

APRIL 1964

TAPE

RECORDING MAGAZINE

24



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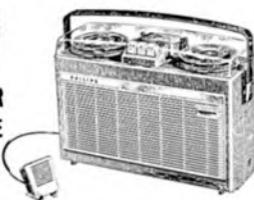


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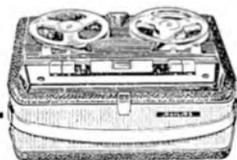
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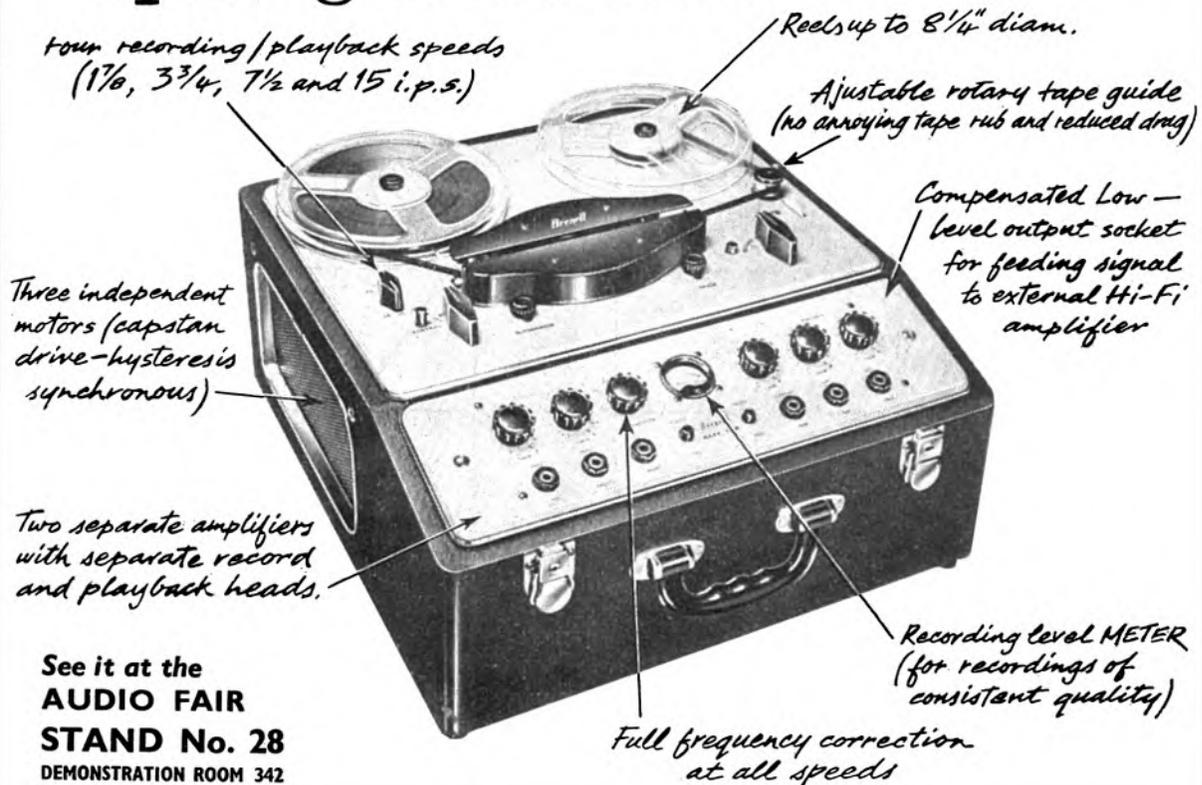
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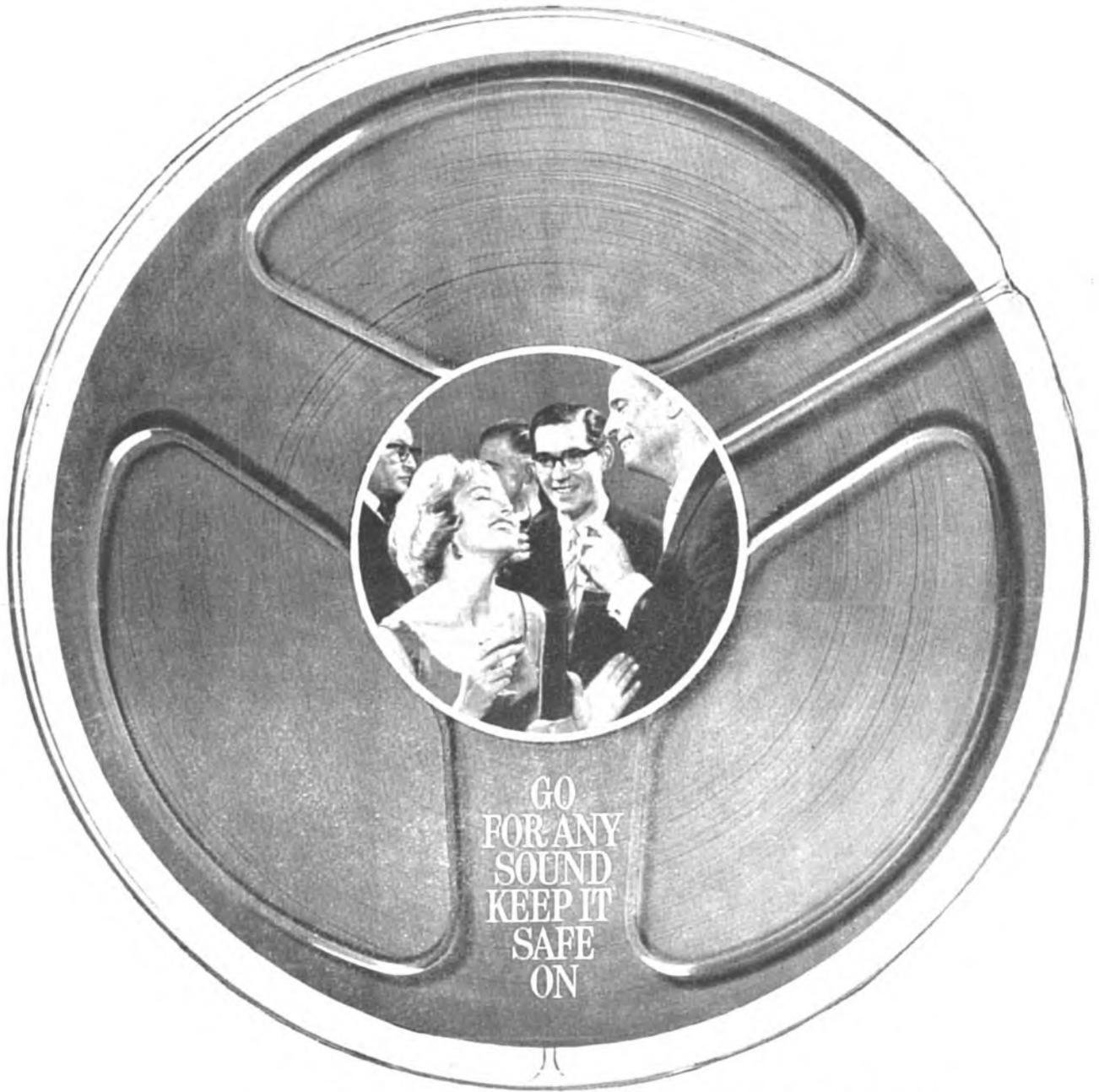
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83 Brilliant Devy Erlih gives dazzling performance of Mendelssohn's Violin Concerto, plus Kreisler Memories. Ernest Bour conducts Sudwestfunk Orchestra.



58 The fabulous, dynamic Duke Ellington himself in eight great numbers, including Stomping at the Savoy, In the Mood and Honey-suckle Rose.



81 Some of Chopin's loveliest melodies magnificently played by world-famous pianist Fou Ts'ong—The Four Ballades, Nocturne in F Sharp Major, etc.



79 Patsy Cline sings 12 smash hit numbers including Walking after Midnight, Too many Secrets, I Can't Forget, Hungry for Love, etc.



12 Beethoven Eroica Symphony. Josef Krips conducts the London Symphony Orchestra in a masterly performance of this monumental work. Also in stereo.



84 Schubert's Rosamunde. Kurt Redel, conducting the Munich Symphony Orchestra, has just the lightness of touch needed for this enchanting and ever popular music.



76 Unforgettable Art Tatum in person plays Tenderly, Body & Soul, Without a Song, Begin the Beguine—12 superb numbers from the greatest-ever jazz pianist.



53 These two suites, containing some of Bizet's most thrilling music, are given magnificent performances by the Sinfonia di London under Muir Mathieson. Also in stereo.



77 In the Mood, Bugle Call Rag, Chattanooga Choo-Choo, Serenade in Blue—9 original tracks by the immortal Glenn Miller and his band.



54 Tchaikovsky's last and greatest symphony, is here given a splendidly moving rendering by the Sinfonia di London conducted by Muir Mathieson. Also in stereo.



80 Dynamic Billy Daniels sings his greatest hits including Summertime, Old Black Magic, On the Street Where You Live, Kiss of Love, and 11 more.



69 The exquisite playing of the Virtuoso Ensemble matches the beauty of Schubert's celebrated Trout Quintet, which contains some of his most famous melodies.



65 Our Love is Here to Stay, The Nearness of You, Gully, and nine more great hits, all with America's top vocal group, the fabulous Four Freshmen.



72 The magnificent Platters bring you Sixteen Tons, My Dream, Mystery of You, You'll Never, Never Know, One in a Million—10 superb numbers.



32 Star cast and orchestra stage all the famous songs. Getting to Know You, Hello Young Lovers, I Whistle a Happy Tune, Shall We Dance, etc. Also in stereo.



89 The one and only Dakota Staton sings If I Love Again, On Green Dolphin Street, Pick Yourself Up, Meet Me at No Special Place, etc.



63 Cuban Carnival, Yesterdays, Blues in My Heart, and eight more great numbers played by George Shearing with vocals by Dakota Staton.



60 Chabrier's colourful Espana, with Suite Pastorale, Joyeuse Marche and Bourrée Fantastique. Paul Bonneau conducts Champs Elysees Theatre Orchestra.



30 Ian Carmichael, Joyce Blair, star cast orchestra. As Long as He Needs Me, Consider Yourself, all the hit numbers from Lionel Bart's great show. Also in stereo.



61 The world's 3 greatest sonatas—Beethoven's Moonlight, Pathétique and Appassionata—superbly played by famous T.V. pianist Joseph Cooper.



25 Ian Wallace, Joyce Blair and chorus. Some Enchanted Evening, I'm In Love With a Wonderful Guy, Bali Hai, and all the unforgettable songs from this great musical. Also in stereo.



48 Deep in My Heart, Drinking Song, Serenade—all the old favourites fresher than ever with Marston Gramalik, Linden Singers and Orchestra. Also in stereo.



59 The silken voice of Nat King Cole in Walkin', Because You're Mine, You'll Never Grow Old, Baby Won't You Say You Love Me and 8 more.



39 Great ballet conductor John Hollingsworth and the Sinfonia di London in a sparklingly fresh interpretation of Tchaikovsky's famous Ballet. Also in stereo.



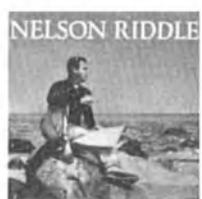
73 Born to be with You, Mad about the Boy, Tomorrow but not Today, That old Feeling—and six more hits by the brilliant and beautiful Patti Page.



2 Grieg Piano Concerto, Alexander Jenner in an electrifying performance with the Bavarian State Radio Orchestra conducted by Odd Gruner-Hegge.



91 Barbara Leigh with all-star cast and orchestra sings It's Never Too Late, I could be happy with You, We said We Wouldn't Look Back, 12 in all. Also in stereo.



71 The smooth sound of the Nelson Riddle Orchestra in Touch of Your Lips, Body and Soul, The Tender Touch, As You Desire Me—11 favourites in all.

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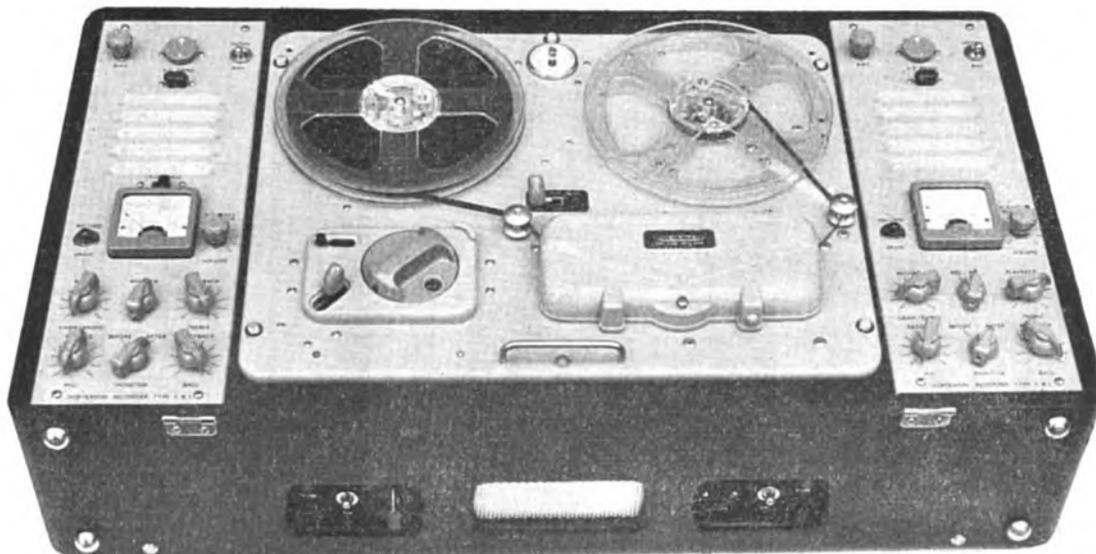
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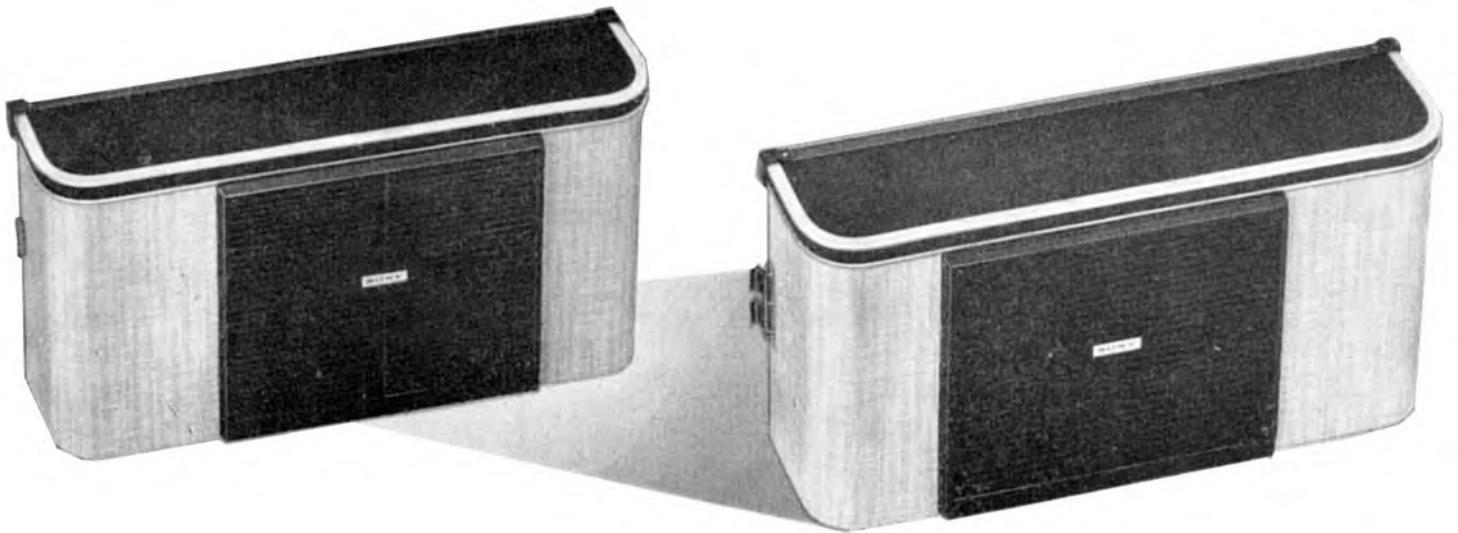
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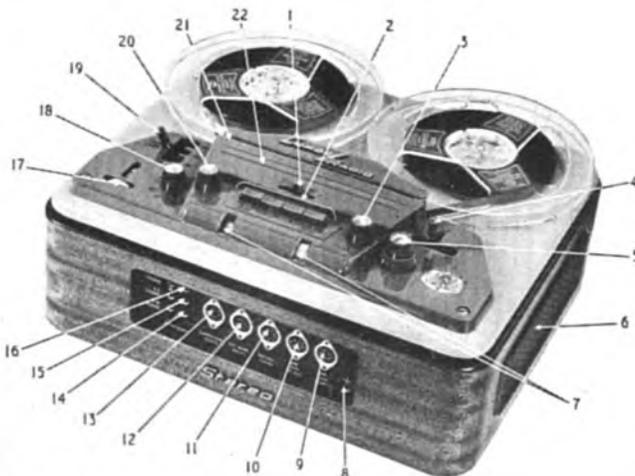
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- 15 Socket for external stereo loudspeaker
- 16 Socket for external stereo loudspeaker
- 17 Tape-consumption indicator (cuetimeter)
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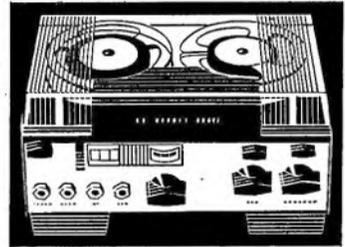
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TAPE

RECORDING
MAGAZINE

Vol. 8

No. 4

April 1964

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COVER PHOTOGRAPH: A modern-day 'one-man-band' is perhaps the best way to describe Wout Steenhuis, who makes his own recordings for release on the Columbia label. Bass, ukelele, banjo, various guitars, and three voices singing in harmony, feature on his latest LP, and Wout plays and sings it all himself using the multi-track technique. (See article on page 159.)

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EDITORIAL

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Tape trends and tape talk

By the Editor

FIRST NEWS of two exciting developments.

The BBC "Sound" programme in April, at the time of the International Audio Festival, may be broadcast stereophonically.

I think this will be the first regular programme (as distinct from the series of experimental stereo broadcasts on Saturday mornings) to be broadcast stereophonically.

Item two: One of the world's biggest manufacturers of tape recorders has unveiled on the Continent a domestic video recorder. I anticipate that it will be shown here within a few months.

Other world names in tape recording are believed to be almost ready to announce new video machines. By the end of 1964 I think there may be at least three famous brand-names on the market.

At first prices may put the machines beyond the reach of most amateurs, but these machines will nonetheless be the first-generation video equipment for the home.

THE ANNOUNCEMENT elsewhere in this issue that firms marketing magnetic tape in Britain have formed a committee to sponsor the British Amateur Tape Recording Contest seems to me a notable step forward in promoting tape recording as a hobby.

For years I have advocated some sort of co-operative effort by the industry to spread the message and I have played a part in calling four separate conferences to discuss what might be done. In the past, however, sufficient agreement to permit action has not been reached.

This time, by limiting the objectives to promoting the established amateur Contest and by limiting the committee to those firms which have a clear-cut common interest—the sale of tape, we have achieved success. As will be seen from the list of sponsors, all the major

firms in the field have associated themselves with this enterprise and it is reasonable to expect a major expansion of the Contest in the immediate future.

Owing to the negotiations necessary before the new arrangements could be announced, an announcement of the detailed arrangements for the 1964 Contest has had to be delayed beyond the normal date.

The basic pattern will, however, remain as in previous years, with the same classes for entries. The best British tapes will go forward to the International Contest, as in the past.

The main change this year will be the use of better and wider methods of promoting and publicising the Contest.

OVER THE YEARS a number of firms have given *Tape Recording Magazine* the most generous assistance to get the Contest established and to keep it running. Throughout all the seven years E.M.I. Tape Ltd. and Grundig (Great Britain) Ltd., have given consistent encouragement and aid. Other firms, like Cosmocord, Wyndson and Irish, have done their part. The Federation of British Tape Recording Clubs has helped in many ways.

Now that the event is being reorganised under wider patronage, I should like to place on record my appreciation of all that these supporters have done for the Contest. If it is now developed into something really big, there will be a special roll of honour for these pioneer backers.

Thanks are also due to Cyril Rex Hassan for the vigorous part he has played in finding the present formula. Because of his experience as the Organiser of the International Audio Festival, he was uniquely qualified to bring the firms together to work out this co-operative effort. He is now the chairman of the Committee of Sponsors.

Tape Recording Magazine, having established this event, is happy now to see it taken over by so broadly-based and powerful a committee.

FROM THE UNITED STATES I have recently received a notable example of another form of co-operative activity by tape firms. They have there an "Institute of High Fidelity"—a non-profit organisation representing 53 manufacturers of high fidelity components.

It has just published a 64-page booklet "An Introduction to Hi-Fi and Stereo," beautifully printed and illustrated and written in a lively yet expert manner by the editor of *Audio Times*.

The Institute is making the booklet available to dealers so that they can mail it free, distribute it over the counter or, if they prefer, sell it at about two shillings a time (which it is well worth).

One feature I particularly liked: a final page of squared paper, to make it easy for a customer to sketch a scale plan of the room in which he wants his hi-fi set-up.

CONGRATULATIONS TO Jean Thevenot and to Radio Television Francaise, who have just celebrated the sixteenth anniversary of "Aux Quatre Vents"—the French radio programme for tape recording and audio enthusiasts. To mark the occasion, RTF staged a "Gala Magnetique" on March 8 in association with the French Association of Sound Hunters.

LAUGH WITH JEEVES



"Why don't you put in a few of those short-circuits and save a bit of wire?"

The power of free expression

By PAUL le BOHEC

One of the most striking and moving tapes entered in the International Tape Recording Contest at Liege came from a 42-year-old schoolmaster in Brittany. He called it "The power of free expression."

Here is a documentary of the way in which a teacher used a tape recorder for a piece of "sympathetic magic," to enable a small child to overcome emotional disturbance and physical disability.

This text, while it conveys the information on the tape, cannot have the impact which is made when the voices of teacher, child and parents are actually heard.

DD-DURING the winter, I played in the snow, but when . . . when I went to f-f-fetch milk at the store I sank in the snow on the small track. When, wh-en, where th-the-the birds came they s-s-sank. I saw starlings in the hen-hen-hen-hen's house, a-a-and we p-p-put them in the rabbit's house."

This was how Loic, an eight-year-old boy, spoke when I first knew him. He stuttered so much that it was impossible for him to read aloud. He suffered not only from his physical disability, but from the jokes of his play-mates. He became more aggressive and yet more nervous.

What could I, his teacher, do to help him?

An incident during a painting lesson was a revelation to me. Looking at a drawing, the child said: "The little princess is in her garden and she believes in love. The flowers hold their heads towards her and give her kisses."

Later, looking at some essays Loic had written, I realised the truth. Here is what he wrote:—

"Every day I dream that the birds love me. And I shall be happy and the birds will say to me: 'Thank you, my children.' The birds think about me. I shall say to them: 'It is good of you to think about me.'

"Bird, you dream, that I am with you. I dream that all children are dead. I see all the children around me, shouting, and I say to them: 'Go away.'

"I dream that all birds love me. I dream that all children die."

Here was evidence of frustration at an emotional level. I had no doubt that Loic was jealous of his small brother.

So I made all the children in the class write on the subject of love for small brothers, and my theory was brutally confirmed.

Loic wrote: "I hate my small brother. I shall take him to the butcher, or, no, I shall put him in the rabbit's hutch and give him grass to eat and then when he grows up . . . tic."

Naturally, at this point I decided to go to see the parents to seek more information.

"He and his small brother don't get on well together, not at all," they admitted. "He's happy when he's alone, playing around. He loves being alone."

"And when his brother appears?"

"Everything goes wrong. . . ."

"Was it always so?"

"Yes, always, from the very beginning."

"What happened when his brother was born?"

"He never said a thing, but he started stuttering at that time."

"But how did you know it was a stutter?"

"I asked the doctor to come."

Well, I felt I had made the correct diagnosis. Now what therapy could I use? I asked the parents to show him more love at home and I myself, at school, showed him all my affection.

"You speak a little bit too quickly—as I do," I said to him. "When you speak quickly, you start getting nervous. Start all over again, speaking slowly. We'll see that your friends keep quiet. You'll see it will be much easier, speaking slowly. . . ."

I encouraged him to talk about brothers and about his love of birds. I introduced a tape recorder, intending, as one might say, to exorcise him.

"At meals, are you allowed to talk?"

"Sometimes, but not always."

"What did the doctor say?"

"That children should be left to talk."

"You are allowed to speak in school and you speak very well."

"Yes, I take my time."

"Did you hear yourself speaking, on the recorder?"

"Yes."

"When you get nervous, telling a story, you say: 'There was a r-r-r-raven. . . .' Say once more: 'There was a raven.'"

"There was a raven."

"There, you see the difference. What did he do, the raven? Carry on with the story."

"There was a raven who made a nest and laid eggs in it. A fox climbed up the tree and ate them. Then came the mother raven and bit the fox's ear. The fox came down the tree and was eaten by an elephant. And then a lion said to the elephant: 'Why did you kill the fox?' 'It is because he ate the other's eggs, because a fox is very bad and frightens the snakes, and snakes can make us die. . . .'"

"Now listen to this. . . ." I played an old tape recording of his voice.

"That is the tape where you stutter. Now what shall I do with it?"

"I don't know yet."

"Well, watch me. I cut the tape, like this. See, with the scissors. I cut it. I am destroying it completely, cutting it into a thousand pieces. All the words you spoke badly are there and, see, I throw them into the dustbin. It's finished. You're free now of all that stutter. All the pieces of tape will be burnt up with the waste paper. Goodbye to it."

I don't know now whether this was the decisive action. Was the cure based on our explaining his physical disability? Or on our increased display of affection? Or the pills which the doctor prescribed to calm him? Or the liberation which came through his greater opportunities for speech and writing? Or was it the influence of the tape recorder? I don't know.

One thing is certain. There was steady improvement, as the examples of his speech at different periods makes clear.

Yesterday I heard him read again. He did not stutter at all. He read well, almost fluently. Better than ever he did.

And there is something else which is very remarkable. Soon after the stutter subsided, the brutal feelings he had expressed in his essays towards his small brother began to disappear, too.

I noted that out of thirty essays, twenty-five were objective descriptive pieces and only five were imaginative fancies. Now he began to write:—

"Yesterday we played football and then we found a lighter. . . ."

"Yesterday I played cowboys and then went home and ate soup and then went to bed. . . ."

I felt reassured. And then, suddenly, a new threat of emotional disturbance appeared—the arrival of a small sister.

But this is what Loic says about it: "Every day I enjoy myself dreaming and wanting to know if the birds like me. The queen arrived, everybody is around her. I enjoy myself dreaming, dreaming, and dreaming, about my beautiful queen. Thank you, beautiful queen of dreams. Thank you, thank you for all the nice dreams I have had so that I learn my queen loves me."

Well, it is obvious that Loic has nothing against his little sister. There is no second trauma. We have only hope.

1964 INTERNATIONAL AUDIO FESTIVAL & FAIR

THE 1964 International Audio Festival and Fair will be held at the Hotel Russell, Russell Square, London, W.C.1, from Thursday, April 2, to Sunday, April 5.

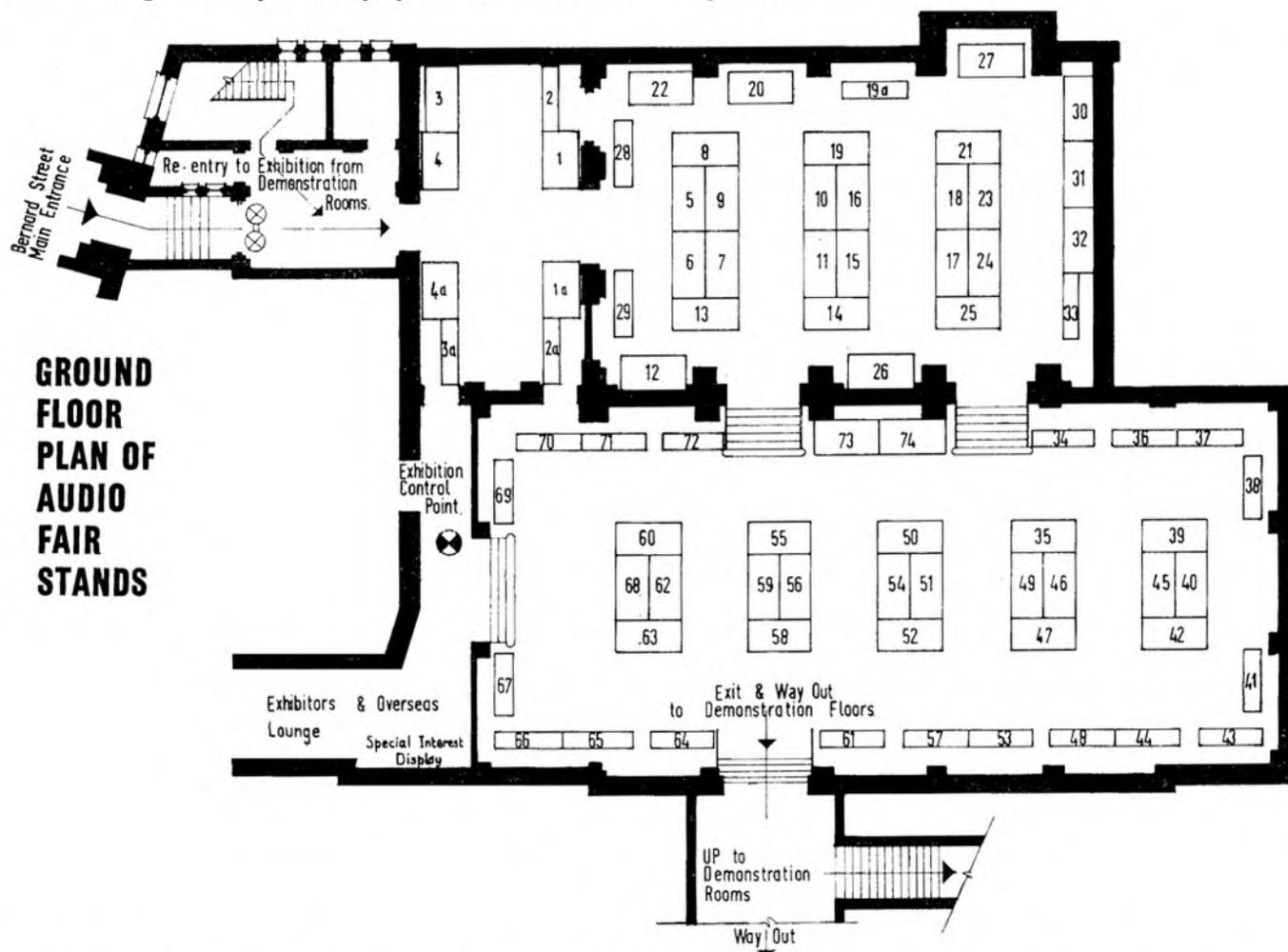
Admission is free, but only by ticket. Tickets are available direct from the Festival Director, 42, Manchester Street, London, W.1, or from the offices of "TAPE."

This will be the ninth Audio Fair to be held in London, and will be the biggest yet, with many firms appearing for the first time. An interesting variety of equipment is to be

shown, and in the following pages "TAPE Recording Magazine" provides a detailed survey of the stands—the first and fullest coverage of the Fair to be found in any journal.

Those attending will find it an invaluable guide, if studied carefully beforehand, of what to look for, and where it is to be found.

Our next issue, May, will be out one week later than normal so that we can include details of exhibits introduced at the last moment. Don't miss this issue out on April 22.



AGFA (Stand 2, Demonstration Room 114, Office 124).

Agfa Limited, 27, Regent Street, London, S.W.1.

The wide range of Agfa magnetic recording tapes with long, and double-play varieties on 3, 4, 4½, 5, 5½, 7, and 8½ inch spools, and triple-play tape on 3, 3½, 4, 4½, 5, 5½, and 7-inch spools.

They will also show their Magnetron accessory kit with coloured leader tapes, splicing tape, silver contact stop foil, tape clips, and scissors.

One surprise item is also expected to be demonstrated in room 114.

AKAI (Stand 47, Demonstration Room 412).

The Pullin Optical Co. Limited, Ellis House, Aintree Road, Perivale, Greenford, Middlesex.

Eight tape recorders, including three stereo models will be among the products manufactured by the Japanese Akai Electric Co. Ltd., and shown by their agents, Pullin Optical.

These include the new Model M-7, which will play two- or four-track stereo and mono tapes at 7½, 3½ or 1½ ips; the professional stereo recorder, Model 345, with two speeds of 7½ and 3½ ips, and a remote control

attachment. This model also features 10½-inch reel extension arms.

The M-6 and de luxe Model 69 recorders, first of the Akai machines to appear in the UK will also be shown together with the half-track Standard Model 27 and Model 903, both with tape speeds of 7½ and 3½ ips. The Model 903 and de luxe Model 707, 7½ and 3½ ips also, complete the Akai range of recorders to be shown for the first time.

Five stereophonic speaker systems will also be shown and demonstrated. Designed as a portable unit, with the two speakers clipping together to make a handy carrying unit, with handle, these include the SS-50

STAND-BY-STAND SURVEY

with a power handling capacity of eight watts; SS-70 and SS-100 (both ten watts); SS-90 (thirty watts) designed for wall hanging; and the SS-55 (five watts). All these systems have an impedance of 8 ohms.



A.K.G. (Stand 46, Demonstration Room 204).

Politechna (London) Limited, 3, Percy Street, London, W.1.

A completely new development from AKG will be displayed on their stand by Politechna, sole UK and Commonwealth agents for this West German company, who will be presenting a demonstration of an echo microphone. This will involve a vocalist and a small orchestra in room 204, who will put the DX11 through its paces. The microphone contains, as well as a cardioid capsule, a reverberation element, a transistor amplifier, and a control unit and battery all self-contained in the microphone housing.

The control unit is calibrated to allow for variations up to a reverberation time of two seconds. The user can thus introduce his own artificial reverberation time in any location.

The frequency range is 50-15,000 cps, and impedance is high and low. No price is available yet.

Politechna will also be showing two other new microphones, the D501 dynamic cardioid with a built-in windscreen, switchable from cardioid to omni-directional characteristics, and the C12A condenser microphone, a smaller version of the established C12. This has a choice of nine different directional characteristics, operated by a small built-in power unit, and not as the C12, with a separate selector control unit.



Three of the AKG microphones. Left to right: D19C with table stand; D19C with switch; and the new C12A

A professional version of the K58 dynamic headset, designated K59, used extensively for language laboratories, will also be shown and demonstrated. This headset has a built-in windshield, and has been used successfully at the recent Winter Olympic Games at Innsbruck.

Their D19 has been re-styled, and will be shown in three versions. The D19C standard type with impedances of 50 or 200 ohms; the D19E incorporating a built-in transformer and with an addition high impedance; and the completely new version, D19S (im-

pedance 60 ohms) featuring an "on-off" switch.



ALLAN (Stand 39, Demonstration Room 120).



AMPEX (Stand 17, Demonstration Room 247).

Ampex Great Britain Ltd., 72, Berkeley Avenue, Reading, Berkshire.

The Ampex recorders being shown this year include two new outstanding advances in tape recorder design—the E65 and the all-new UST4, imported from the new Chicago facilities of Ampex. Both supplement the full range of Ampex professional models.

The E65 is designed with the educational field in mind. Simple in operation, it is sturdy and designed to stand up under long hours of steady usage, and compact for easy movement.

The UST4 is the new star in the Ampex line. This is a stereo record and playback model incorporating dual amplifiers and speaker system mounted in an attractive carrying case. For horizontal or vertical mounting, the UST4 is fully portable.

These new additions will be backed by the established Ampex line including the Universal 351, for broadcasting use, the PR10 professional studio recorder, and the F44, four-track stereo model described in our February issue.

Ampex is also showing its full range of magnetic recording tape with the unique signature-binding in the 500 series.



ARMSTRONG (Stand 19, Demonstration Room 404, Office 441).

Armstrong Audio Ltd., Warters Road, Holloway, London, N.7.

The recently announced new range of Armstrong tuners and amplifiers will be exhibited for the first time at the Hotel Russell. These include the Model 222 integrated stereo amplifier at £27 10s., and the 220 stereo power amplifier and 225 stereo pre-amplifier at £24 18s. and £22 12s. respectively.

Also to be seen will be their range of tuner-amplifiers the Models 227 (£48 15s.), 227M (£33 18s.), and 226 (£56); and two new tuners, Model 223, an AM-FM unit at £28 15s., and Model 224, an FM unit, at £22 10s.



AUDIO RECORD REVIEW (Lounge 344).



BASF (Stand 22, Demonstration Room 320).

BASF Chemicals Ltd., 5a, Gillespie Road, London, N.5.

Pre-recorded talks expertly prepared on a number of topics designed to be of interest and assistance to tape recording enthusiasts will be the main feature of the BASF exhibit. Visitors will be able to choose the subject in which they are interested and whilst they are listening to the talk a dubbing will be automatically prepared and will be made available free of charge.

The talks will cover recordings of historical interest, sound exploration, sound effects, and slide synchronisations.

Details and prices of the full range of BASF tapes, library boxes, and accessories will be available, and BASF's recording experts will answer any queries.



BRAUN (Stand 9, Demonstration Room 214, Office 216).

Argelane Limited, 251, Brompton Road, London, S.W.3.

Braun will be showing their range of hi-fi and stereo tuners, amplifiers, speakers, and record-players. Special emphasis will be placed on their combination of the new Braun PCS45 hi-fi stereo record player and the transistorised CSV10 hi-fi stereo amplifier, as well as the TC20 stereo radiogram. Both of these are new units.

They will also display their new L80 speaker unit, first shown at the Hanover Fair last year.



The two- and four-track Akai Model M7 stereo tape recorder



BRENELL (Stand 28, Demonstration Room 342, Office 341).

Brenell Engineering Co. Ltd., 1a, Doughty Street, London, W.C.1.

The Brenell range of tape recording equipment will include mono models with and without separate record and replay amplifiers, stereo units for use with external hi-fi amplifiers, and decks to accommodate up to 10½-inch diameter spools.

These will include the Mk5 Series 2 deck with four tape speeds of 15, 7½, 3½, and 1½ ips; the Mk 5 Series 2 amplifier designed to match the half-track heads fitted to the standard two-headed mono deck; both of which are incorporated in the Mk 5 Series 2 two-track tape recorder.

They will also exhibit the Mk 5 Type "M" two-track recorder fitted with separate record and playback heads and amplifiers and with four speeds; and the STB1/5/2 stereo unit. This features four speeds, four heads, and replay facilities for two and four-track tapes, plus couplings of both varieties;

Butoba price reductions—new stereo recorder from Germany

and recording facilities for one or both tracks of half-track tapes.



BROWN (Stand 27, Demonstration Room 421, Office 426).



BUTOBA (Stand 68, Demonstration Room 234, Office 241).

Denham & Morley Limited, Denmore House, 173-5, Cleveland Street, London, W.1.

The established Butoba battery/mains tape recorders will be shown again on this stand. These are the MT5, a two-speed, 3 $\frac{1}{4}$, 1 $\frac{1}{2}$ ips model, of which there will be special news on the opening day of the Fair, and the MT7 (£39 18s.), with the remote control version MT7R (£45 3s.)

On this stand also will be the Norwegian transistorised stereo models. Price reductions for these three machines were recently announced. The Models 10 and 14 are reduced from 89 to 69 guineas; and the Model 12 is reduced from 94 to 75 guineas. All three are four-track recorders with tape speeds of 7 $\frac{1}{2}$, 3 $\frac{1}{4}$, 1 $\frac{1}{2}$ ips.

A wide range of accessories for the Siemens and Butoba machines will be displayed including microphones, foot-switches, connecting cables, headphones, portable loudspeaker units; plus power supply units for the Butoba models.

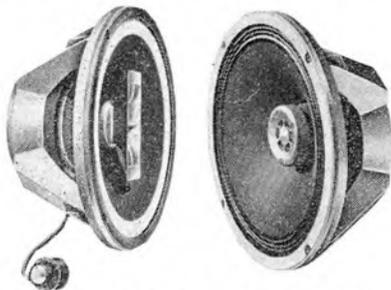


CELESTION (Stand 8, Demonstration Room 149, Office 150).

Celestion Ltd., Ferry Works, Thames Ditton, Surrey.

A new range of loudspeaker units to be known as the Studio Series will be shown for the first time by Celestion.

First of the range is the CX1512 (standard model) and the CX2012 (de luxe model), both full range co-axial units of twelve inch diameter and capable of handling 15 and 20 watts respectively. The cross-over frequency is 4,000 cps and the impedance is 15-16 ohms. The quoted frequency handling range is 30-15,000 cps, and 30-18,000 cps for the de luxe model.



Two new Celestion speaker units. Left, the CX2012, and, right, the CX1512.



CHAPMAN (Stand 70, Demonstration Room 448, Office 462).

Derritron Radio Limited, 24, Upper Brook Street, London, W.1.

The range of amplifiers and radio tuners to be shown by Chapman will have no new items this year. On show will be the FM1000 VHF/FM and FM1005 AM/FM

tuners, plus a six-stage AM Bandsread and high gain FM tuner, the S6BS/FM Mk II, and the equivalent S6BS/AM Mk II unit.

They will also show their 305 Mk II stereo control unit, the 205 amplifier, and the eight-watt 305 stereo power amplifier. To complete their display will be their 306 integrated stereo amplifier.



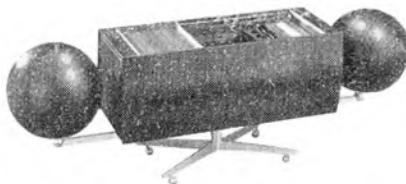
CLAIRTONE (Stand 7, Demonstration Room 215).

Argelane Limited, 251, Brompton Road, London, S.W.3.

A revolutionary feature of the Canadian Clairtone stand will be their "Project G" hi-fi stereo radiogram which takes the form of a cabinet with two sound globes placed on either end.

These stereo sound globes are eighteen inches in diameter and rotate independently and freely around 340 degrees axis. They are made of spun aluminium, and the projection surface is tilted upward at an acute angle.

The first models of these new sets are arriving just before the Fair starts.



The "Project G" stereo radiogram by Clairtone



CLARKE & SMITH (Stand 24, Demonstration Room 241, Office 324).

Clarke & Smith Manufacturing Co. Ltd., Melbourne Works, Wallington, Surrey.

Two new additions to the Clarke and Smith range are a self-powered AM/FM tuner, Model 658 Mark II with a much improved specification over its predecessor the Mk I version; and a compact loudspeaker system, Model 619, matt finished in Walnut veneers.

Also being shown are the integrated stereo amplifier (Model 655), Stereo Control Centre (Model 656) and Stereo Power Amplifier (Model 657). All will be demonstrated with the E.M.I. pick-up (EPU/100) and the C & S transistorised tape recorders TR634, and 635.

Designed for education, industrial, and commercial users, these recorders are housed in a contemporary light oak lockable carrying case with detachable lid. The transistorised amplifiers deliver an output of ten watts, and facilities are available for mixing, monitoring, superimposition, and "straight-through" amplification.

Items produced by the Sound Equipment Division will include a range of the transistor microphone and music input stages with their associated power supply units. A cabinet, containing an assembled panel of these pre-amplifier "bricks" is also to be shown, together with a three-station VHF/FM crystal controlled radio tuner and low power general purpose amplifier.

CONNOISSEUR (Stand 25, Demonstration Room 242, Office 243).

A. R. Sugden and Co. (Engineers) Limited, Market Street, Brighouse, Yorkshire.

The main item of interest will be the new SAU1 arm with detachable head shell for cartridges having the standard half-inch fixing centres. This will accept either their own stereo cartridge Type SCU1 or any cartridge having these fittings.

Also being shown for the first time is the new range of Major II and Minor II speaker enclosures, both with omni-directional sound distribution characteristics; the Craftsman variable three-speed transcription unit and the Craftsman two-speed unit complete with pick-up arm SAU1, will also be shown.



DECCA (Stands 65 and 66, Demonstration Rooms 235 and 236).



DESIGN FURNITURE (Stand 59, Demonstration Room 117).

Design Furniture Limited, Calthorpe Manor, Dashwood Terrace, Banbury, Oxfordshire.

Four models exhibited for the first time will be among the range of equipment cabinets to be shown by Design Furniture.

Their range includes speaker enclosures, tested and approved by Goodmans Industries; record storage cabinets; and equipment cabinets ranging from £13 10s. to £40.

Most models are available in walnut, sapele, mahogany or teak.



DUAL (Stand 33, Demonstration Room 158).

Celsa Electric Co. Limited, Celsa House, Kelway Place, London, W.14.

A last-minute entry into the Fair enables the UK audio enthusiasts to see the first tape recorder by Dual, the West German hi-fi equipment manufacturers.

The new machine is the Dual TG12A, a three-speed four-track stereo recorder which is expected to sell in the £90 price range. Full details are given in the "New Products" section.



ELCOM (Stand 60, Demonstration Room 213).

Elcom (Northampton) Limited, Weedon Road Industrial Estate, Northampton.

A range of transistorised audio equipment, including mono and stereo mixer units, amplifiers, will be exhibited for the first time by Elcom, together with their well-known range of attenuators, switches, connectors, and plugs and sockets.

Available either in table top form, or as a twin pedestal desk will be the ten channel mono/stereo mixer unit. This also features equalisation on all channels, group and master fading, visual monitoring by PPM unit, together with various optional facilities.

The second unit is a four-channel transportable mixer which incorporates a pre-set gain control with an overall range of 0-40 dB.



E.M.I. (Stand 63, Demonstration Room 322, Office 323).

E.M.I. electronics Ltd., Hayes, Middlesex.

Magnetic recording materials and the most advanced professional tape recorders will be displayed on stand 63, together with the Emitape range of magnetic recording tapes.

Also on show will be Emifilm, for accurate synchronisation; the series of Emiguides, six pre-recorded instructional tapes on recording techniques recorded by John Borwick; and the booklet "Emitape Guide to Better Recordings," will be on sale price 2s. 6d.

E.M.I. Electronics will be demonstrating the Type 311, RE301 (transistorised battery portable machine), and the TR52 portable stereo model.



ELECTROIMPEX (Stand 61, Demonstration Room 113).

FANE (Stand 19a, Demonstration Room 221).



**FEDERATION OF BRITISH TAPE RE-
CORDING CLUBS (Lounge 154).**

Secretary: E. Roger Aslin, 1007a, Finchley Road, Golders Green, London, N.W.11.

The playback of winning tapes in the British and International Tape Recording Contest will be the main feature of the Federation stand. The committee members will be present to answer questions on membership; and this year the Federation will introduce an individual membership system.

The AGM will be held in Birmingham on April 25. (See also "Club News," page 165).



FERROGRAPH (Stand 67, Demonstration Room 337, Office 339).

The Ferrograph Co. Ltd., 84, Blackfriars Road, London, S.E.1.

The exhibits of the Ferrograph company will consist of tape recorders for home or domestic use, semi-professional and industrial types.

In addition, the extensive range of components marketed by subsidiaries Wright and Weaire Ltd., and Rendar Instruments, will also be on view. These components include head de-magnetisers, jack plugs and sockets, cable connectors, and tape decks.

Demonstrations of mono and stereo recordings will take place on a continuous basis throughout the Fair.

Also to be demonstrated will be the Series 5 "Ferro-Tutor" tape recorder designed for use in a language laboratory. This is a dual channel model with the upper channel for the Master, and the lower channel for the Pupil.



FI-CORD (Stand 37, Demonstration Room 414).

Fi-Cord International Ltd., 40a, Dover Street, London, W.1.

A new accessory which will increase the versatility of the Fi-Cord 202 battery/mains operated portable tape recorder will be introduced on the Fi-Cord stand.

This is the re-chargeable battery unit, added to the present range of power units, which enables the 202 to be used from power sources including 105-240 volts, AC mains; twelve volt DC car battery; re-chargeable accumulators; and Mercury batteries.

Also on display will be two recent Fi-Cord releases—a portable, battery-powered amplifier speaker, and a battery-operated transistorised mixer unit with high and low impedance outputs. Live demonstrations of the Fi-Cord 202 system will be given in room 414.

The Beyer range of microphones, introduced for the first time at last year's Audio Fair will also be shown, in room 415. A number of new microphones, details not available as we go to press, will be featured.

Lounge for tape club members —four new Goodman units

GARRARD (Stand 29, Demonstration Room 145, Office 162).

Garrard Engineering Ltd., Newcastle Street, Swindon, Wiltshire.

The two-track magazine-loading tape deck designed for use on battery-operated tape recorders will be the main attraction for tape enthusiasts on Garrard's stand.

They will also be exhibiting their range of sound reproducing equipment including turntables, record players and changers, and pick-ups and styli.



GEVAERT (Stand 6).

Gevaert Ltd., Great West Road, Brentford, Middlesex.

Gevaert will be exhibiting their comprehensive range of magnetic recording tape for domestic and professional use.

Their standard and long-play varieties on cellulose triacetate base will be available on 3, 4, 5, 5½, 7, 8½ and 10-inch spools; plus 2,400 ft. (standard-play) on NAB spools for professional use.

Tensilised polyester base long-play tape will be shown on similar size spools; and with the same base, their double-play tape on spools of 3, 4, 5, 5½ and 7-inch diameter.

Extremely thin tape on tensilised polyester base, recommended for portable machines, and four-track recording, on spool sizes of 3, 4 and 5 inches can also be seen.



G.K.D. (Stand 45, Demonstration Room 319).

G.K.D. Ltd., King Street, Houghton, Regis, Dunstable, Bedfordshire.

Minimum space requirement and greater flexibility of layout, enabling enthusiasts to shelve or wall mount their equipment, will be emphasised by G.K.D. who are claiming a new concept in hi-fi housing.

The remainder of their range incorporates certain cabinet modifications to keep up-to-date with latest technical developments and trends, but retain the same style.

Among units to be shown will be the "Chiltern" and "Southdown" cabinets designed exclusively for Leak equipment. Concealed controls, easy access to equipment and in a choice of sapele, walnut or teak, the "Chiltern" costs 37 guineas, and the smaller version of this, costs 27 guineas.

Their two cabinets designed for the Quad equipment, and shown for the first time, are the "Anglian" and "Huntingdon" with similar features. These also cost 37 and 27 guineas respectively.

These units will accommodate transcription units as well as any tape recorder or tape deck, except the "Huntingdon" which has no tape section.



GOLDRING (Stand 20, Demonstration Room 118, Office 123).

Goldring Manufacturing Co. (Great Britain) Limited, 486-488, High Road, Leytonstone, London, E.11.

Three Goldring "Lenco" transcription units will be among the reproduction equipment displayed on stand 20.

In addition to their well-known 580 and 600 variable reluctance mono cartridges, the 700 Mk II variable reluctance stereo cartridge, and the 380A moving magnet stereo cartridge, will be shown.

Their range of replacement sapphire and diamond styli has again been increased to

include all the well-known makes recently introduced in this country.



GOODMANS (Stand 31, Demonstration Room 347, Office 363).

Goodmans Industries Ltd., Axiom Works, Lancelot Road, Wembley, Middlesex.

Goodmans will be showing four new products, the Eleganza II, the Maxim, the Audiom 91, and the Triaxiom 122OC.

First of these is a slim-line enclosure at £27 10s., in walnut or teak to order. Range is 35-15,000 cps, and it is 6½ inches deep. The power range is 15 watts.

The Maxim is a loudspeaker system with a range of 45-20,000 cps, handling eight watts and measuring only 10½ x 5½ x 7½ inches deep. It features two very special precision-built drivers particularly developed for this tiny enclosure. Again in walnut or teak to order, the Maxim will sell at £17 10s. 6d. (inc. P.T. 50s. 6d.).

The Audiom 91 speaker unit, replacing the 90, is 18 inches in diameter and handles 50 watts of power. It costs £27 10s. In the same range will be displayed the Axiote 8, Axiom 10, and Axiom 301. The Triaxiom 122OC, an addition to this range, is a twelve-inch twenty-watt loudspeaker having all three radiating units integrated into one compact unit. Range 35-20,000 cps, impedance 15 ohms, price £18 10s.



GRAMPIAN (Stand 32, Demonstration Room 237).

THE GRAMOPHONE (Lounge 244).

GRUNDIG (Stand 35, Demonstration Room 147, Office 148).

Grundig (Great Britain) Ltd., 40, Newlands Park, Sydenham, London, S.E.26.

The full range of Grundig tape recorders, TK6 (battery/mains portable), and mains models TK14, 18, 23, 40, 41 and 46 will be on show and available for demonstration.

Among the new products will be two hi-fi units, the SV50 stereo power and control amplifier, and RT50 hi-fi tuner. The former unit is fully transistorised with 27 transistors and two rectifiers. It features a built-in microphone pre-amplifier which feeds seven audio amplifiers and correction stages to load the driver stage and the push-pull transformerless output stage.

Their new tuner matches the SV50 amplifier, and is equipped to receive VHF and Medium Wave stations. Star features are the switchable automatic frequency control on FM, switchable noise suppression and stereo decoder stage for stereo FM reception. The AM stage is provided with a switchable Ferrite aerial and switchable bandwidth selection. FM and AM sections are separated throughout the unit.

Two loudspeaker enclosures will also be shown. These are the Box 70 and Box 100, designed for use with the RT50 tuner and SV50 amplifier. Box 70, 2.8 cubic feet, is equipped with four speaker units: one bass, three mid-range/treble; and Box 100, 3.9 cubic feet, features nine speakers: one bass, two mid-range and six treble.



HI-FI NEWS (Stand 72).

LIFFE ELECTRICAL PUBLICATIONS (Stand 1).

Five new models from Sweden —Lustraphone 'Radiomic'

JORDAN-WATTS (Stand 56, Demonstration Room 420).

Boosey and Hawkes (Sales) Limited, Sonorous Works, Deansbrook Road, Edgware, Middlesex.

The basic twelve watts (RMS) Jordan-Watts loudspeaker unit can be used either single or in multiples, according to the acoustic power required. On stand 56 Boosey and Hawkes will be demonstrating this "building-brick" principle which makes their system the smallest—or largest—loudspeaker available. The units and systems are suitable for impedances of 7.5 to 16 ohms. Compact enclosure systems are available for 12, 25 and 50 watt (RMS) power ratings, the smallest being 13½ x 8 x 4½ inches overall, and intended for wall or shelf mounting.



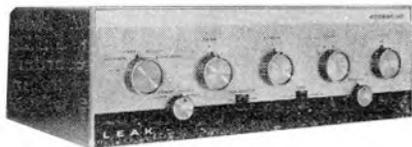
J. B. LANSING (Stand 21, Demonstration Room 112).

Ad. Auriema Limited, Impectron House, 125, Gunnersbury Lane, London, W.3.

A wide variety of speaker units, manufactured in America by the J. B. Lansing Sound Inc., will be shown on stand 21.

Among these will be the JBL-Ranger "Paragon," a stereo reproducer using the radial refraction principle to integrate the sound from two sets of theatre loudspeaker components into a broad three-dimensional sound source. It is nine feet long, and weighs more than 700 lb.

They will also show the Model SG520 "Graphic Controller," a combined pre-amplifier/control unit. Illuminated push-button selectors and direct-recording professional sliding controls are two of the features of this unit.



The Leak 30 stereo amplifier

KEF (Stand 38, Demonstration Room 212, Office 224).

KELLY (Lounges 232 and 233).



KODAK (Stand 49, Demonstration Room 312, Office 327).

Kodak Ltd., Kingsway, London, W.C.2.

An informative booklet "Kodak Sound Recording Tape" will be available free on stand 49 where the complete range of Kodak tapes, making their first appearance at the Fair, will be displayed.

Standard, long, double and triple-play varieties will be shown and demonstrated.



LEAK (Stand 64, Demonstration Room 334).

H. J. Leak & Co. Ltd., Brunel Road, Westway Factory Estate, London, W.3.

Leak will be showing for the first time a transistor integrated amplifier, the Stereo 30, price £49 10s. This features a five position switch allowing the choice of inputs from tape head, microphone, tuner, tape

amplifier, and pick-up for both mono and stereo. Bass and treble controls are also featured together with filter and slope, balance, and volume controls and tape monitoring.

They will also be demonstrating their "Sandwich" loudspeaker, which features the rigid cone diaphragm of two very thin aluminium skins separated by a filler of expanded plastic.



LOEWE-OPTA (Stand 10, Demonstration Room 413).

Highgate Acoustics Ltd., 71-73, Great Portland Street, London, W.1.

Two tape recorders, the Optacord 414 and 414DIA, will be among the equipment manufactured by Loewe-Opta, the West German manufacturers, on the Highgate stand.

The 414 is a single (3½ ips) speed battery/mains operated recorder incorporating a meter recording level indicator and accommodation for 4½-inch spools.

The 414DIA is a version of the former model incorporating a built-in remote control unit for synchronised slide changing in conjunction with a projector.

They will also be showing and demonstrating five stereo-radiograms.



LONG-PLAYING RECORD LIBRARY (Lounge 153).

The Long Playing Record Library Ltd., Squires Gate Station Approach, Blackpool, Lancashire.

The LPRL will be exhibiting their well-known publications, being a guide to the available recording repertoire on disc. These are "A Guide to the Bargain Classics," 15s.; "The Stereo Record Guide," Vol. 1, 21s.; and Vols II and III, 25s.; and "The LPRL Classical Catalogue and Handbook," 6s.

This latter book lists all recommended recordings of the major classical repertoire currently available in mono and stereo, and is a collector's guide to the cream of available classical records.



LOWTHER (Stand 12, Demonstration Room 411).



LUSTRAPHONE (Stand 4, Demonstration Room 220).

Lustraphone Ltd., St. George's Works, Regent's Park Road, London, N.W.1.

Lustraphone exhibits will be grouped to show the numerous microphones, "Radiomic" systems, transistor amplifiers, mixer units, matching transformers, floor and table stands, microphone booms, as well as convenient accessories for educational services, public address, broadcasting, recording studios, tape recorder users and social services.

Their microphones cover a wide range, and include the well-known "Stereomic" (dual head) stereo unit, plus studio ribbon velocity and moving coil units, all of which offer a unique selection for every tape recorder user. In addition, their "Lavalier" microphones have been designed to give full freedom of hands and movement. These units include the LV/59 moving coil and VR/70L ribbon.

Their "Radiomic" system, since it received GPO approval, is now in considerable demand. At this year's show they will be introducing an entirely new radio microphone/transmitter, together with valve/mains single and multi-channel receivers.



The Luxor 423 four-track stereo tape recorder

LUXOR (Stand 30, Demonstration Room 218).

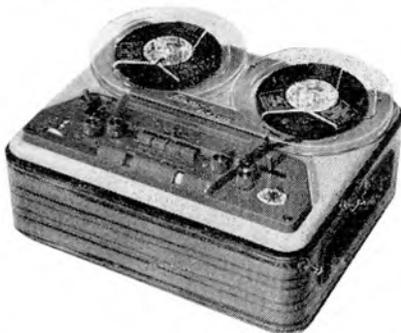
Britimpex Ltd., 16-22, Great Russell Street, London, W.C.1.

Five of the Swedish-manufactured Luxor tape recorders will be seen for the first time at the Audio Fair, at the stand organised by the sole UK distributors.

Also shown will be record players, including a battery-operated transistor unit suitable for stereo playback with additional amplifiers.

The recorders are the Luxor MP-423 and 424 stereo machines, using the four-track system, which are sold in the UK and USA.

These sell at 77 guineas for the 424 in a two-tone carrying case covered in plastic-coated fabric; and 74 guineas for the 423 in a teak or mahogany case. Three speeds are featured, 7½, 3½ and 1½ ips.



The Luxor MP 433 mono four-track, three-speed recorder

There is also the MP-433, a mono version of the above models, and two further mono machines, the two-track MP-233 and MP-404, four-track. The prices of these three recorders are not yet available.

Their loudspeaker range includes complete systems plus separate units for do-it-yourself enthusiasts. These range from two-inch to fourteen-inch units.



METRO-SOUND (Stand 4a, Demonstration Room 335)

Metro-Sound Manufacturing Co. Ltd., Bridge Works, Wallace Road, Canonbury, London, N.1.

The range of Metro-Sound tape accessories including the Klenzatape cleaning out-

fit for removing oxide deposits, dirt, etc., from tape heads in position; Metro-Tabs, a set of coloured identification tabs to be fixed to recording tape; Metro-Brush, a specially-angled brush for cleaning normally inaccessible places; Metro-Stop, a liquid for application to magnetic tape wherever stop-foil is normally used; and the Metro-Splicer, for magnetic tape and 8 mm cine editing, will be exhibited, although the vast bulk of items to be shown by this company will be for disc reproduction.



MSS (Stand 51, Demonstration Room 217).
MSS Recording Co. Ltd., Poyle Trading Estate, Colnbrook, Slough, Buckinghamshire.

MSS will concentrate on "Mastertape," their magnetic recording tape, paying particular attention to publicising the extreme care taken in its manufacture.

They will be showing film of the production of tape, from the raw oxide to the finished boxed state.

They will also exhibit their wide range of products in this field.



MULLARD (Stand 50, Demonstration Room 211, Office 209).

ORTOFON (Stand 2a, Demonstration Room 336).

PETO SCOTT (Lounge 152).



PHILIPS (Stand 54, Demonstration Room 111).

Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

A two-speed four-track recorder will be making its first appearance on the Philips stand. The new model, the EL3548, has been styled to give it a similarity to the two larger models in the Philips range, with cube push buttons for operating controls. To sell at 39 guineas, the recorder is fully described in the "New Products" section of this issue.

Philips will also be showing the remainder of their current range. These include the recently introduced battery portable EL3586, the Family de Luxe 3½ ips EL3541H, the four-speed mono, EL3549, and the stereo version EL3534. A wide range of accessories, microphones, and tapes will also be shown.



PIONEER (Stand 16, Demonstration Room 314).

C. E. Hammond & Co., Ltd., 90, High Street, Eton, Windsor, Berkshire.

A completely new range of radio tuners and audio amplifiers are being shown for the first time on this stand. They are manufactured by the Pioneer Electronic Corporation of Japan.

First is the Model SM-G 205, an integrated stereo tuner and amplifier containing its own Multiplex circuit for receiving BBC stereo broadcasts. Twelve watts output per channel is available, and the price is 85 guineas.

The Model SM-Q 300B is a general purpose integrated tuner-amplifier with three AM bands, short, medium and long, and an FM tuner. No multiplex is incorporated, but sockets are fitted for an external adaptor. The price is 85 guineas.

The Model MXA-1A is a Multiplex adaptor for use with Pioneer tuner-amplifiers equipped with Multiplex connections,

New Philips recorder—Planet will introduce stereo tape deck

and the Model TX-5 is an AM-FM tuner containing its own multiplex circuit.

They will also exhibit an integrated stereo amplifier, Model SM-500, with a frequency response of 5-100,000 cps ±1 dB. Six inputs per channel are available, and it will accept a signal direct from tape head, crystal or magnetic pick-up, microphone, tuner, or tape recorder. The price is not available yet.

At 29 guineas is the Model SR-101, a reverberation amplifier unit for use with any stereo audio amplifiers in the range. The final item to be introduced is the pair of moving coil headphones, Type SE-2, weighing less than 1 lb. They cost eight guineas.



PLANET (Stand 57, Demonstration Room 418, Office 425).

Planet Projects Ltd., Goodman Works, Belvue Road, Northolt, Middlesex.

Planet will be showing their U1 series of tape decks. Two versions are available, the U1 with speeds of 7½, 3½ and 1½ ips, and the U1/15 with speeds of 15, 7½ and 3½ ips. Both models are available fitted with full, half, or quarter-track heads.

Semi and fully remote operation facilities are available for all versions, and a light-actuated optical stop mechanism can be fitted to the decks as an optional extra instead of the customary metal foil mechanism.

Planet also hope to have available a new deck, the Model U1 tape unit complete with stereo recording amplifiers and replay pre-amplifiers. This will be mounted in a wooden plinth, no lid, and will retail in the region of £120. Further specifications will be published when available.

Also to be shown will be the CCI, a continuous cassette-loaded tape recorder for background music. It will hold up to 600 ft. of tape. Prices are available on application.



Two of the Reslosound microphones. Left, the MDP, and right the PD, both with dynamic inserts in a lightweight cylindrical housing



PLANT NEWS (Stand 34).

PYE (Stand 13, Demonstration Room 318).

QUAD (Stand 58, Demonstration Room 422, Office 423).

The Acoustical Manufacturing Co. Ltd., Huntingdon, Huntingdonshire.

Quad will be exhibiting all the established units in their famous range of amplifiers, control units, tuners and, of course, their electrostatic loudspeaker.



RADFORD (Stand 11, Demonstration Room 417, Office 424).

Radford Electronics Limited, Ashton Estate, Bristol 3, Somerset.

Power amplifiers, loudspeakers, tuners, and audio measuring equipment will be shown by Radford at stand 11, and demonstrated in room 417.

Of interest to tape enthusiasts is the FMT1 FM tuner designed to receive stereo broadcasts using the Multiplex system. It is styled similar to the SC2 pre-amplifier control unit as a matching unit.

Their loudspeaker systems, designed for use with their own equipment, are available in three versions. The Bookshelf model B.S.L. will handle up to 25 watts and weighs 28 lb.; the smaller ALS model, 40 watts, weighs 105 lb., and the model S.L.S. handles 30 watts, and weighs 70 lb. They will also be showing two single-channel amplifiers, and three two-channel amplifiers, plus transistorised stereo control units, SC4-10 and SC4-20, with rated outputs of ten and twenty watts respectively.



RECORD HOUSING (Stand 52, Demonstration Room 302).

Record Housing, Brook Road, London, N.22.

Two completely new items to their range of hi-fi cabinets will be shown by Record Housing. The first is the "Lowline One," a compact unit designed for the smaller hi-fi set-up and flat-dweller. Capable of housing up to three sets of controls, it is sufficiently deep to accommodate stereo amplifiers. The mounting board will take the longest arm/pick-up (SME 12-inch) on the market. The price is £15 19s. (medium walnut or mahogany), and £16 19s. (teak).

They will also introduce a new speaker enclosure, the "Folded Horn 8-inch Enclosure." Based on the Voight Patent, the folding horn design enables an extremely wide but natural frequency range from a small, slim enclosure using an eight-inch speaker. Recommended units are the Wharfedale Super 8 RS/DD, and the Goodman Axiette 8.

RECORDS AND RECORDING (Stand 1a).



RESLOSOUND (Stand 71).

Reslosound Limited, 24, Upper Brook Street, London, W.1.

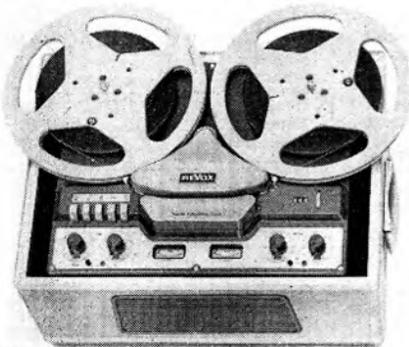
Two new additions to their wide range of microphones will be shown by Reslosound. First is the Pencil Dynamic (Type PD) which incorporates a miniature dynamic insert together with a lightweight tapered cylindrical housing. Reasonable bass cut in the associated amplifier enables the microphone to be used for high level close-speaking or singing without additional acoustic filters.

Combined tape recorder, disc-player, and tuner by Stuzzi

The second new item is the mini version of the above, designated MDP. With the same insert, this microphone has a much smaller body, and it is supplied as Lavalier, complete with neck attachments.

They will also show others in their range of microphones, including the versatile and robust miniature ribbon (RB/T) and another pencil microphone, the ribbon (Type PR) specially designed for amateur tape recorder users.

Accessories to be shown will include floor and table stands, microphone mounts, transistorised couplers, adaptors, plugs and sockets, and quick release adaptors.



The Revox Model 736

REVOX (Stand 15, Demonstration Room 315, Office 316).

C. E. Hammond & Co. Ltd., 90, High Street, Eton, Windsor, Berkshire.

The latest Swiss-manufactured Revox tape recorder, Model 736, is making its first appearance at the Fair. Among the features of this two-speed, 7½, 3½ ips, recorder are two VU meters, accommodation for 10½-inch diameter spools, and a reel-size selector switch for large or small spools.

The 736 is available in two- or four-track mono or stereo versions. The tape transport mechanism is solenoid operated by push-buttons, either on the machine or at a remote position.

A six-watt monitoring amplifier is fitted which can be switched to the incoming signal on either channel, the recorded signal on either channel through separate replay heads and amplifiers, or a combined tape signal. Cathode follower outputs are provided for further amplification or transcription purposes.

The overall frequency response of the 736 is 40-15,000 cps +2 to -3 dB, at 7½ ips. The price is 119 guineas in chassis form, or 124 guineas fitted in a case with a detachable lid.

ROGERS (Stand 43, Demonstration Room, Office 450).

SCOTCH (Stand 53, Demonstration Room 349).

Minnesota Mining & Manufacturing Co. Ltd., 3M House, Wigmore Street, London, W.1.

The 3M company will be showing the range of "Scotch" magnetic tapes and accessories. These include two standard-play, a long-play and double-play varieties.

Accessories include coloured leader and

timing tape in five colours, splicing tape, sensing tape, tape clips and an accessory kit including a tape splicer.

Copies of the "How to do it Booklet on tape recording," and the "Scotch" Playing Time Calculator will be freely available on stand 55.

SHERWOOD (Stand 42, Demonstration Room 122).

Audioson Ltd., Orchard House, Orchard Street, London, W.1.

A new more powerful version of the S-5500 integrated stereo amplifier introduced at last year's Fair will be shown on the Sherwood stand. The new unit is the model S-5500III which has an output of eighty watts music power, or 28 watts RMS per channel.

Sherwood are also introducing their S-9300, 36 watt (15 watt RMS per channel) transistor integrated stereo amplifier which features silicon transistors throughout the pre-amp and control stages. Special circuitry prevents damage through shorted output or overheating. A switch headphone jack is mounted on the front panel, and ten inputs are provided for phono, tape playback, tuner, and tape recorder monitoring.

Other Sherwood equipment to be demonstrated will include the S-3000 III FM tuner; S-8000 FM-MX integrated stereo receiver; and the S-7700 AM-FM-MX integrated stereo receiver. Demonstrations of disc reproduction and headphone listening will be given using the Grado Imperial Cartridge and Koss Stereophones.

SHURE (Stand 48, Demonstration Room 249, Offices 250, 251).

S.M.E. (Stand 44).

S.M.E. Limited, Steyning, Sussex.

The S.M.E. range of Series II pick-up arms are unchanged, but will be presented this year with the amplifier connecting lead as standard equipment in an attractive new pack.

SONY (Stand 73, Demonstration Room 311, Office 309).

Tellux Ltd., Avenue Works, Gallows Corner, Colchester Road, Romford, Essex.

A new range of tape recorders will be introduced by Tellux, importers of the Japanese-manufactured Sony equipment.

There will be four newcomers, the first of which is a stereophonic tape deck and amplifier unit, Sony 263D/SRDL, offered for the do-it-yourself constructor. Complete with a three-head system, this will retail at 39½ and 34 guineas respectively.

Other new models will be the 159 guineas Sony TC 777A, a professional two-track, two-speed, transistorised model. This also has a three-head system, and a quoted frequency response of 30-17,000 cps.

Next will be the Sony 600, a four-track, two-speed stereo recorder with a three-head system permitting tape monitoring, a hysteresis synchronous motor and transistorised hum-free pre-amplifiers. The quoted frequency response is 30-18,000 cps, and the price 106 guineas.

The fourth model, to be shown for the

first time, is the TC 200, described in our "New Products" section last month.

Tellux will also display the Sony 500 (four tracks, two speeds, 106 guineas); Sony TC 272 (two speeds, half-track stereo model at 56 guineas); and the Sony TC 464 (four track, two speeds, at 64 guineas).

Also on display will be the transistorised Bryan amplifiers, Models 400 and 600, both at 60 guineas, with a five-years' guarantee.

S.T.C. (Stand 3).

Standard Telephones & Cables Ltd., Electro-Mechanical Division, West Road, Temple Fields, Harlow, Essex.

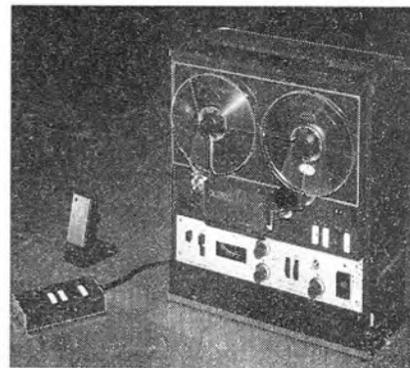
Four new microphones and a new set of earphones will be shown on the S.T.C. stand together with a wide range of their standard equipment.

First of the new microphones is the STC4113 a uni-directional microphone of distinctive appearance combining small size with good performance. Response to breath noises and mechanical vibrations is reduced to a minimum. The new 4114 unit, is an omni-directional microphone suitable for tape recorders, sound reinforcement and announcing systems.

For close-talking applications there is the 4115, a ribbon microphone designed for good quality speech from conditions of high background noise. The 4118 is a lightweight tubular omni-directional moving coil microphone offering good performance at a moderate price, and is described as ideal for music reproduction, speech and sound reinforcement.

The new dynamic stereo earphones have a wide frequency range and low distortion at high sound levels. A robust moving coil system incorporating a plastic diaphragm is housed in lightweight, shockproof moulded enclosures. Correctly matched and phased they are ideal for sound monitoring, and stereo and hi-fi listening.

Eight other studio quality microphones, including the 4033-A switchable moving coil and ribbon cardioid unit, will also be exhibited together with a range of accessories and light, medium and heavy-duty cables.



The Sony 777A, transistorised half-track, two-speed recorder

STUZZI (Stand 14, Demonstration Room 115, Office 116).

Recording Devices Limited, 44 Southern Row, Kensington, London, W.10.

Great interest will doubtless be shown on the Stuzzi stand where a combined tape recorder, record-player, and tuner will be shown and demonstrated by Recording Devices.

This is the Disc-Corder, a battery operated unit weighing only 8½ lb, with a tape speed of 1½ ips, and a 45 rpm disc unit. The com-

plete unit, which has a mains adaptor available is only 59 guineas, including P.T. It is designed with the tape and disc units mounted back-to-back; a row of push buttons selecting the appropriate function of tape, disc, or radio.

Programmes from either radio or disc-player can be recorded on the tape unit.

Also to be shown by Stuzzi will be their two-speed tape recorder 802FM which features a built-in FM tuner. This costs 75 guineas, including P.T., and operates at $7\frac{1}{2}$ and $3\frac{1}{2}$ ips. Quoted frequency response is 40-20,000 cps at the top speed. The same recorder without the tuner, Stuzzi 602, costs 50 guineas; and a similar version, with an AM tuner Stuzzi 504, costs 66 guineas, including P.T.

Also on show will be the Stuzzi Tricorder with three speeds, $3\frac{1}{2}$, 1 $\frac{1}{2}$, and 15/16 ips.



Top: The Stuzzi 802/FM, and bottom, the Stuzzi 602

TANDBERG (Stand 69, Demonstration Room 248, Office 262).

Elstone Electronics Ltd., Edward Street, Templar Street, Leeds 2, Yorkshire.

A replacement for the Tandberg Model 3B mono tape recorder, to be designated Model 9, will be the sole new feature on the Tandberg stand. First models are expected to arrive just prior to the opening of the Fair.

To sell at 69 guineas, the Model 9 features three speeds, $7\frac{1}{2}$, $3\frac{1}{2}$, 1 $\frac{1}{2}$ ips, weighs 22 lb., and measures 15 x 11 $\frac{1}{2}$ x 6 $\frac{1}{2}$ inches.

The familiar Series 6 stereo record and playback decks in two and four-track versions selling at 110 guineas; but requiring additional amplifiers and loudspeakers; plus the Series 7, complete stereo record and playback units at 93 guineas, two or four-track, will again be shown.

Elstone will also demonstrate again the Tandberg Language Laboratory. This comprises a transistorised amplifier and special tape recorder; and includes a control centre for 24 students. The laboratory was introduced for the first time last year.

TANNOY (Stand 23, Demonstration Room 447, Offices 446 and 463).

Tannoy Products Limited, Norwood Road, West Norwood, London, S.E.27.

A monitor range of loudspeakers, and

Battery recorder from Telefunken —Latest Revox model

their associated enclosures, plus pick-up cartridges will be shown by Tannoy.

Among the enclosures will be the Chatsworth II Aperiodic with a 12-inch speaker unit, as has the dual-throated port enclosure; and the similar York, with a 15-inch speaker unit.



"TAPE Recording Magazine" (Lounge 364).

Print and Press Services Limited, 7, Tudor Street, E.C.4.

The Editor and Staff of *TAPE Recording Magazine* will be present in a special lounge to welcome readers.

On sale will be current and back copies of *TAPE*, plus the 1964 *Tape Recording Yearbook*, and copies of the tape recording handbooks. These are *Advice on buying a tape recorder*, *Introduction to the tape recorder*, *Sound Effects*, *How to record weddings, Tape and Cine*, and *Hi-fi for the music lover*.

Also available will be the Tape Time Calculator providing an at-a-glance timetable for speeds from 15/16 to 15 ips.



TELEFUNKEN (Stand 5, Demonstration Room 402, Office 401).

Welmecc Corporation Ltd., Lonsdale Chambers, 27, Chancery Lane, London, W.C.2.

Highlight of the Telefunken stand will be the introduction of the Magnetophon 300, a battery/mains operated portable tape recorder.

This is a single speed, $3\frac{1}{2}$ ips, machine which will accommodate five-inch spools, and it is powered by dry batteries. A rechargeable accumulator is available, plus a power pack for mains operation.

Fuller details of this 59-guinea model are contained in the "New Products" section of this issue.

The complete Telefunken range of recorders will, of course, be shown. This includes the high quality two-speed Model M 55 with a frequency response of 40-16,000 cps at $3\frac{1}{2}$ ips, and a signal-to-noise ratio better than 46 dB. It costs 43 guineas.



THORENS (Stand 3a).

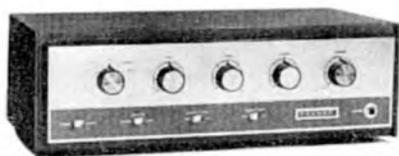


TRIO (Stand 62, Demonstration Room 121).

Winter Trading Company Limited, Winter House, 95/99, Ladbroke Grove, London, W.11.

Five new models will be exhibited on the Trio stand, among their range of Japanese-manufactured tuners and amplifiers.

Included in these will be two multiplex stereo tuners, the FM multiplex Model FX2U at 49 guineas, and the AM-FM Model AFX3U at 59 guineas.



The new Truvox stereo amplifier, which can be seen on Stand 41

At 99 guineas they will show the Model WX-400 FM-AM stereo multiplex stereo tuner providing ten watts per channel; at 59 guineas their Model TW-30 transistorised pre-amplifier providing six watts per channel; and at 19 guineas, an AM-FM Multiplex stereo adaptor Model AD-5U.

Other items will include three tuners at 31, 39 $\frac{1}{2}$, and 53 guineas, all of which will accommodate the AD-5U Multiplex adaptor for stereo broadcasting; three complete Multiplex tuners equipped to receive stereo broadcasts, at 49, 55, and 59 guineas; and various stereo amplifiers.



TRUVOX (Stand 41, Demonstration Room 442).

Truvox Ltd., Neasden Lane, London, N.W.10.

The latest range of Truvox tape recorders, announced last November, will be making its first appearance at the Audio Fair. This is the Series 90, comprising the R92, a half-track mono recorder at 69 guineas with the R94, four-track version at the same price; the PD93 and 95, two- and four-track versions of a mono tape unit, both at 59 guineas; and PD97 and 99, two and four-track versions of a stereo tape unit at 79 guineas each.

We understand two surprise products are expected from this company which will make them the first tape recorder manufacturer to provide a complete tape system.



VITAVOX (Stand 18, Demonstration Room 348, Office 362).



VORTEXION (Stand 74, Demonstration Room 202, Office 201).

Vortexion Ltd., 257-263, The Broadway, Wimbledon, London, S.W.19.

Three recorders will be on view and demonstrated by Vortexion. The CBL stereo recorder, with before and after comparison facilities of the recorded programme, plus a wide range of other features, will be shown together with the earlier WVA and WVB units featuring the Ferrograph Series 5 tape deck.

They will also exhibit their Type M8 ribbon microphone (£8 15s.); their 120/200 watt amplifier with a four-way mixer unit; or the 30/50 amplifier with two, three or four inputs; a mixer amplifier, 10/15 watt, incorporating a four-channel mixer unit; and three separate mixer units for three, four or twelve channels.



WILLIMAN (Lounge 246).

K. H. Williman & Co. Ltd., Blackford House, Sutton, Surrey.

Export agents for FM/VHF tuners, tuner amplifiers, stereo amplifiers and control units, pick-ups, tape decks and loudspeaker units and enclosure systems, Williman will be making a special welcome to overseas visitors to the show.

All information and assistance will be available in Lounge 246 for anything connected with the export sales of British hi-fi equipment manufactured by Kelly Acoustics Ltd., Rogers Developments (Electronics) Ltd., Planet Products Ltd., Armstrong Audio Ltd., and E.M.I. Sound Products Ltd.

(Continued on page 153)



introducing the
TRUVOX 90

introducing the TRUVOX 90

A NEW THOROUGHbred SERIES FROM A FAMOUS BRITISH MARQUE

Clinically professional in every line. Crisply precise in operation. Full and faithful in reproducing sound . . . this sums up the new Series 90—the finest yet from Truvox.

No concessions here to mass-market "styling". No fancy plastic moulding; no pretty-pretty cover fabrics. No "cosmetics" at all. Instead—clean, rugged and functionally austere, the new Truvox looks every inch what it is . . . a thoroughbred instrument for the enthusiast.

For the man who wants a *real* tape recorder; not a gilded toy on the one hand, nor a status symbol on the other.

Among the outstanding features of the Series 90 are:

- * "Piano Key" operation.
- * A cathode follower output.
- * Recording level meter.
- * Positive lock reel carriers.
- * 4 digit counter— instant reset button.
- * Hinged editing panel.
- * 'No-tape' autostop.
- * Mixing facilities.
- * Superimposition.
- * Forward facing Rola-Celestion loudspeaker.
- * 3 tape speeds— $7\frac{1}{2}$ $3\frac{3}{4}$ $1\frac{7}{8}$ ips.
- * 3 motor drive— Papst capstan motor.

R.92 2-track recorder
R.94 4-track recorder
Each 69 gns. (U.K. only)
Complete with moving coil microphone and first-class reel of tape.



PD.93 2-track mono tape unit. PD.97 2-track stereo tape unit.
PD.95 4-track mono tape unit. PD.99 4-track stereo tape unit.
Each 59 gns. (U.K. only) Each 79 gns. (U.K. only).

These handsome self powered tape units, in superb Afrormosia plinths, polyester finished, provide an ideal means of adding tape to the existing Hi-Fidelity system at a very economical price. They can be used with any amplifier at present available and be operated horizontally, vertically or any angle between.

To enable purchasers to make their own personal choice of microphone and tape, we do not supply these items with any tape unit.

TRUVOX LTD., Neasden Lane, London, N.W.10

Tel: DOLLis Hill 8011 (8 lines)



Allegro!

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ROOM 349
at the
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APRIL 2-5

Allegro. Legato. Forte. Pianissimo. However the music is to be played, it will be played well—and recorded well, too, on SCOTCH Magnetic Tape. Good music deserves the best tape.

SCOTCH Magnetic Tape is best because it is made, in Europe's most modern tape plant, in clinical conditions where dust and dirt are banished from the production areas. Right through to final packaging priority is given to purity of products.

More efficient production is passed on to you in high quality tape at the lowest prices. You pay an average 10% less for SCOTCH Magnetic Tape now!

And for easy recognition, SCOTCH is colour coded: black for Standard Play, green for L.P., blue for D.P. Now, there's no mistaking the best magnetic tape.

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Audio Fair Survey

(Continued from page 149)

WHARFEDALE (Stand 53, Demonstration Room 222, Office 223).

Wharfedale Wireless Works Ltd., Idle, Bradford, Yorkshire.

Two new speakers and two crossover networks will be introduced by Wharfedale. The speakers, eight and ten-inch units in their Bronze range, are now available in the RS/DD versions. They replace the 8-inch Bronze/RS, and Bronze/FS/AL, and ten-inch Bronze/RS and Bronze/FSB.

The crossover units are the HS/400/3 and the QS/800. The former unit is a half-section three-way separator with crossover frequencies at 400 and 3,000 cps. Available for 7-16 ohms only. It weighs 32 ounces, and measures 6 x 5 x 2½ inches. The QS/800 is a quarter-section two-way network with a crossover frequency of 800 cps, available for 7-16 ohms only. Weighing 15 ounces, it measures 5 x 3 x 2½ inches. Both units have a maximum input of thirty watts.

The range of their loudspeaker units, speakers, cabinets, will also be shown and demonstrated, and books by G. A. Briggs will be available.



WHITELEY (Stand 26, Demonstration Room 304, Office 305).

Whiteley Electrical Radio Co. Ltd., Radio Works, Victoria Street, Mansfield, Nottinghamshire.

The wide range of Whiteley hi-fi equipment including loudspeaker units, enclosures and matching equipment cabinets, stereo and mono amplifiers, and radio tuners will be displayed on stand 26.

Their Stentorian loudspeakers, varying in size from 1¼ inches up to 18 inches in diameter, are available with a variety of cone construction, speech coil impedance, and magnet strength to suit all requirements. The universal speech coil is fitted on the 8 and 10 inch units, and this feature is of great value in providing satisfactory matching to most systems.

Their enclosures, suitable for use with various types of speakers, will be displayed and a selection of items will be demonstrated. Finished in Sapele, Mahogany or Walnut Veneer, these bass-reflex "break-down" cabinets can be assembled with the aid of only a screwdriver.



WILSON STEREO LIBRARY (Lounge 155).

Wilson Stereo Library Ltd., 463, Stratford High Road, London, S.W.16.

Main item on show in the Wilson Stereo Library lounge will be their Stereo Index, a recommended list of every worthwhile stereo record. Recording and performance have been taken into account in the compila-

Tape firms to sponsor B.A.T.R.C.

FIRMS marketing magnetic recording tape in the United Kingdom have formed a Committee to sponsor the annual British Amateur Tape Recording Contest, and vigorous promotion of the event is planned.

The Organising Committee has been formed under the chairmanship of C. Rex Hassan, who is also the Director of the International Audio Festival.

The members of the Organising Committee are: Agfa Ltd., B.A.S.F. Chemicals Ltd., E.M.I. Tape Ltd., Kodak Ltd., Minnesota, Mining & Manufacturing Co. Ltd., M.S.S. Recording Co. Ltd., Philips Electrical Ltd., and Zonal Films (Magnetic Coatings) Ltd.

Douglas Brown, Editor of "TAPE Recording Magazine," has been elected the perpetual Vice-Chairman of the Committee, and Mr. Roger Aslin has agreed to serve as its Honorary Secretary. Mr. Aslin is also the Honorary Secretary of the Federation of British Tape Recording Clubs.

The offices of the Committee are c/o Audio Information Service, 42, Manchester Street, London, W.1., and 7, Tudor Street London, E.C.4, the offices of "TAPE Recording Magazine."

The British Amateur Tape Recording Contest has taken place annually since 1957, and many of the winning tapes have been broadcast by the BBC. Since 1958, the Contest has been affiliated to the International Amateur Recording Contest, on the Continent, which has been held annually since 1952.

Until now the British event has been sponsored by "TAPE Recording Magazine" and organised with the co-operation of several individual firms in the industry and the Federation of British Tape Recording Clubs.

It now becomes a co-operative effort by the above magnetic tape firms to promote amateur recording activity.

The closing date for entries in the 1964 Contest will be JULY 31. Further information and details of a bigger prize-list—including 50 guineas cash for the "Tape of the Year"—will be published next month.

tion of this list, and every item has been praised or at least approved by leading record critics and by W.S.L.

The stereo index provides complete information on each stereo record including details of the performing artists in operas, or titles and artists for pop and jazz titles. Their recording dates are also supplied.

Over 200 hundred pages of information up to and including Easter 1964 are included in the 7s. 6d. Stereo Index which covers all tastes.



WORDEN (Lounge 313).

Worden Audio Developments Limited, 54, Chepstow Road, London, W.2.

A complete stereophonic system will be displayed and demonstrated in room 313. This comprises two "Panasonic" loudspeakers; a transistorised stereo control unit, with companion main amplifier; transcription motor, and Worden Articulated pick-up arm fitted with a magnetic stereo cartridge. All of the items in this installation may be purchased separately.

Although the system is primarily for record reproduction, the control unit also provides for tape, radio, and microphone inputs, and contains all facilities for mono and stereo reproduction. The price is 18 guineas, and this self-powered unit is operated by a nine-volt battery.

The stereo power amplifier costs £15, provides four watts per channel and has a quoted frequency response of 20-20,000 cps.



ZONAL (Stand 40).

Zonal Film (Magnetic Coatings) Ltd., Zonal House, Heron Trading Estate, Westfields Road, London, W.3.

The recently introduced coloured leader and timing tapes, calibrated in tape speeds (ips) and with provision for titles, etc., will be part of the display on the Zonal stand.

They will also be showing their range of magnetic recording tape spooled on distinctive coloured reels for easy identification: red, green and clear spools for standard, long and double-play tapes. Splicing tape and metallic stop foil will also be shown.

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Improving quality with an external speaker

By HARRY MACK

THIS is not strictly a servicing article. That is to say, there is no intention to advise: "connect this to that, tighten here, bend there and your five-guinea transistorised toy will sound like the latest Clarke and Smith." Neither is it a shopping article. It would be so easy to catalogue the various loudspeakers on the market, but I fear the Editor would frown upon our waste of space.

The fact is—if you will bear with me—quite a few readers have indicated that they would like a little advice on improving the quality output from their tape recorders by adding an external loudspeaker system. Others are concerned

The problem is: what loudspeakers to use; how much should they cost; how do we connect them; what do we do if the tape recorder hasn't the facilities for adding loudspeaker or headphones?

First, the average tape recorder is something of a compromise. Even if it needs a couple of coolies to lug it around, the manu-

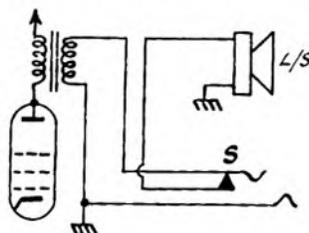


Fig. 1b. Extension speaker jack-plug open-circuits the internal speaker connection.

facturer prides himself that he has made it "portable." Because of this virtue of portability, the loudspeakers fitted to the basic machine are often inadequate for high fidelity reproduction.

This is not to knock the loudspeaker makers. Modern high-flux density jobs are quite capable of all the output we should require, and a tolerable good response. But when you mount a loudspeaker in a fairly small cabinet, surround it with masses of machinery and drive it with a mediocre transformer, you can hardly complain if

the figured bass on the Festival Hall organ sounds more like Pinky and Perky.

A loudspeaker is a transducer: that is, it converts electrical energy into mechanical energy. Discounting the various theories, we can simply say the cone of the speaker pushes out a column of air. As sound is simply a movement of air (I'm leaving myself wide open here for the attacks of the purists, but will develop the argument as we go along), then it is necessary to have a cone of sufficient dimensions and stiffness to handle the bass notes, yet able to respond rapidly to frequency changes, and still give a proportional energy drive to handle the treble. There are other factors, principally the shape and size of the enclosure in which the loudspeaker is mounted. There just isn't room in the domestic tape recorder for what the enthusiast needs.

Fortunately, most machines will have an output suitable for running an extension loudspeaker. The difference in listening

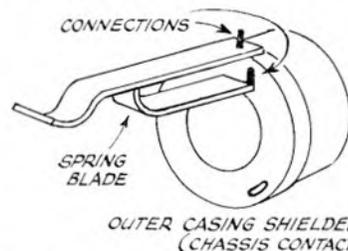


Fig. 1c. A "make-and-break" socket for disconnecting internal loudspeaker.

quality when one's favourite tapes are re-played through a properly positioned and enclosed external speaker is so obvious as to make one wonder why more is not made of this virtue in the manufacturer's advertising.

Unfortunately, it is not always possible to connect the additional loudspeaker in the way that we should wish. Not without making alterations to the circuitry, that is. Some output sockets are simply connected across the existing loudspeaker, as in Fig. 1a.

This raises the first problem, as discovered by B.L.O., Swansea. He wanted to run the extension speaker in another room and cut out the tape recorder's own loudspeaker at will. "Is it possible to fit a simple switch?" he asked. The sort of set-up he envisaged is precisely the technique employed by many other tape recorder makers, whereby the action of plugging in the extension loudspeaker open-circuits the connection to the internal loudspeaker. This is shown in Fig. 1b, where the switch S is actually part of the socket. One type of socket is illustrated at Fig. 1c. The spring blade of the longer connection is pushed aside by the pin of the connecting plug, breaking the circuit to the shorter blade and making circuit instead to the pin.

One way of getting over this without drastic alteration, and without the need for

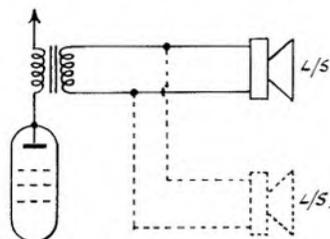


Fig. 1a. Output socket connected across existing loudspeaker.

with that private world, where Dad sits smugly amid the family din, listening to his latest tapes on a pair of headphones.

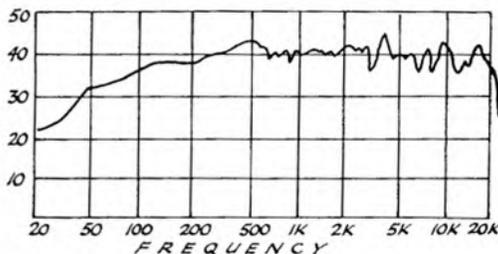
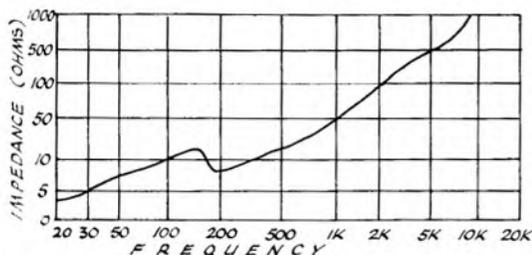


Fig. 2a (left) and 2b, show the impedance and response curves of a typical high-quality moving-coil loudspeaker.

altering all one's plugs and sockets to adapt a "make-and-break" technique, is to fit a simple toggle switch near the extension loud-speaker socket, breaking the connection to the internal speaker. But care must be taken not to allow the machine to run with no load at all on the output stage. With the external speaker disconnected, the switch must always be "On."

Next point, raised by T.W., Chichester, was the type of connecting cable, and its maximum length. "Must it be screened to avoid hum pick-up?"

At the low impedance output of the ordinary machine, usually between 3 and 7 ohms and certainly not more than 15 ohms, attenuation due to insertion loss of the cable is negligible. Ordinary twin flex can be used quite safely, and it need not be screened as the problem here is not so much hum pick-up as hum radiation. The only proviso that should be made is that speaker leads should not run parallel with mains leads. It is good practice to keep them as far apart as possible. A personal note—I do not favour bell-wire, despite the saving in cost.

The single conductor has a nasty habit of breaking at bends, or under some clumsy visitor's heel, and always in the middle of something interesting. Stranded cable is much more durable. The actual size of the cable is not important; current is very low. There is one other point to note—where AC/DC equipment is used, and the chassis is wrongly connected, with the polarity such that it is "live," then the loudspeaker extension can also be "live" and dangerous if the secondary of the output transformer has one side to chassis, as is usual.

The question of impedance was raised above. It is one that foxes many people until they realise that this, again, is one of those "compromise specifications," that depends on a number of factors. But there are some general rules that should be followed.

Assuming that we are talking about moving-coil loudspeakers, which are the greatest majority, we can say that they are likely to the low impedance, and that the stated im-

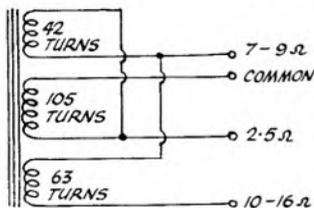


Fig. 3a. Circuit of a matching transformer.

pedance will be that measured at a standard frequency of 400 or 1,000 cycles per second. As the active part consists of a coil of wire, we can expect the moving-coil speaker also to have a low DC resistance. In fact, a useful rule-of-thumb is to calculate the impedance as a third or half as much again as the DC resistance. But it should be remembered that this impedance is by no means a straight line.

Figs. 2a and 2b show the impedance curve and the response curve of a typical high-quality moving-coil unit. The impedance curve has a peak at the natural resonance of the speaker, around thirty cycles, and a rising impedance with frequency (because its voice coil is an inductive element). The frequency response is of the unit "unloaded," and it looks frighteningly uneven. But this curve was actually plotted for the Wharfedale Super 8/RS/DD, and as the basic loudspeaker costs £7 9s. 5d. with

tax, you can see it is by no means a poor example. The important thing is that its enclosure modifies the ultimate curve—and so for that matter does the room in which it is used. The only real test is to listen to results under conditions approximating to normal.

However, we digress. Nominal impedances may be 3, 7½ or 15 ohms. It is first necessary to find what the output impedance of the tape recorder should be, then match any

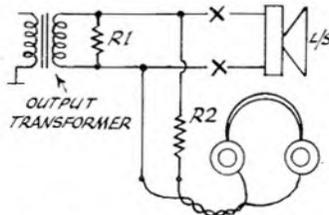


Fig. 3b. Headphones connection. Insert R1 = O/P impedance; and R2 = 10 × R1, and disconnect loudspeaker. For low impedance headphones, decrease R2.

external speaker—or combination of speakers. With a normal domestic machine, giving out about four watts, and using a 3-ohm loudspeaker, the effect of simply adding a similar speaker in parallel is hardly likely to be noticed. Actually the output would be reduced, but unless the machine is working flat out this hardly matters.

What does matter is the necessity to maintain correct matching when dissimilar speakers are used. If you want to retain quality of output, and still keep up the power, it is necessary to use a matching transformer such as illustrated in Fig. 3a. This is a type marketed by Messrs. Wharfedale, and is capable of handling fifteen watts quite comfortably, while matching a hi-fi (10-15 ohm) speaker to a 2.5 ohm output and allowing one to use both or either speaker. This answers A.A.G. of Leicester, who was given a 15 ohm, ten-inch, speaker and was not sure whether connecting it to the output of his Sound Riviera would improve matters. In his case, a direct connection in parallel would have sufficed, despite the mismatch; but the 15 ohm unit would not have been fully loaded by his available 2½ watts.

Adding a high-frequency unit, a tweeter, is a far different matter. The amount of power needed to drive the loudspeaker cone or diaphragm at the upper end of the audio spectrum is very small compared with that needed to move that column of air I mentioned earlier. Anyone who has watched a large speaker reproducing bass organ notes will be well aware of the difference. The tale of the audiophile who spent a fortune trying to eliminate a draught in his listening room, only to discover it came from the bottom port of his reflex cabinet is no doubt apocryphal, but it illustrates the point!

The tweeter may be a small (typically 2½ inches) moving coil, ribbon or electro-

static unit. Several tape recorder manufacturers already have these fitted, although their presence in restricted conditions, especially if they are side-mounted, would appear to be more of a sales gimmick than an audio improvement. In these cases, as in many radiograms, the tweeter is simply fed via a 2, 4, 8, or 12 microfarad capacitor.

It is worthwhile experimenting with this simple device, but, as P.N.J.Q., Manchester, pointed out a short while ago, unless the tweeter is correctly enclosed at the rear, a lot of its advantages at high frequency are lost, and the result may be similar to applying top-cut from a simple tone control.

The best method of tweeter connection is the provision of a "crossover" unit. This is a combination of inductance and capacitance arranged so that the tweeter receives the bulk of the high frequency energy from the output while the low frequency unit, the "Woofer," handles the lower frequencies. Alteration of values changes the frequency at which the cross-over takes place. Of course, the crossover is not sharp, and in a well-designed unit, such as that illustrated in Fig. 4 there will be about an octave of "overlap," where both speakers are operating together. When calculating the values

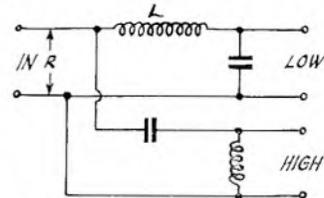


Fig. 4. Circuit of a "cross-over" unit.

of coil and capacitance, it is usual to work to standard components and adjust one's formulæ to balance.

The formulæ are as follows:—

$$L \text{ (milli-henries)} = \frac{R \cdot 10^3}{\pi f \sqrt{2}}$$

$$\text{and } C \text{ (Microfarads)} = \frac{10^6}{2\pi f R \sqrt{2}}$$

where f is the crossover frequency and R the characteristic impedance of the circuit. This sort of circuit, having what is known as Constant Resistance, is widely used in audio networks.

For our purpose, however, it is hardly necessary to go to great lengths, and a simple 12 mfd capacitor for a 3-ohm tweeter, acting as a high-pass filter should suffice. However, for those who wish to experiment with more ambitious arrangements, the circuit at Fig. 5 gives values for a three-speaker system. (This is also a Wharfedale circuit, and readers who wish to follow the matter farther are recommended to Gilbert Briggs' excellent publication, "Loudspeakers.")

It should be remembered that the tweeter is not designed to handle great amounts of power, so the full audio output should never be applied to the high frequency unit alone.

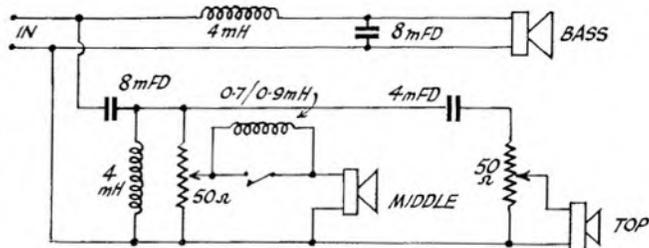
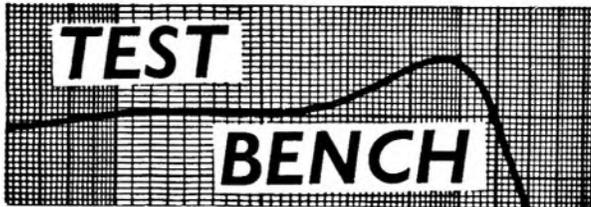


Fig. 5. Values for a three-speaker system.



STEREOMASTER

By H. Burrell Hadden

BEAUTIFUL in appearance, excellent design, comprehensive in operational facilities, and first class in performance. Such is the "Stereomaster" recorder, made in Denmark by Bang and Olofsen Ltd. Indeed, recorder is an understatement for this magnificent piece of equipment; it is a complete sound system for stereophonic or monophonic recording and reproduction.

The Stereomaster is available in four different versions, two table models and two suitcase models, each having the alternative of two or four tracks operation. The suitcase models carry monitoring loudspeakers in the lid; the table models are intended for operation with external loudspeakers, and carry no speakers of their own. The machine tested was the two-track table model.

The Stereomaster will accept tape reels up to seven-inches in diameter, and

operates at $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{7}{8}$ ips. The tape speed control, which also switches the recorder on and off, is a conveniently shaped knob situated between the spool hubs. All the other controls are situated on a very convenient sloping panel at the front of the equipment. And what a lot of controls there are!



Once their functions have been understood, however, the equipment is the most flexible I have yet encountered, and this flexibility enables many interesting operations to be performed.

The controls consist of three groups of push buttons, four linear slider type gain controls, two concentric knobs giving bass and treble tone control on replay, and a stereo balance control, also operating on replay. A further control of the "Joystick" type governs the tape operations of play, fast forward, and re-wind.

The amplifier controls are conveniently mounted in three groups, the first, on the left of the panel, consisting of two rows of four push buttons. The first button on the top row is an additional mains "on/off" switch, so that the amplifiers can be used alone without turning the tape speed control, and thus engaging the tape drive. This enables the equipment to be used for the reproduction of radio or gramophone—suitable receivers and record players being available from the manufacturers. The second and third buttons operate the "record" functions for the two tracks, in conjunction with the "play" switch, suitable interlocks being provided to ensure that accidental erasure does not take place. The fourth button is used for recording, monophonically, the second track in exact synchronism with an existing one. Suppose that the top track has already been recorded, and it is desired to record further material on the bottom track, so that the two can be played together in synch. This switch

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ALAN EDWARD

BEEBY

LOOKING for someone to record the commentary for your latest tape or cine documentary? Why not engage a professional to do the job for you?

TV and film-actor, Donald Morley (remember him as Babbage in the BBC's "Compact" series, and as Elsie Tanner's boy-friend, Walter Fletcher in "Coronation Street"?) offers his services in this capacity to semi-professional and amateur groups for a reasonable fee. He told me: "Through my TV-connections, I am also able to contact fluent French and German speakers, which is sometimes very useful in the case of recordings made by or for Educational and Historical Societies."

Nor are Mr. Morley's talents confined to straightforward commentaries. He takes in his stride Cockney, Welsh, North Country, American and French dialects, together with a wide range of "animal" and singing voices for animated cartoons. A taped commentary of his which accompanied a Photographic Society's recent exhibition at the Olympia Photo Fair earned him high praise from the experts.

Mr. Morley explained: "I am able to consider evening engagements in the London area, and weekend bookings elsewhere. Or, if a client prefers, I will record the tapes on my own machine at home." He can be reached by phone at PROspect 9610.

"BAN-THE-BEAT" Department: I've had a number of letters recently saying things like: "Do you know of anyone who'd care to swap some old '78' discs with me?" and "Do you know of anyone who has a tape or disc copy of so-and-so singing such-and-such a number?" No mention, mind you, of beat groups like Terry Tripe and the Triffids. Instead, names crop up like Guy Mitchell, Frankie Laine, Teresa Brewer, Jane Morgan, Kaye Starr, Shirley Abicaira and Jo Stafford. Film-tracks of the early 'fifties are mentioned such as "Quo Vadis," "Seven Brides for Seven Brothers," "There's No Business Like Show Business" and "Oklahoma." Strictly stuff that was fashionable back in the not-so-distant past, when people wrote things called "songs." Remember...?

I'd be glad to start a Swop Section if anybody's interested, and to pass on details of items offered or required. I'd also like to know, by the way, of any dealer having stocks of "78" discs for sale. Several readers have asked for this information. Replies direct to me, please, at 88, Clare Street, Northampton.

"THIS letter's for you," said the Editor, handing me an envelope. "It would appear to be from the Police." They finally caught me halfway down Tudor Street and dragged me back. "Read it, you fool!" they said. I read it... and breathed out again. It turned out to be nothing more lethal than an interesting news-item kindly sent to me by reader, Les Silcock, Secretary of the International Police Association's Tape Group.

The group was formed six months ago by Les, in collaboration with Bob Blake of Birkenhead. Members of the Civil Police, Special Constabulary, Railway Police, Dock-

yard and Air Ministry Police are all eligible for membership, and this applies throughout the world. Although small in number at present, all the Group's members are keen, dedicated tape enthusiasts, and one of their most successful ventures to-date is the Round-Robin Tape Scheme in which practically everyone participates. The 5s. fee includes a 3 in. spool of tape (which remains their own property), directories, newsletters and language-courses entirely free of copyright. Many I.P.A. Members spent their holidays last summer visiting tape-contacts. Seven, in fact, called on Mr. Silcock at his home in Sheffield.

On Monday, May 25, the International Police Association will be holding their Triennial Congress at Blackpool, and in the five days following, Les assures me, the Association's Tape Group will be fully represented. Amongst other events, B.A.S.F. have promised to repeat the demonstration which they staged so successfully at last year's Audio Show, including the free Tape-Mailing Service. Further information may be obtained from Mr. Silcock at 42, Greenwood Road, Sheffield 9, Yorks.

ONE of the Midlands' best-known and most popular entertainers was telling me recently about his interest in tape recording. Carl Clifford is a professional puppeteer, and his shows, under the general title of "Theatre in Miniature," have thrilled and delighted audiences of all ages within a radius of 150 miles of his home-town, Northampton.

Carl acknowledges unreservedly the value of tape recording in this particular sphere of entertainment. "All our music and effects—a vital part of our productions—are pre-recorded in our own sound studios," he explained. His tape equipment is almost exclusively Philips. "I've had one machine which I call 'Old Faithful' for some years now, and it's given excellent service." The tapes he uses for the shows are standardised at 3½ ips, which Carl considers quite a satisfactory speed for general-purpose playback. Together with his three assistants, John, Stephen and Peter, Carl makes and maintains the Company's stock of 200-300 puppets, designs and builds all his own scenery and props, as well as operating the complex lighting and effects-plots. "We can present a show in spaces ranging from a large sitting-room to a normal-sized theatre," he told me. One "Clifford" production, for example, "Beauty and the Beast," is a "theatre-only" item, and runs for two hours.

Carl is also a competent colour-photographer and sound-recordist in his own right. His full-length documentary, "Moroccan Holiday" was recently premiered at Northampton's Town Hall with outstanding success.

This talented young man has one complaint, however: "When one talks about puppets, some people's minds go no further than an ordinary Punch-and-Judy Show." All I can say is that when those people do eventually get to see one of Carl's "Little Spectaculars," they're in for an extremely pleasant, eye-opening surprise!

Clubs interested are invited to write or phone to Carl Clifford, 17, Rushmere Road, Northampton. Tel.: Northampton 33668.

MR. P. WYMORE of 60 Edinburgh Gardens, Windsor, Berkshire, would like to contact reader "Laundon" or "Landon," who telephoned me some months ago.

A one man band on tape

WOUT STEENHUIS, Dutch-born musician, was guitarist and founder-member of the famous Dutch College Swing Orchestra before he came to live in England. He can now be heard regularly in BBC broadcasts, notably "Easy Beat" on Sunday mornings, and "Music till Midnight" on Monday evenings.

He appears on our front cover this month by virtue of his special tape recording interests which make him a musician with a difference. When you listen to Wout, and you hear an orchestra playing bass, ukelele, banjo, rhythm guitar, electric guitars, and Hawaiian guitar, plus three voices singing in harmony, you hear only one man; Wout plays and sings it all himself.

He has his own home recording studio at Broadstairs, and makes his recordings with the help of his friend and neighbour, Les Wake, an electronic engineer for a local radio and TV dealer.

Of the three Ferrograph recorders in the studio, two (Series 5) are used at 15 ips for the actual recordings; the third machine, which has a second recording head fitted, is used to introduce tape echo. In addition, use is made of an amplifier coupled with a Hammond Spring Echo unit, a so-called reverberation unit, and a four-channel mixer with treble and bass boosts which enable them to "doctor" their sounds in various ways. Most of the instruments have their own electronic pick-ups and they can therefore be recorded by plugging straight into the diode socket. Acoustic tracks (voices, ukelele, flutes, etc.) are made through Reslo microphones.

Basically, one track of music is recorded on one machine, and then transferred to the second recorder mixing in a second instrument (or voice). The process is then continued, and a third track is added to the programme. Wout has made recordings containing up to nine tracks, and his and Les' chief worry is the maintenance of good quality. Each dubbing must introduce some deterioration, but careful manipulation of mixer and echo units now results in recordings which are even acceptable to the BBC and TV studios.

In his broadcasts, Wout uses tapes containing all the tracks except the melody line. He plays the tape back through large extension speakers, and at the same time plays or sings the melody "live" through a separate amplifier.

When performing on the stage, the recorder is usually out of sight with Les Wake operating it. He also works a special mixer for volume and tone control. On his first Columbia LP, which features him playing and singing twelve tunes, Wout is heard a total of 63 times.

TECHNICAL NOTE: Intermittent hum trouble in the beginning almost defeated Wout and Les, until they discovered the electric underfloor heating was the culprit. Now the heating is always switched off as soon as serious recording starts.



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Tape records reviewed

Here is some superb music

CLASSICS



By Edward Greenfield

RACHMANINOV. Symphonic Dances. **RESPIGHI.** Feste Romane. London Symphony Orchestra conducted by Sir Eugene Goossens. WRC (TT 277), 3½ ips, mono. 29s.

Rachmaninov's three Symphonic Dances were his last major work, completed only two years before he died in 1943, and it is surprising that they are not far better known. It is a great mistake to regard Rachmaninov as a piano composer merely, just because he himself was a great virtuoso of the instrument. This work shows his superb mastery of orchestration. It was written specially for the Philadelphia Orchestra, then as now the lushest-sounding orchestra in the world, and anyone wanting to luxuriate in beautiful sounds should certainly hear this.

The recording comes from the Everest stable, and is extremely brilliant. This was one of the last records made by Sir Eugene Goossens and it was one of his best.

The Respighi, made at a different session, is also brilliantly done. Some critics have called this picture post-card music, and in a way that is a just comment, because the composer was mainly concerned with atmospheric colouring. But these pictures

More honours for 'The Rest is Silence'

THE film, "The Rest is Silence," has been placed second in the "Top Eight Contest" for 8 mm film organised by "Amateur Movie Maker," and has also taken an award for the best use of sound in the same competition.

Norman Paul's twenty-minute feature film on the last hours of a man in the condemned cell, was originally a tape drama. It was the "Tape of the Year" in the British Amateur Tape Recording Contest for 1960, and went on to win the Grand Prize in the International Amateur Recording Contest held in Holland. The tape was also played in the BBC Home Service.

The Mountview Players, a local amateur dramatic group, supplied the actors, as they did for the fifteen-minute tape.

Mr. Paul's prize is an 8 mm sound projector, the Silma Sonik, donated by David Williams Cine Equipment Limited. The film can be seen, together with the prize-winners, in the "Ten Best" competition organised by "Amateur Cine World," at the National Film Theatre in London, from April 13-18.

of Ancient Rome on holiday provide wonderful scope for conductor and players. Again the recording is outstanding.

BACH. Four Violin Sonatas (BWV 1021-4). Reingold Barchet, Robert Veyron-Lacroix, Jacoba Muckel. WRC (TCM 47), 3½ ips, mono. 29s.

That title may look rather intimidating, and frankly I think it is high time that someone took the Bach violin sonatas in hand and provided a simple numbering system. Then I am sure we should hear a great deal more of them. This is a tape I should like everyone who has enjoyed Bach to hear. These are not among the best-known Bach violin sonatas but from a second set of six that is rarely played. There is some superb music here.

Some of the slow movements have the same hushed religious intensity as marks such sublime inspirations as the famous Air from the Third Suite (usually known as "on the G String"). The quick movements have the sprightliness of a young man thoroughly enjoying himself in his work, for after all, Bach was still under 40 when he wrote this music.

The performances here are splendid. Reingold Barchet is remarkably firm and accurate with a clear, big tone that at once inspires confidence in the listener, and in the heavenly *Affetuoso* movement of the C minor sonata, he scales his tone down with a true sense of intimacy. Following authentic practice a harpsichord and cello provide the continuo. The recording is very forward and clear, perhaps a little too much so, but it is a fault in the right direction.

SCHUBERT. Piano Sonata in A (D.959). **SCHUMANN.** Fantasietücke Opus 111. **LISZT.** Grand Galop Chromatique. Shura Cherkassky. WRC (TT 58), 3½ ips, mono. 29s.

CLEMENTI. Sonata in B flat, Opus 47 No. 2. **SCHUMANN** (arr. TAUSIG). *Der Contrabandiste.* **LISZT.** Consolation No. 3. Study on "La Campanella." **CHOPIN.** Scherzo No. 3. *Barcarolle.* Nocturne in F Minor. Waltz in E Minor. Shura Cherkassky. WRC (TT 247), 3½ ips, mono. 29s.

Shura Cherkassky is one of the most vital pianists before the public today, and both these interesting recitals can be recommended for some really fine playing. Cherkassky with his slavonic background does not always play Schumann and Schubert in the traditional Viennese or German way, but his romanticism is still most spontaneous-sounding and convincing.

In Liszt and Chopin, of course—two composers with an admixture of influences from East Europe—he is completely at home, and it is a delight to hear such a delightful piece of nonsense as Liszt's Grand Galop Chromatique played with such drive and virtuosity. It really does demand hair-raising technical feats. Recording the piano is never easy, but this is as faithful as you can hope for.

MOZART. Piano Concerto No. 17 in G (K.453) and 23 in A (K.488). Gyorgy Sebok and the Mozart Chamber Orchestra conducted by Jean-François Paillard. WRC (TT 278), 3½ ips, mono. 29s.

These are not ideal performances, but tapes of Mozart Piano Concertos are not all that plentiful, and these are among the most warmly-satisfying works in the whole repertory. Mozart wrote them for himself to play at concerts in Vienna. When most of them were written (including these two) it was a period of comparative success for him, and they reflect not merely the sunny



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perfection of early Mozart but the mature warmth and confidence of a supreme genius. The slow movement of the A major goes against the general run of Mozart's music in being in a minor key, but that somehow only serves to highlight the optimism of the rest.

Sebok and his accompanists are a little ungracious. The playing is generally crisp and unmannered, but one ideally asks for rather more stylishness and sense of poise. Sense of enjoyment too. The recording is very good indeed.

POPULAR



By Fred Chandler

Those four on tape again

WITH THE BEATLES. The Beatles. Parlophone (TA-PMC 1206), 3½ ips, mono. 35s.

Messrs. John Lennon, Paul McCartney, George Harrison, and Ringo Starr invade the tape market again with their second issue. The album of this tape made disc history with advance orders being so great a golden disc was inevitable. It also appeared in the Top Twenty, and has become the fastest selling disc ever.

Seven of the tunes are written by Paul and John Beatle, including *All my Loving*, *It won't be long*, and *Little Child*. George Beatle breaks their run with his composition, *Don't bother me*, which he also sings.

Following his success with *Boys* on their first LP, drummer Ringo sings *I wanna be your man*. This is preceded by a slow, almost African tribal chant type of number—*You really got a hold on me*—which suggests the Beatles were trying to be musical.

Fourteen tunes altogether. Perhaps in some part of a remote African village there exist some persons who have not yet heard of the Beatles, but listening to this tape, one can easily understand the impact this Liverpoolian quartet have made on the world.

FOR YOU—ADAM. Adam Faith and the Johnny Keating Orchestra. Parlophone (TA-PMC 1213), 3½ ips, mono. 35s.

From a 75s, a week messenger boy to pop star and film actor with a supertax income was the astonishing achievement of Adam Faith who shot to fame with his *What do you want* recording incorporating the "by-bee" pronunciation gimmick.

This 24-year-old star has a pleasing personality, and on this tape his own distinctive style comes through some of last year's hits.

Forget Him, *Let there be love*, and *Hello Mary Lou* are the three favourites of mine;

but I like him best with his optimistic *Lazy River*.

Also featured are *Take good care of my baby*, and *Ginny come lately*. *It doesn't matter any more*, originally sung by Buddy Holly—it made third place in the charts—and written by Paul Anka is his shortest and liveliest number, and then he goes straight into his farewell, *Bye Bye Love*, joined by an unnamed chorus.

BOBBY VEE MEETS THE VENTURES. Liberty (TA-LBY 1147), 3½ ips, mono. 35s.

Bobby Vee's big chance came when Buddy Holly was killed, in that tragic air crash five years ago last month, on the way to a concert date in Minneapolis. The concert promoters decided the show must go on, looked around for local talent, and booked Bobby and his group.

Bobby, voted vocalist of the group mainly because he knew all the lyrics to their then sparse repertoire, was later introduced to Liberty Records and soon cut his first disc "Susie Baby" with key members of the original group backing him.

Since then he has become one of the hottest names in show business. He appeared in all the top American TV shows, and has a creditable and enviable list of British and American hits to his name.

He came to England two years ago for a month of one-night stands with The Crickets.

This tape is the fourth of his LP albums, but this cannot expect the same sales as the similar title made with The Crickets. *Walk right back*, written by Cricket Sonny Curtis, and a hit when recorded by The Everly Brothers, is, perhaps his best number on track one.

The Ventures provide two instrumentals, *Caravan* and *Wild Night*, both intricate and pleasant but not really outstanding. One of Bobby's own compositions *What else is new* is included on the tape which also features *I'm gonna sit right down and write myself a letter* among the twelve numbers.

JIMMY'S FANCY. Jimmy Shand and his Band. Parlophone (TA-PMC 1144), 3½ ips, mono. 35s.

This is the second tape by this famous Scottish bandleader; and again it is a question of taste.

The kilt-flying atmosphere of the northern dancing clubs is brought vividly to mind as one listens to this hour-long interpretation of some traditional airs.

The Bluebell Polka, and *The White Cockade* are perhaps the best known of the nine sections on the recording. The latter is sub-divided again to introduce *Davy Knick-Knack* and *Come let us dance and sing*.

Also included are the familiar *Fiddler's Joy*, and *Colonel Ridley's Quickstep*. Twenty-six tunes, with a sprightly air, would make a good investment if your thoughts are prone to wander over the border.

The tapes reviewed this month are issued by the following companies:

"Liberty," "Parlophone": E.M.I. Records Ltd., 20, Manchester Square, London, W.1.
 "WRC": World Record Club, Box 11, Park-bridge House, The Little Green, Richmond, Surrey.

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NEW PRODUCTS

FIRST BATTERY MODEL BY TELEFUNKEN

THE first battery-operated tape recorder to be manufactured by Telefunken will be shown at the Audio Fair. This is the Magnetophon 300, a battery/mains operated tape recorder operating at 3½ ips, and selling at 43 guineas. We hope to review this model in our battery recorder survey in the June issue of *TAPE*.

It has a quoted frequency response of 40-13,000 cps, and wow and flutter is rated as better than 0.2 per cent. Signal-to-noise ratio is given as better than 50 dB.

With accommodation for five-inch reels, the M300 will provide a playing time of 48 minutes on each of the two tracks using long-play tape (900 ft.).

Ordinary dry batteries can be used as the portable power supply, but a re-chargeable accumulator is available if preferred. There is a separate power pack for mains operation and this will also recharge the accumulator. The battery voltage is 5.5 to 7.5 volts.

Main feature of the M300 is the facility allowing one-finger operation when the machine is held by its carrying handle. Other features include a built-in loudspeaker



handling the power output of one watt. An omni-directional moving coil microphone, complete with table stand; recording lead; five-inch spool of tape and spare spool are included in the price.

It measures 11 x 10½ x 3 inches, and weighs 8 lb.

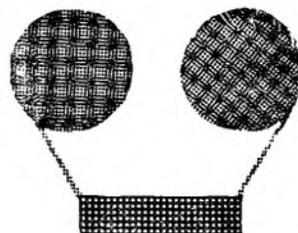
Weltec Corporation Limited, Lonsdale Chambers, 27, Chancery Lane, London, W.C.2.

WEST GERMAN FIRM ENTERS RECORDER MARKET

THE first tape recorder to be introduced by Dual, the West German hi-fi reproduction equipment manufacturers, will make its bow at the Audio Fair. It is expected to sell in the £90 price region.

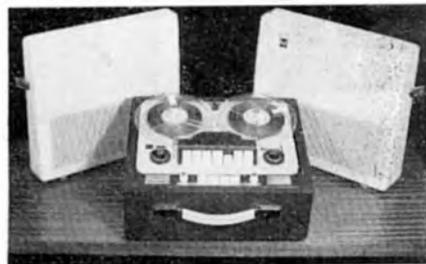
The Dual TG12A is a three-speed, four-track stereo recorder which will accommodate seven-inch spools. Playing time available using standard-play tape (1200 ft.) is 64 minutes per track at 3½ ips. Rewind being achieved within two minutes.

The quoted frequency response is 40-



20,000 cps at the top speed of 7½ ips, wow and flutter is rated at 0.15 per cent at this speed, and signal-to-noise ratio is given as 52 dB. Channel separation is given as better than 40 dB. The third tape speed is 1½ ips.

Among the features of the TG12A are "add-a-track" and Multiplay facilities; superimposition; mixing; monitoring through speakers or headphones; separate level ad-



justments and recording level indicators for each channel.

Other features include tone control, automatic tape-end stop, pause control, and a digital rev. counter with zero reset button.

Two 7 x 5 inch elliptical loudspeakers handling the output power of three watts per channel, are attached to top and bottom of the recorder, one of which serves as the lid.

Inputs are provided for microphone (1.6 mV into 10M ohms), radio (1.6 mV into 22K ohms), and pick-up (100 mV into 1M ohm). Also incorporated is a headphone output, and a low level output (1.5 volts into 20K ohms).

The power supply is 100, 127, 150, 220, and 240 volts, AC 50 or 60 cycles. Power consumption is rated at 65 watts. The valve line-up includes two EF86, two ECC81, one ECC83, three EL95, and two EAM86, plus one selenium rectifier.

It measures 15½ x 13½ x 10½ inches, and weighs 32 lb.

A range of accessories are also available. These include a dynamic multi-impedance microphone MD601HN with a frequency response up to 10,000 cps; a multi-impedance cardioid microphone, MD407HN, with a range up to 12,000 cps; and a dynamic stereo microphone, MDS1, which can be halved and used separately for mono recording. Other accessories are an impedance-matching connector with a ratio of 1:16 with an extension cable; stereo monitoring headphones, HZS14H, and mono high impedance headphones, HZS13.

Celsa Electric Company Limited, Celsa House, Kelway Place, London, W.14.

PHILIPS INCREASE RANGE WITH STEREO MODEL

A NEW two-speed four-track recorder has been added to the Philips range, and will be shown for the first time at the Audio Fair. The new model, EL3548, is similar



in design to the two larger models in their range, with cube buttons for operating controls.

The quoted frequency is 60-13,000 cps \pm 3 dB at 3½ ips; and 60-10,000 cps \pm 3 dB at 1½ ips. Wow and flutter is given as better than 0.6 per cent (peak to peak); and signal-to-noise ratio as better than 40 dB.

It will accommodate up to seven-inch spools, providing a playing time of 96 minutes per track using long-play tape (1800 ft). Rewind for this length is achieved within three minutes.

Among the many features are rotary controls for "on/volume," radio/pick-up, and microphone/tone operation; a digital rev. counter with a push-button zero reset; ribbon type recording level indicator; facilities for mixing of microphone with radio or pick-up inputs; monitoring by headphones or the built-in 6 x 4 inch loudspeaker; and parallel playback of tracks 1 and 3 or 2 and 4; and a footswitch control.

The EL3548 can also replay stereo tapes using the Philips EL3787 pre-amplifier, with an additional amplifier and loudspeaker connected to the stereo socket. This facility also enables the machine to be used for Multiplay and Duoplay purposes.

Inputs are provided for microphone (5-pole DIN, 0.25 mV into 1.5K ohms; pick-up (5-pole flat IEC, 130 mV into 1K ohms); and diode (5-pole DIN, 2.5 mV into 20K ohms). Outputs are for Diode (5-pole DIN, 1 volt, app. into 20K ohms); loudspeaker (2-pole 4 mm x 19 mm, 3-7 ohms); headphones (5-pole DIN, 200 mV into 1.5K ohms) and stereo socket (5-pole DIN).

Power line-up includes one ECL82, EM87, plus five transistors and one diode. Selenium type mains rectifier.

It measures 15½ x 13½ x 6½ inches, and weighs 18 lb. The price is 39 guineas including moving coil omni-directional microphone, 5½-inch reel of LP tape, take-up spool, and connecting lead.

Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

ULTRA INTRODUCE THEIR SECOND RECORDER

ULTRA have introduced their second tape recorder since their entry into the tape field in 1962. The new model, 6202 (illustrated right) is a four-track machine with playing speeds of 3½ and 1½ ips.

It will accommodate 5½-inch spools, providing a playing time of 45 minutes per track using standard-play tape at 3½ ips. The quoted frequency response is 60-10,000 cps at 3½ ips, and 60-6,000 cps at 1½ ips. Incorporating the Thorn deck, it has wow and flutter rated at better than 0.2 per cent

at the top speed; signal to noise is given as 40 dB.

Among the features are piano-key control selecting fast wind in either direction, stop, pause, and start. Two rotary controls are provided for tone and volume correction. Other features are stop-start remote control on the microphone, tape inching facilities, superimposition, straight-through amplification, neon recording level indicator, automatic tape end stop, and a digital rev. counter with automatic reset. A 7 x 3½ inch loudspeaker is incorporated, and the output power is rated at three watts.



The power supply is 200-250 volts, 50 cycles, AC, and the power consumption is rated at 60 watts.

The 6202 sells at 33 guineas, including earphones, microphone, reel of tape, and recording lead. It weighs 19 lb. and measures 14 x 12½ x 7 inches.

Ultra Radio & Television Limited, Television House, Eastcote, Ruislip, Middlesex.

FREE TAPE RECORD WITH GRUNDIG TK6

A FREE tape record is being given away by Grundig (Great Britain) Ltd. to each purchaser of one of the recently introduced TK6 battery/mains operated tape recorders.

The tape, containing extracts from the wide range of E.M.I. Records Ltd. tape records, plays for forty minutes at 3½ ips. Among the stars are The Beatles, Helen Shapiro, Acker Bilk, Cliff Richard, Russ Conway. Seven other well-known names in the entertainment world are featured, and their numbers range from pop to traditional jazz and light and classical music.

Grundig also announce new showrooms at 15 Orchard Street, London, W.1. An official opening ceremony was held during January.

Grundig (Great Britain) Limited, 40, Newlands Park, Sydenham, London, S.E.26.



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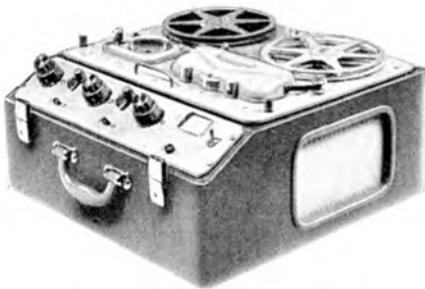
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BIRMINGHAM

Against a background of music and sound effects members of the Birmingham tape club acted a pantomime written by secretary Dawn Knee and Michael Dagnall at their first meeting of the year.

The actors were given only five minutes to learn their lines, and pushed into their costumes for the "dress rehearsal." The whole of the proceedings were recorded. Hurried rustlings through the scripts, missed cues, poached lines, missed pages and misplaced emphasis became evident; but to complicate matters even further, the sound effects were out of synch, and the clock struck twelve after Cinderella had fled from her prince.

Earlier, Michael had played an edited version of the tapes made in an interviewing competition. Members had roamed far and wide equipped with battery portables to interview on such subjects as tipping, Christmas presents and Guy Fawkes night.

At an earlier meeting, members welcomed Mr. Crowle of Zonal Films, who gave a talk and demonstration on tape and cine film. He also demonstrated some of the faults that may mar recordings, and demonstrated the audio frequency range.

The argument of two-track versus four-track was given an airing at one of their December meetings, when Mr. Gilbert gave a talk. He described how he had been won over to four-track recording, illustrating his talk with a Revox four-track recorder. Included in his series of tapes was a recording he had made during the Coronation ten years ago.

For their December 22 meeting, members visited the local Y.W.C.A. to record the hostel's Choral Group singing carols. The proceeds from a proposed concert featuring this recording is to go to the Oxfam fund.

The next day saw members watching treasurer Alan Crook's film of his Spanish holiday, to which he added a sound-track. He also showed his film of the club's visit to the Slimbridge Wild Fowls Trust.

Secretary: Mrs. Dawn Knee, 23, Holly Lane, Birmingham 24, Warwickshire.

BOSTON

A programme of pre-recorded tapes was hastily arranged for the first meeting of the year, when the Boston Soundhunters were not able to hear the winning tapes from the International Amateur Recording Contest as planned.

The following meeting was devoted to a competition entitled "Christmas." R. I. Charlton and W. Franklin tied for first place. Ian Charlton had been out with "War on Want" collectors in the town, and Mr. Franklin had marshalled his children for carols around the fireside.

Discussion has taken place about finding a permanent headquarters for conversion to a studio and workshop. Finance is the main snag, and for the time being they are to continue to meet in the Council Chamber of the 15th Century Guildhall (where the Pilgrim Fathers were tried).

World Tape for Education have announced the award of their Certificate of Excellence to Philip Towell for his tape "Freedom of the Borough of Boston," a runner-up in the 1963 British Amateur Tape Recording Contest. He will thus receive one of their "Lance Awards."

Secretary: Philip P. Towell, 107, Spitsby Road, Boston, Lincolnshire.

DARTFORD

Members of Dartford club were able to visit the new Thames Tunnel prior to its official opening ceremony to make recordings for a feature on the tunnel.

Armed with two Fi-Cord battery portables, a Revox and a Wyndor Viscount, plus two spare (!) machines, tape and cameras, they were met by the tunnel's Security Officer, Mr. Bob Mundy, who is himself a tape enthusiast. The members made a detailed and thorough examination of the toll-tunnel and its control centres, plus the breakdown section, where they recorded the various vehicles making "dummy runs" for their benefit. They also visited the ventilation building, heard about the emergency service which utilises TV cameras, telephones, fire points and loudhailers.

A review of services rendered by the club revealed that they have collected almost £600 over the past three years for a local Veterans' club.

Secretary: E. H. Foreman, 117, Westgate Road, Dartford, Kent.

FEDERATION OF BRITISH TAPE RECORDING CLUBS

Lounge 154 at the International Audio Festival and Fair will be staffed by committee members of the Federation during the four-day show at the Russell Hotel. There members of tape clubs can congregate and meet and also listen to some of the winning tapes in the British and International Amateur Recording Contests.

This year, for the first time, membership of the Federation will be open to individuals, following a decision taken at the last A.G.M. held in the Audio Fair.

The next A.G.M. will be held in Birmingham on April 25. The venue has not been announced as we go to press, but details can be obtained from the secretary.

Other news from the Federation is that the secretary has agreed to serve as Honorary Secretary to the recently-established Organising Committee that is to sponsor the British Amateur Tape Recording Contest. Since its inception, the Federation has played its part in supplying judges to this annual event. Full details are given on page 153 of this issue.

Secretary: E. Roger Aslin, 1007a, Finchley Road, Golders Green, London, N.W.11.

GLASGOW

The West of Scotland club recently changed its name following the establishment of a link with the Radio Club of Scotland. It will now be known as the Tape Section of this national organisation. A programme of weekly meetings has been arranged, and future meetings are to be organised as follows: First Monday in the month, members' tapes; second Monday, practical sessions; third Monday, lecture; and fourth Monday, tape/slide shows. A sixty square-foot screen has been installed for the slide shows.

The decision was made following the club's first A.G.M. held after "a most successful year." During that meeting plans were made to arrange a recording session in a nearby church, and also with a choir.

Later, the club members welcomed Mr. John Borwick who visited them on behalf of E.M.I. Tape Ltd. During his visit he presented the club's "Tape of the Year" Cup to Mr. J. Douglas.

At one of their more recent meetings the subject was: interviewing in the street. This was followed by a practical session putting the finishing touches to the club's tape/slide show made during the summer. Technical expert J. Knowles then gave a talk on recording from TV with a special adaptor.

Secretary: A. McCallum, 9, Glendevon Square, Glasgow, E.3, Scotland.

MABLETHORPE

Pete Rogers writes to say that he is trying to form a tape recording club in the Mablethorpe area. Both he and William Russell of "Marcomb," Marina Road, Mablethorpe, will be pleased to hear from interested persons.

Secretary: Pete Rogers, 65, St. Andrews Road, Mablethorpe, Lincolnshire.

NORTH LONDON

Four more tape recorders have been purchased by the North London tape

club members for use in the production of their fortnightly tape magazine *Enfield Microphone*. One of the machines was purchased from funds raised in a bazaar held last November; the remainder were purchased using funds provided by the Middlesex Association for the Blind.

Off to a rapid start in the New Year, members recently decided to enter as many sections of the B.A.T.R.C. as possible. Now is the time to start preparing your own tape for the club section. Details and an entry form will be available next month, but as far as the club section is concerned the subject is again an open one.

For their January meeting test equipment was available to check machines for wow and flutter and frequency response. This was followed by a tape quiz, and for the following meeting on January 29, an open subject six-minute competition. Practical recording was scheduled for the first of the February meetings; with a sound hunt organised for their February 12 gathering.

Secretary: Richard Collinson, 30, Ridler Road, Forty Hill, Enfield, Middlesex.

MIDLANDS ASSOCIATION

The Association of Midland Tape Recording Clubs proposes to hold a Convention in Birmingham soon after the London Audio Fair. Demonstrations and exhibitions by audio manufacturers are among the features, although exact details are not available as we go to press.

The Grand Hotel is to be the venue for the convention which is expected to last two days, Saturday and Sunday.

Further details are available from the assistant secretary, Mrs. Dawn Knee at 23, Holly Lane, Birmingham 24, Warwickshire.

SOUTHSHIRE

December proved to be a busy month for the Southall members who have been on location providing recordings for various local associations.

Their first trip was to a "Poetry and Jazz" Concert organised by the Trades Council. There they recorded and prepared special tapes for the Centre 42 Organisation who sponsored this and similar cultural events all over the country. The club has since received requests for further recordings to be played at universities, etc. The second trip involved the members in recording a recital of organ music given for the Theatre Organ Club. Two visits to a local cinema and the Town Hall were necessary for this venture.

Yet another "location venture" concerned an entertainment staged by the local Asian Community. Again further requests followed the presentation of the recordings made. When the local "Olde Tyme Dancing Club" held their Christmas Party and Dance, the Southall members were again called in to record the festivities, and during the same month a children's Carol Concert and Nativity Play was also recorded.

On Christmas Day itself some of the members were up in the early hours to record the Midnight Mass at an R.C. church. When they presented the completed tape, they were asked to return to record a series of twelve monthly sermons for worldwide distribution.

Among recent visitors to the club have been Mr. Smith of Truvox Ltd. who demonstrated the Series 90 recorders; and Mr. Raine of Brenell Engineering who presented his company's range of machines.

They are now hard at work producing their entries for the first of the club's 1964 competitions; practice for which has been obtained assisting a local drama group by producing sound effects and playing them back for three public performances.

Secretary: Arnold Highcayon, 101, Roseville Road, Hayes, Middlesex.

THORNTON HEATH

An "Open Night" was organised by the members of the Thornton Heath Club at the beginning of February. During a three-hour exhibition and evening demonstration, over 300 persons

attended to see how the club functioned. Representatives from Agfa, B.A.S.F., E.M.I., Fi-Cord and Grundig attended, and display material was also sent by Kodak, M.S.S., Philips, Soundcraft, Tandberg and Zonatape. In addition, members demonstrated their own equipment and sold copies of *TAPE* and our handbooks on tape recording.

They are now encouraged to hold a full-day show in the Autumn, and several of the manufacturers have promised their support.

The club's monthly tape contest was won by the vice-chairman, G. M. Webb, for his five-minute tape on the subject: "What I hope to get out of tape recording in 1964." The following month's contest subject is to be "Trading Stamps."

Some of the members are currently converting a cellar in the chairman's house into a recording studio and control room. Work is fairly well advanced, with hundreds of egg-boxes securely attached to the walls, and carpeting on the floor.

The last of their February meetings was to include a visit by John Borwick, on behalf of E.M.I. On March 19, another visitor will be Mr. George Pontzen of Lustraphone Ltd. who will demonstrate his company's wide range of microphones.

Secretary: H. J. Bradley, 8, Cammings Road, Addiscombe, Surrey.

TAPE EXCHANGES

Tape recorder owners who wish to contact others with similar interests, to exchange news and views by tape are invited to fill in and return the form on page 166, giving their name, age, address, special hobby or interest for this section.

Details given here also include speeds and spool size to be used, name of recorder, and special area to be contacted.

Ashton, Leigh (33). Flat One, 35, Burrard Street, St. Helier, Jersey, Channel Isles. 3½ ips. 7-inch spool. Corsor CR1602. Male contacts only. Letters first please.

Beavin, John (35). 11, Marama Avenue, Epsom, Auckland, New Zealand. Humour, motoring. 3½ ips. 7-inch spool. Sony 464, four-track.

Beveridge, John Neil (21). 18, Swinbourne Grove, Withington, Manchester 20. Travel, films, music, dancing. 3½ ips. 5½-inch spool. Philips. USA and Europe. Females preferred.

Biscoe, Fred J. (25). 18, Tyzaek Road, High Wycombe, Buckinghamshire. Photography, driving, music. 3½ ips. 4-inch spool. Spentone. Male contacts of same age preferred. UK only.

Blackmore, Klive (25). 67, Park Road, Polsoe Park, Exeter, Devon. 8mm and 35mm photography, cycling, German language. 7½, 3½, 1½ ips. 7-inch spool. Collaro tape deck, and HF/TR3 amplifier.

Brown, Ron (23). 68 Company R.A.S.C., BFPO 40, Germany. Drama on tape, boxing, pop music. 3½ ips. 5½-inch spool. Philips EL3541, four-track. Portsmouth.

Connell, Harry (42). 42, Somerset Street, Middlesbrough, Yorkshire. Photography, films, art. 7½, 3½, 1½, 15/16 ips. 7-inch spool. Stella ST459, four-track.

Coulson, James (40). 45, Percy Road, Isleworth, Middlesex. Stereo, chess, woodwork, sport, music. 15, 7½, 3½, 1½ ips. 7-inch spool. Brenell Mk V. Wyndor Trident.

Cranage, Peter E. (27). 39, Buckland Road, Newton Abbot, Devon. Cars, pop music. 3½, 1½ ips. 7-inch spool. Stella ST458, four-track.

America, New Zealand, Australia
Davies, David (21). 5a, Queen's Road, Skewen, Glamorgan. Cine, pop and jazz music. 7½, 3½ ips. 7-inch spool. Truvox stereo and mono. Female contacts preferred.

(Continued on page 166)

CLASSIFIED ADVERTISEMENTS

Rate.—Sixpence per word (minimum 5s.); Trade, ninepence per word (minimum 10s.); box numbers, one shilling extra. Payment with copy. Copy should be sent to Advertising Department, "Tape Recording Magazine," 7, Tudor Street, London, E.C.4.

MISCELLANEOUS

Disabled War Ex-serviceman will undertake in own home, tape recording, monitoring, dubbing. Same day immediate return. Any speed 1 in., 3 1/2 in., 7 in. TV, or radio news monitoring, etc. All answered. S.A.E. Please. Box No. 444.

8 mm. Home Movies. Send 1s. for fully illustrated catalogue. (Dept. 31), Mountain Films Ltd., 1, New Burlington Street, London, W.1.

TAPE EXCHANGES

(Continued from page 165)

- Docherty, John** (23). 17, Virgil Street, Manchester 16. Art, books, films, records, 3 1/2, 1 1/2 ips. 5 1/2-inch spool. Ferguson, 2- and 4-track.
- Dolling, Norman V.** (26). 78a, High Street, Abbots Langley, Hertfordshire. Films, books, music. 3 1/2 ips. 5 1/2-inch spool. Elpico, four-track. Letters not required.
- Dutton, David** (21). 10, Gibbon Street, Bradford, Manchester. Philately, music. 3 1/2 ips. 7-inch spool. Philips EL3541. New Zealand, Germany, France.
- Gamble, Ken** (26). 24, Gresley Road, Highgate, London, N.19. Photography, travel, theatre and films, classical and pop music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Philips EL3549, four-track and EL3586 (battery portable). America, UK, Europe, Australia, Gilmartin, Tony (32). 6, Lambeth Street, Blackburn, Lancashire. Drama on tape, Irish folk songs, pop music. 3 1/2, 1 1/2 ips. 5-inch spool. Cossor CR1604. Overseas only.
- Gould, Douglas N.** (31). 67, Queen's Crescent, London, N.W.5. Sound effects. 3 1/2 ips. 5 1/2-inch spool. Portadyne, Sony, Philips portable.
- Grovere, Ronald V.** (35). 112, Doggett Road, Catford, London, S.E.16. Stereo, travel, writing, music. 3 1/2 ips. 5 1/2-inch spool. Elizabethan, USA, Holland.
- Hadwick, Ron** (35). 56, Convent Road, Ashford, Middlesex. 8mm cine, films, pop music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Philips stereo. West Africa, China, UK.
- Hardingham, James** (28). 396, Norwich Road, Ipswich, Suffolk. Sound effects, humour, jazz and pop music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Philips EL3549, four-track. USA, Canada, Germany.
- Harrison, Mrs. Myrtle** (22). 48, St. Wilfred's Road, Standish, Wigan, Lancashire. 35mm photography, gardening, music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Truvox PD82.

Tape recorder owners wishing to make contact with others of similar interests are invited to complete and return this form. (BLOCK LETTERS PLEASE)

Name Age

Address

Special interests

Speeds to be used Maximum spool size

Recorder owned

Special areas to be contacted

(Unless otherwise stated, I am prepared to accept tapes from any part of the world)

HIGHEST CASH PRICES offered for good quality Tape Recorders and Hi-Fi. See our advert page 164 this issue. R.E.W., 266-8, Upper Tooting Road, London, S.W.17.

Recorder need repairing? Then let City and Essex Tape Recorder Centres do it for you expertly and economically. (See pages 153 and 170).

Tape a commentary or voices for your film on recordings. Donald Morley (Compact, Coronation Street). Reasonable. Prospect 9610.

Underpillow Speakers. Listen without disturbing others. 3 in x 5 in., 15 ohms, £2 11s. 6d. Timer Unit, designed especially for whisper teaching. Famous make. Three on/off periods in 24 hours. 13 amp. 200/240 v. comp., plugs, etc., £6 13s. 3d. "Sleep Learning"—the book essential for all go-ahead people. Send 6s. 6d. to York House, Dept. B., Huddersfield.

We specialise in Tape Recorder and Hi-Fi repairs and offer a speedy service. Telesonic Limited, 92, Tottenham Court Road, London, W.1. MUSH 8177. Leading Hi-Fi Dealers.

Hill, Tony (27). 15, Drayton Green, West Ealing, London, W.13. Photography, scootering. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Civic 72, four-track.

Hills, Les (40). 9, The Walldrone, Croydon, Surrey. Male voice choirs, Hammond organ, 7 1/2, 3 1/2 ips. 7-inch spool. Cossor, four-track and Baird Tapemaster. UK, Australia, USA.

Hoggan, Preston (32). 6, Blinkbonnie Terrace, Slamannan, Stirlingshire, Scotland. 8mm and 35mm photography, music. 3 1/2 ips. 5-inch spool. Philips EL3514, four-track. Male contacts only.

Holton, Sydney G. (37). 53, Cobden Road, Sevenoaks, Kent. American c/w and folk music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Repts R10 and Elizabethan.

Ingram, Roy (30). 20, Rosslyn Crescent, Bentley, Doncaster, Yorkshire. Stereo, c/w, folk, trad, jazz, small group mod. jazz music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Truvox PD86, and Philips EL3534. Overseas only.

Kirk, Edward G. S. (32). 525, Northumberland Avenue, Reading, Berkshire. Travel, sport, films, pop music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Elizabethan LZ29, four-track. Male contacts only.

Lloyd, Michael (36). 216, Signals Squadron (Para. Brigade), Elles Barracks, Farnborough, Hampshire. Camping, radio, music. 7 1/2, 3 1/2 ips. 8 1/2-inch spool. Ferrograph 5A/N. UK and Europe.

McConnell, David (27). 8, Nightingale Place, Woolwich, London, S.E.18. Photography, chess, sick humour, music. 15, 7 1/2, 3 1/2 ips. 7-inch spool. Elizabethan Essex.

Medford, Ray (36). 21, Longmeadow Road, Walsall, Staffordshire. Modern jazz. 7 1/2, 3 1/2 ips. 8 1/2-inch spool. Ferrograph.

Mogens, Ellegard (36). Tyttebaervej 8, Hjallesø, Denmark. Theatre, humour, ballet, music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Grundig TK46. UK, USA.

Muller, David (41). 5, Adelaide Road, Doomsdale, Natal, South Africa. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Grundig TK45, four-track.

NEW EQUIPMENT

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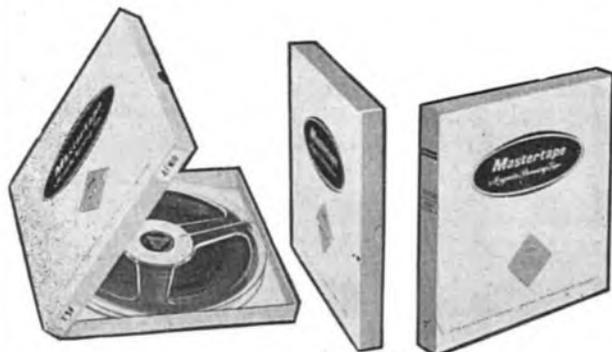
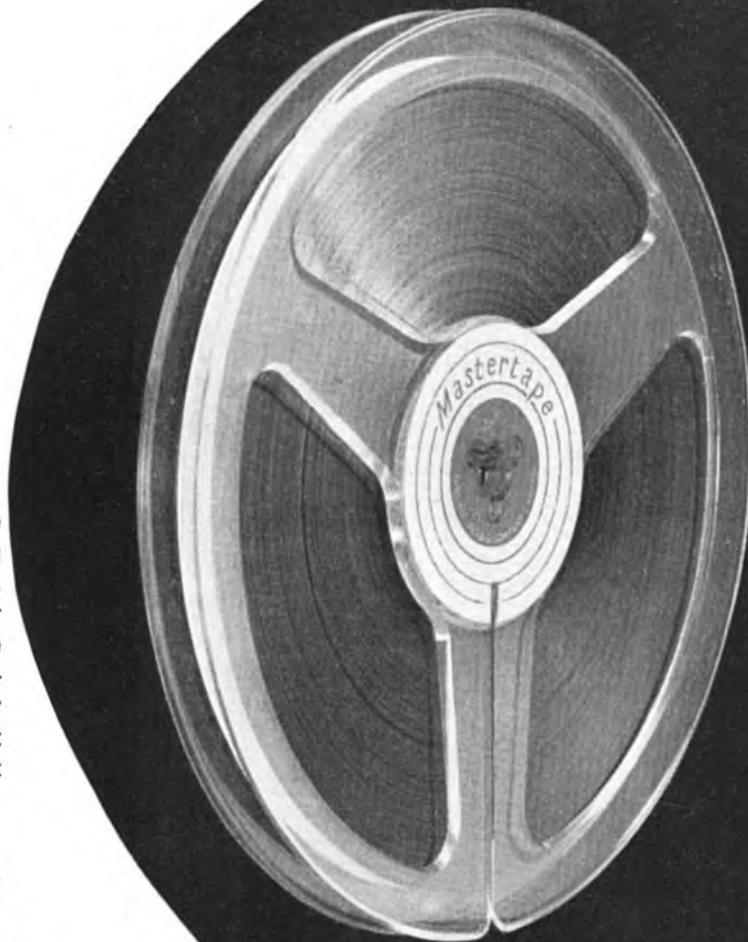
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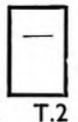
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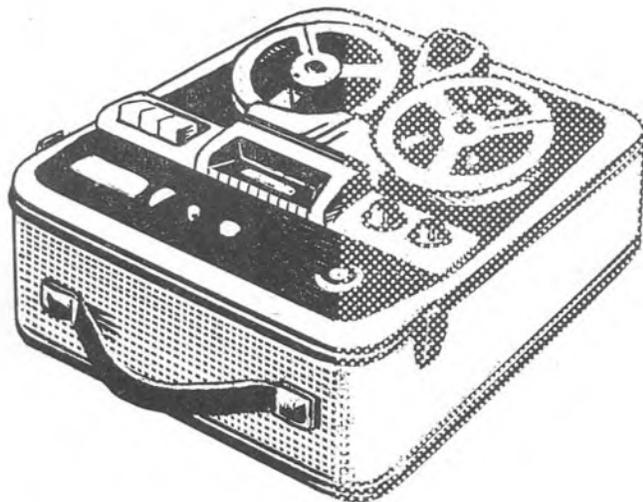
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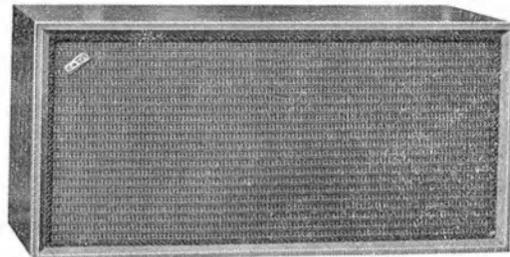


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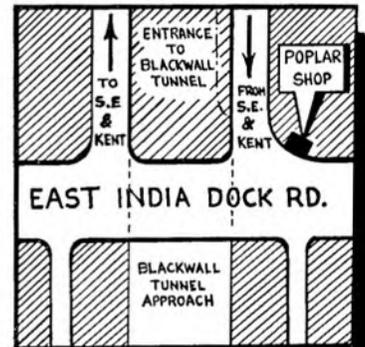
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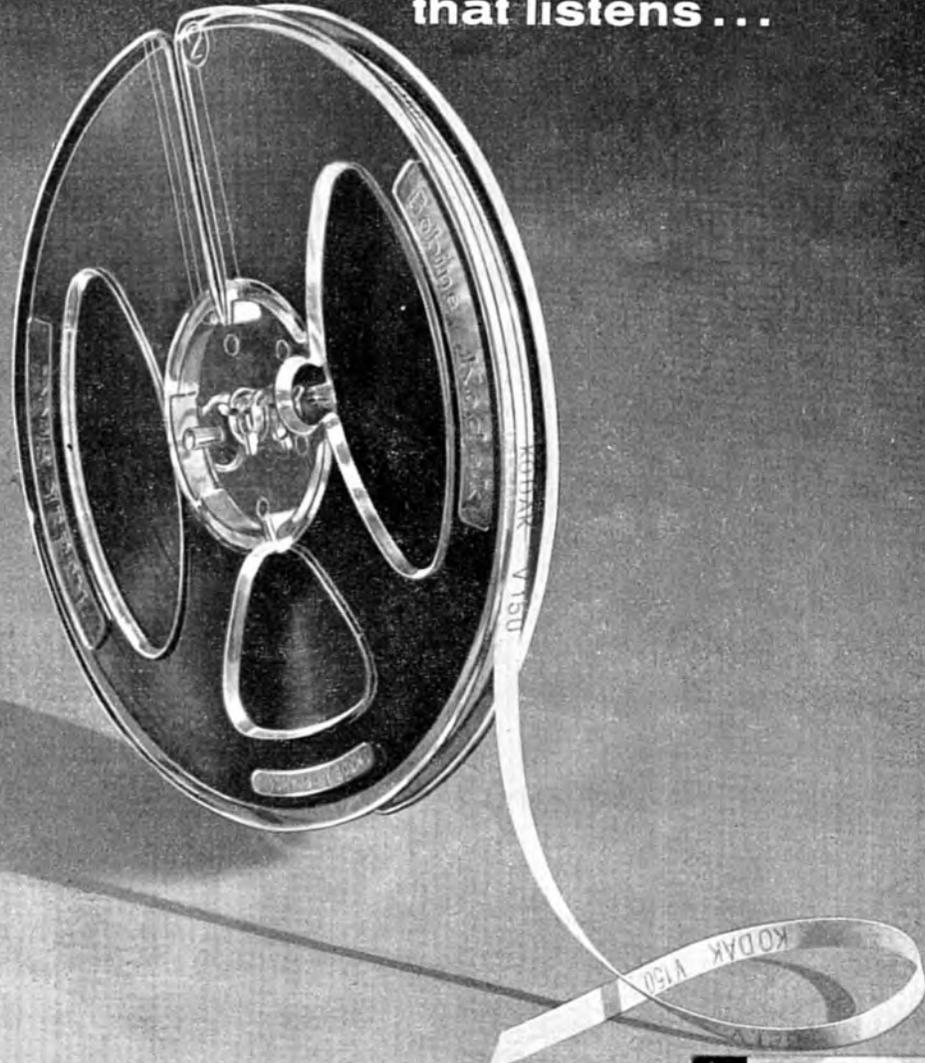
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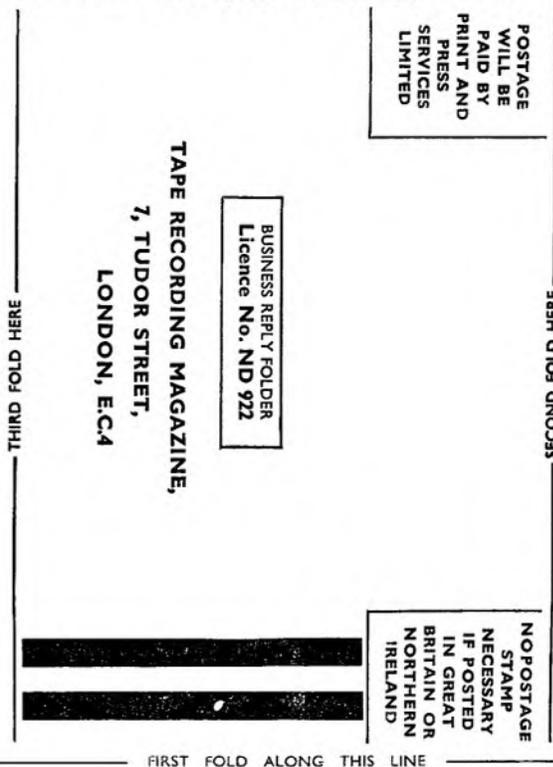
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