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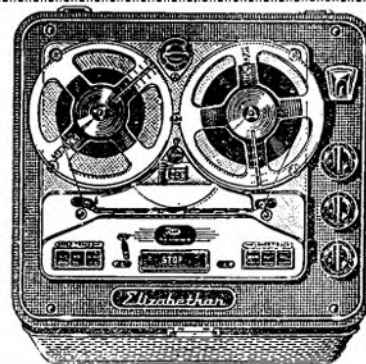
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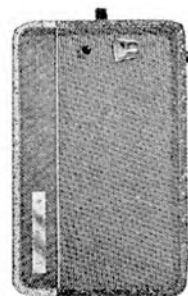
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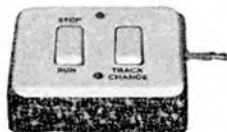
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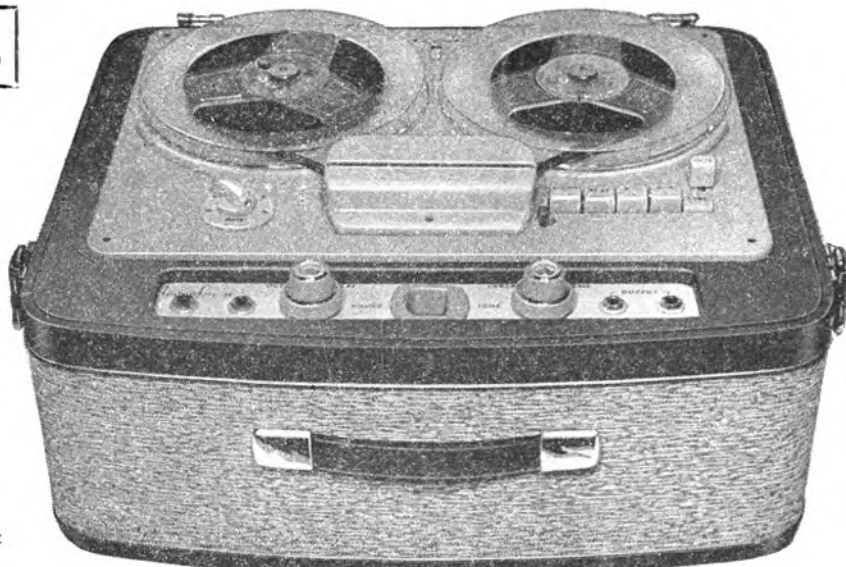
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GS 152

TAPE RECORDS SUPPLEMENT

THE CLASSICS

by **Edward
Greenfield**

(recorded music critic of
the *Manchester Guardian*)



THE Saga catalogue of recorded tapes is growing at a promising rate, and I am glad to report that the quality of recording is equally encouraging—more consistent than it was in the very first issues. In the first batch some months back I had some unflattering things to say about one or two of the Soviet recordings. Whatever their claims to political progressiveness the Russians' recording methods have never kept pace with those of the West. This goes for tapes as well as for discs, but I am particularly pleased that the most interesting Soviet issue that Saga has so far announced has turned out to be about the best recorded, not the highest fi perhaps but perfectly acceptable.

This is of David Oistrakh playing Prokofiev's **First Violin Concerto** with the Soviet State Symphony Orchestra under Nebolsin (STB 8020). The work is one of the loveliest violin concertos written in the last hundred years, and perhaps it is a sign that it is at last achieving the position it deserves that already there are two recorded tapes of it—both by David Oistrakh. This Saga is from Russia, as I have said, and E.M.I. has issued a tape with the London Symphony Orchestra under Maticic.

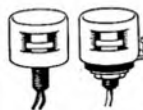
Prokofiev was barely 23 when this work was first produced in 1914. He had only just left the St. Petersburg Conservatoire, having fallen out with all his teachers, among them Glazounov, Rimsky-Korsakov and Liadov, and having earned—not surprisingly—the reputation of being an *enfant terrible*. Though unmistakably “post-war” in feeling it is hard today to think of this work as coming from an *enfant terrible*, so richly romantic is it. It opens with a long curving melody on the solo violin, full of that acid romanticism which we in this country associate most readily with Sir William Walton. Indeed this concerto of Prokofiev's has a remarkable kinship with Walton's violin concerto of 1939. Each begins with a long romantic melody leading into a generally lyrical first movement. Each has a brilliant, spiky scherzo in the middle and each ends with a solid finale with lyrical passages again prominent. One of Walton's themes is so close to one of Prokofiev's that I

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really wonder whether he cribbed unconsciously. Perhaps Walton will one day enlighten us on the parallel in general. In the meantime it is safe to say that both are masterly works which I am sure will live in the repertory, growing less fearsome and ever more popular with the general music lover.

Comparing the performances I find that on native ground Oistrakh was even more uninhibitedly romantic in his interpretation and the passionate central melody of the last movement comes out with passionate intensity in the Soviet recording. But interesting as the comparison is the differences are of the subtlest, for there is no one in the world today to compare with Oistrakh in this music. He has a warmth of tone, never soupy but consistently rich from top to bottom, which is coupled with a wonderful, firm sense of phrasing. The balance between soloist and orchestra on the E.M.I. is much better, for on the Saga the orchestral sound is rather withdrawn in comparison with the violin. On my copy too there was an odd fading in the last movement, but the volume soon returned to normal.

Each version has an unexpected coupling—the E.M.I. has a superlative version by Oistrakh of Bruch's first violin concerto and the Saga has Tchaikovsky's "Romeo and Juliet" played by the Hamburg Pro Musica under Hans Jurgan Walter. This last is a lively enough performance, but the switch from Russia to West Germany brings a greater literalness in the interpretation of Russian music. This is not really very idiomatic playing and there is an odd shrillness in the strings which detracts—but not too seriously—from the orchestral sound. The last point of comparison is price, of course. The Saga is 50 shillings instead of the E.M.I.'s 84 shillings!

The Hamburg Pro Musica plays much more sympathetically in Gershwin's "American in Paris" and "Rhapsody in Blue," the latter with Joyce Hatto as soloist (STB 8004). I am never quite clear about who orchestrated what in the Gershwin canon (for the most part not Gershwin himself), but at least on this tape the sound is beautifully clear with inner details coming out perfectly. What I can only describe as the "smooch" theme in "American in Paris"—so degenerate-sounding but utterly delightful—is here played in a leisurely way. The idiom is sure thanks, I imagine, to the conductor, George Byrd. I suppose Joyce Hatto is a woman, but had it not been for the name I should have described this as splendidly virile playing with strong, muscular finger-work which yet produces a total effect of sympathy. My only complaint on performance is that the final orchestral disintegration before the last return of the "blue" theme is a little too controlled.

The Hamburg Pro Musica appears yet again in eight Mozart overtures—"La Clemenza di Tito," "Idomeneo" and "Impresario" as well as the usual five, "Marriage of Figaro," "Magic Flute," "Cosi fan Tutte," "Don Giovanni" and "Il Seraglio" (STB 8012). Far more attractive musical packages could be devised.

The conductor is the young Canadian, Harry Newstone, who had a very successful concert at the Royal Festival Hall recently and who is best known to record collectors for an outstanding record of Mozart's "Jupiter" Symphony, now alas, deleted. These performances with the Hamburg Orchestra are not quite on that level, but still very vigorous and very sympathetic. I took the opportunity of comparing the "Marriage of Figaro" with the Saga stereo tape version by Frandsen and the Royal Danish Orchestra which I reviewed last month. The comparison was illuminating, and it confirmed my original impression

that the Frandsen sounded like a "run-through" rather than a finished performance. Newstone points the phrases sensitively where Frandsen seems barely aware of the need to phrase anything. The recording is not Saga's best with occasional—but not serious—pre-echo and a more limited range than some. The triangles in "Il Seraglio" sound oddly clanky. But in spite of minor shortcomings this is an enjoyable tape and I look forward to hearing Newstone's two tapes of Bach's Brandenburg Concertos which Saga has announced.

Perhaps the most brilliant batch of tapes from the recording point of view is of **Liszt's First piano concerto** played by Sergio Fiorentino and the Hamburg Pro Musica under Erich Riede (STB 8007). I had never heard of Fiorentino before Saga started issuing recordings of his, but from my limited hearings so far I judge him a virtuoso to be reckoned with, rather flashy in some ways with an obvious kinship with the loud young Americans who seem to be appearing in increasing numbers. But Fiorentino is always intelligent in his playing, and the Liszt concerto, which no one could call a profound work is exactly the piece to show him at his best. The triangle incidentally—this was once dubbed the "Triangle Concerto" for obvious reasons—comes out very well in this recording. The piano solos which complete the tape are not recorded quite so well with "La Campanella" for example tending to overload rather in the climaxes. But the playing is quite staggering. Besides "La Campanella" there are the **Liebstraum No. 3** (the usual one) and the magnificent "**Funérailles**," one of the finest pieces Liszt ever wrote. It was a masterly touch after the magnificence of the funeral procession to end on the hollow sound of bare fifths, played quietly. I recommend this tape highly.

If my enthusiasm for Fiorentino's account of the Schumann concerto with the same orchestra and conductor is not quite so unguarded, that is only a comparative thing (STA 7015). As I said when reviewing the stereo version in the January *Tape Hi-Fi Magazine*, this is a dramatic no-nonsense account of the work. There are two distinct ways of looking at this work. It can be a brilliant virtuoso vehicle as Fiorentino plays it, or it can be gentler and more feminine, although more introspective. I prefer it in this last way. Fiorentino does not go for introspection much at all—the simple lines of the slow movement are shaped almost brutally—but I must admit that I enjoyed the performance more this second time when I knew what to expect and could enjoy the unashamed virtuosity of the first and last movements without inhibition. Whatever Fiorentino is he is certainly never dull.

My final tape is a **Johann Strauss concerto** by the Leipzig Gewandhaus Orchestra—Mendelssohn's orchestra under Otoo Dobrindt (STA 7009). If Saga's Danish recordings have too little "hall" atmosphere and the Hamburg ones generally about the right amount, this Leipzig recording is really too echoey for full clarity, and some of the climaxes produce a rather crumbly sound. The horns at the opening of the "Blue Danube" play with a honeyed ripeness, but they are too muffled. The phrase "honeyed ripeness" could well describe the performances, which I enjoyed very much. I was sorry the repeats were not taken in the "Blue Danube," but all the performances are very loving, mellow yet spirited. The items are: "Artist's Life" and "Roses from the South" on side one and "Blue Danube," "Pizzicato Polka" and "Tritsch Tratsch Polka" on side two. The polkas somehow seem to have attracted rather better recording than the waltzes.

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BEAT AND OFF-BEAT

by **Don Wedge**
(of "New Musical Express")

THERE is a vogue developing for Dakota Staton. **The Late, Late Show** (T 876), issued a year ago, introduced her to Britain in effect although there was the odd track earlier from her days with George Shearing. Critics went wild about her but the L.P. was hardly a best-seller.

Perhaps more than an expression of faith rather than a commercial venture Capitol have issued a follow-up album, **Dynamic!** (T 1054). There is talk, too, of the singer coming to Britain to see if showing her face and talent on television may spark off a more general interest in her.

At the moment, Dakota Staton, on this side of the Atlantic, is not very well known. I have played her records to friends who have usually gone away converted. I make no claim to starting a fashion for the girl. She has started her own and has many supporters. But I do want to suggest that she is well worth taking a big interest in.

For a spell she worked with George Shearing, but it was **The Late, Late Show** that brought her stardom in America. The title comes from the American entertainment world where a midnight movie (on television or in the cinema) or cabaret is known as "the late show" and the one after that gets billed as "the late, late show."

Miss Staton therefore swings through some sultry numbers, but gives them an excitement that ends thoughts of "sultry" meaning anything like despondent. **What Do You See In Her**, a tale of a slipping affair, is one of the most telling performances I have heard on disc.

Dynamic! is in a different vein. There is more emphasis on performance—working the song, instead of the song setting the mood. In many ways and many phrases she resembles our own Shirley Bassey. The opening number, **Let Me Off Uptown**, is a good example of this.

But I do not suggest either copies the other. They are both too good to need to copy anyone.

* * *

DEAN MARTIN continues with his stream of hits. **This Is Dean Martin** (T 1047) is an album of some of the more recent ("Volare," "Return To Me," "Buona Sera"). Everything is very polished, most is latin-tinged (Martin is of Italian extraction) and the whole is an admirable collection of better pops.

* * *

THE style of Edmund Hockridge is quite different. Yet he has an equally acceptable album **Hooray For Love!** (NPL 18021), Ted Hockridge, a Canadian, came to Britain nearly ten years ago to star in "Carousel." He went into one musical after another until two years ago when he started a career in variety—and became one of the best performers in the medium.

His songs on this L.P., though all originating in stage or film musicals, are the sort of thing he does in his variety act. "Tenement Symphony" and "Nice Work If You Can Get It" are very different but Hockridge manages to be successful with both.

* * *

STAN Freberg's bitter, biting satire is an acquired taste. If you have acquired it then you will not want to miss the two-volume **The Best of the Stan Freberg Shows** (LCT 6170-1)—extracts, or reproductions of parts, from his radio programmes.

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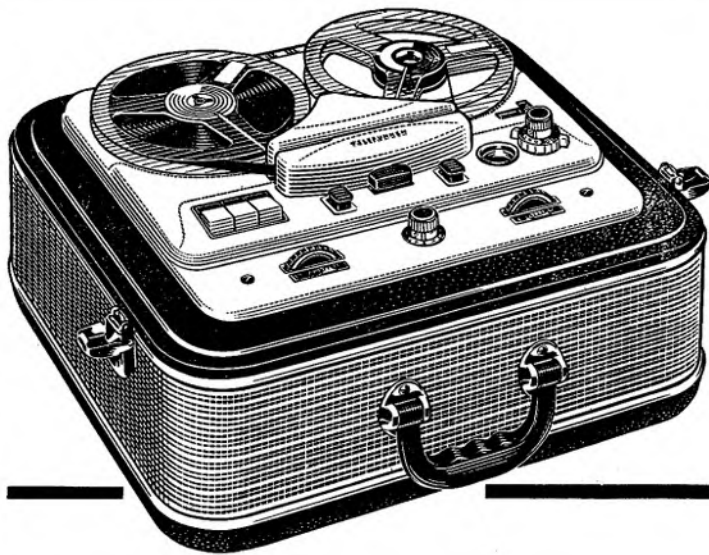
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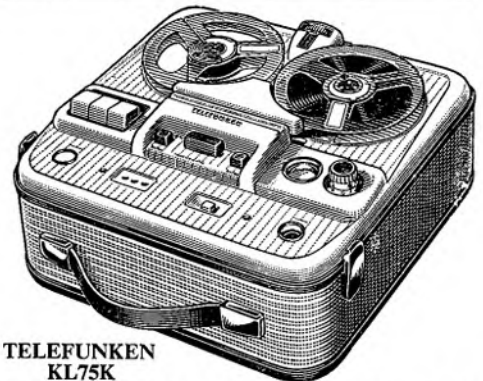
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TAPE

RECORDING
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Vol. 3 No. 3

MARCH 1959

A DISTINGUISHED TEAM



TECHNICAL EXPERTS Charles Langton, A.M.Brit.I.R.E., A.M.Inst.E., has been a lecturer in electronics for more than ten years. He is also a consulting engineer and a local examiner for the Radio Trades Examination Board. Technical Advisory Editor *Tape Recording Hi Fi Magazine*. Angus McKenzie is Technical Advisory Editor of *Stereo Sound Magazine* (our new publication out on April 2). He is managing director of Olympic Sound Studios and a particular friend of all tape amateurs. F. C. Judd, A.M.Inst.E. joins our technical panel this month. He is a professional technical writer and author of more than one hundred published articles on radio and electronics. Main interests, tape recording, stereo and electronic music.

Cecil Andrew, A.M.Brit.I.R.E., A.M.Inst.E., another member of our technical side, has been engaged in experimental radio and electronic research for many years.



STEREO Douglas Gardner journalist for many years specialising in subjects such as the theatre, music and high fidelity. An enthusiast for stereo he now joins the staff as editor of *Stereo Sound Magazine*.



MUSIC Edward Greenfield entered journalism after being called to the Bar. He is recorded music critic of the *Manchester Guardian* and author of a recently published biography entitled *Puccini: Keeper of the Seal*. Don Wedge has been news editor of *New Musical Express* since 1957. He has followed pop music since leaving school and at one time led a dance band.



INFORMATION, CLUB NEWS SERVICE Fred Chandler joins us from the *News Chronicle*. He is co-ordinating our rapidly developing advice and information services as well as editing our Club news feature. A recording enthusiast he is particularly attracted to outside documentary work.

GENERAL EDITORS: IAN ARNISON and R. BROWN

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We take the view . . .

a digest of news, comment and editorial opinion

Latest off-the-record story going the rounds in tape circles concerns another foreign "invasion" of the British market.

Rumour has it that a leading American manufacturer with a reputation way above skyscraper level is about to sign an agreement with a British marketing agency.

If it comes off, there'll be plenty of money and big promotion.

You guess it's Ampex? Well, you may be right. The coming Audio Fair will show us.

* * *

THE other big news at Audio Fair time will be the appearance of *Stereo Sound Magazine*. This new publication will have a broad appeal to all who are interested in good music and its reproduction, and its technical level will be higher than that of *Tape Recording Magazine*. The stereo supplements—the last of which appears in this issue, give some idea of the difference.

The majority of tape enthusiasts, inevitably, have little knowledge of electronics. Most of them are interested in performance rather than design. They want machines that can be handled as simply as a radio or TV set. The editorial level of *Tape Recording Magazine* has been pitched at the right level to fulfil their needs.

But at the present time the man or woman who spends the money needed to buy stereo equipment is a connoisseur with greater knowledge and more exacting standards. This fact will be reflected in the new magazine.

Some of our friends have suggested that we are in advance of events with *Stereo Sound Magazine*. It is a valid point of view, but I do not accept it.

Two and a half years ago when we pioneered the idea of a tape magazine we were told the same thing. We can admit now that we did not ourselves fully foresee the pace of development that has taken place, more than justifying our assessment.

Our estimate of stereo potentialities is confirmed by leading authorities in the field. As our readers know, Mr. Edward Greenfield, one of the most distinguished of the younger school of writers on recorded music, is convinced that the future lies with stereo.

At lunch recently with Mr. James Moir I was encouraged to hear him express his powerful belief in the future of stereo. He goes so far as to doubt whether, in a couple of years' time, there will be much classical music appearing for the first time in monaural form.

In that period, too, we may have stereo broadcasts as part of regular B.B.C. transmissions; that will transform the situation.

Such are a few of the reasons why we are happy now to pioneer another field, as we pioneered the journalism of tape recording. We must leave those with less confidence or courage to trail behind.

We believe, however, that a significant number of enthusiasts will wish to be in on this new adventure from the beginning — as readers of *Stereo Sound Magazine*.

* * *

THE B.B.C. Network 3 programme "Sound" has proved an immediate and immense success. Listener response looks like proving greater than that for any other programme on the network.

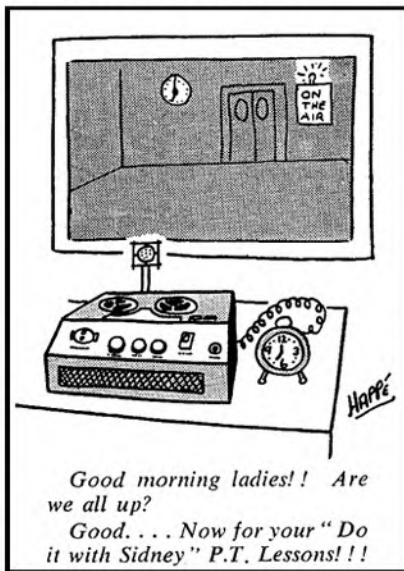
When I discussed the prospects the other day with Marguerite Cutforth, the producer, she was optimistic that "Sound" will have a very long run. Originally, it was scheduled for an experimental six months.

I shall not be surprised if it becomes as much a regular as "The Archers" and "Any Questions?"

Such a programme naturally presents big problems. When it has had time to settle down a measure of its success will be the amount of material it draws from tapes made by listeners.

It is difficult to know at exactly what level of technical knowledge contributions should be made. I thought myself that Tristram Cary's talks, demonstrating how to create an electronic sound-picture, must have sounded fascinating—but very difficult—to some beginners.

On the other hand, early experience with this magazine demonstrated to me how heavy is the pressure from the experts to cater for *their* needs.



Good morning ladies!! Are we all up?

Good. . . Now for your "Do it with Sidney" P.T. Lessons!!!

A broadcast programme of this kind is handicapped by inability to illustrate its points by circuits, sketches and photographs. It has the advantage of using the natural medium, sound; but until all listeners have VHF and stereo receivers, this advantage can be only partly used.

One plea I am sure I can make on behalf of a very wide audience. Let's have some more of Denis Mitchell and his tape documentaries soon.

With its third edition, "Sound" suddenly threw off its early uncertainties and found its feet as a programme likely to prove entertaining as well as valuable to the keen listener.

Stanley Kelly devised a straightforward, but nonetheless fascinating, examination of the anatomy of sound; and Tristram Cary then proceeded to show what could be achieved by a little delicate surgery (his tape splicing is superb).

Tony Gibson followed up with a discussion of recording railway sounds, contrasting the rather esoteric art of a Belgian competitor in the last International Tape Recording Contest with the more orthodox brilliance of Charles Parker and the B.B.C. team which produced *The Ballad of John Axon*.

* * *

ONE machine which you are not likely to see, but of which full details have reached our office, is the Nishikura Tape-Cor, manufactured in Tokyo.

It might cause quite an excitement if it was available here, for it is a three-speed recorder (7½, 3½ and 2½ ips, or any speed between 7½ and 2½ ips), a three-speed disc-player (78, 45 and 33 rpm), and a two-band radio—all in one. It has built-in mixing facilities and can be used as a public address amplifier and a recorder simultaneously.

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* * *

WE learnt some time back that the research boys had found a way of implanting electrodes in the brains of apes, recording the nerve impulses on tape, then replaying the tapes to reproduce exactly the original behaviour.

In a recent TV programme we were told that this technique will be developed so that we shall all be able to relive sensations and experiences from our past lives—or, come to that, from other people's lives.

Mr. Shepherd Mead, who produced this startling idea, is a top executive of a big American advertising firm and he has studied the possibilities pretty diligently. A few years back he wrote a book on this theme, *The Big Ball of Wax* (Boardman, 10s. 6d.).

If the idea of this kind of scientific achievement excites you I urge you to read the book. You may decide it's safer to stick at stereo.

We had those Monte hazards taped

By

ALAN BRINTON

(Motoring Correspondent "News Chronicle")



RALLY RECCE—1959: Ivor Bueb (standing) and Peter Harper stop their Sunbeam Rapier as they check the route and record it on tape

THE Monte Carlo Rally, though not the toughest in the international calendar—and this year certainly not the fairest—has somehow captured the imagination of the world. Success in this mid-winter trip across Europe also captures large orders for the firm making the winning car.

So it is not surprising that most of the major car manufacturers make careful preparations for the "Monte." The most intensive planning for this year's event centred on the final 300 tortuous miles from Chambéry to Monto Carlo, and the even twistier 270 miles night mountain test that followed.

This route, mainly over narrow secondary roads, had to be plotted meticulously. Even a bare second could be vital at some points, and some of the turns could easily be missed.

This year the Sunbeam Rapier works team, under their competitions manager Norman Garrad, carried out a pre-rally reconnaissance as thorough as anything they had ever done before. Yet it needed only one car and two of the works drivers.

The secret was a Philips tape recorder, nestling on the rear seat, ready for me to switch on and off while Peter Harper and Ivor Bueb did a running commentary.

THE BACK SEAT PASSENGER

The recorder, running off the Rapier's battery, was held securely in position by strong rubber slings. And believe me, it took a terrific hammering as we virtually raced for nearly 600 miles over some of the toughest and at times most terrifying roads in Europe. As I told Norman Garrad afterwards, the recorder made a far better back seat passenger than I did!

The job was done in two days, and the results were most satisfactory. The whole tape was played back on our return to Britain, and after a typed version had been edited (cutting out many of the friendly comments Peter and Ivor made on one another's driving methods!) it was distributed to the team drivers for some intensive homework.

This was how we worked with the recorder. Peter and Ivor took the wheel in turn, and also the microphone. My job was just to switch on, tell them when it was warmed up . . . and then try to hold on.

At each change of route number, the drivers noted the

mileage and read out the instructions on the signpost. In one remote village we noted that a barn door swinging open, obscured an important route sign—and were able to give a warning that this might happen again.

At another point we saw that we had to cross a bridge before the route number we wanted was shown. One village was particularly troublesome, with a T-junction, a confusing public square, and a tricky fork without signpost.

We covered that section twice, while Peter made a careful commentary, pointing out useful landmarks as we swept through the startled village with tyres screaming.

A GREAT SUCCESS

There were other jobs for the recorder. With an eye on the petrol gauge, Ivor would note our position and warn that we must look for a refuelling point. On particularly difficult sections there would be comments on the road surface, warnings where ice could almost certainly be expected. There were suggestions that a particular stretch could prove useful to make up for any lost time.

The recorder scored in many ways. Most important, it saved on manpower and time. Imagine trying to make notes in the back of a car sliding every few seconds round mountain hairpins.

Again, because the commentary was made as we drove, it had a continuity that would have been lacking had we tried to make notes in retrospect.

Using the recorder was an encouragement to note every possible feature that might prove of value—and that is just what Norman Garrad wanted.

Our own little private failure was an attempt to pick up the sound of the Rapier roaring through tunnels. We are not experts with a recorder, but we soon found that the mike, held outside the car, picked up far too much wind noise to be of any use.

Norman Garrad tells me that the recorder experiment was a great success. He estimates that it cut his costs for the reconnaissance by over a half. "I shall certainly use a recorder again," he said.



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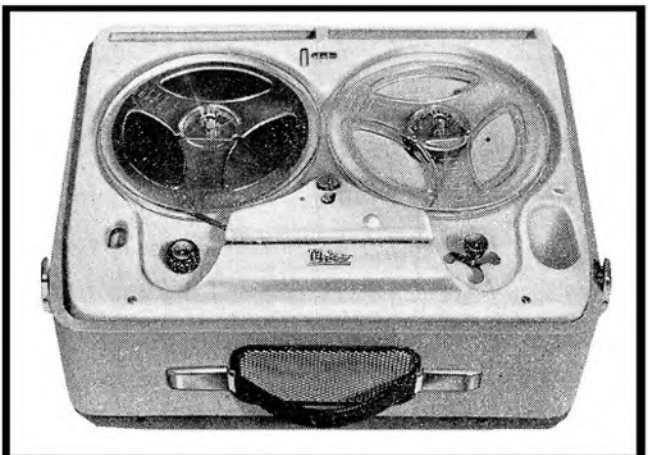
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All other parts are simply constructed from wood and strip metal.

The bearings in the construction are indicated on the diagram by the letters A, B, C, D, and E, and are plain. The bearing F must, of course, be made so that it will follow the movement of the connecting rod that is eccentrically mounted on the pulley.

The vertical member Z hinged at plain bearing C is held in position by a U-shaped frame mounted on the side of the container in which the equipment is assembled.

This vertical member moves up and down and strikes the arm which is hinged at plain bearing D, so that one end of it strikes a panel of stretched drumskin. This may be mounted in the hinged lid of the box.

Other mechanical noises heard when a car is running are created by metal plates let into the arms X and Y at the points of contact with the vertical member Z.

An old sewing machine is ideal for providing all the mechanical movements required, but I would suggest that Meccano parts might be suitable.

The exhaust noise made by the arm striking the drumskin may be varied in pitch by variation of the size of the diaphragm and the tension.

If only a simple constant-run engine noise is wanted, place pennies on the top of a drum and tap the drumskin with a

finger. The tapping speed will determine the simulated engine revolutions.

Tick-over is quite effectively simulated by the machine turning over very slowly.

Gear-changing is reproduced by moving the starter handle progressively to fast, returning it quickly to slow, then, making a solid mechanical click, moving it to a speed not quite as fast as in the first case. Do this for the number of gears required.

Skids may be produced vocally or mechanically. To make the vocal effect, build up air pressure in the mouth (do not blow the cheeks out), and with firm indrawn lips expel the air through the side of the mouth.

The mechanical method is to draw a tumbler, mouth down, along a sheet of glass. This produces a very clear noise.

CREAKS are produced mechanically by several simple methods. A very good effect is obtained by rubbing a large resin-dusted cork with a circular motion on a piece of glass or wood.

The great creak caused by the lowering of an ancient port-cullis or drawbridge is created out of a wastepaper basket, a piece of rag impregnated with resin and a length of strong sisal string. Obtain a papier-maché wastepaper container and in the centre of the bottom make a hole to take the string. Firmly knot the end of the string, so that it does not pull out from the hole, then put the container open end down on to the floor. Hold it down with your foot. With one hand hold the string tightly, vertical, and starting at the container end firmly hold the resined rag around the string and pull it upwards.

The noise produced will depend upon the pressure with which the rag is held. It can be startlingly loud and of long duration.

Door creaks can be produced with a wooden T-shaped peg of slightly tapered section rotated under pressure in a hole drilled in a block of wood. The peg must have been dusted with resin previously. The pressure applied must be carefully controlled as the peg is turned round, or it will stick.

THE LONDON AUDIO FAIR, 1959

THIS year's London Audio Fair is to be held at the Hotel Russell, London, W.C.1., from 2nd to 5th April. Stands will be on the ground floor and demonstration rooms on upper floors.

The following firms will be exhibiting:—

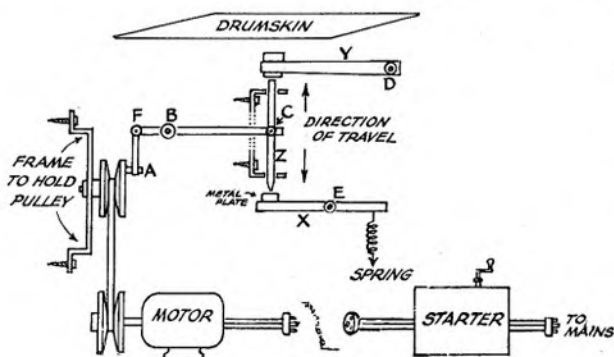
Acoustical Manufacturing Co. Ltd., Altobass Ltd., Ampex Corporation (Electronics) Ltd., Armstrong Wireless and Television Co. Ltd., Associated Electronic Eng's. Ltd., Badische Anili-&-Soda-Fabrik A. G., Beam-Echo Ltd., Brenell Engineering Co. Ltd., British Ferrograph Recorder Co. Ltd., C. T. Chapman (Reproducers) Ltd., Collaro Ltd., Cosmocord Ltd.

Decca Radio & Television, Decca Record Co., Dulci Co. Ltd., Dynatron Radio Ltd., E.A.P. (Tape Recorders) Ltd., Electronic Reproducers (Components) Ltd., E. K. Cole Ltd., E.M.I. Sales & Service Ltd., Fane Acoustics Ltd., Fi-Cord (Distribution) Ltd., Garrard Engineering & Manufacturing Co. Ltd., Goldring Manufacturing Co. Ltd., Goodmans Industries Ltd., Gramplan Reproducers Ltd., Grundig (Great Britain) Ltd., W. Harting-Tandberg Group.

Jason Motor & Electronic Co. Ltd., H. J. Leak & Co. Ltd., Lowther Manufacturing Co., Lustraphone Ltd., M.S.S. Recording Co. Ltd., Minnesota Mining & Manufacturing Co. Ltd., Mullard Ltd., Multimusik Ltd., Pamphonic Reproducers Ltd., Philips Electrical Ltd., Pilot Radio Ltd., Pye Ltd., Pye Group Records (Sales) Ltd., Rola Celestion Ltd., Romagna Reproducers., Simon Sound Services Ltd., Sound Sales Ltd., Specto Ltd., Standard Telephones & Cables Ltd., Stereosound Productions Ltd., Stuzzi Co., A. R. Sugden & Co. Ltd.

Tannoy Products Ltd., Telefunken G.m.b.H., Trix Electrical Co. Ltd., Truvox Ltd., Veritone Ltd., Vitavox Ltd., Vortexion Ltd., Walter (Sales) Ltd., Wharfedale Wireless Works Ltd., Whiteley Electrical Radio Co. Ltd., Resosound Ltd., Rogers (Developments) Ltd.

Tape Recording and Hi-Fi Magazine will be at booth 28 and in room 363. The April issue will be a special Audio Fair number.



DON'T WAIT FOR A

MIRACLE

THESE last six months have seen wild commotion in the record field—more excitement than we have had since the advent of microgroove records. There is a different contender in each of the four corners of the ring: monaural disc v. stereo disc v. twin-track $7\frac{1}{2}$ ips tape on reels v. four-track $3\frac{1}{4}$ ips in magazines. The listening public has been sitting with bated breath trying to make up its mind as to the future of tape and disc. The more gullible (and/or cautious) have stopped buying either tapes or discs, awaiting the advent of non-existent miracles.

It really isn't that complicated. There isn't a single future for recording, as there hasn't been one in the past. We can envisage four different futures, with the problem now becoming how to select the specific future that pleases you. A satisfactory selection can result only from a systematic analysis of the various things that one expects of a tape or disc record.

What do we expect of a record, be it either tape or disc? First, we want a record to be compatible with our present equipment so far as possible. The compatibility need not be perfect—look at the number of users who have lately bought two-track stereo adaptors for their monaural tape recorders.



Next, we expect an artistically pleasing performance, with pleasing acoustical perspective. To get these we are sometimes willing to sacrifice, but in the long run we insist on the following good technical characteristics:

1. Adequate frequency range.
2. Good signal-to-noise ratio.
3. Low wow and flutter.
4. Minimum extraneous sound (print-through, inter-channel leakage, or rumble).
5. Good durability.

Let us deal first with choice number one, namely: monaural disc v. stereo anything. A great deal of material exists only in monaural form, material of great historical and artistic value. An excellent example would be the collection of Arturo Toscanini recordings, existing as pressings or as transfers (by the Walter Toscanini staff) from the original lacquer discs to low print-through magnetic tape. These are irrevocably monaural.

It will take a long time for all of the present gramophones to be replaced by stereo systems or fitted with compatible monaural cartridges. A combination of all these factors, plus the artistic, suggest that it will take a long while for monaural discs to die. As confirmation of this, remember how long it took microgroove to overcome the old 78 rpm records.

So much for the artistic merits of performances; the other prime requisite is acoustical perspective. Good

In our last issue, James Moir discussed probable future developments in tape. A fascinating follow-up to his assessment is provided in this article by a leading American authority, C. J. LeBel, vice-president of Audio Devices Inc.

It is reprinted, with permission from our U.S. contemporary, High Fidelity Magazine.

stereo recording and reproduction do, at best, give greatly improved perspective, as compared to monaural. However, stereo records will vary greatly in perspective, depending on the recording staff's philosophy on separation. The following philosophies have all been heard lately in recordings: 1. Tenth row third balcony; 2. Fifth row orchestra centre; 3. Middle of the orchestra itself.

The last named, unnatural splitting of an orchestra into two groups, is spectacular on the salesroom floor, but fatiguing in the home. Some of the first material released, particularly by opportunists in the disc field, is actually two-source, not stereo, the separation is so excessive.

Even with the best of intentions, there will be big variations in acoustical perspective for the next year or so till the engineers get a better command of their new techniques. The complex possibilities of a four-channel stereo mixer are almost beyond belief.

Now for what I suppose we must call high-fidelity requirements, the first of which is, of course, frequency range. From what we know of the equipment, both stereo disc and $7\frac{1}{2}$ ips twin-track tape *can* offer the full frequency range generally recorded, 30 to 15,000 cps. We have said *can*, not *do*, for many of the stereo discs thus far produced seem to be lacking in the higher frequencies. Is this a wear effect? On the other hand, the quality of $7\frac{1}{2}$ ips recorded tape has not always been as uniform as could be desired. Is this the result of inadequate quality control, or is there a certain inherent loss in high speed mass duplication?

The latter remarks presage even greater worry about the quality of four-track $3\frac{1}{4}$ ips tape, for the frequency range per inch of tape speed has doubled from that available at $7\frac{1}{2}$ ips. The means of doing so, a one-tenth-mil gap in the

reproducing head, is an effective means of minimising *reproducing head* limitations, but it cannot reduce a number of other effects. At 4 kc per inch of tape speed, the effect of dirt on the head is greatly enhanced, as is the effect of tape defects. Little attention has been paid to tape characteristics at such short wave lengths in the past, and we may expect considerable variation in response from one batch to the next.

Also, a given amount of azimuth error—inaccuracy in the vertical setting of the tape head—will do much harm to high-frequency response at the lower speed. In short, we may expect much greater variation in frequency range from day to day, minute to minute, and reel to reel. These effects will be enhanced because some faults will effect duplicating as well as home reproduction.



Equally important, to the purity of sound reproduced, is the factor of signal-to-noise ratio. We are concerned with not only the measured signal-to-noise ratio, but also the miscellaneous effects which are usually not included in the measurement: disc ticks and pops, turntable rumble, tape print-through and leakage between channels. If we disregard some of these side effects, then 7½ ips twin-track tape and stereo disc are on a par at the start. Dust and wear can raise the disc noise level very rapidly, sometimes; magnetised heads on a tape recorder can also prove harmful.

Four-track 3½ ips is inherently noisier, *for a given level of engineering*, due to the slower speed, the narrower track, and the smaller gap. Each of these factors disposes of about 3 dB, so that in round numbers this system would be about 9 dB poorer than two-track 7½ ips when both are played on equipment of the same quality. Any design improvement which would improve the former would also be helpful if applied to the latter, so that for a given level of engineering the 9 dB degeneration is fixed.

The effect of the 9 dB injury should be to reduce the probable 50 dB ratio of a home machine to perhaps 40-42 dB. This figure can be improved on, but only at some cost.

A special kind of noise is print-through, manifested as pre-echo and interpolated noise. This is mainly a tape problem, though it exists also on discs which are cut from tape masters. However, record companies' master tapes may be of the low print-through type, and their storage conditions can be well controlled, which minimises our chances of getting pre-echo on discs. Neither of these precautions is likely to apply to a pre-recorded tape in the home. The higher cost of low-print tape makes unlikely its use by the duplicator, and few people will install tape storage vaults alongside the wine cellar, where cool prevails.

Some help to tape collectors may be a new print-through eraser which (if it is no breach of taste to say so) the company I work for developed recently. It reduces print-through by 6 to 18 dB. Using no valves, it is simply fastened in place on the tape deck, in the tape path. This should reduce an otherwise substantial problem.

Another hazard in stereo recording and reproduction, against which for the time being tapes seem to fare slightly better than discs, is inter-channel leakage. The effect of this is to dilute the stereo effect, reducing separation.

In tapes the effect occurs during both recording and reproduction, due to adventitious magnetic effects. The

separation is presently an effective 25 dB or more, and we may expect it to be increased still faster as better home machine head structures are developed.

In discs the leakage can occur in the cutting head, in the pick-up, or in failure to align the axes of the two channels the same in reproduction as in recording. And, of course, there must be added to this the slight leakage in the tape original. The problem seems to be at its worst in pick-ups, where the separation may range from a good 25 dB down to a pathetic 6 dB.

Then there is the question of durability. The mechanical durability of tape is good, and the magnetic durability is adequate, subject to the chance encounter with a magnetised head. The durability of magazine-loaded tape (i.e., cassettes) under home conditions is, naturally, still in doubt, magazines are too new.

The durability of a stereo disc is presently uncertain, too, for a number of reasons. First, the groove wall surfaces carry a three-dimensional pattern instead of the basically two-dimensional pattern on the walls of a monaural disc. We intuitively would expect more of a wear problem with the more complex surfaces—finer detail should rub off easier.

Secondly, the stereo pickup uses a 0.7-mil radius for the stylus tip instead of the hitherto standard one mil. The tip area is therefore half as great, and for equal wear we would call for half the pressure, i.e., the old average of 6 grams pressure must be replaced by 3 grams with the smaller tip. We do not see this happening in more than a few of the new designs.

Also, present record changers generally require 6 grams or more pressure for proper operation; this will be quite excessive with the stereo stylus. Will the new changers operate satisfactorily at 3 grams pressure?

All of these factors raise questions still unanswered on the wear of the stereo disc.



There exists another tape possibility, not yet tried. Four-track tape looks quite interesting when divorced from the quality problem of the 3½ ips speed and the size, cost, and compatibility problems of the magazine. After all, the narrower tracks taken alone spell only a 3 dB loss in signal-to-noise ratio, which is a lot better than the 9 dB loss of the 3½ ips version.

The conversion problem would be relatively simple, involving only the substitution of a new head and switch assembly in present machines. Selling price should be only two-thirds that of 7½ ips twin-track.

We believe that design study should be given to a 4-track 7½ ips system using tape on a standard reel.

And so to conclusions:

There are many reasons for listening carefully before leaping into stereo. The conversion will come gradually, as to microgroove, over a period of years.

We believe that the ordinary low-fi listener will retain discs, unless the wear problem proves annoying.

The almost ordinary low-fi listener, if bothered by ticks and pops, will consider four-track 3½ ips magazine tapes.

The serious listener will modify his turntable for stereo discs, for selections of ephemeral value. We believe that he will prefer 7½ ips tape for more significant material, in either two- or four-track version. Since he probably already has a large library of two-track tapes, he may want a dual 2/4 track machine.



Once you have heard a 'Sound' Tape Recorder you will know that you too have found the finest—finest for quality, finest for performance, finest for versatility, finest for sheer value. Whichever Sound Model you choose you will feel a great pride of ownership.

***If the human ear can hear it
... Sound can reproduce it.***

Letters to the Editor

'TAPE RECORDERS OF THE FUTURE'

IN his article "Tape Recorders of the Future," James Moir asserts: "Tape recordings have failed to displace gramophone records as home entertainment, etc., etc. This rather suggests the public will always prefer the convenient to the technically perfect, and moreover, they are generally prepared to pay a high price and sacrifice a good deal of possible performance for the sake of their personal convenience." . . .

Pre-recorded tapes are recorded at 7½ ips. How many tape recorders, excluding professional equipment are capable of reproducing the full frequency range of a tape at a speed of 7½ ips?

The price of a pre-recorded tape is in the region of £3 to £4 compared to an L.P. record of about £2.

A good quality pickup and amplifier is better capable of giving the frequency response required than a medium-priced recorder. The tape recorder scores in respect of lack of surface noise, but to suggest that it is cheaper or more convenient is, in my own opinion, rather sweeping.

J. PARISH.

Darlington.

I AGREE entirely with Mr. Moir about the inconvenient fiddling necessary with a rear socket panel but suggest that, whereas input and output sockets should be fitted in a business-like front/top position, duplication of certain sockets is a great convenience with the better quality (and heavier) recorders.

I too have found that the quality and output from my Ferrograph has enabled me to dispense with additional equipment. I feed my tuner unit directly into (and draw power from) the Ferrograph via the octal plug on the front panel; my record reproducer unit feeds when required into the recorder via a neat little one valve preamp/tone control unit; the external speaker system is fed from the recorder direct. However, with wires from the output socket for the speaker system and a six core cable from the octal plug the lid cannot be closed and the whole looks untidy. So I took leads to the rear of the instrument to provide duplicate sockets for normal home use.

In addition to the automatic stop at the end of the reel, I suggest that the mechanism concerned could be linked with another switching mechanism (for use at will) to cut off the mains supply also.

Thirdly, in addition to Mr. Moir's plea for more simple tape-slot threading, I would like to see standardisation of tape threading in respect of the take-up reels. Invisible slots in clear plastic reels are maddening when time counts—patent hub-locks are not much better; the simplest system to date is provided by the Grundig/BASF reel with split side. For domestic use the whole tape threading process should be simple enough for a blind person to use a machine unaided.

Lt. Col. W. B. HUBBARD.

Aldershot.

WE would refer to the opening paragraph of the article "Tape and Disc Recording" on page 34 in your February, 1959, issue which warns against the illegal copying of a commercial gramophone record.

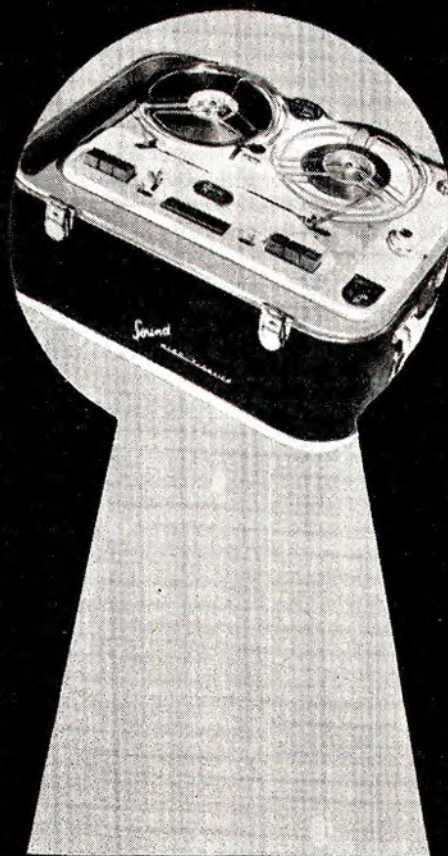
It should be made clear to your readers that in addition to the copyright which may subsist in a recording as such, there may also be a copyright in the material it reproduces. The Copyright Act, 1956, makes it quite clear that one of the acts restricted is the reproducing of a copyright musical work in any material form, which includes that of recording on any form of contrivance and for any purpose whatsoever, and it is therefore illegal for any person possessing tape recording equipment to make a recording of the copyright musical work even for his own private use, without the licence or permission of the copyright owner.

We suggest that this is a fact which cannot be emphasised too strongly and we would welcome your co-operation in making it known to your readers in their own interests.

B. W. PRATT.

Secretary of the Mechanical Copyright Protection Society Limited.

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Here then is good reason for you to choose Emitape for your own tape recordings. With Emitape you can always be sure of the finest possible recording quality—remember, the Emitape you buy is the same .0015" PVC base Emitape used by professionals the world over.



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Closing date for entries is Friday, 31st July.

But before that date the schools contest will have reached its own climax. *Closing date here is Friday, 29th May.* The theme: "How We See Other Countries." One feature tape of twenty minutes on this theme will be awarded the Grundig Challenge Cup to be held for one year and a replica

shield to be held in perpetuity. Grundig will also be arranging a social function in connection with the winning entry.

The overall winner of the individual section will receive the Emitape Challenge Cup and a replica to be retained. And, finally, don't forget the clubs' section. The theme "Our Town" should stimulate a lot of interest.

Write for your entry forms now to *Tape Recording Hi-Fi Magazine*, 7, Tudor Street, London, E.C.4.

Watch out next month for an important announcement as well as news of the handsome prize list for 1959.

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A record they'll remember . . .

...BUT KEEP THIS WEDDING GUEST IN THE BACKGROUND

by Paul Addinsell

The wedding season is here again and this year more couples than ever will be eager to have a sound record of the occasion. Here is some advice on the essentials of tape recording this ceremony by one who has had a great deal of experience in this field.

FROM a recording point of view the wedding ceremony can be divided into four sections:—

1. The organ music up to and including "Here comes the Bride", or the opening hymn;
2. the ceremony at the chancel steps;
3. the hymn or psalm, address (if any) and prayers at the altar;
4. the anthem or organ music while the register is being signed, the Wedding March, the Voluntary and, occasionally, the bells.

There is a fifth section, sometimes, when the bride enters to a processional hymn, and this requires rather special treatment.

The heart of the matter is to get maximum clarity for the spoken parts of the service. These take place in two parts of the church never less than four yards apart and sometimes as much as twenty. High roofs, stone walls and the absence of soft furnishings lead to considerable echo, and microphones have to be placed as close to the speaker as possible. Clarity, in such a building, diminishes rapidly with distance. One microphone can therefore only give rather poor results, unless you can persuade the parson to wear a lapel microphone.

I, personally, would not have the nerve to suggest that he should conduct the service with a lead trailing after him.

Two microphones are therefore a minimum requirement, one at the chancel steps and one at the altar rail, to achieve reasonable clarity. I am assuming that you have a mixer and are able to use more than one microphone.

I like to put two microphones by the chancel steps, one on each side, because it is never possible to place one centrally. If I can only use one, I place it as near the centre as possible (without causing offence) and on the bridegroom's (south) side of the choir aisle. The reason I choose this position is because the couple face inwards towards the clergyman when they make their vows; it is usual for the bride to speak softer than the groom and there is a better chance of achieving clarity if she is speak-



An M.G.M. photograph

ing more or less towards the microphone rather than obliquely away from it.

For perfection, there should be another microphone behind the couple for the parson's use, or even an omni-directional one just above the heads of all three, but either would be too obtrusive. In any case, clergymen are accustomed to public speaking and most of them know how to speak clearly: A microphone somewhat behind the left shoulder is quite adequate for them and is the best that one can do in the circumstances.

I certainly cannot recommend having any placed in the body of the church. There's no knowing what untoward signals will be picked up.

There is usually little choice of position for the microphone at the altar. It just has to be hidden.

To generalise about churches would be stupid: conditions and results vary enormously from church to church, but my heart always sinks when I inspect a church with a gallery, with the organ at the back of the church and when I am told that the choir sings from that gallery. Some of the large London churches have this arrangement: the larger it is, the more complicated the problem.

The couple usually want to be able, when playing the record of their wedding, to get an impression of the general atmosphere. They do like to hear some sort of response from the congregation, good or bad, even though the choir are so much more worth hearing. They were the witnesses of their vows and they naturally like to know that they were there. To record the choir properly a microphone has to be suspended as near to it as possible, perhaps twenty feet above as well as behind the congregation. Of course a microphone sited thus picks up a lot of choir, but only reflected congregation signal. If one has the chancel microphone on as well in an attempt to rectify the balance, it will pick up some of the choir signal too, because their singing is more powerful. This secondary signal will be slightly out of phase with the first because of the distance and the echo. Putting one in the nave for the congregation might work if it was not a certainty that Uncle Joe would be nearest to it and would sing straight into it stridently and out of tune.

Perhaps the best solution is to sling an omni-directional microphone half-way up the church and six feet above the heads of the congregation. This is what I do and I usually get a reasonable balance between choir and congregation.



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SUGGESTIONS

TRIANGULAR TAPE

YOU may be interested to learn of a highly successful and very enjoyable "Triangular Tape" which is circulating between Roy Penfold of Coventry, John R. Murray of Lesmahagow (whom you may remember in connection with his tape posting boxes) and the writer.

This Triangular Tape will shortly be celebrating its "21st Birthday" as it will have completed 21 circuits of the triangular journey — London, Coventry, Lesmahagow, London.

During its activity it has resulted in other similar Triangular Tapes being started, including the Tall Story Tape commenced by Lee Lacy (mentioned in your columns a short time ago) to which I have great fun in contributing as well.

The present Tri-tape has covered a diversity of subjects, including bird song from both sides of the Atlantic; interviews with stage personalities; the contrasting heartbeats of a child and an adult; amateur football teams of the past; anachronisms; tape statistics; the signing of the Magna Charta; a highland pipe band contest; humorous readings from *Three Men in a Boat*; and a Hallowe'en party.

Each recordist listens to both tracks, then records his contribution on the track previously occupied by that of the person to whom he sends the tape. And so it goes on.

JOHN LI-HUGHES.

Fulham, S.W.6.

35MM. COLOUR SLIDES

WHEN I exchange tape recordings with my pals abroad I include a few 35 mm. colour slides of my country and, together with a running commentary on the tape, the two combined make the

If you have a problem, write to "The Ideas Pool" about it. And if you think you have an answer to any of the queries, let other readers share your knowledge and your personal experiences.

THE IDEAS POOL

hobby of tapespondence much more interesting.

These slides are exchanged with the recipient for slides of his or her part of the world. Thus we combine a sound picture on tape with a visual picture on film. 35 mm. colour photography, I have found, is becoming increasingly popular with tape recording enthusiasts all over the world.

MAX H. NICHOLLS.

Tape-respondents, International South African Representative, Natal, South Africa.

"MORE TAPE PER REEL"

MAY I answer some recent correspondents?

First of all: have any of your correspondents tried the reels? Mr. Woods (*November*) says "any conventional tape mechanism is strained to its limit at minimum spooling diameters." I would also point out that my idea behind these spools is that they are for use on a portable machine. I designed them for a Fi-Cord—a one-motor machine which has no difficulty whatsoever in dealing with the reels although, as Mr. Berridge (*January*) points out, they are no use on such decks as the Harting, Collaro, etc., but only on the 3-motor decks such as Brenell, Wearite, Truvox, etc.

To Mr. Holmes (*December*) I would like to say this: I wouldn't like to smuggle a recorder fitted without rigger arms into a concert hall. The dangers are great enough with such a small machine as the Fi-Cord. I know. I had a number of inquiring looks this summer when walking into concerts with a bulge in my jacket. Mr. Strudwich (*January*) refers to 7 in. reels; I am only concerned with 3 in. reels. In any case I already have suggested filling a small reel with Telefunken tape—reference to my tape shows this provides 16 mins. playing time less at 1½ ips.

In conclusion I can only say this: I am making most satisfactory recordings on my Fi-Cord with this reel which I am now having specially made and which holds 20 mins. playing time at 7½ ips because the Fi-Cord will take a 3½ in. diameter reel.

IAN GIBSON.

Liversedge, Yorks.

AND QUERIES

CONVERSION FOR STEREO

THOSE who possess two tape recorders may wish, as I have done, to convert their machines to record and replay stereophonically.

An erase head on the first recorder should be removed and a record/replay head from the second recorder substituted, aligned to the opposite tape track to that of its neighbour and remaining connected to the second recorder by inserting a length of co-axial cable.

When the controls of both recorders are set to "record" the input signals of each recorder will thus be recorded simultaneously on the upper and lower tracks of a tape on the first recorder.

Further advantage may be secured by placing the removed erase head in the space formerly occupied to the record/replay head of the second recorder, aligned to the opposite tape track to that of its neighbouring erase head and being connected to the first recorder by a length of co-axial cable. Both tracks of a tape may then be erased simultaneously on the second recorder when the controls of both are set to "record."

Portability may be restored by cutting the co-axial cables near each recorder and securing the ends in co-axial sockets of the well-fitting variety which can easily be fixed to the exteriors of the recorders. By soldering co-axial plugs to both ends of the lengths of cable thus cut-away interconnection may be made with ease whenever necessary.

S. R. EDDY.

Cornwall.

Tape Recording Hi-Fi Magazine Advice Bureau
March 1959

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There are still a number of recorders giving good service which were manufactured before there was general agreement on recording characteristics. If you have a tape made on one of them, it will play from right to left. To play it on another machine, you will need it

running in reverse

says JOHN PROBERT of Birmingham Repertory Theatre

THE language coming from the recorder was like no tongue we had ever heard before. Lithuanian, perhaps? Or maybe Serbo-Croat?

We had threaded the tape and switched on, and the burst of music from the speaker was strange and yet, somehow, familiar, finishing with a round of applause which stopped suddenly.

And then this man speaking his strange sounds. After a few moments, of course, we realised that it was our mother tongue—played backwards!

The tape belonged to Colin George, an actor who is now delighting theatre-goers in Nottingham with his work at the Playhouse. The recording was of a performance of *Romeo and Juliet* by the Elizabethan Theatre Company in the Oxford Playhouse three years ago, with Colin George playing Romeo.

The recording had been made on an early Grundig machine using a microphone set in the floats of the theatre. The Grundig had been hired for the day, in order to record the last performance of the tour, and, after hurriedly playing back a couple of speeches to make sure the tape had been modulated, Mr. George had had to return the machine to the dealer.

Since that day the tape had remained in its box. Only now did we realise that it had been made on a machine operating from right to left. When we tried to play it back on my Ferrograph, the results were as described. (Today, of course, all recorders are standardised with left to right top-track operation.)

There may be others with treasured recordings made in the early days who may want to play them back the "right way round," or dub on to a tape from which they can be played normally in future.

I first tried a method that had been suggested in *Tape Recording Hi-Fi Magazine*. This was simply to put a twist on the tape so that the coated surface of the tape faced away from the playback head. This has the effect of reversing the two tracks in relation to their movement across the head, so that the recording may be heard normally. But I found that the loss of voltage was so great that the performance could only just be heard, and it was certainly not worth dubbing.

A method had to be found of using the capstan of the machine to pull the tape past the head in the reverse direction to normal, while at the same time keeping the coated surface in direct contact with the head.

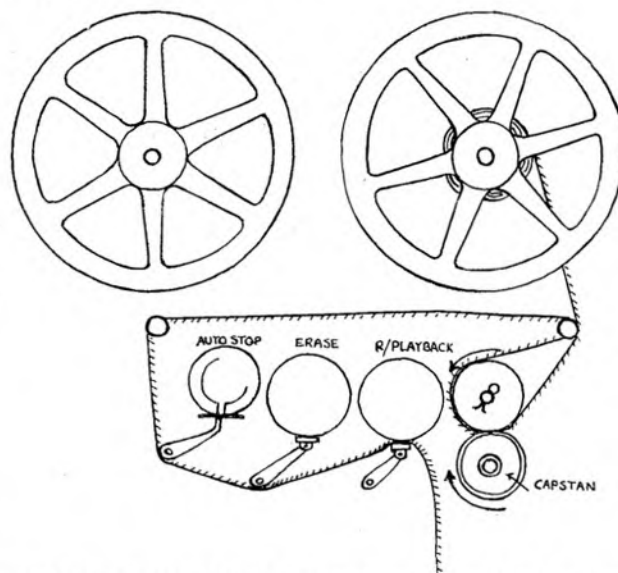
I drew sketches of the layout of heads and tape transport of the machine, one showing normal operation and another showing a possible alternative route for the tape, in order to fulfil my requirements. This is reproduced here.

As can be seen, the tape went first to the record-playback head, then behind the other pressure-pad arms and so

around the back of the head shield, between the capstan and the pulley, and on to the take-up spool. The auto-stop on this machine was made non-effective by inserting a small card between the gap and the lever. This will not be necessary on other models.

The Ferrograph deck has two tape guides, and these were used to give freer running for the tape. It was found that, in practise, the tape could not be drawn from the left-hand spool as the resistance was too great for the capstan drive, so the tape was fed in by hand from the spool, which was placed over a round pencil to serve as a bearing. This may sound a bit "Heath-Robinsonish" but it proved perfectly simple to operate at $3\frac{1}{4}$ ips, and first-class signal was obtained with no obvious wow.

Now, all we had to do was plug directly to another recorder and so dub a straightforward recording of the performance.

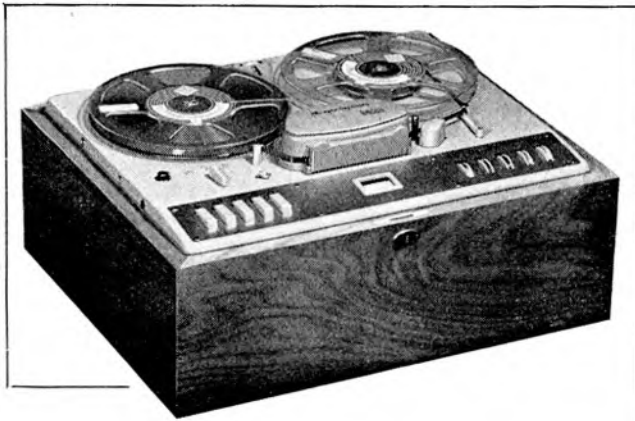


EDITOR'S FOOTNOTE: The technique described above will obviously need to be adapted to meet the deck layout of different recorders. For example, the Ferrograph 3S machines have the record/playback head where the erase head is shown on the accompanying sketch and this calls for a slightly different tape path.

It will be seen that two thicknesses of tape have to move around the right-hand tape guide, the inner one in a clockwise direction and the outer one anti-clockwise. This may cause some "shudder," which can be avoided if a smooth pencil is held firmly on the deck to serve as an additional tape guide, so that the two thicknesses are kept apart.

We print this article as an interesting explanation of a technique that will be found useful in overcoming an exceptional problem. As there are obvious difficulties in ensuring proper tape tension and pressure, prolonged use of a recorder in this way might not be advisable.

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Brenell Three Star	60 18 0	4 13 0	4 13 8
Brenell Mk. 5.....	67 4 0	5 4 0	5 3 4
Wyndson Viscount	51 9 0	4 1 0	3 19 0
Walter 303.....	44 2 0	3 8 0	3 7 10
Elizabethan Essex	68 5 0	5 5 0	5 5 0
Elizabethan Mayfair	75 12 0	5 17 0	5 16 3
Elizabethan Escort.....	47 5 0	3 15 0	3 12 6
Philips AG 8108	65 2 0	5 2 0	5 0 0
*Telefunken KL75K	52 10 0	4 1 0	4 0 9
*Telefunken KL85K	78 15 0	6 3 0	6 1 0
*Grundig TK30	75 12 0	5 17 0	5 16 3
*Grundig TK25	65 2 0	5 2 0	5 0 0
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Charles Langton, A.M.Brit.I.R.E., tells you how you can

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THE enthusiast who wishes to construct a time-switch can do so without difficulty provided an old alarm clock is available. The clock should be in working order, although long-term accuracy is not essential if recordings are to be made within a few hours of setting the switch. Our modifications have been designed to interfere with the mechanism as little as possible, and in fact, the clock may continue in normal service when not being used as a time-switch.

In principle, an electrical contact is fitted in place of the alarm bell so that the hammer strikes against this, thereby completing an electrical circuit. Current is supplied to this circuit by a low-voltage battery, and is fed to a relay when the contact is closed, thus energising the relay. In turn, the contacts of the relay control the mains current to the receiver and recorder, switching on these items ready for use.

Note that with this arrangement the mains supply is completely isolated from the clock. No attempt should be made to control the mains current directly by means of the contact within the clock, because the clock would become "live" and dangerous. Furthermore, the small contact would rapidly burn away.

The clock used by the writer is a "Smith Alarm," but with slight modifications almost any similar model may be adapted. The clock must first be removed from its case, and the alarm bell removed by loosening or removing the two nuts A and B, Fig. 1. It is best to remove these nuts one at a time, replacing immediately, so that the clock frame does not become too loose. Before replacing nut B, a soldering tag should be fitted over the screw thread to make contact with the frame. The nut should then be tightened.

A small paxolin tag strip is next required, possessing one soldering tag and one fixing hole. This may be cut off a multiple tag strip. Bend a piece of steel wire 22 or 24 SWG about 1½ in. long, into the shape shown in Fig. 2a. Solder one end of the wire on to the tag as shown in Fig. 2b, so that the wire sticks out at right angles to the tag strip. This little assembly is now ready for fitting into position on the frame, held in place by the nut A, Fig. 3. When fitted correctly the hammer should strike the bent up end of the wire when the alarm is released, but the wire should be sufficiently springy to "give" so that contact between the two may be maintained for a reasonable period of time during each stroke. Care must be taken not to allow the steel wire or tag to touch the frame at any point.

To complete the clock modification, one insulated flexible lead is soldered to the tag on the paxolin strip at A, and

another is soldered to the tag at B. The clock is now returned to its case, the flexible leads being brought out through a convenient hole, or, better still, terminated at a miniature two-pin socket fixed to the clock case.

The switch so constructed will have to be used in conjunction with a self-locking relay circuit. This is obvious, because in the first place the switch is intermittently making and breaking as the hammer vibrates, and in any case the circuit will finally break after the alarm has run down, within a few moments. A suitable circuit is shown in Fig. 4. The relay is not critical although it should have a

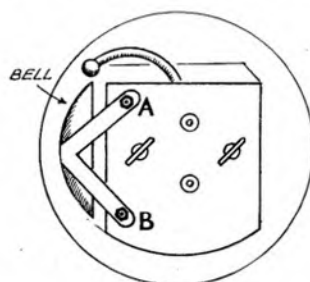


Figure 1

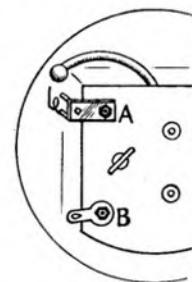


Figure 3

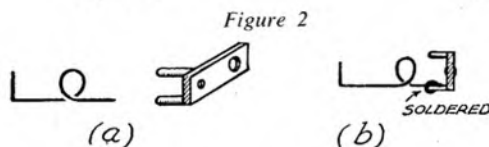


Figure 2

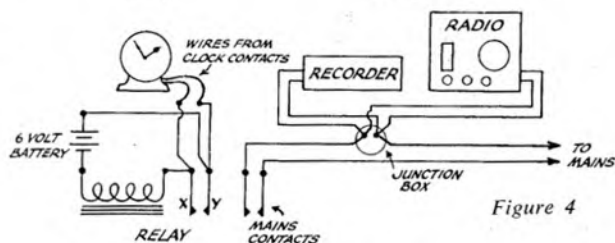


Figure 4

coil resistance of between 50 and 200 ohms. The armature should be light and rapid in action, and for this reason only two pairs of contacts are advisable. One pair should be sufficiently insulated to handle the 240-volt mains, and be capable of carrying about one amp. The other pair of contacts have only a tiny current to carry, and should be adjusted very closely together so that a small movement of the armature is sufficient to close the circuit. Two

(Continued on page 37)

The New Improved COLLARO TAPE TRANSCRIPTOR

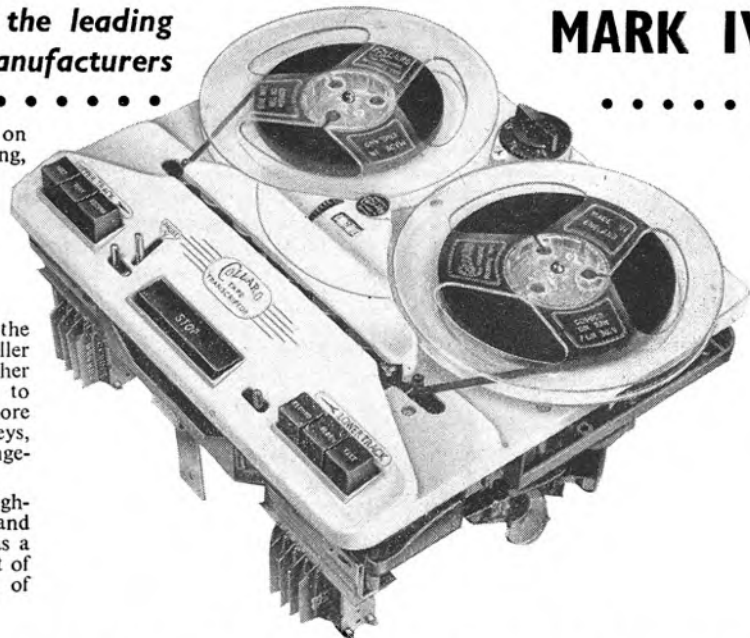
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Walter 303 De Luxe.....	4 9 0	3 6 1	42
Perth-Saja—Standard.....	4 15 0	3 10 10	45
Verdik S.1.....	4 15 0	3 10 10	45
E.A.P. "Escort".....	4 15 0	3 10 10	45
Sound 444.....	4 15 0	3 10 10	45
Magnafon M.1.....	5 2 0	3 15 6	48
Wyndor "Viscount".....	5 3 0	3 17 2	49
Grundig TK20.....	5 12 0	4 1 8	52
Telefunken KL75.....	5 15 0	4 6 8	55
Perth-Saja—De Luxe.....	5 16 0	4 8 4	56
Brenell 3-Star.....	6 4 0	4 11 2	58
Truvoz.....	6 4 0	4 12 11	59
Philips AG8108.....	6 11 0	4 17 7	62

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Essex.....	7 18 0	5 18 1	75
Grundig TK30.....	8 4 0	6 2 10	78
Telefunken KL85.....	8 8 0	6 6 0	80
Harting HM5.....	9 3 0	6 17 0	87
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REDUCING MECHANICAL NOISE

LAST month we discussed the fact that suspending the whole tape transcriber on rubber mountings would reduce certain forms of mechanical noise.

There are a total of five mounting positions on the tape deck, two located on either side and three at the rear. This allows two alternative mountings of either four-way or three-way termination. Of these, the latter is preferable, for a distorted mounting board can in turn distort the diecast chassis of the tape transcriber.

This effect in both cases is reduced when rubber mountings are used. To mount the mechanism proceed as follows: First ensure that sufficient clearance exists between chassis and mounting board cut-out. There should be side to side and back to front movement of at least one-sixteenth inch; any tight fitting will nullify the advantage of suspension.



The relevant mounting holes are first enlarged with a $\frac{1}{4}$ in. twist drill. This is best done by hand using a brace, and not a high speed electric drill. To prevent the cutting or swarf from the drilling operation becoming lodged in the motors, turn the deck upside down and place three or four small blocks of wood under the mounting holes. This will not only prevent holes being drilled in the bench or table, but prevent damage to the three-speed digit counter.

Once the holes have been drilled remove all cuttings with a greasy rag before turning the deck over.

The next step is to reduce the thickness of metal round the $\frac{1}{4}$ in. hole to $1/16$ in. This is achieved by counter-boring those holes with a $\frac{1}{2}$ in. twist drill fitted in a brace. Swarf is prevented from wandering this time by dipping the tip of the drill in thick grease or vaseline.

The appropriate number of $\frac{1}{4}$ in. rubber grommets can now be fitted to complete the job. A strip of thick rubber or grommet cut in half stuck to the underside of the deck, on either side of the $\frac{1}{4}$ in. holes, will prevent undue compression of the mounting grommets.

A grommet most suitable for this purpose and which will take the full weight of the deck is manufactured by Messrs. P. B. Cow & Co. Ltd., Streatham Common, London, S.W. 16. (Type G. 32.)

This raises the tape transcriber by $\frac{1}{8}$ in. but the mounting grommets are easily cut to a suitable height by a wet razor. Fixing the tape transcriber to the base-board is then accomplished with the appropriate number of B.A. nuts, bolts and washers.

The pressure required to operate the mechanism may be considerably reduced by the judicious application of grease to certain of the operating members, noticeably those around the press buttons in the upper and lower tracks.

The lubricant most suitable is Shell Retinax "A" grease which can be obtained at most garages. This special high temperature multi-purpose grease is best applied with the tip of a screwdriver. Petroleum jelly or similar grease is not recommended as these tend to melt at the working temperature of the tape transcriber.

Next month's issue will describe and illustrate those parts which require regular lubrication.—T.H.R.

MAKE YOUR OWN TIME SWITCH

(Continued from page 35)

cycle lamp batteries in series are used to supply the relay coil, and with intermittent use will last for months.

In operation, the alarm is wound and set in the normal manner. After the pre-determined time, the alarm will be released, causing the hammer to strike the steel wire contact, which closes the circuit to the relay coil, which instantly attracts the armature. This movement closes the contacts x and y on the relay, which in turn apply the battery voltage directly to the coil and short circuiting the home-made contacts in the clock. Hence, the relay will remain permanently energised until the battery is switched off or disconnected after the recording, and, of course, the pair of mains contacts will also remain closed.

Addenda

Time-switches of various types may be purchased from radio suppliers at prices ranging from about 27s. 6d. Or,

in case of difficulty, the following manufacturers will furnish information and advice on any of their products.

Venner Electronics Ltd., New Malden, Surrey.

Smiths Ltd., Setric House, Waterloo Road, London.

Sangamo Weston Ltd., Enfield, Middlesex.

ERRATA

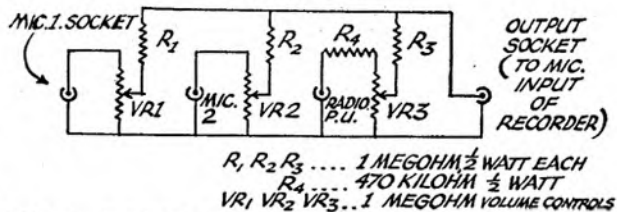


FIG 4. MIXER CIRCUIT

In last month's issue in Charles Langton's article on "Tape and Disc Recording" we published the above diagram for the construction of a mixer circuit. Due to an artist's error a line was drawn which nullified the effect of the circuit. For those working on it we publish the correct diagram above.

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TAPE NEWS DIGEST



Nigel Rees

Roger Charlton

Two highly-placed competitors in the 1957 British Amateur Tape Recording Contest have been given places in the special five-day course on tape recording to be held at the Rose Bruford Training College, Lamorbey Park, Sidcup, Kent, from 31st March to 4th April. They are Mr. Nigel Rees and Mr. Roger Charlton.

Nigel Rees, 14, is a student at the Merchant Taylors' School, Crosby. His tape on Youth Hostelling was highly commended last year. He wants to start his own studio and hopes, eventually, to become a broadcasting producer.

Roger Charlton, aged 20, was the winner of the music section of last year's British Amateur Tape Recording Contest. He is a music student at Manchester University and plays the flute. He has led successfully or conducted music groups at local festivals.

He has been interested in electronics and recording from an early age and hopes to finish building his sixth recorder within the course of the next few weeks.

The College asks us to point out that all places on the course are now filled. *Tape Hi-Fi Magazine* Technical Advisory Editor, Charles Langton, is among the lecturers.

A "Sound Journal," recorded on tape, and published three times a week for the 6,000 blind people in Denmark, has been started in Copenhagen.

The tape plays for an hour, the first half being devoted to general news, and the second half to editorial comment and features in the Danish Press.

Although fog-bound in Glasgow, the two main speakers at a meeting were still able to address the audience in Belfast.

When their plane from Glasgow was turned back Mr. G. E. A. Perutz, of Rank Precision Industries Ltd., and Mr. J. W. Hissey, of G.B. Film Library, telephoned Belfast and had their speeches tape recorded.

The tapes were played back at the meeting, which was held to further interest in the use of films in industry.

Two tape recording enthusiasts in Scotland have developed a further use for tape. Mr. Patrick Copinger and his wife recently offered to record part of the service of a local church, to try to improve the singing of the eighteen boy choristers. He recorded Matins and played it back to the choir afterwards. The choirmaster then indicated to the boys where they were failing. An improvement was noticed in the boys' singing on the following Sunday.

This gave them the idea of recording the whole of Matins one Sunday a month, using three microphones with a mixer. One microphone will stand between the pulpit and the choir, another small microphone on the Lectern and a further small one on the floor inside the altar rail to pick up the other end of the choir and the Rector when he is at the altar.

The idea of the recording has been suggested to the Rector as a means of taking the service to his sick, elderly or infirm parishioners who were unable to attend. These people will be visited by appointment and the whole or part of the services played to them.

Frequency response on the Rees R. 30, as mentioned last month, will be given as soon as a production model becomes available.

Copies of volume two of "Tape Recording Hi-Fi Magazine" can now be accepted for binding—27s. 6d., post free.



Kenny Baker, Britain's star jazz trumpeter, who appears in the B.B.C. Saturday night light programme "Let's Settle for Music" as well as the "Dixieland and After" programme on March 28, described in our "Times to Tune In" feature on page 46

PRODUCTS REVIEW



**Two speed
Elizabethan
Bandbox
—at 29 gns**

THE first two-speed tape recorder at less than thirty guineas is announced this month by Elizabethan. It is the Bandbox. Specification is as follows: Speeds of $3\frac{1}{2}$ and $1\frac{1}{2}$ ips, interlocked push button controls, a precision clock type indicator, an output of $2\frac{1}{2}$ watts, microphone and gram/radio inputs, external l.s. and monitoring (high impedance) output, a 7 in. x 4 in. elliptical speaker and magic eye record level. The size is $10\frac{1}{2}$ in. x 9 in. x 6 in. and the weight is only twelve pounds. The finish is in a two-tone rexine and wooden cabinet. Price 29 guineas.

E.A.P. (Tape Recorders) Ltd., Bridge Close, Oldchurch Road, Romford, Essex.

Multimusic expansion

MULTIMUSIC LTD. have expanded production facilities to cope with the increased demand for their Model 500 Reflectograph, and to provide for the manufacture of stereophonic recording and reproducing instruments. All record and playback amplifiers will now be made at the Chelmsford premises of an electronic engineering firm in which Multimusic Ltd. have acquired an interest.

More than 120 E.M.I. Home Maintenance Ltd. Engineers have been trained to service Reflectographs, and the recently announced annual maintenance and guarantee scheme—free for the first year—is now in operation.

Multimusic Ltd., Maylands Avenue, Hemel Hempstead, Herts.

* * *

A TAPE SPLICING DEVICE now being marketed by Sound Developments Ltd. at 7s. 6d. is named the Editape. The makers claim that it is very simple to use and is accurate enough for professional use, having a special profile and an accurate machined slot.

Sound Developments, 9, Osborne Road, Kingston-upon-Thames, Surrey.

* * *

TECHNICAL SUPPLIERS LTD., 63, Goldhawk Road, London, W.12 (SHE 2581 and 4794) have been appointed sole distributors for all equipment marketed under the C.Q. trade mark. Routine technical enquiries may be sent to Technical Suppliers or to C.Q. Audio Limited.

C.Q. Audio Limited, 2, Sarnesfield Road, Enfield, Middlesex (ENF 8262).

* * *

NORTHERN RADIO SERVICES announce that they are now operating a tape recorder hire service.

Northern Radio Services, 11, King's College Road, London, N.W.3, (PRI 3314).

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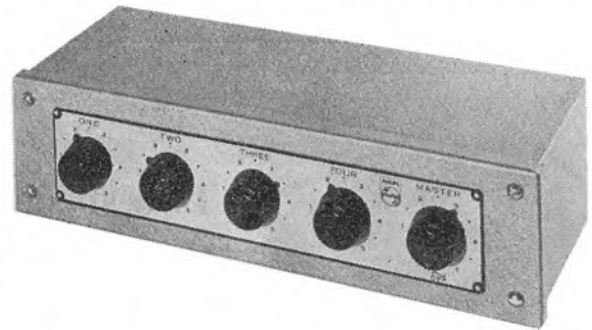
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Philips four-channel mixer



A NEW four channel mixer (Type ET 1039) which supersedes the existing model ET 1027, has been introduced by Philips. This sells at £36, £11 less than its predecessor.

It is intended for public address work and those seriously interested in tape recording. The basic design constitutes a table mixer, which can be converted for rack mounting by means of a panel available separately at £1. Finish is of silver hammer enamel on steel, and rubber feet are provided.

There are four inputs at 600 ohms, each with a gain control and transformer. Output consists of a cathode follower, with master gain control. Sensitivity is 1 mV for 90 mV output. The frequency response is given as 50 to 20,000 cps ± 1 dB, and 60 to 10,000 cps $\pm \frac{1}{2}$ dB.

The output socket is provided with a plug. The four input sockets are not so provided as these are already fitted to Philips microphones. Plugs to fit can be ordered from the firm if other makes of microphones are used.

Microphones of 50 to 600 ohms may be used. Maximum gain is obtained at 600 ohms as the mixer's built-in transformers are wound for this impedance. Since both inputs and outputs are at low impedance, considerable lengths of cable may be used.

Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2 (Gerrard 7777).

Big reduction on the Saba

A PRICE REDUCTION brings the Saba tape recorder down from 110 guineas to 89 guineas.

The Saba offers recording and playback in both directions by means of an automatic change-over system. This gives four hours playing time on twin tracks, automatic reversal, and continuous non-stop playing, if desired, without changing the tapes.

During recording the instrument automatically stops after both tracks have been filled. The double track system is according to C.C.I.R. standards, and a special plug makes it possible also to play back tapes recorded on German standards.

Frequency response is given as 30 to 20,000 cps at $7\frac{1}{2}$ ips and 40 to 16,000 cps at $3\frac{1}{2}$ ips. Two concert loudspeakers in a tridimensional arrangement are included, and a tape meter for both directions with zero setting. A very fast rewind is claimed with a visual level indicator. There are connections for headphones, extension speaker, remote control, and mixer unit. Consumption approximately 70 watts. Mains voltage can be set for 110, 130, 220 and 240 volts. Current AC.

Weight is 39 lb. Price 89 guineas. A Saba D/11 microphone with a speech music switch is available at nine guineas.

Henri Selmer and Co. Ltd., 114/116, Charing Cross Road, London, W.C.2 (Temple Bar 0444).

Veritone Venus portable



A PORTABLE VERSION of the well-known Venus Console, announced this month by Veritone, incorporates all the facilities of the Console version including the monitoring and superimposition. These facilities make it possible to re-record over an existing sound track while listening to the first (with 1/5th sec. delay) and to add many layers of sound.

As in the case of the Console, the deck has three heads (one erase, one record, one playback), counter, solenoid braking, safety interlocked controls, separate bass and treble controls and indicator lights—green for playback; red for record. The twin amplifiers give 4 watts undistorted and the 10 in. x 6 in. speaker uses the recorder lid as a baffle.

The overall size of the Veritone Venus Portable is approximately 17 x 15½ x 7½ ins.

The price is 58 gns. including Acos 39/1 microphone, tape and radio lead with jack plug.

Production will continue of the Veritone Venus Console, designed entirely for the home and with a VHF tuner unit as an optional extra.

Veritone Ltd., Avenue Parade, Ridge Avenue, London, N.21.

New C.Q. loudspeaker



CONTINUING their search for loudspeaker efficiency in ever smaller spaces, C.Q. Audio Ltd. have produced the C.Q. Junior, with dimensions of 17 x 9½ x 10 in., a claimed frequency response of 45 to 12,000 cps, and a power handling of 4 watts continuously or 8-10 watts speech or music.

The makers claim that the bass is clean and uncoloured down to the lowest frequency and that the treble is sweet and smooth, with a general impression imparted of a much larger speaker. They suggest that two Junior speakers provide a solution to the problem of accommodating stereo in a small home.

Four sides of the cabinet are veneered and polished so that it can conveniently be mounted either vertically or horizontally. The price is 13 guineas.

In this feature every month you can check



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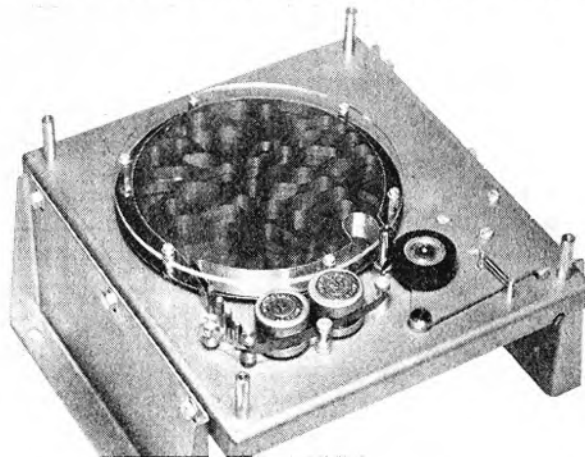
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Continuous loop tape deck



TWO MACHINES with practical commercial applications are introduced this month. A continuous tape deck introduced by Gate allows for storage of a continuous loop of tape of sufficient length to provide up to four minutes playing time. The many applications of such a device are instantly recognisable. The deck operates without take-up spools, the tape being stored in a shallow tray magazine, and its entry and exit being facilitated by two shaped slots in the sides. Tape is kept dust-free and in place by a circular disc of perspex.

When it is fed into the magazine the tape arranges itself in a large number of small loops, as shown in our illustration. On leaving it passes in and out between four small pillars which tension it and remove any static which may have accumulated on the tape. Price on application from the manufacturers.

Gate Electronics Ltd., Tudor Grove, Hackney, London, E.9 (Amherst 8484).

* * *

THE ANSAFONE, introduced by Southern Instruments Ltd., automatically answers a telephone and records a message if the subscriber is unable to reply in person. It replies to an incoming call after ten or fifteen seconds, relaying a pre-recorded announcement inviting a message to be recorded. A recording time of from three to thirty minutes is available depending on the number of messages already recorded. Ten seconds after a caller stops speaking a further announcement is made indicating the end of the recording. Then the instrument disconnects itself ready to make further announcements or record messages. Any telephone to which it is connected may be used normally at any time. In common with most telephone equipment the instrument will be installed on a rental basis, varying according to contract from 35s. to 22s. 6d.

* * *

GRUNDIG announce an improved foot control for use with their Stenorette dictating machine. It has a single foot plate control and is finished in two tones to match the parent machine. It is known as RCF 33—MK 11. Price remains unaltered at 3½ guineas. A big sales-promotion scheme is shortly to be launched for Stenorettes.

Grundig (Great Britain) Ltd., Newlands Park, Sydenham, S.E.26—not the previous address, Kidbrooke Park Road, London, S.E.3, as stated in last month's issue.

* * *

SELECTED DEALERS throughout the country are being appointed to act as Walter Service Centres for their range of machines. K. G. Kelland, 88, Rose Hill, Oxford, is covering the area from Tewkesbury in the north to include Banbury, Towcester, Aylesbury, Windsor, Newbury, Devizes, Chippenham, Stroud and Gloucester.

Walter Instruments Ltd., Garth Road, Morden, Surrey (Derwent 4421).

TO conclude this series, here are some tips on the care of equipment which may help the owner to keep his recorder working at its best. A modern tape recorder will normally give very little trouble and the user should obtain years of satisfactory use out of the instrument.

There is very little to be done in the way of maintenance, and the general rule should be to leave well alone. Recorders have reached a high standard of mechanical and electronic perfection, and although very robust as far as normal usage is concerned, can be easily put out of action by over-enthusiastic maintenance.

Whenever possible follow the manufacturers instructions to the letter. This applies particularly to lubrication, which should be rarely done on any instrument. As a rule, not more than one drop of the specified oil should be applied to any bearing, and all surplus oil should be immediately wiped off with a clean cloth.

When in doubt, it is better *not* to oil than take a chance. As many of the mechanical drives are of plastic or rubber bands passing lightly over pulleys, the slightest trace of oil here will cause slip, which may, for example, result in the introduction of wow which may be difficult to trace. Again, many of the bearings are self-lubricating and do not require oil.

Charles Langton concludes his series "Tape in a Hi-Fi System" with these hints on the care of your recorder. Next month he starts an important series on the scientific basis of magnetic recording

The magnetic heads will need cleaning perhaps every six months (or whenever they look dirty) otherwise the particles of dirt will become embedded in the tape and scratch the surface of the heads. This will eventually result in all recordings having a high background noise (even with a new tape) and the only remedy is the expensive one of fitting new heads. To clean the heads, carefully brush the surfaces with methylated spirits, using a soft brush or cloth. Do not under any circumstances use trichlorethylene, carbon-tetrachloride, amylacetate, switch cleaner, or any similar solvents. These solvents have just as disastrous effects on plastic as acid has on steel. While cleaning the heads, check the guide pins, tape rollers, capstan spindle and pressure pads. They may also be cleaned if necessary.

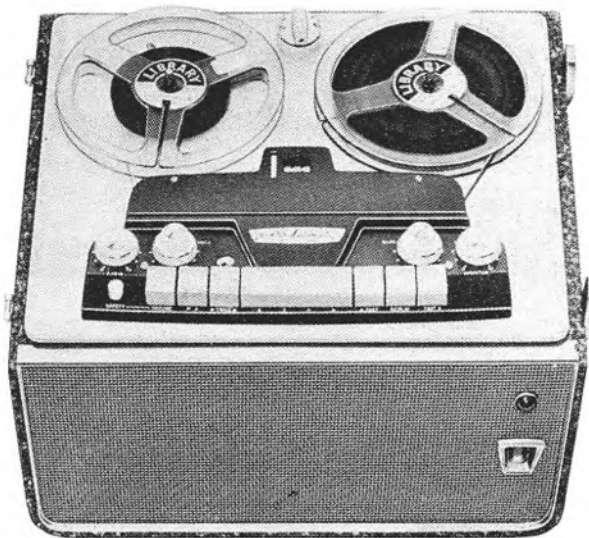
The push-button switch contacts may need cleaning after long use, and once again methylated spirits only should be brushed on to the contacts, then after operating the switches several times, left to dry before connecting to the mains.

A tape recorder relies for its operation on magnetism; but excessive magnetism in the wrong places may spoil the recorder or tape. Keep any magnets away from the recording heads, or the heads may become permanently magnetised. Tape should be kept away from strong magnetic fields or they may become partially erased, and noisy, and in this respect remember that loudspeakers, moving coil and ribbon microphones, and certain pickups contain powerful magnets.

If a tape containing a recording has to be stored for a long time, rewind it occasionally. Otherwise there is a slight risk of the magnetism from one portion of the tape magnetising an adjacent layer—or "print through."

TESTED IN THE LAB

SIMON SP4



by Angus McKenzie

SOMETIMES, all too rarely, a product received for review has a quite outstanding performance and is reliable and robust. Such a product is the Simon SP4. It has a superb performance in every way, with not one snag in the way of it.

The hum level is the lowest I have measured on any domestic machine, and is better than many so-called "professional" models. It is very handsome in appearance, marred only by the label on the head covers, which could surely have been moulded instead of being a stuck transfer?

Push buttons perform the operations of public address (i.e., monitor input), playback, record, wind-on and re-wind, and automatic track change. A stop button, centrally situated, cancels the function being used. Bass and treble controls are operable on playback and on P.A., so that the recorder may be used as a gramophone amplifier with tone controls.

Two microphone inputs may be mixed with the gram or radio input, giving the facility of a three-way mixer. While a recording is being made, the monitor speaker can be raised or lowered in volume, thus stopping any loudspeaker feedback to the microphone, and avoiding howling.

The loudspeakers enclosed in the cabinet are a 10-inch elliptical and a small tweeter for high frequencies. The volume is limited to these to prevent overloading.

The wow and flutter are far better than the specification, except for a very occasional slight wobble. At 3½ ips, the wow level is quite outstanding, even if one makes no allowance for the slow speed.

The tape rides evenly through the transport mechanism, without any noise. Spooling is very even, but a little slow when feeding on to an empty spool. The motor on the deck is of a very high standard, heavily shrouded against giving external magnetic fields and synchronous, meaning that no warming up of any kind is necessary to record and playback at exactly the correct pitch.

Using tapes supplied by Simon's, with aluminium foil at each

end, the tapes automatically change track and direction at the end of each spool. This is a very useful device, ensuring that, at parties for instance, high quality dance music can be played continuously without any long break, without attention. The recorder can accommodate 7-inch spools, so that 2,400 feet of double-play tape allows recordings of up to two hours. The break between change-over takes about $1\frac{1}{2}$ seconds, whether automatic or manual.

The recorder has an output of ten watts, sufficient for almost anybody, and at a distortion level not exceeding 0.5 per cent at full rated output.

I liked the treble and bass controls, but I wished that the "level" position could be more accurately set at, say, 12 o'clock. The controls are mounted concentrically, and give quite a degree of boost as well as cut. It is most useful to be able to use a bass boost control on playback without audibly increasing the hum level.

The tape position indicator is mounted so that it shows through the head cover, and is easily seen when operating the recorder. But I am afraid that the magic eye level indicator is less easily seen. This is placed on the front, and not on the deck itself, a position I found rather inconvenient. The magic eye is quite accurate as a means of reading peak recording level, the output for it being taken from the output transformers, driven, incidentally, in an ultralinear circuit.



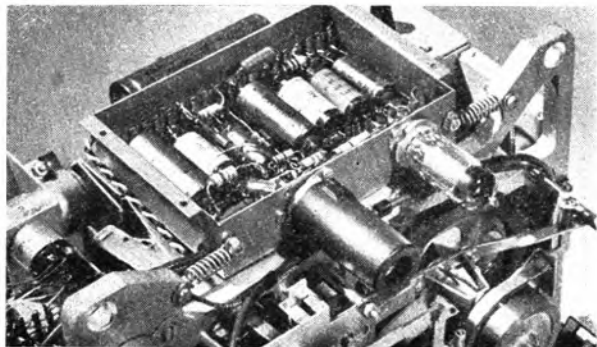
The recorder case is most attractive, covered in "dual tone" rexine. The front of the machine is covered with a fret material, obscuring the speakers. The two-speed changeover switch is at the back of the deck, 180 deg. rotation changing pulleys on the capstans, which change the speed. A lock on the spool spindles can lock the spool down, so that there is no chance of wow because of a wobbly spool. Under the deck are the automatic brakes, acting in unison very evenly on each spool.

A safety button, to the left of the record button, always has to be re-set before a recording can be made. This button automatically stops recording on the tape on a restart after the machine has been stopped by a mains failure or tape breakage. The recorder stops itself either at the end of a spool having no metal foil or, alternatively, if the tape breaks.

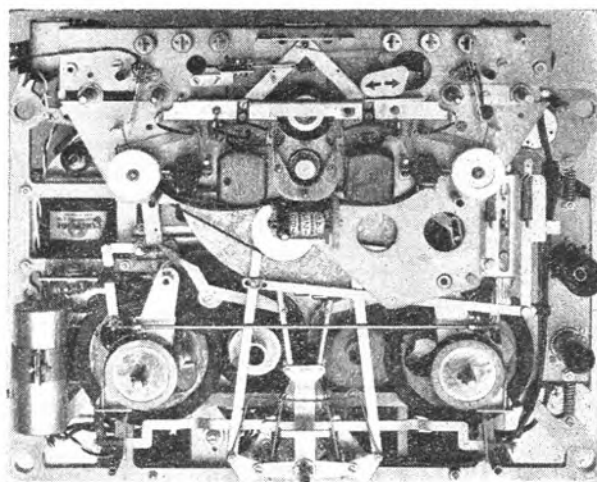
Provision is made for starting, stopping and changing the track by remote control, when the machine is set either to record or replay. Unfortunately, a jack has been chosen, and a number of times this reviewer, fumbling about the back from a position in front, has put the external loudspeaker into this socket, instead of in the adjoining one, and has produced a loud hum—the D.C. relay supply to the switch.

The electronic circuitry has been carefully designed in order to get this staggering performance. The erase and bias oscillator is push-pull, giving a very clean waveform indeed. This explains, in part, why the background noise is so low. The peaking circuits have been designed so that the best performance can be obtained from the machine without any freak boosting of any kind.

The replay response at $7\frac{1}{2}$ ips on both tracks is ± 1 dB from 40 cs. to 10 kc. The sensitivity of the two tracks on replay



Anti-vibration mounting of first and second stage valves



Underside view of the mechanism

never differed by more than $\frac{1}{2}$ dB. High frequencies gave absolutely steady readings on a meter on replay. The reader can draw his own conclusions!

The overall response at $7\frac{1}{2}$ ips is ± 3 dB from 40 to 16,000 cps, although the manufacturers only claim for 30 to 12,000 cps. This response was obtained on both tracks. The background noise was represented by one hundred-thousandth of the power of a tone recorded at peak level (i.e., -50 dB relative to 10 volts out).

The writer was asked by the manufacturers to tour the factory in Central London. Each recorder went through an amazing number of tests, from the testing of each separate record head to that of the complete machine, which is "soak" tested for many hours.



The machine reviewed was chosen at random from a batch of several dozen, and had just completed its final tests. The interior of the recorder, both electronically and mechanically, is a pleasure to see. Any fault that might develop could obviously be put right reasonably quickly, because of this excellent internal layout.

A small matter that did cause a certain amount of annoyance was that the push-buttons are rather near the gain controls, causing one's fingers to get caught between.

TECHNICAL REPORT:

Hum and Noise: ($7\frac{1}{2}$ ips and $3\frac{1}{2}$ ips identical).

	Track 1	Track 2
Replay	-53 dB	-54 dB
Record/Replay	-49 dB	-50 dB

All figures relative to peak recording level.

Frequency response: CCIR Replay only, controls set so that the output is 0 dB at 50 cps, 1 kc and 10 kc: ± 1 dB from 40 to 10,000 cps.

Record/Replay: ± 3 dB from 40 to 16,000 cps at $7\frac{1}{2}$ ips and ± 3 dB from 40 to 8,500 cps at $3\frac{1}{2}$ ips.

The responses of the two tracks overall were never more than 1 dB apart, and usually were exactly the same. The waveform was inspected at spot frequencies up to 16,000 cps and was always completely pure. The modulation noise was very low, showing that the bias had been very very carefully set at the factory. The full output of 10 watts was obtained from the external speaker socket.

The reader must have seen by now the enthusiasm with which this review was written. Any owner of an SP.4 can be very proud of it. I feel sure that this machine will go far to establishing a new standard of quality by which other machines will be judged.

Tested in the Lab

Rogers Junior amplifier and switched tuner

Equipment under review: RD Junior Amplifier.
RD Junior Control Unit, Mk. II.
RD Junior Switched F.M. Unit.

Manufacturers: Rogers Developments (Electronics) Ltd.,
Rodevco Works, 4-14, Barmeston Road,
Catford, London, S.E.6.

Prices: Amplifier, £17. Control Unit, £11. F.M. Unit £24 17s.

Visual examination of the RD high fidelity units received for review gave instant pleasure at the beautifully wired chassis and superb workmanship throughout. This goes a long way towards guaranteeing the reliability of the equipment.

The three units are designed to be used together as a matched equipment, although each item may be used in conjunction with any appropriate high-fidelity system. When used together, the units are conveniently inter-connected by means of plugs and sockets, the control and tuner units deriving their H.T. and L.T. supplies from the power pack on the main amplifier chassis. The amplifier and tuner unit are in chassis form, intended for mounting in a cabinet, whereas the control unit is totally enclosed in a steel case, and may be stood on a shelf, etc., if desired. A suitable cabinet is obtainable from the manufacturers.

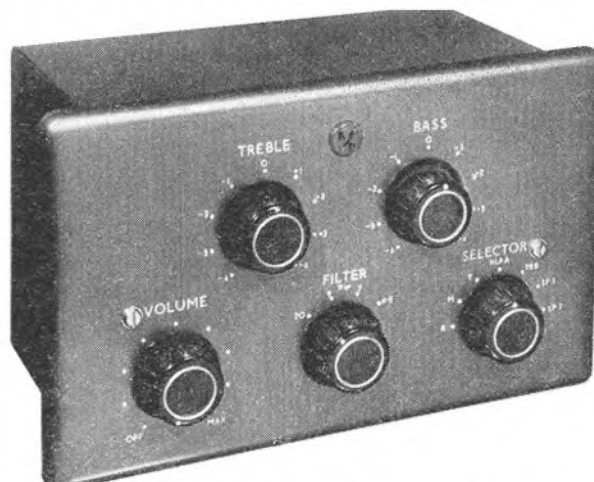
RD Junior Amplifier.—Two EL84 valves are used in an ultra-linear circuit giving a nominal output of 10 watts. One half of an ECC83 acts as a phase splitter, and this in turn is driven by the other half, used as the input A.F. amplifier. An EZ81 rectifier supplies H.T. from a double wound mains transformer, the smoothing components being inside a magnetic screen. H.T. and L.T. sockets are fitted to supply the control and tuner units. The output transformer has adequate dimensions and contains additional negative feedback windings, feeding back to each cathode of the ECC83.

The degree of feedback measured on the amplifier received for test was 18 dB, measured at 1,000 c/s.

Provision is made for matching loudspeakers having impedances of 2-3, 6-8, or 12-16 ohms, changeover from one output

impedance to another being carried out by inserting the appropriate octal plug into a socket at the rear of the chassis. Negative feedback is also adjusted to suit automatically by the connections within the plug.

The output valves are run under normal loading conditions, and so the power output may be measured by injecting a sine



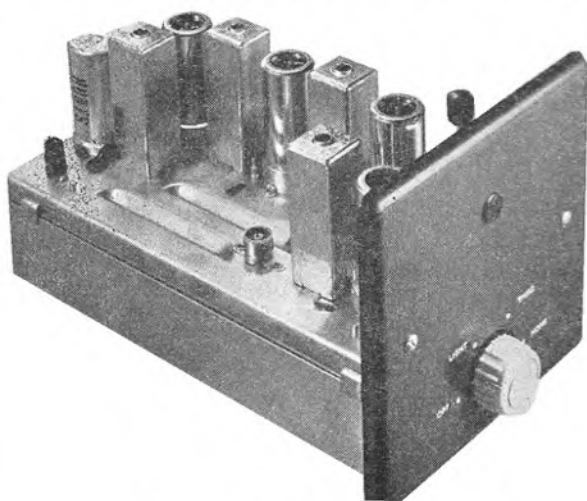
The RD Junior Control Unit, Mark II

wave. The maximum power output without visible distortion on the oscilloscope was 9.5 watts (12 volts r.m.s. across a 15 ohm load), and to achieve this an input signal of 0.55 volts was required. A wide frequency response extending from 30 c/s to over 20 kc/s, ± 1 dB, makes this amplifier well suited for high fidelity reproduction. Distortion is very low, whilst the hum level is negligible. A thoughtful addition is a hum-dinger in the heater circuit to the control unit and tuner unit supplies, but, although mounted on the main amplifier chassis, will only control the hum level when these two units are in use.

The circuit diagram issued with the amplifier may be of a provisional nature, but service technicians may note that the diagram received differed from the chassis in so far as the connections to the two halves of V (ECC83) are reversed. Furthermore, a grid stopper is included in the first triode section.

RD Junior Control Unit, Mk. II.—This incorporates a pre-amplifier as well as all the controls necessary for an audio amplifier, and has five input sockets. These are: Radio, microphone, tape replay, P.U.1, and P.U.2. Each may be selected at will by means of a switch on the front panel, and an excellent feature is the inclusion of an independent pre-set volume control for four of the five inputs at the rear of the chassis, the microphone being excluded from this feature. These are in addition to the master volume control which is on the front panel.

Three more controls are also on the front panel. These being: Treble control, bass control, and filter switch, a flexible control of frequency response being obtained by suitable adjust-



The RD Junior switched FM tuner

(Continued on page 46)

Times to tune in . . .

JAZZ fans from all over England are expected in London on 21st February. For on this date the B.B.C. is to present the first of two **Jazz Saturday** concerts.

One of the B.B.C.'s greatest successes, "Jazz Saturday," gives the enthusiast the opportunity to see famous jazz bands and artists or to hear them at home.

The first concert is sub-titled **New Orleans to Dixieland** and includes such well-known artists as Mick Mulligan, Ken Rattenbury, Diz Disley and Terry Lightfoot.

Five weeks later the second concert, **Dixieland and After**, can be seen or heard. Humphrey Lyttleton and Johnny Dankworth head the star list for 28th March along with Kenny Baker, Alex Walsh, Kathleen Stobbart and Ronnie Ross.

Both concerts are to be presented at the Royal Albert Hall. Tickets may be obtained direct from there or from the usual ticket agencies, prices ranging from 15s. to 3s.

Parts of each will be broadcast between 8 and 8.30 p.m. and 9 and 10 p.m. in the Light Programme.

A music concrete composition entitled **The Creation of Animals**, based on a story by Jules Supervielle, can be heard in the Third Programme in the first week in March. In the same week, the originals and translations of poems by Boris Pasternak are to be broadcast, also in the Third Programme.

Our special feature giving details of radio programmes you may like to record

Broadcasts from the world of opera during the month include two works by Handel. In the Third Programme on 8th March, Silvo Varviso conducts the Chorus and Orchestra of the Schwetzingen Festival in **Julius Caesar**. This is a recording made at the Festival last year.

On 22nd March, in the Third, Joan Sutherland, Marion Studholme and the Chandos Chorus and Philomusica of London, conducted by Charles Farncombe, can be heard in a studio performance, in English, of Handel's **Alcina**.

Mozart's **Zaide** with April Cantelo, Alexander Young and the B.B.C. Scottish Orchestra conducted by Colin Davis, can be heard on Sunday 1st March, in the Third Programme. (Recorded performance.)

Sir John Barbirolli will conduct the Hallé Orchestra for Mahler's **Symphony No. 2** on 12th March (Third Programme). Mahler's **Fifth Symphony**, conducted by Rudolph Schwarz, will be broadcast on

18th March from the Royal Festival Hall. **Beethoven's Piano Concerto No. 5** is included in the programme which can be heard on the Third.

Towards the end of the month, Mahler's work appears for the third time. In The Saturday Concert, Third Programme, 28th March, Joan Sutherland sings some of his **Wunderhorn** songs. In the same programme Rudolph Schwarz conducts the B.B.C. Symphony Orchestra for Dvorak's **Symphonic Variations**.

Villem Tausky conducts the Chorus and Orchestra of Sadler's Wells in their English version of Dvorak's **Rusalka**. Soloists include Joan Hammond and Christopher Hassel. (Third Programme, 19th March.)

Every Sunday evening until the end of March the B.B.C. are to broadcast, in the Home Service, programmes from Music Clubs in different parts of the country.

Three will have already been heard before we went to press. On January 25 the fourth will come from Belfast and the rest weekly as follows. Ilkley (February 1), Bangor (February 8), Aberdeen (February 15), Bristol (March 1), Criccieth (March 8), Milgavie (March 15) and finally from Hexham on March 22.

* * *

Readers are again reminded that it is an infringement of copyright to record a sound broadcast or the sound part of a television broadcast other than for private purposes without first obtaining permission from the B.B.C.

Rogers Junior amplifier and switched tuner

(Continued from page 45)

ment. At 50 c/s, the bass control had a range of 30 dB, whilst at 10 kc/s the treble control was 27 dB. This means that it is possible to compensate the amplifier to any of the existing disc or tape recording characteristics.

The filter control is a low-pass filter, having cut-off frequencies of 20, 9, 7, and 4.5 kc/s marked on the four position switch. On the "20" position, the control unit has a flat response from 30 c/s to 20 kc/s, above which frequency the response falls rapidly. If a high pitched needle scratch is present on certain recordings, the 9, 7, or 4.5 kc/s position may be selected, the response falling rapidly at frequencies higher than each one selected. The measured fall-off in response above each of these frequencies was about 12 dB per octave.

* * *

As a qualitative example of the effectiveness of the filter and tone controls, a 9 kc/s whistle was superimposed upon a radio programme, the amplitude of the whistle being approximately equal to the peaks of the radio signal. With the tone controls set to give a flat response, the interference was unbearable. Adjustment of the treble and filter controls almost entirely eliminated the whistle, however, making the programme of entertainment value.

Provision is made for adjusting the response to RIAA standards as well as any other disc characteristic, whilst for the replay of tape a CCIR characteristic is obtainable by removing a shorting link. A tape record output is available, but it should be clearly understood that a separate bias oscillator is required before recordings can be made. Again, although tape replay facilities are provided, a tape pre-amplifier must be obtained,

as the gain at the tape input socket of the Mk. II Control Unit is insufficient for direct connection to the magnetic heads.

When used in conjunction with the RD Junior Amplifier, the following input voltages were required to produce 10 watts output, at 1,000 c/s.

Input to tuner socket	50 millivolts	
Input to mic. socket	3 "	
Input to tape socket	30 "	
Input to P.U.1 socket.....	3 to 6 "	} depending on the chosen characteristic.
Input to P.U.2 socket.....	30 to 60 "	

An input of 10 millivolts at the mic. input gave 0.5 volts from the tape record output socket.

RD Junior Switched F.M. Unit.—This unit contained a cascode R.F. amplifier followed by a triode pentode frequency changer, one I.F. amplifier, limiter, Foster-Seeley discriminator, and cathode follower output. The oscillator frequency is automatically stabilised, and all of the above functions are carried out by three triode-pentodes (ECF80), and one double triode (ECC84).

A four position switch is the only control provided on the front panel, allowing instant selection of either Home, Third or Light programmes. Incremental inductive tuning is used. In the fourth position the unit is off, although the valve heaters remain alight ready for immediate use. The master switch for the mains is on the Control Unit. A pre-set volume control is a useful addition, and is fitted on the chassis.

The workmanship and component layout is excellent, and the performance leaves nothing to be desired. The quality when used in conjunction with the RD Junior Amplifier and Control Unit and a good loudspeaker system was very pleasing. Sensitivity was such that at the location in which the tests took place (in the service area of the local transmitter), the only aerial required was a piece of wire two feet long, plugged into the aerial socket. It must be emphasised, however, that in many cases a good aerial must be used for satisfactory results.

NEWS FROM THE CLUBS

The Federation

THE Federation welcomes the inauguration of two more tape clubs, in Leicester and West Essex. The Chairman reports that the Essex Club, nurtured by Committee-member Alan Stableford, was off to a good start with a dozen keen members. The committee sent a greetings tape to John Buckler for playing over to the meeting in Leicester.

At the moment more business is done by the Federation for new clubs and individuals who want help in starting clubs, than for member-clubs of the Federation. The position will slowly become the reverse as more clubs join the Federation and take advantage of the benefits of belonging to a national corporate body.

As so many clubs are requesting ideas for talks at their meetings, a list of tapes is being drawn up of recorded talks on all aspects of tape recording. Initial titles include "Sound Effects at home," "Noises off," and "The uses of a tape recorder." Clubs are urged to ask their technical members to make up illustrated recorded talks for the members of other clubs. There will be no dubbing charge for member-clubs of the Federation.

Secretary: Roy Penfold, 48, Holbrook Lane, Coventry.

Chesterfield

THE Chesterfield Tape Recording Society is now four months old and already has 25 active members.

Services rendered by members include recorded programmes to hospitals, especially children to whom they offer both entertaining and educational tapes.

Next step for them is to organise a service for the blind and disabled.

Secretary: Cyril R. Newman, 9, Devonshire Villas, Barrow Hill, Nr. Chesterfield, Derbyshire.

Coventry

A VARIETY of tapes ranging from a canary's whistle to Maori music were played at a recent meeting. In the second of the "Strange to your Ears" tape, Roy Penfold showed the different effects obtained from a canary's whistle. The Maori music was provided on a tape obtained by Bill Palmer from New Zealand.

Later in the programme a tune was made up from the whistles of the canary.

Locomotive recordings from America was another tape played. The sounds coming from the various engines were said to be quite remarkable. Can we now look forward to a tune spliced together from these recordings? It was quite successfully done with train "chuffs" on one of the "Sound" programmes on Network Three.

Howard Freer still leads in the competition tapes; with 43 points he keeps ahead of Allan Marston by one point.

The Club has had a change of Secretary. Roy Penfold is succeeded by Mr. R. V. Reynolds, 1, Thurlestone Road, Radford, Coventry.

Dundee

CLUB members have arranged themselves into groups with specialised interest. Initial groupings are under the headings of music, sound effects, programme production and "general." Further groups are intended as more members are welcomed.

At a recent meeting a tape from the Midland Counties Club was played. Harry Ayers records the "Sound" programme for those unable to hear the originals.

Secretary: Charles Aitken, 59, Strathmartine Road, Dundee, Angus.

East Lothian

A NEW club has been formed in East Lothian called the "Voice of Scotland Club."

Members are concentrating on the stereo side of recording and run exchange services for both tape and disc.

Anyone wishing to join can do so by contacting Mr. J. Gibson, 132, Church Street, Tranent, East Lothian, Scotland.



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East to West

"TAPE enthusiasts prefer West to East." This heading in a newspaper would tend to conjure up thoughts of a grand egress by audio fans from behind the Iron Curtain. Such thinking would be wrong, for the title would simply refer to a decision made by the West Essex Tape Recording Society.

The Society came into being last month. Prior to their inugural meeting the name "East London" had been used in publicity, but it was later found that a majority of those attending lived in the area more accurately described as West Essex.

Officers were appointed to serve for a period of three months only, thus allowing members to get to know one another before electing officers for a full year's term of office.

The Chairman will be Lee Lacy and the Treasurer C. Lowe. Allan Stableford becomes Club Secretary. Address is 9, Normandy Terrace, London, E.16.

Edinburgh

BECAUSE of pressure of business, Alex White has asked to be released as Secretary. Alex has been with the club since it started in 1957. His "yeoman service" should go on record says his successor, John Penman.

The last meeting was devoted to reading and recording of plays. The new Secretary gave a talk on the subject from a general point of view, including items such as good diction, phrasing, pace, with illustrations of each. Stuart Henry then spoke about difficulties in play recording. The two talks were recorded.

A Telefunken was demonstrated by its owner Mr. King, followed by general discussion.

Secretary: John F. Penman, 22, Lauriston Place, Edinburgh 3. FOU 7741.

Jarrow

THIS month saw the start of the first club in the county of Durham. At the inaugural meeting, members discussed the future of the club and decided on the name Jarrow and District Tape Recording Club.

John Ripington played a tape recorded by Messrs. Fi-Cord Ltd., on their transistorised portable, followed by views aired by members regarding the B.B.C. "Sound" programme.

The Secretary is arranging an official rendezvous; meetings meanwhile will be held at his own home, 30, Breamish Street, Jarrow, Co. Durham.

Kettering

MEMBERS now have their own "round-robin tape" based last month on the *Sound Magazine* idea. The tape started circulating last month.

A member of the Rugby Club, members of the Corby Cine Club, and the President of Rugby Motor Club were guests entertained at the last meeting.

The talk for the evening was given by Roy and Kenneth Turner, who demonstrated their own method of supplying a silent home movie with a tape-recorded sound track. One of the most realistic scenes shown was of the fair ground at Great Yarmouth filmed at night in colour. This was accompanied by location recordings of a showman's type "fair organ."

Of interest to local members was a film of last year's Carnival Parade, also in colour. Recordings were taken in the streets while the parade was in progress. Part of the talk was recorded by the visitor from Rugby.

Some members are working to produce a programme on tape of music recorded at various cinema organs by Reginald New. Members recently entertained Messrs. Battery-Services Ltd., a local firm, who gave a demonstration of stereo on disc.

A demonstration has been arranged of their stereo system by Messrs. Truvox Ltd. on 11th March in the George Hotel, Kettering. A week later M.S.S. Recording Co. will also be demonstrating their products in the same building.

Secretary: A. M. Webb, 93, Regent Street, Kettering, Northants.

Leicester

The inaugural meeting of this club was held at the end of January at the Shaftesbury Boy's Club.

After general discussion the officials were selected. J. Buckler

was chosen as Chairman, C. J. Frost as Treasurer, and Janet Towlson and Ray Butler as committee members.

Secretary: Peter Starie, 56, Minehead Street, Leicester.

London

AMONG tapes played at the last meeting was one of organ music taken along by Mr. Blake. Alan Stableford gave a demonstration of a Grundig TK35, using it to play the member's tapes.

In the general discussion afterwards members agreed that the club should own its own equipment, starting with a recorder and a loudspeaker.

The campaign was started by a collection, followed by offers of various items to be donated for raffles. Alan Stableford set the ball rolling by presenting a Sound recorder.

Among suggestions received and discussed was one that a tape-to-disc service be started.

Stanley Wrist has taken over the sound-effects library.

Secretary: E. Roger Aslin, Fairlea, Boars Head, Crowborough, Sussex.

New Zealand

THE Secretary writes to tell us that owing to wide Dominion interest the club has had to alter the rules confining membership to Auckland City. They have had requests from both islands for membership and can boast the biggest "tape parish" for a "local" club.

Each month their out-of-town members can listen to "Tape Digest," a news and variety tape which travels on the round-robin system.

The Club attended the Pan-Pacific Scout Jamboree held in the New Year. Besides having a stall where the scouts could record their voices, they maintained a recording booth and a field-recording unit. Members are now busy editing a large amount of taped material and hope soon to have an interesting addition to their growing sound library.

Secretary: Murray J. Spiers, 39, Ponsonby Road, Auckland, W.I., New Zealand.

Nottingham

THE Audio Society has re-organised itself as the Nottingham Record Club. The town already has a record club, but their material is essentially classical music.

Programmes of recorded music are well under way and will continue to be held every Wednesday evening at the Sherwood Community Centre, Woodthorpe House.

A new Committee has been elected to deal with the new problems and the new Secretary will supply any information.

Secretary: Mr. B. Wade, 56, Mandalay Street, Basford, Nottingham.

Rugby

AT a recent meeting members heard two tapes on the Christmas theme, and the last in the present series of quiz tapes. The winner was Mr. Scott. His prize is to be presented by Messrs. Benn Radio Ltd.

Later in the evening members made a tape of sound effects. These ranged from various animal calls by Mr. Underwood to Mr. Butcher's version of a window breaking.

Mr. Campden keeps up the good work in the hospital service. Co-operation by World Tape Pals and local enthusiasts has resulted in messages flying thick and fast in and out of the Sun Pavilion, St. Cross.

A tape, illustrating the hospital service was played at a more recent meeting.

At the same meeting Mr. J. E. Capell presented a tape of impressions of well-known artists by Mr. M. Shelley of Barby, Rugby, followed with a story from Jon Pertwee who was introduced, on tape, by Peter Scott.

A tape of greetings from every member was made to send to the first meeting of Leicester Tape Club.

Finally, the play-reading section played the finished entry for a Tape Drama competition. This section are now busy

making a version of "Cuckoo in the Nest," a farce by Ben Travers.

A party of members visited the B.B.C. Studios in Birmingham recently. In the combined sound/TV studio they inspected the many microphones and were soon thoroughly engrossed in the sound effects apparatus. They were able to see a programme transmitted from London and fed onto the local transmitter at Sutton Coldfield. The programme was a link, through Eurovision, with Lubeck in Germany.

A film-show is intended for the next meeting when the members also hope to hear the tape of Maori music, loaned by Bill Palmer of Coventry Club.

Membership now totals 28, including five ladies. *Secretary: Mike Brown, 219, Clifton Road, Rugby.*

South Africa

The address of S.A.R.C. Secretary, Dennon R. Sieg, should be corrected to P.O. Box 3392, Cape Town, South Africa.

World Tape Pals

LEN WATKINS has been appointed U.K. Representative as a result of the elections recently held by members.

A W.T.P.'s get-together is visualised for July or August with Munich as the rendezvous. Further details can be obtained from Dennis Cooper, 14, Guildford Street, London, W.C.1, who welcomes any suggestions for programmes.

U.K. Representative: Len Watkins, 40, Ravenslea Road, London, S.W.12.

Voicespence

QUERIES concerning this Club can now be put to Sir Mark Dalrymple Bart, who is the representative for Scotland, Ireland and Wales, or Lee Lacy who caters for England.

Sir Mark and Lee were chosen as U.K. representatives in the recent elections of this American Club.

Membership inquiries should still be addressed to Ronald Davies who, with Lee Lacy, receives letters at 15, Fentons Avenue, Plaistow, London, E.13.

Sir Mark's address is Newhailes, Musselburgh, Midlothian, Scotland.

Volume two of "Voices in the Post" starts this month. Copies are being made by Fred Gazeley of Beckenham, Kent, who also edits the West Middlesex Club's Sound Magazine.

Lee Lacy requests that Mr. P. Ratcliff Harris of Eastbourne should contact him.

In formation

NEWs of five clubs in the making for this month in Leeds, Birkenhead, Maidenhead, Ilford and S.E. London.

Readers in the South London area are invited to contact Mr. D. C. Harker, 62, Barmeston Road, Catford, S.E.6, for details of the club soon to appear in Catford.

Yet another society is planned for Lancashire, this time in Birkenhead. Mr. F. A. Jobson, 43, Bramwell Avenue, Prenton, Birkenhead, is starting a club in this area.

The north is also represented by Terence Quigley who wishes to start a club to cater for Leeds enthusiasts. His address is 32, Derby Road, Rawdon, nr. Leeds, Yorkshire.

Roger J. Silvester intends to start a club in the Maidenhead district. Anyone interested should write to him at 54, Grenfell Road, Maidenhead, Berks.

Ilford readers are invited to write to Percival Ager, 27, York Road, Ilford, Essex, who is keen to get a club started.

Meetings for amateurs

THE new professional Telefunken tape recorder was demonstrated at the February meeting for amateur tape and stereo enthusiasts at Olympic Sound Studios. The next meeting is to take place on 7th March, commencing at 3 p.m. Amateurs are invited to bring their own tapes for playback. They can also make their own dubbings free of charge.

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 **Advertisement Department**, "Tape Recording Magazine," 1 Crane Court, Fleet Street, London, E.C.4.

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BRENELL MARK IV. Overhauled by makers. Pause Control, Microphone, Tape. £30. Projector Dept., C.M.S., 6, Salisbury Square, E.C.4.

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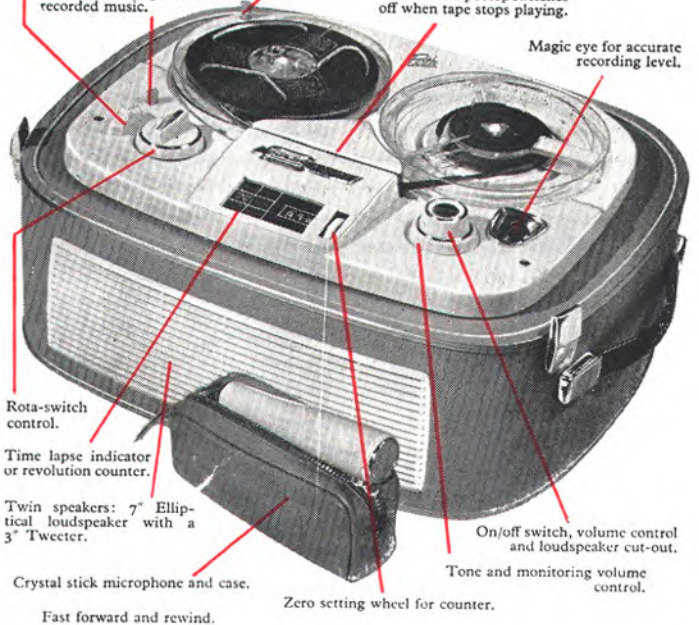
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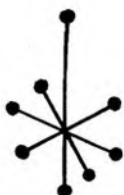
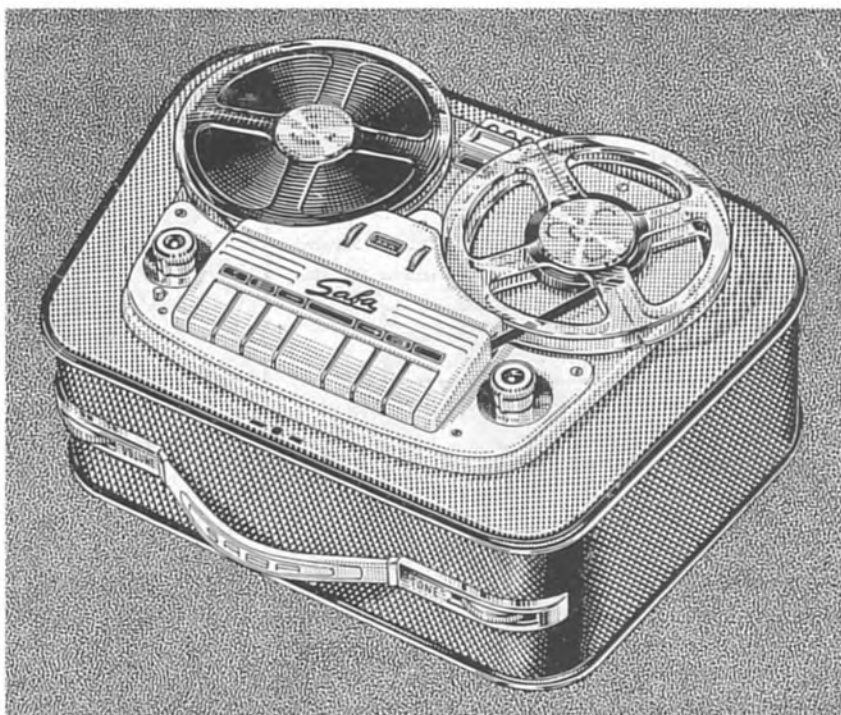
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