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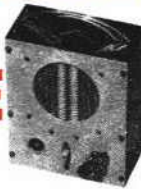
Amateur Tape Recording

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Amateur Tape Recording

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Editor's comment:

Summer is over and the long evenings are with us once again. How many of the spring and summertime sounds were captured with *your* tape recorder? Did you put *your* holiday or *your* tour on tape? Do you have not one but many reels of tape to edit and copy into travelogue or documentary albums of living sound that you may never have the opportunity of recording again.

Over the past months, up to and including this issue of *ATR*, we have devoted a good deal of editorial to this very absorbing facet of tape recording which we hope has given inspiration to those with portable tape recorders, but there is still a busy season ahead for indoor recording. Tapes for competitions and especially the British Tape Recording Contest, and whilst we are on the

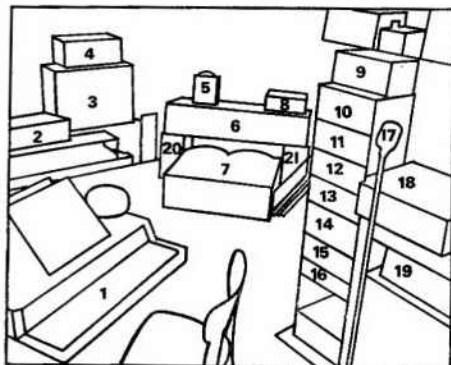
subject of contests may we remind clubs that members should be kept active producing their own subjects and recordings for club contests. Time now for the constructional enthusiasts to start building new equipment for the enhancement of future recording. Time also to do a little maintenance on your tape recorders, and to assist readers in taking care of their machines, and to ensure tip-top working conditions, we begin next month with a new series by Gordon King on this very subject.

Last but not least we learn that the BBC 'Sound' programme will not be coming back on the air. A great pity, but there is hope that winning tapes entered in the BTR Contest will be broadcast. A letter from the BBC is reproduced on page 15.

F.C.J.

FRONT COVER

Our front cover this month shows the Electronic Music corner of the studio of F. C. Judd, who recently won the professional section of the British Recording Contest. The Philips Philocorder electronic organ is a recent acquisition for making multi-track organ recordings with tape loop rhythms.



Items of equipment shown on the front cover

- 1 PHILICORDA ELECTRONIC ORGAN
- 2 SPECIAL KEYBOARD INSTRUMENT FOR ELECTRONIC MUSIC AND RHYTHM LOOPS
- 3 SONY 777 TAPE RECORDER
- 4 AUDIO SIGNAL GENERATOR
- 5 ELECTRONIC METRONOME
- 6 LINE REVERBERATION UNIT
- 7 TELEFUNKEN M.24 STUDIO RECORDER
- 8 MIXER (THREE CHANNEL)
- 9 AUDIO SIGNAL GENERATOR
- 10 OSCILLOSCOPE
- 11 LINE SIGNAL LEVEL METER
- 12 RING MODULATOR
- 13 FOUR-CHANNEL MIXER
- 14 PATCHING BOARD
- 15 AUDIO FILTERS
- 16 PATCHING BOARD
- 17 SHURE 55S RIBBON CARDIOID MICROPHONE
- 18 TANDBERG MODEL 62 STEREO RECORDER
- 19 STEREO MONITOR AMPLIFIER
- 20, 21 GOODMAN'S MAXIM LOUDSPEAKERS

Editor: F. C. Judd, A.Inst.E. Assistant Editor: Kim Cook. Art Editor: Robert Morley. Production Director: Denis Curtis. Production Manager: Roy Dennis. Advertisement Director: Lindsay Masters. Advertisement Manager: E. McKeown. Circulation Manager: David Hughes. Editorial, Advertising and Subscriptions: Amateur Tape Recording, Haymarket Press Ltd, 86/88 Edgware Road, London W2, Ambassador 3200. Amateur Tape Recording is published by Haymarket Press Ltd. © 1965 Printed by The Sidney Press Ltd, Bedford. Title registered at Stationers' Hall. Subscription rates throughout the world 30s. post paid for twelve issues.

Equipment not shown in the photograph includes a master stereo amplifier with two Wharfedale speakers, a modified 12 speed Brenell replay deck with full track heads and a six-channel mixer.

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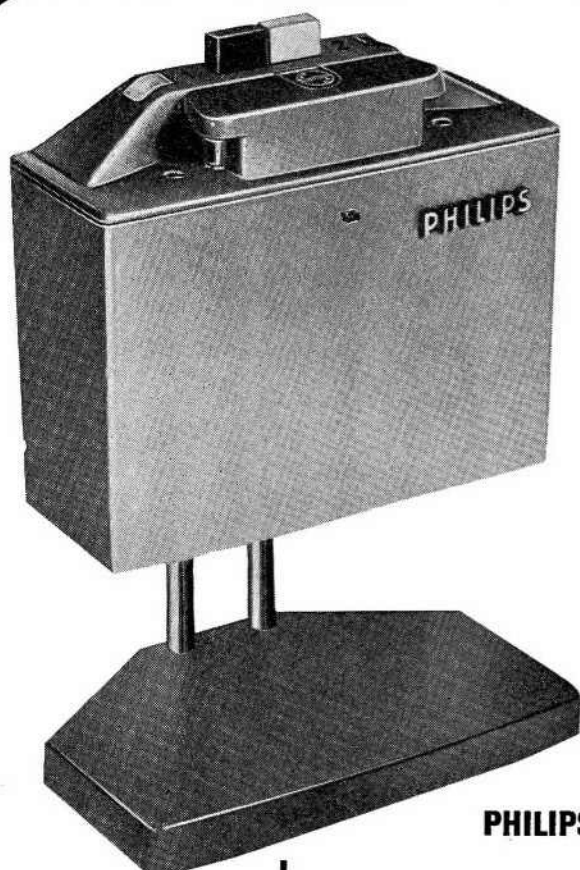
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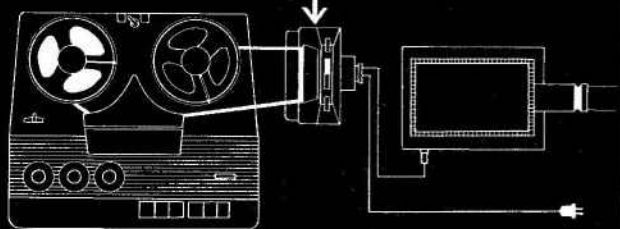
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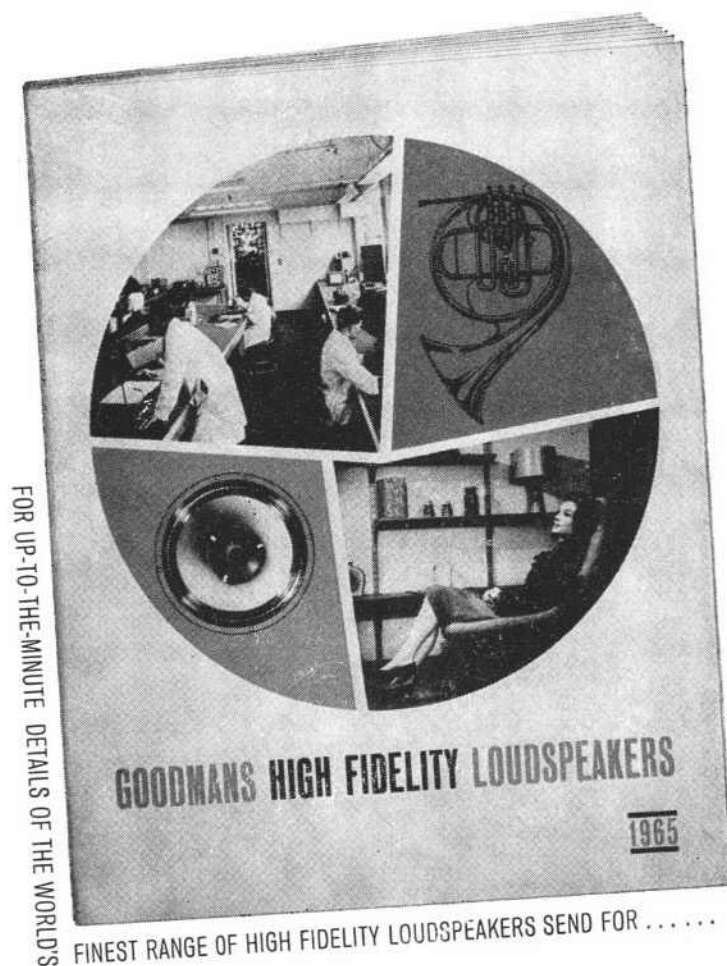
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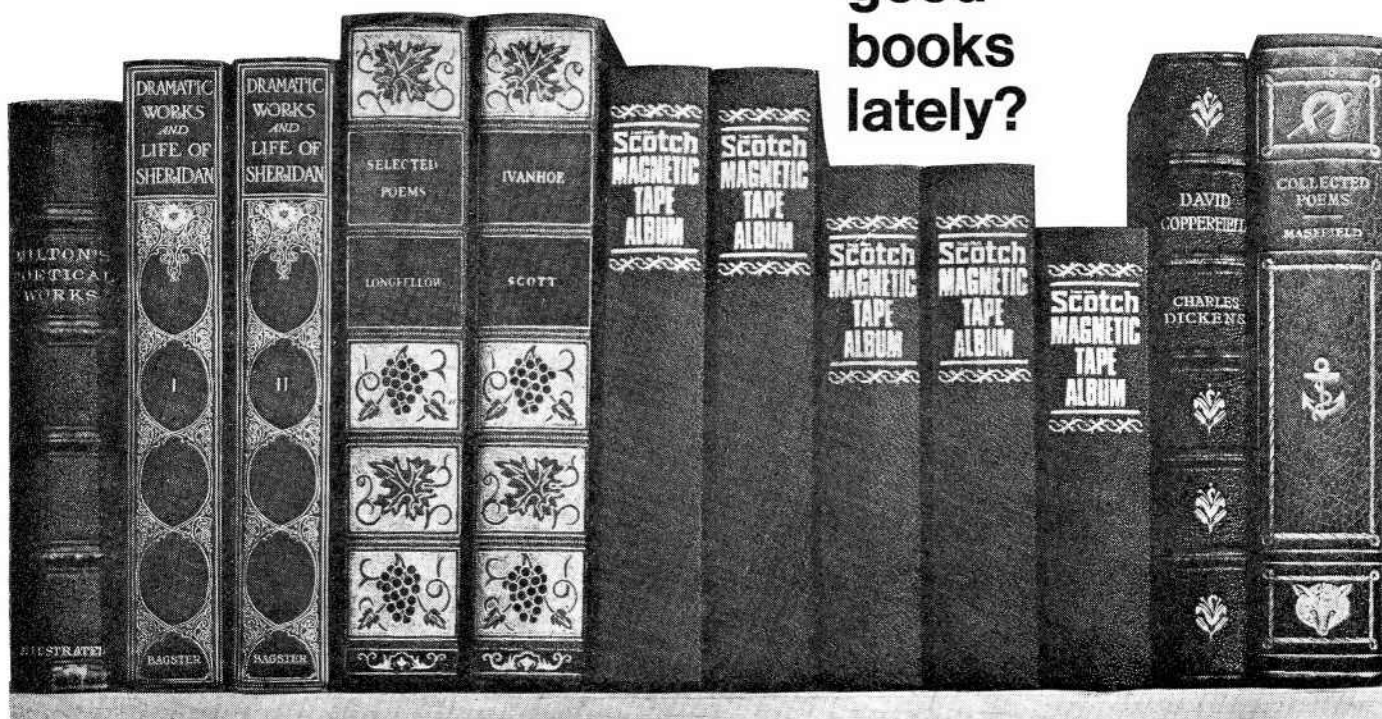
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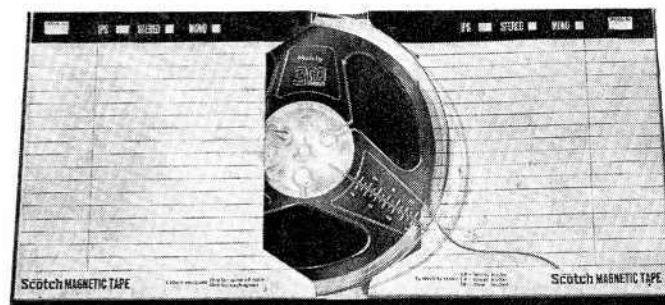


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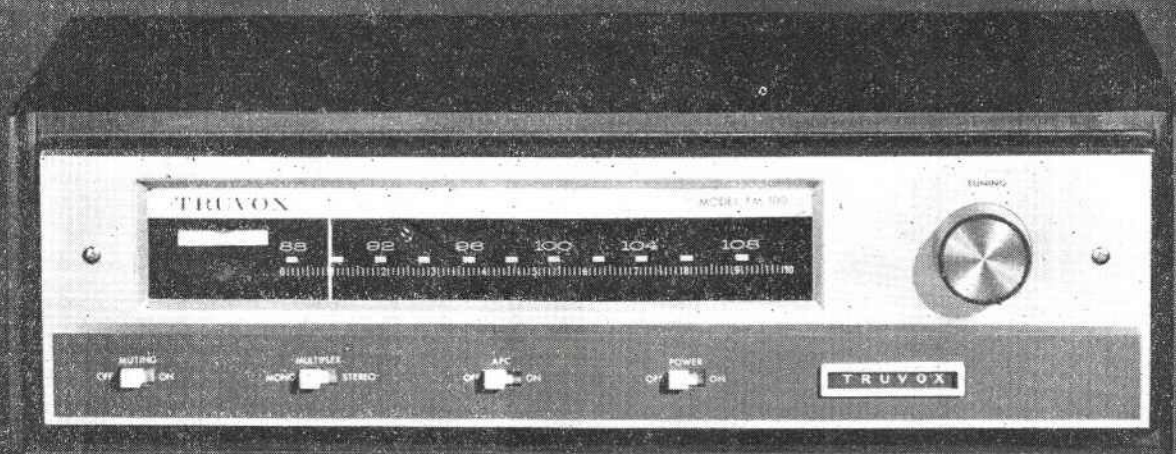


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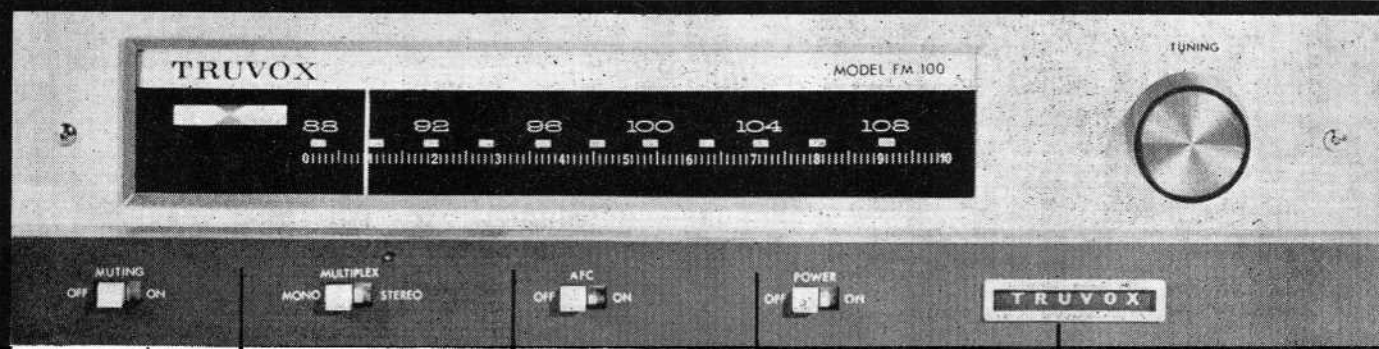
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Outputs variable to 0-1 volt emitter follower.
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TECHNIQUES OF LOCATION RECORDING

by Bill Jay

Years ago, in the Midlands, a friend and I used to take a superannuated Bell & Howell 16mm projector round to isolated villages giving film shows. As capitalists we soon fell victim to the laws of supply and demand. Others moved in, undercut our prices and our business. So we provided a mute newsreel of local events as an extra attraction. For a time business picked up again. Then our competitors followed suit. Keeping one jump ahead, we added sound. The sound was recorded on a Ferrograph which was not synchronized with the camera. The tape was then edited to the same running time as the newsreel and played back on the same Ferrograph unsynchronized to the projector. As long as we started the projector and recorder at the same time, it seemed to work quite well. Of course, during the shooting we resorted to all the well-known dodges to obviate the problem of synchronization. The vicar opening the village fete would be shot in close-up as he ascended the platform and then the camera would leap back to an alarming long-shot when he began to speak. The audience couldn't see his lip movement and could barely see the vicar and so lip-sync didn't really apply. This crude method of 'scene sync' was quite successful and even today many cine clubs

use this method effectively and perhaps more subtly. Of all the dodges to obviate sync, I think my favourite is the hand or handkerchief held in front of the mouth—convincing when filming a flu epidemic but otherwise somewhat mad and funny. When recording sound for films the recordist has two alternatives. Either he can record sync, when the sound is synchronized to the camera or he can record 'wildtrack' not synchronized to the camera. Most amateurs have no choice. They have to shoot 'wild' because sync is an involved and complicated process.

Microphone Boom

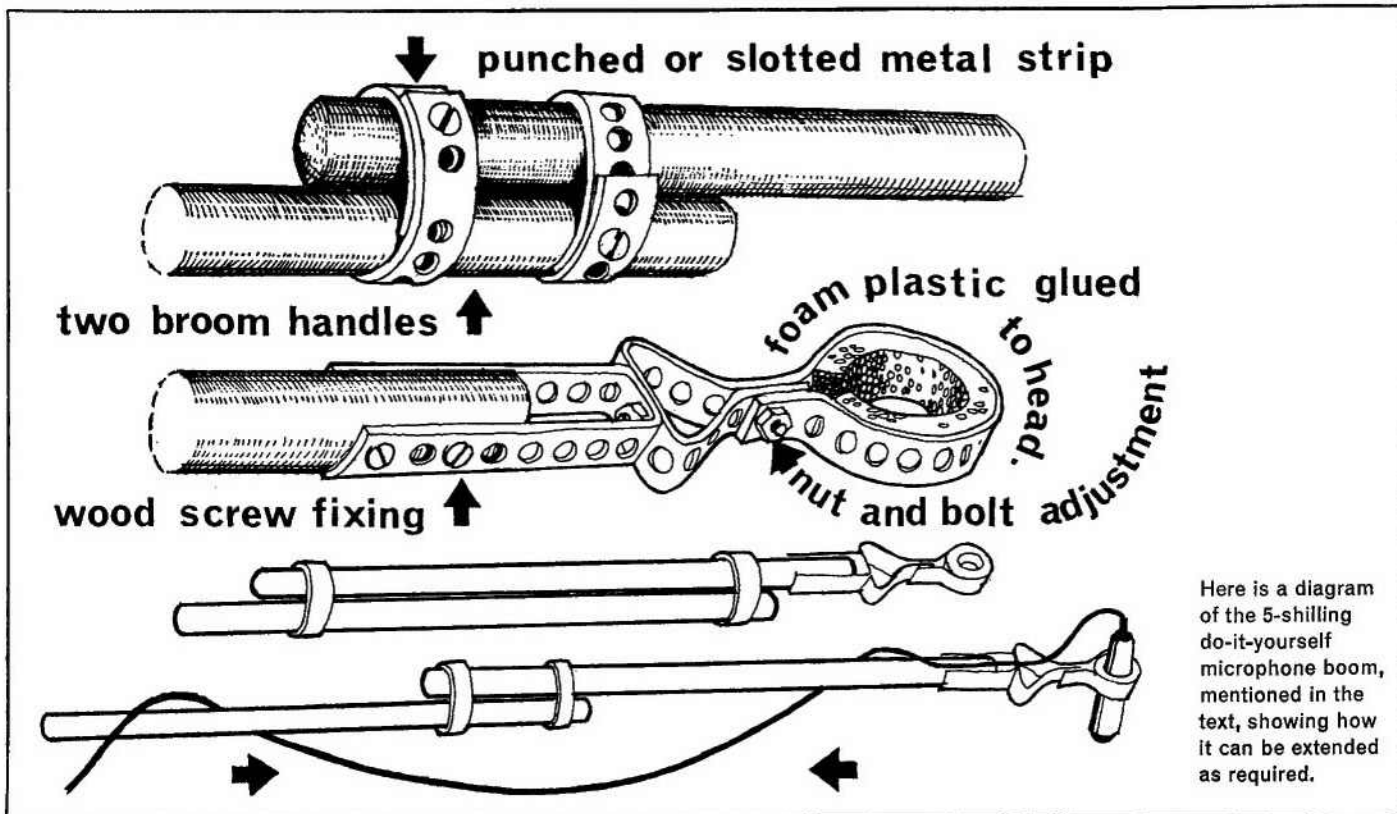
For sync recording a microphone boom is essential. Even for wildtrack recording the advantages of a boom soon present themselves. In feature films a boom is always used on the sound stages. Often it is the one illustrated on the right of this article. For £700 you can buy one yourself. Unfortunately, it's not much use on location as it's too immobile on rough ground. For five shillings you can make a boom at home which is ideally suited for location work. It's a little Heath-Robinson in appearance, but perfectly adequate for the job. The professional location boom is just a chromium-plated version of the do-it-yourself type as shown below.

Location Shooting

On location, as anywhere else, the film recordist has three main responsibilities: (1) to record good sound (2) to keep the microphone and its shadow out of shot; (3) to ensure that the individual sound takes will cut together.

Good sound is achieved by getting the microphone in the optimum position having regard to the camera and lights. The most usual, though not necessarily the best, is just over the artist's head. The microphone, on the end of the boom, is placed in front of the artist's face and lifted until the cameraman says that it has cleared frame. A voice level test is made in this position and if the recordist considers the sound quality not good enough another mic position is tried, perhaps below the artist's face but still clearing frame. If all possible positions have been tried and the quality is still not acceptable, then the recordist must tactfully assert his authority and explain his difficulty to the director. If the director is worth his salt he will either tighten the shot or cut in closer when any dialogue occurs.

To keep the microphone and its shadow out of shot relies heavily upon co-operation between the cameraman and the recordist. The cameraman defines the limits and the recordist must stick to them. An extra problem arises when the set is artificially lit. The problem is the multiplicity of shadows from the lights. The method of lighting a set depends upon the availability of lights and the idiosyncrasies of the individual cameraman.



once it is recorded. This need for sound continuity between one take and the next is not an excuse for bloody-mindedness. Any minor variation in background noise can always be compensated during dubbing by using a 'buzz' track of general background noise recorded at the location.

The sound recordist is not purely a technician. He must try to establish a rapport with the director and help him to achieve his desired effect. Suppose the director wants to film a dialogue sequence in heavy traffic. The recordist must not say that the traffic noise is too loud and that it can't be done. Rather the recordist should suggest that the director films his establishing shots in the heavy traffic without sound and move to a quieter street for the dialogue in close-up. During dubbing heavy traffic roar could be mixed over the voices and an audience would never know that locations were different. This is the film game, a distortion of truth but quite permissible.

There is no camera to worry about and so the microphone can be where the recordist wants it. The sounds must be of a more general nature. For example, it would be quite foolish to hear a motorcycle start and move off when there is obviously no motorbike in the picture. Wild-tracks should always be longer than the picture requires. It is easy to cut tracks but very difficult to extend them if they are too short. Wild-tracks should never be recorded too near the sound source. What one thinks is the typical sound of say a babbling brook is really a combination of the brook, reverberation from the banks, tree noise and bird twitter. Pure unadulterated sound just does not seem like the real thing. Remember the well-tried adage and plug one ear with a finger to hear what the mic will pick up.

Quite often for films the constant sound of a moving object is required. In these cases it is more often than not better to cheat the recording rather than try to get the real thing.

If the film calls for the constant sound of a horse or bicycle it is much better to put the mic on a boom and get the horse/bike to move in a circle with the recordist at the centre. The resultant sound is constant in volume but the recordist should not revolve too quickly otherwise (a) there'll be wind noise on the microphone, (b) he'll get dizzy.

To record the constant interior noise of a car the solution is obvious. To record a constant exterior noise of a car the best place is in the boot - with it open of course.

There are some sounds which require more than one microphone. Pop groups are a self-evident example. But there are also what appear to be simple sounds in this category too. In the aforementioned cops and robbers film I was required to record a gun battle. With one microphone the gunshots sounded like a child's popgun. I had to have one mic at low level near the gun for the explosion and another some distance away at higher level for the reverberation.

Incidentally, you'll never record the gunshots as used in Hollywood Westerns - the ones which ping off into infinity. They're produced electronically.

With more than one microphone a mixer unit is required and other considerations apply. But in film work 95% of the time the standard maxim applies: one camera, one microphone.

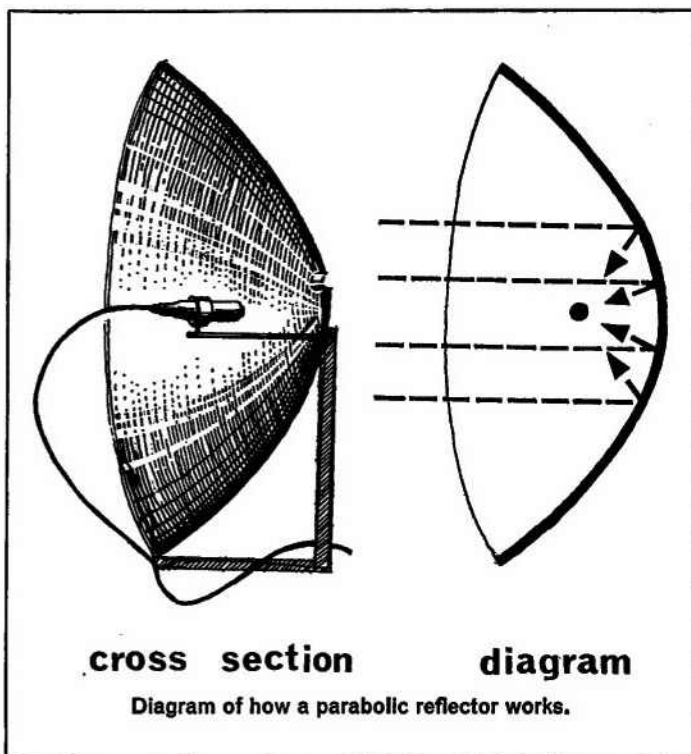
Parabolic Reflectors

Just as the cameraman has a variety of lenses at his disposal, so the recordist, to a lesser extent, has a number of different mics. If it is impossible to get near a particular subject a cameraman can use a telephoto lens. The sound equivalent of this lens takes two forms. Either a rifle microphone which is prohibitively expensive for most amateurs or the faithful moving coil fitted into a parabolic reflector. The reflector works like a headlight in reverse. It collects sound from a distance and focuses it on the microphone (diagram top right).

I remember once having to get a wildtrack of an irate swan guarding its mate. Not wishing to have an arm broken by its wing, I used a parabolic reflector and came back with a beautiful recording of the swan's hiss. On another occasion I successfully picked out the sound of the ball being booted during a very noisy football match. On yet another occasion a reflector helped me to add life to a horserace by picking out the thunder of hooves over the turf.

Regrettably no parabolic reflector of manageable size will faithfully concentrate the human voice because sound does not act in quite the same way as light, and here the headlight analogy proves false.

Every sound has a wavelength dependent upon its frequency, and sound will only be reflected when the horizontal length of the reflecting medium



is equal to, or greater than the wavelength of that sound. This means that to reflect any sound the parabolic reflector must be of a diameter greater than the wavelength of the sound.

Frequency in cycles per second	Minimum diameter of parabolic reflector
160	8 ft
250	4 ft
500	2 ft
1,000	1 ft
2,000	6 in
4,000	3 in
8,000	1½ in
16,000	¾ in

An adult male has a fundamental voice frequency of about 125 cps and so the reflector would have to be 8 ft in diameter - too big to be easily manageable. Also there is as yet no medium which is 100% reflective over the whole frequency range. The higher frequencies are more easily absorbed. Consequently any parabolic reflector tends to attenuate these higher frequencies. Another phenomenon of sound which leads to less efficiency in parabolic reflectors is that the lower frequencies, below 500 cps are very elastic and will bend round obstacles to an alarming degree. So the reflector will never produce a torchbeam directivity pattern. It is useless trying to record a single isolated sound in bass-heavy surroundings.

Having enumerated their defects, the question arises: are parabolic reflectors worth the £8 or so? If you wish to accentuate sounds having a relatively high fundamental frequency, e.g. birdsong in the country, yes. If you wish to pick out sound that would otherwise be difficult to do, e.g. horse hooves, yes. If you wish to record dialogue for films for a scene in long-shot, yes. The voices will be less than high fidelity but perfectionists can console themselves with the hope that an audience with a picture to watch is less critical of the sound. Remembering the inherent defects, parabolics are certainly worth-while acquisitions especially for clubs. A reflector will often produce acceptable sound in what are otherwise hopeless situations.

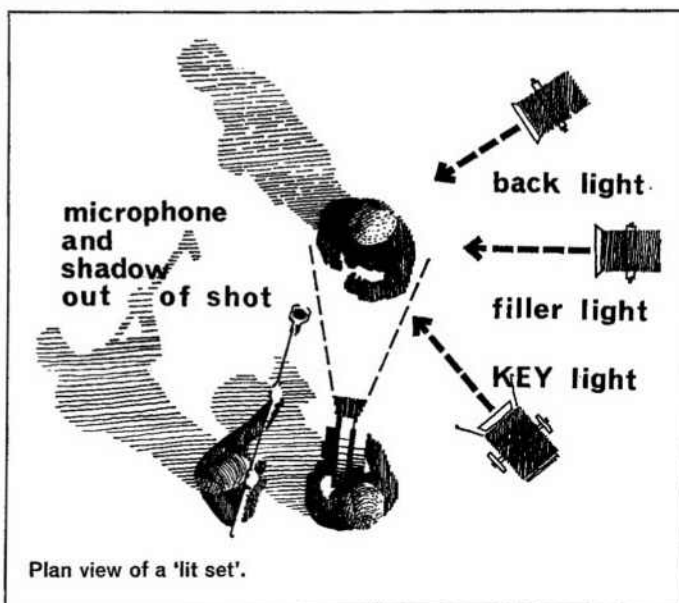
One last point about location sound in films is that one will never achieve perfection. There are too many compromises which have to be made. Because of its special nature, location sound cannot be compared to studio sound. Sound for films has a specific job to do and its success or failure must be measured against how well it fulfils that function.



Compact Microphone boom often seen in television and film studios. Unfortunately, at seven hundred pounds, it is outside the scope of most amateurs.

Most lighting for films, however, conforms to the general rule of a key light, which is the principal light; a back light so that the subject shall not appear flat and filler lights to soften any harsh shadows or fill in any dark areas. If the boom operator stands on the opposite side of the camera from the key, boom shadows will be cast out of shot. A plan view of a lit set is illustrated below right.

One cannot overstate the importance of co-operation between camera and sound crews in keeping the microphone out of shot. But in the final analysis it is the cameraman's ultimate responsibility because only he can see what is happening through the viewfinder. Of course, none of this applies to documentaries where the microphone in shot often lends authenticity to the film. Ensuring that the individual sound takes will cut together is the recordist's heaviest responsibility and the one most likely to make him unpopular with the rest of the film crew. Visually, film is a fragmentary art. Granted that the cameraman requires a great deal of expertise but by adhering to a few basic rules a perfectly adequate, if not outstanding, film can be made. Sound does not permit the same latitude. For example, it would be perfectly feasible to film a mediaeval costume drama at the end of Number 1 runway London Airport provided no aeroplanes or other modern paraphernalia came into shot. But sound to match the drama could never be recorded under these circumstances. Even with modern drama films the recordist must ensure that there is no discontinuity between one sound take and the next. To illustrate this point I remember working on a film in the country when we were making a 'Cops 'n' Robbers' film. We were shooting out of sequence in the approved manner when half-way through a sequence the farmer decided to plough the next field. I told the director that either we reshot the earlier takes which had no tractor over the track, or else someone would have to bribe the farmer into laying off for the day. The latter was duly done. Had I said nothing and accepted half the tracks with tractor and half without, the cut film when assembled together would have the noise of a tractor appearing and disappearing with distraught burps. Watch television news interviews at London



Airport and you will see the same effect with aeroplanes. To be fair to the news recordist though, they have no control over the conditions and most of their stories are once only, or never.

Pictures can change but sound must appear to be constant throughout. The recordist should attempt to record dialogue in as quiet surroundings as possible. Other sounds can be added later but noise cannot be erased

continued overleaf



THE THINGS YOU SAY

Copyright – no! . . .

Following the letter from the Mechanical Copyright Protection Society and your reprint of the regulations regarding the copying of records, I feel it is high time these gentlemen (and the PRS) got down from their ivory towers and studied the facts of life. It is the great strides made by the electronic industry which have made it possible for the records to be produced (via tape, I would point out) and for the buyers to play them with such fidelity.

The tape recorder is an offshoot of this and if I may quote a song without being proceeded against, 'you can't have one without the other'. I would hazard a guess that the sales of the so-called pop records pay very handsomely for any revenue lost on unauthorized dubbing of serious music.

It really is wonderful what a jungle of law the MCPS introduces us to. Consider, for example, if I happen to be so gifted as to be able to reproduce a tune on a musical instrument after hearing it from a record, and my good friend records it, is he liable to prosecution? And what about the songs I sing in my bath? Lastly, just what are they going to do about it? Every one of my tape friends does it, I wouldn't be surprised if nearly all the members of all the tape clubs do it at some time or another, although as I have to sign my name, I never do it!

Richmond Yorks.

L. Bolam

. . . yes . . .

Your various articles and letters dealing with copyright and performing rights have been timely and interesting, especially the information contained in your August issue.

Perhaps I may be permitted to amplify this matter a little by touching on one or two important points which appear to have been overlooked even by the representative of MCPS. It should be realized by all that it is just as much an infringement of copyright to copy a pre-recorded tape as it is to copy a gramophone record without permission. Similarly, that membership of the Federation of British Recording Clubs does not absolve anyone from obtaining such permission.

We, in common with others in the pre-recorded tape music business, have had many bitter experiences at the hands of tape recorder owners, not the least of which is the copying and selling of our material, or the copying of our material on to tape other than our own, with inadequate equipment and then returning the item so copied as a complaint. Many are not clever enough to use the same spool or tape with the identical colour base.

So far we have taken no serious action in such instances, but merely returned the item with a caution that it is not our material and should be returned to the source of purchase for a complaint to be dealt with.

We have been forced now to include within the structure of our guarantee that all tapes returned must come back in their original boxes, on their original reels bearing our manufacturing serial number.

One final point concerns some important information that has been omitted from that provided by your articles. First, MCPS do not represent all the publishers in the world. Therefore, it is

still possible to run into trouble by recording material that is not under their jurisdiction. Secondly, any application to record any copyright piece of music should be made before the recording is to be made, and if the music is published by Chappell & Co, or any of their associate companies, application has to be made to them, not to MCPS. Thirdly, if a recording of a piece of music published on the Continent is made, or an item not controlled by the previously mentioned bodies, then application has to be made to an organization known as BIEM.

I am sure that Chappell & Co copyright department would be only too pleased to amplify their ramifications to you and provide a list of the companies they control, and likewise BIEM will give all the information necessary to provide material for the last and final article on this thorny problem.

Unless, of course, you'd like me to write it for you!

Southend-on-Sea, Essex

A. Campbell Gifford,
Director, Recotape Recordings Ltd

. . . and NO!

Once again there is another big hoo-ha from the copyright bods, screaming murder and sudden death in all directions! Technically I suppose you are correct to publish various assorted statements on this theme, and to ram home the fact (again technically speaking) it is illegal to tape records domestically without a licence. The point is this – though goodness knows how long it's going to be before it gets across to those concerned – that once the average person has paid his thirty-odd bob for a record, he considers that he has a perfect right to do as he wishes with that disc. I include myself in this class, by the way.

These copyright associations cannot, and can never hope to, police an entire nation. Even if they do manage to trap the occasional chap, what microscopic percentage of recorder-owners does this represent? Since tape recorders appeared, discs have been taped off, and as long as recorders exist they will still be used for taping off discs, among other things.

Not being a moralist, I don't propose to argue the moral or technical legalities of this business. I merely feel the same way as any average person does – that the record is either mine, or it is not. Now, if someone takes my money for an item, to me this constitutes an outright sale to me, unconditionally. A record cannot belong to me and yet still be owned by some vague, faceless individual who can dictate what use I put this disc to. I am only one of tens of thousands of people, so just what exactly do these people think that their endless blathering is going to achieve.

It may be that the copyright people think that their German success (?) can get across here. Well it can't. Have they taken into consideration the second-hand machine, the do-it-yourself recorder kits, the man who has access to a machine by job, loan, hire or service? No they can't win, either now or at any future date. In any case, record companies, singing stars, etc., make quite enough out of record buyers. They are very ready to scream the house down, yet a good look at the City financial page will

(continued overleaf) 15

show that they are doing better now than ever before. Well enough, in fact, to make it look as though it's turned into a pretty good racket. No, I'm sorry, but both I and countless others are going to tape off their expensive discs and then play the tapes as and when we like. There isn't a single thing that the copyright people can effectively do to stop it. Isn't it a pity that they can't have their cake and eat it too?

London W3

D. R. Wiseman

Tapes on the Air?

I very much fear that our new arrangements make it unlikely that we shall be able to reinstate the programme 'Sound' on a regular basis. However, we are considering the possibility of making time available on the air on an *ad hoc* basis to broadcast the best amateur tape recordings. These programmes are likely to be linked with the annual amateur tape recording competition, with which Mr T. Eckersley, the Assistant Head of our Central Programme Operations Department, is connected.

I realize that this will not fully meet your point, but, given the current pressures on airtime, I do not think we can do more.

London W1

G. E. H. Mansell,

Chief of Home Service and Music Programme, BBC

B.B.C. Broadcast

We now learn that a programme devoted to the 1965 British Tape Recording Contest will be broadcast on the Home Service on Wednesday November 3rd at 9.30 p.m.

For further details see the current issue of the Radio Times. It is hoped that some or all of the winning tapes will be included in the programme.



In defence of the crystal microphone.

I enclose herewith my comments on Mr Gorman's reply to my June article regarding crystal mics. I hope you will consider it for inclusion underneath Mr Gorman's letter in the October issue of *ATR*. Since Mr Beard was also named as a co-culprit, I have sent him a copy of my comments.

I hope this does not involve me in a protracted correspondence about the relative merits of various types of microphones. I regard mic warfare just as futile as the gauge warfare at present waged on the amateur cine scene. 'It has become obvious from correspondence that I've received that the question of impedance matching is far from clear. To get the optimum performance from any microphone, the impedance of that microphone must be similar to the input impedance of the recorder. Unfortunately, there seems to be no standardization of impedances and the only advice I can offer is that you check with a reputable dealer that your intended microphone purchase suits the input of your recorder. If it doesn't, you can remedy the defect by buying an impedance matching transformer which are relatively cheap and not at all bulky. I realize that reputable dealers tend to be scarce or else they do an excellent camouflage job of hiding their lights under bushels. This is especially so in the areas outside London. I regret this fact, but one of the advantages of belonging to a tape recording club is the common pooling of knowledge which is possible. This common

pool could also include a *Which?* report on dealers in the area.

In answer to the specific points raised in Mr Gorman's reply to my article, I must begin by admitting an error on my part. Mr Gorman was quite right in correcting the mistake. I should have noticed it myself. The attenuation of the lower frequencies from a crystal microphone is not caused by the length of cable. It is caused by incorrectly terminating the microphone into a low-impedance load. The effect of a long cable on a crystal mic is to attenuate all the frequencies, theoretically by the same amount. This means that the output from the microphone is reduced. As noted above, a cable run of 11 yards for a given cable reduces the output by 6 dB; in other words, the output is halved. Similarly, a 50 yard length of the same cable will cause an attenuation of 12 dB, which means that the output is now reduced to a quarter of its original value. Fifty yards is by no means excessive for location recording and I regard a loss of three-quarters of the original output to be too much. This does not happen with a low-impedance moving-coil whether you are one or a hundred yards from the recorder. Mr Gorman claims a frequency response of 100-8,000 cps for Acos crystal mics when working under optimum conditions. I am quite prepared to accept this specification. But I am not prepared to accept his contention that 'it is doubtful whether any extension of this response would add to the reproduced quality'. The accepted frequency range of the average human ear is in the region of 15-15,000 cps. This being so, 2½ octaves at the bass end and almost 1 octave at the top end are discounted in Mr Gorman's thesis.

I would never advocate mismatching microphone and recorder input, but since Mr Gorman optimistically states that terminating the typical crystal mic into a 'mere' ½ megohm load will only cause the response to be down by 3 dB at about 300 cps, I can't help wondering what happens to the other 4 octaves below this that the human ear is capable of appreciating.

If this sounds like a chronicle of gloom for crystal microphones, I don't intend it to be so. As I stated in my June article, and as is explicit in Mr Gorman's reply, there is nothing intrinsically wrong with crystal mics. In theory, they could have a smoother frequency response and a much better transient response than moving-coils. Transients are the short-lived frequencies present at the beginning of particular sounds. They are not dependent on the fundamental frequency of the sound and very soon die away. produce, for example, the 'bite' associated with the sound of a cymbal. However, theory does not seem to be borne out in practice and I believe it is difficult to easily find a crystal microphone that does not have a peak around 3 k/cps and a veritable ski-slope of a response at high and low frequencies.

Retailing at just over £1, crystals are the cheapest microphones on the market and I assume this must be one of the criteria why most British manufacturers include one as a standard fitting with their cheaper range of recorders. But in common with all contributors to this magazine I assume that readers use their machines for something more than top-of-the-pops every Sunday. If this is the case, then there are other types of microphones readily available which give a more faithful recording of the original sound than crystals do. They are, I admit, more expensive. But as with everything in this world, you pay yer money and you makes yer choice. I have accepted Cosmacord's offer of the loan of one of their crystals and I look forward to amending my opinion of them. Now if some other agency were to lend me a Nagra recorder . . .!

S. G. W. Jones

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7"	1200'	Acetate			
Long Play			Double Play		
5"	900'	Acetate	5"	1200'	Polyester
5"	1200'	Acetate	5½"	1800'	Polyester
7"	1800'	Acetate	7"	2400'	Polyester

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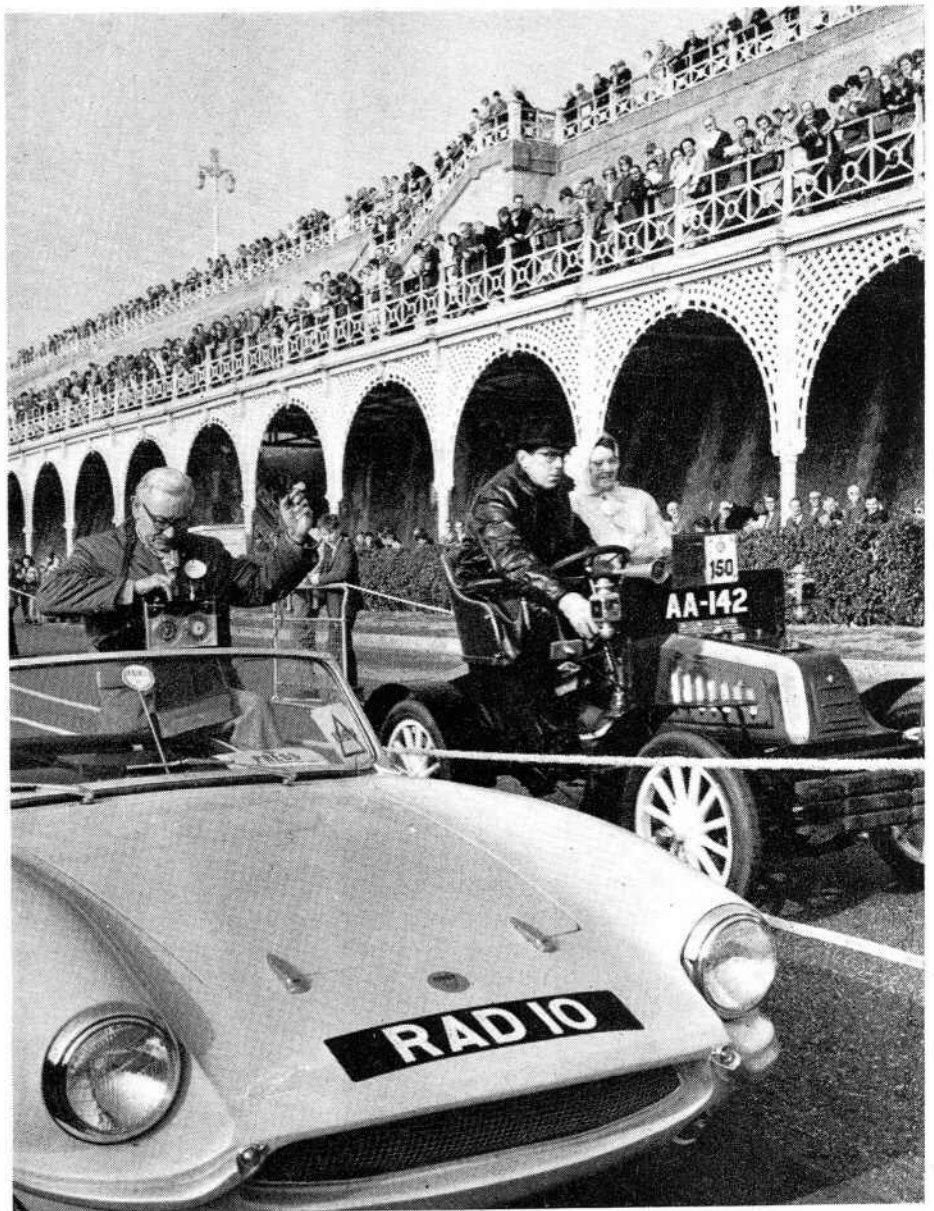
LEDA TAPES, 30 BAKER STREET, LONDON, W.1

THE SOUNDS AROUND YOU

Bob Danvers-Walker encourages every man to be his own reporter.

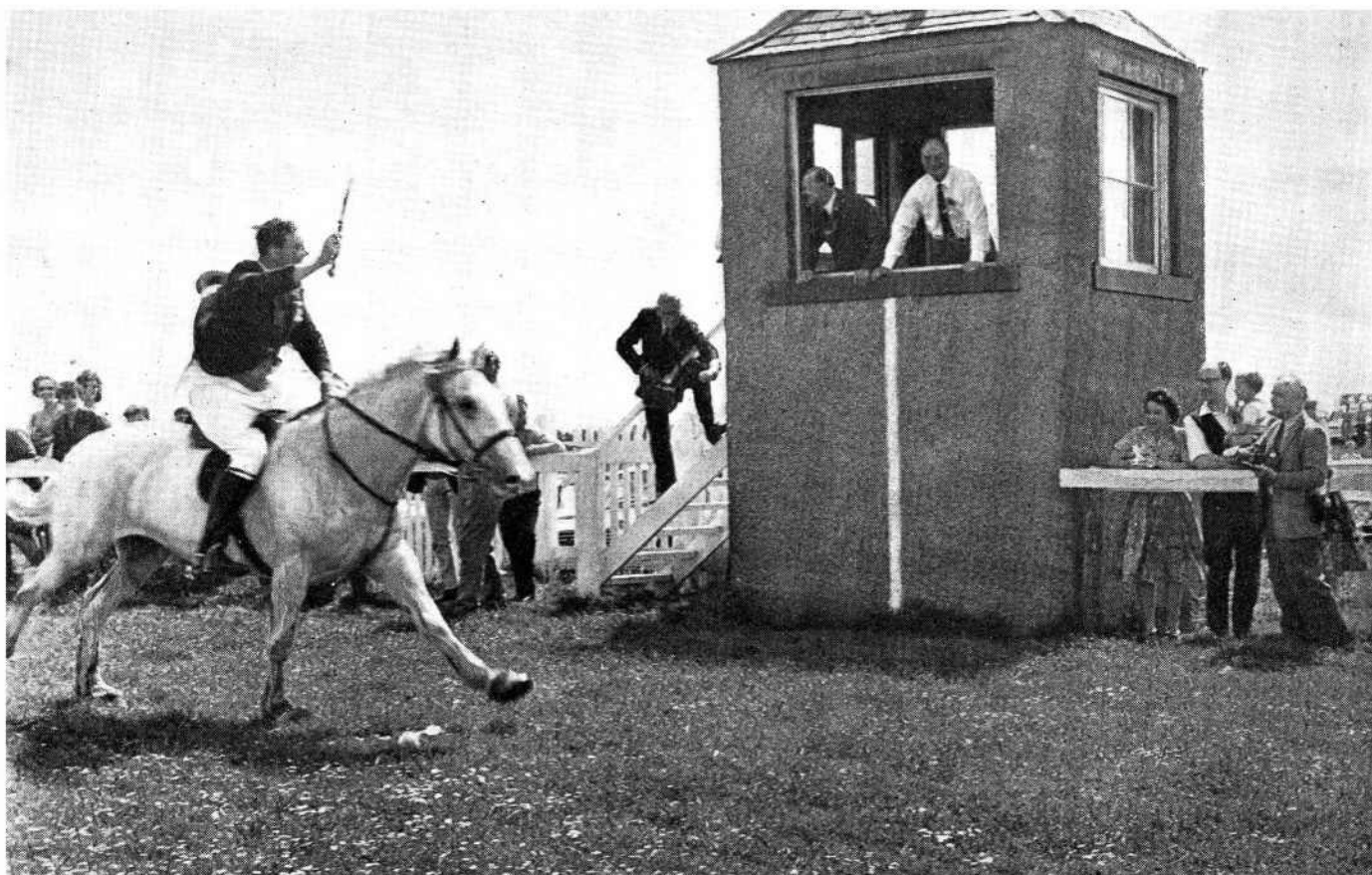
I was drawn into a discussion recently on the merits and de-merits of 'artificial' sound. (By that I think he meant 'reproduced' sound which, when one comes to think of it, can be several removes away from the original.) One man argued that it is because so much listening is done these days to *reproduced* sound on radio, television, the cinema, gramophone records and tape that many people are tending to become unconscious of the *original* sounds all about them. They may be faintly conscious of a general background of something which they might call *noise*, but unless one is interested in *individual* sounds there is no full awareness of them when one gets away, from the prevailing din of modern life which tends to dull perceptiveness. There's a lot in what he says, of course. But his friend took the other view. He contends that radio, TV, records and tapes, etc., stimulate man's interest in sounds which otherwise might escape his notice. I found it interesting just to sit and listen – for a change! One point I did make was to say how I wished people would give some thought to the refinements of sound – the details and structures of audible noises. One might almost give a twist to the old saying 'he can't see the trees for the forest' by saying 'he can't hear the sounds for the noise'. Every once in a while pause and listen intently – be it in the clatter and roar of a city or the quiet of the countryside – and 'separate' the individual sounds with a discerning ear. And since every sound must have its physical source there is a fascination in searching out the things which tend to get swamped by the dominant

continued overleaf



A rich haul of Veteran Car sounds can be recorded anywhere along the 53-mile route of the annual London to Brighton run down the A23 to the coast. Last year Bob Danvers-Walker used his Mark IV 'ELVA' sports car with its appropriate registration number RAD 10 as a grandstand-cum-recording studio to capture the sounds as the entrants checked in at the finish on Marine Parade.

The dawn start of the London-Brighton Veteran Car Run sees Editor Fred Judd with his Fi-Cord 202 recording the 66-years old Benz, single-cylinder 'Dog Cart'. This year the event takes place on 7 November.



Sounds Around You *continued*

ing events of everyday life. To help illustrate this I have asked my good friend Fred Judd to publish a few photos taken during some of my BBC assignments in the UK. Writing in last month's issue of *ATR*, Fred Judd said how 'deaf' we are tending to become to the subtle sounds which are always detectable if we would only pause and listen. Therefore, since the world of sound has its nuances, it is these delicate differences and shades of meaning that lead us to their sources. The unusual is always really much more interesting than the commonplace. One Home Service programme to which I contribute is the 'Countryside' series. For these monthly broadcasts I range the British Isles for old folk customs. So if you know of some strange and interesting ceremony, ritual, rite or historic observance not only could you put it on tape but in so doing place on record a sound which is just as important as the press photo and the written report. I am not altogether convinced that all owners of tape recorders are employing them fully or to the best advantage. That *every man should be his own reporter* is not such a fanciful idea. And I often wonder whether one day someone with a portable battery tape recorder will get a news scoop by being in the right place at the right moment. Newspapers pay well for a dramatic picture captured by members of the public; I wonder whether an eye-witness news item has ever been accepted in like manner by the BBC.



Horse power of another kind. The thunder of horses' hoofs and the atmosphere of the race track is always good value. This, however, is part of the ancient Common Riding Ceremony in Hawick, Scotland, recorded by Bob Danvers-Walker for the BBC.

Airport terminals are fruitful locations for tape recordists interested in the sounds of different types of aircraft. For his personal library Bob Danvers-Walker visited Gatwick to record aircraft used by British United Airways whose Airport Visits Officer (seen here) recorded a piece on how members of the public may use the observation facilities.



Another colourful folk custom is the Pace Egg Play when school boys garbed in character costumes perform the old Easter play in the Yorkshire towns and villages of Midgley, Mytholmroyd, Hebden Bridge, Luddenden and Todmorden. The lines they recite are well worth recording.

The Folk Festival presented by The English Folk Dance and Song Society at the Royal Albert Hall. Many of the performers in this colourful function are themselves tape recordists, and whilst I know of no objections being raised to members of the audience recording (on battery portables) extracts from the performances, a courtesy letter seeking an OK from the Secretary of the Society at 2 Regent's Park Road, NW1 would be a proper thing to do if you have it in mind to visit future Festivals.



The start of the most strenuous day's sport in the British Isles; Ashbourne's Shrovetide Football, the ancient Derbyshire custom with the ornately decorated ball being thrown up at 2 o'clock for the start of the 'game' which ends at midnight. The 'goals' are three miles apart and anyone may join in. As security, shop windows are boarded up and old and frail folk retreat indoors. Bob recorded this rugged event for his series on the BBC on old folk customs.

ON TEST: TRUVOX R 102

Truvox, a well-known name in value-for-money tape recorders, have recently introduced a new "series 100" range of recorders, F.C.J. reports on the Truvox R102 which he tested for ATR this month.

Whenever I am asked to recommend a good tape recorder, four or five names are usually mentioned and always among these is Truvox. Good tape recorders are never cheap, a point worth remembering by those about to buy a tape recorder for the first time, but with a Truvox R102 or any of its contemporary models you will get full value for your money.

You will also get all the facilities likely to be required by any true tape recording enthusiast such as microphone and radio mixing, cue control, direct monitoring or indirect monitoring (off tape), v.u. type recording level meter etc.

Truvox series

The R102 is one of the 'Series 100' range by Truvox and is a half-track machine, ie, two tracks on standard $\frac{1}{2}$ in wide tape. It is, of course, a mono recorder, but there is a quarter-track version available, namely the R104, again mono only. For stereo enthusiasts the PD102 and PD104 half- and quarter-track tape record/replay units are comparable with the R102 and R104 which are complete tape recorders, ie, with an output stage and loudspeaker. I have explained this because the instruction book supplied with the R102 on which I report covers all four models and might confuse the non-technical owner.

Tape speeds

However, to return to the R102, a complete tape recorder with the latest Truvox deck. The specification is shown separately and from this we see that this recorder has three speeds, $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{7}{8}$ ips and will take spools

up to 7 in in diameter. This should cater for all the normal requirements of the most ardent enthusiast and so also should the fast tape rewind of 60 seconds for 1,200 ft of tape.

Frequency response

The frequency response claims made in the specification are quite justified and my test model performed to within ± 1 dB on each of the three speeds. However, I feel that the hf response is forced a little, judging by the noise content on pure tone at 8 to 10 Kc/s. Even professional tape recorders rarely exceed an upper limit of 15 Kc/s at 15 ips tape speed. Extended frequency response at the expense of noise I feel is not worth while.

The overall distortion is, however, low enough to bring this recorder into the 'hi-fi' category and this includes hum and general noise content of the amplifiers, etc. The power output of five watts makes the R102 well worthwhile and the internal speaker not only handles this power quite well but also does an excellent job reproduction-wise.

Recording quality

A microphone is included with the recorder but tends to give a slightly 'boxy' reproduction on speech. Music and speech recordings made with a high-grade ribbon cardioid microphone, however, proved that the R102 is capable of making a fine recording that will stand up to being replayed via a hi-fi amplifier and loudspeaker. This applies also to music recorded from F.M. radio and even at $1\frac{7}{8}$ ips the overall quality on recorded

The neat deck layout, conveniently placed controls and solid proportions of the Truvox R102 are well illustrated by our photograph.



music is of a high standard, certainly high enough for casual, yet pleasing listening.

The wow and flutter content, as with most recorders these days, is low enough as to warrant no comment, even at $1\frac{1}{2}$ ips, and the tape speed I also found to be accurate, pitch-wise, when compared with a high-grade professional studio recorder. On the overall mechanics I have no criticism or anything to report other than correct and accurate functioning. Rewind, braking, cue and record interlock is adequate. Access to the heads for tape marking and cutting is provided as well as a built-in splicing block.

Transistors

The electronics of the Truvox R102 and its sister units are completely transistorized and one must congratulate Truvox on this point. Transistorized equipment is already proving to be much more reliable than that employing valves. The circuitry of the R102 is versatile enough for all demands; for instance, a superimposing control (erase off) is provided as well as dual mixing on the two input channels. There are output sockets for external amplifier and extension loudspeaker which automatically cut the internal speaker when connected. The v.u. record level meter is a much more accurate method than the magic eye type indicator and is just sufficiently damped to hold the peaks for easy estimation of full level. Last but not least is the 'tape source' switch which allows direct monitoring of the input signal or direct listening to the recording off tape whilst a recording is being made. Again a good technical

facility, since full use can be made of the separate record and replay heads.

Of the Truvox R102 I can only say 'it is one that I would buy' were I seeking a tape recorder with facilities that even the novice will come to appreciate after a little experience of tape recording in its entirety. One final word and this to those who doubt the integrity of reviewers in this day and age one is hard put to find a poor tape recorder among the kind made by Truvox and similar reputable manufacturers, especially British manufacturers. Over the past few years the better class of recorder like the R102 has developed and improved out of all proportion to those made even three or four years ago. There is little for reviewers to find fault with these days, but don't forget there are still cheap and shoddy recorders about. We just don't review them.

The Truvox R102 and its contemporary models is manufactured by Truvox Ltd, Neasden Lane, London NW10, and is supplied complete with microphone, a 7 in spool of tape, spare spool and connecting leads, etc. The retail price is £200 00s 0d.

TECHNICAL SPECIFICATIONS Recorders and Tape Units

Reel size: Up to 7 in.

Tape speeds: $7\frac{1}{2}$, $3\frac{1}{2}$ and $1\frac{1}{2}$ ips constant within $\pm 1\%$.

Tracking sense: International, top track, left to right.

Drive: Three motors, external rotor capstan motor, heavy fly-wheel, drive disengaged in OFF position.

Brakes: Mechanical compensated.

Winding time: 60 sec for 1,200 ft.

Frequency response: 30-17,000 cps ± 2 db, at $7\frac{1}{2}$ ips (19 cm)

40-10,000 cps ± 2 db, at $3\frac{1}{2}$ ips (9.5 cm)

60-8,000 cps ± 3 db, at $1\frac{1}{2}$ ips (4.75 cm)

Amplifier distortion: (recorder only) 0.35 of 1% at 5 watts.

Hum: Better than 45 db.

Signal to noise: Better than 50 db.

Inputs: (1) Microphone 1 mV at 50 K ohms

(2) Radio/P.U. 50 mV at 100 K ohms.

Output (recorder only): 5 watts, into 15 ohms load.

Output to ext. amp.: Emitter follower, across 100 ohms, output voltage variable up to 1 V.

Record characteristics to the new European Standards: 70 μ S at $7\frac{1}{2}$ ips

140 μ S at $3\frac{1}{2}$ ips.

Wow and flutter: $7\frac{1}{2}$ ips better than 0.1%

$3\frac{1}{2}$ ips better than 0.15%

$1\frac{1}{2}$ ips better than 0.25%.

Oscillator frequency: 90 Kcs.

Speaker size: 8 x 5 in hyperbolic cone, high flux.

Transistors: R102 and R104

2 x 2N2613, 9 x 0C71, 1 x 0C44,

2 x 0C81Z, 1 x AC128,

(1 x AD161, 1 x AD162)

(complementary pair.)

Total: 17

PD102 and PD104 4 x 2N2613, 2 x 0C44,

2 x 0C81Z, 16 x 0C71. Total: 24.

Power rectifier: H129PE01B.

RECORDING DIARY

when and where to record in November

When and where to record in November . . . With the winter upon us outdoor events become less and less, but if you don't mind being up at the crack of dawn the **RAC London to Brighton Veteran Car Run** which starts from Hyde Park at about 8 am offers the largest variety ever of old car sounds. (See 'The Sounds Around You' elsewhere in this issue.) This takes place on 1 November.

Then, of course, there will be **Guy Fawkes Firework Celebrations** on 5 November, held in various places all over the country, sometimes in grander style and more spectacular than the one for the 'kids' in the garden. Nevertheless, some backyard bonfire nights can offer various bangs and shrieks suitable for sound effects.

The **Manchester 'Do-it-Yourself' Exhibition**, 9-20 November, may offer something for those who chance to visit with a tape recorder, as also the **International Factory Equipment Exhibition** at Earls Court, London, between the 15th and 20th. At the same time and same place (Earls Court) will be the **Photographic and Television**

Exhibition. Perhaps video recording will be on show too.

Old customs offer only the **Courtsleet and Baron** at Ashburton, Devon. We have no idea what this is, but Devonian tape enthusiasts might appreciate the reminder. Perhaps to be regarded as an old custom is the famous **Lord Mayor's Show** in London City. Provisional date is 13 November and it runs from the Guildhall to the Royal Courts of Justice. Should be some Military Bands in this.

Two dog shows might offer some doggy sound effects and these are **Ladies' Kennel Association Championship Show** at Olympia, London, on 4 November and the **Birmingham Dog Show Society Championship Show** at Birmingham between the 11th and 13th. You might be able to tape some shaggy-dog stories at the same time!

Finally a reminder that if you want really advance information on all **Events in Britain** a list for the year is obtainable from the British Travel and Holidays Association, Queens House, 64-65 St James Street, London S.W.1. The list is 5s.

Right: photograph showing completed electronic metronome. Actual sizes are $6" \times 5" \times 2\frac{1}{2}"$.

ELECTRONIC METRONOME

This novel, easy to make metronome sent to us by A. Lester Rand is an ideal instrument for musically minded tape recordists.

This handy unit should provide some interest in the music room and no doubt has applications other than as a metronome. It calls for no particular shape or layout and the circuit as in Fig. 1 is not critical with regard to component values or transistors. The layout used in the original is shown in Fig. 2. If this is used a box $6 \times 5 \times 2\frac{1}{2}$ in will accommodate the loudspeaker and components as well as a 9-volt Ever Ready battery type PP7. The circuit consists simply of a slow-

speed multi-vibrator (TR2 and TR3) which drives the D.C. amplifier TR1. When TR2 is conducting TR1 is cut off and the lamp is extinguished. When TR2 is cut off TR1 conducts and the lamp lights. At the same time TR3 will provide a pulse through the loudspeaker, resulting in the familiar metronome click which occurs when the lamp flashes. Thus the circuit provides audible as well as visual indication of beats which can be varied between about 30 and 250 per minute by VR1. With a

small 3 in 3 to 15 ohm speaker the click is quite loud enough for normal usage but should a much louder sound be required an output signal for an external amplifier could be taken via a 0.1 mFd capacitor from the collector of TR3.

Circuit adjustment

Small variations in the resistor values of R1 R3 may be necessary depending on the types of transistor used for (a) the D.C. lamp control TR1 and (b)

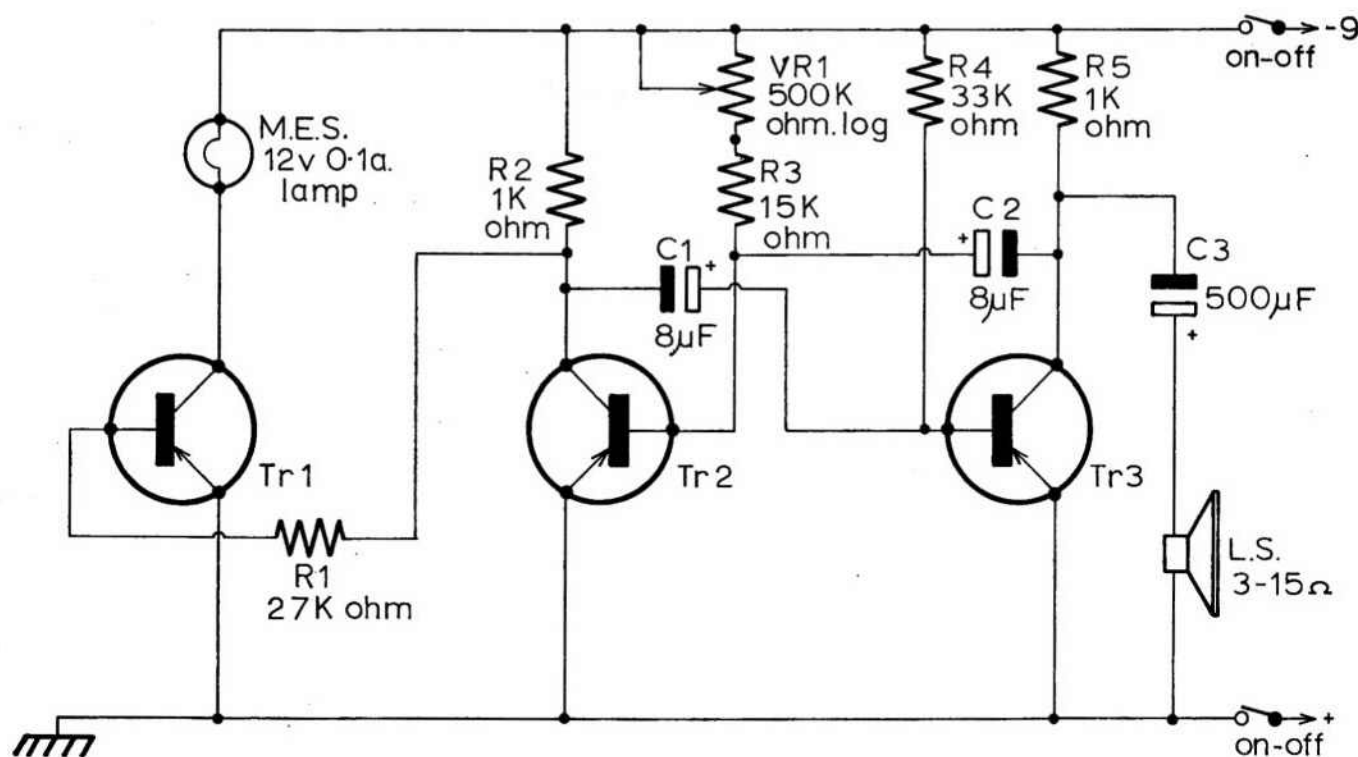
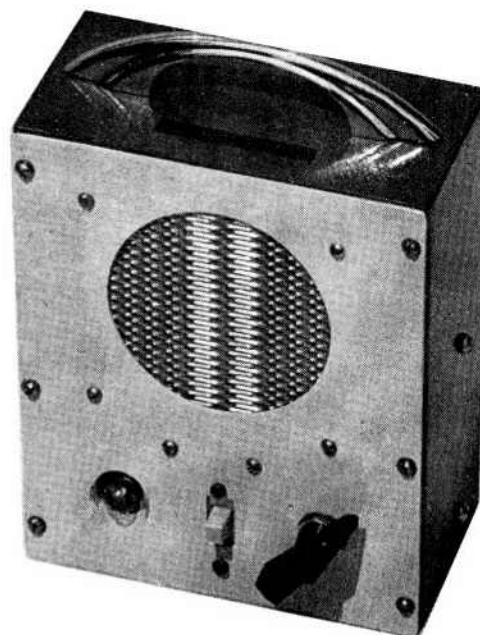


Fig. 1: Circuit of the Electronic Metronome.

Components Required

TR1: Mullard OC35 – Siemens AD140
– Newmarket NKT404

TR2: Mullard OC72 – Siemens AC151
– Newmarket NKT222

VR1: 500 K.ohm log

R1 to R5: all $\frac{1}{4}$ watt 20%

C1 and C2: 8 mFd min 10 v wkg

C3: 500 mFd min 10 v. wkg

Loudspeaker: 3 in 3 to 15 ohm

Tagboard: 6-way miniature

Heatsink for TR1: Dural, etc., $3\frac{1}{2} \times 1\frac{1}{2}$ in

the mutli-vibrator TR2 and TR3. For example, TR1 should pass sufficient current to make the lamp glow brightly and adjustment to R1 may be necessary. The potentiometer VR1 should be a logarithmic type which will provide a fairly linear control over the repetition rate. VR1 should be connected so that the slowest beat occurs when the control is turned fully clockwise. The lamp could be replaced by two 6-volt 0.1 amp bulbs in series.

Note: The heatsink for TR1 must be completely insulated from other parts of the circuit and for this reason is mounted on a paxolin panel as in Fig.3.

Calibration

With VR1 fully clockwise the repetition rate should be slower than one beat per second and with the control fully anti-clockwise should be about 5 to 6 beats per second. This more than covers the normal range of a mechanical metronome which is approximately as follows:

Beats Per Minute	Tempo
40 to 70	Largo
70 to 98	Larghetto
98 to 126	Adagio
126 to 154	Andante
154 to 184	Allegro
185 to 208	Presto

Another constructional feature will be found on page 26

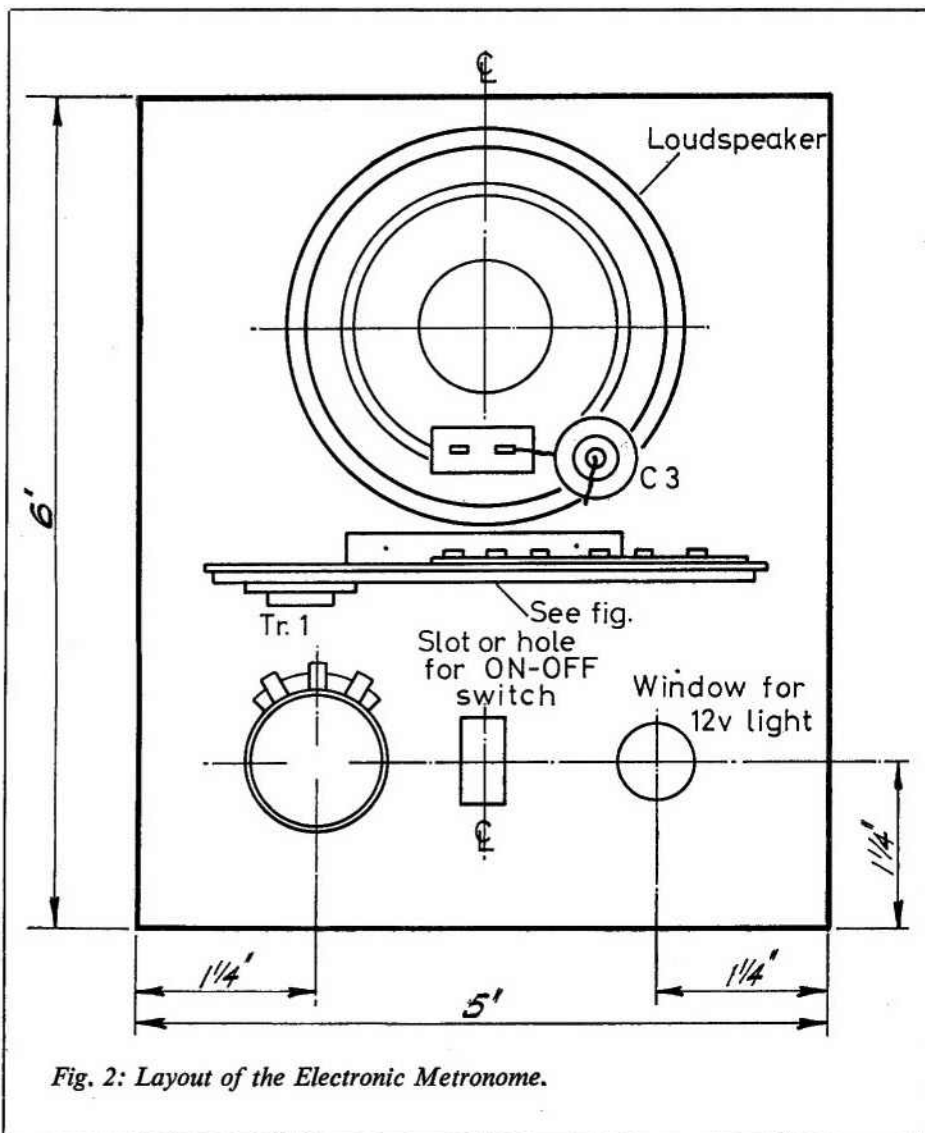


Fig. 2: Layout of the Electronic Metronome.

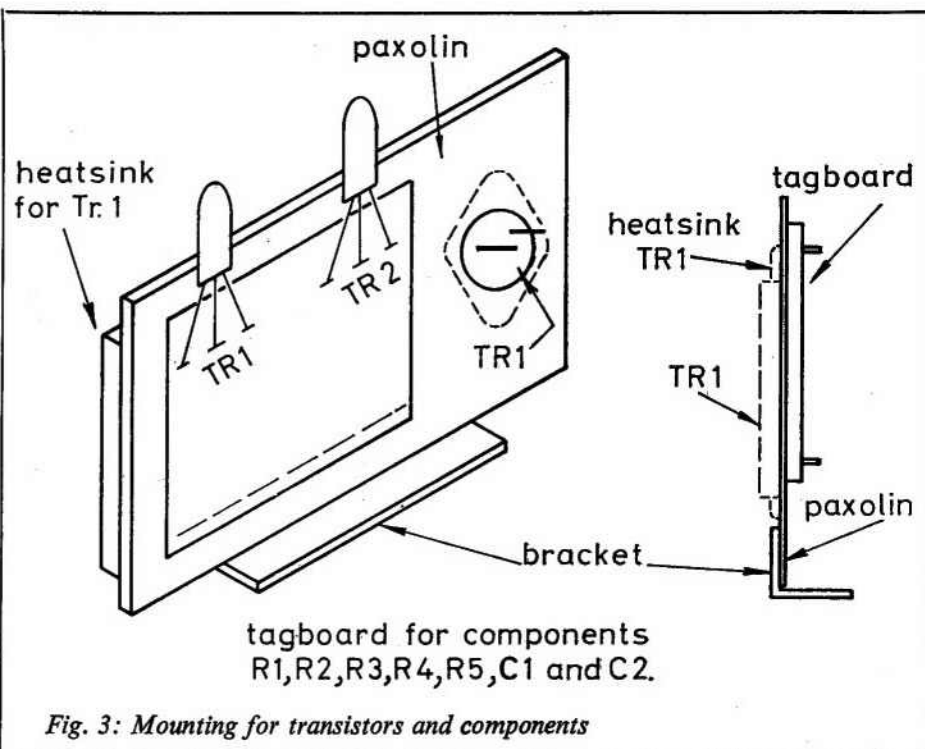


Fig. 3: Mounting for transistors and components

YOUR TOWN IN SOUND

WRITTEN
BY
L. TEBBUT

An A.T.R. reader discovers a multitude of new sounds in his home town. by L. Tebbut.

Most of us are familiar with professional and amateur attempts to show us our own town, its nooks and crannies, in picture form; and one of the beauties is that these films never seem stale when we see them again after a lapse of time – in fact, they are often sharpened by nostalgic memories of what has disappeared with developments taking place. But how many have heard the same thing in sound, now made possible by the excellent portable tape recorders now being sold which can be used on mains, on car or boat batteries, and on their own self-contained power units, regardless of normal electrical services.

In ordinary mortals perhaps the daily sounds of a town almost pass unnoticed – yet in a recent spell in bed I was amazed how much I could picture of what was going on outside, from what I heard, in spite of a dark room with drawn curtains. So I resolved to make recordings 'out and about', and incorporate them in one large tape by editing and transferring from my little portable which would serve me faithfully anywhere. It did not take me long to discover there were many more sound pictures than I had supposed, and as some were only obtainable on special occasions, they had to be taken as and when available, and sorted out later. I found a fair amount of blank tape between items was advisable to allow for run-in and run-out when transferring, but as the tape could be scrubbed afterwards this was not wasteful. I liked captions before the items, preparing listeners for the items, but my wife preferred 'that was' after them.

In this town we are fortunate; although we are a small one, of some 12,500 people, we have six mediaeval churches, most of them with good peals of bells and each one with an organ of good performance – nearly a dozen items to start with. By a little careful persuasion it is possible to get some good and varied items on these organs, and often the choirs as well. Other similar sounds are the striking clocks on some of the churches, public buildings and almshouses; and there is another beautiful striking and chiming clock at nearby Burghley House, the home of our hurdler-Lord, Lord Exeter, who as Lord Burghley once won a gold medal in the Olympic Games.



Top:

A rare sound in any town! This automatic 'TOERISTEN GIDS' (Tourist Guide) box announces the history and places of interest in the city of Ghent, Belgium, in either of four different languages. An excellent subject for the visitor with a Fi-Cord 202.



Left:

Old customs and crafts make ideal subjects for documentaries. ATR Editor interviews Belgian lace makers in Bruges.

We have the well-known school bell at Stamford School which signals all the movements in the school, and must be a familiar memory to thousands of boys who have now passed out into the world. Alas it is now being gradually replaced by an electric alarm. We are also fortunate in retaining our Town Crier, and he must go into the picture with his

loud bell and his carefully phrased announcements preceded and followed by 'Oyez, Oyez, Oyez'.

The large Monday cattle market offers a variety of sounds, animal and human, and a very witty auctioneer provides the highlight against the background of the market place. A long tunnel brings the trains into Stamford station, and the

whistle the far end, the intervening rumble and the bursting forth of the train will bring back memories to many old townsfolk, especially as it is a steam train. My thoughts go back to 1919 when I returned to the old town after four years of soldiering.

Several of the works about the town have their 'buzzers' as they are locally known, the time signals for starting and stopping of work, which are familiar to everyone, and often serve as time tellers. The fire siren is a must, and so is the sound which has thrilled young boys – and many old ones – for ages, the fire-bell on the engine or tender, now alas replaced by a continental ding-dong. We must also include the sounds from the V-Bomber force at the nearby RAF station, and with the wind in the usual direction one does not have to go far to pick up this deafening roar. The Town Band and the Salvation Army band provide a far more pleasant alternative, and so do the 'Waits' or carol singers at Christmastide. Indoors we must have an opening portion of the full Council Meeting, led by the Mayor, and here we shall also hear his Chaplain taking opening prayers, and Mr Town Clerk initiating the business of the evening. Also at the Town Hall we shall get the Mayor's Messenger and Mace Bearer describing the wonderful collection of Regalia which comprises two unique maces and a punch bowl which holds (and has recently held) five gallons!

Our annual Fair is held during Mid-Lent in the streets of the town, and this bristles with sounds of all descriptions. Quite apart from the music; the cheap-jacks; the side-show patter and shrieks of the young couples as they enter and emerge from 'The Tunnel of Love', are all too good to be missed. We used to have our famous Fat Man on show who tipped the scales at 52 stone 11 lb 8 oz, but he has gone – what a subject in many ways.

Finally there should be a few of the well-known voices of the town on record. We shall have the Mayor and Town Clerk; our 'Hurdler Lord' with his distinct and so well-known diction; the none the less remarkable voice which filters through a magnificent patriarch's beard, a clergyman of sporting instincts who is still young at 93. Our hospital matron is included for a lovely Irish brogue which has brought comfort to many; and amongst many others we must not spurn the good fortune which has given us the brother of the late James McKechnie with his delightful Scottish accent.

Perhaps I have given someone an idea, and I do not doubt that its scope can be greatly increased and enhanced by ingenious tape recordists everywhere.



Does your town still have trams like the one above in Antwerp?

technical and constructional articles . . .

**on tape recording and hi-fi are
always welcome from *ATR* readers**

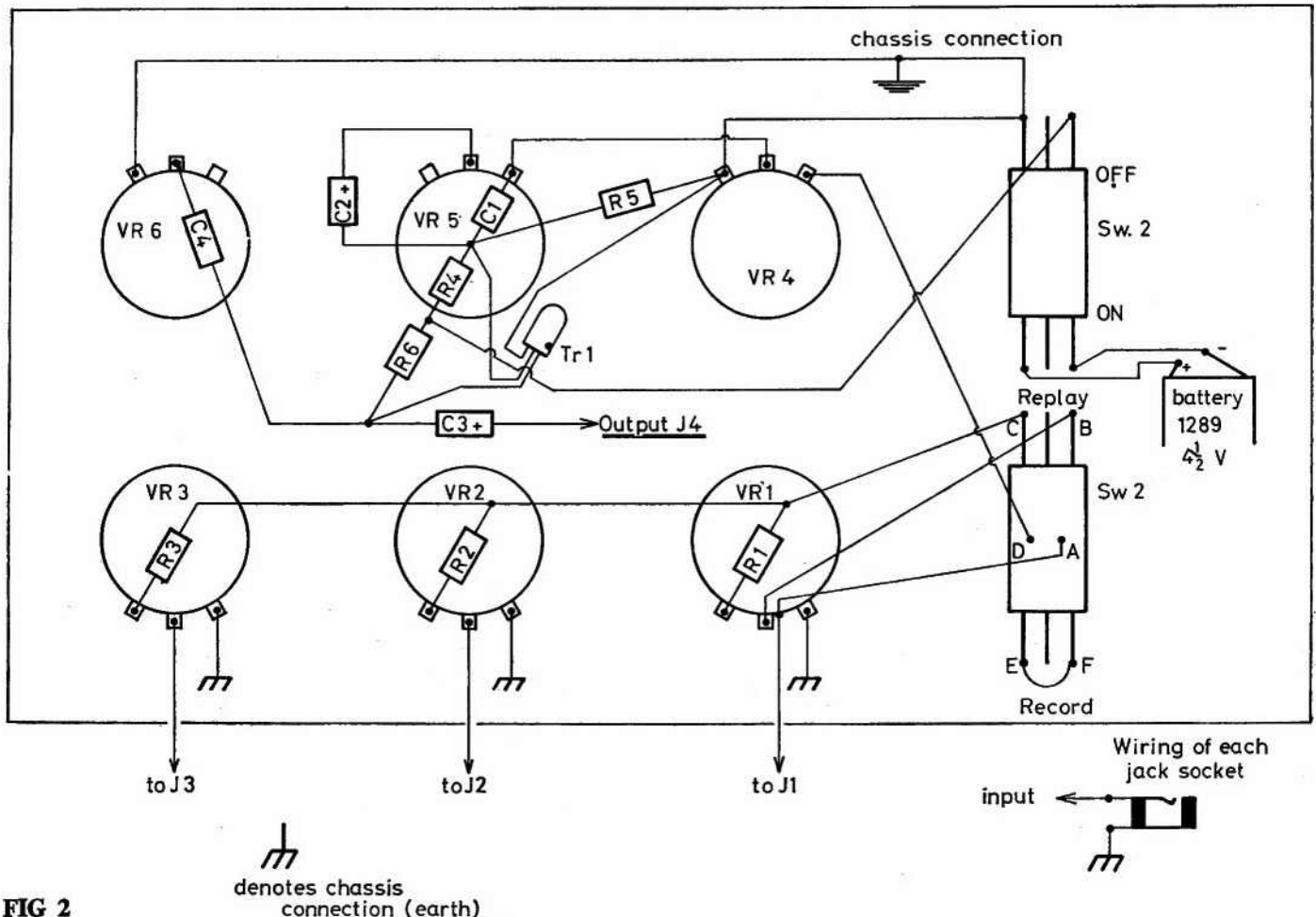
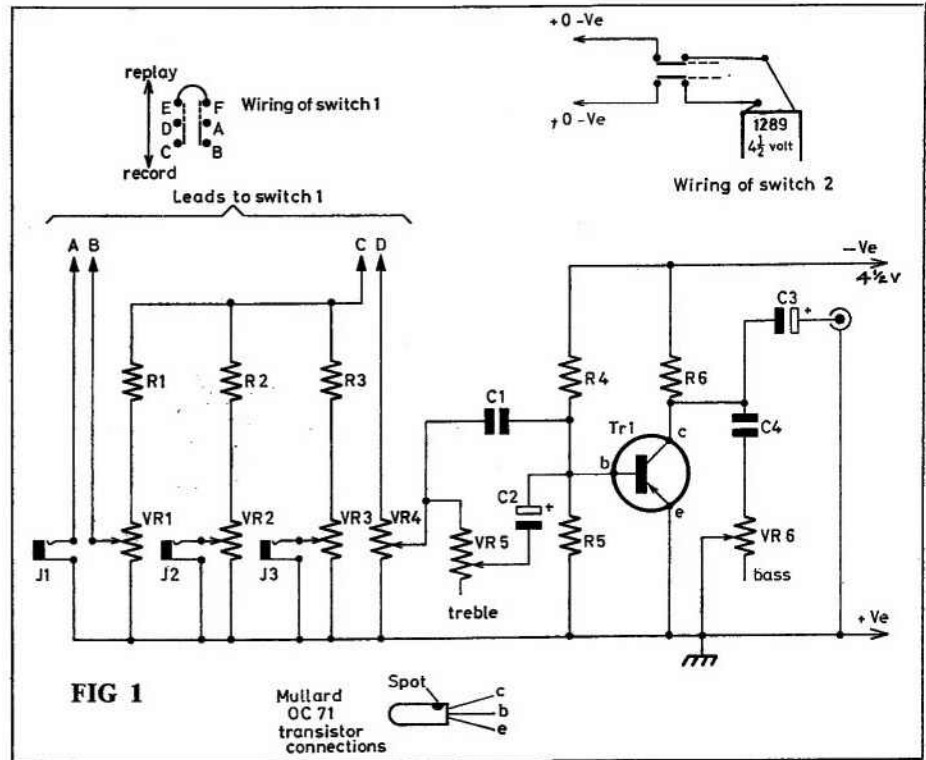
All contributions will be carefully considered for publication but should be submitted typewritten with double spaced lines. Drawings need only be clear pencil sketches but photographs with articles must be sharp and clear and preferably not less than half plate size (approx: 6½ in × 4½ in). All MSS to The Editor – Amateur Tape Recording, Haymarket Press Ltd, 86-88 Edgware Road, London W2.

CIRCUIT FOR CONSTRUCTORS

THREE CHANNEL MIXER

The circuit shown in Fig.1 was sent in by ATR reader Mr A. R. Brown and is a simplified arrangement employing a single OC71 transistor. The circuit provides for simultaneous mixing of three inputs, bass and treble control, and master fading control. In the 'record' position a switch connects each input to its respective volume control and to the transistor amplifier. In the 'replay' position the switch connects an input to jack socket 1 via the master fader control. In both cases the output from the mixer is taken from the co-axial socket.

The reason for the switch is that the mixer may be used to feed three different signals to a tape recorder each with separate volume control in the usual way. With the switch in the replay position the amplifier is still in use with bass and/or treble control if required. The inputs are suitable for high-impedance microphones, radio tuner or record player.



Components

The following components are required:

Resistors

R1, R2, R3	100 K. ohm $\frac{1}{2}$ w 10%
R4	35 K. ohm $\frac{1}{2}$ w 20%
R5	5 K. ohm $\frac{1}{2}$ w 20%
R6	10 K. ohm $\frac{1}{2}$ w 20%

Capacitors

C1	500 pFd silver mica
C2, C3	25 mFd electrolytic 25 v wkg
C4	0.1 mFd paper capacitor
VR1, 2, 3 and 4	1 Meg. Ohm log potentiometers
VR5 and 6	50 K. ohm log potentiometers

Control knobs, jack sockets, tag-board, switches, etc.

The general layout and assembly of the mixer is shown in Figs. 2 and 3.

See page 22 for
our other constructional
feature this month

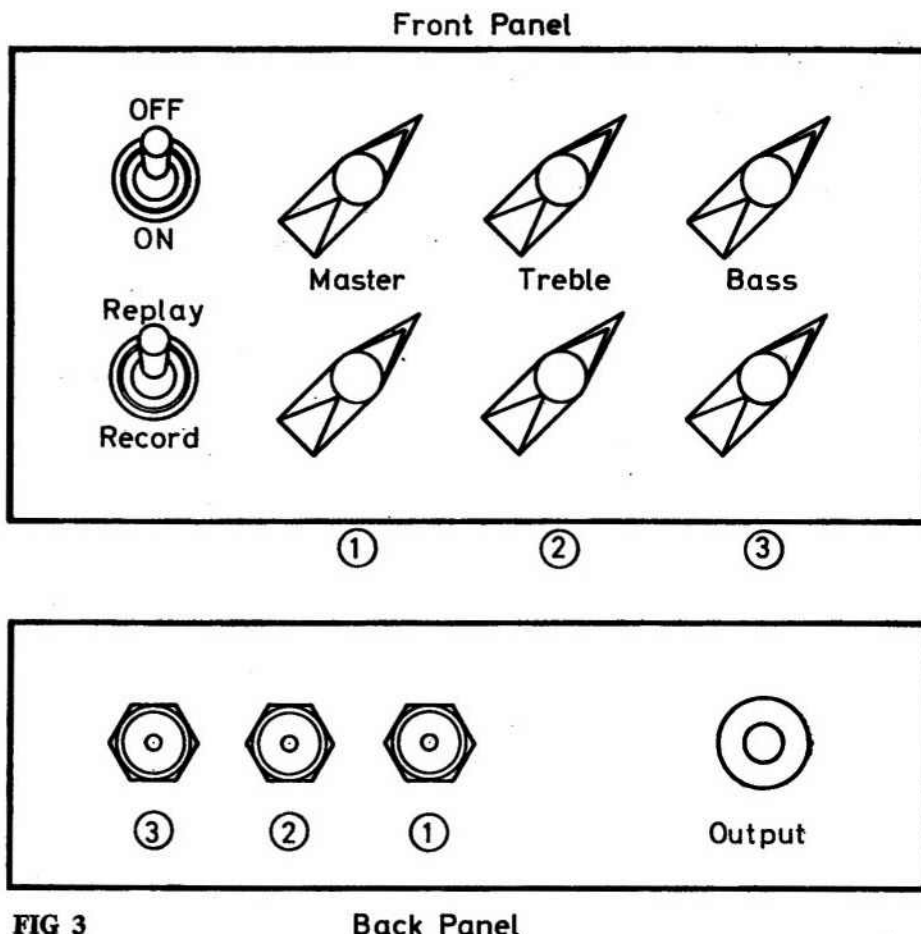


FIG 3

Back Panel

Front Cover

Our front cover this month shows part of the recording studio of ATR Editor F. C. Judd. Here's what he says about making the Electronic Music recording 'Tempotone' that won the professional entry section of the BTR Contest 1965.

'My decision to enter a recording for the BTR Contest was prompted by two reasons, first to encourage all "ATR" readers; remember I said in the April issue of "ATR" that I would enter a tape in the professional section, and secondly to "have a go" for the spirit of the contest itself. Well, the tape was chosen out of all the other professional entries by an independent panel of judges and awarded the 3M Trophy. The techniques employed in making "Tempotone" I have described often enough in "ATR", but the recording was intended to show primarily that rhythmic electronic music with an attractive melody can be produced. Moreover, it can be produced with equipment that many advanced amateurs use. The most valuable tool in making a recording of this kind is "time", because "Tempotone" involved me in over 100 hours of work. Equipment? Well take a look at the front cover of this issue. Everything, except the Philicorda organ which is a recent acquisition, was used, including a multi-speed Brenell deck not visible in the picture. The recording itself began with two pieces of tape each 3 in long on which were recorded the two foundation sounds for the rhythm tracks. From this loop the complete complex rhythm



Amongst his vast selection of sound equipment, ATR Editor Fred Judd is seen here working on "Tempotone".

backing was recorded and cut into sections, each section being used for the three repeats of the melody line in different keys. Before the melodic parts, however, there were special effects to add in tempo with the rhythm track. Many of these effects employed electronically produced sounds from ring modulated tones, white noise, etc., all mixed in by means of a

special "keyed" mixer, i.e., a signal mixer controlled by piano keys. Much of this part necessitated re-recording from the Brenell multi-speed deck, at which stage various speed changing techniques were introduced. All recording was otherwise done at a basic speed of 15 ips using full track recording. Finally the melodic parts were recorded against the completed rhythm tracks. The melody lines were produced partly from keyed audio tone generators and partly from a keyed multi-vibrator. Various tonal effects and some reverberation were introduced as well as double note effects by using two replay heads in circuit during the final recording of the master tapes. Note the plural "tapes", because these then had to be cut down to complete 32-bar sections and joined without a break in the rhythm background! Finally a brief outline of the equipment. Master recorder, Telefunken M24 (full track), Brenell deck (full track), replay only with choice of 12 speeds (this is a specially modified deck), reverberation (spring line unit), echo - Tandberg Model 62 recorder in echo circuit with a mixer, 2 six-channel mixers, three audio tone generators, ring modulator and the special keyboard mixer cum tone generator. Amplifiers - Roger Master stereo and Armstrong stereo units, feeding Wharfedale loudspeakers for monitoring and replay, etc. Unfortunately I cannot describe the sound and melody of "Tempotone", but because of its "catchy" tune it has become known around the house as "Fred's tune" - goodness only knows they have heard it enough times and I think the neighbours have too!

New from
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SYNCHRONIZING TAPE PICTURES

Adapting a domestic TV receiver for video tape reproduction

by Gordon J. King

In the previous video tape article the subject of synchronization was very briefly considered. As this is an important aspect of taping television pictures, we shall now examine it in greater detail before – as promised in the last article – seeing how an ordinary domestic type of TV set can be adapted to reproduce what has been recorded in terms of both sound and vision.

A complete television signal consists of ordinary sound signals and complete picture signals, including the sync pulses. The sound accompaniment is simply recorded. For instance, it is no more of a problem to make a tape recording of television sound than it is to record, say, the sound signal from a radio set, record player or microphone. However, the sound does have to be synchronized itself with the picture signal. This is achieved by the use of two tracks on the tape, one for the sound signal and the other for the picture signal. This then ensures that the sound is automatically synchronized with the vision.

For the time being we will forget about the sound channel and concentrate on the picture channel. Earlier articles in this series have shown how the picture or scene as 'viewed' by the television camera is translated into electrical signals of specific waveform. We have also seen that at the camera end of the chain a special waveform generator produces 'square-wave-type pulses (sync pulses)' which are added to the video signal after each line scan and after each field scan.

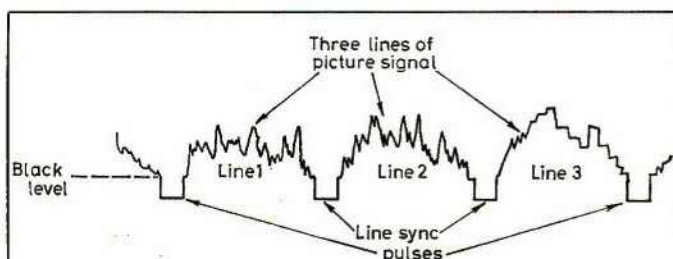


Fig. 1: Three lines of picture signal, showing the line sync pulses. A line sync pulse follows a line of picture signal to instigate the line flyback, but immediately prior to a pulse the picture signals fall to black level for a very small period of time. Similarly, the signal is at black level for a very small period following a pulse. These black level intervals give the circuits a small time tolerance.

Sync Pulses

Fig. 1 in this article shows several lines of video signal and the line sync pulse following each line. In TV transmission systems each field scan is concluded by a series of field sync pulses as shown in Fig. 2. It has already been told how the line sync pulses instigate the start of the line scan at the TV receiver or monitor and how the field sync pulses trigger off the field frame scan.

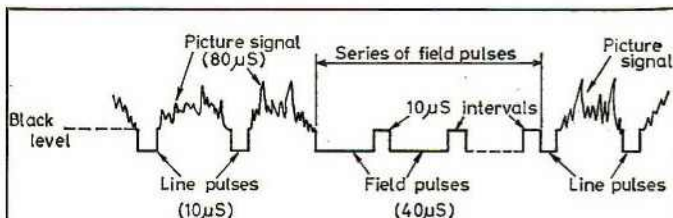


Fig. 2: At the end of the field scan a series of field sync pulses are produced. While only two such pulses are shown here, a TV system may use a series of seven or so. The occurrence of these pulses relative to a line scan determines whether the system is interlaced or sequential. The time periods shown relate to a 405-line system. Times differ on a 625-line system, a line scan, for instance, lasting only about 53 µS.

The video amplifier in the receiver or monitor boosts the composite vision signal (including the sync pulses), and the sync pulses are removed from the signal by means of a 'synchronizing separator' (sync separator) stage. Actually, this stage functions by removing the picture parts of the signal, leaving only the line and field sync pulses at its output. These pulses are, in effect, passed through high- and low-pass circuits respectively and thence to the appropriate time bases, as indicated basically in Fig. 3. Thus, the line time base receives only processed line sync pulses and the field time base a processed pulse derived from the series of field sync pulses.

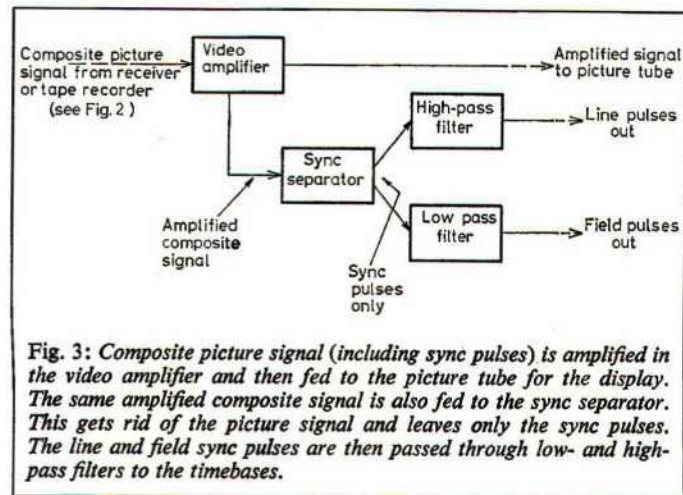


Fig. 3: Composite picture signal (including sync pulses) is amplified in the video amplifier and then fed to the picture tube for the display. The same amplified composite signal is also fed to the sync separator. This gets rid of the picture signal and leaves only the sync pulses. The line and field sync pulses are then passed through low- and high-pass filters to the timebases.

At this juncture, it is not intended to delve in great detail into the circuits of the TV set, but something must be known about them to obtain an understanding of the tape recording of the signals themselves. A sync separator stage is essential to avoid the pulse comprising the picture signal proper from triggering the time bases in a random manner and at times when they should not be triggered. A TV set of ordinary domestic nature, for instance, fails to lock the picture on lines and fields correctly if there is any trace of picture signal gaining admittance to the time bases. That is, if the sync separator stage is defective.

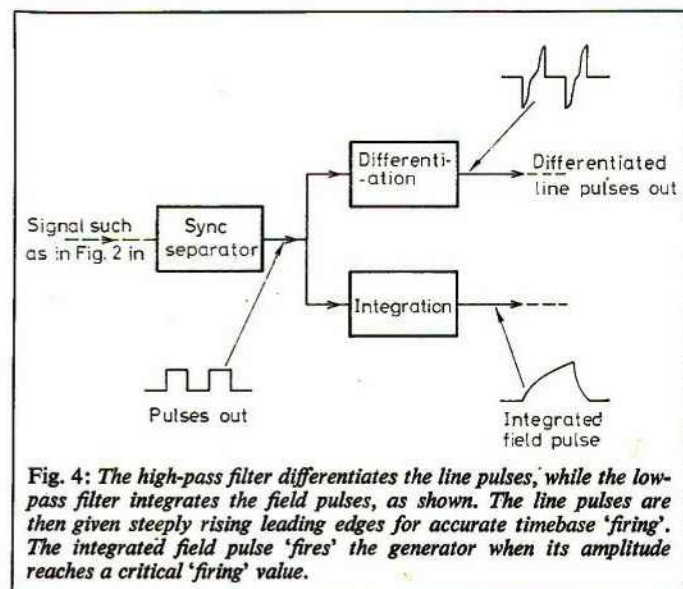


Fig. 4: The high-pass filter differentiates the line pulses, while the low-pass filter integrates the field pulses, as shown. The line pulses are then given steeply rising leading edges for accurate timebase 'firing'. The integrated field pulse 'fires' the generator when its amplitude reaches a critical 'firing' value.

Accuracy of timing important

To ensure that the time bases are accurately triggered, the line sync pulses are differentiated, while the series of field sync pulses are integrated (that is, they are added to form one 'solid' pulse of steep leading edge to 'fire' or trigger the field time base at precisely the exact moment, bearing in mind the accuracy of timing for good interlace – on a system where interlace is adopted – see the previous article in this series).

The differentiation and integration take place in the so-called high- and low-pass filters mentioned above, and to make sure that all traces of line sync is removed from the field pulses and to change the rounded, integrated field pulse, as depicted in Fig.4, into a pulse with a sharply rising leading edge, the pulse is sometimes fed to the field time base through a partnering differentiating network, as shown in Fig.5. The resulting pulse is then ideal for 'firing' the field timebase very accurately.

At this stage it should be mentioned that, while the series of field pulses is being produced, the line time base remains in synchronism because of the intervals between the field pulses themselves being differentiated (they 'look' to the line differentiating circuit like ordinary line sync pulses). Fig.2 shows that these intervals have the same $10\ \mu$ second time period as the line sync pulses, which is the reason why they work the line differentiating circuits in the same way as the line pulses proper.

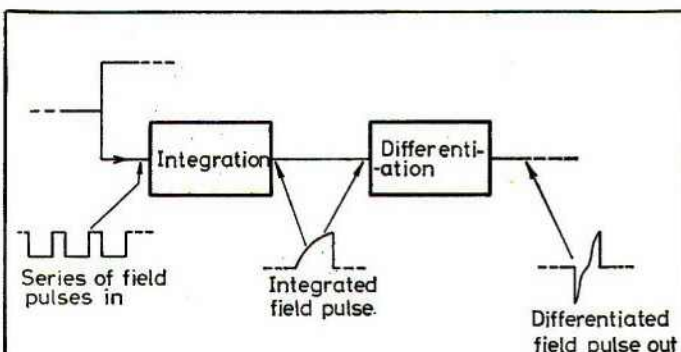


Fig. 5: To make the field 'firing' more accurate, interlaced TV systems sometimes use an 'interlace filter' or differentiating circuit subsequent to the integrating circuit, as shown. This, then, produces a field pulse from the series of field sync pulses which is much more 'potent' in 'firing' the field timebase at the exact time for optimum interlace.

Odd half line

Moreover, with an interlaced system, the field pulse chain commences half-way through the final line scan of that particular field or frame. This, then, means that the line scan fails to complete a full line but finishes half-way through. In this way the odd half line of the interlaced system is produced (see last article).

Video tape enthusiasts, however, as mentioned earlier, generally adopt the so-called random interlace technique, making the field timing just a little less critical. This is really just as well, for when one considers time periods as short as $10\ \mu$ S and less (one micro-second – μ S – is one-millionth of a second), the great importance of speed consistency of the tape transport mechanism becomes clearly apparent. But more about this later.

Now, if we can get a faithful tape recording of the signal at the output of the video amplifier – say, of an ordinary domestic TV set – it follows (assuming a constant tape speed) that if we apply the tape playback signal to the input of a TV set's video amplifier, the signal recorded would produce a picture on the tube screen. Just how would we do this?

The basic solution is given in Fig.6. Here the picture tube and sync separator outputs from the video amplifier in any EV set are broken, and the output is taken instead to the input of a tape recorder. In practice, there would be equalization somewhere in this circuit and one may decide not to break the tube and sync separator connections so as to use the TV set as a monitor. This has its

parallel sound-wise, for when one makes a recording from a radio programme, say, the sound signal is often extracted from the af amplifier (equivalent to the video amplifier from the picture signal aspect) or from the sound detector (equivalent from the vision detector) without disturbing the original circuits. It is then possible to hear on the radio's speaker the programme that is being recorded.

Top response to millions of cycles per second

However, so far as the vision signal is concerned, a far greater importance must be attached to the frequency response. If the treble is cut, say, at 8,000 c/s due to bad coupling techniques on the sound channel, nothing much happens, the reproduction being perfectly acceptable. Not so from the vision point of view. We have already learnt that the vision channel must be wide enough to pass signals without undue attenuation up to several million cycles per second (Mc/s). Unnecessary connections should, therefore, be avoided, for it is very easy to bypass the really high-frequency video signals. It is for this reason that Fig.6 shows the tube and sync connections broken, but by taking special precautions in practice they can be retained, as we shall see in future articles in this series.

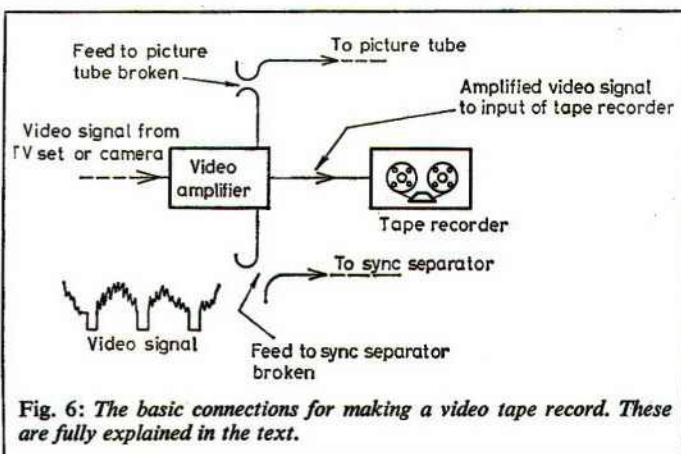


Fig. 6: The basic connections for making a video tape record. These are fully explained in the text.

Having thus recorded the vision (or video) signals from the setup in Fig.6, we might employ the reciprocal arrangement in Fig.7 to play them back in terms of a picture. Here the connection from the vision detector (in any TV set) is broken and the output of the tape recorder connected to the video amplifier instead. Theoretically, the playback of the video tape record should feed video signals to the sync separator, as did the vision detector when the set was working normally, and a picture should appear on the screen of the set's tube!

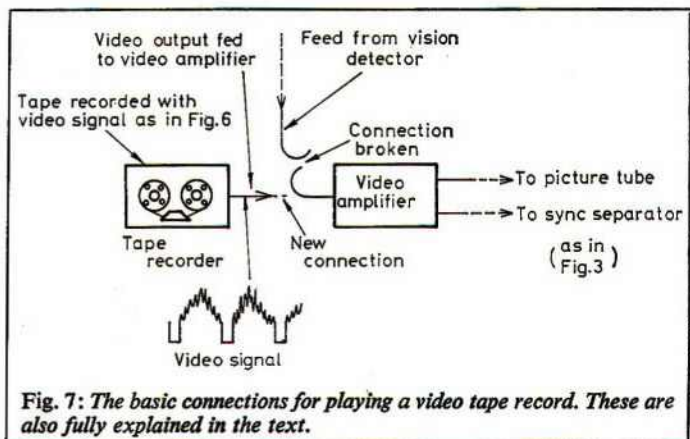


Fig. 7: The basic connections for playing a video tape record. These are also fully explained in the text.

Although all this may sound very simple, the practice of it is bristling with snags and problems. We shall now have to await the next article to see why and to learn what would happen if we simply employed the arrangements of Figs.6 and 7 in conjunction with our ordinary tape recorder.

I LOVE MUSIC BUT...

by G. Harris

Shakespeare should be the patron saint of tape recording, for did not the bard utter 'If music be the food of life, then play on...?' However nutritious melody might be, there is no real need for tape recordists to gorge themselves silly!

For those charitable clubs and individuals who produce magazine programmes and tape slide shows and who want an audience, the problem seems to be what can be done different from the usual run-of-the-mill presentations. For our club, the eternal question is bound up with subject-matter and our audiences consist mainly of old people. Holiday tape slide shows and 'Down Your Way' type of sound presentations are reliable guides, but I can't help thinking that the tape recorder has a more ambitious potential than this without resorting to the padded cavalcade of musical renderings.

A survey by members of our group resulted in a statement being issued by a spokesman for the society who said, 'You must have music to give variety to a half-hour show and to hold the attention!' to which I say, without wishing to promote a punch-up, 'Rubbish!'

To have, or not to have music? This is, indeed, the question to which there are three noble answers. Musical copyright has a breach into which it's easy to fall and the first answer is: be good citizens and cough up with the fees. The second answer, for those bent towards anarchy, is to create your own though what the Musicians' Union will say if you don't have a card is perhaps worthy of another article. The third answer is directed to the real tape enthusiasts. Forget music and make use of natural sounds.

The last time I went abroad I took with me a battery portable and a fair stock of tape. Regardless of expense, I let the recorder run whether I was standing in a shop or waist deep in alpine snow. I ignored the slightly facetious remarks from my wife who suggested that the sound of snow might create acute over-modulation. The results were, however, fruitful. I edited the stack of tapes on to a five inch standard play at three and three-quarters, leaving myself with an hour of pure sounds. Bearing in mind the microphone does not have the censurable ability of the human ear, it's not really so surprising what sounds I actually caught.

A street 'audio scene' in Interlaken was, at the time, just ordinary. At home I discovered that I picked up the hot-blooded argument between a taxi driver and a pedestrian who obviously had an inherent hate of anything and anyone to do with taxis. Fortunately for English ears, the discourse was conducted in an interesting alien idiom. The recording of snow whilst

standing on top of the Jungfrauoch had caught the delicious swish of skis and a more dramatic sound of someone's scream who had disappeared over a precipice.

A train journey between Interlaken and Lucerne produced an educational lesson on the Japanese language. Not all tourists who go to Switzerland are English or American. Suffice to say that, coupled with the slides that I took, I produced a tape slide show without music.

It's worth mentioning that if you do take a battery recorder abroad, it's also best to take your own spare stock of batteries. One of our members was forced to purchase a set in Germany. The recorder worked perfectly until those batteries ran out and he patriotically came back to the British standard. He discovered then that his tapes were running back at a slightly slower speed. It was most unfortunate! (I might add, from experience, that the question of standards also applies to the more powerful lucratives. 70% proof alcohol 'over there' is a darn sight stronger than the English 100% proof!)

Another member of our club did a similar thing, wandering around the streets of Warwick. The tapes were edited, a script was written around the sounds and a half-hour programme called 'The Sounds of Warwick' was produced, without falling to the germ of an orchestral backing. This member is now the Mayor, which must prove something – if not my point!

Holding people's attention without the aid of music is not really so difficult. I mean, try whistling to someone instead of talking and see how far their attention will roam! After all! that able body called 'BBC' gives out a fair proportion of music all day. The tapist should not need to compete with professionalism along such lines, but there is competition with originality and the BBC doesn't have an overwhelming hold on this. These are fighting words. They're meant to be.

Of course there are dramas, but I don't think that these are the answer, since tape

'I had picked up a hot blooded argument.'



societies do tend to suffer from an acute shortage of willing actors. No! I repeat. Natural sounds are the real food for the tape recordist's life. Before you demand to know what possible interest there is for a group of old-age pensioners to listen to a half-hour session of factory hooters and motor cycle exhaust pipes, consider the potential interests for those people who can't readily get into town. The sounds of a supermarket, a village post office, a weekend market and the stalls, other old people's homes and news reports of what's going on. Who hasn't been asked by some old person: 'What's going on, then?' It's surprising what is going on. What isn't so interesting to you may be a scoop for another. There's no copyright on fact and there are facts given in most journals. Facts on cooking, knitting and gardening. These people don't readily have the glossy journals and, if they do, half of them probably find the print too small to read. Collect these facts, edit them, give 'em spice and you won't need any music to hold their attention. Don't quote the passages, otherwise you may be standing before the 'beak' on account of thieving the writer's copyright.

I once wrote a short story and recorded it, just to hear what it sounded like. Some months later after giving a tape slide show to a group of old people (and this one had music!), the tape ran on and picked up this story. I switched it off. Someone heard it and demanded that I should keep the recorder going. For fifteen minutes there was just my voice telling a story. I'm still being asked to do another. This might have been a piece of cheap advertising only it didn't pay off in the commercial sense. The publishers obviously considered it to be pretty foul because they all sent it back with regrets. I don't think my audience regretted it though!

Natural sounds can be tiresome if they're just thrown together. The real tape recordist has to be prepared to put some work into his production. That should go without saying! Put natural sounds into some form of sequence and write a connecting script and those sounds become 'music'. This point about writing a script must be amplified. Too many tapists still persist in reeling off an *ad lib* narration and most of them sound boringly 'ad lib'ish. It kills what otherwise could be a good programme and that's when the coughs and shufflings begin. If you think natural sounds are not the meat for good recordings, then why did you buy a tape recorder in the first place? You can always get a gramophone for the other thing. Decide on your subject-matter and the natural sounds will come automatically.

By the way, I do love music.

tape club news

TO ALL CLUBS If you found Club News lacking its usual informative presentation last month, please blame your ATR Editor. Owing to illness, Kim Cook was unable to piece together the late contributions and your Editor had to take over at the printers in order to get a few of the late items in at all. Sincere apologies, but I know all clubs will understand and join me in wishing Kim a speedy recovery. Meantime, I will attempt the club news for this issue, but if you find it not to Kim Cook's usual standard I hope you will understand why. My only other comment is that there seems to be an almighty lot of news items which suggests to me that there is an almighty lot of tape recording activity around the clubs. Which is as it should be.

F. C. J.

Unforeseen Circumstances

First out of the hat this month comes the South Devon Tape Recording Club to whom my apologies are due for being unable to deliver my lecture/demonstration on Electronic Music on 15 September. All was well on my journey down until at 60 mph the windscreen of my car shattered, fortunately resulting in no more than a few cuts from broken glass. Sorry SDTRC, will see if I can make it another time (F. C. J.).

The South Devon club recently staged a Mobile Sound hunting expedition, a novel idea which involved the collection of 20 specified sounds. In six cars with portable recorders at the ready, they set off on a journey of over 80 miles, taking them through Exeter, Ottery St Mary, Bickton Gardens, Otterton, Exmouth, etc., returning via Dawlish and Teignmouth. A stop for tea was made at Nutwell House Hotel on the Exmouth-Exeter road.

A list of 20 sounds to be collected was handed to each participant before he left, and, despite some heavy rain showers, most of the sounds were captured. The idea of the excursion was not only to find unusual sounds to record, but also interesting places to visit.

5 points were awarded for each listed sound obtained.

3 points for any interesting or unusual sound not listed.

10 points for the most interesting sound of the day.

South Devon also have a full programme for 1966 including a Tape/Slide evening, Stereo on Tape, a Tape Battle (?) and a Dinner and Dance. Their club programme is made up until next May!

Live Microphone

A range of questions relating to tape record-

ing were numbered, placed in a hat and drawn by BTRAC members. Everyone had to answer his questions and speak on the subject, in front of a live microphone for two minutes. Then they answered 'follow-up' questions fired by the remaining members. An evening such as this can be recommended to other clubs; it was an excellent way of getting members into discussion as well as improving microphone technique. An evening much more exciting and interesting than had been hoped. Laurie Watson and Alan Bird recently gave a programme of recordings taken on portables during the club tour of Hams Hall Power Station. This was followed by a quiz, with taped questions on all topics. Only one member realized that a particular piece of music had been played at double speed. **Quick Service.** The tape recorder at a hospital very near to BTRAC's clubroom was reported to be playing both tracks at the same time. A quick investigation by about twenty BTRAC members, led by technical expert Brian Skinner, revealed that the tape was resting on the deck cover behind the tape guide, so that the head was indeed scanning both tracks. Hospital staff are reported to be amazed that the recorder was 'repaired' in less than five minutes, including cleaning and de-fluxing the heads! Well that deserves a couple of points towards the Top Ten Status!

Group Four Demonstration

Rugby Tape Recording Society meetings are now held at the Central Hotel, Church Street, which was featured in local newspapers recently. At their last meeting Mr J. Berwick, a local hi-fi specialist dealer, presented a demonstration of two systems of sound reproduction to 31 members and guests, commencing with the *Group Four* equipment - Goldring deck, amplified by an Armstrong amplifier with KEF Cantata stereo speakers and cabinet by Record Housing Ltd. An excellent programme of music showed the clarity and quality of this equipment which was followed by a demonstration of a Ferrograph 631H recorder. Mr Berwick also brought along a Fi-Cord 202A portable recorder and a Truvox stereo recorder. Later he demonstrated the Leak Troughline 3 VHF tuner with transistorized amplifier and the Leak Sandwich speakers. This first-class programme was augmented by a quiz tape devised by John Bannister and won by Tom Reader with Rosemary Scott second. Mr Bannister also talked about the 'Steam Organ' at Perranporth, Cornwall, which he saw whilst on holiday in August and played a tape recording he had made.

A team of members this week is making a start on a feature tape concerning a local beat group, 'The Cataracts', whilst Mr Bannister is making plans to record a speech in French by the Mayor of Rugby, Cllr. N. Assheston, B.A., for a tape to be taken to Evreux, the French twin town of Rugby, by the Chairman of the Rugby-Evreux Twinning Committee, Mr John Hardeman.

Visits to the Leicester, Warwick and Leamington and BTRAC clubs have been planned for the very near future.

Son-et-Lumiere at Brighton

Mr Tucker, of the South Eastern Electricity Board, was at the Royal Pavilion, Brighton, to welcome a party of members from the Brighton Tape Recording Club when they paid a visit to see the control equipment of the Son-et-Lumiere. Two tape recorders were

the main part of the equipment and controlled sound and lighting, extensive use of amplifiers and relays were used in conjunction with the recorders, both EMI professionals.

At their first meeting after their summer recess, so much material was brought up that it was not possible to deal with all the tapes that evening. First, however, the Secretary gave an excellent demonstration of tape and slide harmony, the subject being the recent Brighton Carnival, with genuine sound effects of the procession and fireworks display. Included also was a recording of the club's visit to the Son-et-Lumiere and one of a trip on the famous Bluebell Railway. Brighton speed trials have also been filmed and recorded and it is hoped that a public showing of the film will be made soon.

The club meets every Wednesday evening at the Downs School, Grantham Road, Brighton; the Secretary is Mr Keith Upton of 47 Kingsley Road, Brighton. They now have a News Sheet available to all members and No.1 clearly indicates the active nature of the BTRC.

New Meeting Place

Norwich Tape Recording Society announce their new meeting time and place. Fourth Thursday of each month at the Assembly House, Theatre Street, Norwich. They say: 'We trust that the change of night will enable you to attend our meetings, and are sure that you will find the Assembly House very pleasant with a most congenial atmosphere. The advantages are immense, especially the central heating, the availability of a car park (entrance in Chantry Road) and a restaurant where excellent refreshments may be obtained at reasonable prices.' (Sounds fine. - Ed.)

The committee have put much thought into the matter of future programmes. Please make the necessary notes in your diary. (N.B. The December meeting is on the third Thursday.) November 25th/65. 'Any Questions' answered by Reg Williamson. Questions to Reg in advance please.

December 16th/65. 'Live Recording Session.' The Echos Beat Group. Please bring your recorders.

January 27th/66. Another visit from Fi-Cord International Ltd. A talk by Mr Newell which will include a lecture/demonstration of the 'Synchroslide' (35mm slides with taped sound). February 24th/66. 'Cine Sound' presented by Mr G. G. Burton.

March 24th/66. Norfolk Dialect. A talk by Mr H. E. Betts.

April 28th/66. AGM.

Meetings commence at 7.30 pm sharp with a break for refreshments at 8.25 pm.

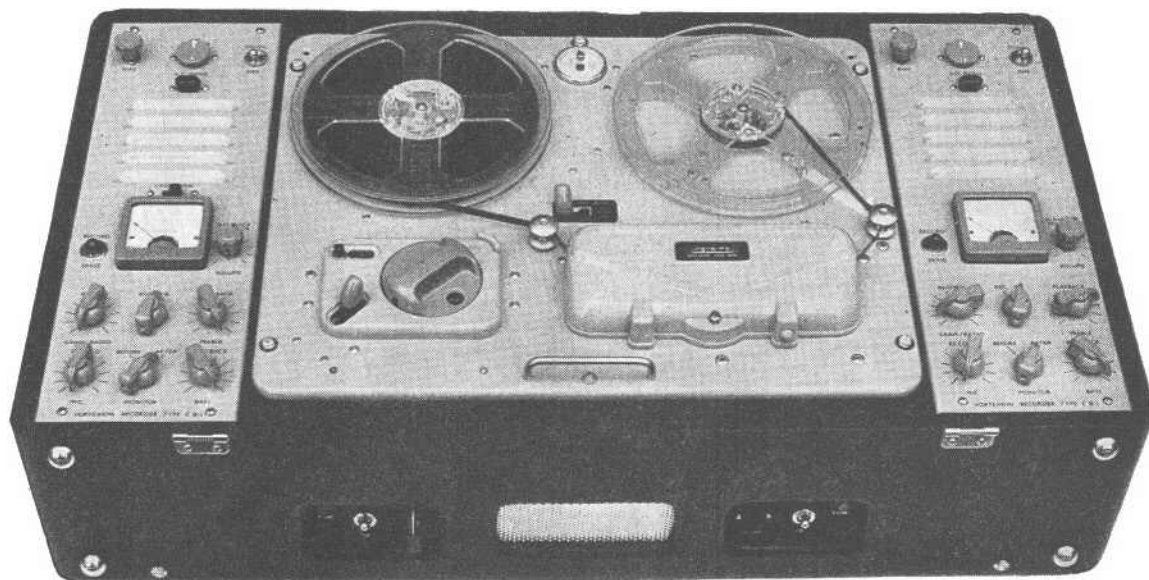
What Makes a Good Club Member?

Reading Cine and Tape Recording Society reckon that members can be valued by the number of contributions they make to club evenings. Hence their *club member of the year* award to be introduced this season. The Society intends awarding points to members throughout the year for any contribution they make on club nights. Such contributions will entitle them to one point at least, regardless of merit, and in any of the major fields of tape, slide or film up to ten will be given. The audience will be asked to allot the points and an average will be taken. A top total by the end of the season gives that energetic member a medallion plus a roll of film or tape. Apart from members' activities, the programme

continued overleaf

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IT CAN also make a recording on one track and then transfer it to the other track while measuring and listening to it and adding one or two more signals also metered.

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Tape Club News *continued*

secretary tells us that this year's programme is already bulging at the seams. At least two events have been arranged for most club evenings, and a series of beginners' lecturettes will be given as well, going all the way from loading the camera to editing the film. Some of the highlights planned are a lecture on make-up to be shown on closed circuit television, plenty of manufacturers' evenings, practical film making, and talks by such well-known names as club member Gordon Rowley. The RTCR summer bulletin, which covers 1965 and 1966, includes some important dates to remember. 6 December, Abbey Cap; 17 January, Annual exercise with film, slides and tape; 14 February, Ladies' night; 21 February, Grosvenor Cup for best tape of the year; 18 April, Bournes Cup for best film of the year; 9 May, AGM. ATR readers around Reading who may be interested in joining this highly active Cine and Tape Society should contact the Hon Sec, Mrs R. Noyes, 4 Froxfield Avenue, Reading.

The Southall Show

The efforts of Southall TRS to make their contribution to the three-day Southall Show a success were amply rewarded. The display was by far the most outstanding STRS have yet produced and it received very considerable praise from the Southall Show Organizers (see photograph).

Members' own equipment on display included: Tape recorders and decks by: Akai, Beocord, Brennell, Fi-Cord, Stella, Truvox, Uher, Vortexion and Wearite.

Microphones by: AKG, Film Industries, Gramplan, Philips, Reslo and Uher.

Loudspeakers by: Celestion, Decca, Goodmans, Leak and W.B.

Turntables by: B. and O., Connoisseur and Thorens.

Test Equipment by: Heathkit and Taylor.

Members' home-constructed items included tapes, amps, pre and main amps, mic mixers, etc., and the all-important tape/slide controller. At one time over £1,500 worth of members' equipment was on display.

The planned demonstration of sound/slide control by tape recorder was given added impetus by recent magazine articles and proved to be far the greatest attraction. Members had built the control themselves and only just got it finished in time. A sequence of slides showing Alpine views, accompanied by Swiss music and commentary, lasted about 12 minutes and proved to be the feature which drew the crowds. Pictures were projected on to a 6 ft x 4 ft screen from a Perkeo Automat projector.

After watching the sound/slide demonstration visitors showed great interest in the rest of the display. A large assortment of manufacturers' literature and free magazines was available. The club had taken the precaution of arranging a particularly interesting programme for future meetings and printed schedules were on hand for potential recruits. A maximum turnout of regular members ensured that there was always several available to answer questions and give advice. Other members were occupied manning the various displays, including tapespondence, home recording, tape splicing, programming, etc. Many visitors were amused by the 'talk to yourself' feature where the replay was altered from original to varying delay by changing

the tape speed to confuse the speaker.

The club's own 50 watt Vortexion amp. and P.A. equipment was used to give sound coverage to part of the main show area. A music background was maintained and the regular bulletins on the Test Match scores were appreciated by the other exhibitors.

Southall TRS is only a small club with, over the past few years, an average of only 10 regular members. Casual members come and go, but it is the regulars who do all the work. We feel that the success of Southall to rise to the big occasion, and each time to improve on the past, should encourage other small clubs to be bold and ambitious in any projects which can bring their activities to the notice of the public.

NEWS IN BRIEF

New Club

Park Tape Recording Club is the name and it caters for enthusiasts around Richmond, Surrey. Chairman is D. J. Morris and the Secretary John Tibble of 29 Meadlands Drive, Petersham, Surrey, to whom potential members should write. Meetings will be fortnightly and a lively programme is being prepared.

Newcastle and District TRC

Recent visit to the Farne Islands yielded bird sounds galore, boat engines and harbour sounds. Highlight of the trip was a breakdown when the boat engine failed and members had visions of being picked up by the local lifeboat. However, the engine was repaired and the trip continued to complete the best outdoor meeting of the summer season. Next outdoor trip will be to the Ravenglass small gauge railway and the NDTRC say: 'Millom, look out.'

Attention all Clubs

A group of tape recording enthusiasts in Singapore are hoping to produce a weekly series of record request programmes for patients in the British Military Hospital there. The programmes are to be broadcast over the hospital earphone network. Here's what they say in a letter to ATR:

'From time to time some of the patients are men wounded (some severely) in Borneo or they may be long-term patients through accidents or severe illness. To improve our programme and also to give a better service to the patients and maybe even assist in patient recovery, we were wondering if you could help us by contacting your list of "Tape Recording Clubs" and finding out which of those clubs would be prepared to interview on tape the wives or parents, etc., of patients who live in the immediate area of a particular club. The message(s) would then be incorporated in our programme as a surprise for the patient. There may even be readers of your magazine who would, although not members of a club, be prepared to travel locally and tape a message.'

'We on our part would contact direct by air-mail the nearest club or person prepared to help, giving addresses of relatives, etc. We would, of course, return the tape by airmail to the sender and can cope with all tape speeds from 1 1/2 to 15 ips, two track and four track.' The letter was from W.O. 1, Carroll R.A.O.C., c/o Ados - H.Q., S.A., G.P.O. Singapore, to whom letters should be sent direct.

Derby Tape Recording Club

A service for blind persons and hospital patients is being planned and the monthly

tape competition was won by A. Stanway. The quiz programme, presented by D. Fleckno, was won by member D. Hill. The committee is seeking a new and larger meeting place to accommodate the now large membership of the DTRC.

Recording Society of Australia

They say in a recent letter: 'We don't expect to get into the Top Ten, but we'd be more than grateful for a mention in your pages. It'll show the Pommies that the Aussies are not all beer and surfing! Yours sincerely, Richard Collinson, Secretary.'

Well we hope the Aussies are all tea and tape recording, like us Pommies. (Ed.) 'Good on yer sport' and thanks for the letter which also outlines the RS of A activity. Sorry we cannot get all that in Richard, but your letter was too close to the printing deadline. If you can get your news up a bit earlier than the normal club news copy date we'll get it in. Good luck to all your members down under.

North London Tape and Hi-Fi Club

Better late than never, their very informative news letter reached us just a bit too late for a full spread. Seems they are organizing a Christmas party and plenty of interesting programmes for the members. Also under way is an eight-channel mixer for club use, but there seems to be a complaint about lack of enthusiasm on the part of members. No volunteers for recording interviews and too few competition entries. Why not try the old Army method for volunteers - You, you and you, get cracking!

New Tape Club in the North-west

From the wild Northern wastes of Lancashire (that'll start something) comes news in a long report from the newly formed **Furness Sound Track Club**. They have been under way for four months and anyone interested should contact Mrs Rayner, 123 Abbey Road, Barrow in Furness. It seems that in four months they have achieved a great deal, including sound effects for a local theatre, a juke box programme, a visit to Millom tape club with a pie and tea supper laid on, and now they are contemplating a studio, like the one Millom have. Lots of things have been taped including a *Murder Trial*, *Any Questions*, interviews, music groups and they even made headlines in the local paper.

(We'll try to get your photo in next month.) Good luck, Furness Sound Trackers, and keep busy with those egg cartons for the sound proofing. (That is definitely all this month. - Ed.)

Top Ten listing

held over until

next month

Copy dates for future editions of Tape Club News are as follows: December: 25 October; January: 20 November. News should be addressed to Mrs Kim Cook, ATR, Haymarket Press Ltd, 86-88 Edgware Road, London W2

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Quite my favourite Aussie import and 'twas my pleasure (financially and socially) to meet and photograph them when they first arrived. In fact, World Record Club are using my photograph on the box and on their LP cover. (Personal plug!) As they, the Seekers, were such a delightful bunch, I was happy to see them make the Hit Parade.

They don't do their 'hit' numbers here but stick to a sort of older pop - 'Danny Boy', 'Waltzing Matilda', 'Plaisir d'amour' etc, and with the accent on Aussie originals. Very pleasing and ideal for the join-in-and-sing type of folk fan.

Congratulations to World Record Club for enclosing a leaflet giving a potted history of the group and other interesting 'gen'.

'Lilac Time'/World Record Club Ltd,
TLM 4. £1 9s 6d

Music by Franz Schubert. Lyrics by Adrian Rose. Starring Jacqueline Delmar, John Larsen, Peter Glossop, The Linden Singers and the Sinfonia of London conducted by John Hollingsworth. The frustrating thing about this is that, of course, they couldn't get the entire operetta on to the one tape. But what they have got is most mouth-watering. Light, cheerful, excellently performed.

Once again there's a fine informative leaflet enclosed to bring forth still more applause from RA.

Another popular musical of yesteryear pops up on **HMV TA-CLP 1592. £1 15s 0d.** The Sadler's Wells Opera presents 'The Mikado' (Vol 1) by Gilbert and Sullivan. This appears to be Act 1 in entirety. Naturally, being of The Sadler's Wells it is absolutely first rate.

Gorgeous orchestra, good voices including John Heddle Nash, Patricia Kern, Marion Studholme, Denis Dowling, John Wakefield, etc.

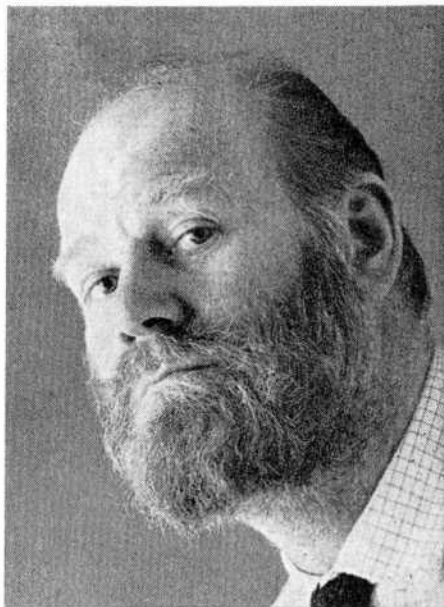
Gilbert and Sullivan has become almost a religious cult, and, like Catholicism, people either love it or hate it.

It's a lot of fun and contains much jolly good music and there's 48 minutes of it here. I enjoyed all 48!

... and so, to yet another musical show - 'On Tour with the George Mitchell Minstrels' from the Black and White Minstrel Show/HMV TA-CLP 1667. £1 15s 0d. I must confess to being a non-fan of this type of thing, but nevertheless was im-

TAPE REVIEWS

by Russ Allen



mensely impressed by this tape.

The Mitchell Choir do such a good job, sound as if they really enjoy it and are backed by a fine orchestra playing tip-top arrangements.

B & W Minstrel lovers will adore this and there's something for all, Music Hall, Irish, Calypso, Scottish, etc.

A jolly good Show!

**'Jazz Samba', Stan Getz-Charlie Byrd/
Verve TA-VLP 9013. £1 15s 0d.**

This was recorded on 13 February 1962 and reviewed by me as an LP in ATR in February 1963.

To quote from then '... this is a superbly relaxed jazz set which had my ear from

the start and proved much more conducive to dancing than some other Latin groups I wot of.

Get this. But desafinitely.'

Hearing it again, I remain as enthusiastic. Recording is really fine too.

'Our Shining Hour', Sammy Davis-Count Basie. Arranged and conducted by Quincy Jones/Verve TA-VLP 9085. £1 15s 0d. A very happy match. Davis is a great artist who can really sell a song. Basie's full swinging backing is great and so too are Jones' arrangements, between them making a true shining 36 minutes. (Not quite the hour I'm afraid.)

'Why Try to Change Me Now' is a Sinatra impression and the fabbest track, 'She's a Woman', is a gas. Final bash, 'Bill Basie Come Home', features Davis's crazy dancing feet.

'Herman's Hermits'/Columbia TA-33SX 1727. £1 15s 0d.

Woon o've me fivrite growps. Oi think ees luvly. Wiv 'is litle crewked tooth an all. When they began to issue 12 in LPs the recording companies exposed the weakness of the average artists and groups. Very few can sustain interest for number after number. Those who can are the true giants.

Despite the fact that the sight of young Herman makes me come all over paternal, I still found my excitement wavering part way through Track 1.

However, Track 2 had 'I'm 'Enery the Eighth I am' and 'Mrs Brown You've Got a Lovely Daughter' which brightened me up a bit. Good fun and of course a must for Herman's many followers.

'Scheherazade' Symphonic Suite Op 35. Rimsky-Korsakov. Royal Philharmonic Orchestra conducted by Sir Thomas Beecham. Solo violin - Steven Staryk/HMV TA-ALP 1564. £1 15s 0d.

This is an old recording and contains a certain amount of 'hiss'. Though hackneyed, it's still a favourite piece of descriptive music and Beecham was one of my favourite conductors. A man of fire who could drive an orchestra to excel themselves. The orchestra does extremely well on this but later recordings have appeared with a better quality of balance and recording.

The pre-recorded tapes supplied for this review were kindly loaned by Teletape Ltd, to whom further enquiries should be addressed. Teletape Ltd, 33 Edgware Road, London W2.

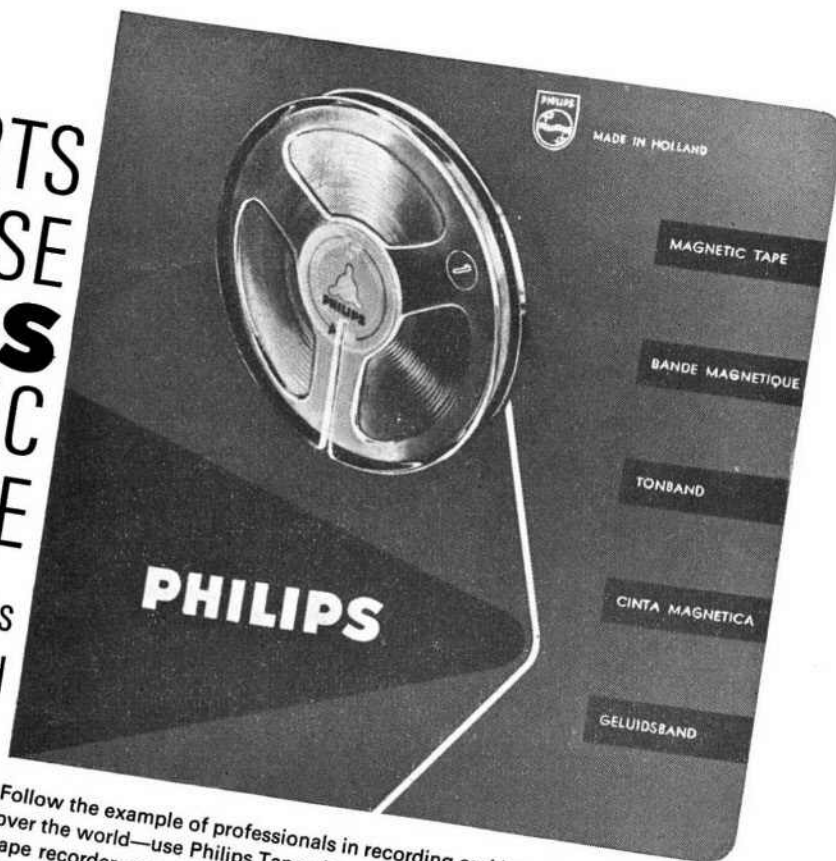
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THE TAPE DIRECTORY

Particulars of Tapespondents are given in the following order: name, age, occupation, address; special interests, tastes in music; type of machine, spool sizes, speeds; area of tapesponding required.

AUSTRALIA

Robert King, 19, salesman, Unit 22, Tania Court, 24 Chandos Street, Ashfield, Sydney, NSW, Australia. Tape recording, photography, stamp collecting, golf, reading. Pop music. National RS7558, 7 in. 3½-7½. England and USA.

FRANCE

Alan Duchatel, 20, English teacher, 2 Avenue Azam, 33 Pessac 6de, France. Amateur radio, tapesponding, language, travels, general chat. Pop, light classical and sound effects. 2-track Tesla, 5 in. 3½, 1½. United Kingdom, Spain and France. French and English speaking.

NEW ZEALAND

E. A. Sutton, 39, 27 Lune St, Oamaru, New Zealand. 35mm slides, fishing (sea and river), life in other countries, general conversation. Popular, light and modern. Philips 4-track, 7 in. 1½, 3½, 7½. All countries.
Robert Stark, 39, printer, 46 Seaton Road, Portobello, Dunedin, New Zealand. Out doors, Esperanto. All kinds of music. BSR, 5½ in. 3½. Any country.

SOUTH AFRICA

David Farrell, 23, journalist, 6 Fairways, Simon Bekker Drive, Krugersdorp, Transvaal, South Africa. Poetry, amateur dramatics, tape recording composing. Pops, jazz and folk. Philips EL 355 (4-track), 5½ in. 3½. Any English speaking, but especially Europe.

D. D. du Plessis, 33, clerk, PO Box 880, Bloemfontein, OFS, South Africa. Tapesponding, gardening, travelling, photography, music. Light classics. Philips EL 3541, 7 in. 3½. All over the world.

USA

Jerry Roberts, 40, TV film accountant, 5523 Strohm Avenue, Hollywood, California, USA. People, politics, chit-chat. Pop, folk. Sony 500 4-track, 7 in. 3½-7½. Ireland, Scotland, any English speaking.

BRITISH FORCES

Cpl W. Donkin, 32, serviceman (driving instructor), 210 Signal Squadron, BFPO 69, Aden. Tape recording, old cars (veteran). Serious and unusual. Akai M8 4-track, 7 in. 1½, 3½, 7½, 15. Anywhere English speaking.

S.A.C. Morgan, 20, RAF instrument mechanic. TASF, RAF, Akrotiri, BFPO 53, Cyprus. Photography, modern art, electronics. Modern jazz, brass bands. General stereo 66A, 7 in. 1½, 3½, 7½. America.

BEDFORDSHIRE

John Scott Barling, 39, district income clerk, 10 Kingscroft Avenue, Dunstable, Beds. Evangelical interdenominational youth groups, photography (especially colour). Classical only. Standard Unicorder, Portogram Audio-tape, 7 in. 1½, 3½, 7½. All countries. English speaking.

BUCKINGHAMSHIRE

Sue Abbott, 42, service wife, 27 Woodcock Avenue, Naphill, High Wycombe, Bucks. Broadcasting (open and closed circuits), humour. Everything from Sinatra to Sibelius. Revox/Sony/Philips, 10 in. 1½, 3½, 7½. You wherever you are!

CO DURHAM

John Shaw, 41, bus driver, 35 Red Courts, Brandon, Co Durham. General conversation, radio listening. Classical. Grundig TK14, 5½ in. 3½. S Africa, USA.

ESSEX

Dennis Rookard, 23, photographer, 8 Railway Square, Brentwood, Essex. Photography, tape recording, mad humour, current affairs, radio, chit-chat. Pop to classical. Akai M69, Philips EL3542, 7 in. 1½, 3½, 7½. Anywhere.

KENT

George A. Turner, 56, none, chronic arthritis, 144 Dane Valley Road, Margate, Kent. Jobbing printing, short story writing. Country and Western. BSR Challenge, 5½ in. 3½. Canada, USA and UK.

Michael John Duggan, 22, medical laboratory technician, 12 Belle Vue Road, Bexleyheath, Kent. Classical music, medicine, current affairs, cars, psychology. Philips EL 3536 stereo, 7 in. 7½, 3½, 1½. USA, France, Japan.

LANCASHIRE

Sam Williams, 62, long-distance HGV driver, 13 Amos Avenue, Litherland, Liverpool 21. Yachting, navigation and motoring, travel. Beatles to Bach and back. Sony TC/500 stereo, 4-track, 7 in. 3½, 7½. Any especially Australia. (Would like to form club in Liverpool district. Please help.)

John Doyle, 29, marine engineer, MV *Leinster*, c/o Coast Lines, Princes Dock, Liverpool 2. Motor cycle and car racing. Folk, country and western. Sony TC 200, 7 in. 3½, 7½. Britain.

Margaret Hall, 14, schoolgirl, Carr Royd, Caravan Park, Hambleton, Nr Blackpool, Lancashire. Swimming, camping, outdoor life. Musical films, folk songs. Telefunken 85, 7 in. 7½, 3½. Canada and Ireland.

LONDON

Ronald Booth, 36, recordist, 15 Keynsham Road, Eltham, London SE9. Recording, radio, railways, electronics, ladies. All music (except jazz). Truvox R102 and Stella portable, 7 in. 7½, 3½, 1½. Anywhere.

Frederick Parker, 20, British Rail worker, 10 Goodhall Street, Willesden, London NW10. Recording. Popular, film music. Cossor 4-track, 7 in. 1½, 1½, 3½, 7½. Australia, USA.

MIDDLESEX

Edward Morton, 24, engineer, 40 Moorcroft Green Hillingdon, Middx. Mixing sound effects, home-made comedy. All music but opera. Truvox 2-track mono, 7 in. 7½, 3½, 1½. Any abroad.

NORTHANTS

Dennis Emmerson, 44, insurance official, 26 Hillcrest Avenue, Kettering, Northants. Sailing and all sporting activities, bridge, motor-ing. Light classical music. Grundig TK18 and Philips. 5½ in. 3½. Scandinavian and Canada.

SOMERSET

Trevor Thomas, 21, medical laboratory technician, 6 French Weir Avenue, Taunton, Somerset. Literature, amateur dramatics, military, languages, medicine - in fact pretty well everything. Musicals, most modern and pop. 'Q'-Cord R119K, 4½ in. 3½. Anywhere, preferably English speaking.

Damian McMillan, 17, sales assistant, 28 Charles Road, Yeovil, Somerset. Photography, scientific progress, science fiction, humorous situations, jokes, ingenious gadgets, tapesponding. All music but opera and R & B. Elizabethan LZ 29, Stella ST 459, 7 in. 1½, 1½, 3½, 7½. Anywhere and everywhere.

SURREY

David Hammond, 36, GPO engineer, 7 Martin Grove, Morden, Surrey. Christianity, international friendships, motor cycling. Classical, some pop. Fidelity Major Trackmaster 4, 7 in. 1½, 3½, 7½. Anywhere.

WARWICKSHIRE

G. W. Sayers, 23, civil servant, 2 Shirley Park Road, Solihull, Warks. Cine photography, cinema, gardening, travel and various. Popular and light classics. Philips EL 3549 and Philips EL 3301, 7 in. 1½, 1½, 3½, 7 in. All.

WILTSHIRE

R. Burns, 25, 87 Antrobus Road, Amesbury, Nr Salisbury, Wilts. Films, reading, music. Varied. Siemens stereo, 7 in. 7½, 3½, 1½. America, France, Spain.

YORKSHIRE

Geoffrey Wood, 41, engineer, Wood Dean, Scotland Lane, Horsporth, Nr Leeds. Irish history, particularly 1916-22. Folk songs. Fi-cord 202, 4 in. 3½, 7½. Ireland or Irish, immigrants anywhere.

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The system is beautifully engineered from top quality British components. No soldering. No mains. No prior knowledge needed. Simply arrange components on perforated transparent panel, position brass connecting strip underneath, fix with 6 BA nuts and circuit works with full efficiency. You can then dismantle and build another circuit. Your results are guaranteed by our Technical Department and News Letter Service. All parts available separately for conversion or expansion of sets.

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RADIONIC PRODUCTS LIMITED
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CRAWLEY, SUSSEX

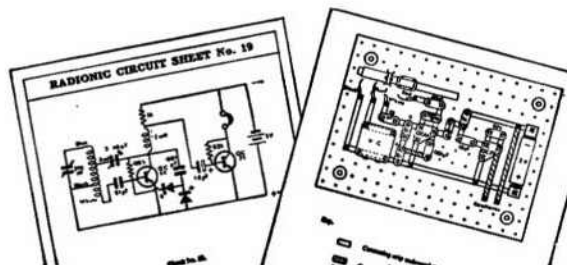
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3" / 150 ft.	4 for 18/-
do.	48/- doz.
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5" / 600 ft.	2 for 26/-
5 1/2" / 900 ft.	16/-
7" / 1,200 ft.	19/-

LONG PLAY (Prestressed Polyester Base)

3" / 225 ft.	4 for 22/-
do.	60/- doz.
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5" / 900 ft.	2 for 35/-
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3" / 375 ft.	2 for 20/-
do.	108/- doz.
4" / 600 ft.	2 for 30/-
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7" / 2,400 ft.	45/-

TRIPLE PLAY (Prestressed Polyester Base)

3" / 475 ft.	2 for 26/6
do.	150/- doz.
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Enclosed £ s. d.

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TAPE RECORDER COVERS

Smart waterproof cover to give complete protection to your tape recorder. Made from rubberised canvas in navy, wine, tan and bottle green with white contrasting pipings, reinforced base, handy zip microphone pocket and name panel.

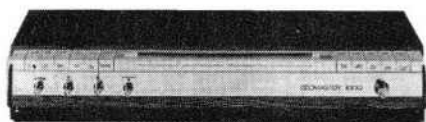
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AUDIOVIEW NEW PRODUCTS



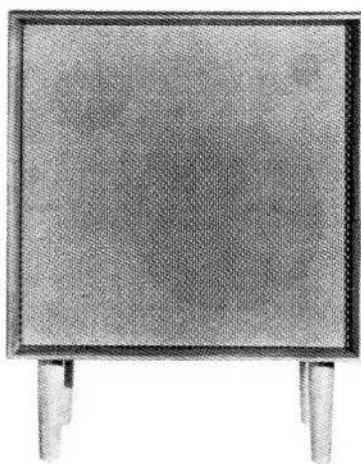
The Beomaster 1000 Amplifier (above)

Bang & Olufsen announce the UK introduction of the all-transistor BEO-MASTER 1000 stereo amplifier and FM tuner. This new tuner/amplifier is the latest addition to the range of B & O products now being marketed in the UK by their Sales Division, Debenhams Electrical & Radio Distribution Co Ltd, Gloucester. The Beomaster 1000 is styled in a teak or Brazilian rosewood 'slim line' cabinet with stainless steel control knobs and 'piano key' selector switches in ivory plastic. Only 3 7/8" in high, the Beomaster 1000 has numerous applications and delivers no less than 2 x 15 watts output. The FM band is extended up to 108 Mc/s and incorporates an automatic control circuit which 'sucks in' FM stations and keeps them finely tuned.

Special features include: push-button speaker change-over switches which control two sets of stereophonic speaker systems; separate bass and treble controls, balance control for correct stereophonic sound distribution, compensated volume control; separate treble and rumble filters; push button switching between monaural and stereophonic reproduction; push-button function selector for switching between the following types of operation: FM broadcasting; FM automatic frequency control; Tape recorder; Gramophone 1; Gramophone 2. The Beomaster 1000 retails at 79 gns.

Arena Loudspeakers

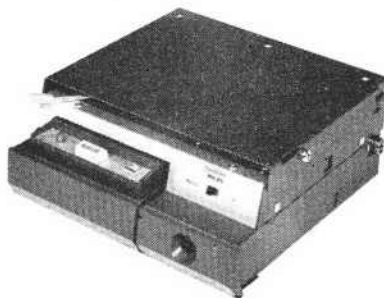
Also handled by Highgate Acoustics Ltd are the new range of Arena loudspeakers housed in various attractive cabinets. Of these, the Model AT9, which handles 25 watts, should be of interest to Hi-Fi enthusiasts, it's shown top centre and is available for 4 or 16 ohm outputs. Frequency response is 30 to 20,000 c/s and two speakers are incorporated with a crossover network. Cabinet choice of teak or Brazilian rosewood.



Arena pressure chamber loudspeakers are based on the principle that a relatively small loudspeaker mounted in an entirely padded and enclosed cabinet will reproduce the same tonal range as larger and more expensive loudspeakers. Further details and illustrated lists from Highgate Acoustics Ltd, 71/73 Great Portland Street, London W1.

Permaton Tape

A new heavy-duty all-purpose tape at moderate prices has just been introduced by Highgate Acoustics Ltd. Three types are available: PEL . Long Play, PED . Double Play and TRIPLEX . triple play. All tapes are fitted with two coloured leaders and contact foil at both ends. Permaton tapes are available as follows:

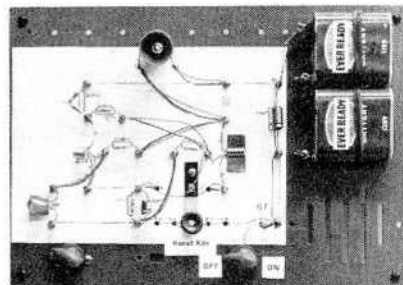


Philips Car Tape Recorder (above)

We are not certain as to whether this constitutes a danger to driving; perhaps no more than an ordinary car radio because this Philips new car tape recorder, which operates through any conventional car radio, uses the highly successful Philips cassette-loaded battery tape recorder, model EL3301. There is no fuss of threading or re-threading tapes; it is simply a matter of dropping the cassette into position and it is ready to play. Price of the complete unit is 40 gns.

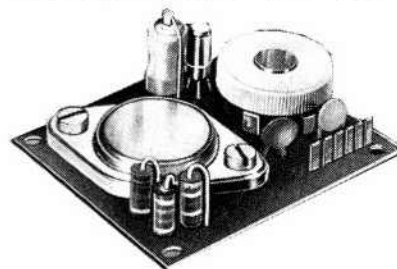
Radio and Electronics Engineer Kits

Youngsters, or for that matter older members of the family, should find a great deal of interest in the Philips Radio



and Electronic Engineering training kits from which one can build all kinds of working radio and electronic equipment. These kits come boxed with detailed instructions and plans for building radio receivers, amplifiers, an electronic organ, acoustic relay, microphone amplifier, etc. The instructions in themselves are educational, for they explain all the fundamental workings of each exercise. Each circuit can be laid out on a special board as shown above and everything operates from batteries.

With the RE1 kit you can build a complete radio receiver and there are supplementary kits, RE1A and RE2, for different multi-transistor radios with a loudspeaker. The EE8 electronics kit allows for the building of eight working circuits, but with the add-on A20 kit you can build 22 working circuits. These kits are available now in most large toy shops or further details will be sent from Philips Electrical, Century House, Shaftesbury Avenue, London WC2.



Transistor Amplifier Kits

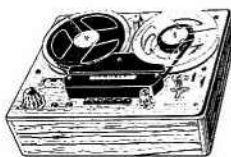
Sinclair Radionics Ltd, of Comberton, Cambridge, now do a comprehensive range of transistor amplifiers and radio receiver kits. Most of these are miniaturized such as the TR750 power amplifier shown above which can be purchased ready for use at 45s. It operates from a 6 to 12 v supply and will deliver 750 milliwatts of power for a 10 mV input.

For those who require large power outputs there is the Sinclair X-20 pulse width modulated amplifier and pre-amplifier which delivers over 12 watts of audio to a 15 ohm speaker. Frequency response 20 to 20,000 c/s ± 1 dB. Operating voltage 28 to 45 v. Input sensitivity 1 mV at 5 K.ohms. Full details of this and the Sinclair X-10 combined 10 watt hi-fi unit can be obtained from the address above.

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THE CHOICE MUST BE TANDBERG"**

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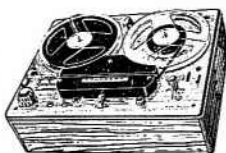
6



Model 64 4 track
Model 62 2 track
Price 110 gns. each.
Semi professional
Stereo/mono tape
recorders with cathode
follower output. Three
speeds—Three heads
—Four amplifiers—
"Sound on sound" etc.

Model 74 4 track
Model 72 2 track
Price 93 gns. each.

Build-it-in or carry-it-
around. Complete stereo/
mono record and playback
with own power
amplifiers and speakers.
Three speeds—dual
record indicators—output
for hi-fi pre-amps—
centre channel for
language teaching or cine work.

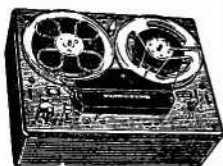


SERIES

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8



Model 823 2 track
(teak case) 54 gns.
Model 822 2 track
(Portable with lid) 57 gns.
Model 843 4 track
(teak case) 59 gns.
Model 842 4 track
(Portable with lid) 62 gns.

High class monaural tape recorders suitable for
home, business, education, photo sound, etc.
($3\frac{1}{2}$ and $1\frac{1}{2}$ I.P.S. speeds—7" reels).

Model 92 2 track only
(teak case) 69 gns.

High class monaural 3
speed ($7\frac{1}{2}$, $3\frac{1}{2}$, $1\frac{1}{2}$ I.P.S.)
tape recorder, with quality
comparable to the famous
Stereo models. Extremely
reliable machine
recommended for all
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purposes, etc.



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Tandberg

Send for further information and specifications stating the model
number you are interested in, to:-

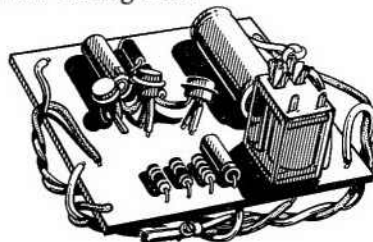
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Elstone Electronics Limited, 81, Kirkstall Road, Leeds. 3.
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Two-way intercommuni-
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**WATER
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Transistor device with special sensor. For
operating an audible or visual alarm if
water—e.g. in bath or tank, exceeds a given
level.

WITH

2 WALL DATA CHARTS

Containing

**VALVE
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GUIDE**

Current preferred
types, equivalents,
practical hints,
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**ENCLOSURES
AND PICK-UPS**

Practical data for
the audio enthu-
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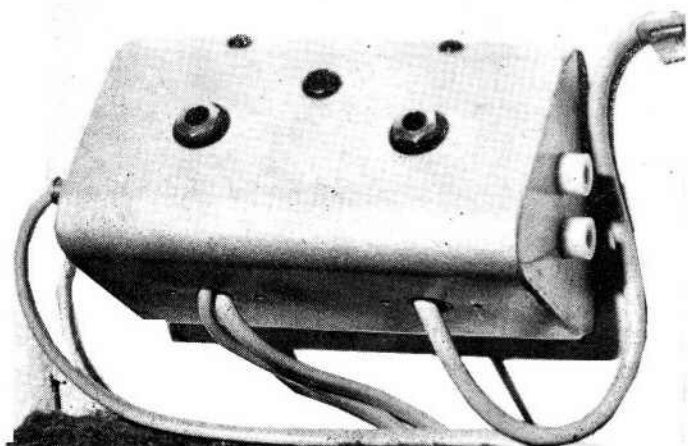
Practical Electronics

NOVEMBER ISSUE OUT NOW 2/6

SOUND SCENE

Sound Scene Hints

Microphone extensions in the studio or to another room can be neatly carried out by using suitable screened cable between the tape recorder and a jack socket box like the one shown below mounted down on the skirting board. This box also carries two sockets for a 6 volt D.C. cue light supply and a pair for extension or replay loudspeaker. If the microphone extension cables are over 20 ft long, and this applies to low impedance microphones, a balanced line should be used, i.e., two inner wires with outer screening and a balanced microphone low to high transformer. Long extensions should never be used for crystal or other high impedance microphones because of the risk of hum pick-up and/or signal attenuation due to cable capacity.



Telephone Pick-ups

The modern style GPO telephone has a rather small internal magnetic field and some have experienced difficulty in using a magnetic pick-up with these handsets. The Acos magnetic pick-up shown on the right of the telephone (below) will operate satisfactorily with the modern handset if placed as shown in the photo. Rather more gain is required at the tape recorder and the pick-up should therefore be connected to the microphone input socket.



Azimuth Alignment

Do your older recordings lack their original brilliance and good treble response in the reproduction? If so, there may be at least three reasons: (1) the replay head is worn, although this is unlikely unless you do a tremendous amount of recording and/or replay, (2) the head has become clogged with tape dust and simply needs cleaning or (3) the pressure pads have worn away or become slack so that the tape is not in close contact with the head. If you have checked up on these and there is still a loss of treble, then it may be azimuth alignment, i.e., the gap in the record/replay or replay head is not in alignment with the magnetic track on the tape. A tape head can gradually alter its alignment through tension springs becoming tired or through the alignment screw gradually moving round. Now don't rush at it with a screwdriver until you are certain that you can successfully re-align to an original tape recording, i.e., rock the head by means of the adjusting screw until the treble response is again at maximum (below). If you feel uncertain about this at all get a competent engineer to do it or purchase an *azimuth alignment tape* which also contains instructions for use. These can be obtained from Tutching Electronics Ltd, 14 Rook Hill Rd, Christchurch, Hants.



Video Tape Recording

We learn that a video tape recorder priced at between £600 and £700 will be available about January 1966 from Loewe Opta (Highgate Acoustics Ltd). This video recorder will have a single rotating record/replay head providing a helical tape scan at comparatively slow nominal tape speed. It may be demonstrated at the next Audio Festival.

Still no further news on video, except from Sony, who say early next year for their first domestic video recorder.

continued overleaf 43

TEMPOTAPE

SUPERB PROFESSIONALLY RECORDED MUSIC—PLUS 600 ft OF EXTRA TAPE FOR YOUR OWN HOME RECORDINGS ALL FOR 21/- (3 $\frac{3}{4}$ I.P.S. $\frac{1}{2}$ track) MONO



Why consider ordinary magnetic recording tape when you can buy the wonderful new TEMPOTAPE, 600 ft. of super quality long play polyester on 5" reel, with the top track professionally recorded by skilled engineers on the latest Danish Lyrec equipment costing many thousands of pounds.

Here is the list of titles available:

1 EROTIC PERCUSSION. 2 BIG BAND BLAST. 4 TCHAIKOVSKY'S PIANO CONCERTO. 5 THE KING AND I. 6 CAMELOT. 7 FEATURING BILLY DANIELS. 8 HAPPY HARMONICA. 9 SOUTH PACIFIC. 10 ANDRE PREVIN. 11 GREAT THEMES FROM GREAT MOVIES. 12 BIG BAND SWINGS THE CLASSICS. 13 TRIBUTE TO DUKE ELLINGTON. 14 FLAMENCO. 15 UNDER PARIS SKIES. 16 ROMEO AND JULIET OVERTURE. 17 ORGAN POP CLASSICS JOHN KILEY. 18 TCHAIKOVSKY'S 1812 OVERTURE. 19 L'AMORE D'ITALIA. 20 OKLAHOMA. 21 FAMOUS OVERTURES. 22 MUSIC FROM IRVING BERLIN. 23 MUSIC FOR LOVERS. 24 THE GOLD RECORD. 25 SOUND OF MUSIC. 26 TRIBUTE TO WOODY HERMAN.

All are specially selected for your enjoyment and equivalent in playing time to both sides of an L.P. record.

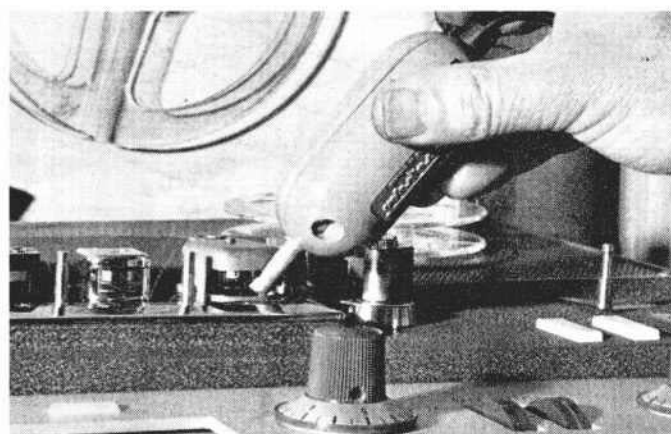
In addition to providing you with a pre-recorded tape of superlative quality, TEMPOTAPE provide a bonus of 600 feet of blank tape, and all you do is turn over the reel and make your own recordings on the bottom track. You can later erase the top pre-recorded track making a further 600 ft. available for your own use and at 21/- you can afford to do this.

Ask your dealer for details or write to: Dept. Y.1.
Tempotape Division, A. C. Farnell Limited, Hereford House,
North Court, Vicar Lane, Leeds 2. Phone: 35111.

Sound Scene *continued*

ATR Sound Tour Contest

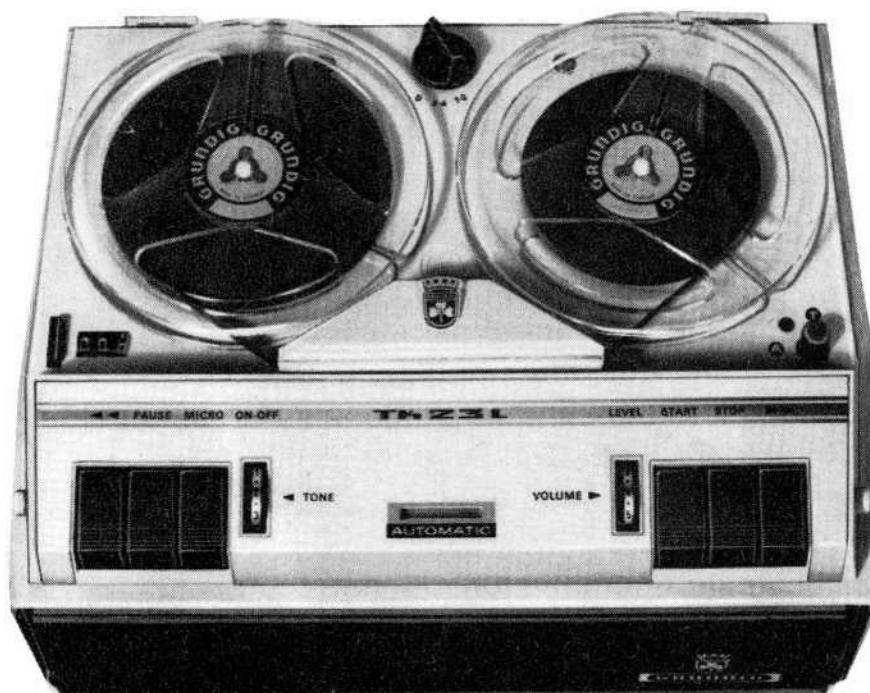
The winner of the ATR Sound Tour to Denmark is Michael Dagnall of Yardley, Birmingham. Mr Dagnall produced an excellent documentary/report on the tour, backed by many of the sounds recorded during the tour. He is awarded a Fi-Cord 202 portable tape recorder. A year's subscription to ATR is also awarded to Mr Dagnall and to Mr T. Morris of Erdington for the best individual sounds recorded during the tour.



Keep the Noise Down

All tape record/replay heads need de-magnetizing from time to time (de-gaussing is another term used for this). The tape heads can become magnetized for various reasons and an indication of this is a high noise on the recording. The noise is of the hissing variety (white noise) and can spoil recordings, particularly where the signal level is low, as during quiet passages of music. A de-magnetizing tool like the one shown above is not an expensive item and should be used regularly especially by those who do a lot of recording and editing, particularly editing with the tape running backwards or forwards at high speed and in contact with the head. Some use this method of locating sections of a recording, and high level signals on the tape can produce permanent magnetism in the heads, permanent that is if not treated with a de-magnetizing tool. Don't forget that tape heads and guides need cleaning regularly because tape dust can clog in these parts and reduce the necessary close contact between the tape and the head. Another noise-reducing device is the bulk eraser below, although this is applicable to the tape itself. Not every tape recorder will perfectly erase old recordings and some even leave a slight after-erase noise level. Nothing is more annoying than to find the murmur of an old recording spoiling a new one. This sometimes happens when tapes made on one recorder are used on another. Difference in alignment of the erase head may cause impartial erase. A bulk eraser will clean a whole tape all at one go and leave it noise free for new recordings. Again a fairly necessary item if you do a lot of recording, especially with exchange tapes.





Let's face it, what could be simpler than a Grundig tape recorder.

An automatic Grundig tape recorder!

The Grundig TK23L is a highly professional tape recorder. It records on four tracks, plays back for up to six hours on a spool of double-play tape.

Yet, for all its intricate insides, it remains a simple, robust Grundig. Whether you wish to recapture a sigh or a symphony, it records what you want—with feeling.

The TK23L has a further advantage. It's automatic.

This doesn't mean you switch it on and come back to find the dinner cooked. But it means that when you're putting something onto tape, the Grundig

'Magic Ear' adjusts the recording level automatically. *Forte* or *pianissimo*, you get balanced sound all the time.

With the TK23L you can superimpose, make trick recordings too. It costs 49 gns.—comes complete with over a quarter of a mile of tape and a microphone worth seven guineas.

Listen to it soon. And in case you're a person who likes twiddling knobs while you record—relax! There's a switch that turns off the automatic 'Magic Ear.'

Grundig think of everything.

Valuable - but free if you post now!

Grundig make first-class tape recorders from 37 gns., radios from 15½ gns. Send today for a free 20-page colour book about them, called 'The Grundig World of Sound.' Post this coupon to Grundig, London, S.E.26.

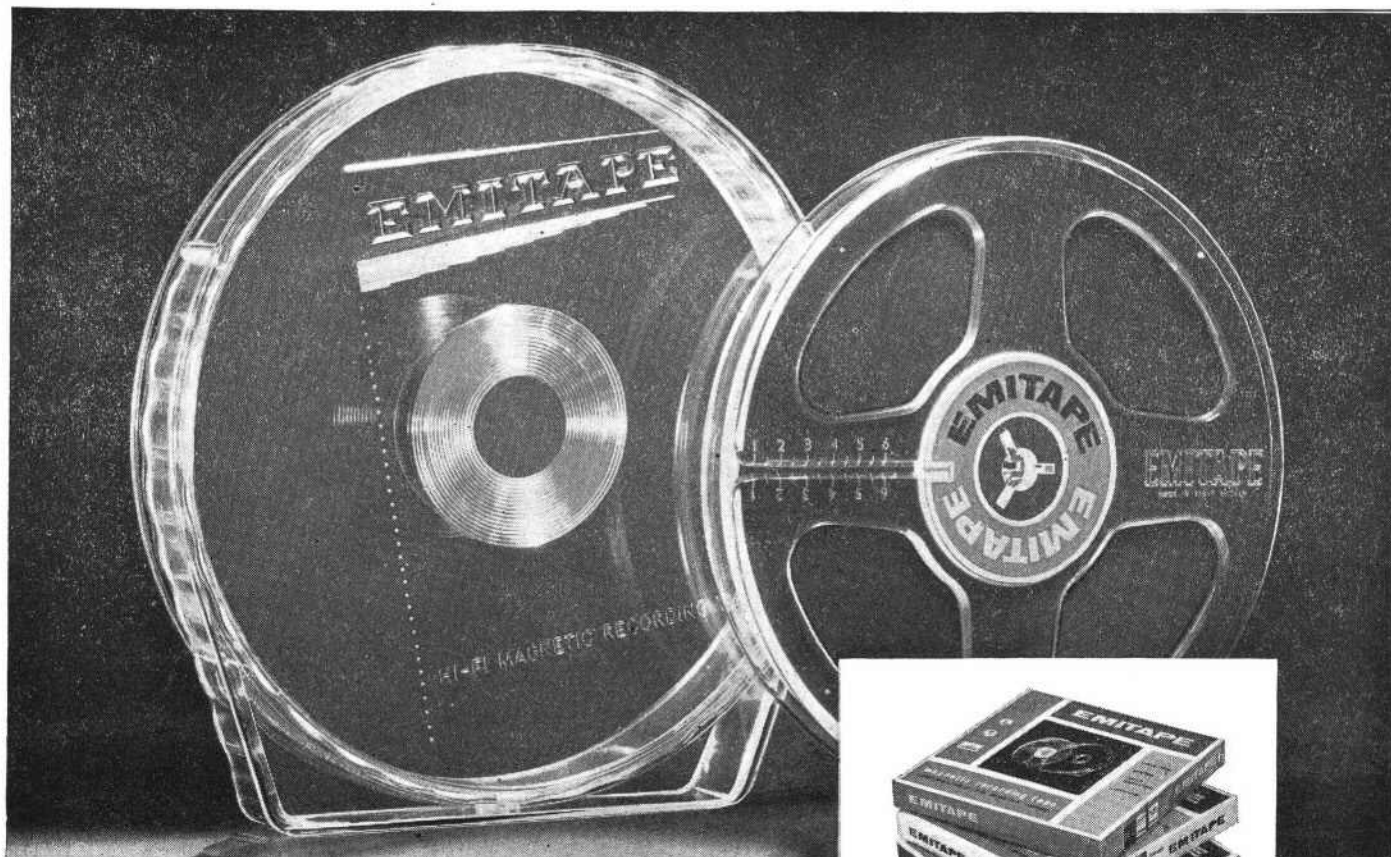
Name
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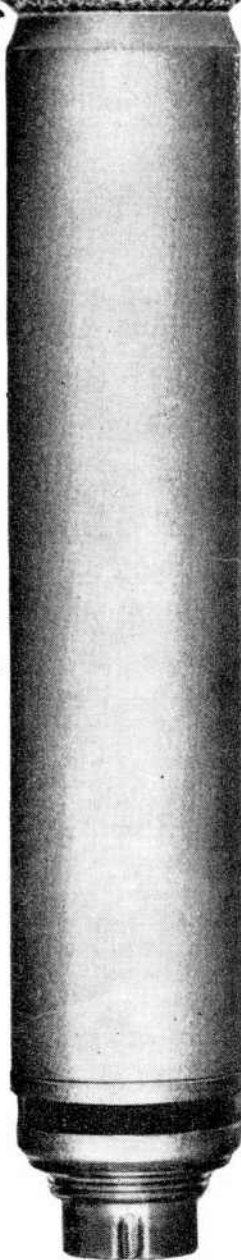
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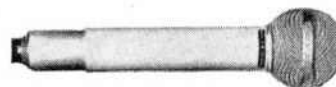
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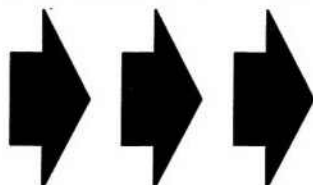
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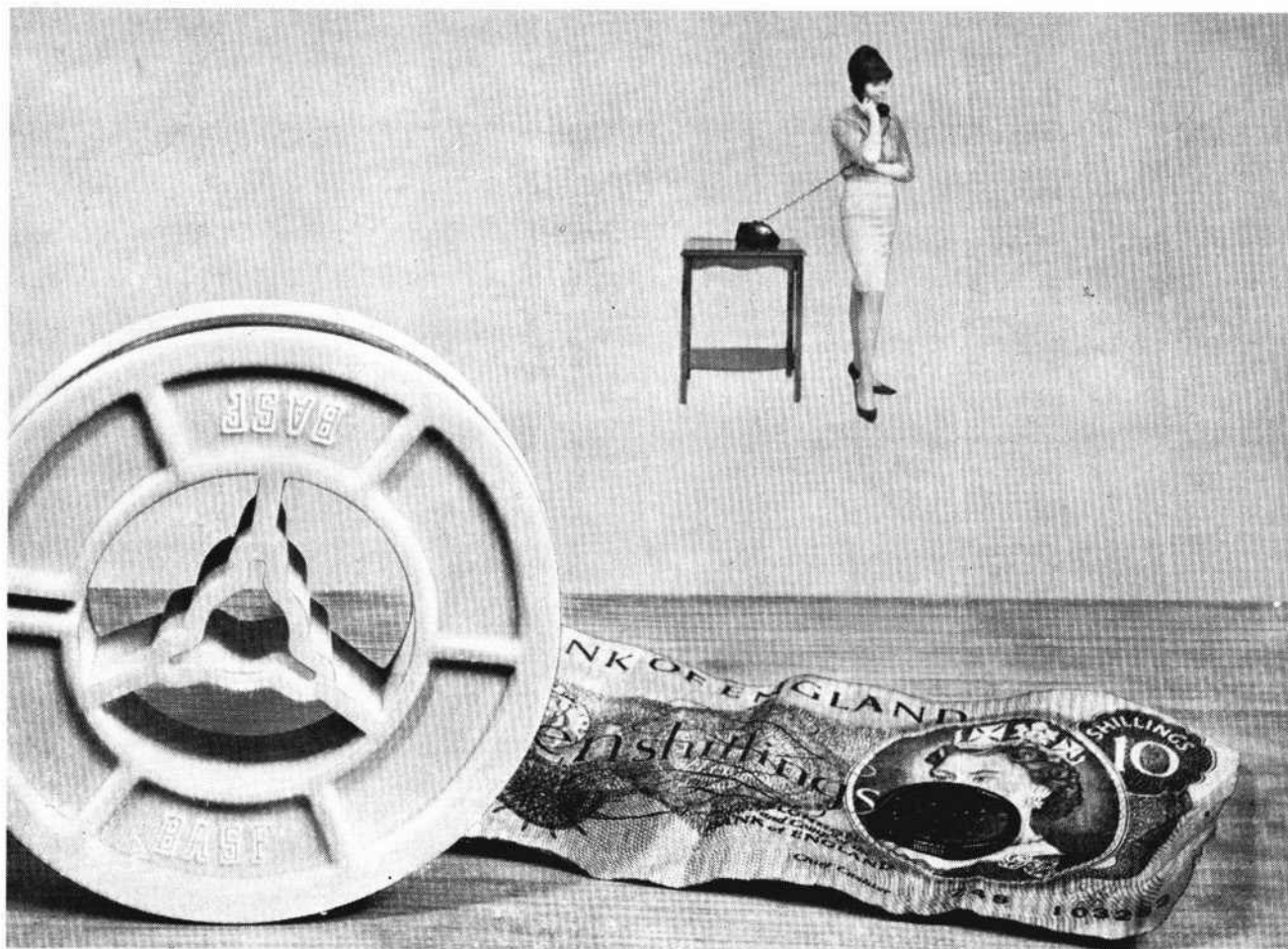
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