

FEBRUARY 1965

TAPE

RECORDING MAGAZINE

24



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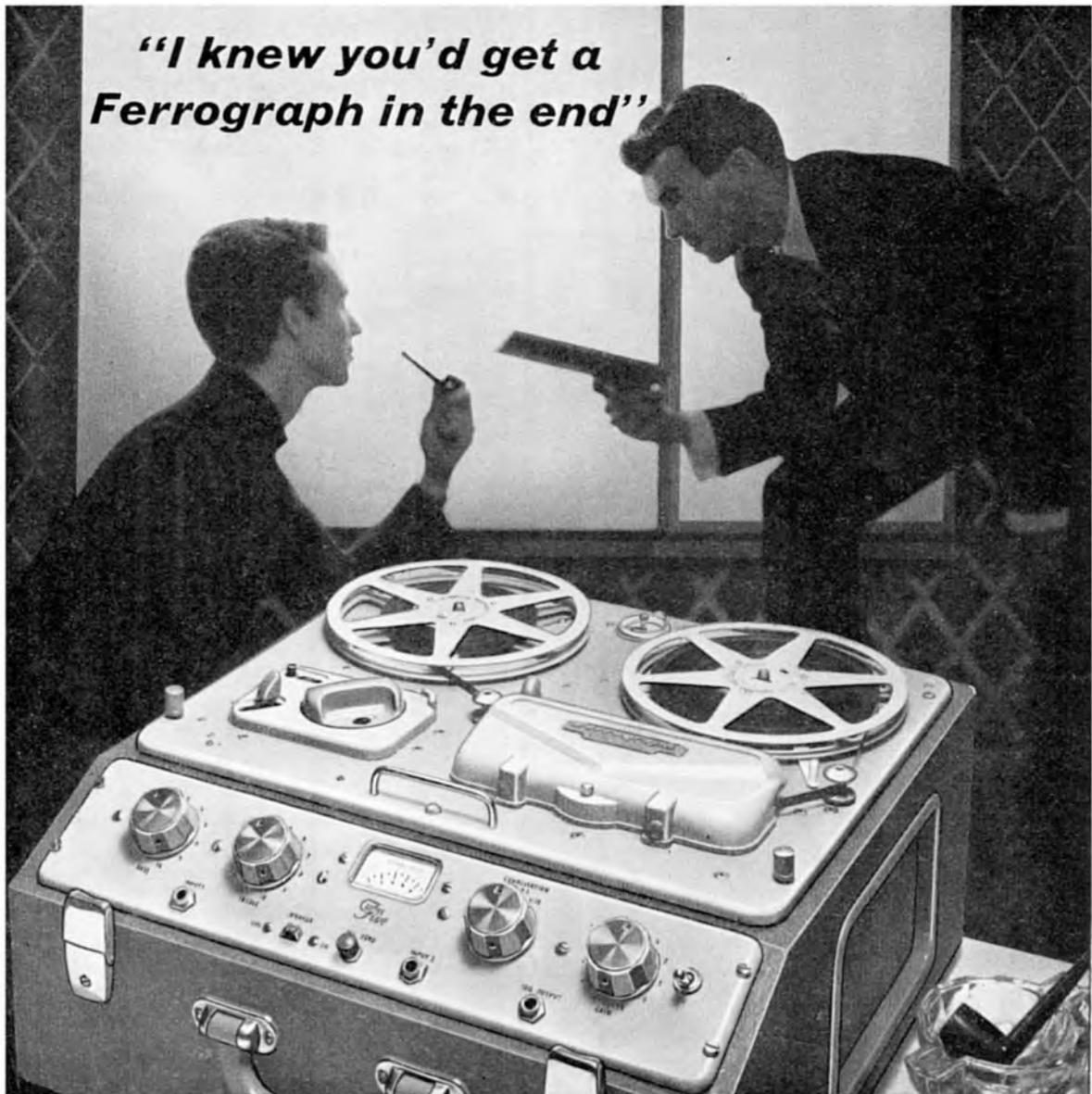


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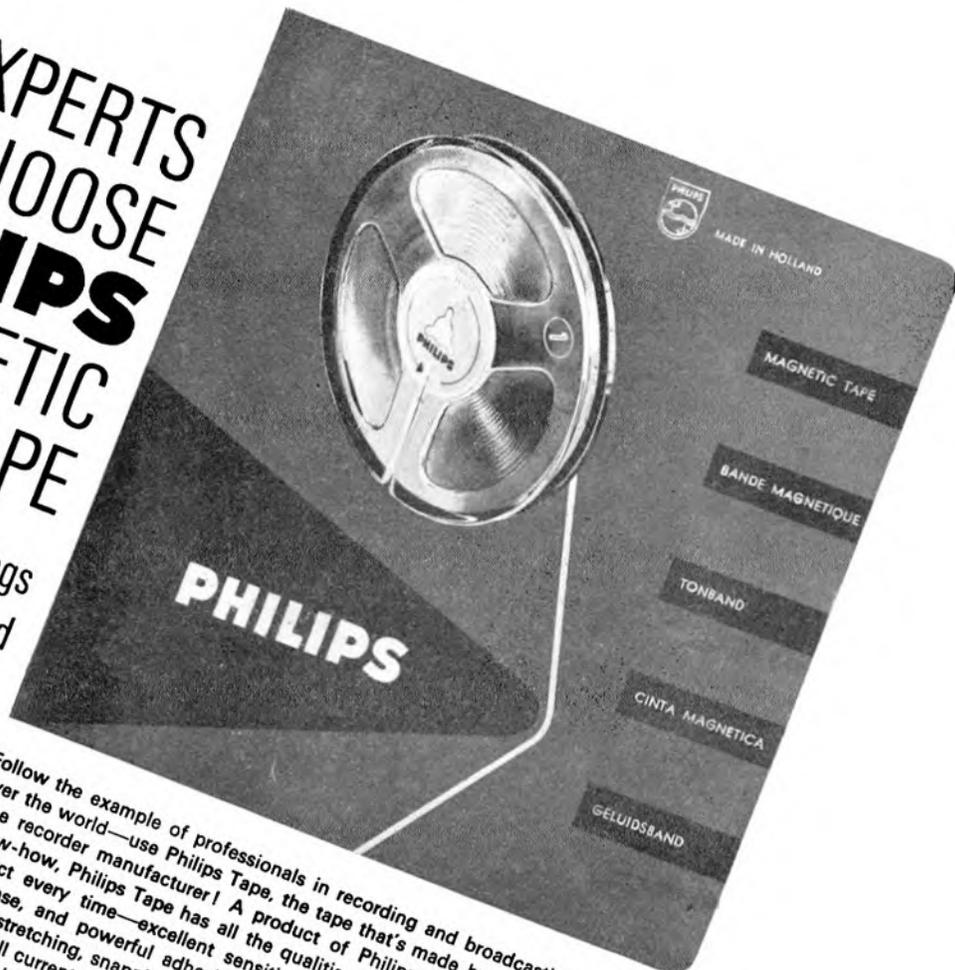
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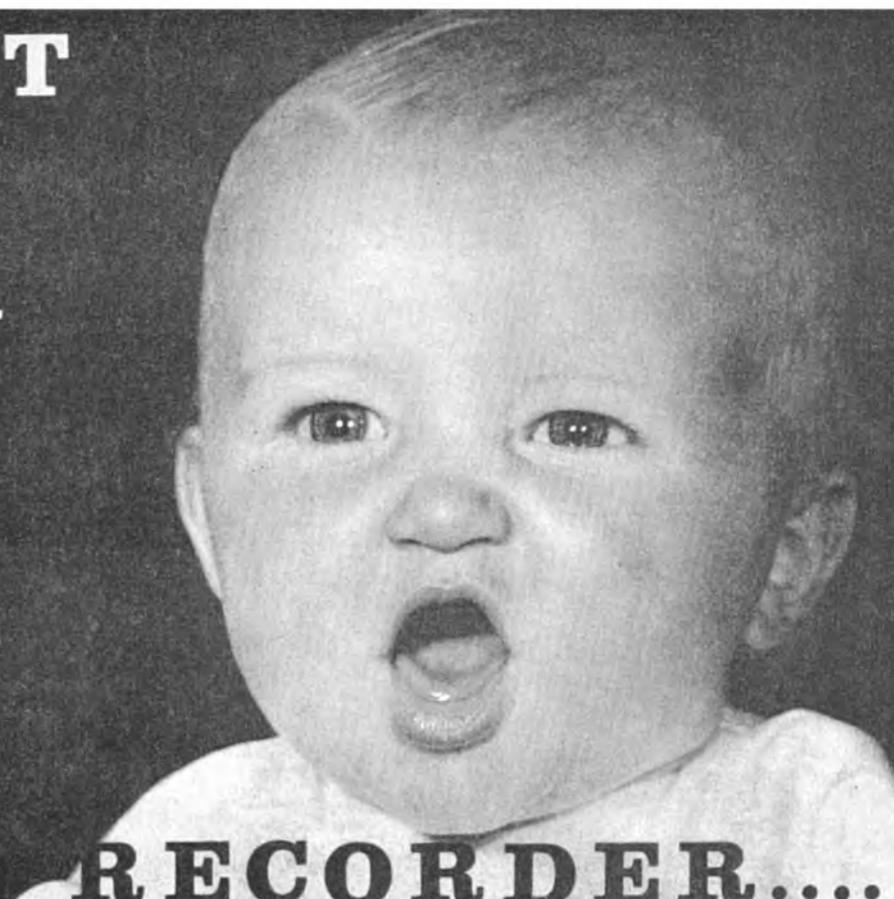


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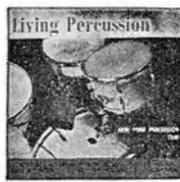
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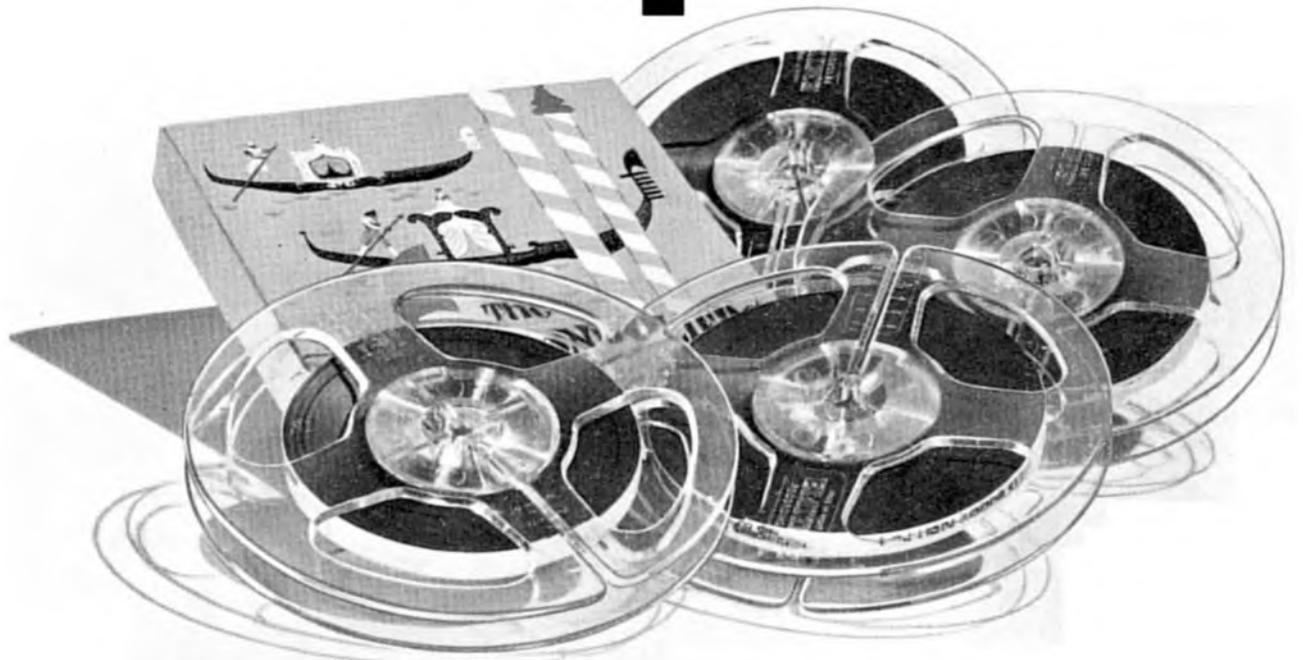


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14 Tchaikovsky Symphony No. 5. Sir Malcolm Sargent and LSO combine to give this famous symphony a dramatic and colourful rendering. Also in stereo.



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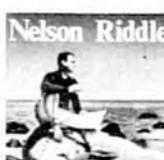
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71 The smooth sound of the Nelson Riddle Orchestra in Touch of Your Lips, Body and Soul, The Tender Touch, As you Desire Me—11 favourites in all.



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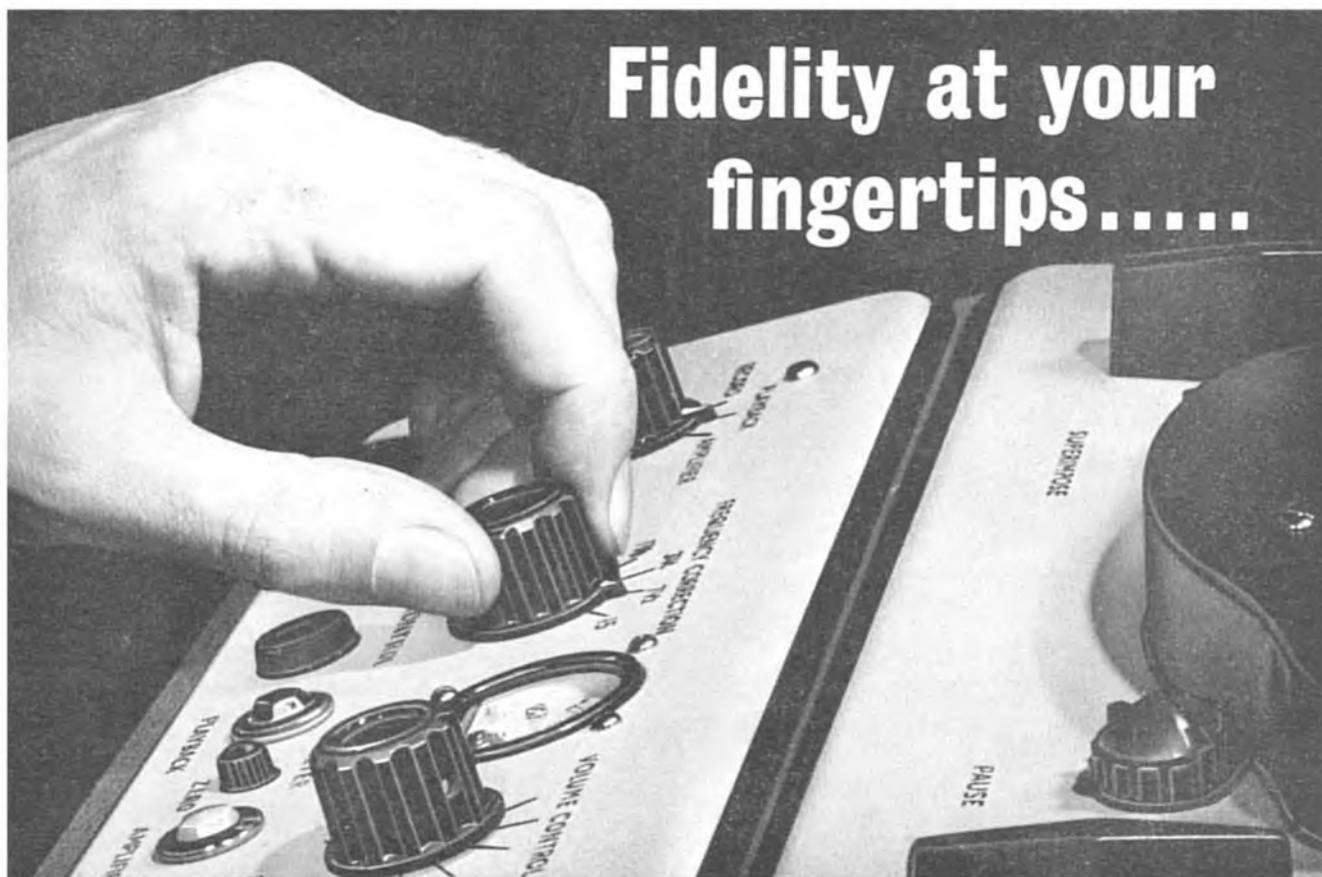
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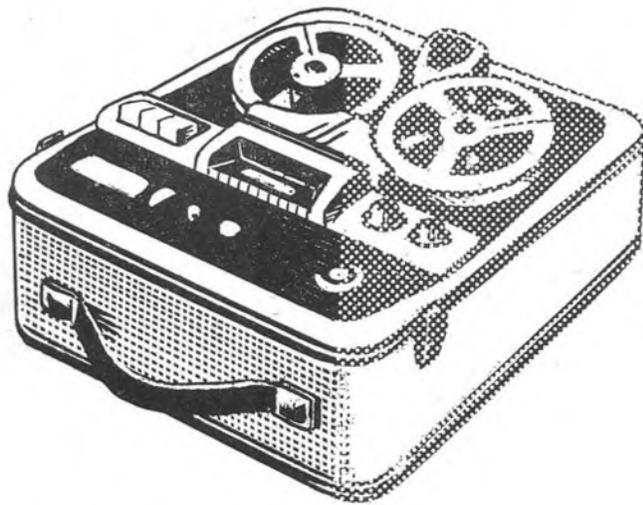
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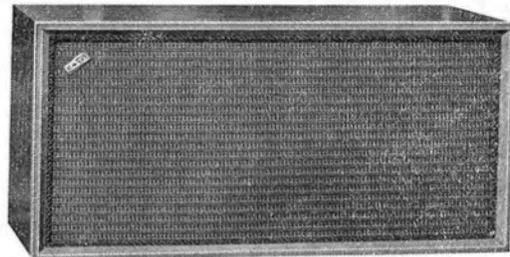


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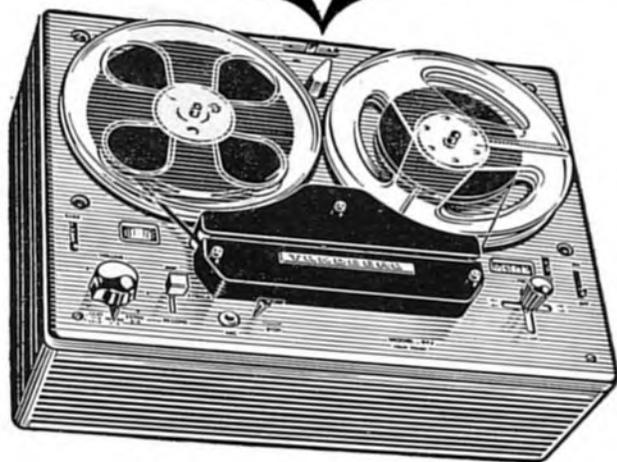


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TAPE
RECORDING
MAGAZINE

Vol. 9

No. 2

February 1965

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COVER PHOTOGRAPH: An impromptu dressing-room rehearsal for some of the Pigalle lovelies waiting to go on-stage for the spectacular all-girl review "We're no Angels" now running at London's famous night spot. The recorder receiving all the attention is the Grundig TK41.

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EDITORIAL

Editor,
R. DOUGLAS BROWN

Assistant Editor,
FRED CHANDLER

British Tape Recording Contest 1965

SOME VERY IMPORTANT changes have been made in the organisation and rules of the British Tape Recording Contest in 1965. The Contest is now in the hands of an Organising Committee which represents the eight leading firms marketing tape in this country: Agfa, BASF, Emitape, Kodak, Master-tape, Scotch, Philips and Ilford-Zonatape. Under this sponsorship, it is possible, for the first time, to promote the Contest on a really ambitious scale—and this is what is going to happen in 1965.

Firstly, a lot more money is being put into the organising of the event, so that it has the chance to become the natural outlet for the best recording work being done in Britain. Clubs, schools and individual enthusiasts throughout Britain will have the Contest brought to their attention in a lively way.

And it is no longer simply a Contest for the amateur. There is, from this year, a professional section, too, so that the best recording work from professional studios can be entered.

The rules have been greatly simplified. Instead of the seven classes under which entries were formerly submitted, the Contest now divides into three broad, but clearly distinct, sections.

Novices . . .

THE FIRST IS FOR novices. This will give a chance to those who have only bought a recorder within the past year, who have never entered a recording contest before, and who are still at the experimenting stage. Such entrants can enter any sort of tape they wish, on any subject, the only condition being that it must not exceed four minutes' duration.

The simple "family snapshot" in sound, the striking sound effect, the cry of birds and some brief holiday incident will all be eligible. The idea is to tempt the beginner in this hobby to enter the Contest "at the shallow end" by sending in a tape of something he or she has recorded as a matter of course.

. . . Amateurs . . .

THEN THERE WILL BE an Amateur section, which will be approximately comparable to the whole contest as it has been run in previous years. Anyone who has been recording for a year but who has never been employed as a professional recordist will submit his or her tape in this section. Again, it can be on any subject, of any type; the only restriction is a maximum playing time of fifteen minutes.

It is in this section that I shall expect to see the rounded exercises in recording which, in previous

years, have made the outstanding entries in the Compositions, Documentaries and Music classes of the old Contest. A word here to those enthusiasts who wish their tapes to be considered as British entries in the International Recording Contest (CIMES) next autumn. The only rule they need worry about in the British event is the time duration; but the CIMES rules will be the same this year as in previous years and British tapes will have to be entered in one of the classes designated by the organisers of CIMES, and will have to come within the playing time limits specified by CIMES.

If, therefore, you want to make a tape for consideration in both British and International Contests, you should consider the CIMES classification to which it will be appropriate and the relevant time limit: Compositions, fifteen minutes; Documentaries and Reportage, ten minutes; Actuality, four minutes; Music or Speech, four minutes; Technical Experiment, four minutes; Schools tapes, fifteen minutes.

If your tape takes the form of a music recording, a technical experiment or an actuality recording and you want it to be considered for CIMES as well as the British Contest, keep its length down to four minutes. If you are not concerned about CIMES but only the British event, you can let it run to the full fifteen minutes if you want to. But remember the advice given repeatedly by the judges in the past: short tapes are often the best ones.

. . . and Professionals

THE THIRD SECTION WILL be, as indicated already, for those who are, or have been, professional recording engineers. Their tapes must not exceed fifteen minutes.

School and club entries will be eligible in any of the three sections, but as most of them will presumably be made by amateurs with a little experience, the natural place for them is likely to be the Amateur section.

The outstanding tape in the whole Contest will be selected as "The Tape of the Year" and will win a silver trophy and a cash prize of £50.

The best tape in each of the three sections will win a silver trophy and a cash prize of £25. There will be other awards for other outstanding entries. Information will be published later. Winners will be brought to London for a special celebration party.

And, as in previous years, the best British tapes have the chance of winning further substantial prizes in the International Contest.

The closing date for entries will be earlier this year: Monday, May 31.

Fuller information, with an entry form, will be published next month.



Richard A. Margoschis won the Philips Shield for the best entry in the Technical Experiment section of the British Amateur Tape Recording Contest 1964. He also won 5,000 Belgian francs in the same class of the International Amateur Recording Contest, and below he describes how he produced his award-winning tape "The Songster's Fantasia."



A thousand joints for a four-minute tape

I WAS listening to some birdsong which I had recently recorded when accidentally the song of a thrush was replayed at half speed. I listened, fascinated, as a sustained note, repeated several times and typical of this bird, came over as a long drawn out note an octave low. I adjusted my Brenell deck to play this note at a quarter of the original speed and a delightfully pure note sounded, two octaves lower than the bird had produced it. For some time I had been looking for a sound to manipulate and I decided that this was it.

One great advantage of the Brenell deck is that the tape capstan can very easily be changed. Two capstans are supplied with the deck and both produce standard tape speeds, the smaller one being exactly half the larger. Coupled with the three deck speeds available these two capstans give 15, $7\frac{1}{2}$, $3\frac{1}{4}$, and $1\frac{1}{8}$ ips. I have another nine capstans ranging in size down from the large to the small standard, and by means of this series of capstans I can bring a signal down through one octave in eleven steps. With the three deck speeds this produces 31 steps through three octaves.

By copying one note of the thrush with each capstan and two deck speeds I produced a series of 44 notes running up and down two octaves—and the experiment was on.

As the frequency of the note is lowered by a reduction in the tape speed so the duration is extended and it was immediately obvious that each note would have to be cut to length. Further, it was necessary to separate each note by a short length of tape carrying no sound. This was done at $7\frac{1}{2}$ ips and after some experiment each note was cut to $\frac{3}{4}$ -inch and each was separated by a quarter-inch of tape, which, so far as time is concerned,

means that each note has a duration of $\frac{1}{10}$ of a second and the gap between it and the next note is $\frac{1}{30}$ of a second. This first sequence runs for seven seconds and entailed 91 joints in its composition.

Before proceeding to produce sequences made up of notes of varying duration I had to evolve a method of measuring the length of the note. This was done by affixing to my Emitape splicing block a scale marked off in inches, and subdivided into eighths of an inch, with zero at the cutting slot. Lengths of inserts could now be accurately cut to one-eighth of an inch.

This done I selected the notes produced by five capstans when replaying the original bird note and made a stock of these on five separate lengths of tape. As I built up a sequence from these notes I was able to write a formula for that sequence.

In the formula I used a full point to separate inches and $\frac{1}{8}$ -inch: thus 1.4 means $1\frac{1}{2}$ inches, and 0.5 means $\frac{5}{8}$ -inch. The oblique stroke represents a joint.

My code ran as follows: G represents a gap (silent tape); S1=note from capstan No. 1; S2=note from capstan No. 4; S3=note from capstan No. 6; S4=note from capstan No. 8; and S5=note from capstan No. 10. All with deck speed of $3\frac{1}{2}$ ips, originally recorded at $7\frac{1}{2}$ ips.

The various codes would give the following example which is in fact line one: S1-1.4/G-0.4/S3-0.6/G-0.4/S3-0.6/G-0.4/S4-0.5/G-0.2/S4-0.5/G-0.4/S5-1.4//

Rarely did the first attempt produce the desired effect but it was possible to adjust the formula and build up the tape accordingly, often requiring several attempts before arriving at the final.

By this method half a dozen or so sequences were built up and linked to-

gether; but by now the result could not be recognised as anything at all to do with a bird! However, I found that the "quack-quack" of a duck could be varied in pitch considerably and still be recognisable, and so suitably manipulated duck noises were inserted at the end of each sequence. I was impressed by the result and, after a search through my library of bird song recordings, decided that the call of the plover (peewit) could also be similarly treated and used as an alternative to the duck.

Some sort of "backing" was now required and a further search suggested either the grasshopper warbler or the nuthatch. Trials proved that the fast repeated tinkling song of the nuthatch lent itself to considerable variation in pitch. Once again a stock was produced by using a loop of the original, dubbed off at four different tape speeds.

For the mixing process one tape was reproduced by the Brenell and the other by my Fi-Cord 1A, the two signals being mixed on my home-made recording amplifier and re-recorded on an old Bradmatic deck. Timing became a problem in order to get the change in pitch of the backing to coincide with the change of the rhythm (for want of a better description!). In the end it was done section by section and edited accordingly.

Now I had a series of sequences which could go on and on, and the problem of how to bring them to a suitable end. The answer was found in an unmistakable bird which also added a touch of humour in the right place—"De diddle de um pum—Cuckoo!"

Having got so far the composition, which by now was drumming in my head, was put away for a while. When eventually I listened to it again I realised that it was lacking in resonance. The final stage of this technical experiment was, therefore, the addition of artificial reverberation which made the whole more harmonious, brought it to life and gave me considerable satisfaction.

Other than the stage by stage explanation of the experiment all the sounds were derived from bird song recordings taken with a home-made twenty-inch parabolic reflector, a Grampian DP4 microphone and the Fi-Cord 1A battery recorder to which I have carried out certain modifications especially for bird recording purposes.

The dubbed tapes were all made and edited at $7\frac{1}{2}$ ips and in many cases it was necessary to make four or five copies before a sequence was ready for insertion into the master tape. This tape contains no less than 243 joints in its four minutes duration but I estimate that well over one thousand joints were necessary to produce it. Together these hundreds of bits of tape make up "The Songster's Fantasia."

The fifth article of a series explaining the mysteries of electronics to the layman. Below the author describes how a coil of wire can be magnetised by passing a current through it.

This electricity: Magnetism

By CHARLES NORMAN

WE saw last month that electrons moving in a conductor can be used to make heat and light. They have other effects that are not quite so obvious but are equally important.

If you pass a current through a long coil of wire—you can call it a solenoid if you want to be technical—the coil will attract small pieces of iron, point north and south if it is suspended by its centre, and generally behave just like a bar magnet. Giving the coil a soft iron core makes the magnetic effect much stronger.

This should lead us to suspect that magnetism is just an electrical effect, but we have to decide why a permanent magnet does the same thing when there is no current flowing through it. The explanation should suggest itself when we remember the orbital movement of most of the electrons in any substance. As the electron itself is a tiny piece of electricity then each electron is a minute current.

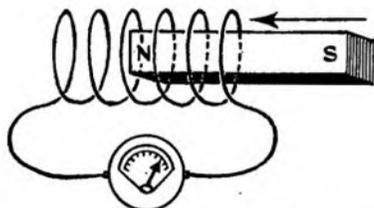


Fig. 1. Electromagnetic induction

In a magnet, many of these orbits point in the same direction so that their magnetic effects add up to give a field of force outside the magnet. This is called a magnetic field. In other materials the electron orbits point in all directions. No addition can take place and no magnetic field is produced.

The turns of a coil produce a magnetic field because they all act in the same direction like the parallel electron orbits in a magnet. Or the parallel orbits in a magnet produce a magnetic field because they act in the same direction like the turns of a coil. Which way you look at it depends upon whose side you are on. When we put a soft iron core inside the coil its magnetic field twists many of the

iron's electron orbits into parallelism. So we get a more powerful magnetic effect than the coil alone could produce. The powerful lifting magnets that you sometimes see dangling from cranes are made on exactly the same principle. A heavy current passing through a multi-turned coil on an iron core can be made to lift tons of iron at a time without the bother of fixing hooks or slings.

If we wanted to make a permanent magnet all we would need is a coil with plenty of turns, a source of current and a piece of steel. We simply put the steel inside the coil in place of the soft iron core and switch on the current for an instant. When we switch off the steel is permanently magnetised. A soft iron core would lose its magnetism as soon as the current ceased to flow. The difference in behaviour is due to the difference in the atomic structure of iron and steel. In iron the orbits of the electrons are not very rigid. They can be easily twisted into parallelism but as soon as the twisting force is removed they relax into any old position. In steel though, the orbits are fixed rigidly. It takes a lot more force to twist them, but once they have been moved they stay put. When we consider how much more rigid steel is than iron, this seems natural enough.

What we have been doing is taking a preliminary look at electronmagnetism. This is a tremendously important effect without which there could be no such animal as the tape recorder.

Now we can really get down to it. If instead of passing a current through a coil we connect a meter across it and then push a magnet into it as shown in Fig. 1 the needle is deflected while the magnet is moving. So we must have caused an electric current to flow. This opens up all sorts of interesting possibilities.

As we saw earlier in the series a current is caused to flow by a pressure of electrons at one end of a conductor moving along to fill a shortage at the other. A generator is a device which keeps up the pressure by artificially maintaining this pressure and shortage. So, simply by moving a magnet inside a coil we have made something that looks very like a generator. Now it seems that if we could find some way to keep the magnet moving steadily by, say, steam power, we should be able to produce a much more powerful electrical pressure than that depending upon a few chemicals in a little zinc can.

We do something like this in practice, but instead of moving a magnet inside a coil we

move the coil inside the magnet. Fig. 2 is a sectional end-on view of a simple electric generator. Back and forwards motion is not very satisfactory, so we mount the coil on a spindle and rotate it in a powerful magnetic field. This is called the armature, or rotor, of the generator. Really hefty permanent magnets are expensive and difficult to make, especially if we want a magnetic field of even and known strength. Apart from that, they are not really permanent. All magnets of this type tend to lose their power as time goes on.

So in most generators we scrap the idea of using permanent magnets to provide the field and use coils wound round soft iron cores. We have already seen that this produces a powerful magnetic effect, and it seems logical that the strength of the effect will depend mainly upon the number of turns and the magnitude of the current. All we need then is a current source to feed the coils. As the armature is a source of current all we need to do is connect it to the fixed coils, which we call the field or stator of the generator. So the generator uses power from outside to pick itself up by its own bootstraps and turn mechanical energy into electrical pressure.

Now we run into a little problem. Looking again at Fig 2 we see that we are going to have to take off the current from a moving object. At first it might seem that all we need do is take each end of the armature coil to an insulated ring on the spindle and let a contact press on each ring. But the direction of the current depends

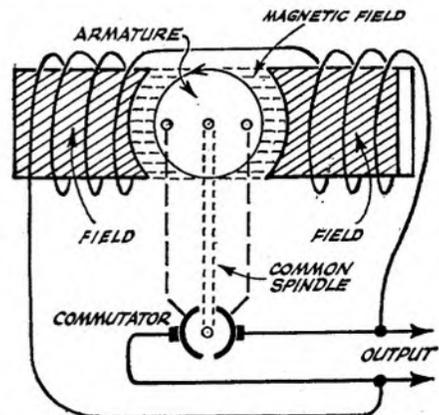


Fig. 2. A generator

upon the direction in which the winding moves in relation to the magnetic field. As it is moving up on the left-hand side and down on the right, the direction of the current in the winding must reverse twice for every revolution of the armature. So the current taken from the rings, which are called slip rings is continuously changing direction. This is in fact an alternating current, so our generator is really an alternator. The enormous creations used in power stations are only more complex versions of exactly the same thing.

To take off the output from the armature as a direct current we have to use a commutator, which is a rotary switch mounted on the armature spindle. Instead of using two rings we use a single ring split axially into separate halves which are insulated from each other. One end of the armature winding is taken to each half and a contact bears on each. So as the direction of the current in the armature changes the direction in which it is taken out of the commutator changes and we get a direct current from the generator.

In practice, there are usually many armature windings on a single rotor because this gives a more even current. As each end of each winding must be insulated from all the others the commutator is divided not into two but into a large number of segments. These are the flat strips you have probably noticed on the end of the armature of a dynamo.

There is yet another thing we can do with a magnet and a coil. If we put the magnet into the coil and then pass a current one of two things can happen. If the magnet is in

NEXT MONTH
Converting electricity
into sound

such a direction that its field is in opposite directions to that produced by the current it is just held more firmly in place. But if the magnet's field is in the same direction then we have two magnets pointing in the same direction lying closely side by side. This is something of which magnets do not approve, as you can try for yourself if you care to get hold of a couple of bar magnets. So the magnet tends to shoot out of the coil.

So this production of a current by moving a conductor in relation to a magnetic field works the other way round too. Consequently, if instead of driving a dynamo by applying some kind of mechanical power we connect to it a suitable supply of electricity the dynamo will run as a motor. What is more, because of its commutator it will work just as well from an alternating supply as it will from a DC. In fact, there is little difference between a dynamo and an electric motor structurally. They are the same thing used in different ways.

An alternator will not run as a motor though, because it needs a DC field. So big alternators and big motors designed to run on alternating current usually have their own private dynamos to supply the field current. These are carried on the same spindle as the main armature.

We know a little about magnetism now and we have seen that its effects can be used to produce movement from electricity or electricity from movement. Next month we shall consider how these effects work together in a tape recorder.

TAPED FROM RADIO

For those new to the hobby of tape recording we publish below a resume on the vexed question of copyright.

By a Barrister

IT was a splendid gift and you are going to meet 1965 to the sound of music—on tape! The radio is the obvious source from which you can start to build up a musical library but you have that nagging doubt about the copyright position. What exactly can one extract from the ether and store on tape?

If the answer is to be accurate it has to be a little complicated for the position is governed by no less than three Acts of Parliament: the Copyright Act 1956, and two Performers Protection Acts, one in 1958 the other in 1963.

Right away, one can say that a good deal of tolerance is given if you are going to use the tape only for private purposes, i.e., within the family circle. If you are not going to sell the tape, or hire it, or use it in a public place like a dance hall or a club to which members may bring guests, if in fact you use it only for private listening, there are only two situations in which copyright law applies. Even for private listening, if you have taped something in which the author's or composer's copyright still exists you ought to get that person's permission. Most people know that copyright runs for the life of the author and fifty years afterwards. Therefore if you tape a Noel Coward play you should get Mr. Coward's permission, but it is otherwise if you tape a Shakespeare play or a Beethoven symphony. That you can use freely in the family circle.

A second point concerning the "family circle" use of a taped broadcast is that, if the tape has the sound of a commercial record, i.e., as background music, then you should get permission of the gramophone company.

If you wish your tape to be used in public then, of course, real complications arise. You would have to get permission from the BBC (or ITV as the case might be); and you would also need permission from the owner of the copyright. This would be the man who wrote the literary or the musical script (or his representatives if he died in recent times). The Performers Protection Acts mean that you would also need permission from the performers taking part in the broadcast.

If you are a schoolteacher there are special concessions of great value concerning the BBC Schools broadcasts (but not other broadcasts). The BBC has made special arrangements with the copyright

owners and artistes' unions and, as a result, recordings of these broadcasts may be made subject to two conditions. The tapes must be used only for instructional purposes and in class, and they must be erased at the end of the school year.

Many of us look forward to getting a recording of some public events, a public meeting or even a concert. In the case of a play, or a concert, or a lecture you would almost certainly require permission but if the sounds you record have, on the other hand, no artistic or creative character, for example, the sounds at a zoo, or an air display, or a dog show, problems of copyright would not exist. It would be up to the organisers of these events if they decided to make it a condition of the contract by which they allow entry that no recordings should be taken. It is frequently done in the case of photographs. This reminds me that, recently, a magistrate at Bow Street, London, having remarked on the well known prohibition on taking photographs in court, said to a member of the public who had been observed using a tape recorder that he could go on using it "to his heart's content" as he put it, provided it made no noise. Unfortunately, it started to hum and its owner took it out of court.

Apart from copyright there is, of course, the question of possible defamation of character by use of tapes. Anything published about someone which, as the lawyers say, tends to lower him in the estimation of right-thinking persons or expose him to feelings of hatred, ridicule, fear or contempt, can be defamatory, and so, recording the hilarious end of the firm's New Year's party may be very amusing but to play the tape over in another place in other company might be unwise.

There has been at least one case where humorous but disparaging remarks were made about a man in an after-dinner speech but, although nobody present took these remarks seriously, when they later appeared in a newspaper they were held to be libellous.

In another case, even publishing a story which a man told about himself was held to be wrong. "There is a wide distinction" said the judge, "between a man telling a ludicrous story of himself in the private circle of his friends or acquaintances and the publication of it to the world at large."

So, there it is; but actually, even if a recording is defamatory it would be all right to play it over to your wife or husband because, owing to the legal fiction of the unity of husband and wife it is not, in law, a "publication" of the material.



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TAPE AND CINE. The third article in our new series giving advice on the exciting possibilities when tape is linked with cine photography. This month our expert moves on to advise on the task of combining music and effects to produce a composite sound-track for a film.

Keeping the tape and film in sync.

By PETER RYDE

ONCE the commentary is written, you can begin planning the music and effects—preferably something simple to start with, such as a plain musical background.

First of all, you must select some suitable musical recordings and time them. By comparing these timings with those you made of each shot in the film earlier on, you will be able to draw up a musical cue sheet showing what music is to be played, when, at what point each piece is to be faded in or out, and so on. If a passage you particularly want to use turns out at this stage to be a little too short, you can probably extend it by re-recording it with some of its sections repeated.

Similarly, you may be able to shorten, adapt and generally rearrange the music in various other ways with simple scissors-and-tape splicing, until you have built up some suitable passages for use in the film.

It is not possible to give much useful guidance as to what kind of music to use. It depends so much on personal preference and on the mood of the film. But remember that the music must supplement the picture and not distract the audience's attention from it. Tunes that are too well known are best avoided, unless they are deliberately used for some special effect in which the audience is *meant* to recognise them. As a general rule, too, singing is not very satisfactory although there are exceptions. A few well-chosen national folk-songs can make an attractive background to a foreign travel film, so long as they are used in moderation, and at times when there's no commentary.

My own personal preference is for something of slowish or medium tempo, with an attractive, but not insistent, melody. On the whole, I prefer pieces scored for only a few instruments, or even a single one; fully orchestrated music tends to seem rather heavy-handed and pretentious when used with films.

Incidentally, if you want to use commercially-recorded music for films that you hope to give an outside showing, you may be rather worried by copyright considerations. In this case, it would pay you to get in touch with the Institute of Amateur Cinematographers, 8, West Street, Epsom, Surrey. They run a special scheme under

which, for a small fee, copyright clearance for film use is available to *bona fide* amateurs on a wide range of commercial discs.

When you have finished tinkering with the music and have drawn up a cue sheet for it, you are ready to start the proper recording. For much of the time now, you will be on familiar ground, but you have to remember one very important difference between film sound tracks and other tapes. In film work, you have always to be considering synchronisation.

Basically, you have two main concerns. The first is to see that every part of the track—every sentence of commentary, every musical effect—comes at exactly the right place on the tape so that it will synchronise properly with the film. Secondly, you have to carry out all the compilation of the track, all the combination of speech with music, etc., in such a way that you don't destroy the synchronisation which you have so carefully established. This rather limits the means at your disposal.

At first sight, the most obvious way of ensuring that your tape will run in synchronisation with the film would seem to be to do the recording with the projector running. For simple tracks this is quite feasible, provided you can find some way of eliminating the projector noise from the recording. If the projector is a quiet one, a directional microphone is the complete answer; but with a noisier machine, in a small room, there will be so much reflected sound that the microphone may still pick some of it up. Another possible solution is to project into the recording room from outside, through a glass door, or through a dining-room service hatch, blocked up with hardboard except for a tiny projection port the size of the lens.

A third idea is to pre-record the commentary, speaking it continuously. Then, with the film running, you can dub from this master recording onto the final tape, using the Pause control to let in each sentence on cue.

But however successfully you suppress the projector noise, recording whilst the film is running has two snags. In the first place, you are more or less committed to recording the whole track at once, because even with a synchroniser that will start in synchronisation again after being stopped in mid-film, it is not, in practice, very easy to make the sections join up neatly if you do them separately. But with long recording sessions, there's a great risk of a mistake

near the end ruining everything. Secondly, the "simultaneous" method needs the help of several people all at the same time—a projectionist, commentator, and at least one, probably two, recordists. This is not a suitable method for the lone worker.

It is simpler in the long run to work without the projector, but before you can do this you will need to record a pilot track. You may already have used a pilot to help in timing the shots and writing the commentary. The idea is much the same for the present purpose, but the instructions contained in the pilot will be different.

Before recording your pilot, first number every sentence or paragraph of commentary. Now thread up a blank tape, and, with the synchroniser in action, run the film through. As each cue for commentary appears on the screen, you call out its number, and this is recorded on the tape in the correct place. You can now put the projector away and work from the tape only.

What you do next depends on your equipment. If you can monitor one track whilst recording on the other, you can listen to the pilot through headphones and record the commentary on a different track. If your recorder does not permit this, it may be necessary to transfer the audible cues of the pilot to visible cues on the back of the tape. But in either case, each time a commentary cue comes up, you speak the appropriate sentence, and so you record the commentary in perfect synchronisation, even though the projector is not running. You can pause for a rest any time you like.

If you have a Synchrodek, an alternative to the pilot commentary is to run the tape and film together up to the first cue; you now stop the recorder, but not the projector, with the result that a synchronisation error develops on the dial. Whilst the projector is running, the appropriate sentence is spoken aloud, for timing purposes, but not recorded. When the sentence is finished, the projector, too, is stopped. The recorder is now switched to "Record," and the sentence spoken properly. Since the tape is now running by itself, the Synchrodek needle will gradually creep back again, and should reach zero shortly after the end of the sentence. When it does so, the projector is started again, and the film and tape are run together until the next cue, at which the process is repeated.

So much for the first problem. Now, what about combining music and effects with the speech?

You have to remember that ordinary dubbing from one tape to another will result in loss of synchronisation, since recorder speeds are not constant or consistent. Hence, all compiling has to be done on the actual tape on which the pilot track or the synchronisation speech recording has been made. You must not dub *from* this tape, only *onto* it.

There are various methods of track compilation you can use, either by themselves, or in combination.

1. Simultaneous recording of speech and music with a mixer. This is quite feasible for simple tracks if you can get enough helpers. It is best to make a pilot first, but if you pre-record the commentary on another tape, you can do the final recording with the film running, using the pause control to dub in each sentence on cue, as explained earlier. At the same time, a continuous musical background is mixed in from tape or disc.

2. Superimposition of the music on the speech, which has first been recorded in synchronisation. This is unsatisfactory

(Continued on page 61)

A LITTLE while ago I was asked for some opinions on the subject of service and guarantees offered by manufacturers.

To forestall that hollow laugh from those cynics who have been bitten, let me say that in most cases, purchasing tape recorders or hi-fi equipment from reputable dealers is not likely to lead to those recriminations that litter the Intrays of *Which?* The golden rule is, *You do not get something for nothing.* The chap who picks up a second-hand bargain from a chap at the club must not be surprised when his local dealer is reluctant to handle the repairs.

My article of August 1964 should have given some indication of the points to be observed, and some of those to be avoided when buying second-hand tape recorders. This article deals mainly with the purchasing of new equipment—and the unlucky eventuality of its going wrong.

First, guarantees. There is a lot of apparent misconception on the subject. The purchase of a machine—even an expensive one—does not automatically entail the provision of a built-in engineer, nor even the eager attention of the chap who sold it. Although, in fairness, most good dealers will bend over backwards to satisfy a customer, even where this is not within the strictly legal requirements of the guarantee.

So what are these requirements? The guarantee is offered by the makers of the equipment. Usually it is for twelve months, with valves separately guaranteed, either for a nominal three-month period, or, as is

AFTER SALES SERVICE

Although many dealers and manufacturers are willing and able to provide a satisfactory after sales service once a purchase has been made, not all can be expected to service machines freely for ever and a day. In this article HARRY MACK discusses the purchase of new equipment—and the unlucky eventuality of its going wrong and advises what service can be reasonably expected. Below right, a qualified technician for a large importer of foreign equipment spotlights the specific problem of estimating maintenance costs.

more usual nowadays, for half a year. But this guarantee simply states that faulty parts, *after examination by the makers*, will be made good.

Note the italics. To be absolutely correct, you should pack the equipment and send it at your own risk and expense, back to the makers, who will then replace faulty parts if the guarantee has been found to be correctly registered, and return the goods to you, at your expense again. Carriage charges being what they are, it is hardly worth the outlay of a pound or more for the replacement of a faulty ninepenny component—and there is always the ungentle handling of our notorious carriers to be considered.

So we take the next easiest course; we lug the so-called portable, which grows heavier with each step, back to the shop from where we bought it.

As I said, in most cases, the dealer is happy to undertake the job of checking the machine, returning the parts himself to the makers within the terms of their guarantee, and perhaps returning the goods to us with nothing but his blessings. Simply in order to maintain his reputation. All in the cause of goodwill, so to speak.

But we must remember that he has no need to do this. He can, quite legitimately, make a charge for the time spent and trouble taken. And, labour costs being what they are, these charges could very well be



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AFTER SALES SERVICE

many times the cost of the components replaced.

All right, you say, let's demand a refund from the manufacturer. Well, it is a beautiful thought, but, I regret, quite invalid in law. The Sale of Goods Act, 1893 (which still applies), states that, if a buyer, "expressly or by implication makes it known to the seller the particular purposes for which the goods are required" then it is understood that the buyer pays his money on the same understanding. We do not intend to use the tape recorder as a doorstop, so we take delivery of it, knowing what it is. To bung it back to the maker with the complaint that it will not do its job is just not good enough.

This underlines what I said in the August article: test before buying. You can trust the reviews in this magazine as being a preliminary test for you, and if you take the trouble to read them carefully, a pretty full description of the machine's functions should have been obtained before entering the shop door.

From then on, we are practically on our own. We would not think of purchasing a car, for example, without making a test run round the block, at least. And even a furniture salesman invites us to bounce on the bed before we sign the forms. So, when buying a tape recorder, let us at least make sure it is recording! And if the dealer is not willing to give this simple demonstration, my advice is: go elsewhere.

The next point is the sore one of after-sales service. Many dealers will offer a maintenance service, at quite a moderate cost. Now, it is no use arguing that your Super Ten-Star Special should never go wrong. Even the Archangel Gabriel's horn blows a wrong note at times. When it *does* go wrong we want to know it is going to be handled by someone the manufacturer has considered capable of tackling repairs to his goods. Hence, buy from the reputable dealer who is an agent for the brand on which you have set your heart. This does not overrule the little chap down the street, who may very well have one or two special agencies—it does, I stress, outlaw the furniture stores and sell-anything shops, unless they, too, can show they are agents. The best test, I advise, is a chat with the salesman. If he is knowledgeable about the goods, you are pretty safe. But if he does not know a drop-out from a print-through, avoid the shop like the plague!

I say this without shame, and at the risk of Editorial admonition.* After all, if you

* Carry on—We are with you.—ED.

are reading this, it is to be presumed you are an enthusiast; not just a chap who wants to record the budge and Grandma's last words, then let your new-found toy moulder under the bed!

The reputable dealer will provide after-sales service, even though he may make a small charge for doing so. Quite often, this charge by no means covers his costs. But he knows that you are going to come back to him, as a satisfied customer, for tapes and accessories, and maybe a bigger and better machine, as the years go by. He is investing, as the insurance boys say, in tomorrow.

Then what about goods on approval, I hear someone ask? Well, the law is rather chary about this. Under Section 18 of the Act quoted above, the contract between buyer and seller must be firmly defined. If you get goods on approval, then dispose of them (to be polite) the poor dealer has a hard job in law to regain his losses. Similarly, we have no claim on the dealer

who sells us a *similar* piece of equipment to the thing we fancied in the window. The law is quite strict about this, and again, the answer is to demand a demonstrator, to try out the actual machine you are buying, and, if the dealer raises an objection, go elsewhere. We can be quite definite about our request: the Merchandise Marks Act, 1887, lays down quite definitely that it is an offence to sell goods with a false trade mark or description, so if we go to the shop with a firm idea of the goods we are going to buy, there is little chance of being "done." Again, read the reviews, meticulously. Take a little time to make up your mind, and then be firm about your requirements.

If the goods fail after we have taken delivery, and if we have made this preliminary test, there is nothing to be gained by slating the dealer. And, until we know exactly what is wrong, it is pointless to invoke the flames of wrath about the manufacturer's head. It may be a simple, unavoidable fault. But I would add a sly word here: where there are obvious slips in construction, unsoldered joints, incorrect components, etc., a threat of publication will usually bring a manufacturer to heel. Not even the best is faultless in this respect, and several readers have written to the magazine with legitimate complaints, to find them miraculously cleared when the correspondence was forwarded. Contrary to general opinion, manufacturers are extremely jealous of their reputations.

Which should really be the last word on after-sales service. If you buy from a reputable dealer, and do not expect him to bankrupt himself in your cause, then, if things go wrong, deal quite politely but firmly with the makers, you should have no trouble. No doubt, there will be a flood of correspondence from disgruntled readers after that observation: but, as an engineer who has worked for manufacturers, small and large dealers, and for himself, I feel I am on safe ground in stating that we, the enthusiasts, are welcomed by the "trade," provided we use the right approach.

A thought— not an afterthought

HAVE you ever thought what maintenance a tape recorder needs compared to hi-fi equipment, radios and perhaps television apparatus?

Tape recorders are mechanical and electrical precision machines. The electrical side is usually more robust than the mechanical construction, but then they are not so liable to develop faults due to wear. But still, it has been estimated that one can pay up to 2½ per cent of the purchase value per year in maintenance costs.

In many cases the faults are simply rectified by following the information in the instruction booklet supplied; if not given in the "book of words," information can be obtained from an expert. Many of the mechanical parts of a tape recorder move at a speed of 3,000 rps. The pinch-wheel collects dust, and suddenly your tape recorder sounds like a very old fair-ground organ.

In the case of battery portable models the picture is changed again. The motor which drives the mechanism is of very low power—and batteries are used to supply this power. Whereas mains-powered machines with a heavier motor are not so susceptible to dust and drying out of bearings, the small

voltage DC power of the battery machines are sensitive to deposits of dirt and even temperature changes. Thus battery recorders should have more care and attention than mains models. Here the cost of maintenance would be more in the line of 2½-5 per cent of the purchase value in the first year, rising to ten per cent in the second year. One should realise that other mechanical machinery, petrol or diesel driven, costs even more to maintain.

The drive mechanism of the battery portable should be cleaned regularly every fifty hours of use to ensure maximum performance. Professional users have to clean their equipment more often than the amateur of course; but regular cleaning of the heads is a must whatever your status.

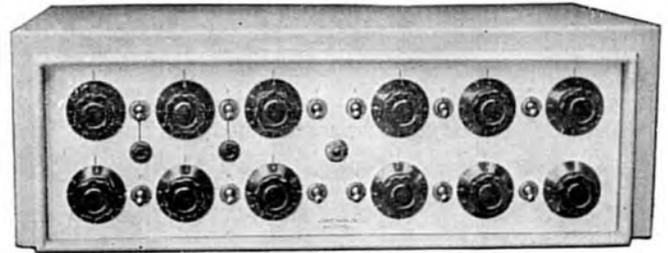
Care should also be taken in the purchase of fragile machines. If you are likely to be transporting your equipment regularly a more robust design would be needed, so examine closely those plastic cases.

There are of course many points to be considered when making a purchase; but in general before buying a thought is more beneficial than an afterthought, and bear in mind those maintenance costs. W.W.

Vortexion

quality equipment

The 12-way electronic mixer has facilities for mixing 12 balanced line microphones. Each of the 12 lines has its own potted mumetal shielded microphone transformer and input valve, each control is hermetically sealed. Muting switches are normally fitted on each channel and the unit is fed from its own mumetal shielded mains transformer and metal rectifier.



12-WAY ELECTRONIC MIXER

FOUR-WAY ELECTRONIC MIXER

This unit provides for 4 independent channels electronically mixed without "spurious break through", microphony hum and background noise have been reduced to a minimum by careful selection of components. The standard 15-50 ohm shielded transformers on each input are arranged for balanced line, and have screened primaries to prevent H.F. transfer when used on long lines.

The standard 5 valve unit only consumes 18.5 watts, H.T. is provided by a selenium rectifier fed by low loss, low field, transformer in screening box. The ventilated case gives negligible temperature rise with this low consumption assuring continuance of low noise figures.

20,000 ohms is the standard output impedance, but the noise pick-up on the output lines is equivalent to approximately 2,000 ohms due to the large amount of negative feedback used.

For any output impedance between 20,000 ohms and infinity half a volt output is available. Special models can be supplied for 600 ohms at equivalent voltage by an additional transformer or 1 milliwatt 600 ohms by additional transformer and valve.

The white engraved front panel permits of temporary pencil notes being made, and these may be easily erased when required. The standard input is balanced line by means of 2 point jack sockets at the front, but alternative 3 point connectors may be obtained to order at the rear.

Mixer for 200-250V A.C. Mains	...	...	...	...	...	...	...	£40 8 6
Extra for 600 ohm output model	...	...	...	...	...	...	...	£1 18 6
Extra for 600 ohm 1 milliwatt output	...	...	...	...	...	...	...	£3 0 6
Size 18½in. wide × 11½in. front to back (excluding plugs) × 6½in. high. Weight 22 lb.								

THREE-WAY MIXER & peak programme meter for recording and large sound installations, etc.

This is similar in dimension to the 4-Way Mixer, but has an output meter indicating transient peaks by means of a valve volt-meter with a 1 second time constant in its grid circuit.

The meter is calibrated in db's, zero db being 1 milliwatt-600 ohm (.775V) and markings are provided for + 10db and -26db. A switch is provided for checking the calibration. A valve is used for stabilising the gain of this unit.

The output is 1 milliwatt on 600 ohms for zero level, up to + 12db maximum. An internal switch connects the output for balance, unbalance, or float. This output is given for an input of 40 microvolts on 15 ohm.

An additional input marked "Ext. Mxr," will accept the output of the 4-Way Mixer converting the unit into a 7-Way controlled unit. This input will also accept the output of a crystal pick-up, but no control of volume is available.

The standard input is balanced line by means of 3 point jack sockets at rear, but alternative 2 point connectors may be obtained to order at the front or rear as desired.

The 8 valves and selenium rectifier draw a total of 25 watts.

P.P.M. for 200-250V. A.C. Mains	Price on application.
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ALAN EDWARD

BEEBY

YOUNG man with an idea." From the hard training ground of war-time Midland concert-party, Alan Clark graduated to professional entertaining as a jazz singer. Later, during a tour as personal assistant and special effects engineer with American illusionist, Virgil's show, "Magicana," Alan discovered a flair for mime-comedy. Encouraged by the praise of a newspaper critic who had pronounced his act "... the funniest thing since Chaplin," he began to look around for ideas; for a gimmick; a suitable vehicle for his talents. He found it—in his tape recorder.

Composing sound-effects for an amateur drama group in Bedfordshire, Alan suddenly realised that the ideal "partner" for a mime act would be, simply, sound. He made a trial recording consisting almost entirely of the sound of church bells being rung, and then played it back, at the same time, miming the part of a bell-ringer tackling the job alone and unaided for the very first time. The result sent a small "guinea-pig" audience of relatives and friends virtually into hysterics!

More ideas followed: a delivery-man trying to cross a busy main road with a heavy TV-set; an impressionable country-bumpkin type seeing his first strip show, and an over-imaginative TV-viewer carrying on a gun-battle (live shots issuing miraculously from his index finger!) with the cowboys on the screen.

Over a period of nine months (during which time he was stage-managing Clarkson Rose's famous "Twinkle" show), the act slowly took shape in his mind—and on tape. Alan decided to try his luck with the agents—who, it turned out, didn't really want to know. Mime, they told him, had been played out years ago. In vain, he insisted that the act was a totally different thing from the old business of miming to gramophone records. "Don't call us... etc.," they said.

Then, came the break. An agent sat up and took notice. The act was presented publicly for the first time at London's Nuffield Centre, and went like a bomb. Other dates came along: at Hull's Continental Palace Theatre, a second appearance (by request) at the Nuffield, and an eight-week tour of night clubs in the Manchester area.

One treat denied Alan's audiences, incidentally, is a glimpse of his attractive wife, Jackie, an ex head-girl of the famous De Vere dancers, who operates the recorder for him off-stage. She and Alan met and married while both were appearing in the aforementioned "Magicana" show.

The effects-tapes for Alan's act are recorded at their caravan-home in Leighton Buzzard. His equipment includes a Ferrograph 424 stereo recorder, a Magnavox studio tape-deck, a Garrard magazine play-back-deck and an E.M.I. L2B portable recorder. Microphones used are a Japanese Tiesco DM304, a Reslo Dynamic PGD, plus an uncased Acos Crystal insert for "explosions" and similar violent effects. A Garrard SRP10 record-deck earns high praise from its owner ("It's a light, tough little job, and thoroughly reliable.") as does the Linear Conchord thirty-watt amplifier which drives a twelve-inch Fane twenty-watt speaker in line with a Goodman twelve-inch, fifteen-watt speaker for stage use. The best tape for sound-effect work? "In my ex-



Alan Clarke

perience, Philips," Alan claims. "Quite frankly," he adds, "I don't know another brand that would survive half the atrocities I inflict on my tapes during our travels."

Alan has long been a loyal reader of *TAPE Recording Magazine*. He told me: "Some hi-fi publications play the subject straight; too straight, in fact. Some play down to their readers, which is even worse. *TAPE* on the other hand, plays it straight down the middle. Technicalities, certainly, but laced with plenty of down-to-earth chat—which suits me nicely."

My readers will, I know, join me in wishing both Alan and Jackie the very best of luck in their venture. As Al Jolson (Alan's idol) used to say: "You ain't seen nut'n yet!" Having seen Britain's new-style comedian at work for myself, I'll second that. And, as tape breaks through into the world of variety entertainment, we'll be watching. . . .

EFFECTS wanted. A colleague in the "TAPE" office asked me the other day if I had a recording of a water-splash I could let him have. Time prevented a home production and "I can't seem to obtain one anywhere," was his complaint. Which didn't entirely surprise me, because there isn't one—at least, not to my knowledge. This raises a point.

I can think of quite a few effective items



which have not yet been made available commercially; or, if they have, not very satisfactorily. For instance: A really good isolated water-splash, like a swimmer hitting the water from a diving-board; a selection of various types of explosion, each preceded by around half-a-dozen ticks from a metronome for spot-on cueing; and a window-smash. I've been asked for this particular sound many times in the past, and have already mentioned the omission twice before in this column. Rumour has it that there's a stereo version (on disc) available somewhere, although I've never been able to locate it. Can anybody help? Also unavailable a series of thunder-claps which do not sound suspiciously like either a "cooked" imitation or a steel sheet being rattled. A full-blooded, open-vowelled crash with plenty of reverberation is what's needed; and of course, a selection of gun-shots, with and without bullet-whine.

Record-manufacturers, please note.

S.O.S. Tailpieces: 1. Can anyone suggest a good method of storing tape-loops? 2. Has anyone a copy of the complete LP sound-track album of Olivier's film, "Richard III" they'd like to sell? 3. Am I the only one who isn't happy with the present "brief-stop" arrangement on the Wearite deck? Letters, please, to me at 88, Clare Street, Northampton. (Tel.: 36964).

TAPE AND CINE

(Continued from page 57)

because the quality is poor, you have too little control, and mistakes are fatal.

3. Multi-track. You record the speech on one track and the music on the other and play the two back together. To get the best out of this scheme you need to be able to monitor one track whilst recording on the other, as explained in connection with the pilot commentary. Having recorded the speech, you can now listen to this through the phones while you replace the pilot by the music. Since you can hear the speech, you know when to fade the music up or down, and if you make a mistake, you can always re-do the music without spoiling the speech, or vice versa.

A neat scheme would be to use all four tracks of the tape, one for the pilot, one for speech, one for music and one for sound effects. It would not be difficult to adapt a recorder to do this, but nobody else would be able to play back the tapes and they would fail the basic test of interchangeability.

4. Inter-track recording. You record the speech on one track, and then dub it onto the other track, at the same time mixing in the music from some separate source. If you make a mistake, you can easily start again, for the speech track is undamaged. Once the combined recording is satisfactory, you can erase the original speech track and dub the combined speech-and-music back onto the first track, mixing in the sound effects. You cannot lose synchronisation during this dubbing, but you may lose quality: for the best results, you need a stereo head, so as to minimise interference between the tracks during the recording—or better still, completely separate heads.

So much, then, for the basic techniques. Having mastered these, you will want to start on more complex tracks, with "spot-on" synchronisation for sound effects, special tricks like cutting to music, etc. But these will have to wait until the next article.

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Dramatape miscellany

By PERSPECTIVE

IF you own a tape recorder and any accessories—such as a turntable and a mixer—you ought to get in touch with your local amateur dramatic society. You can then offer to record their next stage-production, the subject I shall be dealing with this month.

There are two different ways of tackling this truly fascinating job.

First, you can ask the producer to convene the cast for a separate recording session, i.e., to make a "dramatape" version of the play. Alternatively, you can attend the stage performance "on the night"—and make a recording in the presence of the audience.

You'll probably find the society will plump for a recording made "on the night"—thus causing you a lot of interesting problems. (Don't try to persuade the society that they would do better under studio-conditions. Always urge that they make a studio-recording *in addition*. You'll find, as I have, they cherish both versions.)

THE STAGE-STUDIO

The "studio" method isn't, of course, a true studio method at all. Bear in mind that the actors will have carefully rehearsed the action *for the stage*. They will understand nothing whatsoever of perspective and acoustics—even if you do. I'm not being rude. Many recordists, unless they happen to be members of a specialised dramatape society, know little of drama-studio practice. So your studio will be the stage itself—with, of course, the curtains shut and the auditorium empty.

I need hardly stress that you must read the play beforehand and attend as many rehearsals as possible. To record a production in utter ignorance is by no means uncommon with certain recordists! To be fair, I must add that certain producers can be unco-operative; nevertheless, you must discuss your problems with the producer, stage-manager and all relevant officials. And for heaven's sake, don't forget the leading actors!

Your first request is that the cast attend the session in non-rustling clothing. No jingling coins and necklaces! Sweaters, slacks and plimsolls (in my view) are ideal clothing for drama-in-sound.

Secondly, the stage should be "set" as for performance. The cast can then enact their proper movements and make the right sounds—e.g., mixing a drink.

An out-and-out dramatape enthusiast would split the scene into separate "takes"—and devise fresh "viewpoints" for his future listener. But you will find it easiest to record all voices at an equal level and as clearly defined as possible. Use an omnidirectional microphone and suspend it above the actors' heads, facing downwards in a central position.

Should the actors read from the scripts or utilise their memory? This (I suggest)

is up to the actors; it depends, too, on whether or not you are recording "all in one go" or take-by-take.

PERFORMANCE-RECORDING

Recording an actual performance is a great challenge neglected by many amateur recordists.

First, never stand a microphone on the stage if it can be avoided. Your recording will probably be ruined by unsuspected rattles which develop during the "hotting-up." There are two useful microphone-positions and, ideally, you should use both—each microphone being fed to a mixer. (A mixer, however, isn't always necessary: you can often "make do" by swiftly changing over microphone-plugs!)

The first position is not (as is commonly supposed) in the centre of the stage by the footlights. This may be suitable for a song or recitation—but not a play. The stage-microphone position should be towards the *back* of the stage, i.e., suspended high up near the back-cloth. Frequently, it can be concealed by some convenient "flat"; and, if you have ever been in the "flies," you will know that the actors' voices are extremely clear there.

The second microphone-position is *at the back of the hall facing the stage*. The type of microphone should be uni-directional and raised fairly high (to minimise audience-noises) and pointed downwards at the action. (I haven't tried a parabolic reflector with an omni-directional microphone in this way, and would be interested to hear if anyone has.) Exact positioning depends on whether or not the hall is small and/or well-filled. A half-filled hall, for example, of (say) ten rows, would mean installing the microphone behind the eleventh row. And, of course, you wouldn't record from the back of an exceptionally large hall: you would probably compromise with a side-position.

Many recordists may be puzzled at the idea of recording from the auditorium, but there is a good dramatic reason. In the theatre, voices are vocally "projected" towards the back of the hall. A recording taken from the stage-microphone can, therefore, create difficulties from the "exaggerated" sound. For example, the reduced gain for the principle up-stage actors can cut down the volume on the down-stage actors; and any applause sounds too "distant."

It is best (depending on the nature of the play) to start the scene on the auditorium-microphone; then, during the scene, to

transfer to the stage-microphone, returning to the former at the conclusion.

If you face a choice, however, test each microphone-position during the dress-rehearsal and select the most suitable. But remember that an auditorium-microphone must account for the size of the audience—so be prepared to adapt the position without fuss. Don't (for example) strap your microphone to the gallery-rail—only to find you must haul it down five minutes before the curtain rises.

ABOUT SOUND-EFFECTS

Membership of theatrical societies runs into thousands. Compared with the hundred or so tape clubs, these societies still remain undeveloped as far as tape is concerned. Many drama lovers have never been associated with a tape recorder and you must expect complete ignorance, not only in making "dramatapes" but in the sphere of sound-effects.

I daresay you will conceive an affection for the panatrope (I am fascinated by it); but, if you are recording a stage-studio version of the play, it is best to suggest mixing effects direct. This avoids the acoustic mix via the society's crackling loud-speaker.

In performance-recording, however, you are obliged to rely on the acoustic mix; but disc-effects are usually so brief that the poor reproduction is immaterial.

Several societies pride themselves on their back-stage "live" effects. No extra microphone arrangements are necessary to pick up the sounds; but you should test the results in dress-rehearsal. It can happen that the operators, in their enthusiasm, work too near the microphone-face.

Permission should be obtained, beforehand, for recording a copyright play. In practice, you'll have little difficulty if *application is made when the play is booked*. Once the stage-fees are paid, the play-agent tends to lose interest—and is likely to say "no" to any recording!

ANY FUTURE IN IT?

Yes. Once a society has recorded a play, it is very possible they will do so again. You could quite easily associate yourself permanently with the group as the drama recordist. It's possible, too, that a certain section of the group will want to start a dramatape section—with you as Hon. Technician.

Well, why not?

Two-minute tape sketch by David Haines

A monthly exercise in perspective, acoustics and sound-effects.

AT a recent drama party, the guests were each handed a sound-effects disc in a sealed envelope. Each guest, either by himself or with another, had to play the disc to a tape recorder—and add extempore dialogue to create a sketch.

The author's effort is printed below; the disc given was HMV7FX9 (Trains). Footsteps were added by tapping a fountain-pen along a table-edge.

Why not use the same simple idea at your own parties?

AT THE STATION

(TRAIN APPROACHES AND DRAWS UP AT PLATFORM. PAUSE. TRAIN DEPARTS. PAUSE. BELATED PASSENGER COMES DASHING INTO THE STATION.)

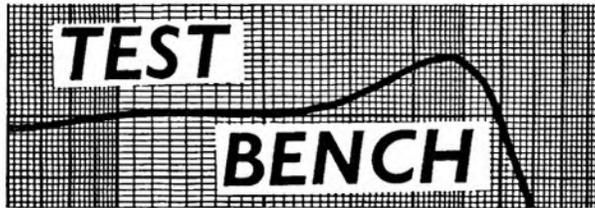
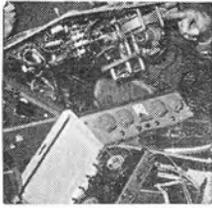
PASSENGER: (*breathlessly*) Porter! Porter! Have I missed the eight-forty-five?
PORTER: Yes, Sir. You have.
PASSENGER: What can I do?
PORTER: Wait for the next one.

PASSENGER: But I'm in a hurry—I'm a very busy man!

PORTER: I can't help that, Sir. If you've missed it, you've missed it.

PASSENGER: (*sighing*) I suppose you're right. I'll have to sit down and wait.

PORTER: I'm afraid so. But remember that we do provide various slot-machines for the refreshment of stranded passengers (*pause*). Try a bar of chocolate, Dr. Beeching.



FERROGRAPH 5A/N

By John Borwick

SURELY there is no one in any way interested in tape recording who has not heard the name Ferrograph. Tape machines bearing this name have been on the British market since the very beginning of magnetic tape. They appeal to music lovers, who demand reliability and high standards of speed consistency; and they have been the choice of many serious amateur recordists too for their rugged ability to withstand being carried about and operated under all sorts of conditions.

The Ferrograph Series 5 was introduced at the end of 1962 and, while making a few superficial concessions to modernity, sufficient to earn a Design Centre approval tag, it has retained the tried and trusted functional features of its predecessors. Indeed, by reducing

the capstan diameter so that a heavier flywheel now runs at twice the speed, wow has virtually been eliminated.

Operation of the Ferrograph is not materially different from that of other recorders though, unlike most, the selection of the operational mode—play, record, re-wind or wind on—is divorced from the start and stop controls. The function



selector switch is near the left-hand spool. It is a four-position rotary switch and the selected function appears through a round window in the knob itself. Having turned

this switch to the required position, you start the motor(s) by pulling a "start" lever to the side. To stop, you press a small red button.

Once the start lever is pulled to the side, the starting bar which it operates is held in the "on" position by an electromagnet (or solenoid) until either the stop button is pressed or the automatic stop is tripped. The latter is a tension arm resting against the tape, between the capstan and the take-up spool, during play or record. When the tape runs off the end, or breaks, or the take-up spool is accidentally touched, the arm moves inwards and causes the "hold on" solenoid to be short-circuited.

The start lever also serves as a pause control during play or record. Sliding it back towards the off position moves the pressure roller out of engagement with the capstan, so bringing the tape to rest. A slight movement to the right locks the lever in position ready to give speedy, click-free starting when required.

The method of threading the tape is quite conventional, once the selector switch is set to one of the fast wind positions so that the pressure pads are moved back from the heads. The head cover is hinged and must be lifted to insert the tape. The free access this gives to the heads is also useful during tape editing and head demagnetising and other routine maintenance operations.

Following the erase head and record/replay head is a third head position. This carries a valve holder into which any Ferrograph record/replay head may be inserted. The Ferrograph 5A/N has a dummy head in this position but this may be replaced by a stereo head, to convert to model 5S, or a standard head for monitoring purposes.

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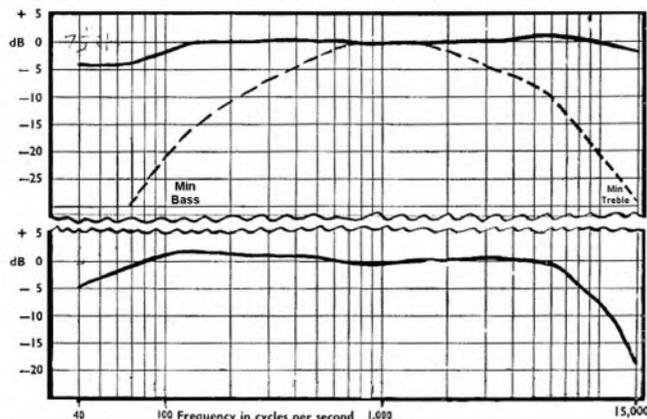
A most useful feature which I would like to see on other makes of recorder allows you to adjust the height of the tape as it enters or leaves the spools. In this way you can eliminate the nasty scraping of tape against spool edge which is all too often a permanent accompaniment to the reproduction. On the Ferrograph you take the tape round a couple of "bobbin" guides. The effective height of these guides can be raised or lowered in a few seconds, to allow for even badly buckled spools.

The only other operational features on the tape deck are the speed change switch and the clock type tape position indicator. The latter is driven from the take-up spool, one revolution of the spool corresponding to one small division on the dial so that cueing indication is to an accuracy of one turn.

All other controls and jack sockets are on the sloping front panel. Reading from right to left, there is the mains on/off switch, volume control, equalisation switch (which must be at the same setting as the speed selector switch, $7\frac{1}{2}$ or $3\frac{1}{2}$ on the 5A/N; 15 or $7\frac{1}{2}$ on the 5A/H, or the start knob will not operate), record level meter (which has a right hand zero so that the spring assists the rapid indication of peaks, but slows the needle when it falls back), treble and bass controls. Beneath this row of controls are the jack sockets for high and low level inputs and external loudspeaker output.

The high level input is rated at 150 mV, 80 Kilohms and suits all the usual recording outlets on radio tuners, record players, etc. It will also record satisfactorily from 600 ohm lines and external loudspeaker outlets, though the usual precaution of fitting an appropriate resistor in parallel—15, 7 or 3 ohms—to give correct matching is recommended. The low level input is rated at 3 mV, 1 Megohm. This suits any crystal or high impedance moving coil or ribbon microphone. Where low impedance types are to be used, and of course these

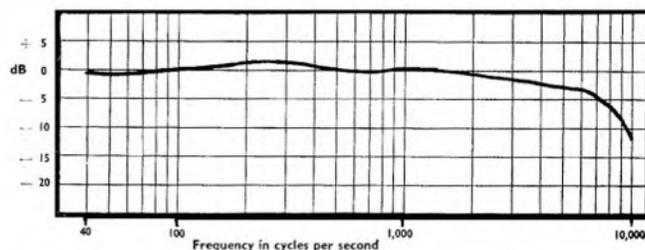
Fig. 1. Record/replay frequency response of Ferrograph 5/A.N. Top: $7\frac{1}{2}$ ips, showing range of bass and treble controls (dotted line); and bottom, range at $3\frac{1}{2}$ ips.



are best because they allow you to employ long leads, the Ferrograph 30 ohms to 1 Megohm matching transformer must be inserted at the tape recorder end of the microphone cable.

At the rear of the machine are the usual three-pin mains socket, a not-so-usual auxiliary octal socket providing HT and LT feeds for a tuner, etc., and two removable links. The first of these links is in auxiliary octal socket providing HT and it literally cuts off the erase and bias supplies to the deck when removed. A possible use of this link would therefore be, as a safety precaution, to remove it before putting the recorder in the hands of inexperienced operators who are to perform play-

Fig. 2. Replay only response of Ferrograph 5A/N at $7\frac{1}{2}$ ips.



back only of valuable tapes. A more sophisticated use is to insert a new plug, instead of the shorting link, wired to a separate rheostat or volume control. This allows you to "fade erase" previously recorded material and interject new recordings smoothly.

The second link disconnects the erase supply only, and enables you to "superimpose" new material without erasing the old.

Two of Ferrograph's own patent Hublok metal spools were supplied. These spools are an accessory that you either love or hate. They incorporate two small spring loaded levers. The first springs back to grip the spool spindle and so keeps the spool from rattling or falling off when the machine is being carried. The second raises a green catch on the hub into which you poke the loose end of the tape. Both these features can speed up and improve operations, once you have taken the trouble to get the feel of them, but I have met people who think they are a nuisance.

COMMENTS ON PERFORMANCE

Listening to tape records and some of my own tapes on the 10 x 6 inch built-in loudspeaker, I found the quality to be excellent by portable standards; that is remembering the inevitable limitations of any portable cabinet for good bass reproduction. I was thus encouraged to relay the output through a hi-fi loudspeaker and

which however is slight and will have the effect of making the machine more nearly compatible for replaying American NARTB characteristic tapes.

This is clearly a machine that deserves to be used in association with high fidelity equipment—a good external amplifier and/or loudspeaker, and a better-than-average microphone. The Reslo RBL/T ribbon microphone is recommended in the Ferrograph Manual (easily the best handbook I have yet seen supplied with a tape recorder) and one of these microphones was supplied with the machine for test. Good quality recordings were made with this microphone and also with a variety of domestic and professional microphones which happened to be to hand. I can confidently recommend this recorder, as I have been verbally recommending its predecessors for many years.

Manufacturer's Specification

Tape Speed: $7\frac{1}{2}$ and $3\frac{1}{2}$ ips.
 No. of Tracks: two.
 Maximum Spool Size: $8\frac{1}{2}$ in.
 Power Supply: 200-250 volts AC.
 Audio Output Power: $2\frac{1}{2}$ watts.
 Frequency Range: 40-15,000 cps ± 3 dB at $7\frac{1}{2}$ ips; 40-10,000 cps ± 3 dB at $3\frac{1}{2}$ ips.
 Wow and Flutter: less than 0.16 per cent at $7\frac{1}{2}$ ips.
 Inputs: Low (3 mV 1 Megohm); High (150 mV 80 Kilohms).
 Signal-to-Noise Ratio: better than 50 dB in the range 200 cps to 15,000 cps.
 Rewind Time: less than one minute for 1,750 ft.
 Overall Dimensions: $18\frac{1}{2}$ x $17\frac{1}{2}$ x $9\frac{1}{2}$ in.
 Weight: $49\frac{1}{2}$ lb.
 Price: £89 5s.
 Manufacturers: The Ferrograph Company Ltd., 84, Blackfriars Road, London, S.E.1.

Contest tape to be broadcast by BBC

"THE Mind's Eye," the thirteen-minute feature tape which won the Club's Section of the 1964 British Amateur Tape Recording Contest is to be broadcast on January 25 in the BBC's Home Service.

This dramatised account of the work of the Talking Book Library for the Blind can be heard in Jack Singleton's magazine programme "Home this afternoon" broadcast from 4.45 to 5.25 p.m.

Walter Buchanan who produced the tape with Mike Avel on behalf of the tape section of the Triumph Owner's Motor-cycle Club has arranged that the fee for the broadcast—in common with all other rewards received for their prize-winning tape—will be paid to the Talking Book Organisation.

Part of the tape deals with the shortage of volunteer readers for this worthwhile service, and Walter Buchanan draws readers attention to this need, and requests interested persons to contact the Manager, The Talking Book Library, Mount Pleasant, Alper-ton, Wembley, Middlesex.

found the frequency range and absence of background noise or distortion to be of a very high order. The Ferrograph output power is $2\frac{1}{2}$ watts. Where more power is needed, for large rooms, a high fidelity amplifier could be included, but where quality only is concerned the Ferrograph amplifier may be rated as true hi-fi.

Plotting the frequency response confirmed these subjective findings, the record/replay graph being within ± 3 dB from 40 to 15,000 cps at $7\frac{1}{2}$ ips and 40 to 10,000 cps at $3\frac{1}{2}$ ips as Fig. 1 shows. The range of the bass and treble controls is also indicated on the $7\frac{1}{2}$ ips graph. The playback only response, on CCIR test tapes, showed a falling off at high frequencies (see Fig. 2)

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Tape records reviewed

The RAF's pride in its music

CLASSICS



By Edward Greenfield

MUSIC OF THE RAF. Central Band of the RAF; conductor, Wing-Co. J. L. Wallace. H.M.V. (TA-CLP 1705) 3½ ips, mono, 35s.

The Royal Air Force has always taken pride in its music (influenced perhaps by Walford Davies's stirring RAF March Past) and during the war the Central Band collected some of the most renowned musicians during their war service. That a very high standard is still kept up is clear from the playing on this tape, and it can be recommended highly to anyone interested in military music. The standard of discipline is commendably high even for servicemen, but as so often with military band playing that discipline is often won at the expense of what one might describe as "breathing-space," the microscopic fluctuations from rigid tempo which bring music to life.

It is noticeable here how much more alive the playing is when it is a question of having a good march tune that goes with a swing rather than, say, the Allegro deciso from Handel's Water Music. That is perhaps as it should be, for even Handel's outdoor music is not the best-adapted material for military bands, coming as it does here by way of Harty.

One track of the tape is called "Parading of the Queen's Colour" with even the little tags of music for the general salute included. The second track covers the music of a passing-out parade at the RAF College, Cranwell, finishing with Auld Lang Syne and that unavoidable RAF March Past.

CONCERT MASTERPIECES No. 2. Rimsky-Korsakov: Easter Festival Overture; Sarasate: Zigeunerweisen; Johann Strauss: Blue Danube Waltz; Tchaikovsky: 1812 Overture, Vienna Symphony Orchestra conducted by Heinrich Hollreiser. Recotape (2 RSL 508), 3½ ips, half-track stereo, 55s.

Recotape have excelled themselves in the inaccuracy of the labelling. "Korsakov" gets an "r" after the "a" (arguably deliberate but not a very likely transliteration from the Russian) and "Zigeunerweisen" (Gypsy Melodies) is spelt so inaccurately that for our composer's sake I hesitate to try and repeat it. On top of that no mention is made of the fact that this is a stereo tape. I started playing it mono only to find that the whole programme was included in the outward direction and only reverse sounds occupied track two. That may not argue very well for the quality of recording, when obviously I was making do

with a single channel, but in fact properly reproduced it is clearer than many Recotape issues and the five-inch spool is very well packed indeed.

Rimsky-Korsakov's Russian Easter Festival Overture is a colourful, enjoyable piece. The Sarasate is a virtuoso showpiece for solo violin, and it seems outrageous when the playing is so rich and confident that the name of the soloist, Aaron Rosand is included not on the outside label but in the smallest possible type in the middle of the sleeve-note.

The Blue Danube is beautifully played with the authentic Viennese lilt and (most agreeably) with all the repeats taken. Tchaikovsky's 1812 makes a sure-fire finale, though there have been more brilliant recorded performances than this.

BERLIOZ: Fantastic Symphony; MOUSSORGSKY: Night on the Bare Mountain. Vienna Symphony Orchestra conducted by Heinrich Hollreiser. Recotape (RML 506), 3½ ips, mono, 50s.

This is a generally straightforward and often exciting performance of Berlioz's masterpiece, one of the miracles of music written just after Beethoven's death but looking forward well into our own century. It is a pity the recording quality is not clearer, for Berlioz's orchestration is unfailingly brilliant. Hollreiser gives a clear-cut account of the first movement, then takes the waltz on the slow side but with a good rhythmic sense. The March to the Scaffold is very excitingly done, and though the opening of the final Witches' Sabbath lacks tension, Hollreiser's sense of drive increases as the movement gathers momentum.

One great advantage of having the symphony coupled with another work is (quite apart from the extra music provided) that the whole of the slow movement is accommodated on the first track. That is what happens on the Karajan version available on a Columbia 7½ ips tape. Night on the Bare Mountain is taken at a rather leisurely pace—the Gopak rhythms that is, which should sound rather more demonic—but the woodwind playing is excellent, particularly the flute in the final slow section. At the end the tape provides between five and ten minutes of usefully empty silence.

POPULAR



By Fred Chandler

A tribute to a great singer

HOMMAGE à PIAF. Edith Piaf. Columbia (TA-33SX 1623), 3½ ips, mono, 35s.

The tragic death of Edith Piaf last year after an illness, left Parisian night-clubs and the popular music world bereft of one of the greatest singers France has produced. Her inimitable style, typifying the accepted French attitude to life, will be sadly missed by her followers.

This issue, the first of Piaf's recordings to appear in tape form features her in a variety of moods. From the first track of *L'Accordeoniste*, evoking memories of the Left

EMI RESTYLE TAPE ISSUES

VERY welcome indeed is E.M.I.'s changeover to smaller four-inch reels to hold their tapes. Re-attaching the tape's leader (using the small label formerly supplied) after playing a tape was never satisfactory, and standard tape-clips aren't normally successful with a half-filled reel. Even now the reels are only two-thirds filled, but it is an improvement.

The boxes have been modified also, and those troublesome open spaces at

the corners have now been filled in so that the tape does not unwind further than the edge of the reel. Some other companies could take a hint from this idea.

E.M.I. are to be congratulated on this move. The day cannot be far off, we hope, when the tape purchaser has as much information as his disc-buying colleague. I should like to see sleeve notes from the discs supplied on a pamphlet within the box.

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Bank and the smaller night clubs and bistros; through *Les Trois Cloches*, which relates the life story of Jimmy Brown and the three bells which herald the important stages of his life; to the eternal *La Vie En Rose*, Piaf moves completely into the story she tells in each of the twelve numbers featured.

Sad, gay, dejected, ecstatic, but always vital: her songs could be reminiscent of her own life. Perhaps this is why she was able to eject such feelings into her singing. Her earthiness was unique.

My favourites on this tape are *La Ca Ira*, exemplifying the Frenchman's love of splendour and gaiety, mixed with relief, at a post-war martial parade; and the alternatively jolly and reflective *Milord*. I missed her rendering of "Rien" in this issue, but maybe we can look forward to this and others of her repertoire in a future issue.

THE FIVE FACES OF MANFRED MANN. HMV (TA-CLP 1731), 3½ ips, mono, 35s.

The appearance of Manfred Mann and his four colleagues at a time when the pop market was already almost saturated with groups, may account for their not achieving the popularity of some other groups. The return to favour of the single vocalists may prevent their ever repeating the success of *Do wah diddy*; but either way this album does nothing to enhance their reputation.

Their music is lively, and as normally expected of groups nowadays, many of the tracks are scored by the members themselves. But one looks for something different in an album—this time to no avail.

Most suitable for party-time. My niece loved it, and cavorted in the expected fashion; but then she's only nine. The teenagers may love it.

TOUCH OF LATIN. Mr. Acker Bilk and the Leon Young String Chorale. Columbia (TA-335X 1624), 3½ ips, mono, 35s.

Maria Elena pops up yet again on this tape, and I really enjoyed Mr. Bilk's interpretation. The mood is fine while he plays solo, and the drifting strings of the Leon Young violins accentuate the warmth of Acker's clarinet.

This is a mixed bag with half the numbers being tunes readily recalled from the past. *Perhaps, perhaps, perhaps; Frenesi; Lonely Senorita; and La Paloma* (The Little Dove) being particularly well played.

Bilk achieved some notable successes with his Paramount Jazz Band. His departure from the jazz field may account for his recent absence from those same charts; but he proves he is still master of his instru-

ment, and the velvet control he has over his clarinet is enhanced with the slower numbers he performs here.

Twelve numbers in all, and if he is at his best with *Pancho's Love Song* and *Lonely Senorita*, his other tracks are nothing short of cosy, regenerating the warmth of his "Stranger on the Shore" hit.

HITS HAWAIIAN STYLE. Big Ben Hawaiian Band. Columbia (TA-335X 1641), 3½ ips, mono, 35s.

A real sucker for the lilting music of the South Pacific, I fairly gloated when this tape first appeared on my desk. Never a fan of the Big Ben Banjo Band, I approached the listening session of this tape with some apprehension. However, the echoing phrases of *Spanish Harlem* had hardly died before one again is transplanted on to some tropical paradise, this time with Frank Ifield's hit *I Remember You*, and the remainder of the tape is equally enjoyable.

The presentation is almost corny with the emphasis on Hawaiian-style music. Even the cover shows grass-skirted girls holding a cut-out "Aloha" greeting and background of palm trees and a distant reef. But it is as if each tune was scored to be played in this form.

Shapiro's *Walking back to happiness; Bilk's Stranger on the shore; Mercouri's Never on Sunday; Richard's The Young Ones*, and straight on through *Diana, Moon River, Dance on, and Roses are Red*. Oh! of course the inevitable *Maria Elena*. I've probably heard this particular favourite of mine in every possible rendition now.

On this tape, E.M.I. and the Big Ben Band have possibly succeeded in doing the impossible—issuing "second-hand" tunes in a style that completely removes any trace of the previous owner.

The music, largely electronic anyway, is a natural for a recording session, and the experts continue to provide excellent tapes.

NEXT MONTH

Owing to pressure on space the article on amplifier design had to be held over from this issue. It will appear in our next issue together with a feature on

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The tapes reviewed this month are issued by E.M.I. Records Ltd., 20, Manchester Square, London, W.1.

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NEW PRODUCTS

BATTERY/MAINS MACHINE BY OPTACORD

A NEW battery and mains-operated transistorised tape recorder is announced by Highgate Acoustics, importers of the Loewe-Opta range of equipment. The new model, Optacord 408 (illustrated right), is a single-speed two-track instrument operating at 3½ ips.

Measuring 9½ x 8 x 3½ inches, the Optacord 404 weighs only four pounds, and will sell at 39 guineas.

A playing time of sixty minutes per track is available using triple-play tape on the 4½-inch spool accommodated. Rewind for such a tape being completed within 2½ minutes.

Power supply is from five 1½ volt U2 batteries; a 6 or 12-volt car battery (12 volt used in conjunction with extra resistance LR412); or from AC mains 110-240 volt 40-60 cycles. Power consumption is rated at seven volts (amplifier).

Among the features are facilities for remote control operation (particulars on application); push-button operation for wind, rewind, play/record and stop; safety erase lock to prevent accidental erasure; headphone monitoring; tape position indicator; and a combined battery-life/recording level indicating meter.

A dynamic permanent magnet 5 x 3-inch oval cone loudspeaker is incorporated, and it also features a 5 ohms extension loudspeaker socket.

Inputs are provided for microphone or radio (5 mV across 5 K ohms). Outputs are for radio (1.5 mV across 10 K ohms); and power output (800 mW across 5 ohms). Headphone monitoring (via a socket at one volt across 1 k ohms) scans the range 90-10,000 cps at the radio output.

The transistor line-up includes five A/C 151, four A/C 153, one T/F 78; and diodes include two OA 85, and one Z 6 full wave selenium rectifier.

Highgate Acoustics, 71 Great Portland Street, London, W.1.

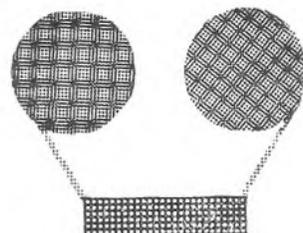
BAIRD INTRODUCE THEIR LATEST MODEL

RECENTLY released by Baird is the Tapemaster Model 282, a single-speed, two-track tape recorder operating at 3½ ips.

Their new model, illustrated right, incorporates the BSR tape deck featuring joystick controls. It will accommodate 5½-inch spools, providing a playing time of 45 minutes per track using standard play tape.

The quoted frequency response is 60-8,000 cps; signal to noise ratio given as 50 dB down, and wow and flutter as 0.4 per cent total (RMS).

Among the features of the Tapemaster 282 is a magic eye recording level indicator, safety erase lock, and a combined tone control. Rotary controls are incorporated and ample storage is provided for accessories. Other features include a built-in



8 x 3-inch elliptical loudspeaker handling the power output of three watts. High impedance inputs are provided for microphone and radio/gram, and an output socket is provided for an extension speaker (3-5 ohms).

It measures 14½ x 12 x 5 inches, and weighs 17½ lb. Power supply need is 200-



250 volts, AC, 50 cycles. Power consumption is rated at 60 watts.

Included in the price of 19 guineas is an Acos 40 crystal microphone, 5½-inch spool of tape, spare spool, and a recording lead.

Baird TV Distributors Limited, 414, Chiswick High Road, London, W.4.

FIRST STEREO RECORDERS BY ELIZABETHAN

FOUR of the latest tape recorders to be added to the Elizabethan range include two four-track stereo models, and their first automatic tape recorder.

First of these machines is the LZ507. This is a four-track, three-speed fully-transistorised model, selling at 49 guineas. With accommodation for seven-inch reels, it provides a playing time of 32 minutes per track using standard-play tape (1,200 ft.) at the highest speed of 7½ ips. Rewind for such a length being achieved within two minutes.

The quoted frequency response is 60-

12,000 cps at 7½ ips, 60-6,000 cps at 3½ ips, and 60-3,500 cps at 1½ ips. Signal-to-noise ratio is given as better than 40 dB. Cross-talk rejection is given as better than 40 dB.

Among the features are a digital rev. counter, two VU recording level meters, facilities for automatic tape end stop, and two 8 x 5-inch detachable loudspeakers. Inputs are provided for microphones and radio/phono, and a single operating control selects all functions.

The LZ507 (illustrated top in our photograph below) measures 22 x 15 x 7½ inches and weighs 30 lb.

The second of their stereo models is the 65-guinea LZ511. This is a four-track, three-speed transistorised machine, which will also play two-track stereo programmes.

The quoted frequency response is 60-14,000 cps at 7½ ips, 60-10,000 cps at 3½ ips, and 60-4,000 cps at 1½ ips. Signal-to-noise ratio is given as better than 40 dB, cross-talk rejection as better than 50 dB, and wow and flutter as not greater than 0.15 per cent at 7½ ips.



The LZ511 (illustrated above) also features digital rev. counter, automatic tape end stop, separate channel selector switches, facilities for monitoring through the loudspeakers, facilities for sound on sound recording, and two VU meter recording level indicators.

Two 8 x 5-inch detachable loudspeakers are incorporated which handle the power output of 6 watts (three each channel). Leads are supplied so that the loudspeakers can be operated sixteen feet apart.

Accommodation is available for seven-inch reels, giving a playing time identical to the 507. 1,200 ft. of tape is rewound within two minutes.

The power supply required is 200-250 volts, 50 cycles, AC, and the power consumption is rated as 115 watts.

Inputs are supplied for microphones and radio/phono; and sockets are supplied for four speaker output (two pairs). Controls include volume, on/off, and separate bass and treble operation, all duplicated for each channel. A single operating control is supplied for all functions.

The 511 measures 25½ x 13½ x 8½ inches, and weighs 36 lb.

The third of their machines is the Automatic Two selling at 26 guineas. This two-track machine (illustrated top right) has a four-track version, the Automatic Four, selling at 28 guineas.

This is a single-speed model accommodating 5¼-inch spools, providing 45 minutes playing time per track using standard-play tape (850 ft.) at 3½ ips. The quoted frequency response is 60-10,000 cps.

Features, additional to its ability to record without the need for recording level adjustment, include facilities for superimposition, a digital rev. counter, and safety erase lock mechanism to prevent accidental erasure. The built-in 7 x 4 elliptical loudspeaker handles a power output of 3½ watts.



Inputs are provided for microphone and radio/pick-up, and outputs for an extension loudspeaker (3-5 ohms) and external amplifier (22 K ohms). The valve line-up includes an ECC83, ECL86, EF89 and a metal rectifier. The mains voltage is 200-250 v, AC, 50 cycles, and mains consumption is rated at 60 watts. Other voltages are available to order.

Housed in a wooden cabinet covered in washable PVC, and fitted with an accessories storage compartment, the Automatic Two measures 14½ x 13½ x 6½ inches, and weighs 16 lb.

Elizabethan Tape Recorders Limited, Crow Lane, Romford, Essex.

TRANSISTORISED MODEL IN EAGLE RANGE

A NEW transistorised mains powered tape recorder has been added to the Japanese Eagle range of products handled by B. Adler & Sons (Radio) Ltd.

Their new model, Eagle ST-79 (illustrated below) is a two-speed half-track recorder operating at 7½ and 3½ ips. It has a quoted frequency response of 100-10,000 cps. Accommodation is available for seven-inch reels, providing a playing time of 64 minutes per track using standard-play tape at the slower speed.

Among the features are facilities for mixing, monitoring, meter recording level indicator, digital rev. counter, a combined



tone control, and an elliptical 6 x 4-inch loudspeaker.

Quarter-inch jack-plug sockets are available for microphone and radio inputs, and similar outputs are available for monitoring and an external loudspeaker.

Push-button controls are incorporated for play, stop, rewind, and fast forward.

The power supply required is 220-250 volts, 50 cycles.

The Eagle ST-79 measures 12 x 6¼ x 9 inches, and weighs 14½ lb.

A dynamic microphone, crystal earphone and seven-inch reel of tape is included in the price of £28 10s.

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COTSWOLD

A live recording session made with the assistance of local soprano Mrs. Dora Gwilliam and her accompanist Mr. George Harris was a feature of one of the recent meetings of the Cotswold Society. Together they gave a programme of ballads and traditional songs, which will be included in the club's magazine *Cotswold Roundabout*. One of the club's blind members, pianist W. Martin, also played for the members' recorders.

Balancing piano and vocalist is an exercise of some complexity, and the evening provided valuable experience for members, besides adding to the store of material constantly needed to keep up the club's welfare work.

Among equipment being used were two Tandbergs, three Ferrographs, a Telefunken 85, and a host of smaller machines including two battery portables, a Butoba and a Philips. In use for the first time was a system of cue lights designed and made by Eric Jones. Obviating verbal cueing, it provided indications for silence, recorders-on, recording proper, recorders-off, and relax—a most useful facility for which the society is most grateful to its founder's member.

At the following meeting the tapes made during the evening were studied. One particular song had been recorded on different equipment, and with varying microphone positioning. Notable results were achieved by new member Miss Stock who used relatively simple equipment for her first recording session with the club.

The closing down of local railway services saw members actively recording the passing scene. June and Peter Turner were at Chalford Station one night to record the once-familiar sound of the Chalford Auto, together with comments of passengers and bystanders. Peter Duddridge was on a similar assignment with the Gloucester-Hereford line. With a still and windless night assisting matters, some excellent recordings were made for the club's archives.

Arrangements have been completed with the Gloucestershire Community Council for the wider distribution amongst Old Folks' Clubs of their regular magazine. This is expected to result in a considerable augmentation of its usual listeners.

Secretary: Peter D. Turner, Pike Cottage, Frampton Mansell, Stroud, Gloucestershire.

FERROGRAPH OWNERS' CLUB

The second edition of *Ferro*, a twelve-page bi-monthly magazine issued by the British Ferrograph Owners' Club, is now being issued. Complete with up-to-date listing of members' addresses and equipment; it also contains information on the club's plans for the New Year.

One of their first ventures will be to organise a visit to the Ferrograph offices in London, where out-of-town members hope to meet their city counterparts.

A round-robin is also going the rounds. Available in mono and stereo versions, this is making the circuit between four members at present. It is hoped to enlarge this circle, and owners of Ferrograph tape recorders are invited to contact the secretary with this in mind.

Secretary: R. D. Littler, "Kingswood," Silverne Drive, Ellesmere Port, Cheshire.

FRIERN BARNET

A change of address for the secretary of the Friern Barnet tape club is announced. Prospective members and other clubs should contact Mr. A. S. Andrews at 86 Goldsmith Road, Friern Barnet, London, N.W.11.

GLASGOW

At the AGM of the tape section of the Radio Club of Scotland, former secretary A. MacCallum relinquished his post to John Douglas.

Also announced was the organisation for meetings in 1965. These are now to be held at the club's new headquarters at 336 North Woodside Road, Glasgow, N.W.

In his New Year letter to *TAPE Recording Magazine*, chairman John Wood spoke of the success the club had achieved increasing their membership as a direct result of reports published in this section. Many of their more recent members joined via *TAPE*. Secretary: John Douglas, 113 Novar Drive, Glasgow, W.2, Scotland.

HARLOW

A tape club has been formed in the Harlow district. At the inaugural meeting four persons attended, and the following meeting saw membership doubled. Future meetings are to be held weekly.

Plans are now afoot to organise a stereo demonstration, lectures by local radio experts, and the loan of a cine projector for a film show incorporating taped commentary.

Advice on possible activities is invited from other clubs; and interested persons are invited to contact the secretary regarding membership.

Secretary: E. J. Hills, 41 Brays Mead, Harlow, Essex.

IPSWICH

Members of the Ipswich society are now meeting at the Royal George Hotel, Colchester Road, Ipswich, on alternate Thursdays, at 7.30 p.m. At their AGM, secretary and treasurer posts remained with Malcolm Wilding and Russell Burgess, and John Stegall was elected as new chairman.

Among recent visitors to the club has been Mr. K. C. Smith of Truvox Ltd. who demonstrated their range of tape recorders and tape units together with their new transistorised stereo amplifier and loudspeaker system.

Local musicians Terry Blake and Clive Moore (pianists) together with Russell Kellas and his cornet also visited the club at one of their meetings when a live recording session was arranged. The musical programme included some original compositions, and many mono and stereo recordings were made with the largest number of tape recorders and microphones ever seen at their club meetings.

The club has split into groups specialising in hi-fi, cine, blind services, play-reading, and outdoor recording, all of which are actively engaged.

One of the club's recent activities was to record the complete production by the local G. & S. Society of the *Pirates of Penzance*. The recording, made by Colin Lockwood and Paul Cross, will be presented to Ipswich Blind Society for a future programme.

Secretary: Malcolm Wilding, 49 Tramere Grove, Ipswich, Suffolk.

SOUTH DEVON

An inter-club competition evening was organised by the South Devon tape society when they welcomed to their December meeting members of the Plymouth club. Tapes from each club were entered under headings including interview, music, composition (play, sketch or documentary), and actuality. Three judges were chosen, and these were to award points to each team accordingly. First prize went to the hosts who scored 231½ points against their visitors' 226.

At a later meeting, their last of 1964, the contest fever was again on the South Devon members when they arranged a Sound Quiz. Members and guests were to provide sounds to be guessed by the remainder of the audience.

In his speech, marking the end of another successful year, the club president, Donald Aldous, Technical Editor of *Audio Record Review*, complimented the members on establishing themselves with the local Education Committee—meetings are now being held in conjunction with the Further

Education Centre. He also spoke of club participation in the British Amateur Tape Recording Contest, and encouraged members to enter a club tape.

For the first of their January meetings, members were to be entertained with a tape/slide show presented by Arthur Knight. The programme was to include a feature on Switzerland entitled *Overland 64*, a tour through seven continental countries by Vic Chapple, and a professional tape/slide lecture entitled *Impact in Colour*, by Graham Woodmansterne.

Among recent programmes at the club have been a demonstration by the club president, who related the history and development of stereophonic sound, illustrating his talk with examples of the early experiments in 1881. Jeffrey-Brooke Smith then demonstrated his stereo equipment based on one of the Truvox decks. He used Brian Mudge's Lowther speakers.

The first of their November meetings included a demonstration on electrostatic speakers presented by Plymouth dealers, Albert Ford Ltd. This was followed on November 18 by a tape and cine demonstration of the "Elements of lip synchronisation" by Joe Pengelly, Peter Cox and John Penty. The meeting was attended by the Torbay Amateur Cine Society.

THANET

A stereophonic demonstration was one of the highlights of a recent meeting of the Thanet tape club. Presented by secretary George Watson, it was heard by invited guests including one of the Dover Lifeboat crew, and a number of young people. Members Mr. Philpott then entertained with recordings of some Gilbert and Sullivan extracts taken from his tape library.

The club is currently producing two hospital tapes. This is their first venture of the kind, and their initial programmes run for an hour each.

Their sound magazine, issued monthly, is now being despatched to overseas members of the club. Some 65 members now receive the programme.

Secretary: George Watson, Studio One, Woodlands Avenue, Birchington, Kent.

TRANSWORLD TAPE EXCHANGE

News of the inauguration of a series of international round-robin tapes is received from Michigan in America. John Howe has prepared half-a-dozen tapes on varied subjects which he intends to distribute to as many countries as possible.

The first of the new tapes is already in circulation, and Mr. Howe welcomes letters professing interest in receiving this and future tapes. He proposes to include six persons on any one circuit (with a maximum of eight) to encourage rapid circulation of each programme.

The tapes include a digest of sound news, with items of interest presented in documentary form. The tape is being supplied free, and Mr. Howe says: "It is just a matter of establishing contacts now." His scheme, organised in co-operation with some of the established Tape Exchange organisations, including the Voicespondence Club, the World Round-Robin Club and World Tape Pals, emanates from the problem American tape enthusiasts face now that their own Tape Journals have ceased publication.

Interested readers are invited to contact Mr. Howe direct, at 84 Sproat, Detroit, Michigan, 48201, U.S.A.

WEST MIDDLESEX

A change of secretary for the West Middlesex club, with Dennis Marks taking over from former secretary H. E. (Sandy) Saunders. The club, which has not featured in this section for some while, still continues to hold regular meetings.

At the recent meeting organised by the London Society to discuss the formation of a local association of clubs, Mr. Marks was accompanied by several of his fellow-members.

Secretary: Dennis R. Marks, 47 Church Road, Teddington, Middlesex.

TAPE EXCHANGES

TAPE recorder owners who wish to contact others with similar interests, to exchange news and views by tape are invited to fill in and return the form on page 74, giving their name, age, address, special hobby or interest for this section.

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

Andrews, John (20). 23, Victoria Avenue, Donnybrook, Dublin, Eire. Travel, photography, cinema. 7½, 3½, 1½, 15/16 ips. 7-inch spool. Philips EL3549, four-track. West Germany, Spain, Italy.

Ask, Leonard A. (37). 7, High Street, Gorleston, Great Yarmouth, Norfolk. Bible study, tropical fish. 3½, 1½ ips. 7-inch spool. Cossor, four-track and Philips battery portable.

Bass, Sam (32). 98, Orme Road, Newcastle, Staffordshire. Pop music, Jolson, Lanza, Formby, Bobby Breen. 7½, 3½ ips. 7-inch spool Philips, four-track and Elizabethan.

Bird, David F. (25). Radac House, 92, Gardiner Street, Gillingham, Kent. Cine photography, decorating, music. 3½ ips. 7-inch spool. Philips EL3541/15B four-track. Male contacts preferred in England.

Brooking, Mrs. Margaret (25). 37, Upper Church Road, Weston-super-Mare, Somerset. Dancing, TV, pop music. 7½, 3½, 1½ ips. 7-inch spool. Grundig TK35 and TK30. England only, no need to write.

Browne, Dave (32). 265, Mays Lane, Barnet, Hertfordshire. Photography, reading, music. 7½, 3½, 1½ ips. 7-inch spool. Robuk RK4 four-track. North London and UKA. Letters first please.

Curtis, Goff (46). 45, Holyrood Avenue, South Harrow, Middlesex. Amateur Radio, flying, motorcycling. 3½ ips. 5½-inch spool. Elizabethan FT1. UK and Commonwealth.

D'Arcy, David Franklin (23). 31, St. Mark's Road, Saltney, Chester. Church recording, cine films. 3½ ips. 5½-inch spool. Fidelity Argyle.

Dyke, Sgt. Ray, (40). 55, Lethe Grove, Colchester, Essex. C & W music. 7½, 3½ ips. 7-inch spool. Repts R10 Philips EL3541.

Edmett, Robin (21). 13, Whitehorn Lane, Letchworth, Hertfordshire. 8mm cine, wine making, scouting. 3½ ips. 7-inch spool. Cossor CR1604. Sweden and UK.

Flanagan, Clement (27). 30, Athenry Road, Tuam, County Galway, Eire. Pop music and films. 3½ ips. 7-inch spool. Philips EL3516G. York, Leeds, Dublin.

Green, Harold (37). 11, West Brampton, Newcastle, Staffordshire. Travel, geography, films, autographs, swing music. 7½, 3½ ips. 8½-inch spool. Ferrograph stereo two/four-track. Bermuda, Arizona, UK.

Harrison, John Wilfred (27). 48, St. Wilfred's Road, Standish, Wigan, Lancashire. 35mm photography, hi-fi. 7½, 3½, 1½ ips. 7-inch spool. Truvox PD82. Overseas.

Lorbett, Miss Judith (20). 44, Burdon Terrace, Jesmond, Newcastle upon Tyne, Northumberland. 35mm photography, musicals, reading. 7½, 3½, 1½ ips. 7-inch spool. Stella ST450.

Molloy, Jim (37). 15B, Aberporth Road, Gabalfa, Cardiff, South Wales. Humour, organ music. 7½, 3½, 1½ ips. 7-inch spool. Philips EL3534, four-track stereo. UK, USA, Continent, Australia. Letters not needed.

Montgomery, William (23). 1, Carnethy Court, Penicuik, Scotland, Midlothian. Photography, music. 3½ ips. 7-inch spool. Philips, four-track.

Noakes, Eric (36). 41, Aldermore Lane, Stoke, Coventry, Warwickshire. Short-wave radio. 3½ ips. 5½-inch spool. Philips EL3552.

(Continued on page 74)

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3. A to Z in Audio by Gilbert A. Briggs (1960). 224 pages, 160 illustrations. 15s. 6d. <i>A first-class book of reference for the subject.</i>		15. Loudspeakers (Fifth edition) by Gilbert A. Briggs (1963). 336 pages, 230 illustrations. 25s. <i>All aspects of the design and performance of loudspeakers and enclosures are dealt with in non-technical terms.</i>		27. Stereo and Hi-Fi as a Pastime by Douglas Gardner (1959). 148 pages. 15s.	<i>simple language to these and many other sound effects problems are given in this first-class little book.</i>
4. Audio and Acoustics by Gilbert A. Briggs (1963). 168 pages, 140 illustrations. 10s. 6d. <i>Acoustical Consultant James Moir as sub-editor. A revised but basically original work from the well known "Sound Reproduction."</i>		20. More About Loudspeakers by Gilbert A. Briggs (1963). 136 pages, 112 illustrations. 8s. 6d. <i>Deals with the latest trends in non-technical terms, and takes a new look at questions such as response and impedance, load matching, adding a speaker, listening tests, stereo.</i>		29. Tape Recording and Hi-Fi by Douglas Brown (1961). 160 pages. 5s. <i>Now as a paperback this interesting book by the Editor of "Tape Recording Magazine" is very good value for money.</i>	
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7. Cabinet Handbook by Gilbert A. Briggs (1963). 112 pages, 90 illustrations. 7s. 6d. <i>Intended for the do-it-yourself man, and contains vital information on design and acoustic principles particularly in relation to compact enclosures which are now so popular for stereo.</i>		22. Practical Stereophony by H. Burrell-Hadden (1964). 159 pages. 37s. 6d. <i>The author, an instructor at the BBC, has been actively engaged for many years in research in this field, as a result the book is mainly directed towards those who make this art their profession, but there is much for the amateur enthusiast.</i>		33. You and Your Tape Recorder by Norman Paul (1962). 4s. <i>Very good value by a past winner of the British Amateur Tape Recording Contest.</i>	
9. Hi-Fi for the Music Lover by Edward Greenfield (1959). 40 pages. 3s. <i>Mr. Greenfield, well known music critic of "The Guardian," sets out to help musicians and music lovers to cope with the baffling technicalities of recorded sound, and aims at giving the music lover at least a basic know-how to become a hi-fi enthusiast without developing into a hi-fi maniac.</i>		25. Sound Recording Works Like This by Clement Brown. Illustrated. 10s. 6d. <i>Part of "Science Works like this Series" the book is intended for the younger members of the family.</i>		34. Introduction to the Tape Recorder (revised edition 1964/65) by Charles Langton. 48 pages, many diagrams. 3s. 6d. <i>Best possible value for the newcomer. The technician however, has not been left out and the radio service apprentice studying for the RTEB Radio Servicing Certificate will find in the text sufficient material to progressively support his class work in the principles of tape recording.</i>	
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TAPE EXCHANGES

(Continued from page 71)

Yusoff, Eldaeni Wazir (22). 21, Clova Road, Forest Gate, London, E.7. Photography, electronics, music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Telefunken M97, stereo. Europe, USA, South America.

OVERSEAS READERS

Bennet, Ronald (59). Box 477, Sidney, British Columbia, Canada. 35 mm and 8 mm photography, boating. 7 1/2, 3 1/2 ips. 7-inch spool. Sony TC200, four-track stereo.

Freidlein, Ed (38). 191-35, 113, Avenue, Hollis, New York, NY, USA 11412. Photography, art, theatre, music. 7 1/2, 3 1/2 ips. 7-inch spool. Wollensak 1500 and 1580 (two and four-track, mono and stereo). Male contacts required in UK, USA and Europe.

Gardner, William (45). RR3, Forest Road, Danville, Quebec, Canada. 7 1/2, 3 1/2 ips. 7-inch spool. Philips 100 recorder. Family groups preferred in Africa and UK.

Lewis, Llewellyn J. 25, Clifton Heights, De Korte Street, Braamfontein, Johannesburg, South Africa. Travel, cars, sports. 3 1/2 ips. 7-inch spool. Suria recorder, four-track. USA, Canada, UK, Europe, Australia, New Zealand.

Miller, Kenneth. 1500, Grand Concourse, New York 57, NY, USA. Outdoor sound hunting. 15, 7 1/2, 3 1/2, 1 1/2, 15/16 ips. 5-inch spool. Uher and Fi-Cord battery portables.

Osborne, Roy Alan (38). Parkerville Children's Homes, Parkerville, Western Australia. Sound effects, music, especially Hawaiian. 3 1/2 ips. 5 1/2-inch spool. Telefunken M96 (four-track) and M300 (battery portable).

Porcaro, Paul (29). 328, Central Avenue, Brooklyn, New York, NY, USA. Photography, electronics. 7 1/2, 3 1/2 ips. 7-inch spool. VM-750A tape recorder.

Welch, Roger (24). P.O. Box 514, Brunel, North Borneo. Records, comedy. 3 1/2 ips. 5 1/2-inch spool. Home-built recorder (BSR deck). Scandinavia and Europe.

TEENAGE READERS

Bereza, Andrzej (15). Penley Hall, Near Wrexham, Denbighshire. 8 mm cine photography, pop music. 3 1/2 ips. 5-inch spool. Walter tape recorder. USA, Canada (Polish spoken).

Borg, Lars (15). Bondegatan, 15, Vasteras, Sweden. Photography, philately, sports. 3 1/2, 1 1/2 ips. 5 1/2-inch spool. Philips EL3547 (four-track stereo). UK, USA, Egypt.

Emmerson, Robert (16). 87, Frimley Road, Chessington, Surrey. Photography, travel, instrumental pop music. 3 1/2 ips. 5 1/2-inch spool. Saja tape recorder. Female contacts required.

Crocock, Colin (17). 7, Sun Street, Darlington, Co. Durham. Photography, The Beatles. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Elizabethan LZ29. England only.

Hornor, Terence B. (17). 8, L'Espee Street, Northallerton, Yorkshire. 35 mm photography, pop music 3 1/2 ips. 5 1/2-inch spool. Grundig TK14. English-speaking female contacts required in Iron Curtain countries.

Kennedy, Terence (16). 401, Northways, 8, Jager Street, Berea, Johannesburg, South Africa. Radio and pop music. 3 1/2 ips. 7-inch spool. Philips EL3541, four-track. UK and USA.

Smyth, Alastair (18). "Strathleven," Toome Road, Ballymena, Co. Antrim, Northern Ireland. Round robin tapes, Ireland, C/w music. 3 1/2 ips. 4-inch spool. Philips four-track, and Sobell recorder. Female contacts only please.

Squires, Jack (19). Chapel Cottage, Plumstone Road, Acol, Near Birchington, Kent. Travel, motor-cycling, camping, music. 7 1/2, 3 1/2, 1 1/2 ips. 7-inch spool. Challenge 44 tape recorder. Overseas only.

Stevenson David (19). 11, Wealdway, Reigate, Surrey. Photography, travel, languages, art, folk singing and pop music. 3 1/2 ips. 5 1/2-inch spool. Fidelity Playmaster, four-track. Female contacts preferred.

Winchester, Ian (14). 35 mm photography, philately, cricket, all music except pops. 3 1/2, 1 1/2 ips. 5-inch spool. Stella ST458, four-track, and Philips battery portable. Canada, West Indies, Australia, New Zealand, South Africa, Ceylon, India, Pakistan. Letters first please.

Sullivan, Barry (16). 182, Keightley Road, Leicester, Leicestershire. Cycling, sport, music. 3 1/2, 1 1/2 ips. 7-inch spool. Stella ST458, four-track. Female contacts (own age) required.

FAMILY EXCHANGES

Arrowsmith, Mr. and Mrs. Vera and Eddie (29/30). 15, Carleton Road, Chorley, Lancashire. 8 mm and 35 mm photography, music. 3 1/2 ips. 5 1/2-inch spool. Grundig TK20.

King, Mr. and Mrs. R. J. (29/31). 10, Green Lane, Hallwood Green. 35 mm photography, camping. 3 1/2, 1 1/2 ips. 5 1/2-inch spool. Grundig TK24 and TK6 battery portable. UK and Australia.

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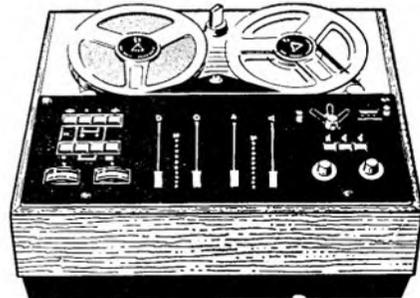
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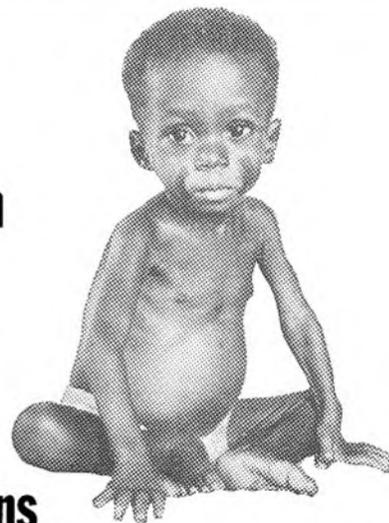
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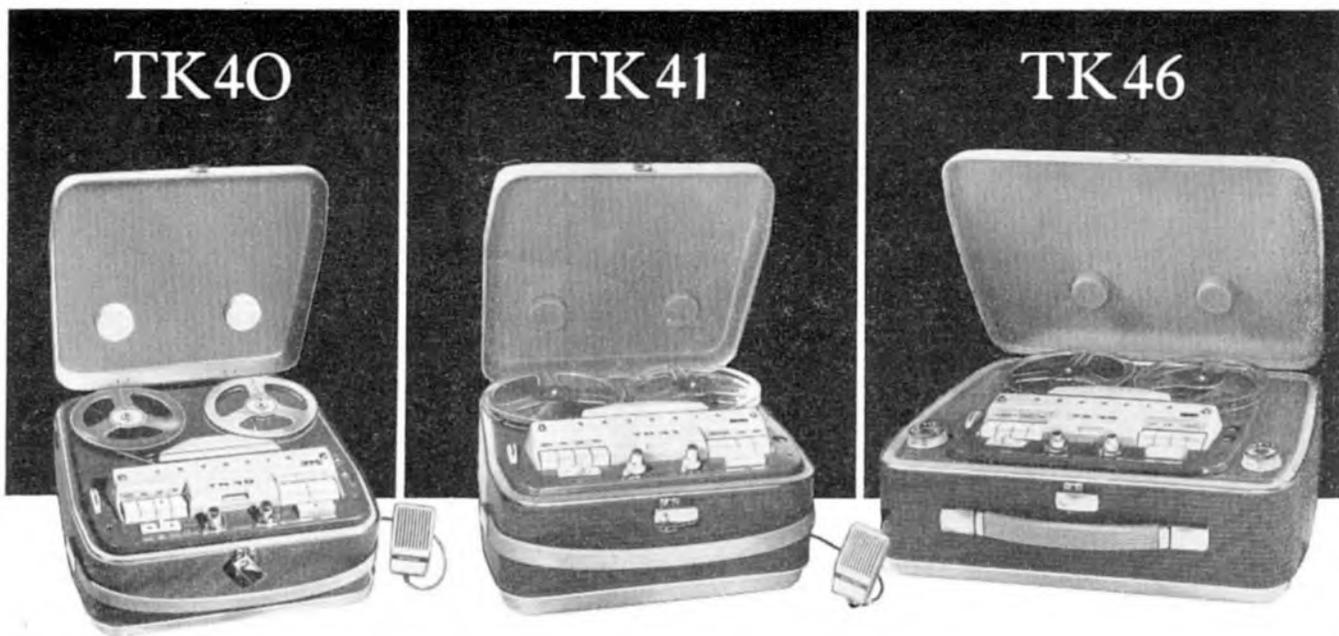
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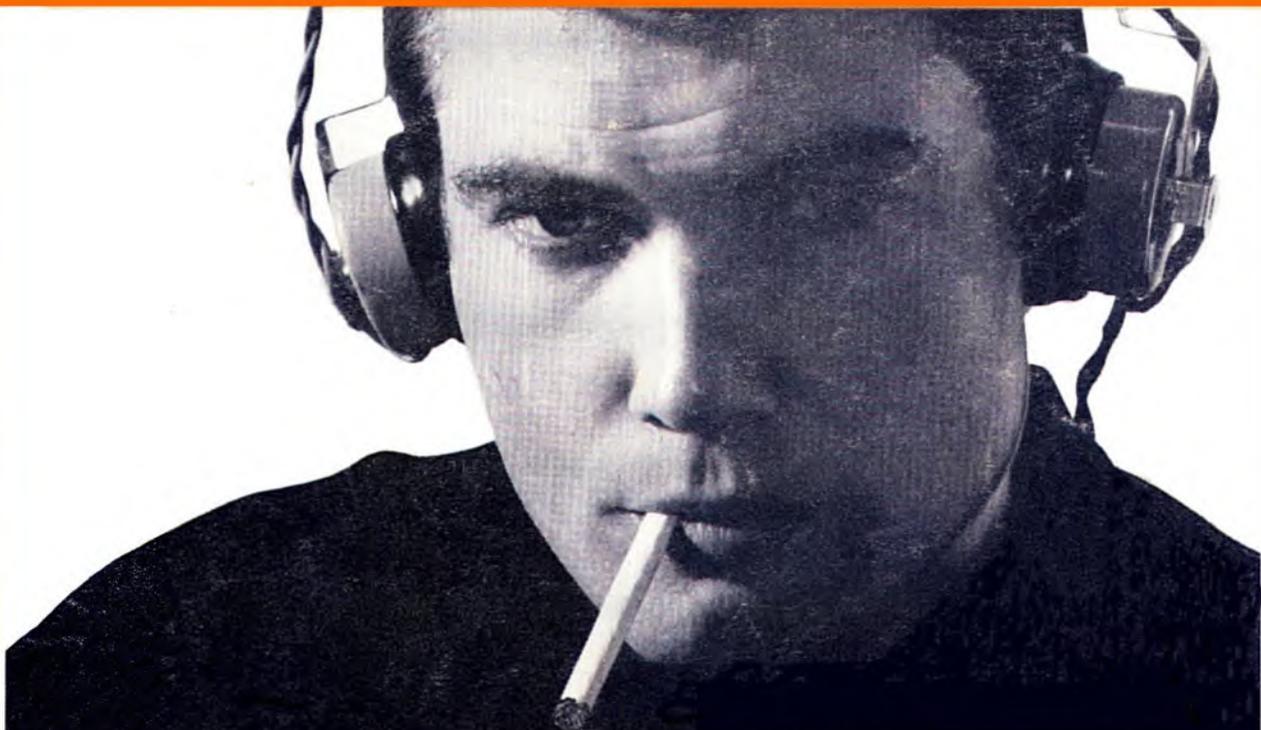
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