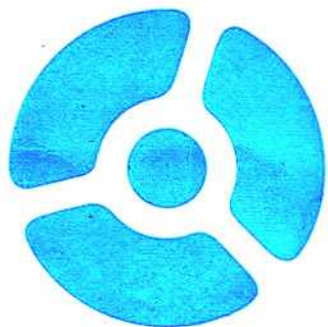


Amateur Tape Recording

VIDEO&HI-FI

March 1966 Vol 7 No 8 2/6



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Amateur Tape Recording

Vol 7 Number 8
March 1966

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FRONT COVER

Our front cover this month shows the Philips cassette tape recorder EL 3301 which we reviewed in the December 1965 issue of *ATR*. Also shown are the redesigned cassettes and packs, including the tape stand which is now on sale. Pre-recorded tapes, both by Philips and other producers, compatible with the EL 3301 system are already available on the Continent and it is hoped that they will shortly be available in the UK. When *ATR*'s Editor, Fred Judd, was in Holland recently he was given a demonstration of the EL 3301 with a pre-recorded cassette of another make. Connected to an external amplifier and loudspeaker, this remarkable little recorder is indeed capable of reproduction that is honestly hi-fi.

Editorial comment

Phonopost! This lovely new word which came into our language on 1 February means at long last a fair deal for tapespondents. For many years now tape enthusiasts, and in particular tapespondents, have been lobbying the GPO for more reasonable and realistic postage rates for recordings being sent overseas. Now Mr Wedgwood Benn has waved his magic wand and the new Phonopost rates leave us with no complaints. Surface mail tapes can be sent anywhere abroad for the sum of 5d for each 2 oz, but even this welcome reduction is put in the shade by the new rates of 6d, 7d and 8d per $\frac{1}{2}$ oz for airmail delivery. The price variations are for the varying distances, and, roughly speaking, the rate for continental countries is 6d, that for middle-eastern countries 7d and for such far-away places as Australia and New Zealand 8d. Certainly sending a tape by air mail to Australia is now much cheaper than sending a letter of equivalent length, and many pen correspondents will surely now be converted to the joys of tapesponding. The only new stipulation in GPO regulations

is that tapes must bear the new Phonopost stickers, as well as the usual customs declarations, etc, as before. These Phonopost labels are now available at all post offices, but BASF are already including sets of labels with all their special message tape packs.

Nor is the benefit one way. I understand that our GPO's action is part of an international agreement. Certainly tapes I have received from overseas in the past few weeks that have arrived bearing the Phonopost labels have had less than a quarter of the usual postage on them!

Coming back nearer home, the 1966 British Amateur Tape Recording Contest must surely be uppermost in our minds. With the new rules and excellent prizes (as reported on page 37 of last month's issue of *ATR*) entries for the 1966 Contest should be even higher than last year's. Particularly welcome incentive is the possibility of the winning tape being broadcast by the BBC. I feel sure that the contest organizers will do all they can to secure this most valuable air time for amateur recordists.

To encourage all *ATR* readers in creative recording for the BATR Contest (or any other

contest for that matter), we have already started publishing articles on previous contest winners, on how the professionals work, and on new developments in audio that can aid creativity. In fact, in my search for new things in tape recording I recently toured through a large part of Europe. The results you will be able to see for yourself in forthcoming issues of *ATR* - so don't miss them.

F.C.J.

Editor: F. C. Judd, A.Inst.E. Assistant Editor: Kim Cook. Art Editor: Robert Gordon. Production Director: Dennis Curtis. Advertisement Director: Lindsay Masters. Advertisement Manager: E. McKeown. Circulation Manager: David Hughes. Editorial, Advertising and Subscriptions: Amateur Tape Recording Haymarket Press Ltd, 9 Harrow Road, London W2, Ambassador 3200. Amateur Tape Recording is published by Haymarket Press Ltd. © 1966 Printed by The Sidney Press Ltd, Bedford. Title registered at Stationers' Hall. Subscription Rates throughout the world 30s. post paid for twelve issues.

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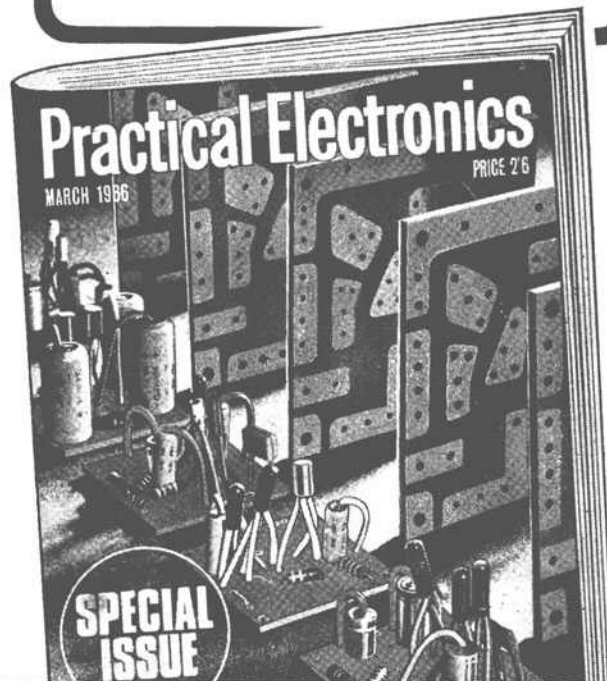
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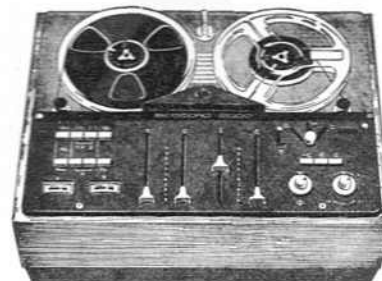
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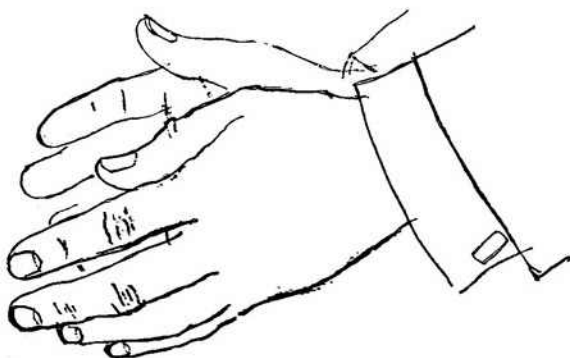
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RECORDING STEREO BROADCASTS

Recording mono broadcasting is a much-practised facet of amateur recording. With stereo broadcasting creeping into this country from the Continent and the increase in sales of stereo recorders, the recording of stereo broadcasts is inevitable. Here Peter Knight gives some practical advice

The art of stereo broadcasting is nicely explained by H. Burrell Hadden in the August 1965 issue of *Amateur Tape Recording*. This article is not designed to cover the same paths, but deals more with the receiving end of the system and the practical aspects of stereo decoders, or multiplexers as they are sometimes called. The angle will be towards taping the stereo broadcasts.

Unfortunately, at the present there is not a full-time stereo broadcasting system operating in Great Britain, but the BBC do run stereo tests using tone and programme material from the Wrotham station – on VHF (FM), of course, using the frequency of 91.3 Mc/s and 120 kW of erp. Some low-power booster and translator FM stations re-radiate the Wrotham signals, but this does not always mean that the stereo transmissions are properly delivered by these stations, even though they derive their signals from Wrotham. The reason is that some of the smaller stations cannot adequately pass the full bandwidth of the multiplex modulating signal and thus stereo loss is likely.

Some enthusiastic vhf FM listeners may be fortunately located so as to receive FM transmissions from foreign stations, some of which carry stereo information.

The stereo broadcasting system mostly used is that known as the Zenith-GE system, and it is for this kind of stereo transmission that stereo decoders and multiplex adaptors are designed.

Now, let us suppose that we wish to record the BBC's stereo test transmissions from Wrotham. What do we need for the job? Well, of course, the main item is a stereo tape recorder. A basically mono recorder with a second track and channel added would be suitable. Then we need a tuner to receive the stereo signals. An ordinary mono FM tuner will pick up the stereo signals and they will give rise to a properly balanced mono output at the speaker. This is because the stereo system is compatible, meaning that on ordinary mono equipment it will produce ordinary results.

Thus, we need something more than a mono receiver or tuner. We either need a mono tuner or receiver *plus* a multiplex adaptor (decoder) or a fully-fledged stereo tuner. A stereo tuner contains all the items of a mono tuner *plus* the multiplex circuits.

Multiplex adaptors and, indeed, stereo tuners are available in Great Britain even though there is not a stereo broadcasting service as such. For the real enthusiast, designs are available for their construction and these include both valve and solid-state (transistor) versions.

Many FM tuners now feature points of connecting to a stereo multiplex adaptor, but if one decides to make or purchase a multiplex adaptor to use in conjunction with the existing FM tuner which does not have such points of connection, there is no need to worry, for it is relatively easy to connect a multiplex output.

For good stereo results, however, the FM tuner must be of exemplary design and performance, with very low distortion in the if and demodulator stages and suitably wide bandwidth. This is because of the stereo information that has to appear at the detector (ie, demodulator) output of the tuner.

For mono working, the audio is developed at the output of the demodulator in the usual manner, and any information above about 15 Kc/s is attenuated by the de-emphasis filter that follows the demodulator. For stereo working, the de-emphasis filter has to be deleted from the output of the demodulator, because the stereo information is composed of signals rising up to about 53 Kc/s. De-emphasis on stereo is achieved by the use of filter networks in the right and left output channels from the multiplex circuits.

From Mr Hadden's article, it will be recalled that a vhf stereo carrier (from the transmitter) is frequency modulated by the mono signals from about 50 c/s to 15 Kc/s, by a 19 Kc/s pilot carrier and by the upper and lower sidebands of the stereo information.

In the multiplex adaptor (or stereo tuner) a circuit is featured that effectively doubles the pilot carrier frequency, producing a signal at 38 Kc/s, and it is relative to this signal that the upper and lower stereo sidebands are produced. The actual 38 Kc/s stereo carrier signal is suppressed in the circuits, so that the output from the stereo tuner demodulator consists of (i) the normal mono signals, (ii) the 19 Kc/s pilot carrier and (iii) the upper and lower sidebands of the stereo information. This is shown in Fig.1.

At this juncture it would be instructive to look at the final stages of the American 'Dynatuner', Model FM1, made by the Dyna Company of 3916 Powelton Avenue, Philadelphia, USA. Fig.2 (overleaf) shows V6 as the final if amplifier/limiter valve, and diodes D1 and D2 as the demodulators, arranged in the usual form of a discriminator. This circuit represents the ordinary demodulator of any FM tuner.

Now, on stereo, signals of the pattern of those in Fig.1 appear at the grid of V7A. This is arranged as a cathode-follower and the signals appear at relatively low impedance across R1. From here the 19 Kc/s pilot carrier is fed through R2 and C1 to the tuned filter T2 and thence to the control grid of V9A. The anode of this valve is coupled to the tuned filter T5, responsive to 38 Kc/s; hence the frequency-doubling action.

The mono and stereo signals across R1 of the cathode-follower are fed to V7B grid and are amplified by this valve. From the anode, the amplified signals are fed via the T3 tuned filter to four diodes, D3, D4, D5 and D6. This network, called a matrix, also receives the 38 Kc/s signal by way of V9B and T4.

A sort of balanced bridge detector action then results in the matrix, and the stereo signals produce modulation envelopes either side of the 38 Kc/s signal, one corresponding to the information of the right-hand channel and the other to the information of the left-hand channel.

These right and left modulation envelopes are finally demodulated by half the balanced bridge in which the arms open and close synchronously to the 38 Kc/s signal. In this way the 'switching action', as described by Mr Hadden, is achieved.

Thus, the matrix gives audio outputs on the two stereo channels. These outputs in the circuit under discussion are fed through filters to triodes V8A and V8B, the outputs then appearing up to about 2 volts at the anodes.

The tuning indicator is V10. This has two fluorescent sections. One is for ordinary tuning and is operated by the potential in the control grid of the final if amplifier/limiter valve, V6, while the other section glows only when a stereo transmission is tuned since it is activated by the pilot carrier signal present only in a stereo transmission. This section of the indicator is often placed behind a transparent screen, across which is captioned 'stereo'. Thus, the word 'stereo' is lit from behind when a stereo transmission is received.

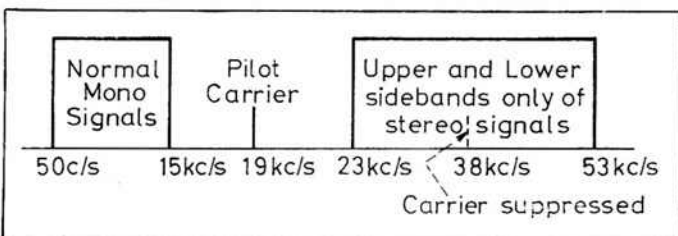


Fig. 1. Block diagram showing a demodulator producing a 19 Kc/s pilot carrier.

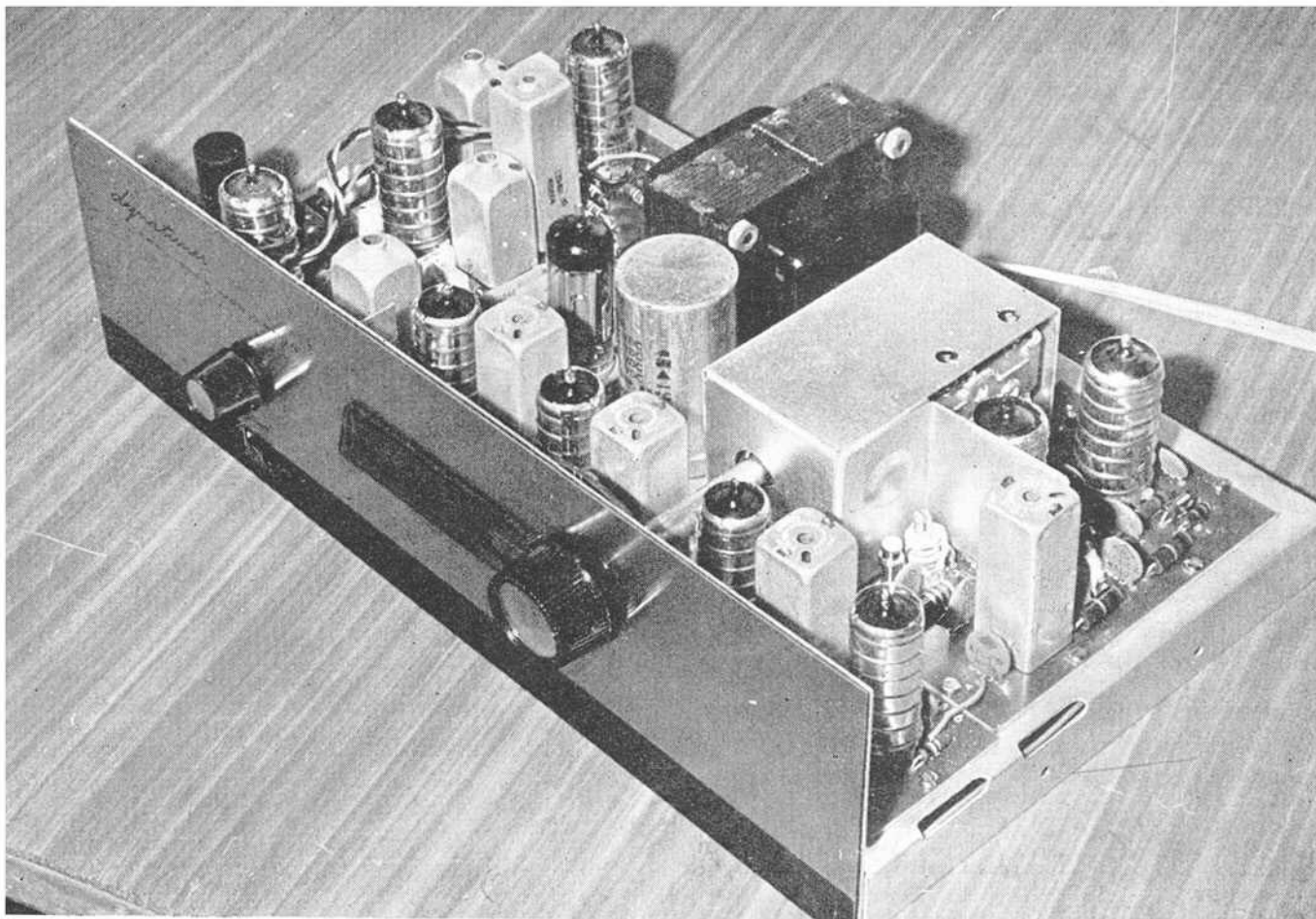


Fig.3. The internals of the American Dynatuner, Model FM 1, the circuit of which is shown in Fig.2 (overleaf).

Gordon King did in fact perform a series of tests using this tuner, information from which was published in the February and March 1963 issues of *Audio and Record Review*, under the direction of Donald Aldous, Technical Editor.

This excellent tuner is shown in Fig.3, while an untouched photograph of the remarkably well balanced discriminator response is shown in Fig.4.

I have also had the opportunity of examining and testing the 'Fisher' MPX-200 multiplex adaptor on a number of British and American FM tuners. This unit features four double-triode valves in a circuit that is somewhat different in detail from that shown in Fig.2, though it performs identical functions.

It is self-contained with its own mains power unit, it has input sockets for 'high' and 'low' level signals from the 'multiplex socket' of a non-stereo tuner (or from across the demodulator output of a tuner without a multiplex socket – that is, with the de-emphasis filter removed) and two pairs of output sockets (ie, two for right and two for left). These allow signals to be applied simultaneously, say, to the input of a stereo hi-fi amplifier and tape recorder. The unit is shown in detail in Fig.5. As mentioned, a number of ordinary FM tuners were tried with the unit, and results varied considerably, depending not only on the nature of the tuner selected for the tests but also on the distance from the station. The tests were also greatly influenced by the presence of a strong signal from a local FM booster station when the frequency is not far off that of the more distant, and weaker Wrotham station. Tuners with good afc tended to pull away from the weak Wrotham signal and latch on to the more powerful local booster station.

Tuners with no afc or with afc that could be switched off and with sufficient selectivity without passband restriction were found to give the best results in areas of weak Wrotham signal and powerful adjacent transmission. The Heathkit tuner worked extremely well with the Fisher

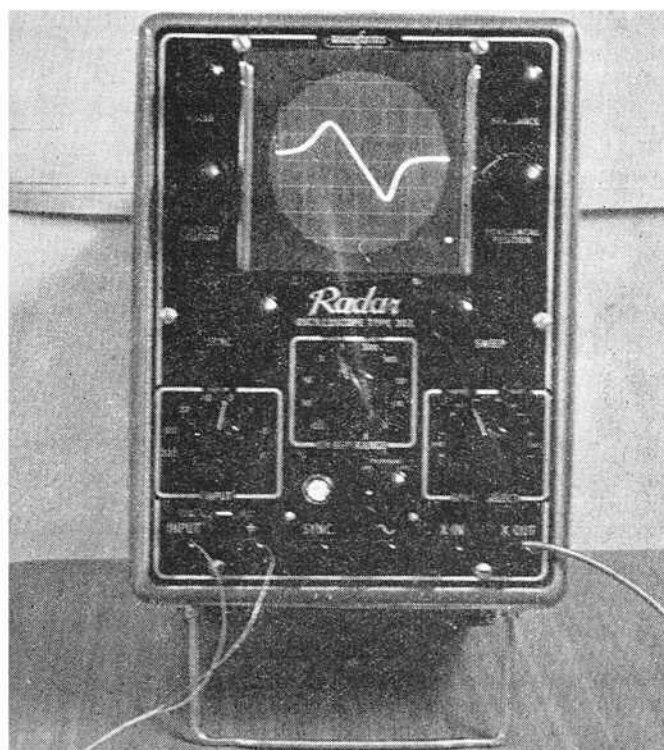
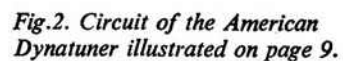


Fig.4. This untouched photograph shows the remarkably well balanced discriminator response of the Dynatuner.



Multiplex adaptor. No difficulty at all was experienced in obtaining good stereo recordings of the Wrotham test transmissions once the results were optimized on through channels to the speakers. In strong signal areas it is very little more difficult to obtain good stereo recordings than mono ones, but at distant sites extra attention needs to be given to details.

In some cases the if stages of the test tuner had to be completely realigned using a wobulator and oscilloscope to provide a display of the if and discriminator response characteristics. Phase distortion troubles in the if amplifier or unbalance in the discriminator can considerably impair the stereo effect. FM tuners with a restricted passband almost completely delete the stereo effect and, of course, the stereo information is eliminated if the de-emphasis network remains at the demodulator output. With the majority of multiplex units, de-emphasis is applied in the right and left audio channels; so removing the de-emphasis from the tuner demodulator does not impair the stereo audio response in terms of excessive treble lift.

Receiving locations suffering from multipath reception difficulties (ie, the receiving aerial picking up two or more signals, the direct signal and signals a fraction of a second later from reflecting objects) are not very good for the best stereo effect, which is one of the reasons why, when a stereo service is instigated, all stations will have to carry the signals, and not just the main ones.

Stereo transmissions also give rise to a signal/noise ratio a little below that achieved mono-wise. Good results are also possible at locations where the signal delivered by the aerial is little more than 25/30 μ V and where there is a much more powerful station just a few hundreds of Kc/s away.

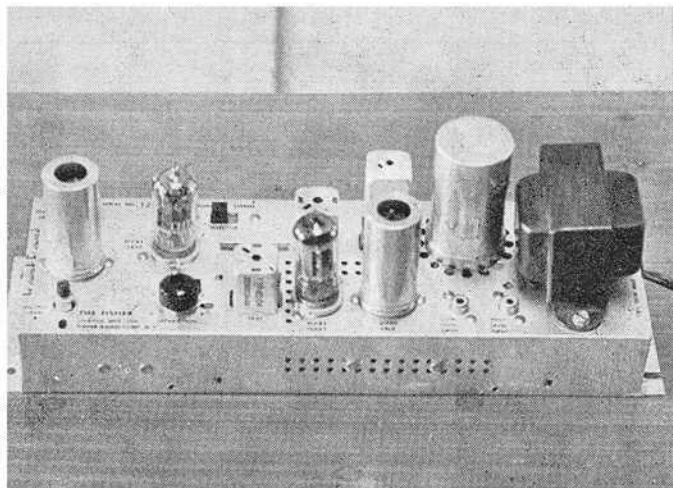
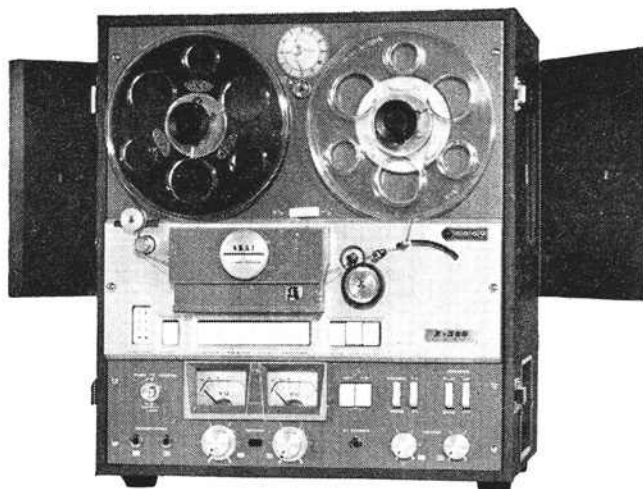


Fig.5. The Fisher MPX 200 multiplex adaptor which features four double triode valves in its circuit.



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AN AID TO EDITING

Tape editing can, if you aren't extremely methodical, be quite a messy business, particularly in creative recording. Here Richard Margoschis, one of the most creative recordists in the country and twice a winner in the BATR contest, describes the gadget he constructed to keep his editing table neat.

Long before an editing or indexing and filing session is over I have found that the materials in use have become so tangled up that it has been hopeless to find anything quickly.

I start by cutting a dozen or more short lengths of jointing tape and sticking them along the edge of the table so that they are to hand as required, then when they are all used I look for the small roll and am unable to find it because it has become buried among the trailing ends of editing tape protruding from the plastic containers or slipped off the spools.

Now this trouble is not due entirely to my general untidiness. I invariably use EMI leader tape for editing purposes, mainly because I like the colours in which it is obtainable, but I detest the plastic containers in which it is packed. Many times I have run out of a particular colour half-way through a session because I have not looked inside to see how much was left, but if I take the spool out of the container the tape falls all over the place, and this is not very funny when three or four different colours are being used.

Problems arise as well with the jointing tape. It is such a fiddle to have to pick up the spool of tape and a pair of scissors every time a piece is required to complete a joint, and cutting off a dozen pieces at a time is really only a compromise.

At last I have done something about it and now my problems are solved by the gadget illustrated. It provides four spools of leader tape easily to hand and the tape cannot spill off the spools. It also carries a spool of jointing tape in such a way that the required amount can be pulled and cut off when needed quite easily with one hand. In addition, my EMI splicing block can be fixed along the front of the baseboard so that the whole thing becomes a complete editing unit. Incidentally, it is designed to use Scotch jointing tape, mainly because this is spooled up on a reasonable and convenient sized core. . . . If the makers decide to alter this then I shall have to make a modification to the unit!

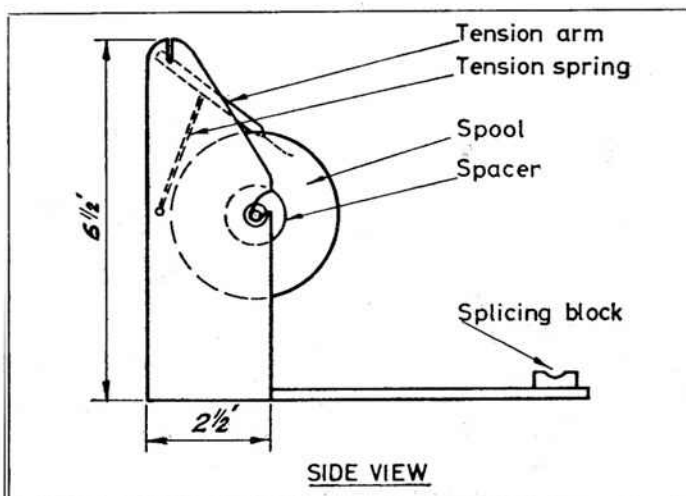
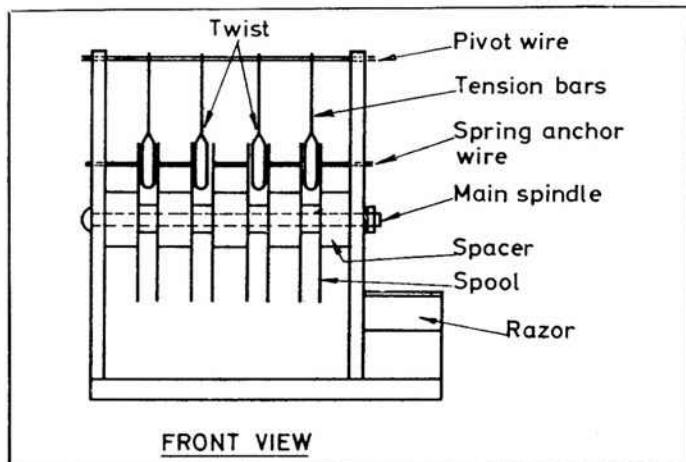
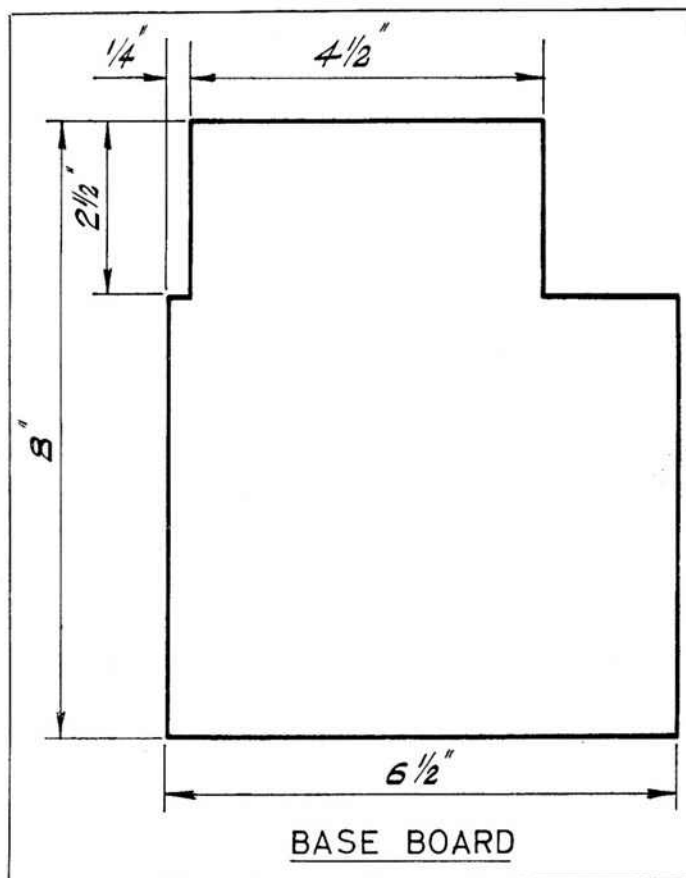
The whole unit has been made up out of bits found in the junk box with the one exception of the long bolt which carries the spools. None of the measurements is critical and with reference to the diagrams and the following description it is quite simple to make.

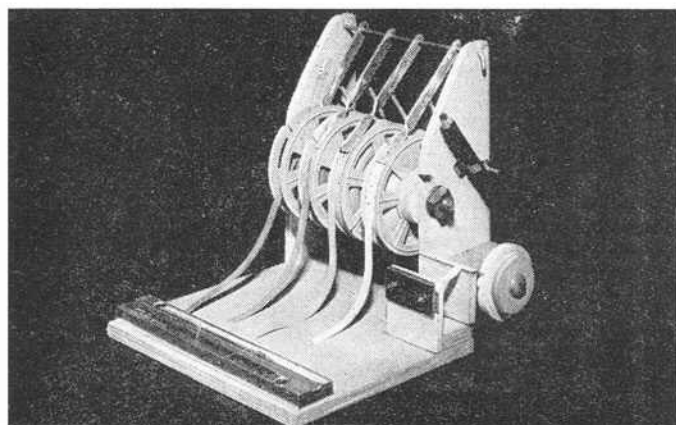
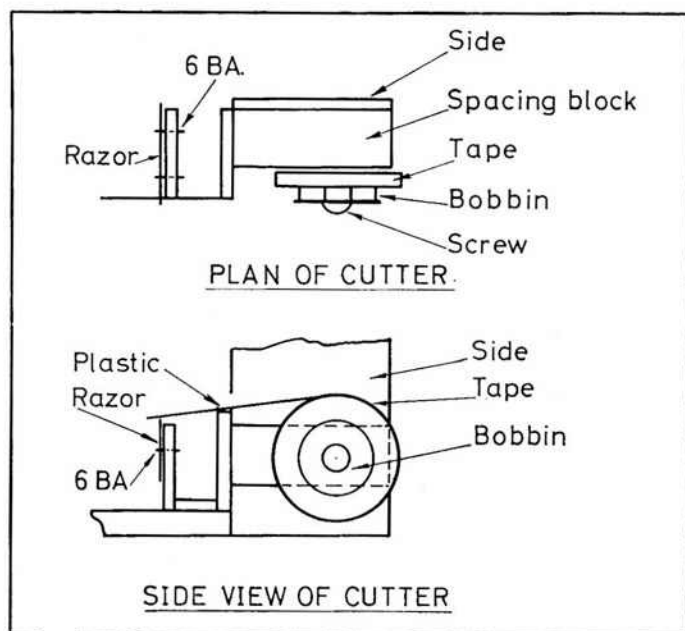
First cut out the baseboard and uprights from plywood (Fig.1). For the uprights $\frac{1}{4}$ in ply is adequate, but $\frac{3}{8}$ in or even $\frac{1}{2}$ in is advisable for the base, to add a little weight and to prevent the unit slipping about when in use. The addition of three small rubber feet, two at the front and one at the back, is a refinement which helps considerably in stabilization. Complete the sides by drilling the small hole and slot at the top a suitable size to receive the galvanized wire described later, also the larger slot to receive the spindle. Fix the uprights to the baseboard by means of $\frac{1}{2}$ in by 6 wood screws, two to each. The spindle is a $5\frac{1}{2}$ by $\frac{1}{8}$ in bolt and nut obtainable at any ironmongers, but when purchasing take along one of your spools to ensure a good fit.

For the four spools I have used discarded 8mm Kodak film spools left behind by a friend. They are rather smaller than standard 3 in tape spools and certainly cheaper, but there is no reason why the latter should not be used. Incidentally, these empty film spools together with the cover now provided with them make excellent message spools. Spacers must now be provided to keep the spools apart when on the spindle - about $\frac{1}{2}$ in is sufficient. To make these, raid your wife's sewing basket for empty cotton bobbins and cut them to size. The hole through them makes too tight a fit on the spindle but a couple of turns on a rat tail file eases them sufficiently.

Cut the four tension arms out of sheet aluminium or other suitable material. Each should be about $3\frac{1}{2}$ in long and about $\frac{1}{4}$ in wide. A small hole, through which the wire can pass, is drilled at one end and a similar hole about $1\frac{1}{2}$ in along the arm. The last $1\frac{1}{4}$ in of the arm is twisted through 90 degrees so as to come flat on the tape.

Two pieces of wire rather more than 5 in long are now required; galvanized wire as used for fencing is quite suitable. One piece drops into the slots at the top of the wooden sides and forms the pivot for the four tension arms. The second piece of wire is fitted into the two small holes in the sides and acts as an anchor rod for small tension springs, the other ends of which are fastened into the holes in the middle of the





tension arms. The length of these springs is not critical but should be adjusted so as to put light tension on the arm when there is no tape on the spool. The complete assembly is shown in Fig.2 and Fig.3.

When it is necessary to remove the spools for reloading the tension arms can be moved out of the way simply by lifting the top length of wire out of the slots. The spindle carrying the spools can then be lifted out of its slot by loosening the nut.

It is quite simple to load up the spools by placing the empty spool on the recorder and holding a couple of fingers through the cardboard bobbin from which the tape is to be taken.

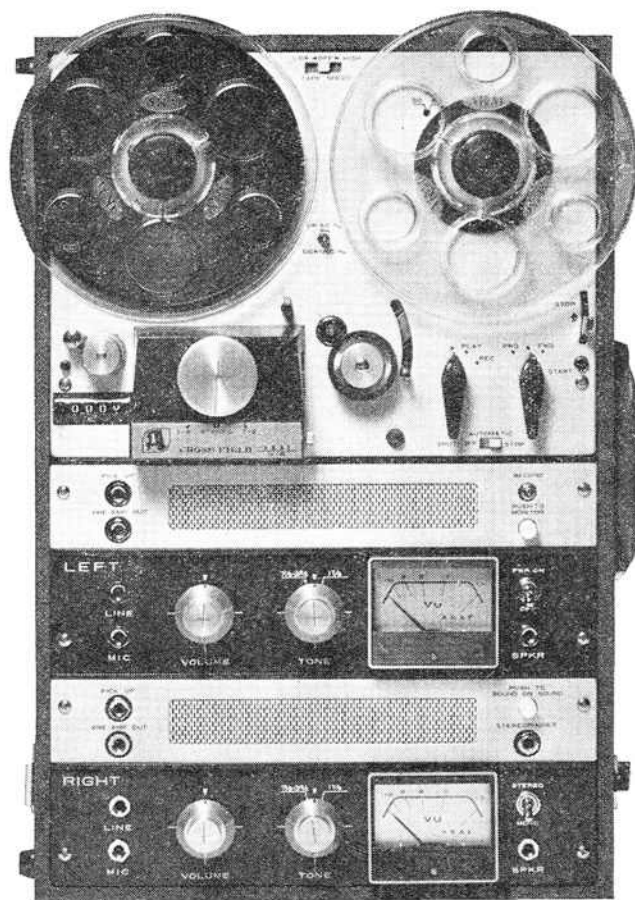
The plastic bobbin on which Scotch jointing tape is carried will not quite go over a cotton bobbin, but by careful use of a chisel the centre can be cut down to the necessary diameter and the end of the cotton bobbin will then hold the tape bobbin in place. An alternative is to cut half an inch off the end of your wife's broom handle and fit a cap of slightly larger diameter over one end!

The jointing tape is held about $1\frac{1}{4}$ in away from the side of the spool carrier by a small block of hardwood, and it is held in place on this block by a screw through its centre. The jointing tape bobbin must be capable of revolving freely on the core.

Two small pieces of plywood are glued in place in front of the tape. The one nearest to the tape spool is topped with a bit of plastic to which the tape will stick more easily than to wood. The second piece of wood is placed sufficiently far in front of the first to allow the forefinger to pass between them. A razor blade is fitted in front of the second piece by means of two 6 BA nuts and bolts with suitable washers. (For assembly, see Fig.4.)

To dispense, the tape is gripped by passing the forefinger between the two pieces of wood; sufficient tape is pulled off and a downward movement cuts it on the razor blade.

When the EMI jointing block is fitted along the front of the baseboard the unit is complete as shown in the photo above.



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RECORDING THE BIRDS

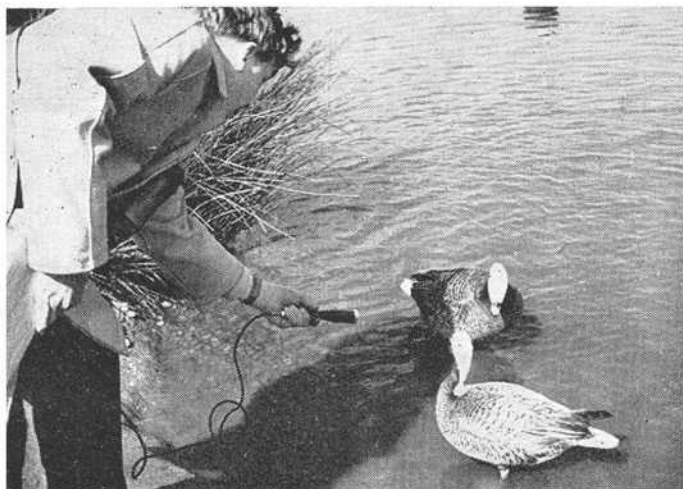
Taping the songs and cries of the wild bird life of this country can be a very fascinating, though sometimes frustrating, hobby, as our contributor L. Tebbutt explains

There must be something about birdsong recording that invites gremlins, for nine times out of ten I find I'm thwarted! No matter where I am, or what time of day or night it is when I set up my equipment, it seems to be the signal for noise of some description to start. I track down with much patience a very vocal feathered candidate, and all is otherwise quiet – until the moment I go to press that little red record button!

The birds themselves aren't always that easy to locate, either. Most of us know that the robin has a quiet, sweet little song, which is poured forth from a high vantage point all through the year. However, because of the louder choir of other birds joining in, the robin's song can seldom be heard in its full sweet beauty until early autumn.

Carefully, I hunt for a solo robin and find a fine songster who regularly uses a certain high perch (probably prepared for him by last year's youngsters) more or less at the same time each day. All is beautifully quiet, my equipment is expertly set, there is no sound at all and my songster is singing his heart out. Then splash! Someone pulls the plug out of a sinkful of water and that is that! Finally the last glugs and gurgles drain away, my finger steals cautiously towards the red record button and crash! My next-door neighbours pile into their car, slamming six doors (though I swear it has only four!). However, my robin is not easily daunted and his song peals out more loudly than before. Distant traffic has amazingly almost ceased its endless growl and in the hush of the autumn twilight I once more move towards that red button. Simultaneously an almighty racket announces the arrival of excited parents and four noisy children to survey a nearby house which is for sale. That settles the robin for the day. This sort of experience is not unusual, and one soon learns that patience is essential. Indeed, one even comes to expect noise of some kind and to marvel at its infinite variety!

14 Wind, of course, is a nuisance, particularly when you are using



Some of the more domesticated breeds of duck are not in the least microphone-shy and can provide a variety of good sounds.

an ordinary small recorder with none of the new-fangled gadgets which, to me at least, seem to take so much fun out of recording without necessarily securing the desired results. But oh the joy of completing a successful recording without having to attribute any of the glory to gadget accessories!

Noise in its various forms must run wind rumble a very close race for nuisance value on recording trips of this type. Aircraft are almost expected in daylight hours, and one soon acquires a long-range aural detection system which registers the first distant rumble and the last disappearing whine. Mechanical equipment is met everywhere, particularly on building sites and on farms, and if up-wind can make recording impossible. A waterfall will blot out most sounds around it, as will a plantation of aspen trees in even a slight breeze.

A waterfall will blot out most of the sounds around it. With recording level turned right down and microphone held fairly close to the mouth, one can get a good commentary near a waterfall, but the sounds of birds in the vicinity will be completely washed out by the dashing water. Even a small waterfall can produce an amazingly loud sound, so best beware of them all.



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Recently I tried recording some swan and cygnet chatter, but my efforts were ruined by a metronome-like sound which I discovered was an electric fence motor. It certainly put me off even if it didn't disturb the cattle on the other side! Yet another otherwise perfect recording of turtle doves – such a lovely peaceful sound – was wrecked in the middle by some fiend on a nearby river who decided at that moment to open out his boat engine for some aqua-planing! I have had a missel-thrush song ruined by a fire-engine siren; a fine tape of gold finches in flocks feeding on thistles disturbed by a bellowing cow; swallows in lovely fruity conversation in an old disused windmill had to be scrubbed because someone in a nearby caravan chose that moment to drop a tray of crockery; and a really good recording in a rookery was shattered by a bull-dozer demolishing the only building for miles. But pride of place for bizarre interruption must go to the night when I had the chance of a lifetime with a full throated nightingale only a few yards away – only to find on playback the distant sound of the chimes of an ice-cream van over a mile away. However, the birds do sometimes come into their own, and there is little sound (except perhaps a waterfall or a V-bomber) which can spoil the recording of a flock of geese rising and giving tongue as they wheel overhead, or of a colony of rooks really busy with feeding their young or nest building.

I have tried many things in my fairly long and active life, but I have never come across any hobby which is as gripping as this recording of birds and the sounds of the countryside. It takes one into magnificent scenery often in lovely weather conditions and among song that is incomparable.

I use an Optacord 408 for outside work and a Philips 4-track mains machine at home. Their plugs and sockets interchange so easily that they seem an ideal combination and present no problems at all when I come to edit my recordings. The makers of all small battery portable sets have indeed put great pleasure within the reach of many people of all ages. When we compare our tiny modern portables with the so-called portables of a few years back we have much to be thankful for! The ease with which these little sets can be carried and used, the opportunities they present, and the simple way in which the material that they gather can be transferred to a large machine make them essential companions for anyone interested, as I am, in recording the birds

... when we compare our tiny modern portables with the so-called portables of a few years back we have much to be thankful for!



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MANX RADIO

by Bob Danvers-Walker

Local radio stations have been in the offing for some time now, and their advent seems inevitable within the next year or so. The possibilities and opportunities local broadcasting can open up for tape and tape enthusiasts are tremendous, and to discover more precisely what these opportunities are, Bob Danvers-Walker visited Britain's first local station, Manx Radio

As a radio journalist I was particularly keen to visit the only authorized independent local radio station in the British Isles, Manx Radio. During the five-day efficiency seminar I was able to pass on some practical tips, acquired during forty years in radio, to the announcing personnel. This exclusive report tells how this station at Douglas on the Isle of Man relies upon tape and tape machines in its drive to establish an operational blueprint for future local radio stations.

Bird watchers on the Isle of Man are members of a field section of the Natural History and Antiquarian Society. This cartoon, specially drawn for ATR by Peter Borland, depicts Manxmen recording bird calls during

The Isle of Man has a resident population of 48,000 and an annual intake of 500,000 holiday-makers from May to September. Manx Radio has therefore to satisfy a local listening public and also identify itself with a visiting population during five months of the year. This involves broad aspects of entertainment and service to residents and visitors alike. Manx Radio is operated by the Isle of Man Broadcasting Co Ltd under concession granted by the Isle of Man Government (the House of Keys) on 17 November 1964 and in the terms of a broad-

an outing. This winter activity coincides with the Island's strange old folk custom called 'Hunt the Wren' which is observed every year. It is strongly associated with ancient witchcraft.



casting licence issued by HM Post Office. It broadcasts programmes every day from 8 am to 8 pm. Its medium wave transmitter is temporarily located at Onchan near Douglas and gives coverage of the Douglas area and some ten miles around it. It will shortly be moved to its permanent site. The VHF transmitter is situated on Snaefel ('Snow Mountain', 2,034 ft and the loftiest point on the island) from which almost complete coverage is obtained. The station transmits on 232 metres during the daylight and on 188 metres after dark. VHF frequencies are 89 and 91.2 m/cs.

When I spoke to the station's General Manager, John Grierson, about the use of tape, he had this to say: 'Honestly, we don't know what we'd do without it. There is a nightmare that every local radio station manager goes through' (he was referring to Canadian stations with which he had been connected). 'He is dreaming that he has no tape or tape machine and has somehow to run a radio station without such aid. We at Manx Radio can, and do, depend to a very large extent on tape recording in various forms and various uses. What we find so useful is the immediacy with which a recording can be made and for this recording to be played to air. Literally a matter of minutes is all that is needed for a tape recording, if of sufficiently good quality, to be broadcast.' John Grierson then told me some of the ways he employs tape. These I list.

News. A combination of straight news reporting, of interviews, commentaries and on-the-spot reports of events that occur within minutes' ride from the station.

Commercials. With increasing frequency both local and national advertisers appreciate that a tailor-made commercial recorded by the voice appropriate to the sales message is the best way of selling on the air. We can overcome present lack of studio space by expanding our recording facilities outside.

Education. We are at the present moment in course of negotiation with the various bodies concerned for broadcasts to be made over this local station of adult education programmes and eventually, we hope, programmes aimed directly at assisting the curricula in schools. The only way that this can be done is on tape.

Audience participation. Particularly in Summer, with thousands of visitors in the Island we will have, and have had, a team of announcers (including John Grierson himself there are five) out on the promenade and on the beaches taking recorded greetings and messages from visitors and local residents. This can only be done of course with a battery portable so as to be entirely mobile.

Station effects. We are building up a library of sound effects and special musical bridges for use either directly in the studio or for making further recordings. The only way we can keep a clean, easily available library is on tape.

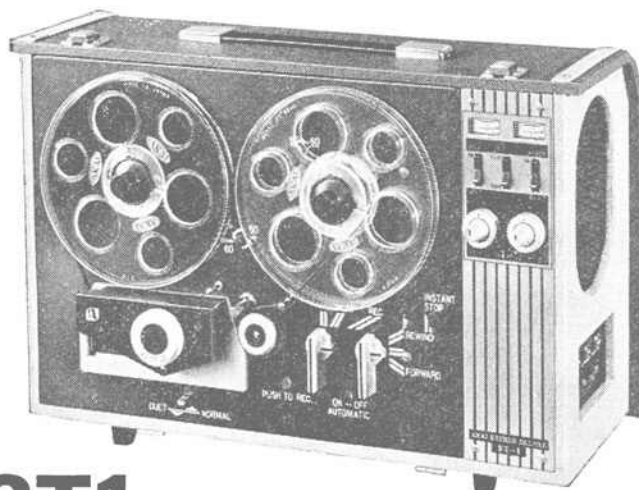
Special features. Listeners are going to be invited to contribute to the life of their own local station by sending in interesting sounds and recorded aspects of Island life which would be fitted into special features on Island activity. Again tape is the answer. Interest in tape recorders is growing.

Special operations. On many occasions an announcer simply cannot be in the studio when his programme is usually broadcast. So he records the whole of his continuity in advance, complete in every detail. He can only do this on tape.

Outside broadcasts. Apart from the news/actuality side as already described, tape recording makes it possible for an event or for a series of items to be 'put in the can' and used at the station's convenience. Sports events, concerts, recitals, ceremonies and music from local artists can all be recorded for later use. At the same time it must be remembered that basically this is a daylight station and a lot of events take place at night. We can record these in full and broadcast them when the station is on the air.

'We have five standard tape decks for use at 3½ or 7½ ips. We also have two tape-loop cassette machines with special cue facilities. We are considering for future development the use of battery-operated and therefore independent high quality tape recording machines. A great many activities depend upon being able to use a tape recorder such as yours, Bob (I had been demonstrating my Fi-Cord 202a to him and, incidentally, recording these notes), when no mains power is available.' (At the end of our talk I showed him how, with a power pack, the Fi-Cord 202a can be operated from all normal a.c. mains supplies. This dual system of powering would also give him another tape deck in the studio.) John Grierson then concluded with this comment. 'Radio in general and local radio in particular depends very heavily indeed upon the audio facilities which tape recorders and tape recordings make available to it.'

By taped question and answer I became the only Manx catechist with a wonderful tale.



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GRAND PRIX TAPER

Would you know how to go about making a prize recording? Most of us get stumped for ideas when we think in terms of a tape made specially for a contest, but, as often as not, a tape made for some completely different purpose can score a big success. This is what happened to Kurt Felix, a Swiss teacher who made a tape as a memento of the pupils he was leaving behind when he was due to give up teaching.



The prize awarded to Kurt Felix, winner of the Stereo Grand Prix in the 1965 International Recording Contest, was a gold-plated Sennheiser microphone. Here we see Kurt recording into the beautiful gleaming instrument.

Winner of both the Stereo Actuality class and the Stereo Grand Prix in the 1965 International Recording Contest was Kurt Felix. Here, exclusively for *ATR* readers, he reveals how and why he made the brilliant 'Die Musikmaschine'.

'At the time the winning recording was made I was twenty-four, and a teacher in a primary school in Frauenfeld, a small town in the Thurgau canton of Switzerland. However, this was to be my last teaching term, and I wanted to study something special with my class of children of whom I had become very fond. As an amateur recordist of some eight years standing, and a firm believer in the tape recorder as a teaching aid, I decided that a special project in the practical teaching of stereo would be ideal.'

Kurt himself devised the idea and wrote the script for 'Die Musikmaschine' - 'The Music Machine'. He in fact dreamed up a machine which would automatically produce individual notes, chord progressions, rhythm, melodies and harmonies. To many such a machine would seem to belong in Utopia, but not to Kurt. As he says: 'It is fortunate that no such machine as the one in the recording yet exists. What would happen to the composer's creative ability and the musician's inspired playing if well-balanced melodies and harmonies were available from a purely mechanical source?'

How, then, was the machine depicted on tape if it did not, in fact, exist? For the answer we must take a look at Kurt's class of thirty ten-year-old children. 'Each child in the class, even the most

untalented, was able to take part, even if only by clapping out the rhythm or delicately playing the triangle,' says Kurt, and from this we can see something of the psychology used in keeping thirty ten-year-olds keen and attentive throughout the whole project!

'The positioning of each child and his or her instrument in relation to the others and to the microphones took much working out. The general scheme was to keep the note section on the left and the rhythm section on the right with a piano in the centre. The note section consisted of seven melodicas (accordion-like instruments) and eleven soprano recorders. These were covered by a single MD 21 microphone placed about 10 ft from the melodicas and 13 ft from the recorders. The rhythm section contained three glockenspiele (chiming instruments), three small drums, a triangle, a schlagholz (wooden percussion instrument) and four children clapping. These were positioned centrally in front of a second MD 21 microphone which had been placed at a distance which was slightly overlapped by the sound of the note section. A third microphone was placed on the side of the rhythm section in order to differentiate in the recording of the various instruments.

'It was found that this system worked very well, keeping the body of the sound (the note section) as full and compact as possible and harmonizing the three-part and four-part melodies played by the melodicas. However, the positions of the technical equipment were altered on occasions according to the music played, and the

players were also placed differently. For instance, we recorded the last musical item in five different sequences and subsequently these were cut and then put together – a task requiring delicacy and precision.

'The whole recording was held together by a commentary from Professor Musikmann who had the task of explaining the machine to the listeners. The part of the Professor was played by little fair-haired Fredy. With virtually no guidance the happy, carefree manner of this little girl immediately won the hearts of her audience. Who, listening to the tape now, could realize that Fredy was not one of the best in her class and just before the recording session had secretly shed a few tears through stage-fright!

'Between the note and rhythm sections the Professor also manipulates the composing machine. Starting with a single note, then adding one by one additional notes, basic rhythm beat, melody and harmony, we built up the music that was written specially for "Die Musikmaschine". Ultimately it is possible to hear everything desired by feeding this material into the "composing machine" through a mixer. Professor Musikmann thus jumbles melodies together in different variations calling for a degree of musicianship both from the artist and the audience.

'The production of this tape from the very first conception of the idea, through the composition of special tunes and linking verse commentary, to the final award-winning tape took many hours of hard work and concentration, but it was certainly worth all the trouble because my former class now possesses a large stereo tape recorder and I was awarded a gold-plated Sennheiser microphone.'

Unfortunately Kurt is no longer able to take part in any further international recording contests as he is now employed as a programme planner for Swiss television. He also finds it disappointing that his new job gives him little opportunity to make tape recordings of 'Die Musikmaschine' type, although he still derives great pleasure from hearing beautiful tunes and sounds.

Perhaps this will leave the way clear for a winning stereo tape from Britain this year. As most of the British entries in the International come from entries in our national contest, why not start the ball rolling by producing a stereo tape for that? Rules and entry form for the 1966 British Amateur Recording Contest were first published on page 37 of last month's issue of *ATR*, and a coupon for entry forms is on page 33 of this issue. So set up for stereo now! Copies of 'Die Musikmaschine' and other winning entries in the 1965 International Recording Contest can be obtained by members of the Federation of British Recording Clubs applying to the Federation librarian, Miss M. Buchanan, at 33 Fairlawnes, Maldon Road, Wallington, Surrey.

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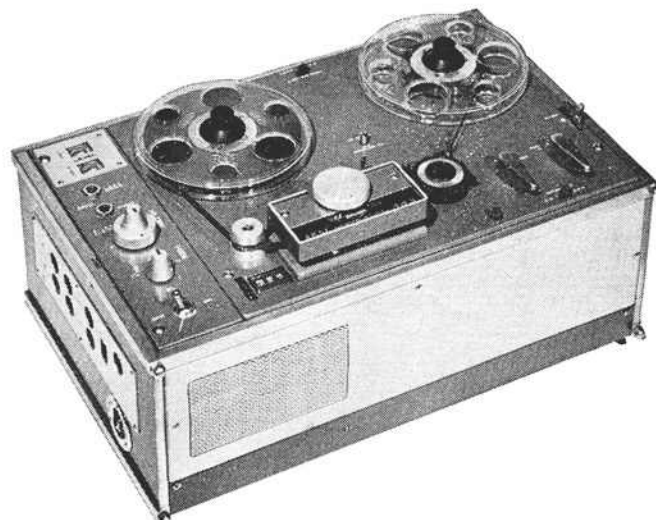
Who couldn't these days – and £100 could be yours if you enter the 1966 British Amateur Tape Recording Contest. You could also hear your tape broadcast by the BBC, win a free trip to London and receive a beautiful silver trophy.

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PRE-RECORDED TAPES

The pre-recorded tape industry could be the answer to every music-lover's prayer. Tapes could outsell discs. Tapes could do many things, but don't. Why not? Russ Allen investigates and comes up with some revealing answers

One of the major delights of the long playing record is that music producers have been able to break the shackles that held them bound to the three-minute performance limit of a 10 in 78 rpm disc. Nowadays many a jazz man sees fit to blow solo for the full 15 or more minutes of a 12 in LP.

Quality of sound has been improved too and we are now really able to appreciate the performance of hi-fi equipment. Better and lighter pick-up arms and heads have reduced record wear to a minimum and, by and large, it's all been most encouraging. But as far as symphony and opera are concerned, we still have to take the record off and turn it over, and sometimes even continue listening on a second or third record.

The coming of pre-recorded tape could have put this right. Quality tape will outlast even the most carefully handled LP and there is no reason why a whole opera shouldn't be recorded on one tape. Certainly as far as classical music goes, I can think of no one work that could not be accommodated on one track of an LP tape. The pre-recorded tape (or tape record) is a comparatively recent innovation and it is only in the last couple of years that tape records have begun to realize their enormous selling potential. The major record companies in this country have not, however, jumped on the band wagon and, in fact, as far as I can make out, only EMI are actively participating.

However, many American tapes are being imported to fill the gaps. Prices range from as little as 8s 6d (EMI Guides) to £5 10s 0d (Angel Stereo). Value for money varies even more.

There is only one company that mentions anything about the quantity of tape used for the recording. None mentions playing time, and this does vary considerably from one tape to another. The biggest boxes with the largest reels don't usually contain any more tape or programme time than some of the smaller productions on 4 or 5 in spools. Most observant tape buyers are by now well aware of the tricks of the extra-large hub, the half-empty reel and the over-size lavish-looking box.

I have spent most of my life in music and have been reviewing records and tapes for a considerable number of years. My hearing is good and whilst I do not pretend to be an electronics or acoustics engineer, I do know how musical instruments should sound, whether they are in tune or not and how the balance should be maintained. It is only rarely that a major disc record company issues a recording which is a bad musical performance. Unfortunately, the pre-recorded tape companies don't seem to be so fussy.

I think the time has come for all concerned with the tape industry to concentrate on giving the tape buyer a square deal. As a reviewer, I have heard so many appallingly bad tapes, bad music, dirty recording, lack of tonal range, etc., that I say it's about time we had a quality standard charter to which all pre-recorded tape manufacturers should conform.

How should such a charter read? Well, for a start how about this? 'For the satisfaction and pleasurable listening of the pre-recorded tape buyer we, the manufacturers, do solemnly pledge that:

1. We shall cease immediately to foist upon you age-old recordings long deleted from record catalogues.
2. We shall produce tapes only from tapes, ie no more recordings from discs especially not from 78s unless it be for a strictly historical purpose, in which case this shall be clearly stated on the label.
3. We will (if a disc record producing company) make tapes equal in quality to our LP records and shall record specifically for the tape market items of a length unsuitable for LP records.
4. We shall state on the carton the actual playing time of the recorded programme and/or the length of the tape and whether the tape be standard, LP, DP or whatever.
5. We shall also state only the truth in describing the artist(s) concerned, ie who is actually playing, conducting, etc.
6. The use of fictitious names to cover old recordings or studio pick-up groups gilded with high sounding aliases in order to by-pass other people's copyright shall cease.
7. We will also state date or dates on which recording was originally made.
8. We will, where applicable, ie in jazz groups, chamber groups, trios, quartets, etc., state the personnel and in the case of 'musicals' whether the recording is from the film sound track, the original stage production company or by a studio pick-up group.
9. We shall maintain as high a recording quality standard as possible, never allowing it to drop below the quality of a brand-new top quality LP disc, ie clear, clean and fully dynamic.'

Most charters, whatever the field, seem to contain a nice, round number of pledges. However, I think these nine cover most of my major grievances, but perhaps other long-suffering pre-recorded tape buyers among our readers have other ideas. If any of you have any further comments, we would like to hear them, and publish a selection of the best.

Further, I feel that while the playing speed of $3\frac{3}{4}$ ips is reasonable for most popular requirements, the added quality that $7\frac{1}{2}$ ips can provide is a must for the connoisseur. Likewise, the use of titled leader strips is a practice that should be followed by all manufacturers.

I fully appreciate that the task of recording, checking, packing and distributing is a vast and complicated one and I do not overlook its difficulties. But I cannot overlook the fact that among the last eighteen tapes I have received for possible review in *ATR* one was completely blank, another faded in part way through the opening number and yet another contained the wrong tape and had several bad recording faults. This is a disgraceful state of affairs and I feel sure that I am not the only sufferer. It may be that some pre-recorded tape buyers are the complaisant sort who accept anything, but I doubt if many readers of *ATR* fall into that category. So if any of you have a tale to tell about pre-recorded tapes, tell it to me.

You may, in fact, be wondering why I have not been so stringently critical in the past in my regular monthly tape reviews. I have borne in mind that many firms, particularly some of the smaller ones, producing pre-recorded tapes are new to this world and, as such, have had their share of teething troubles. However, teething time should be over by now and henceforth there is no excuse for any tape record manufacturer supplying shoddy and inferior tape programmes. You will thus be hearing much more stringent comments from me in the future. Meanwhile, don't forget to send in any comments you have on the pre-recorded tape business as a whole to me, Russ Allen, at the address on page 3.

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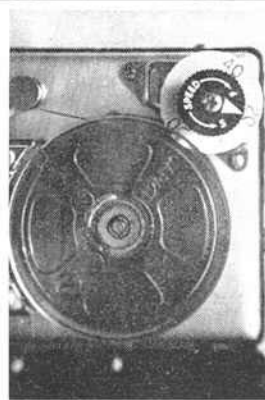
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BEAT THE TRAFFIC JAMS

by B E Wilkinson



A modified tape recorder, fitted inside a car, can make a very accurate average speed indicator to help you time long journeys.



Close-up of the tape speed control calibrated in miles per hour.

These days, when traffic hold-ups are a part of car journeys, frequent assessments of progress and consequent speed adjustments are required if predicted times of arrival are to be kept. The average speed indicator is, in effect, a small computer which incorporates a clock, and taking a distance input from the car's drive indicates continuously the speed required if the journey is to be completed in a specified time. The amount of use that the average motorist would have for such a machine would not perhaps justify buying one. It is possible, however, to use a tape recorder as a less sophisticated means of average speed indication. The recorder used must be battery-driven, although it need not be an expensive model (Fig.1).

The function of the recorder in this application is as a clock, although it is calibrated in distance (miles). The principle of the arrangement is that the recorder announces at one-mile intervals the distance that the driver should have travelled for a given average speed. If the driver is trying to maintain an average speed of, say, 30 mph, then the recorder will announce the mileage at two-minute intervals (30 mph being one mile every two minutes). The commentary on the tape, therefore, consists of an initial announcement 'zero', followed by 'one mile', 'two miles', etc., at two-minute intervals. Before setting out on a journey, the driver notes the mileage already indicated on his speedometer. Some speedometers incorporate a second mileage indicator which can be manually reset, and in this case he sets this to zero. As he drives off, he presses the recorder replay button and hears the announcement 'zero'. From then on he receives audible indication of the distance he should have gone.

The system has two functions. First, it enables the driver to maintain the average speed by keeping the distance he has gone in step with the recorder. He need only glance at his mileage indicator when he hears a distance announced to know if he requires to increase or decrease speed. If he knows that his journey will take him through a town, or some area where his speed will be reduced, he can anticipate this by increasing his speed to put the mileage indicator in advance of the recorder. If he has predicted the hold-up accurately, recorder and indicator will be in step as he leaves the area of reduced speed. The second function of the system is that if the driver cannot maintain the required average speed, he has at least an idea of how his time of arrival will be affected. Suppose, for example, that he sets out on a journey, and on hearing that he should have travelled 26 miles finds that he has, in fact, gone only 22 miles. He knows that he is 4 miles behind, and that even if he can maintain his intended average speed, he will still have 4 miles to go when the recorder announces the mileage at which the journey should be complete.

The reader will have observed that the programmed tape is of use for only one average speed. Where variable tape speed is available on the recorder, several average speeds can be covered with one track, because the interval between announcements can be varied. Where one speed only is available, it is usually possible to fit motor speed control in a dc-driven recorder. A variable resistor (about 0-50 ohms) connected in series with the motor and the battery will usually provide control down to zero tape speed. The speed control knob should be fitted with a mark or pointer moving over a scale as in Fig.2.

It is difficult to maintain an average speed above 40 mph, and one less than 20 mph would be considered low, so that the recorder can be made to cover the 20-40 mph range. The table gives the interval for one-mile announcements for suggested average speeds. Five are shown, but three (20, 30 and 40) are used for setting-up. The tape record is made on the recorder it will be used with, as follows:

- Load a new reel of tape, check that the batteries are in good condition, and plug in the microphone.
- Set the motor speed to the minimum practical value - ie, the output is sufficient and undistorted, and the motor is not likely to stop.
- Press the 'record' button and announce 'zero'.
- After 3 minutes, announce '1 mile', and mark 20 on the speed control scale, against the mark or pointer.
- Run the tape back to the start, and replay, adjusting the speed control until the interval between the announcements is 2 minutes. Now mark 30 on the scale against the pointer.
- Run the tape back to the start, press the 'record' button and announce 'calibration interval - zero'. After 20 seconds, announce 'end'. Allow a few seconds and then start the actual commentary, announcing 'zero'. After 2 minutes, announce '1 mile', after a further 2 minutes '2 miles', and so on until all the tape has been transferred to the take-up reel.

- Run the tape back to the start, and replay, adjusting the speed control until the interval is $1\frac{1}{2}$ minutes. Mark 40 on the scale.

The setting-up procedure may seem involved, but there is a reason for it. If the commentary is recorded with intervals of 3 minutes (average speed 20 mph), then when the interval is reduced to $1\frac{1}{2}$ minutes (40 mph), the tape is running twice as fast and the announcements are seriously distorted by the pitch increase. With the commentary recorded for the centre speed (30 mph), there is a slight reduction in voice pitch when 20 is selected, and a corresponding pitch increase for 40. The setting-up procedure also ensures that the maximum playing time is available by using the slowest tape speed to represent the lowest average speed.

Experiment has shown that temperature, the condition of the batteries and other factors will affect the tape speed, and this in turn will result in variation in the intervals. To overcome this, the calibration interval is recorded slightly before the main commentary. The table shows the correct duration of this interval for the selected average speeds. The speed control scale then should be regarded as a guide for an approximate setting, the calibration interval being used as a fine control. In speedometers where fractions of a mile are not shown, and the mileage indicator changes in one-mile steps, an error of up to a maximum of one mile may occur. If, for example, the mileage indicator indicates 10, the driver cannot be sure at a glance whether it has just changed from 9 or is about to change to 11. The error is, however, significant only in the early stages of a journey, where it is large compared with the distance travelled.

Quality of reproduction is not a requirement of the recorder, so that an instrument intended primarily for speech is suitable. Most recorders of this type take only small reels (3 in diameter), though slow tape speed and thin tape can offset the limits of the small reel. If the estimated time for a journey exceeds the playing time, the journey can be divided into stages, the driver stopping at the end of each stage to rewind and restart the recorder.

(There appears to be no reason why the intervals between mileage announcements should not be filled with music recordings. Ed.)

Speed	Interval (1 mile)	Calibration Interval
20	3 min	30 sec
25	$2\frac{2}{3}$ min	24 sec
30	2 min	20 sec
35	$1\frac{1}{2}$ min	17 sec
40	$1\frac{1}{2}$ min	15 sec

WHAT'S UP SPORT?

David Lazell takes a humorous look at possible uses for tape and tape recorders in the world of sport.

After all these years, I've discovered why I was so poor at school sports. I didn't have the necessary equipment – tape-wise, that is. In those happy days, before paper-chases were made illegal by the Litter Act, I tottered across remote fields on weekly cross-country runs. I was so slow that the PT master invariably enquired, as I trudged in hours after everyone else, if I'd been to the pictures. Things would have been different if I'd had a portable tape recorder over my shoulder and giving out with pre-recorded encouragement, e.g. 'Get up out of that ditch . . . what's a soaking now and then?' Or even a chorus or two of the school song, the words of which I never discovered, as no one seemed to know them. The School Captain assured me that he always sang 'rhubarb, rhubarb' to the music; that must have been the secret of his success, I suppose. They never recorded the school song, which is just as well. On playback, the teachers might have listened to the words!

I heard of a bloke who took his battery portable to his local football ground to capture local colour. Alas, he placed the machine on one of those rickety wooden forms, and, in sudden excitement, a somewhat aggressive fellow nearby picked up the machine and hurled it at the referee. I bet the referee was glad it wasn't a console model! I've often wondered why the local supporters club doesn't install stereo equipment for pre-recorded cheers to be played back whenever the home side doesn't do so well. Imagine the cheerful commentator on the BBC Saturday sports show: 'A really terrible match . . . but you should have heard the cheers for the home team, as they went down, 46-nil'. If you're the kind of supporter who likes his remarks to the team to be *clearly* heard, recording equipment is the only answer. Disguise your recorder as a hot-dog stall, get near the front of the stand, and then give out with the good advice! Ignore the stares of those nearby who see you chatting to a hot-dog (really a dynamic mic carefully disguised). Referees are carefully trained to withstand criticism, of course. Every night they sit at home listening to pre-recorded tapes of rude remarks. That way they soon get used to it.

At this point in the proceedings a whiskery bloke in white sweater and flannels is liable to declare that 'it's not cricket'. Ignore him . . . he's still living in the days when 'high fidelity' meant a new thorn needle in the hand-wound gramophone. I can, in any case, reveal that many of the players scattered around the cricket ground, apparently waiting to catch a passing ball, are really catching up with their tape correspondence. They keep tiny



Japanese tape recorders under their caps, no less. No background noises out there on silly-mid-off, folks (and thereabouts).

Tape is more widely used in sport than many people imagine. The toreador in the bull-ring never goes out without a tape recorder under his red flannel cloak. The tape plays back soothing assurances to the bull, e.g.: 'I'm only kidding, Ferdinand . . . just play it up for the crowd, eh?' Many a toreador has been bounced by the bull because he accidentally switched to fast re-wind instead of playback. Golfers, having mislaid the little white ball in the rough, often take a tape machine from the caddy bag, and listen to pre-recorded 'golf ball music', e.g. 'Don't Bury me on the Lone Prairie'. In fact, many of those golf clubs are really omnidirectional microphones. But the powers-that-be never permit a tape recorder near the wrestling ring on account of the nasty remarks sometimes made by the grapplers, in the heat of the moment. That's why the wrestlers wear such abbreviated trunks . . . to make sure that they can't conceal a tape recorder! Tape is also proving a great help to impoverished Masters of Hounds. If they can't muster enough hounds to pursue the fox, pre-recorded tapes of assorted yowls, barks, growls and snarls are played back, loudly, in the direction of the departing fox. Perhaps you saw the recent television interview with George Clutchitt-Grimleigh, the first man to reach the top of the Bulgarian Alps in snowshoes. When asked why he climbed it, the great mountaineer pondered for a moment, then said that he wanted a bit of peace and quiet to make a tape to his sister! Pity his guide took a portable harmonium, really.

Tape, like sport, isn't meant to be taken too seriously. I knew a promising table-tennis player who gave up the game because it didn't sound like the track on the stereo demonstration record. Last I heard of him he'd taken up pot-holing. Reckoned it saved him getting his own 'echo-chamber'.

ADDING SOUND TO CINE

This month, Peter Dean, editor of *8mm Magazine*, discusses three units which are of particular interest: two are designed to synchronize tape recorders with a cine projector (but in very different ways); the third is a budget-priced add-on unit which will convert most silent projectors into sound-stripe machines

This is the last in this short series of articles which will, I hope, have helped to make clearer the cine and sound situation. As any harassed projectionist of amateur film shows will tell you, it is better to regard the production of 8mm sound films as an exercise in home movies rather than a cheap way of reaching a mass audience. Once a sound film goes out of your hands there is no guarantee that the degree of synchronization which you can achieve with your own equipment will be maintained by some other person with different apparatus. This is not true of striped film, where once the sound track has been made in synch, it stays in synch; but even here, should you be thinking of using film for anything other than entertaining your family, friends, or perhaps a local club or society, 8mm has the disadvantage, *at the moment*, of very poor facilities for duplication or dubbing of any film with a tape or stripe sound track. And you will

not want your precious original to be damaged. Now, I don't want to frighten anyone away from experimenting. These things *can* be done, and they can be done acceptably. But if you are really serious about producing sound films to reach a large audience, I would advise you to consider 16mm (cries of 'traitor' from the ranks). Here you have a medium which possesses ample facilities for recording and duplicating sound films with professional results. Moreover, a film made on 16mm can be reduced to 8mm with far less loss of quality than a straight 8mm duplicate involves. Naturally, the cost of 16mm film is higher, and most of the equipment is not only much more expensive to buy, but in my opinion lacks very desirable features which even very modestly priced 8mm equipment has had for years. (Some of the features on 8mm cameras do not need to be included on 16mm, since effects, such as fades and dissolves, can be made when the film is printed, whereas with 8mm they must be made in the camera when the original is shot. Editing too is greatly simplified on 16mm; there need be no splices in the final print.) But the cost of using 16mm can be greatly reduced by hiring both equipment and sound studios. Charges are certainly not unreasonable, considering the variety of facilities available and the tremendous scope they give.

I have only touched on these very few aspects of 'professional quality' sound filming because this aspect is very well covered in most books on cine filming—often, I feel, to the detriment of the average amateur, who is regarded as a poor relation and treated in a very generalized manner. In any case, the experience which is gained from filming with 8mm, and adding even the most modest sound track, is quite invaluable. From such modest beginnings you may go on to

more ambitious projects: but if you do, you will need more advice and help than I can give in a few pages of *ATR*. So, back to our main theme . . .

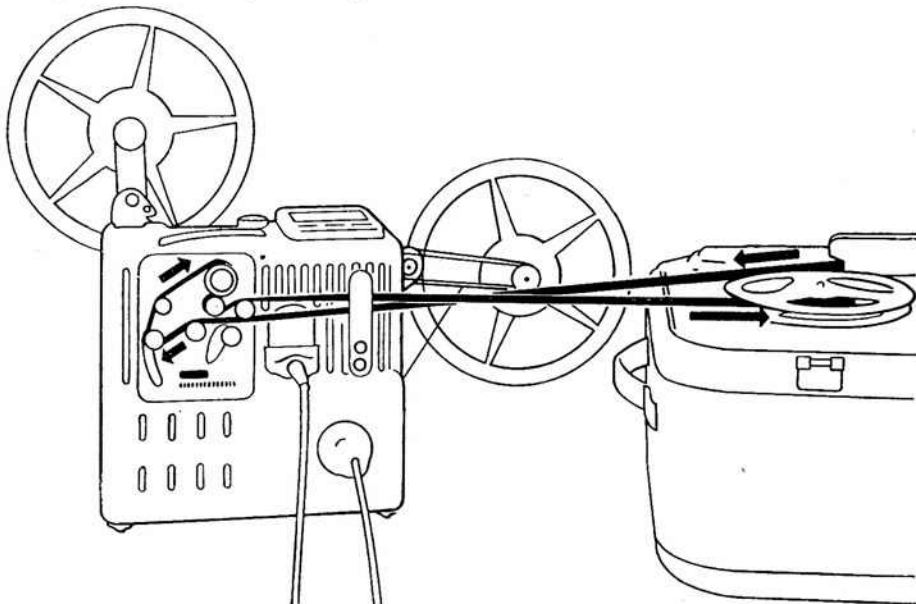
Tape and sound

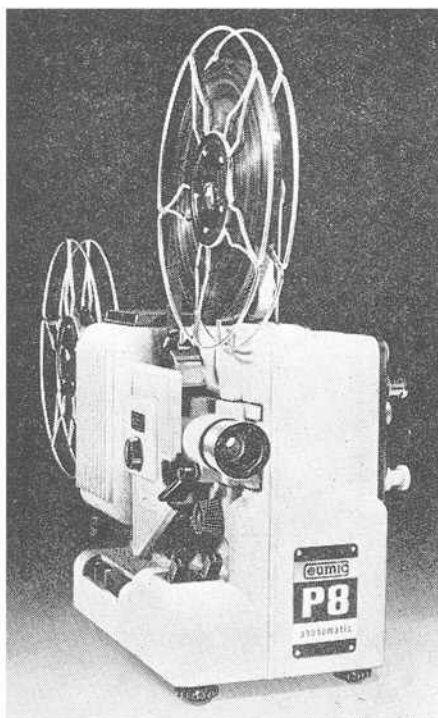
Probably the most widely used projector specially designed for synchronizing a tape recorder is the Eumig Phonomatic. Eumig were pioneers in this field, producing in their Imperial machine the first built-in synchronizing unit. From this developed the Phonomatic, which has also undergone changes over the years, until now, under the name of the Phonomatic Novo, it includes such features as zoom lens, high-output quartz-iodine lamp, fully automatic threading, still projection, reverse run, variable speeds—at a price which compares very favourably with other models. I must confess to being prejudiced here: I have used a Phonomatic for many years and it has never once let me down. Eumig are now concentrating on their Mark S stripe, and the Phonomatic Novo is probably the last of its breed; but there are plenty still in constant use and more being bought new or secondhand. For this reason I intend to go over it in greater 'operational' detail than I have so far given in these articles.

Using the Phonomatic

The projector will work with any recorder which will run at 3½ ips and which does not have a sunken tape deck, or obstructions which would prevent the tape being diverted from the sound head out to thread into the projector. In addition, it is wise to check whether the recorder has reasonably good tension on the take-up spool. If it is too weak the tape may not pass smoothly through the synchronizer on the projector. Both the projector and recorder must be positioned alongside one another, with the synchronizing

Below: The set-up of projector and tape recorder with the Eumig Photomatic, clearly showing how the tape is laced into the synchronizing device.





Above: The Photomatic in this version does not have a quartz-iodine lamp, but still gives a fine performance. It may often be bought second-hand by those seeking good value for little outlay.

unit and the tape deck at about the same level. The relative heights are not critical, but it will be found that one or other machine will need some kind of additional support. When the recommended threading of the tape is used, the recorder will be behind the projector, which is obviously the most convenient place. Before the tape and film are laced up the projector should be warmed up by running it for a few minutes. This makes sure that it runs fast enough to synchronize at an exact 16 frames per second. (A warm-up is a useful precaution with most variable speed projectors.) The tape is led out from the recording head to the synchronizer, passing through a guide. The path of the tape through the synchronizer is as follows: it is led first over a roller, then down to another roller mounted on a swinging arm which travels along a vertically disposed curved slot. It is taken up from the swinging arm to the top of the unit, passing over a third roller, then round a large rubber capstan, between a pinch wheel (closed by a lever) and finally out of the synchronizer over a fourth roller (see illustration). From there it goes straight to the take-up spool of the recorder. The synchronizer has two separate functions. The *swinging arm* is a potentiometer controlling the projector speed. When the tape is first laced up, the swinging arm is pulled up to the top of the slot, and the projector is off. As soon as the recorder is operated, tape is fed through, slackening off the swinging arm, which drops down in the slot, allowing the projector motor to start. However, the tape is also pulled

through by the *capstan*, which is driven by the projector motor. As the motor speeds up, so does the capstan and pulls tape through faster than it is supplied by the recorder. This tightens up the tape on the swinging arm, which moves up the slot, and slows down the projector. In this way, the tape is kept moving through the synchronizer at a constant speed, which in turn governs the projector to a steady 16 fps. Any small variation in the speed of the motor is quickly corrected by the swinging arm.

The capstan of the synchronizer must be accurately machined, so that the projector *does* run at 16 fps and not, say, 17. This is of no consequence when the tape is always projected on the same machine, but it may be found that on another machine, with a slightly different capstan diameter, synchronization is upset. And even tape recorders, although their speed is very constant, may not run at exactly the speeds marked. Also, the additional tension imposed on the tape may cause it to slip or stretch, again upsetting synch. Because of the physical link of tape between recorder and projector, there is always the possibility of damage to it, and should either it, or the film break, synch will not only be lost, but it will be very hard to recover since the relative speeds of the two cannot be altered. So there are problems: in practice they are very much less in evidence than this might suggest.

To ensure that the tape and film may be replayed subsequently without elaborate methods of matching up picture and sound, 'start marks' must be made on the film and tape leader. (By the way, you will need an extra-long leader on the tape because of the extended path it follows.) Ideally they should be positioned in the gate of the projector and on the replay head of the recorder, but if these are inaccessible it may be necessary to line them up with something else. Provided that every time the film is shown the start marks on both leaders are lined up with the chosen reference points on projector and recorder, there should be no loss of synch. The advantage of using the gate and head is that these do not depend on individual whim, which is an advantage if your film is to be projected by someone else who may not find instructions such as 'line up the third broken sprocket hole with the chipped piece of enamel near the top of the thingummyjig' very easy to follow. (You may think I'm exaggerating, but I'm not.)

Once set up, the projector is controlled by the tape recorder and both tape and film are stopped and started simultaneously without loss of synch. I described ways of recording the track last month. Should you not use the 'pilot' method, but record direct as the film is running, what happens if you make a mistake? To go back to the beginning and start again would be far too tedious. In fact, both film

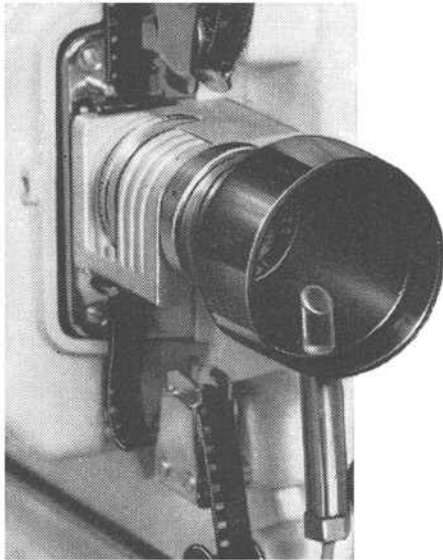
and tape can be reversed without losing synch, but this is somewhat tricky. The instruction booklet tells you how, but my advice is: 1. Check methodically that you have carried out all the steps, and don't be in too much of a hurry. 2. Always make sure that the tape is taut, and does not slacken off (this can easily happen if your tape spool tension is slight). If it becomes too slack it may jump off the capstan.

The Carol Cinesound

We now pass to an altogether more sophisticated, and electronically more interesting device – the Carol Cinesound – with its 'pulse' synchronizing method, similar in outline to that used professionally for lip-synch filming. In this system, track three of a four-track recorder is a 'control', played back simultaneously with track one, which is the sound track. A pulse is derived from the projector and recorded on the control track. When replayed, the recorded pulse is 'locked' to a further set of pulses from the projector. If the projector speeds up, its pulses go out of step with those on the tape, and the projector is slowed down by the motor control circuit. The Cinesound is intended for post-synchronized sound, but it will be immediately apparent that, if a camera can be arranged to feed pulses to the 'control' track, the projector could be locked to these also, and any sound recorded with the camera would synchronize on projection. This opens up extremely interesting possibilities, for lip-synch recording (unless post-synchronized) is difficult to achieve with 8mm and equipment tends to be Heath Robinson-ish in the absence of a commercially available system.

The Cinesound in detail

The pulse from the projector is obtained by sensing the flicker of the light beam. A hood containing a small perspex rod is slipped over the projector lens. The rod transmits a portion of the light to a photo-transistor, producing a series of electrical bursts. On the majority of projectors there is a three-bladed shutter which rotates once per frame. If the projector is running at 16 frames per second, this results in a pulse frequency of 48 per second. These pulses are amplified and shaped, so that whatever the density of the film the recorded signal is of the same amplitude and form for each pulse. The pulses are also fed to a tachometer, which indicates the running speed of the projector. To avoid unnecessary changes in speed this is set as close to 16 fps as possible, before both recording and replay. When the track is played back, the recorded pulses are fed to one side of a flip-flop circuit controlling the power supply to the projector. The recorded pulses switch the power 'on'. At the same time, the pulses coming from



UNDOUBTEDLY

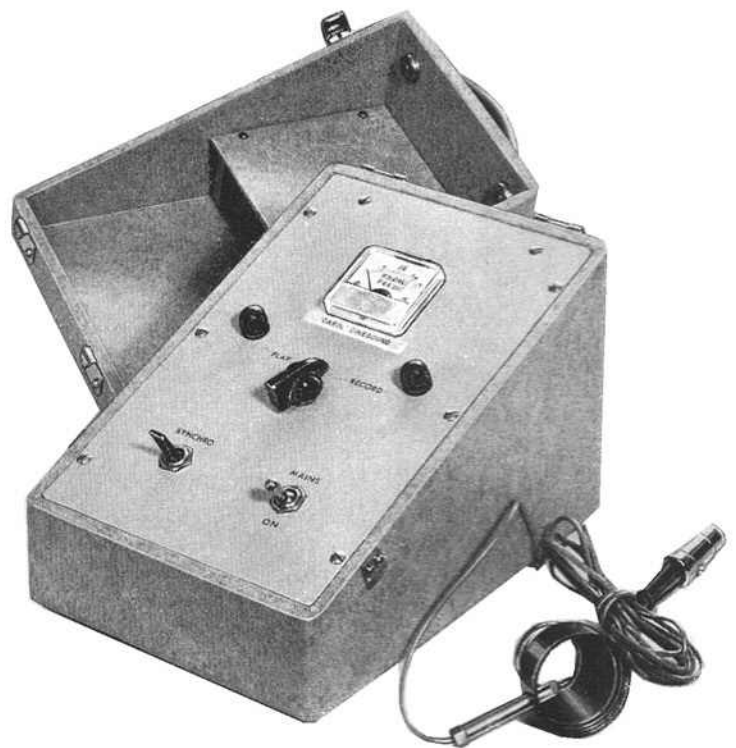
the most versatile system of SOUND SYNCHRONIZATION

The Carol Cinesound system utilizes the latest developments in solid-state electronics, and offers unlimited flexibility in recording techniques. Sound and Sync. tracks may be recorded independently, tape may be cut and spliced for editing, and even filming in synchronization is simple if a contact arrangement can be fitted to the camera.

The only requirements are that your projector must have a potentiometer type speed control and you must be able to record and playback two tracks on your tape recorder simultaneously (i.e. a stereo tape recorder, a four-track tape recorder, or a half-track tape recorder fitted with an additional half-track head).

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Adding Cine to Sound *continued*

the projector are fed to the other side of the circuit, and switch the power 'off'. When the projector is operating at the correct speed, the 'on' and 'off' pulses are equally spaced. But if the projector runs faster, the 'off' pulses follow the 'on' pulses more rapidly, decreasing the 'on' time. This slows the projector down, and the synchronization is held. The projector, on replay, follows the speed of the projector when the track was recorded. Thus, even if the speed of the latter is not quite constant, it will be followed faithfully on replay, and there can be no loss of synch (except where there are sudden gross differences in speed). This feature is extremely useful, and does not appear on other methods of synchronizing. It is even more useful when considering a camera/recorder link, since any variations in camera speed will be exactly reproduced by the projector without affecting the sound synch.

Using the Cinesound with a camera

I am grateful to Contronics Ltd, makers of the Cinesound, for the following description of synchronizing devices which could be fitted to cine cameras. It will be noted that they do require some modification to the camera, and although this may not be difficult, such modification, unless external and removable, would invalidate any guarantee, and might make resale of the camera difficult. So choose something cheap for your experiments. An exception would be cameras such as the Zeiss Moviflex, the Ilford Elmo 8TL6 and 8TL4 and the Bolex H8, which have an external drive shaft from the mechanism: internal camera modification would not be necessary. A pulse simulator could be made from a rotating disc driven by the camera mechanism, pierced to allow light to pass to a photocell from an exciter lamp (if one revolution of the disc represents a frame of film, then three holes would need to be pierced). Alternatively a rotating make and break contact could be used, though this might, with certain cameras, create a drag on the mechanism. Here is what Contronics say:

'Camera-synch is quite simple if it is possible to fit a device to the camera which will simulate the projector-shutter, or simulate the same number of pulses per frame as the number of pulses per frame from the projector. This can be done either with a lamp and photo-cell or by means of a contact device.'

Although we have not tried the following method, we feel it may be worth mentioning. There are now on the market tiny reed switches which consist of a pair of contacts enclosed in a sealed glass tube. These contacts can be made to close by means of a tiny permanent magnet when the magnet is brought into close proximity to the switch. It should be possible to glue the magnet (or magnets if one requires

extra pulses) to part of the moving mechanism and mount the reed-switch near the path of the magnet, so that the switch operates once every frame, or three times per frame as required. The reed switch has the advantage of being very small, very fast in operation, and has long contact life due to its being sealed.

Due to the fact that the 'Carol' Cinesound unit produces a constant oscillation signal which is broken by the photo-cell or contact pulses, editing of a lip-synch film can be fairly simple. If the equipment is all set-up and the tape started, a constant frequency is recorded on the tape; when the camera starts the frequency is chopped at whatever speed the contact arrangement produces. When the camera is stopped again, if the tape is allowed to run on, the constant frequency is recorded. To edit the tape, it is only necessary to play the sync track through an audio amplifier when the constant frequency of chopped signal will be heard. By means of the pause button, it is easy to accurately locate the start and finish of each shot, and the tape may be cut and spliced accordingly.'

Projection details

Switching of the motor control circuit is by a silicon-controlled rectifier, a solid-state device which has indefinite life, operates virtually instantaneously and will handle motors of up to 200 watts (more than ample).

Operation is remarkably simple and has been further simplified by the inclusion of an 'auto start' facility, which allows the tape to start the projector, on the first pulse from the control track. Some modification is, of course, required to both projector and recorder – the latter *must* be a four-track model, or be convertible – although Contronics do supply recorders based on the BSR TD2 deck with these facilities: either a recorder with synchronizing unit built in, or a separate recorder and synchronizing unit. Alternatively, only the synchronizing unit and projector photocell hood assembly are supplied. Because the connections required are electrical, the set-up is quite flexible, unlike the mechanical tape link of the Eumig.

The makers recommend the use of a variable speed projector with the synchronizer, but there would be no objection to using a fixed-speed machine which operates around 16 fps, although the tapes will probably not synchronize on another machine. Problems such as tape slip and stretch are entirely avoided by this system – lip-synch with other methods means the use of expensive and perforated tape and special sprocket wheels on the synchronizer. A further advantage is that, if required, tape speeds slower or faster than 3½ ips may be used without affecting the method of synchronization in any way. It is, I feel, a system for the enthusiast, but one that is well worth investigating.

Stripe price breakthrough

Finally, a progress report on a new

development in stripe sound: the Topsonic. Here the news is price. At just over £40 the Topsonic is the cheapest method of converting almost any silent projector to a stripe machine. (The exceptions are those machines which have both reels at the front of the projector, instead of the more usual 'fore and aft' arrangement, because they make it virtually impossible to thread the add-on unit and lead the film back to that take-up spool, while maintaining the correct 56-frames separation between the picture and the sound signal.) An ingenious extendable platform ensures that all machines with their spools in the right place can be sat safely on top of the unit (which is finished in a good quality teak case, with matching speaker). The specification follows the usual pattern for stripe machines: microphone gram and radio inputs, with mixing on microphone and gram/radio, output for external amplifier, tone control. There is a safety lock when recording which is designed to prevent accidental erasure, magic eye level indicator, and signals may be superimposed if required. Output is a claimed five watts into a 5 in × 7 in elliptical speaker.

Whenever a separate projector is employed, it is especially important to stabilize the film's speed as it moves over the stripe heads. The Topsonic employs a driven flywheel, connected to the capstan which pulls the film past the heads. This is linked to a speed control device, the function of which is to match the speed of the sound unit to that of the projector. To do this, the film passes over a swinging arm, which moves as the film tightens or slackens according to fluctuating projector speed. Unlike the Eumig, which I described earlier, this swinging arm is a mechanical device which rides on the face of the flywheel. As the swinging arm moves it alters its position on the circumference of the wheel, so changing its speed of rotation, and adjusting the running speed of the unit.

It is unfortunate that Super 8 stripe film has a different picture/sound separation than the standard 8mm – 28 frames, to be exact – since this is too short to allow conventional add-on units to be adapted to Super 8 projectors (there is no other reason why they should not be). However, this need deter no one from buying such a unit if they already possess a standard 8 projector, as this gauge will be with us for many years to come. And, of course, if you are only making films for family consumption, there is no reason why you should not use a non-standard picture/sound separation.

One word of advice. If you do buy an add-on unit with the idea of showing package films, which can be either bought or hired from film libraries, make sure that your projector will run at a genuine 24 fps. Some won't. And most sound package films are printed from originals running at 24 fps.

TAPE RECORDER SERVICING

This month Gordon J. King
discusses problems arising from
faults in resistors and capacitors

Faults through amplifier components

Last month we concluded with a voltage analysis of the first amplifier stage which was suspected as being responsible for the symptom of *No record or playback, motor circuit normal*. The tests described in that article would prove pretty conclusively whether a fault existed there or not.

A mention was made, however, of leaking coupling capacitors. Normally, the grid bias on a valve amplifier is derived from the voltage dropped across a resistor in the cathode circuit. Fig.1 shows a basic triode amplifier circuit in which R1 is the grid resistor, R2 the cathode resistor and R3 the anode resistor. Signals are coupled to the grid through C1 while the amplified signals are taken from the anode through C2.

Grid bias from cathode resistor

Now, when the valve is passing anode current, the same amount of current flows through R2. A voltage thus develops across this resistor, making the cathode positive with respect to ht negative or chassis. The grid of the valve is in dc connection with the chassis, through R1. This means, then, that the cathode of the valve is positive with respect to the grid or – just as true – that the grid of the valve is *negative* with respect to the cathode. The valve is thus given grid bias by the voltage dropped across the cathode resistor R2.

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For proper working, a valve must have a specific value of grid bias, and the value which is given by the cathode resistor is equal to the cathode current in *milliamperes* times the value of the cathode resistor in *thousands of ohms* (ie, Kilohms). If the cathode current is 5 mA and R2 is, say, 2 Kohms, then the voltage across the cathode resistor and hence the grid bias is 10 V. The designer works out these values and they do not bother us as long as the circuit is working properly.

It is not easily possible to measure the grid voltage accurately by connecting a voltmeter between the grid and cathode of a valve. This is because R1 is usually of a fairly high value and because the voltmeter requires current to work it. A volts drop therefore occurs across the grid resistor and detracts from the reading. The best plan is simply to measure the voltage across the cathode resistor with a high resistance voltmeter. This is equal to the grid bias because there is normally no current flowing in the grid resistor. Current flows only when a meter is connected to the grid.

Faulty cathode by-pass capacitor

Now, there are several things that can upset the grid bias and either make the stage inoperative – giving the symptom under discussion – or impair the performance. C3 is an electrolytic capacitor across the cathode resistor, the purpose of which is to by-pass the audio signal developed across the resistor without affecting the dc voltage used for grid bias. A capacitor is effectively open-circuit to dc but represents a low impedance to signals. This means that the capacitor must have a low reactance at audio frequencies. The value of the capacitor must

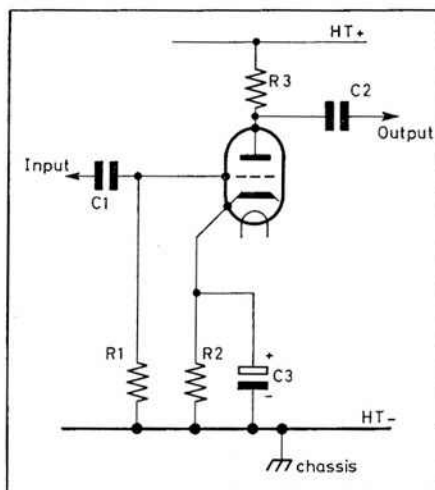


Fig.1. Basic valve amplifier stage showing main components. With a pentode valve, an extra resistor to feed the screen grid with ht voltage and a capacitor to bypass it would be used.

therefore be large, which is the reason why an electrolytic is used. If the audio signals were allowed to remain across this resistor, they would be reflected back to the grid circuit as negative feedback, and disturb the normal operation of the stage.

This, in fact, is just what would happen should C3 go open-circuit. The sensitivity of the stage would fall badly, but some degree of record and playback would usually be possible. Should C3 short-circuit to dc, the grid bias would be cut off completely, and this, under certain conditions, could prevent the stage from operating, though weak, distorted signal would be more likely to occur – both on record and playback if the stage is common to both.

An analysis of the voltages at the various points in all the stages common to both record and playback should be undertaken until the defective stage or circuit section is revealed by an abnormal reading. At this stage it should not be difficult to locate the faulty component. Whether a valve is conducting or not can also be determined by measuring the voltage across the cathode resistor. If there is no voltage here, and assuming that the cathode by-pass capacitor is not shorting, then the emission of the valve should be suspected if the anode (and screen in the case of a pentode valve) voltage is correct and the heater is alight.

Now, as already intimated, poor insulation in a grid coupling capacitor can also cause havoc in a tape recorder. Such trouble may or may not result in complete failure, but it will almost certainly reduce the gain of an amplifier section and probably introduce distortion as well.

Low gain and possible distortion

It has already been said that the grid bias of a valve is set to suit the design requirements of the amplifier stage. If there is too much negative bias the anode current is cut off and the valve ceases to operate, while

if there is zero bias or if the grid tends to go positive with respect to cathode, instead of negative, the anode current rises and the valve will become saturated. This means that the anode current cannot rise any higher, its value being limited mainly by the anode and cathode resistors.

There are very few faults that can cause an increase in negative bias, though there are several that can produce zero bias or positive volts on the grid. The obvious zero-bias fault is a short-circuit in the cathode by-pass capacitor, as we have seen.

Another common fault that can affect the grid bias is poor insulation (electrical leak) in the coupling capacitor connected to the grid of the valve. The signal from one stage is often coupled to the grid of the subsequent stage through a coupling capacitor, this being C1 in Fig.1. A better illustration of coupling capacitors is shown in the circuit in Fig.2. Here is a circuit section from the Fidelity Playmaster Major tape recorder. Both sections of the double-triode V1, V1A and V1B, are in use on record and playback, and this follows the technique which is now common in this class of tape recorder. The triodes are arranged in cascade (ie, one section coupled to the other) so as to secure a high overall gain or amplification.

On record, signals from a pentode amplifier are fed to the grid of V1A through C1 (the coupling capacitor) and the level control. On playback V1A receives a signal from a low-noise transistor head amplifier, this being a particular feature of this recorder.

The amplified signals (whether record or playback) appear at the anode of V1A and are coupled through C2 to the grid of V1B. The further amplified signals at the anode of V1B is coupled through C3 to the tape

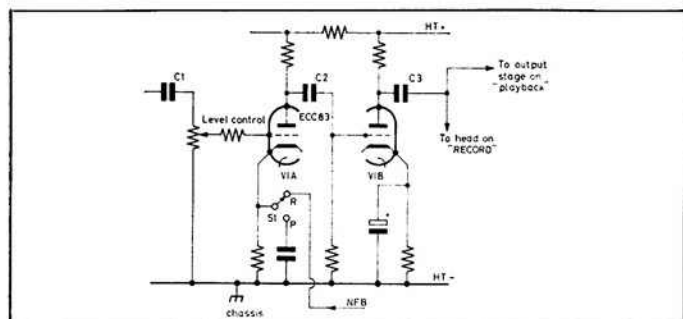


Fig.2. A double-triode amplifier stage taken from a circuit of the Fidelity Playmaster Major. This is fully discussed in the text.

head on record or to the grid of the output valve on playback. Here, then, we have three coupling capacitors.

Let us suppose that the insulation in, say, C2 deteriorates. What happens? Well, positive voltage at the anode of V1A is reflected to the grid of V1B. This pulls the grid positive by an amount related to the magnitude of the capacitor leak. Usually, the coupling capacitor develops a high resistance, so only a small current flows through the anode resistor, through the coupling capacitor and through the grid resistor, and the grid goes only a little positive. Nevertheless, this is sufficient to upset things, particularly in the low-level signal stages of tape recorders. Indeed, quite a lot of low-gain and distortion troubles of an elusive nature are caused by leaky coupling capacitors.

When the grid goes positive (or far less negative than it should) due to a coupling capacitor fault, the valve tends to pass an abnormally high current. This means that there is a tendency for the current to increase in the cathode resistor, an effect which tries to neutralize the positive voltage at the grid; but as neutralization can never be complete under this condition, the grid bias is usually almost completely countered.

In small signal stages used in tape recorders, the lack of bias (or positive bias) often causes the valve affected to run towards saturation, and this considerably reduces the gain of the stage, thereby detracting from the performance of the recording and playback functions, where the stage concerned is a common one. In stages that handle a higher level of signal, the effect will be not only low gain but also distortion.

Leaky coupling capacitors are responsible for many faults of this kind in the popular type of tape recorder, which is why we have investigated the trouble in some detail.

It should be noted that the symptom may not be produced by just a single coupling capacitor leaking, for in several 'low-gain' recorder faults I have investigated the original performance of the machines could be restored only by replacing all of the coupling capacitors! Some makes of capacitor are more prone to leak electrically than others, and if one is found to be so troubled, it is well worthwhile to replace all of them with capacitors of another make.

Coupling capacitor check

Assuming that we have a low-gain fault possibly accompanied by distortion, how can we be sure that coupling capacitor trouble is responsible? The best way of testing is first to connect a voltmeter between the anode of the valve to the grid of which the suspect coupling capacitor is connected and ht negative line or chassis. Carefully note the voltage reading and then disconnect the capacitor from the grid of the valve. If the capacitor has even the slightest leak an increase in voltage reading will be observed when it is disconnected from the valve grid. If there is no discernible difference between the voltage readings with the capacitor connected and disconnected, one can be pretty sure that, at least, the capacitor has excellent insulation.

If a coupling capacitor is completely open-circuit, of course, it will neither leak nor pass signal. For instance, C1 in Fig.2, being open-circuit, would affect record only because a transistor amplifier is coupled to the grid of V1A by a separate route for the playback signals, as already mentioned. An open-circuit in C2 or C3 would affect both record and playback.

Excessive hiss

A leak in a capacitor feeding signal to the head from the record output stage can cause even more trouble. Look at Fig.3. Here we see the anode of a triode (the record output valve) feeding the head with signal, via the coupling capacitor C1 and the constant current resistor R1. Normally, of course, C1 blocks the ht voltage from the head winding and passes only the signal currents.

However, should the capacitor develop an electrical leak, direct-current will flow from the ht positive line, through the 47 Kohm anode resistor, through C1, R1 and the head winding. This is a terrible thing to happen to a head, for the flow of dc through its winding will create a magnetic field and probably magnetize the pole piece, leaving residual magnetism even after the current is removed.

Even though the dc flowing on record may be insufficient to detract from the recording action, the residual magnetism remaining in the head on playback will almost certainly be large enough to greatly increase the background noise (hiss). The disconcerting thing about this trouble is that one may conclude that the high hiss level is due to residual head magnetism, and as a consequence a defluxing exercise may be put in hand. This would clear the hiss on immediate playback of a test tape,

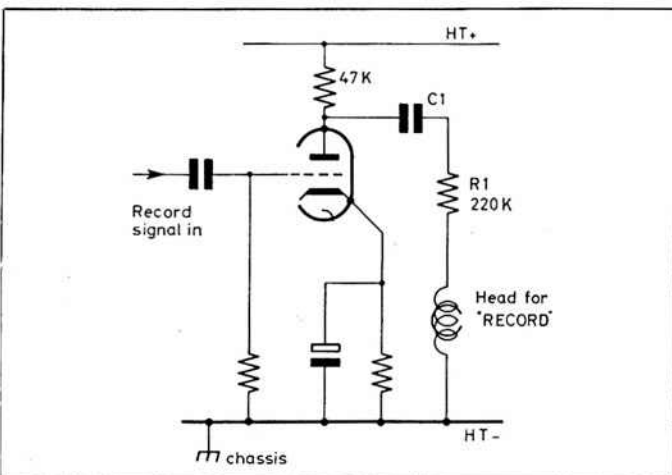


Fig.3. An electrical leak in the coupling capacitor C1 can cause direct current to flow in the head winding and result in head magnetism, the cause of many 'hiss' troubles.

but as soon as the machine is again switched to record the dc would again flow in the head winding and give exactly the same trouble on subsequent playback. This may lead one to suspect trouble elsewhere in the system.

The maxim, then, is that for any excess noise or hiss trouble *always* check the head coupling capacitor for insulation before delving too deeply into other sections of the circuit.

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THE THINGS YOU SAY

More From Singapore

Having returned from a spot of Christmas leave in Malaya, I found your tape among my mail. May I on behalf of our group here in Singapore thank you, not only for the tape, but also for the unexpected honour that was bestowed on us on being selected top of the 'Top Ten' for November. I have answered all replies to my letter, which you were so kind as to publish, with the exception of two tapes which I will deal with this week.

Of the numerous replies received, we have had only one from Scotland. Dare we ask you to help us once more? We do have a Scottish regiment out here.

In conclusion, may I wish all the Staff of ATR a very happy and prosperous New Year.

GPO, Singapore

W. Carroll

The tape sent to Mr Carroll was a 5 in reel of LP tape, one of which is sent to the top club in our 'Club News' feature every month. Scots readers and/or clubs wishing to contact Mr Carroll should write to him at this address: WOI W. Carroll, RAOC, c/o ADOS HQ SA, GPO, Singapore.

Away With Fluff!

Re your December 1965 issue, front cover, please advise young lady (and gimmick men) that it is not desirable to scatter spools of recording tape near fluffy rugs and carpets.

Mitcham, Surrey

F. C. Beresford

Corrado's Correspondence Club

I was given your address by a Lancashire man now living in New Zealand who told me that you might be good enough to publish details of a new International Postal Club founded in Italy. The name of this organization is CCC (Corrado's Correspondence Club), and through the Club members can make either tape or letter contacts all over the world without first having to make personal contact with an individual member.

CCC is a non-profit-making organisation which was founded solely for promoting international friendship in spite of political barriers and it is supported only by membership fees. I am sure that several of your readers will be interested in knowing about the existence of this Club and I would add that most CCC members are enthusiastic tape recordists.

I look forward to receiving any enquiries your readers may send.

Torino, Italy

Corrado Baldi

The specimen membership application sent to us included requests for all the usual taping information, including details of hobbies and tape recorders owned. Membership fee is 13 international reply coupons, 13 British shillings, 1000 Italian lire or \$1.70, and should be sent to the President, Mr Corrado Baldi, Via Michelangelo 25, Grugliasco (Torino), Italy.

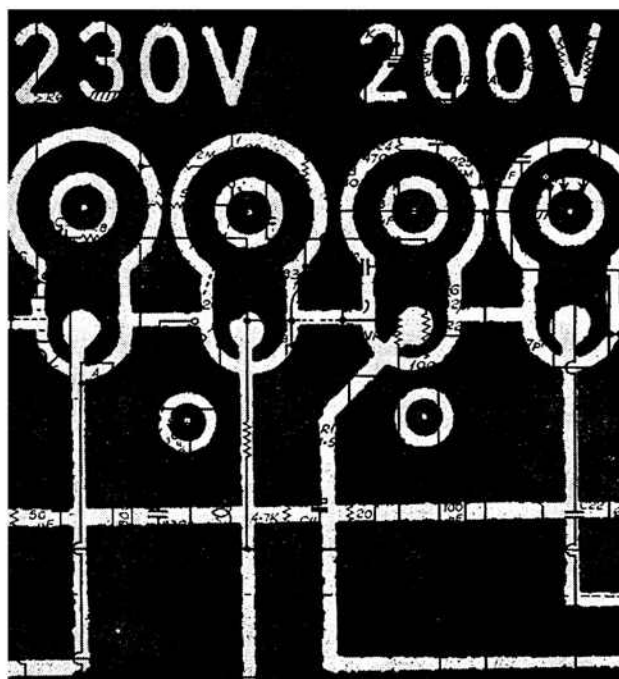
A Nation of Thieves?

I wish to reply to Mr B. W. Pratt's letter on copyright and taping. He has simply reiterated the usual series of legal bleats, without being, in my opinion, at all constructive. Mister Ordinary Recorder-Owner is going to pay not the slightest attention to this jargon, and there is nothing he can do about it. The Russians have ignored copyright for years, so does he call them a nation of thieves? I did NOT say anything about using my recordings for public performance, or any such thing. In fact, I merely put a recording of each of my valuable LPs on to tape, for safety and the positive elimination of record-wear.

Now, our friend Pratt has made a most vicious remark about my sense of honesty. As anyone can be brave behind a pen, will he have the moral courage to make the same remark to me, but in person? In fairness, I point out that I am a hefty six-foot ex-paratrooper! Or will this not appear in print?

Acton, London

D. R. Wiseman



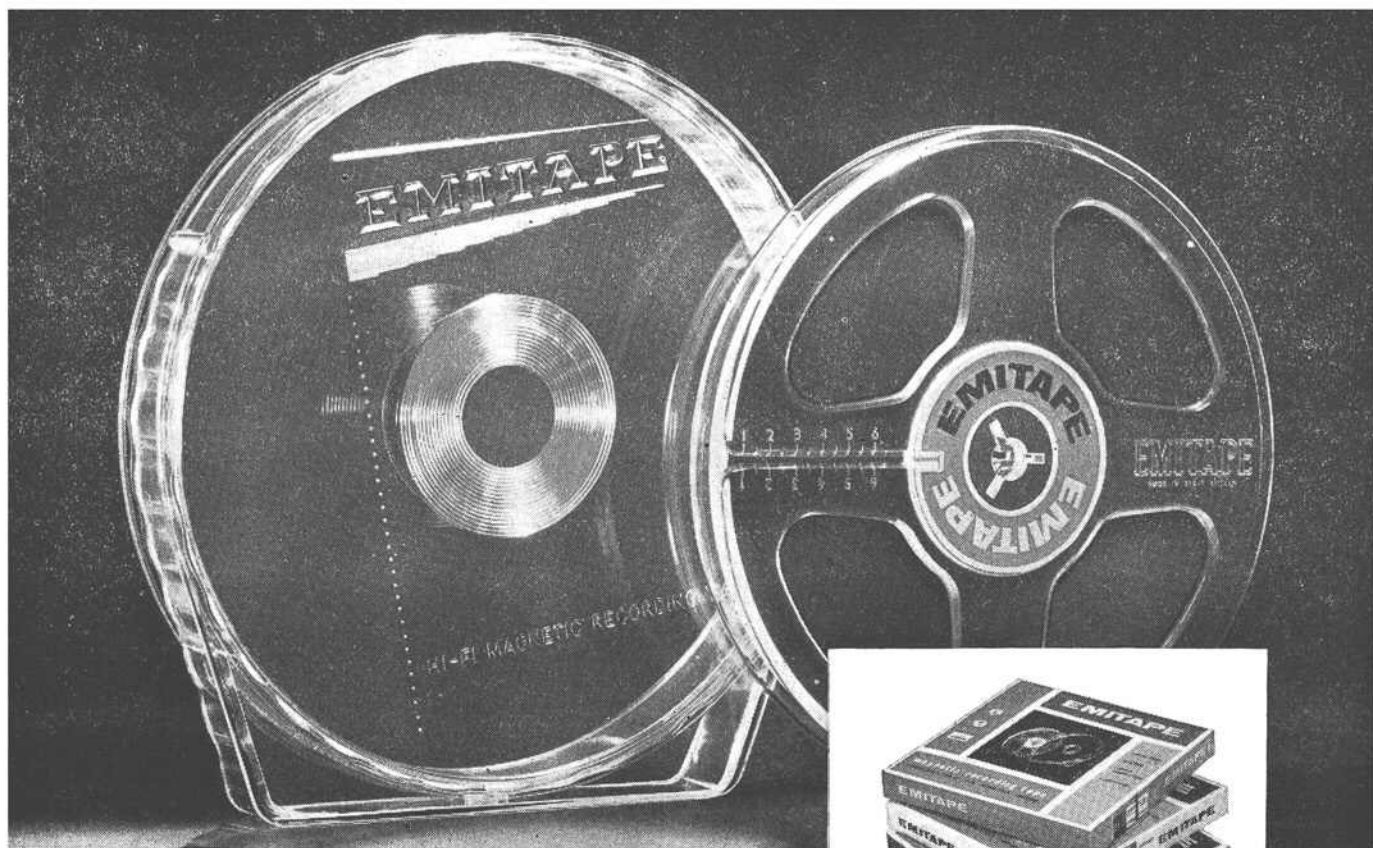
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ON TEST

The Sony TC-250 A Stereo Tape Deck

F. C. Judd reviews the latest (and probably least expensive) of the Sony Japanese recorders



General view of the Sony TC-250 A showing layout of controls and two VU meters.

The designation tape deck rather belies the true function of the TC-250 A recorder, for it is a complete stereo record/replay unit lacking only the necessary output stages and loudspeakers. It therefore has full recording facilities for quarter track, mono or stereo tapes and replay via a suitable stereo hi-fi amplifier. The record/replay amplifiers within the deck unit are solid state (transistorized) and the unit operates at $7\frac{1}{2}$ ips or $3\frac{3}{4}$ ips. It can be mounted horizontally or vertically in the wood case provided (see photograph) or can be taken out of the case, still as a complete unit, and fitted into a larger cabinet. The TC-250 A will accept microphone or radio signals (or a gram pick-up) but does not have provision for mixing. The outputs are at fixed level for an impedance of 5 Kohms for direct connection to an amplifier or pre-amplifier with volume controls. Deck functions include record, playback, fast forward or reverse re-wind, twin VU recording level meters, one for each channel, a tape position indicator and speed selector facilities. The head covers are removable for editing and cleaning and the capstan drive is interchangeable for 50 or 60 cycle mains supplies. The TC-250 A takes up to 7 in diameter tape spools. No microphones or tape are supplied but one empty spool is included with the unit.

The Sony TC-250 A is essentially a hi-fi tape record/replay unit having most of the desirable features of a conventional tape recorder. It is compact, almost bookshelf size and should appeal to those with little space to spare or who wish to build such a unit into a complete hi-fi outfit (see Fig.1). The complete specification is shown below:

Power requirement: 100, 110, 117, 125, 220 or 240 volts 40 watts, 50/60 cycles.

Tape speeds: Instantaneous selection $7\frac{1}{2}$ ips or $3\frac{3}{4}$ ips.

Reels: 7 in maximum.

Recording system: 4-track stereophonic and monophonic.

Frequency response: 30-18,000 c/s at $7\frac{1}{2}$ ips; ± 3 dB 50-15,000 c/s at $7\frac{1}{2}$ ips; 30-13,000 c/s at $3\frac{3}{4}$ ips.

Signal-to-noise ratio: Better than 50 dB.

Flutter and wow: Less than 0.19% at $7\frac{1}{2}$ ips. Less than 0.25% at $3\frac{3}{4}$ ips.

Harmonic distortion: 1% at 0 dB line output.

Erase head: In-line (stacked) quarter track, EF18-2902H.

Record/playback head: In-line (stacked) quarter track, PP30-4202.

Level indication: Two VU meters (calibrated to 0 dB at 12 dB below saturation).

Inputs: Low impedance microphone inputs - transistorized (will accommodate any microphone of 250 ohms to 1 Kohm impedance). Sensitivity -72 dB (0.2 mV). High impedance auxiliary inputs. Sensitivity -18 dB (0.1 V).

Outputs: Low impedance line outputs. Auxiliary record/playback connector.

Operating position: Either horizontal or vertical.

Transistors: 2SD64 ($\times 6$), 2SB382 ($\times 2$), 2SB383 ($\times 2$).

Weight: Approx. 16.9 lb (7.7 kg).

Dimensions: 14.2 in \times 11.4 in \times 6.3 in.

Performance

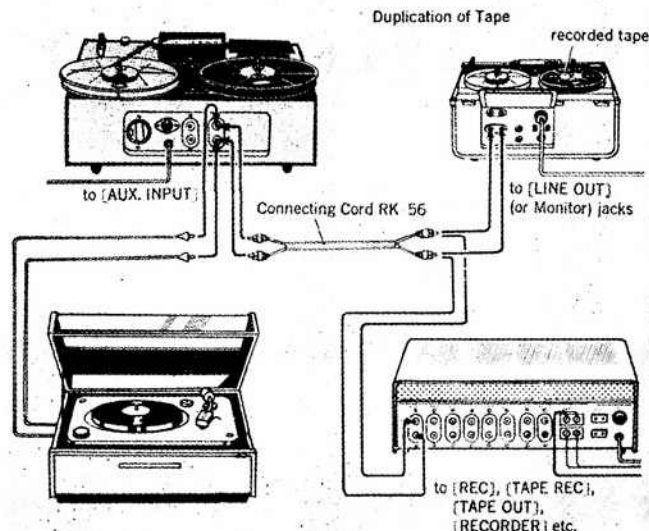
It is worth noting that the microphone inputs are low impedance, 250 to 1,000 ohms, but the sensitivity at the microphone socket is 0.2 mV. The microphone sockets take miniature jack plugs which are

difficult to buy in this country and I suggest the distributors include two microphone plugs at least with the TC-250 A or any other Sony tape recorder having similar microphone sockets. The output sockets are standard and in any event connecting leads are supplied with the deck. My only other criticism of this unit is that the output signals are quite high and since no output gain controls are provided one might easily overload the input circuit of a conventional hi-fi pre-amplifier. This, in fact, was so when I coupled the TC-250 A to a Rogers amplifier and also to an Armstrong amplifier. Users of this tape deck may find it necessary to include a preset variable or even a fixed attenuator across each output socket. The electrical and mechanical performance is otherwise impeccable, the amplifiers providing more than adequate frequency response and very low noise level.

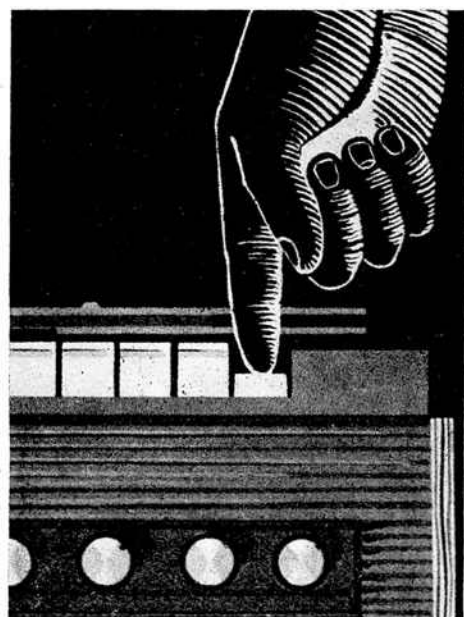
Aside from the two microphone inputs, there are two high impedance auxiliary inputs with a sensitivity of 100 mV which are of course suitable for radio or pick-up input. There is also a separate DIN socket which combines the auxiliary inputs and outputs, thus allowing for a single cable between the tape deck and an external amplifier.

The Sony TC-250 A is altogether an excellent tape record/replay unit more suitable for the hi-fi enthusiast rather than those with creative recording in mind, but well worth its price of £57 15s 0d. The UK distributors are Debenhams Electrical & Radio Distribution Co Ltd, Mercia Road, Gloucester, who will supply further information on request.

One of the many hi-fi and recording arrangements possible with the Sony TC-250 A record/replay unit.



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ATR

SOUND SCENE

News of people and events in the world of audio and tape recording



Above: Members of the Fi-Cord party of top salesmen and their wives leaving for their free trip to Paris. See 'Sales Incentive'.

Baird Managing Director to Head Goodmans

Mr J. W. C. Robinson, MBE, MA, Chairman of Radio Rentals Ltd, has announced the appointment of Mr J. Kirkby, CEng, AMI Prod E, MBIM, as Deputy Chairman and Chief Executive of Goodmans Industries Ltd.

Mr Kirkby, who retains his present post as Managing Director of Baird Television Ltd, is now responsible (under the chairmanship of Mr Robinson) for both main manufacturing subsidiaries of the Radio Rentals Group.

Jordan for Audio & Design

Ted Jordan, previously of Goodmans Industries and late of Jordan-Watts, has joined Audio & Design Ltd, a consortium of a growing number of specialists in various audio fields. A new range of speakers is being developed to Ted Jordan's designs on the principles described in his well-known textbook, *Loudspeakers*. One of these, known as the 'QED R/12/40', a book-case or free-standing unit, is now available and is being distributed through usual wholesale channels to the retail trade.

Audio Design Ltd now incorporates MJB Recording & Transcription Service which specializes in disc recording at highest professional standard. This department is under the personal direction of Michael Beville, a member of the committee of the Association of Professional Recording Studios.

Sales Incentive

Fi-Cord International last year introduced an unusual incentive to stimulate the sales of Fi-Cord portable tape recorders and equipment which they solely distribute in Great Britain. As a prize to representatives who reached their sales targets in 1965, they offered a weekend in Paris with their wives. The photograph shows the six successful men with their wives outside Fi-Cord International's head office at East Grinstead before the party set off to weekend in Paris.

From left to right : Les Pratt, Brian Dangerfield, Maureen Pratt, Keith Monks behind Pauline Dangerfield, Stanley Duer (managing director of Fi-Cord in Britain), Sheila Monks, Diana Gough,



Above: Miss Margaret Harvey (right), PRO at Grundig, and Miss Linda Kimberley sort out a delivery of tapes entered in the Grundig schools competition.

Gwyneth Hall, Chris Gough, Bruce Hall and Bill Bailey behind Penny Bailey.

New Address

The Belfast branch of Kodak Ltd has completed its move to newer and larger premises at Lislea Drive, Lisburn Row, Belfast 9. Here a new building has been erected designed specifically for the storage and distribution of Kodak products. Many modern aids to mechanical handling have been installed and should result in increased efficiency and promptness.

Grundig Campaign

In a new sales effort, Grundig has embarked this week on a mammoth 6-week advertising campaign for their TK 14L, TK 17L and TK 23L models. With all these models now being sold goes a free half-hour tape programme compered by Bob Monkhouse and featuring a number of famous entertainers, music and hints on tape recording.

BBC Research Scholarships, 1965

The Engineering Division of the BBC maintains six research scholars at United Kingdom Universities. The scholarships are awarded to selected honours graduates and provide the opportunity to work for a higher degree, the post-graduate study subject being within those fields of physics or engineering that have an application to television or sound broadcasting. It is announced that the 1965 scholarships have been awarded to Mr E. Trickett and Mr J. Clarke.

CBS agency for D & M

CBS International, a division of the Columbia Broadcasting System Inc of New York, has appointed Denham & Morley Ltd as UK distributors of their new ERA (Extended Range Audio) magnetic recording tapes.

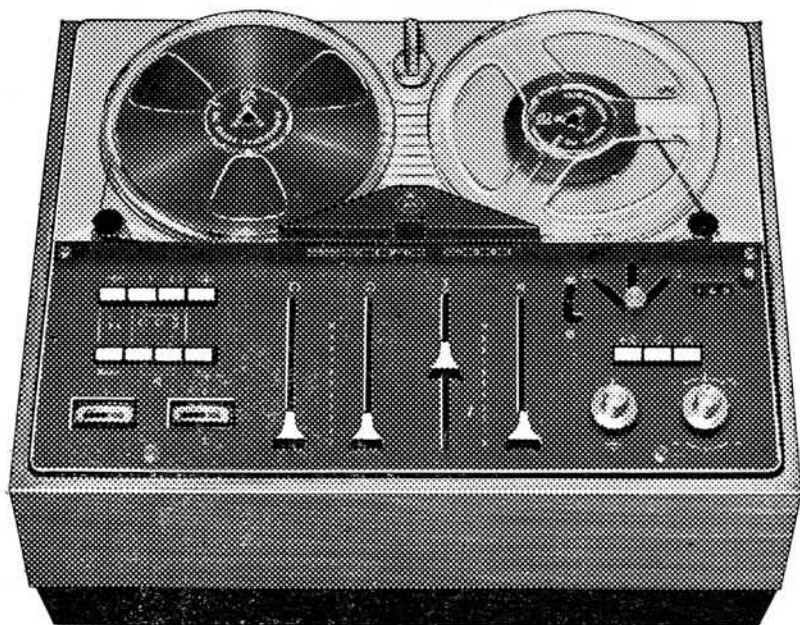
These tapes have been recently developed and improved to accept a wider range of sound than ever before possible.

Bang and Olufsen



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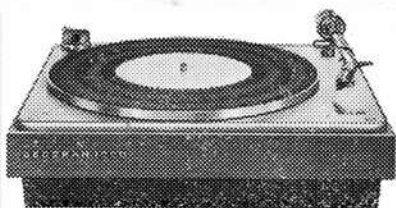
Enthusiasts demand the best—they choose the Bang and Olufsen Beocord 2000K tape recorder



Modern design distinguishes the Beocord 2000K from conventional tape recorders. It has been designed by top Danish engineers to give you the following features: Built-in 3-channel mixer section which gives an amazing variety of recording effects such as 'sound-on-sound', the synchronizing of two recordings on separate tracks, echos on both stereo and monaural recordings.

Power output is 2 x 8 watts, distortion at 5 watts less 1%. FREQUENCY RESPONSE: 7 1/2 in./sec.: 30-20,000 c/s (± 2 dB: 40-16,000 c/s); 3 3/4 in./sec.: 1 7/8 in./sec.: 50-8,000 c/s (± 2 dB: 50-6,000 c/s). Price 119 Gns.

Also available to the same specification is Model 2000T which has two speakers built into the lid of the portable carrying case. Price: 123 Gns.



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Mercia Road, Gloucester.
Telephone: Gloucester 26841.

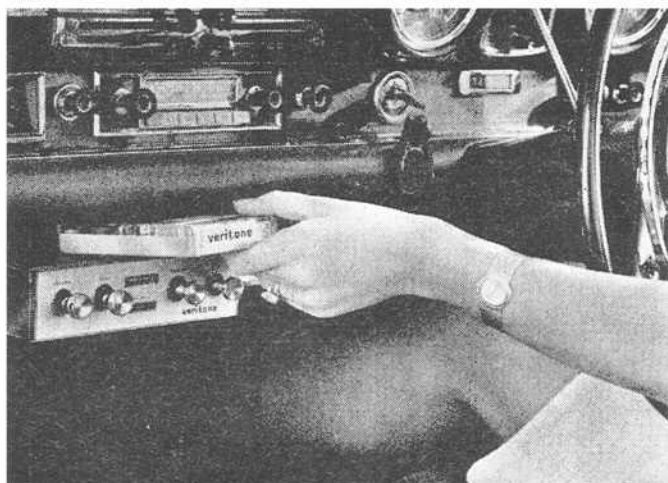
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Address

London Showroom
70-71 Welbeck St.,
W.1.

AUDIOVIEW NEW PRODUCTS

Information about the latest recording equipment and accessories now available in this country



Stereo Cassette Recorder

A new automatic stereo cassette player has been announced by Veritone Ltd, of Eden Grove, Holloway, London N7. Its specification includes a frequency response of 50–12,000 c/s, signal to noise ratio of 46 dB (min) and a nominal wow and flutter figure of 0.25%. The Veritone, shown above, has been designed primarily for cars, caravans and cruisers and operates from a 12-volt dc battery. Also available to fit the Veritone are continuous play cartridges of stereo recordings by such artists as Sinatra, Basie, Ella Fitzgerald and Keely Smith, as well as special language tuition tapes in Spanish, Italian, French and German. Retail price of the Veritone, including one music tape, but excluding speakers, is 43 gns.

German Meter Agency

Lennard Developments Ltd of 7 Slades Hill, Enfield, Middlesex, have been appointed sole UK distributors for the range of wow and flutter meters manufactured by Tech-Phys Lab. Dipl-Ing B. Woelke of Munich. Already available is the ME 101, with a built-in audio frequency generator providing the measuring tone of 3,150 c/s. Tone fluctuations between ± 0.02 and $\pm 2.5\%$ can be read linearly or weighted as approximate peak values according to CCIR and DIN. A draft indicator measures the deviation of the mean value of the measuring tone from the theoretical value. Both indicators can be switched to rapid or slow indication as desired. Further information concerning this and other meters, servicing arrangements and availability of test records, etc., will be announced shortly.

Magnetophon 200

As mentioned in last month's issue of *ATR*, the Magnetophon 200, a two-track version of the 201, is now available. Specification is similar to that of the 201 and the price is 39 gns including tape, spare spool, audio lead and microphone.

AEG (Great Britain) Ltd, the UK Telefunken distributors, also announce that their models M 104 and M 97 are now discontinued, and prices of these models have been decontrolled.



Self-threading Reels

The increasingly popular Scotch self-threading reel produced by 3Ms is now available in 5½ in size as well as 7 in size. Shown above in its new merchandising pack, the 5½ in reel costs 7s 11d.

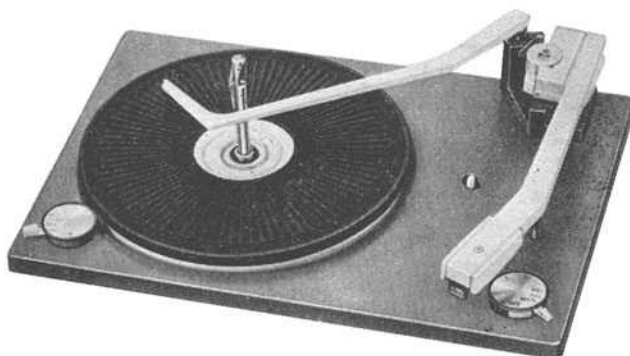
New BSR Minichanger

A completely new, fully automatic record changer has been developed by BSR Ltd. The UA50 'Minichanger' is 40% lighter and 35% smaller than other record changers with similar features, weighing, only 4½ lb and measuring 11½ in long × 8½ in wide × 5 in deep (see below).

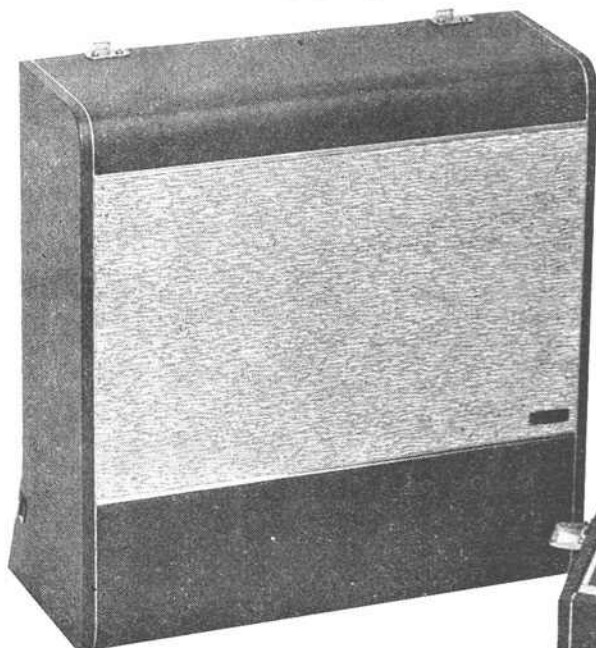
The four-speed unit can be operated from either a battery or mains power supply and provision is made for both monaural and stereo cartridges.

Six records of 7 in, 10 in or 12 in diameter can be accommodated in one loading; 10 in and 12 in diameter records of the same speed may be intermixed. Shut-off is automatic.

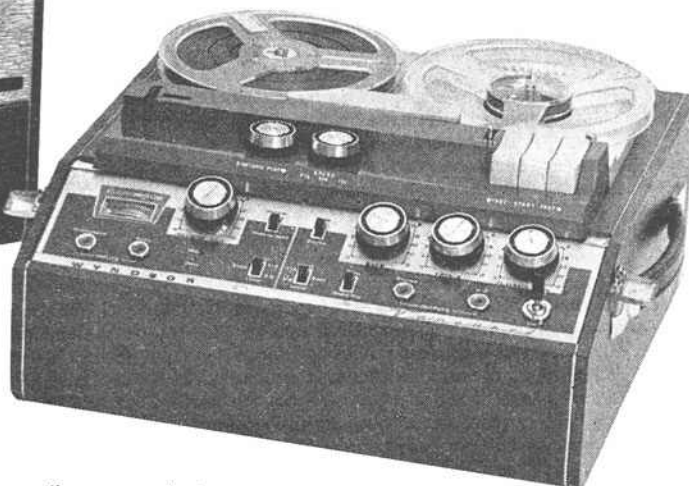
For further information write to BSR Ltd, Monarch Works, Old Hill, Staffordshire.



the Wyndсор VANGUARD



**“the only recorder
at its price
offering so many
outstanding features”**



A top quality 4 track mono tape recorder designed to suit the requirements of most tape recording enthusiasts. The finest precision components are used throughout and the modern design knobs, control panel and cabinet add a look of quality that belies the remarkably low price. Study the features and you will see many that are normally found only in the most expensive machines. We are proud to have produced the Vanguard and are confident you will judge for yourself that at 59 gns it is honest to goodness value for money and way ahead of any other similarly priced recorder.

- 4 track — 3 speeds $7\frac{1}{2}$ ", $3\frac{1}{2}$ ", $1\frac{1}{8}$ " — 7" spools
- 3 head system of highest quality
- Separate Record/Playback amplifiers enabling record and playback simultaneously.
- Double Play facility—two tracks can be replayed together.
- Sound on Sound switch for multiple recordings.
- Detachable lid fitted 8" 15 ohm loudspeaker with 12ft lead and standard jack plug — can be placed in the best position for optimum results — ideal for cine, dances etc.
- Stereo output socket—works in conjunction with separate amplifier enabling 4 track stereo tapes to be replayed.
- Unique illuminated recording level indicator — Red when recording — Green when playing back.
- Can be used as straight through amplifier by using either microphone, radio or gram input sockets.
- Separate Bass, Treble and Volume controls plus Record Gain control.
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PRICE 59 gns. with 1800ft L.P. BASF tape, BASF tape manual, two spare jack plugs. (less microphone)

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Wyndсор "707 II"

2 track, 3 speed recorder offering monitoring facilities, double play switch etc. 7" spools. **Price 32 gns.** Complete with microphone, tape, recording lead etc.

Wyndсор "707 IV"

4 track version of above **Price 35 gns.**

Export Division : Willmex Ltd., Compton House, Malden Rd, New Malden, Surrey

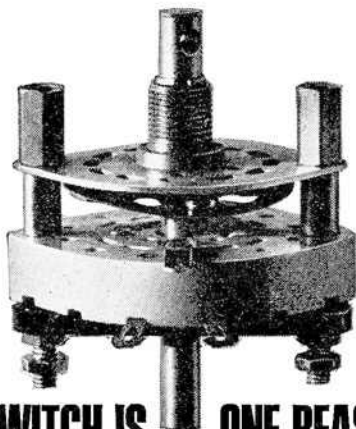
To Wyndсор Recording Co. Ltd. (Dept. ATR 3/66)
2 Bellevue Road, Friern Barnet, London, N.11.

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(Focal Press Ltd) | by J. Borwick | 9/- |
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(Focal Press Ltd) | by J. Borwick | 9/- |
| 7 The Tape Editing Guide
(Focal Press Ltd) | by R. Hock | 9/- |
| 8 Radio and Electronic Hobbies
(Museum Press) | by F. C. Judd | 23/6 |
| 9 FM Radio Servicing Handbook
(Odams Press) | by G. J. King | 27/6 |
| 10 Practical Hi-Fi Handbook
(Odams) | by G. J. King | 27/6 |
| 11 Radio and Audio Service Handbook
(Odams) | by G. J. King | 27/6 |
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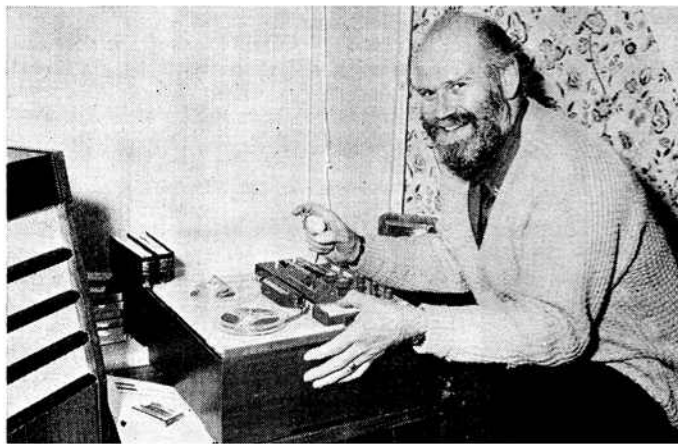
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P.B. 3/66

TAPE REVIEWS

by RUSS ALLEN

Jazz . . . ballet . . . Latin . . . symphonic . . . pop
. . . Russ Allen reviews some of the latest pre-
recorded tape releases



Russ Allen's listening den includes a necessary (unfortunately) stop watch for the accurate timing of tapes.

Having said (elsewhere in this issue) such a lot about poor recording, it gives me great pleasure to start my review with a faultless issue, but unfortunately it is an imported one.

'Artistry in Bossa Nova from the creative world of Stan Kenton' is on Capitol ZT1931, 4 track stereo, 7½ ips. £3 15s 0d.

The first thing that struck me on playing this was the fullness of the stereo band, with no central gap and yet not giving the feeling the musicians had been set up to give the effect, but rather that the effect had been gained by the recording. Naturally the recording quality is good, very good.

Kenton has always been interesting, (I first heard him in the late 'thirties), often controversial, an innovator and always including a little Latin rhythm in his repertoire.

It's great fun to hear some of the old Kenton standards, Artistry in Rhythm, Eager Beaver, Painted Rhythm, etc., dressed up with a bossa beat.

Funny, too, that despite the large, shouting brass team, the overall effect is one of gentleness. Very moody, swingy and quite delightful.

Stravinsky. *Petrouchka* - Complete Ballet (original version). The London Symphony Orchestra conducted by Sir Eugene Goossens. *Ebony Concerto* (1945). Woody Herman and His Orchestra. WRC TCM23. £1 9s 6d.

Igor Stravinsky, born near St. Petersburg, Russia, in 1882, has been a controversial figure on the classical music scene for more than half a century. He produced exciting, eerie music for ballet, *Firebird*, *Rite of Spring* and *Petrouchka*, with excursions into jazz, 'Ragtime for Eight Instruments', 'Ragtime for Piano', and 'Ebony Concerto' written for the Woody Herman Herd of '45. The Concerto was written to be played by Herman's regular line-up of four trumpets, four trombones, five saxes, piano, guitar, bass and drums. No particulars are given on the tape box, but I suspect that extra men were used to implement the woodwind, possibly an extra bassist, and there appears to be some pizzicato cello. The orchestration is interesting and though not jazz in the true sense of the word, it makes exciting listening.

My sincere compliments to the Herman men for interpreting a difficult score so ably when it must have been so completely different from anything they'd read before.

Petrouchka, on the other hand, with the London Symphony Orchestra who, playing in an idiom certainly more familiar though not always so easy for them harmonically, is tackled with the assurance they should possess.

Like most of Stravinsky, it has its moments of beauty, it's harsh stridency, crash and counter crash, it's moments, however brief, of delicacy (an oboe solo), and its fiery passionate staccato shouts. Stravinsky might well have said, 'nobody sleeps while I'm on', but he is always so intriguing that I can't imagine any one wanting to sleep anyway.

Recording is not so fabulous and side two of my copy had some rough patches. Superb music though!

'The New Sound of Connie Boswell Singing the Irving Berlin Song Folio,' Pickwick 4 Track Stereo. P4T - 421. £2 5s 0d.

It doesn't say so in the otherwise informative sleeve notes, but unless I'm much mistaken this lady was one of the Boswell Sisters who in my youth were the wow vocal trio. If this is so, then she ain't no chicken, but she sure still can wow it up! The songs are all standards, 'Alexandra's Ragtime Band', 'Cheek to Cheek', 'How Deep is the Ocean', 'Blue Skies', etc., and she sings them very, very well indeed. Backings are good, both jazz and sweet, though they're not quite as stated in the notes, but what matter.

Recording, stereowise, is truly great and that Boswell lady seemed to be singing right there in my room, with the band playing just behind her in the corner. Arrangements are good, well played and all in all this is excellent entertainment. Most enjoyable and Miss Boswell has my best bowler raised to her and I raise it again for the quality of the sound that Mr Pickwick got.

'Ben Webster meets Oscar Peterson.' World Record Club. TT 495. Recorded New York early 1960. £1 9s 6d.

Ben Webster, tenor sax', Oscar Peterson, piano, Ray Brown, bass, Ed Thigpen, drums.

For me, this is a happy meeting, as I adore all parties concerned. Webster's breathy, lyrical playing fits beautifully with the trio's neat swinging brand of jazz. Brown's playing is superb and Thigpen's crisp drum work a delight.

Recording on the original LP was perfect and it's lost nothing in the transition; in fact, it seems so good that maybe it was made direct from EMI's original tape master.

This incidentally is something I would dearly have liked to hear in stereo.

A lovely smooth moody quartet and a credit to all participants.

'Shostakovich - Symphony No. 6, Op. 54.' London Philharmonic Orchestra conducted by Sir Adrian Boult. World Record Club TCM 28. £1 9s 6d.

Dmitri Shostakovich, like Stravinsky, was born in Russia, in St. Petersburg, but some 24 years later. Unlike Igor, his work follows a more conventional pattern, writing long smooth lines of great beauty. The long flute solo here is a typical example. However, he works up to grand finales which, unless you have a big room and understanding neighbours, will certainly require you to turn the volume down toward the middle and end of track two.

It's a great pity that we can't here more of this kind of music played live at our concert halls. Sponsors of concerts say that unless they make up their programmes of the popular 'potboilers' they lose money as concert-goers only wish to hear what they know. An ugly thought this, but I can well believe it. So, if you haven't heard Shostakovich before, then try this for size. You may just find it as palatable as Tchaikovsky and, perchance, more satisfying.

'The Ventures on Stage.' Liberty TA-LBY 1270.

A pop instrumental group playing before a highly enthusiastic vociferous congregation somewhere in the Americas. They have a not very talented but very loud and tasteless drummer, three guitars, with a discrepancy in tuning which makes it a little hard to take if you have a musical ear. 'Slaughter on Tenth Avenue' is taken for a trip to the abattoir to be reslaughtered and by non-RSPCA approved methods. Notwithstanding, the audience screams its approval in ear-shattering manner.

The commentator on side one sounded to be talking in a language like Japanese most of the time, but I could be mistaken.

Side two is announced as the Ventures' first visit to England. The crowd sounds smaller but manages, I regret to say, to make itself heard in much the mode of its Atlantic opposites. The guitars are more in tune this time and the drummer has either been changed or recorded down, which is a blessing.

Strictly for the undiscerning beat fan.

continued on page 46 39

tape club news

Going up! That's the status of tape enthusiasts in general, and club members in particular. Although in the past tape recordists have not always been taken seriously or given the co-operation they deserve, there are heartening signs that the national press, many authorities and the general public are at least changing this attitude.

The interesting factor in this is that all these very pleasant changes seem to stem from one source - the International Recording Contest held in London last year. Consider the following chain of events.

After the International Contest last year, the BBC were finally persuaded (having refused repeated requests for over a year) to give air time to amateur recordings. One programme, 'The Soundhunters', went out, and this sparked off a not altogether sympathetic article from Anne Duchene, a critic for *The Guardian*. Following this article Mrs Duchene, received letters from tape enthusiasts, and in particular one from the Federation of British Tape Recording Clubs. As Mrs Duchene's home is in Sussex, it was arranged that she should visit her nearest local tape club, Brighton, and as a result in her subsequent articles on recording Mrs Duchene sounds quite converted. She is also in the enviable position of being able to convert a large number of others too! Having a spokesman (or spokeswoman) on the national press is a very useful step forward.

As I have mentioned, the International did make the BBC relent and give us at least one half-hour of air time (although, needless to say, we can still do with more). This improvement was not, however, momentary, for there are other signs that the almighty (in sound) is regarding us favourably. Recently when two young club members visited the BBC in London to record an interview with comedian Al Read for their hospital programme, they took along a small portable. However, a very kindly BBC personage asked them what machine they would be using for playback, and on learning that it was to be a high-class mains model, immediately put a complete studio with beautiful console recorder at their disposal. Well done, BBC-man, whoever you were!

So you see, these two tales alone show that, as a hobby, tape recording is gaining esteem. Club members, by consistently being courteous and effective, as well as by producing ever-improving recordings, can do much to further this. Never miss a chance to get an oar in on our behalf!

K.C.

Brighton

As mentioned above, members of Brighton Tape Recording Club were recently visited by Mrs Anne Duchene, a *Guardian* critic. Club secretary Keith Upton, on behalf of the club, welcomed Mrs Duchene and two representatives of the Federation of British Tape Recording Clubs, Peggy Buchanan (Treasurer) and John Bradley (Press and Publicity Officer). The three guests were shown examples of the club's work, including church recordings, amateur dramatics and various tape and slide shows of local events. After this, the tables were turned, and it became the turn of the Federation representatives to answer questions about their organization, its aims and its effectiveness.

Two other recent meetings of the Brighton club were devoted to the history of recording and taping respectively. At the latter meeting members were asked to bring along contributions from taperspondents to compare styles and approaches to this fascinating aspect of our hobby.

Coventry

Changes of office in the Coventry club have followed the club's recent AGM. Chairman is Mr K. Preston, and the new Secretary is Mr C. Stanley, of 333 Holyhead Road, Coventry. Mr P. Warden continues as Treasurer.

The club's work in association with the Coventry Committee for International Understanding continues. Last month the CCIU promoted an international social evening to which natives of Scotland, Ireland, Wales, France, Holland, Belgium, Czechoslovakia, and several other countries were invited. Needless to say, tape club members were in evidence with many portables, in spite of the fact that they had all been on the town the night before at the club's annual dinner and social!

Plans are going ahead for the production of a new club magazine, a number of film shows have been lined up for future meetings, and the club committee is already looking ahead to a very ambitious demonstration which is scheduled to take place in the Herbert Art Gallery in the autumn.

Derby

When members of the Derby tape club had their annual dinner and social evening, a very unusual form of round-robin tape was heard. Each member in turn recorded a one-minute episode, leaving the next person a tricky situation to explain away. Thus the next person not only had to get out of the situation presented, but also inveigle the next member into one, all in the space of sixty seconds. The end product was a very entertaining half-hour tape.

The club's monthly contest, entitled 'Western Story', was won by A. Jeffries, with M. Nichols second. The winning tape was distinguished by its good use of sound effects and background material.

Ferrograph Owners

Date for the AGM of the Ferrograph Owners has now been fixed for Sunday, 17 April. This has purposely been chosen to coincide with Audio Fair weekend so that members can combine a visit to the Fair with the club get-together. For those who have to travel a long

distance to get to the meeting, I understand that refreshments will be laid on. Venue has not yet been settled, as this will depend on the number of members able to attend.

Home construction kits are now available to club members. Only two of these are in production at the moment but I understand that more will be on the way shortly.

George West has again produced the club's tape magazine *Ferrosound*, which went down very well with all members.

The club's secretary, and with him the HQ, has moved from Ellesmere Port. The new address is 19 Redhall Gardens, Leeds 17.

Great Yarmouth

Club members have been very pleased with programmes made specially for three local old people's homes in the Great Yarmouth area. They managed to get in touch with over fifty relatives of the residents of the homes and were even able to get messages to the inmates from as far afield as Australia, South Africa and Berlin. In fact, club members reckoned that it was harder to get messages from relatives living in the town than from those overseas. Needless to say, the ladies on the receiving end of the messages were more than delighted, and it is hoped that these programmes will now become a regular part of the club's programme. Club members have also had the opportunity of recording local artistes, and have been taking it in turns to entertain their fellow club members with taped programmes on club nights.

London

'How not to Conduct an Interview' and 'Britain in Sound - the Isle of Man' were two of the tapes played by Mr Conn Ryan of the Central Office of Information on his recent visit to the London Tape Recording Club. At a subsequent meeting, the regular edition of members' tape time included another of Conn Ryan's tapes, this time an interview with the Dame of Sark. Also at this meeting members had a second chance to hear a comedy tape on editing, known as 'Editions'.

A new addition to club meetings is a spontaneous (or almost so) tape programme on the lines of the BBC programme 'Today'. The main idea of the session is to give as many members as possible a chance to perform on tape. Included in the first programme was a topical discussion, chaired by Ron Tucker, and as many items as possible, of maximum duration 4 minutes, were fitted into a half-hour programme.

North London

A special lecture for beginners at the North London club was given by its two star members Ron and Den Goodwin, who won the club's competition league championship for 1965. Competitions for the 1966 championship at this club, the first of which was held on 2 February, will now be judged in two distinct ways. For competitions where a definite subject is set, entries are being judged on technical merit, while open competitions are being judged on originality of script, ideas, etc. Anticipating more visitors to the club in 1966, the club has purchased new crockery 'including cups and saucers of better quality for visitors'. Charles Davison volunteered to

make a box in which to keep the new crockery and a kettle, and David Barker has been appointed Catering Officer! First to enjoy the new facilities were members of the New Circle club who visited North London for a joint meeting.

Rugby

Following a report in the *Daily Mirror* of the amazing work carried out, often with the help of a tape recorder, by Mrs Ann Armstrong, a polio victim in an iron lung, members of the Rugby club compiled a tape to Mrs Armstrong and sent it off with their best wishes. The tape itself was edited by their master editor, Jack Willis, himself blind. It is hoped that Mrs Armstrong will be able to spend a little time taping with the club, but in any event the first tape has been extended as a gift.

A reporter and photographer from the local weekly paper, the *Rugby Advertiser*, have been busy at the club's recent meetings preparing material for a special feature on the club, its work and achievements.

In return for the Christmas gift sent to the club by the Palmerston North club of New Zealand, the club were at first stumped as to what would make a suitable present to send to New Zealand. They finally decided on a hand-bell in brass, bought at Coventry Cathedral and bearing the Cathedral's crest. This is intended for use in calling meetings to order! Membership, in spite of inevitable losses of people moving away from the area, is now at a new high of 62 and more signings are expected shortly.

Radio Scotland

Like many other tape clubs, the Radio Club of Scotland (Tape Section) held its AGM at the very end of 1965. The 1966 committee features Gordon Calder as Chairman, with John Wood as Secretary, Jack Malcolm as Deputy Chairman, and John Knowles as Technical Adviser (the latter for the fourth year running). Among recent Monday night sessions, members heard a tape from the Cotswold Club, and a stereo/mono comparison demonstration from John Knowles (seems as though someone's got an appropriate name!).

Two humorous and creative tapes have been played back at recent meetings - Jack Malcolm's make-believe visit to the submarine *Polaris* and the Chairman's effort at trying (literally) to get a tune out of ten green bottles! On screen the club's main event was 'Looking Back', a recap on the outdoor activities of members, which was provided by the Technical Adviser.

The club's six-week 'Beginners' Class' series held in the RCS annexe has proved most useful, and any enthusiast within reach of Glasgow will be made most welcome at the club rooms at 336 North Woodside Road. For details, contact Secretary John Wood at 62 Kingarth Street, Glasgow, S2.

Thornton Heath

On hearing that they had won the *ATR* club trophy for the third time, the excited members of the Thornton Heath TR Club filled the cup (which they already held from last year) with champagne perry (the real stuff being a bit on the dear side for forty-odd members!).

David Kennard, assisted by Alan Brown, gave members an evening's entertainment, part of which was selections from the BBC programme 'Quiet Flows the River'. David himself had been responsible for quite a number of the documentary recordings on the Thames used in this programme.

At a recent live recording session the club was fortunate enough to obtain the service of a very expert electronic organist (the organ being the electronic item, not the organist, I am assured). A great array of recorders was in evidence with just about everyone's ideas on mics and booms and placings being practised. Some very good recordings were made. A subtle change of loyalties is taking place within the club. Morris Webb is eagerly awaiting delivery of a new Ferrograph 6, while Ted Bashford has changed from Brenell to a new Vortexion - to go with his new Vortexion mixer?

Two members of the club, wearing the FBTRC cap, recently visited the Brighton club with Mrs Anne Duchene, as reported by the Brighton club.

Morris Webb has been busy editing and collating a whole mass of recordings taken at séances by a lady member of the club, and it is hoped that the material should make interesting and possibly dramatic listening.

Late News

I have just heard from the Secretary of the Millom club of the tragic death of the club's treasurer, Ken Bannister, who was killed by a pocket of gas while cleaning an underground waste pipe. Although Ken's voice will be remembered by many who exchanged tapes with the Millom club, Ken himself never owned a tape recorder, attending club meetings purely for the social pleasure. Regular readers of *ATR* will remember how much work he put in on the Millom club studio, as reported in the August, September and October issues of *ATR*. I am sure all club members will join with me in extending sympathy to his widow and three children, and to the members of the Millom club who so valued his friendship and assistance.

Top Ten for March

- | | |
|-------------------|-----------------|
| 1. Radio Scotland | 6. London |
| 2. Brighton | 7. Coventry |
| 3. Rugby | 8. North London |
| 4. Thornton Heath | 9. Derby |
| 5. Great Yarmouth | 10. Ferrograph |

THE LEAGUE CHAMPIONSHIP

- | | |
|-------------------|----|
| 1. Rugby | 25 |
| 1. Thornton Heath | 25 |
| 3. Brighton | 23 |
| 4. Great Yarmouth | 22 |
| 5. Newcastle | 15 |
| 5. Radio Scotland | 15 |
| 7. Leeds | 14 |
| 8. Derby | 13 |
| 9. London | 10 |
| 9. Park | 10 |
| 11. Coventry | 9 |
| 12. Dartford | 8 |
| 12. North London | 8 |
| 14. ITAC | 7 |
| 15. Ferrograph | 6 |

CLUB SECRETARIES PLEASE NOTE: The publication of the May issue has been brought forward to coincide with the opening of the 1966 Audio Fair. Club News copy should therefore reach me at 9 Harrow Road, London W2, by first post on Wednesday, 9 March, at the latest.

Members of the Brighton Tape Club with visitors Mrs Anne Duchene, a Guardian critic (second from left), and Miss Peggy Buchanan (far left) and Mr John Bradley (centre), both of the Federation of British Tape Recording Clubs. (See 'Brighton').



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 taping required.

BUCKINGHAMSHIRE

ROBIN DE VRIES, 17, student, 90 London Road, Datchet, Bucks. Music, guitar playing, fishing, ten-pin bowling; pop music. Civic T52, 5½ in, 3½. Germany.

BERKSHIRE

SYD BROWN, 41, sales engineer, 'Dauphin', Ball Hill, Woolton Hill, Nr Newbury. Photography (35mm), woodwork, people; popular, theatre, light classics. Truvox 93/4TR Stereo, 7 in, 1½, 3½, 7½. Sweden, Canada.

COLIN HILL, 30, quantity surveyor, 140 Cromwell Road, Newbury. Hi-fi, motoring, electronic organ; classics. Cossor 4-track (stereo), 5½ in, 1½, 3½. Anywhere.

JAMES BARROW, 21, teletypist, 38 South View Avenue, Caversham, Reading. Electronics, all tape recording; Hawaiian music, classical and surfing. Sanyo, Civic T72, 7 in, 1½, 3½, 7½. USA including Hawaii.

PHILIP WYMORE, 32, broadcaster, 60 Edinburgh Gardens, Long Walk, Windsor. Books, music, theatre, travel; folk music. Brenell, Philips, 8½ in, 3½, 7½, 15. UK, Holland, USA, Australia, Europe, Commonwealth. Male contacts only. Letters first please.

CAMBRIDGESHIRE

DAVID ORBELL, 15, schoolboy, 17 Leys Road, Cambridge. Hi-fi reproduction, perfecting recordings; all types of music, especially pop. Bang and Olufsen Stereomaster, 7 in, 1½, 3½, 7½. Anywhere.

DERBYSHIRE

MR EVAN A. GREENAN, 32, RAC road patrol, 17 Copes Way, Chaddesden. Photography, 35mm, and 8mm cine, camping, touring, motor cycling; Scottish country, musicals, light classics. Cossor 1604, 7 in, 1½, 3½. Denmark, Sweden, Norway, Scotland, England.

J. EDWARD PETTIFOR, 29, lace draughtsman, 162 Derby Road, Heanor. Amateur dramatics, records, reading, shows; light classical, jazz (trad). Cossor 1605, 7 in, 1½, 3½, 7½. Far East, Australia, America or anywhere outside UK.

DORSET

DAVID J. BLUNDELL, 20, commercial photographer (single), C7 Pinehurst Caravan Park, Pinehurst Road, West Moors. Live sound recording in mono and stereo, 8mm films, hi-fi generally, driving; pops, instrumentals, electronic organ music in stereo (Hammond or classical). Truvox PD 97, stereo, Fi-Cord 1A, 7 in, 1½, 3½, 7½. Anywhere English speaking, male or female. No need to write - all tapes answered.

JOHN N. MITCHELL, 45, accountant, 2 Delph Road, Merley, Wimborne. Recorded humour, light music, all general interests; light music. Elizabethan 4-track, Cossor portable, 7 in, 1½, 3½, 7½. Anywhere, outside UK, English only.

J. R. SIMISTER, 30, pipe fitter, 1 Wesley Street, Weymouth. Tropical fish; pop, jazz, Sinatra. Ultra, 5½ in, 1½, 3½. USA, anywhere English speaking.

DURHAM

PATRICK WELSH, 42, labourer, 4 Friar Square, Ford Estate, Sunderland. Travel, 8 and 35mm photography; general music. Grundig 4-track, 5½ in, 3½. Anywhere.

ESSEX

RAYMOND HEATH, 20, HM Forces, 'Primrose Cottage', Goldings Hill, Loughton. Tape recording, swimming, music; pop and light classical. Sony TC 200, 7 in, 3½, 7½. British Guiana, USA.

JOHN HILLS, 32, caretaker, 41 Brays Mead, Harlow. Tape, SW radio, photography, electronics; anything. Fidelity Major 4, 7 in, 1½, 3½, 7½. All countries, any age, no need to write.

GLOUCESTERSHIRE

KIM CHARLES EDWARD WASHBOURNE, 40, drawtwister, 23 Wymans Road, Cheltenham. Camping, motor cycling, camping, Asiatic foods, voluntary youth work; popular, native, folk, light classical. Sony TC 200, stereo, mono, 7 in, 3½, 7½. Anywhere, all tapes replied to. English speaking only.

HAMPSHIRE

DONALD CLARKE, 37, debt investigator, 34 Central Road, Drayton, Portsmouth. Family taping, general talk, amateur electronics and astronomy; no jazz, opera or heavy classical. Elizabethan LZ 29, 7 in, 1½, 3½, 7½. All countries, no need to write.

FRED RICKERS, 57, decorator, 5 Belmont Road, Andover, Hants. Electronic organ, building; light popular. Bradmatic and Philips, 7 in, 3½, 7½ (Bradmatic), 3 in, 1½ (Philips). Anywhere, no need to write.

MR AND MRS E. H. SAUNDERS, 28, 25, commercial artist, housewife, 165 Alresford Road, Winchester. DIY, car care, cookery, stamps; pops, light classical. Philips EL 3548, 7 in, 1½, 3½. Sweden, anywhere English speaking.

HERTFORDSHIRE

CLIFF ROBSON, 24, 35mm colour process film pre-splice operator, 32 Prince Park, Chaulden, Hemel Hempstead, Herts. 8mm, 35mm, hi-fi, radio, TV, short wave listening, sound effects, travel, cars, films, gimmick recording, science fiction, flying saucers, draughts, video recordings for amateurs; Latin American, Hawaiian, light classical (dance), pop, country and western. Sony TC 500, 4-track stereo, Vortexion CBL 2-track stereo, Philips EL 3585, 2-track portable,

8½ in, 1½, 3½, 7½. Anywhere English speaking. Only 4-track stereo tapespondents wanted.

KENT

ROBIN BASFORD, 31, radio and TV engineer, 26 Cornwall Road, Walmer. Stamps, aquariums, target shooting, audio; strictly serious. Philips EL 3541/15L, 7 in, 3½. Scandinavia.

TERRY BEDDIS, 24, sales assistant, 74A Coolinge Road, Folkestone. Reading, drama, popular music; popular, film music. Elizabethan LZ 29, 7 in, 1½, 3½, 7½. Holland, France.

LANCASHIRE

MR H. BARNES, 30, representative, 37 Rusland Avenue, Mereside, Blackpool. Gun dogs, tape recordings, collecting country and western music; country and western. Cossor CR 1606, 5½ in, 1½, 3½, 7½. USA, New Zealand.

KEITH HOOK, 23, assistant manager radio/TV/records dept., 13 Caxton Street, Castleton, Rochdale. Tapesponding, organ recordings, sound effects, art, corny recordings, horror stories; country and western, Hawaiian, folk, pop, classical, opera. Elizabethan LZ 511 stereo, Philips EL 3300 battery, Defiant, 7 in, 1½, 3½, 7½. USA, South Europe, UK, Hawaii, Russia, Africa. Letters not needed.

H. NATH, 17, sixth-form student, 30, Lancaster Road, Formby, Lancs. Photography, shooting, folk music, languages - German especially; mainly classical and general. Fidelity Playmaster Major 4-track, 7 in, 1½, 3½, 7½. West Germany, Denmark, Scandinavia or any continental country.

LONDON

DAVID M. BANDY, 19, telephone engineer, 59 Dylways, Denmark Hill, Camberwell, SE5. Dancing, bowling, records, driving and of course taping; pop and some ballads. Grundig TK 20, 3½, 5½. Anywhere. All letters replied to.

MISS JAN BURTON, 17, nursery student, 4 Avenue House, Cazenoue Road, N16. Ice skating, camping, travel; all music. Fidelity, 5½ in, 3½. Canada, Switzerland, Germany. English speaking only.

MR R. BOOTH, 35, TV repair man, 15 Keynsham Road, Eltham, SE9. Recording, railways, TV repair, science and model making; all kinds of music. Spinney, 2-track, 7 in, 1½, 3½, 7½. All countries, no need to write. Male or female.

TREVOR DAVIES, 61, export clerk, 25 Crewdson Road, SW9. Family recordings, current affairs and travel; from Bach to pop. Elizabethan LZ 29, 7 in, 1½, 3½, 7½. Europe, especially Scandinavia.

EDWARD HORNE, 37, forecourt salesman, 17 Thorpe Road, N15. Fairground organs, street organs, any organs, tape recording, films, shows; popular music. Sanyo battery, Philips, Wyndson, 2-track, 7 in, 3½, 7½. Anywhere, English speaking.

ROBERT JOHNSON, 30, lift engineer, 7 Albion Road, Walthamstow, E17. Photography, music, reading; Bach to pops, all good types. Vortexion WVA 5, 8 in, 3½, 7½. UK or Continent. Male or female.

AUSTRALIA

Paul Bagchus, 54, tool turner, 7 Clifton Street, Goodwood Park, Nr Adelaide, South Australia. 8mm filming, 35mm slides, bird watching, making sounds for films/slides; light classical, organ. Grundigs and TK2, 7½ in, 3½ TK200, 7½. South Africa, Holland, England (in English, Dutch and S African language).

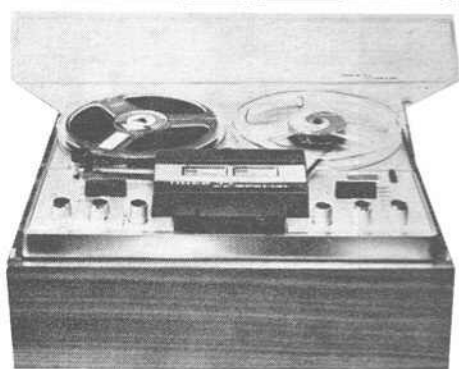
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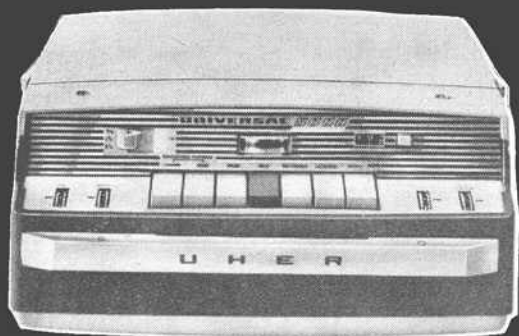
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TAPE REVIEWS *continued from page 39*

'Fabulous Brass.' Recotape ZRSL 231. Played by the London Brass Ensemble. £2 10s 0d.

Just in case any of Harry Mortimer's mates go rushing to buy this, may I hasten to mention that this brass is not quite his kinda music. It is extremely well arranged and beautifully played items of the 'Mood Indigo', 'Sabre Dance', 'I Can't Get Started' type. Why it was called Fabulous Brass I'm not sure, because to me this seems a slur on all the excellent non-brass players on this fine tape.

The recording is highly exciting in instrument placing and stereophonic quality, although recording quality is not always perfect. However, I understand that Recotape have been remastering a lot of these tapes and perhaps the future will see some of this roughness disappearing.

Must confess that, apart from the tiny flaws aforementioned, I enjoyed this all very much indeed.

'Mozart. Bassoon Concerto, K.191, and Clarinet Concerto, K.622.' HMV TA-ALP 1768. £2 0s 0d.

Gwydion Brooke, bassoon, and the Royal Philharmonic Orchestra conducted by Sir Thomas Beecham.

The bassoon is not a usual solo instrument and for that alone the record is interesting. Gwydion Brooke is a talented performer at present with the Philharmonia. He plays the Mozart well but without inspiration, particularly in the cadenzas. His technique is faultless and he shows fully the instrument's range, but that is all. Basically I would say that Beecham himself was not a Mozart man and I would have liked to have heard this done by the Mozart Players.

Similarly, I feel about Jack Brymer and the Clarinet Concerto. He is a brilliant clarinet player, at present with the BBC, and although technically he cannot be faulted here, Mozart is not everybody's cup of tea. Both tracks are first class for all except the purist, who I'm sure will agree with me that they are not approached in the true Mozartian manner.

If you aren't so flaming fussy, then these are both jolly good show pieces for bassoon and clarinet.

R. A.

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Side 2—Sibilant—white noise (pitch) Sibilant—white noise (pitch octave high) Three-tone undulation Filtered tone Stridor (tonal) Ring modulation and sibilant

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Side 2—Police car and bell, chase Police launch and siren Steam goods train and whistle Car door slam, and starter Storm at sea, thunder, wind and gulls Tube train, stop, doors and start

H MFX/2—AUTHENTIC HIGH-FIDELITY SOUND EFFECTS *Price 7/6*

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Side 2—City and Waterloo tube train—arriving City and Waterloo tube train—departing Footsteps (continuous track) In subway (mixed) In narrow streets (female) On pavement (mixed) Running in street (female) Running in street (male) Up and down (wooden stairs) Workmen hammering and sawing

I MPX/1—MILITARY PARADE AND WARFARE SOUNDS *Price 7/6*

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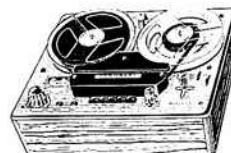
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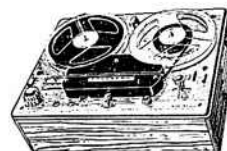


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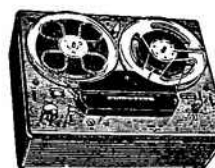


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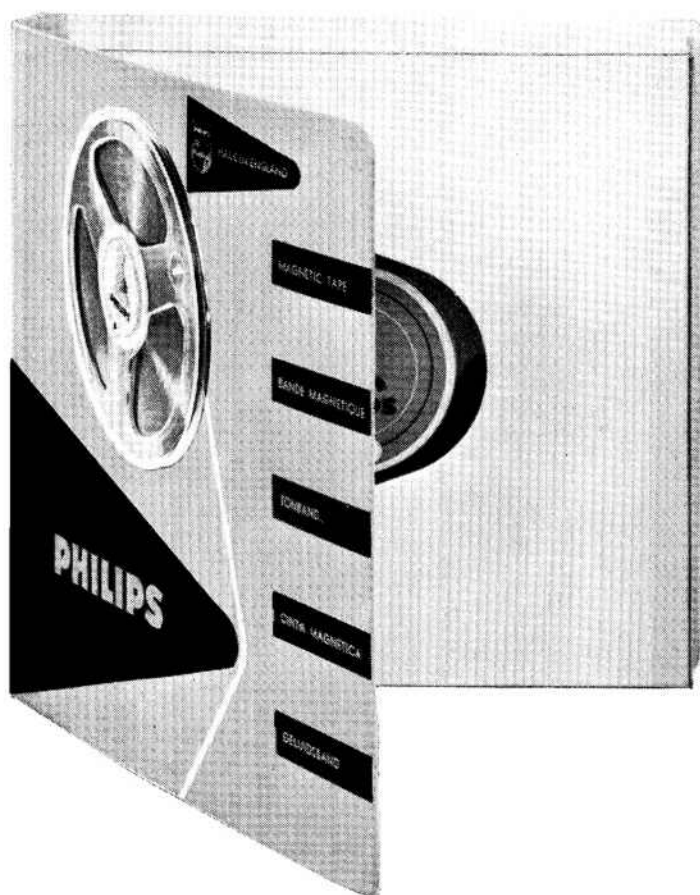
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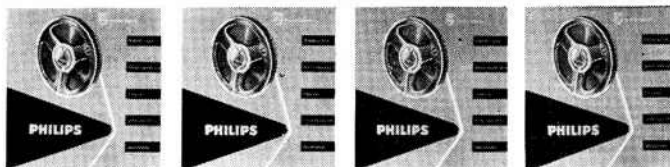
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