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**TAPING THE SATELLITE
TO EARTH**

• See pages four and five

THE VOICE IN THE DARK



SECOND PRIZE winning article
in Audio Devices'
HOME RECORDING CONTEST

by Marybeth Hornbeck
Redondo Beach, California

Although the tape recorder entered our lives in a most spectacular manner, it has become as useful an appliance in our home as the toaster or vacuum cleaner.

At the age of five years our daughter was in an accident in which she suffered severe brain injuries. Brain specialists and psychiatrists offered no hope of recovery. At times she did not remember the name of her own dog and was not expected to learn anything. By the time she was eleven she could barely read pre-primer books although her desire and efforts were heart breaking. The University Remedial Reading program would not admit her. Tutors gave up after a few lessons.

I read of a Peruvian tenor who learned a German opera role by listening to tape recordings in his sleep. I was convinced that this method would by-pass the blocks which had been set up, perhaps detour the damaged areas of brain, and enable my child to learn to read, to learn anything.

Through months of inquiries, I learned of many uses that had been made of sleep-learning. I could find no one to instruct me, but decided I could do no harm with love and prayer to guide me.

I bought an inexpensive Pentron Model 9T3-C for its simplicity of operation and its clear sound. I knew nothing of the techniques of recording, but felt there should be as little mechanical distraction as possible. It took many days for me to erase the "tears" from my voice and achieve a soothing monotone.

Our daughter had retrogressed in personality, too, of course, and was afraid of

people, even old family friends. I started with assurances to her that she was glad to see old friends and make new friends; that she knew they were brought together for the good and happiness of each other; that she had as much to give in friendship as to receive; that her friends were glad to be with her; that she was an important part of their lives. In the background I used theremin recordings, for my own mood.

About a week after I started playing the recording each night in her sleep, she came into the house while I was playing these records, which she had never heard before. Her eyes opened wide with wonder and she exclaimed, "Why, Mother, that music is REAL! I thought it was DREAM music because I hear it in my dreams every night."

I was delighted to have a little proof that the recording was "getting through." I made four recordings and bought a timer to turn the tape recorder on and off during the night so it was repeated for fifteen minutes at ten o'clock, twelve o'clock, two o'clock and four o'clock.

After about two weeks I answered the doorbell one day. There stood my daughter with another little girl. "Mother," she said very graciously, "this is Jane, a new girl in our neighborhood. I wanted her to meet you and see my room." I know Jane will never in her life have an introduction so joyously accepted.

Now I began on spelling. Just the mention of this subject had always brought on hysterics, so convinced was she that she could not learn. I started with the basic word list, repeating each word three times

and then starting over at the beginning. Each day I added twenty words, also assuring her that she could spell them, that she could learn anything she needed to know. Gradually the resistance disappeared and she gladly practiced aloud.

In some weeks she announced that she did not have to study spelling — she just read the words once and she knew them.

At this time I began to tell her she could read; that she recognized words when she saw them and remembered their meanings. These experiments were begun in May, when she could barely read PRE-primer books. In September she could read at the sixth grade level! She writes very legibly, gave the best oral book report in her room last semester, is an active member of a Girl Scout Troop and sold next to the most cookies in the Troop cookie sale.

The tape recorder had seemed to grow heavier each day as I carried it in and out of her room after she was asleep and before she awoke. A friend brought me a pillow speaker, of unknown make, flat and covered with heavy flock so it was possible to slip it under the ear without discomfort. With a long cord, it was possible to take this from room to room without effort.

In the meantime a young girl with many emotional personality problems came to live with us. She was withdrawn, suspicious, unfriendly, awkward, totally unaware of her charm or potentials. Since she was older, I discussed with her the possibilities of self-improvement through sleep training. We worked out a recording which we used over a period of several months with very happy results.

The girls had used the tape recorder for amusement. Now they began to use it to improve their speech. They obtained exercises from the high school Public Speaking teacher. When there was an oral report required, it was prepared, talked into the mike, played back, analyzed and corrected. When satisfactory it was recorded and played during the night with the added suggestions that it would be presented clearly, loudly and with expression. Both girls made outstanding contributions in this classwork.

Our school district broadcasts stories for children each day. Whether I am at home

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or not I set up the Pentron to record them. In our neighborhood there are many young children who frequently spend the night at our house. They are happy because the "Whisper Lady" always has a story for them; a story no one else can hear. She uses their own name and she knows what stories they love to hear. At the end of a story about a fat little "hippopopamus" she tells them to wrap themselves in God's love, like a warm blanket, and sleep sweetly, with beautiful dreams. Some of the children had nightmares because their fathers were in Korea or away at sea; some of them chewed their fingernails or sucked their thumbs. The "Whisper Lady" knows about that too and tells them they will keep their hands beautiful. No one has nightmares anymore and there are pretty pink fingernails on every hand.

My husband works with aircraft, projected several years in the future. There are constant changes involving corresponding changes in code numbers of parts and tooling. This was a strain and a plague until he started to record pages of them at a time and playing the tape in his sleep.

I was taking heavy college courses at night. I was often so weary and sleepy that I did not get as much out of lectures as I should. With the instructor's permission I recorded his lectures and class discussion. In the morning I could listen to them when

I was rested. I recorded my assignments and noticed a peculiar "ripening" of my understanding of textbook passages. Paragraphs that were rather obscure as I read them into the mike became very clear after I "listened" to them in my sleep.

My sister was going to Germany and could not locate pre-recorded tapes so had them made by a local teacher. When she went abroad she took her tape recorder. Her tutor comes to dine once a week and leaves a tape to be listened to all week.

My mother fell, injuring her shoulder so that she was unable to write for many months. She bought a Revere Tape Recorder and keeps a tape in the mail, a round robin sort of tape. It is a delight to hear her voice and we shall never settle for letters again.

My husband works nights so he requests a tape on any TV or Radio program he wishes to hear. Some talks on National or International affairs we preserve for the future. My husband built slanting files in which we store our used tapes. They are identified on the side of the boxes and are easily removed.

With so many uses for the tapes, one tape recorder was not enough; yet we could not immediately invest in another. Then we found the Bell Playback. We had an old Wilcox Gay Recordio, long since discarded

except for the radio. By stripping the cabinet to the base level we could use the Playback. With this we needed another pillow speaker. We bought a "Hushatone" which was not as convenient as the old one as it has to be put under the pillow or fastened to the mattress or headboard. But it has a mellowed sound. We also bought an unmounted switch clock.

We built a unit by purchasing a motor, a turntable, speaker, etc. We found it cheaper to buy a single speed record player . . . the only difficulty being that many small record players are not large enough to accommodate the Tape Playback. We learned that the Hushatone was not necessary when the room was not shared, the sound directly from the speaker does not disturb the sleeper.

We try each brand of tape as it is introduced. Since we erase our tapes and use them over so frequently the erasability is a prime factor with us. We have found Audiotape best for our use.

We still know little about "frequency response" and "optimum bias set," but we learn by experience every day. Did I say our Tape Recorder was as useful as our Toaster or Vacuum Cleaner? We use the toaster once a day and the vacuum once a week but we use our tape recorder around the clock every day.

"HOW TO MAKE GOOD TAPE RECORDINGS"

This completely new handbook of tape recording contains up-to-the-minute information of interest and real practical value to every tape recordist. Profusely illustrated with photographs, charts and diagrams prepared especially for this book, it contains 150 pages of valuable information on all phases of modern tape recording. The author, Mr. C. J. LeBel, is one of the country's foremost authorities on sound recording.

"How to Make Good Tape Recordings" is written in simple, non-technical language. It can be read and easily understood from cover to cover by even the most inexperienced home recordist. Yet it contains such a wealth of practical information that it will be a valuable aid to professional tape recordists as well.

The following chapter headings indicate the scope of the material covered:

- How a Tape Recorder Works
- Characteristics of a Tape Recorder
- Selecting a Tape Recorder
- Selecting a Recording Tape
- Using the Tape Recorder

- Making a Microphone Recording
- Acoustically Treating the Studio
- Tape Editing
- Binaural or Stereophonic Recording
- Putting Together a Recording Show
- Glossary of Tape Recording Terms

In addition, the book includes the following chapters, contributed by leading authorities in their respective specialized fields:

- Microphone Recording* — by Vincent J. Liebler, Director of Recording Operations, Columbia Records, Inc.
- Tape Editing* — by Mr. A. A. Pulley, Administrator, General Recording, RCA Victor Record Department.
- Use of Sound Effects* — by Mr. Herman Haverkamp, Assistant Director, Radio Station WNYE.

"How to Make Good Tape Recordings" is available in a deluxe cloth-bound edition at \$2.50, or the economy paper-bound edition for \$1.50. Get a copy from your Audiotape distributor or send a check or money order direct to Audio Devices, 444 Madison Avenue, New York 22.



TAPING THE

First artificial moon will "talk" to engineers
on Earth through EP Audiotape



It is February 16, 1958. The time—evening twilight, shortly before "zero hour" at Patrick Air Force Base, Cape Canaveral, Florida. The air is charged with expectancy. A momentous event is about to take place—the culmination of years of planning, research and meteorological investigation. All eyes are focused on a huge, needle-shaped rocket whose slender silhouette towers 70 feet into the darkening star-studded sky. It is unlike any rocket ever launched before. It is a "moon" rocket.

Concealed within its slender, conical nose is a 22-inch sphere—a man-made satellite which is about to be launched into outer space. It is an artificial "moon," destined to circle the earth and add its infinitesimal reflected brilliance to the stars of the firmament.

The seconds tick off—6, 5, 4, 3, 2, 1, zero!

With a roar of flaming power, the silhouette begins to move—raising itself, slowly at first, on a pillar of incandescent gases. Faster, now—incredibly faster, it

blasts its way up into the darkness. Shooting suddenly above the shadow of the earth, it emerges into sunlight—now a brilliant, smooth projectile tracing its course among the stars. Smaller and smaller now, it bends its course toward the south and east—streaking upward and outward over the broad Atlantic. A flash of brighter light—and the projectile gains further acceleration as the second rocket section belches a flame of power. Then the third section takes over, pushing the satellite into its final orbit as the second section drops away. Finally, at a height of over 200 miles and a speed of 18,000 miles an hour, the "moon," released from its rocket cage, floats free in outer space—its centrifugal force delicately balanced against the earth's gravitational pull. There, in an elliptical orbit, it will continue its course around and around the earth.

This man-made moon, unlike our natural satellite, is not a dead and lifeless thing. Within its spherical magnesium shell is one of the most compact and ingenious assemblies of complex instruments ever devised. This moon can "think" and "talk." Not in words, of course. But in radio impulses which keep it in constant contact with observer stations on earth. Through these impulses, recorded on extra-precision Type EP Audiotape, our man-made satellite will report its findings and tell the story of its life. Even within the satellite itself, a tiny tape recorder developed by Prof. J. A. Van Allen and his associates at the State University of Iowa will store information on cosmic radiation throughout each orbit.

The exact time and the date of the first satellite launching are just speculation at this point. But the "moon" itself is very real, and the information which it will convey to the tape-recorder stations on earth will be of inestimable value to meteorologists and geophysicists the world over.

Although the application of EP Audiotape to the recording of "moon" signals is an exciting part of a much-anticipated international geophysical research program, there are other projects of equal significance, some of them already well under way. But let's start at the beginning—with IGY.

Did you ever run across those letters before? They stand for International Geophysical Year.

What is the International Geophysical Year? Well, first of all, it isn't really a year. As a matter of fact, IGY (as we'll call it from now on) lasts 17 months—from July, 1957 to December, 1958. However, despite the misnomer of "Year," IGY is definitely International—over 5000 scientists from about 50 nations will participate—and it is "Geophysical."

That is, IGY will involve a concerted effort to find out more about this Earth of ours: what it's made of, what influences it, how it's shaped, and so forth.

One reason for holding IGY during the particular 17 months chosen is that sunspot activity will be at the height of its 11-year cycle during this period. To make coordinated research on this and other phenomena, it was decided to hold "world days"—each a specific 24-hour period during which scientists all over the world will concentrate on gathering data which can be correlated and compared later.

It is obvious, of course, that satellites and rockets will play an essential part in the observation and collection of much of the data. Not only will rockets be fired all during the IGY, but special firings will be made during "world days," and other special intervals.

For the past few months the United States, with Canadian cooperation, has been launching rockets from a recently completed firing installation at Fort Churchill, Manitoba, Canada. This series of test-firings is a preliminary to the 80 rockets which will be fired during IGY.

The United States has come a long way since its first experiments with captured German V-2 rockets. Two of the latest types of rockets will be fired during IGY.

The Nike-Cajun will be used for lower altitude observations. It can rise 95 miles.

The Aerobee can go up 180 miles with about 150 lbs of instruments. It is a larger, refined version of the famous WAC Corporal.

The instruments being used at Fort Churchill to measure the flight paths of the various rockets, are the most accurate



The first Ballistic Research Laboratories rocket firing to be a preliminary to IGY. This is a Nike-Cajun (the Nike as the booster and the Cajun for the second stage) launched at White Sands Proving Ground, N. M., on August 9, 1956. The Nike-Cajun is one of two types of rockets to be fired during IGY.

SATELLITE TO EARTH

equipment of their kind ever built. They were developed, installed and operated by engineers from the Ballistic Research Laboratories of the Army's Ordnance Corps.

Both electronic and optical systems are being used to track the rockets. The electronic system is the one which utilizes magnetic recording tape—Type EP Audiotape, of course.

This system, called DOVAP, is vastly superior in measurement precision to the radar tracking systems developed during World War II. The heart of the DOVAP system is a small radio receiver-transmitter which is carried by the rocket. This special transponder, in response to radio signals transmitted to it from the ground, sends out replies to a number of ground receiving stations.

The signals received at these ground stations permit detection and measurement of rocket motions of less than one foot. Continuous recording of these "doppler" signals on Audiotape enables the scientists to calculate the trajectory of the rocket with an accuracy of a few feet. In addition, they can determine the speed of the rocket within one foot per second. Thus, the recording of data to calculate trajectory and determine speed is Audiotape's first use with the rockets.

The same phenomenon of the "doppler" effect will be recorded on Audiotape to detect changes in the ionization density as the rockets pass into, through, and out of the ionosphere. Heavy emphasis will be placed on the study of the ionosphere and geomagnetism during IGY. Scientists are particularly interested in them because of their effect on radio transmission and reception.

The transponder also contains a telemetering device which can relay to the ground stations, for Audiotape recording and subsequent analysis, upper atmosphere research data collected during flight by highly specialized equipment in the rocket. This, then, is the third use of Audiotape.

Engineers from the Ballistic Research Laboratories are instrumenting 12 rocket nose cones to collect data on ionospheric structure, water vapor, cloud structures, winds and temperatures in the upper reaches of the atmosphere. Many of these men are pioneers in the guided missile instrumentation field who have had over ten years of experience in the design, development and operation of even more comprehensive systems of instruments at the guided

missile test ranges at White Sands Proving Ground and the Air Force Missile Test Center in Florida.

Probably the most interesting, and certainly the most publicized, part of IGY is the satellite program which the United States has undertaken as part of its share of the IGY activities. Here are the vital statistics on the satellite:

- Size: 22 inches in diameter
- Weight: 21.5 lbs.
- Life expectancy: two weeks to a year
- Orbit speed: 18,000 mph
- Orbit Altitude: from 200 to 1,000 miles depending on swing of the ellipse
- Where launched: Patrick AFB, Cape Canaveral, Florida
- How launched: three-stage rocket, 70 feet long, weighing 11 tons
- When to be launched: early 1958
- How many: about 12

It is expected that the satellite will be visible to the naked eye in clear air at dawn or dusk in such diverse spots as San Francisco, Istanbul, Melbourne, Montevideo, and New York. The orbit of the artificial moon will be from 40° North to 40° South of the equator. The great difference in the distance from the Earth's surface is due to the fact that the orbit of the satellite around the Earth will be similar to that of Earth around the Sun, i.e., an ellipse. This orbit will have the satellite circling the Earth 15 times every 24 hours; it will cross the United States in ten minutes.

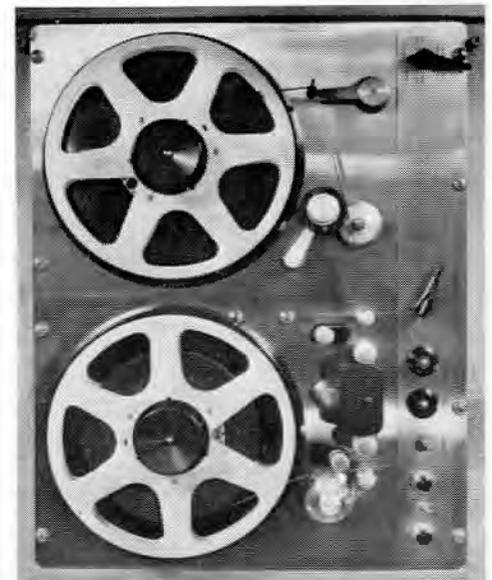
The satellites, despite the great popular furor they have aroused, will be used to obtain information of the most scientific sort. There will be no attempt to make like Buck Rogers. It is hoped that they will provide useful data on the following subjects:

1. Accurate distances between points on the Earth's surface, particularly inter-island distances.
2. The shape of the Earth.
3. The density of the outermost air.
4. Counting and measuring primary cosmic rays.
5. Measurement of the Earth's magnetic field at high altitudes.
6. Measurement of hydrogen atoms to determine air densities.
7. Measurement of the number of meteors hitting the satellite.
8. Measurement of ionization densities at various altitudes.

Because the satellites probably will burn to dust when they re-enter our atmosphere, it is imperative that all information be recorded while they are in the air. Formerly the engineers of the Ballistic Research Laboratories had felt that the best recording job could be done with motion picture films of the sound waves appearing on the oscilloscope as they were received from the transponder. However, a couple of years ago experiments were begun with magnetic tape to record the sounds from the receiver rather than film recording the oscilloscope. Once the tape had been recorded, it could be played back into an oscilloscope. The results from using magnetic tape with a "live" oscilloscope were far superior to films of the oscilloscope.

Occasionally, breaks in the continuity of the radio signal or evidence of erratic signal behavior call for more detailed investigation of specific portions of the tape record. It is here that a magnetic tape scanner specially developed for the Ballistic Research Laboratories proves useful. With this device, specific groups of signal pulses can be scanned repeatedly and presented on an oscilloscope as a stationary pattern for study or photographing. Where signal distortion persists over a tape length of several inches, or even several feet, the tape may be run through the scanner at speeds

(Continued on Page 6, Col. 3)



A magnetic tape scanner specially developed for the Ballistic Research Laboratories. The tape transport incorporates a cam-driven rocker-arm mechanism for giving a reciprocating motion to the tape at the playback head assembly, and for maintaining tape velocity at about 30 inches per second over a significant portion of the scan cycle. Tape length scanned is one inch. Scan rate is ten per second. Return sweep of scan cycle is blanked out electronically. Capstan drive provides tape progression rates of 0, 0.3, 0.6, 3, and 6 inches per second, as desired. Device is applicable to either AM or FM signals, and to multi-channel tapes.

AUDIO AWARDS STIR EXCITEMENT

The announcement in September of a \$16,000 education awards program sponsored by Audio Devices has stirred a flurry of excitement in the world of education. Less than two months after the announcement more than 425 schools and colleges, from Texas to the Canadian Provinces, had already sent in for their official entry blanks. Two institutions had even completed and submitted their entries.

There's still time to cash-in on this nation-wide awards program. The few hours required to prepare your entry could well entitle your school to a \$2,000 sound recording system — donated by Audio Devices, Inc. with no strings attached.

A total of 66 awards will be made — 33 in each of two classes. Class I includes all private or parochial junior and senior high schools; Class II, all junior and senior colleges or universities. Identical awards will be granted in each of these classes.

First place award will be \$2,000 worth of sound recording equipment and \$750 worth of tapes or discs. The 64 other awards, ranging in value from \$2,200 for second place to \$55 for fifth place, will consist of tape, discs and equipment of the participant's own choice. Although there will be only one first, second and third place award in each class, there will be ten fourth places and twenty fifth places in each.

Participating schools and colleges are asked to answer three questions: If your school or college were given \$2000 worth of tape or disc recording equipment of your own choice, plus \$500 worth of recording tape or recording discs . . .

1. What would you get with it?
2. How would it be used?
3. How would your school benefit from it?

To encourage participants to get acquainted with their Audio Devices distributors, and to take advantage of the distributor's assistance in the selection of recording equipment and materials for the awards, special bonus awards of tape and/or discs will be awarded to any winner whose entry blank is stamped or signed by the distributor. The amount of this bonus varies from \$250 on the first place awards to \$5 on the fifth places. However, distributor endorsement will not affect the judging of the entries.

Participants have been asked to include a complete description of the recording equipment and materials that would be selected — explain in fairly complete detail how this equipment would be used

and how it would tie-in with or supplement any existing recording facilities — and describe the benefits which the school would derive from the new equipment and facilities. In addition, each entry should include an itemized listing of all recording equipment presently owned by the school and a brief description of how this existing equipment is used.

The amount of recording equipment presently being used will not affect the judging of the entries, other than as an explanation of how the new equipment will fit into the overall educational recording program. A school which does not have any recording equipment at present will be just as eligible for an award as one which already has a large and well-equipped recording setup. The deciding factor will be the most effective and beneficial use of the new equipment offered under the terms of the award.

Photos of existing equipment would be of interest but are not required. Sketches or hook-up diagrams of the *new equipment* may be submitted if desired and could be of value in selecting the winning awards if they help to explain the way in which the new equipment would be used.

Information may be obtained from an Audiotape distributor or directly from Audio Devices, Inc., 444 Madison Avenue, New York City.

The program closes on February 1, 1957. To be eligible for the awards, entries must be postmarked not later than midnight, February 1, 1957. It is planned to present the awards to the winning schools and colleges before June, 1957.

Remember: it's not too late to send for your entry blank. A \$2000 sound recording system could be a big asset to any school.

WHO SELLS AUDIOTAPE?

In the past we have received many letters from people who wanted to know where they could buy Audiotape.

For the convenience of anyone wishing this information, we have prepared printed lists of distributors and retail outlets selling Audiotape in each of our 19 sales territories. Each list also includes the name of the company representative in that territory.

To get a free copy of the list for your area, just drop a line to: Audio Devices, Inc., 444 Madison Avenue, New York 22, N. Y.

TAPING THE SATELLITE TO EARTH

(Continued from Page 5, Col. 3)

slow enough to permit oscilloscope observers to evaluate the data irregularities.

The tape finally chosen for the recording job was EP Audiotape. Here are the advantages which it offered over optical recording:

1. Immediate availability — no waiting for negatives to be developed.
2. More information could be recorded on a given amount of tape than on the same amount of film.
3. Period of continuous recording was longer.
4. Easier handling.
5. Can be replayed indefinitely without deterioration.
6. Erasure possible, solving the problem of storage.
7. More economical.
8. Expected to be more durable in climatic extremes.

However, the activities at Fort Churchill are just experimental. So far, the scientists there have been extremely pleased with the results of using Audiotape. But the real test will come in 1958 when the satellite is taped to Earth, through Audiotape.

FIRST RADAR-MOON CONTACT RECORDED ON AUDIODISCS

On the morning of January 25, 1946, from the laboratories of the Army Signal Corps in Belmar, N. J., came the startling announcement that engineers had contacted the moon by radar.

So important was this news that, almost immediately, special arrangements were made with Army authorities by the Special Features Division of the Mutual Broadcasting System to repeat their memorable experiment to permit a sound recording to be made of the moon's echo.

Thus, shortly after midnight on January 27, in the studios of WOR — New York, with representatives of Audio Devices and MBS in attendance, this history-making transcription was recorded on an Audiodisc.

A few hours later Mutual brought to its listeners a complete description of the experiment, along with interviews with Army officers and technicians who had worked on the project, as well as the actual Audiodisc recording of the radar impulses echoed back from the moon.

Officials of Audio Devices and Mutual presented a copy to New York's Hayden Planetarium which immediately revised its daily lectures to include this historic recording.

audio pointers for the Recordist

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

WHAT'S NEW IN RECORDING?

With the fall season came two infallible (and happily simultaneous) indexes to the progress of the recording art: The Annual Convention of the Audio Engineering Society and the New York High Fidelity Show. One supplied the annual ration of professional knowledge, and the other an indication of what the manufacturers have for us.



C. J. LeBel

The AES Convention

Out of 44 listed papers, we can only select a few for comment. Two speakers came a long ways to deliver their papers; the farthest travelled was Carlos E. R. A. Maura of RGE Records in San Paulo, Brazil. He spoke on Practical Aspects of Hot Stylus. Almost as far came Dr. R. Dutton of EMI in Hayes, England, who spoke on the EMI Stereosonic System. Both papers were unique, each being a thorough study of a subject which has had but little reported of a quantitative nature. Perhaps the most significant were Dr. Dutton's remarks on the need for directional microphones in stereo pickup, quite contrary to much but not all American practice. J. W. Bayless of Capitol Records gave a very interesting paper on their new studios in Hollywood. Our own Frank Radocy gave a paper on tape storage problems in his usual very thorough style. There was an interesting five-paper symposium on transistor application problems, and Theodore Lindenberg gave a very illuminating paper on the problems of designing an electrostatic loudspeaker of full frequency range. The latter led this writer to suspect that a number of widely-commented-on news reports from Britain on extremely low frequency reproduction from comparatively small electrostatic speakers seemed either youthful enthusiasm or else sales pitches for the American market.

The AES Banquet reflected what may be a frightening preview of the automation of the future. Dr. H. J. von Braunmühl being not well enough to come from Germany, his Honorary Membership was accepted by a message on a magnetic tape. Warren Birkenhead being called to Japan by urgent defense business, his acceptance of the Audio Engineering Society Award was sent on a 16mm sound film made in that country. Coincidentally, three members who were unable to attend sent their tape recorders to the banquet. This poses the frightening spectre of the automated banquet of the future, with all speeches delivered by tape players and listening being done by a battery of tape recorders, all under the control of a digital computer. Whither are we whencing?

Some General Notes on the Show

The most significant observation at the show was the increase in the average fidelity of tape recorders. Some years ago, half the units in a manufacturer's line were frankly and unashamedly low fidelity. Now, almost every machine catalogued offers at least 10kc range at 7½ ips. Flutter has been reduced to a point where 0.3% is common, and signal to noise ratio has been improved to an average of 48 or 50 db for home machines. Two speeds are common, and a third is sometimes available.

Professional machine manufacturers have expanded their penetration of the \$350-\$500 field, at the same time that manufacturers hitherto in the \$250 class are now also offering units at \$150-\$180. All classes of makers have used modern styling on a much wider scale, with frequent utilization of pastel colored plastics, brass and even the lighter hardwoods.

Specific Observations

Ampex has replaced its popular model 600 by model 601, better adapted to professional use with low impedance input and output. For the first time they have entered the \$400-\$500 class with the new series A, promising interesting competition for Magne-cord and Berlant Concertone (both of whom have had models in this price range for years). Some versions of model A offer stereo playback.

Berlant Concertone had its usual professional line, with machines in the \$500, \$700 and \$1,300 classes; however, we were especially intrigued to find stereo recorders in the \$800 and \$1,000 classes. They also showed professional modifications which would play back one program as the next was being recorded.

DeJur showed a new and more compact model at \$300 to supplement their \$400

unit shown last year. Both have fully professional specifications in spite of the price. These are the only home units offered with cardioid microphone — very desirable for excluding much of the ambient noise in the average home.

Magne-cord has completely modernized their extremely well-known PT-6 series, with hysteresis synchronous motors added; other series have been added in the \$750 and \$850 classes. Continuing are the very fine M-90 recorder and the popular 814 continuous tape player. The under \$400 class has seen a redesign; the S36B in this class offers a hysteresis motor at under \$400. Also listed is a stereo recorder at only \$900.

Pentron offers a recorder fitted with a VU meter at under \$300; another interesting model has a natural wood case, with attachable legs available to turn the unit into a console. Both these models have an unusually powerful output stage — 10 watts rating. Continued are the single lever and pushbutton control characteristic of this maker's products. Of special interest is their new "Stereo-Magic" conversion kit which adapts any Pentron recorder sold in the last 5 years for stereophonic tape playback.

Mark Simpson's model 500 at \$168.50 kept their room so crowded that we could get no further than the doorway. With 12kc frequency range and 0.3% wow in their catalog specifications, we could understand the crowd's interest.

VM had their usual interesting line, with full push-button control. We were especially intrigued by their model 711, which offered stereo playback as well as single channel recording, and 15kc range, at little over \$200. Their model 710 recorder offered convertibility to stereo playback, and the same frequency range, at \$20 less.

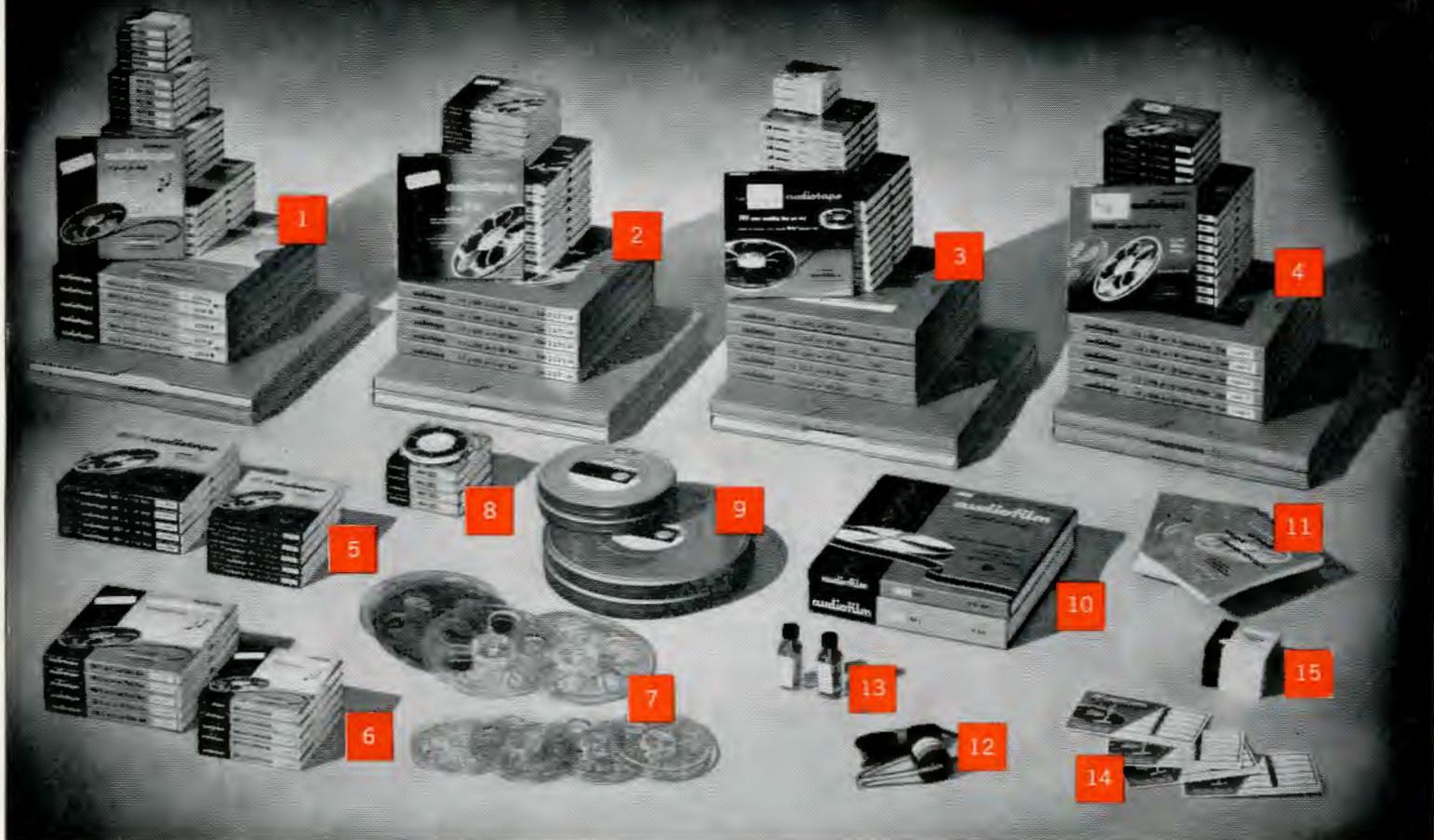
Bell Sound's BT-76 recorder also offered stereo playback in a case of very interesting modern design. To take care of the sound amplifier and speaker needed for stereo, they offered a "sound cabinet" with an extra audio amplifier, and a removable speaker section which could be placed to one side when playing stereo. At other times the speaker could be stored as an integral part of the cabinet. Bell's model RT-88 catalogued unusually good performance at a very moderate price.

Summary

This year showed a continuation of last year's rise in quality and/or reduction in cost. Stereo is becoming more easily available. Appearance has become a factor, and the stylist's touch has become an accepted thing.

now you can meet every tape recording need

with this **COMPLETE audiotape LINE**



1. PLASTIC-BASE AUDIOTAPE on 1½-mil cellulose acetate meets the most exacting requirements of the professional, educational and home recordist at minimum cost. Known the world over for matchless performance and consistent uniform quality. Series 51, in the red box.

2. AUDIOTAPE ON 1½-MIL MYLAR* — a premium-quality professional tape with maximum mechanical strength and immunity to heat and humidity. Will not dry out or embrittle with age. Series 7L, in the green box.

3. "LR" AUDIOTAPE ON 1-MIL "MYLAR" — 50% more recording time per reel. Strong, super-durable polyester film base assures trouble-free operation even under extreme heat and humidity. Series 6L, in the black and red box.

4. PLASTIC-BASE "LR" AUDIOTAPE provides 50% more recording time on low-cost 1-mil cellulose acetate base, affording maximum economy where high strength is not required. Series 4L, in the blue box.

5. SUPER-THIN AUDIOTAPE on ½-mil "Mylar" gives twice as much recording time per reel as standard plastic-base tape. For long-play applications where tape tension is not excessive. Series 3L, in the yellow box.

6. COLORED AUDIOTAPE on green or blue 1½-mil plastic base provides fast, easy color cueing and color coding, at no extra cost.

7. COLORED AUDIOTAPE REELS — 7" and 5" reels in jewel-tone colors — red, yellow, green and blue — for color coding, at no extra cost.

8. HEAD ALIGNING TAPE pre-recorded with precise head alignment, giving a highly accurate reference for aligning recording heads.

9. TYPE "EP" AUDIOTAPE provides extra precision and guaranteed freedom from defects, for computers, telemetering and high-speed magnetic data recording.

10. AUDIOFILM extends Audiotape's unsurpassed sound quality to motion picture and TV film recording. Available in 35mm, 17½mm and 16mm sizes.

11. "HOW TO MAKE GOOD TAPE RECORDINGS" The complete handbook of tape recording, containing 150 pages of up-to-the-minute information of practical value to every tape recordist. \$1.50 paper bound, \$2.50 cloth bound.

12. AUDIO HEAD DEMAGNETIZER removes all permanent magnetism from recording and reproducing heads in a matter of seconds.

13. AUDIO HEAD CLEANER, especially formulated for use on magnetic recording heads — superior to carbon tetrachloride.

14. ADHESIVE REEL LABELS provide positive identification of your tapes right on the reel. Press to apply, pull off to remove.

15. AUDIO SELF-TIMING LEADER TAPE A strong, durable leader tape of white "Mylar" with spaced markings for precise timing of leader intervals.

New 5-Reel Cellophane Package



gives extra protection against dust and dirt — keeps tape and boxes factory fresh.

Ask your dealer for genuine, professional-quality Audiotape
... it now costs no more than ordinary tape!

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