deeply touched.

The Movement Grows

On September, 1956, a group of leading American citizens assembled at a special White House Conference and formulated the People-to-People Program with the aim of building a massive program of communication between Americans and citizens of other lands. The ideas set forth by the PPP committee were almost identical to those under which WTP had operated for four years.

Harry Matthews was asked to serve as head of a subcommittee on Tape Recording Exchange. During the past year, hundreds of copies of President Eisenhower's speech setting forth the principles of the PPP have been sent to overseas WTP members. Through WTP, the People-to-people Program has been given publicity in magazines and newspapers in Great Britain, Europe, South Africa, Australia, New Zealand, and other countries.

From a survey of WTP members, it was found that each person who sends tapes overseas has an audience of not less than twenty individuals who hear his comments on life in these United States. Multiply that by the number of persons engaged in tape exchange, and the results are staggering. Truly the tape recorder makes each of us an ambassador for our country.

Audio Devices Opens New Rectifier Division

(Continued from Page 3, Col. 3)

the rectifier systems used up to now. The superiorities of the silicon rectifier are conclusive: (1) it has the highest available rectification efficiency, of the order of 99%; (2) it develops less heat in operation; (3) it stands up to much higher temperatures without loss of efficiency, and without injury, as compared with any other semiconductor rectifier; (4) it takes less space than any other rectifier of comparable power-handling capacity; (5) it does not lose efficiency because of aging, over its very long service life; (6) it nearly always costs less, and often considerably less, than the rectifier system it replaces or substitutes for; (7) the forward voltage drop is only 2 volts or less.

With this line-up of characteristics, the silicon rectifier is considered today to rank with the transistor as the "hottest" thing in electronic components since the introduction of the vacuum tube itself. Total industry sales of silicon rectifiers at the \$100,000,000 annual level are predicted for a few years from now.

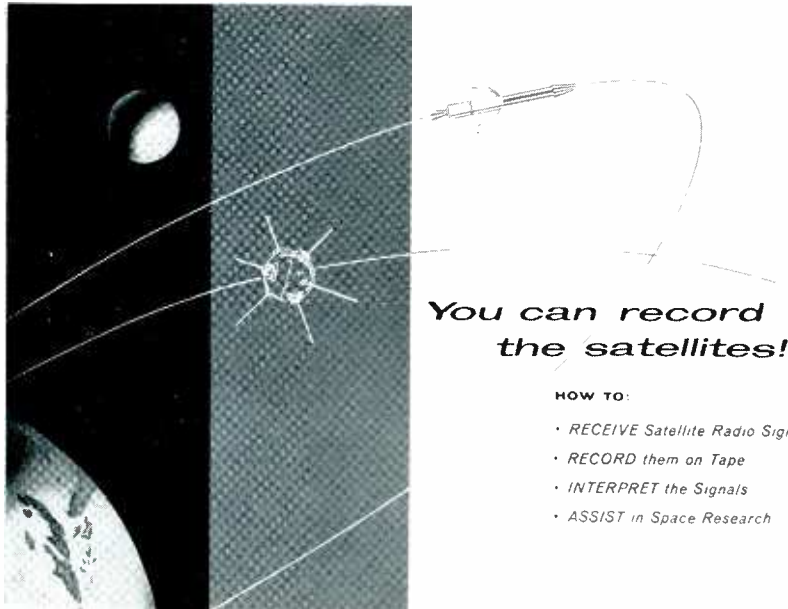
Principal models in the Audio Devices line now include the A750, with a peak inverse rating of four hundred volts and a maximum forward current rating of 750 milliamperes; and units with forward current ratings of 5, 25, 35, 50, 75, 100, 150, and 200 amperes. Models with higher current ratings will soon be in production.

Electrons and Holes

The operation of the silicon rectifier is based on the properties of crystals of extremely pure silicon, to which minute quantities of special impurities are added. With one kind of impurity, the crystal has extra electrons which can move through the crystal structure under the influence of an electric field. With another impurity, the crystal has "holes" which can be considered units of positive electricity, also able to move through the crystal. When there is a junction between a "negative" crystal and a "positive" crystal, the holes and electrons arrange themselves around the junction in such a way that current, represented by the motion of the electrical charges, can pass in one direction and not in the other.

The manufacture of silicon rectifiers is a high-precision process. It starts with the melting of super-pure silicon in a crucible, which requires a temperature of over 2500 degrees Fahrenheit. The proper impurity is added to the melted silicon ("doping"). Then the melt is held at the critical temperature just between melting and freezing. A rod with small seed crystals on the end is dipped into the melt and slowly withdrawn. A crystal forms on the seed, and a column

You can record and interpret satellite signals



**You can record
the satellites!**

HOW TO:

- RECEIVE Satellite Radio Signals
- RECORD them on Tape
- INTERPRET the Signals
- ASSIST in Space Research

What are the satellites saying? From the limitless void of outer space, their radio voices are continuously sending out coded data on the conditions which they encounter — cosmic rays, meteorites, temperatures and other phenomena of great value to our understanding of the universe in which we live.

A tape recorder, an FM radio receiver and some ingenuity are all you need to receive and record these radio signals from outer space — and perhaps make a valuable contribution to our satellite program.

Although official tracking and recording stations have been set up at many points around the globe, there aren't enough of them to cover every point on each orbit. And amateur recordings from widely scattered locations throughout the country could very well pick up information available from no other source.

With a few modifications, you can adapt your home FM receiver or communications receiver to bring in the signals from the Explorer and Vanguard satellites. What's more, by recording them at a high tape speed and playing back at a lower speed, you can actually understand much of what the satellites are saying!

How to do this is fully explained in our new booklet (shown above), "You Can Record the Satellites." It tells you how to modify your equipment to receive, record and even interpret the satellite signals — and how to make your recordings available to the proper authorities in the satellite program. Ask your Audiotape dealer for a copy of this 12-page booklet. Or send 10 cents, to cover the cost of handling and mailing, to Dept. AB, Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y.

of silicon in crystal form follows the seed out of the melt.

The crystal is sawed into slices, and then each slice is "diced" to make small slabs of the crystal material. Each slab, after cleaning, is then heated again, sandwiched between two small plates of metal. The three elements are fused together, and the barrier between "positive" and "negative" elements is formed.

The leads are then attached to the assembly and it is mounted in a cartridge, which is hermetically sealed to prevent even the smallest amount of moisture from entering.

Every unit made is given a full-load test, with humidity and temperature cycling.

Audio Devices is applying to its rectifier manufacture the same no-compromise-with-quality approach that has given its magnetic tape and recording discs their pre-eminent standing. The future of silicon rectifiers is dazzling, with practically the entire electrical, electronic and electrochemical industries becoming dependent on silicon units for rectified power. The special quality that Audio Devices is building into its rectifiers makes it certain that they will play a big role in that future.



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

A New Tape Base Material

It is an incurable habit of the electronic industry that it is always demanding more and more in less and less space. Even the recording field is not immune to this tradition, and so we have often been pressed for more recording time on a smaller reel. Thus, a 7-inch reel of standard thickness would hold only 8 minutes of single track recording at the original 30 ips speed, while the same size reel of our LR tape holds 96 minutes of the modern 7 1/2 ips dual track material. If the trend continues for long, we may find an hour recorded on a reel so small that it must be handled under a magnifier. Fortunately for our factory's eyesight, tape has not yet arrived at that point, though it has become compact enough to provide double the usual playing time for home entertainment and expeditionary uses.



C. J. LeBel

In this last remark we were thinking of

our Super-Thin extra long recording material, which supplies 2400 feet on a seven inch reel, which footage provides over two hours on a twin track monaural recording at 7 1/2 ips. One unfortunate limitation of the past material was the reduced tensile strength, which led to trouble on some home machines and on many professional machines that were not deliberately readjusted to light tension. Previous half-mil polyester provided a base with almost the necessary strength, but not quite enough.

A New Material

The answer to this problem is found in DuPont's new variation on its Mylar material, which they call T-50 and we call "tempered." By orienting (stretching) the plastic more intensively and by adding 20% to the thickness, the tensile strength of "half mil" base has been nearly doubled. Let's look at some of our laboratory figures:

	Base Material		Tempered Improvement
	Standard	Tempered	
Tensile strength	2.9 lbs.	5.4 lbs.	87%
Force for 0.3%, permanent elongation	1.4 lbs.	1.8 lbs.	29%
Force for 0.8%, permanent elongation	1.5 lbs.	2.3 lbs.	53%

In the above, the tensile strength was measured on an Amthor Machine; permanent elongation was measured by maintaining tension for 5 minutes, then allowing the plastic 5 minutes, unstressed, to recover. All new materials are somewhat variable in characteristics from batch to batch, so these test results are typical rather than absolute.

The 87% increase in tensile strength has been attained at the expense of reduced temperature resistance:

Temperature	% Shrinkage	
	Standard	Tempered
140°F	0	0.2
150°F	0	0.4
205°F	0.6	7.0

The test was made with an unsupported 6" length of tape, and the time of exposure was about 15 minutes. Again, since this is a new material the figures are only typical.

It can be seen that we have nearly a 90% increase in tensile strength and a 30-50% higher elastic limit, but the temperature limit has dropped about 45°F. Military specifications for field equipment often contain a 160°F temperature limit, which is a bit more than the new material can meet.

The fact that the base thickness is only about 0.6 mil causes the print-through to be about 7db higher than for standard (1 1/2-mil) Audiotape. This is not serious for many applications, but it will trouble the professional. We may supply this material with our low print oxide on special order and at a premium price, if the demand warrants. This would bring the print-through back to "standard."

Summary

The new Tempered Mylar base looks very interesting for extra long recording time per reel and especially for home tapes where the increase in time outweighs the disadvantages of greater print-through and poorer temperature characteristics. It should be mechanically troublefree on home machines and in much professional use. However, we are presently reluctant to recommend its use where high temperatures may be encountered.

The Tape Recorder at University School
(Continued from Page 2, Col. 3)

F. The Music Programs:

1. To create a library of music on tapes.
2. To record and play back solo and small groups in both vocal and instrumental music for evaluation, musical appreciation, and practice.
3. To use in teaching a course in music appreciation given during the summer session.

G. Program for the Mentally Retarded:

1. To use as motivating devices for students to "put on programs."
2. To record raw data for research into problems related to increasing effectiveness of education of the retarded.

3. To record instructions for those students who learn better by hearing than reading.
4. To record instructions, directions, and materials for individual students, thus permitting the instructor to be free to work with other individuals.
5. To record audio events in the community that would be useful to the teacher in enriching the curriculum for the handicapped.
6. To use in the teaching of language skills. The mentally retarded depend upon repetition much more than the normal child. By recording materials for work in word meaning, spelling, articulation, and pronunciation, language skills will be more readily learned.

H. Physical Education:

1. To record and create a library of square dance calls for use by instructors in teaching social dancing and in teaching student teachers how to call dances.
2. To record dance music for use in social dancing units in class.
3. To record music for teaching units in relaxation, rhythmic, and gymnastics.

I. Home Making:

1. To record performances of members while practicing speeches for demonstrations.
2. To record and play back the script used by the announcer in each year's style show.

NOW: a **SUPER-THIN** Audiotape
that's **SUPER-STRONG**



NEW Super-Thin Audiotape on TEMPERED MYLAR* gives you DOUBLE THE RECORDING TIME yet won't stretch or break on any machine!

From the laboratories of DuPont has come a great boon to serious tape recordists—Tempered “Mylar”! This improved base material is actually *twice as strong* as ordinary 1/2-mil “Mylar,” giving you a double-length tape that can be used on any machine without danger of stretching or breaking under starting, stopping or rewind stresses. “Tempering” does away with the extra-careful handling required by ordinary double-length tapes.

With Super-Thin Audiotape on Tempered “Mylar,” you get 2400 feet on a 7-inch reel—a *full hour* of uninterrupted recording time on each track, at 7 1/2” per second, or *two hours* per track at 3 3/4” per second. In effect, it gives professional 10 1/2” reel capacity to any portable or home-type recorder that will take a 7” reel!

The doubled length and strength are achieved with no sacrifice in magnetic characteristics. This tape has the same superior performance and consistent uniform quality that have made Audiotape the first choice of professional recordists the world over. It is available *now*—in the following reel sizes: 5” (1200 ft.), 7” (2400 ft.) and 10 1/2” (4800 ft.). Stock up on this, or any of the other seven types of Audiotape, on the next trip to your Audiotape dealer.

*“Mylar” is a DuPont Trade Mark

audiotape
TRADE MARK

it speaks for itself

AUDIO DEVICES, INC., 444 Madison Ave., N. Y. 22, N. Y.

In Hollywood: 840 N. Fairfax Ave. • In Chicago: 5428 Milwaukee Ave.
Export Dept.: 13 East 40th St., N. Y., 16 • Cables “ARLAB”
Rectifier Division: 620 E. Dyer Rd., Santa Ana, Calif.



SUPER-THIN[™] audiotape
on TEMPERED Mylar[™]



...DOUBLE the recording time on a standard reel
...DOUBLE the strength

it speaks for itself

Manufactured by
AUDIO DEVICES, Inc.
10000th St., N. Y., N. Y.