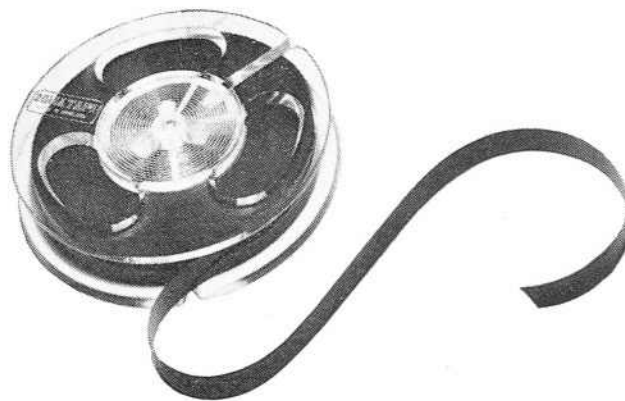


AMATEUR TAPE RECORDING



Tapesponding;
Patrick Copinger
discusses the art
and pleasure of tape
corresponding;
how to achieve
a good recording
standard on letter
tapes; details of
new postal rates
for tape messages.
Sound Initiative—
how to organise
an entertaining
technical demonstration
Ribbon Microphones
and Windgags;
when and where to
record in July.





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A subsidiary of Ilford Limited, Ilford, Essex.

AMATEUR TAPE RECORDING

VIDEO & HI-FI

Vol. 6 No. 12 July 1965

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TAPESPONDING has always been a prominent part of the hobby of tape recording and is not, as many suppose, entirely without the creative aspect. Pat Copinger, himself a confirmed and active tape correspondent, deals adequately with tapesponding in this issue of ATR and explains how to make interesting tapes to others. It naturally follows that if your tapes are interesting you are likely to receive something equally interesting from your tapespondent.

We deal too in this issue with tape and slides, a combination which tapespondents might like to think about, for what better than to make your tapes come alive with colour pictures of yourself your family and your environment.

Tapespondents who live overseas may also appreciate seeing as well as hearing something of the town and the country in

which you live. This is where the **ATR Recording Diary** may come in useful as well as our other regular feature **Tape Directory** of which there is an extended edition this month.

And more good news for tapespondents. It seems likely that the GPO will be introducing special postal rates for magnetic recordings on tape and if you are concerned about the cost of tape itself we might mention here that most tape manufacturers now market special small lightweight tapes already packed in suitable mailing boxes, all designed to reduce the cost of postage to a minimum.

The world and its population is yours to explore in search of new friends, new voices and new sounds. Why not adopt the idea recently used by the GPO to promote letter writing . . . 'someone, somewhere, wants a letter from you'—on tape!

F.C.J.

Editor: F. C. Judd, A.Inst.E. Assistant Editor: Kim Cook. Art Editor: Robert Morley. Production Director: Denis Curtis. Advertisement Director: Lindsay Masters. Advertisement Manager: E. McKeown. Circulation Manager: David Hughes. Editorial, Advertising and Subscriptions: Amateur Tape Recording, Haymarket Press Ltd., 86/88 Edgware Road, London W2, Ambassador 3200. Amateur Tape Recording is published by Haymarket Press Ltd. © 1965. Printed by Athol Press, Douglas, Isle of Man. Title registered at Stationers' Hall. Subscription Rates throughout the world 30s. 0d. Post Paid for twelve issues.



UHER

4000
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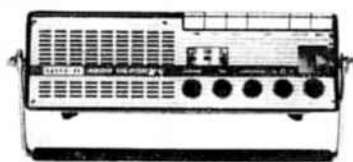
Ready for recording and playback anywhere and at any time the UHER 4000 Report-S satisfies the most exacting demands of both amateur and professional and offers virtually every facility provided by a mains-operated recorder. It requires only five flashlight cells as a power supply, and is even more economical when operated from a re-chargeable "dryfit" battery. It can also be used with any type of storage battery from 6 to 24 volts.

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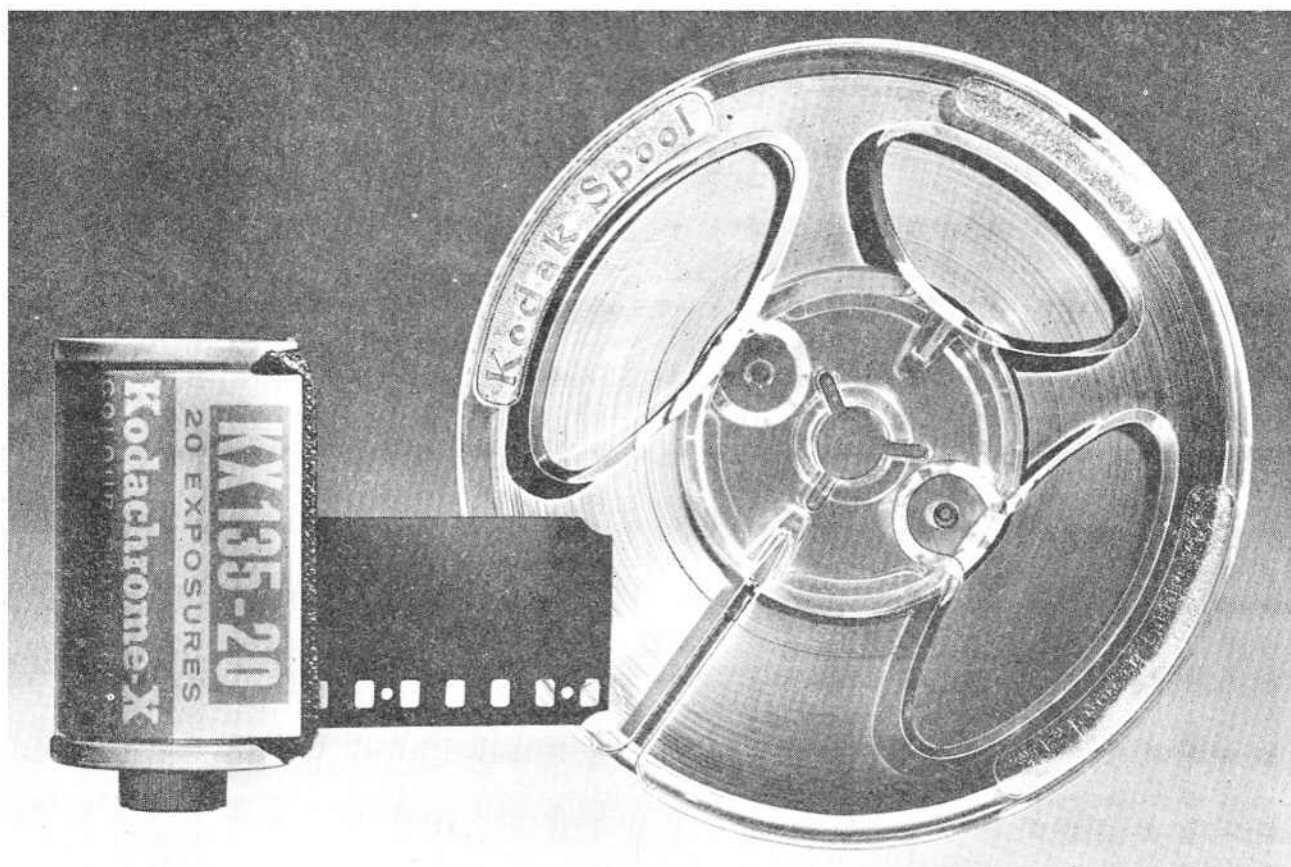


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with battery portables (5½ hours playing time on a single 3½" reel!). So next time you buy tape, do the sensible thing and specify Kodak Tape. It will do full justice to your equipment. And it costs no more.




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ADDRESS.....

.....



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TAPE CORRESPONDENCE

Patrick Copinger

On page 14 of this magazine you will see a page headed 'The Tape Directory'. and listed are the names and addresses of people with tape recorders in various parts of the world who are prepared to talk on tape and thereby establish a friendship with anyone else who can talk into a microphone and record.

It is quite fascinating to hear someone talking to you personally from a distant land, to listen to his different type of speech, to hear him tell you about his way of life, his family and his job. Perhaps he introduces friends visiting him who also talk to you. Until you have experienced this thrill of personal voice contact maybe across thousands of miles, you have no idea what it is like. Many and lasting friendships are formed this way. I have stayed with a tape friend in Paris for a few days, had lunch with one and dinner with another in New York. My wife also stayed with tape friends in Paris and Lausanne, and we have had friends from New York and New Hampshire, USA to stay with us in Scotland. In every case it was just like meeting old friends again although we knew them only as voices.

I intend to give you some ideas and guidance on this rather different use of the tape recorder commonly called 'tapespondence.' I first became a 'tapespondent' when I joined the Voicespondence Club of Virginia, USA in 1955. This was one of about three clubs then operating. I am still exchanging tapes with tapespondents I 'met' on tape 10 years ago.

JOINING A CLUB

It is really preferable to join one of the tape correspondence clubs listed, but you can start tapesponding right away if you have a microphone and a tape recorder, by writing to one or more of the people listed in the ATR Directory. Always write first. Never send a tape without writing to introduce yourself, and asking permission to start an exchange of tapes, unless there is a note in the Directory entry after the name of the person listed indicating that there is no need to write first. This is important. The person with whom you choose to tape may have been inundated with tapes and be unable to cope with any more. He may have moved, or lost interest since the notice appeared. There is also a strong pos-

sibility that you may lose the tape if you fail to write first.

If you decide to join a club, you will receive a list of members with their interests, hobbies, type of recorder, etc. Information is given on how to start a tapespondence and a news letter or magazine produced periodically gives news about members and about the club. This also lists new members, address changes and so on. Joining a club costs an annual subscription which may vary from 5s to £1 depending on the type of club and facilities offered. This sub. usually just covers running expenses such as printing and postage. There are tape correspondence clubs to suit all tastes, and with members all over the world. There are clubs for organ enthusiasts, for stereo specialists, for religious groups, those interested in languages, etc. There are clubs with headquarters in America, Australia, Canada, England, Scotland, etc. Location is of no particular importance as all contacts are made by mail.

EQUIPMENT NECESSARY

All that is needed to start you off is a tape recorder, a microphone and the ability to talk to someone you don't know and can't see! This latter point might bother some people but with a little practice you can get used to this by imagining your friend to be in the microphone, or sitting in a chair just behind it. The fact that you don't know the person initially should encourage you to talk quite vociferously as he or she will want to know all about you, and you will want to ask questions about them. Your tape recorder need not be an expensive or elaborate one. It doesn't require a variety of speeds and tracks. All that is necessary is a tape speed of 3½ ips half track with high impedance microphone input, a radio input and a crystal microphone. A speed of 1½ will be quite satisfactory but may restrict the number of people you can contact who have that speed. Even a small battery-operated portable will do. On the other hand you can tapesond just as easily with a four-track stereo tape recorder, a mixer, an echo unit, extra tone controls and a second tape recorder. This is apparent in our picture of Marguerite. Furthermore it is not necessary to have a special

sound-proofed studio in which to record or listen to your friends. Listening and even recording can be done in the kitchen while getting the lunch ready as seen in our other picture (overleaf).

FOUR TRACK TAPE RECORDER

When using four track (¼ track) tape recorders for tapesponding, you may find yourself in a bit of bother if you exchange tapes with someone who has an ordinary twin track machine. This is because if you record one of your quarter tracks on a tape which has previously been recorded half track, and it is played back on a half track machine, it will play both half the original ¼ track and the ¼ track just added. Hence the owner of the half track machine will get a garbled message, in fact two messages – half his own coming back to him, probably backwards, and your quarter track message. Fig. 1 shows how the tracks are situated on a tape recorder with four tracks. From this it will be seen how track 1 on a two track machine plays the two tracks on the four track machine.

Track No. 1 on a four track machine will be the top track, and when that has been played to the end of the reel of tape from one side to the other and you start Track No. 4. Having played that you switch your track selector switch to 2/3 turning the tape over again you will play Track No. 3, which is running parallel with Track No. 1. At the end of No. 3 turn over for the last time and with the track selector switch still at 2/3 you finally play Track No. 2. At the end you will find that the tape is back on its original spool. Note. Some manufacturers have a different system of numbering tracks from that indicated here. If your tape recorder refers to Tracks 1 and 2 with the track selector switch in our position, and Tracks 3 and 4 in the other, this means 1 and 4 in my diagram for one and two, and 2 and 3 for what they refer to as three and four. It is really the outer two tracks or the inner two.

The four track head is constructed with two coils which 'scan' or 'look' at the tape at the top and just below the centre line as in Fig. 2. For four track stereo recordings both these coils are operating together with two separate amplifiers. For mono operating a switch is incorporated

Fig. 1 The tape must be turned over to play the upsidedown tracks.

Fig. 2 Position of four-track head gaps in relation to tape.



which switches both erase and record/play parts of the amplifier record circuit to either the upper section or the lower section of the head, the upper section being the outer tracks and the lower the inner, with tracks 2 and 4 being played in the opposite direction to tracks 1 and 3.

In order to tapespond with someone who has a twin track recorder the owner of a four track machine must either bulk erase the tape if possible, or erase the inner tracks first and record on the outer track (1 and 4) only. This can be done without a bulk eraser by switching your track selector switch to the inner tracks 2/3 (or 3 and 4), turn gain controls down, set recorder to fastest speed, and press record button. At end of tape turn over and repeat for other track. The tape should now be back on its original spool and you are ready to talk to your friend when you have switched your track selector switch back to 1/4 (or 1 and 2). If your correspondent also has a four track machine all you need bother about is to ensure that you tell him which track to go to at the end of each track.

FINDING A TAPESPONDENT

If you have joined a club, study the list of members and their interests or locations. You may like to talk to someone in Honolulu or Australia or to someone who has the same job as you, or to a lighthousekeeper. Most of the clubs list the members' occupations and details of their equipment, i.e. speeds, tracks, maximum reel sizes, etc. . . . This will be a guide for you to decide what speed and size of reel you should use. Normally a 3" reel of LP tape at 3½ ips is quite sufficient to start with. This gives 16 minutes each track and costs about 9/6d.

MAKING A START

You may feel that you could not possibly talk for half an hour about yourself to a complete stranger who is miles away and whom you have never seen. But you will be surprised how quickly the time goes once you've started. Make a few brief heading notes. Never write out what you intend to say and read it. It sounds unnatural and insincere. Your brief notes might read: 'Self, age, wife, children, street live in, job, how far to work, car, . . .' Always begin by giving your name and your friend's name and the date you start the recording. You might start something like this: 'Hullo, John Smith, this is Joe Snooks coming to you from London, England, on Saturday evening, July 3rd and it's a lovely evening. . . .' and you're off. With your first tape it is a good plan to include your name and address on a piece of paper and put it in the box with the tape. I always have my name and address on

the reel, sticking it with sellotape so that if it goes astray or the wrapping breaks the GPO knows where to return the tape. Your first tape should be easy. Don't be afraid of talking about yourself. That's what the other fellow wants to know about. He wants to know what sort of bloke you are. How you earn a living, what sort of house you live in, what sort of a wife and family you have (if any), whether you have a garden and what's in it. He would like to know about your tape recorder and what it can do, about your radio or television and whether you record from either and if so what. You can talk about your daily journey to work by bus, train, car or what.

Always try to ask questions about him, and note his interests and ask about them. The more questions you can ask the better, and a more interesting tape will come in reply. When you are doing your first recording to a tape friend don't bother about phraseology or wording. Talk quite naturally. Try to maintain an unrehearsed conversational naturalness, which is not difficult if you mentally change the microphone into the person to whom you are talking. Don't get pedantic in your speech. You're not making an after-dinner speech, but talking to a friend.

TECHNIQUE

Before starting to record you should really be in the mood, and you may find it easier to be in private, with no possibility of interruptions. It is preferable to speak fairly close to the microphone, in order to avoid picking up extraneous noises, and this gives a more personal effect. Do a test recording before you start. Make sure that you are comfortable and relaxed. If you want to record on the dining-room table, make sure that the microphone is not picking up vibrations or noises from the tape recorder. Avoid rustlings of paper from your notes. If you are using a hand microphone, don't continually "paw" it or keep moving it about while you are recording. Don't talk too fast, don't swallow the microphone or blow down it. If you want to stop recording to collect your thoughts, don't just stop the mechanism and when ready start again. This produces clicks, wow and noises on the tape. Turn down the gain before stopping and turn it up to the same level again after starting the mechanism. If you have a pause control on your tape recorder you can use this.

Take your time over making a tape—a rushed job always sounds just what it is. Because you started your tape by giving the date, don't feel that it has to be finished that day. Continue next day, or even next week, and when you get to

continued overleaf

the end you can mention that some time has passed since you started the tape, and give the date on which you are completing and posting it.

MAILING THE TAPE

If mailing the tape abroad, it should be securely wrapped with corrugated cardboard round the maker's box, with paper and string or 'Sellotape.' It is a good plan to have labels printed with your name and address in small letters for return to the sender in case the tape gets lost. A small green customs label, obtainable from most Post Offices, should be filled in and stuck to the parcel. On this label you should declare what is in the parcel, the net weight and the value. Under 'Contents' write 'Magnetic tape recorded message' or 'magnetic tape recording,' and under 'Value' write 'no commercial.' No customs duties are charged on these tapes by the UK, and as far as I can ascertain, only Brazil and Spain may charge duty. This can be checked with your tapespondent.

A 3" reel to the USA costs about 2/3d, depending on the wrapping. It is possible to send a tape abroad by *small packet rate* if it is enclosed in an unsealed packet. You may be able to obtain some stout manilla envelopes fastened by a split-pin which will take a small reel of tape, but if you use the small packet rate the tape must not include a spoken message. If there is a message on the tape it must go by letter rate.

KEEPING NOTES

Various systems suggest themselves for keeping notes, and if you intend to tapespond with more than one or two people some records are very necessary. When you have made a recording to a friend you should keep the notes you have made about what you have said or intended to say. It is always a good plan to play over your tape and make a few notes when listening, as you will then notice any glaring errors or stupid mistakes you may have made. Also it will be a check on your recording technique. Make a separate note of any music you may have put on the tape, so that if your friend asks what music it was, you have the information. This will also help you to avoid repeating the same music.

Your notes could be made in a small note-book, keeping one book for each tapespondent with his name on the back for handy reference. You might use one side of the page for your notes and the other for brief notes on what he said. You may find that you will want a large envelope to keep photographs, drawings, maps, etc., which some people send.

Another record indicating when a tape was sent out and when it came in might also be kept. This tells you at a glance how long different people take to reply, from which you can estimate when to expect the tape back. The system which I use for this record is a sheet of double foolscap paper ruled as follows:

B. Day	21st November		
	Bill Brown	John Jones	Hugh Smith
OUT	21-3-59		9-6-59
IN	25-5-59	6-2-58	21-7-59
OUT	27-5-59	12-2-58	28-7-59
IN		etc.	

This also tells you who started the tape and, thereby, whose tape it is. I include on this record the friend's birthday where known and we try to do a special tape to arrive around his birthday.

If you are really keen you can have made a printed duplicate book with your name and address printed at the bottom of each page with the pages printed as follows:

To
 Tape Received
 Tape Recorded
 Tape Posted
 Speed: Track I Track II
 Comments:
 File No.

From:
 Each page is duplicate numbered, the top copy is torn off and enclosed in the box with the tape while the copy remains in the book giving you a permanent reference and record.

RECORDED RECORD

If you own two tape recorders a very interesting record which can be kept is

a copy of each tapespondent's opening and closing remarks from his first tape. I have a special tape prepared during the last ten years which contains the voices of my tape friends from all over the world greeting my wife and myself. We only keep two or three minute extracts from each tape which goes on the permanent reel in chronological order.

RECEIVING YOUR FIRST TAPE

You have posted your first tape and are now awaiting a reply. Your tape friend may like the tape so much that he wants to play it to his friends, particularly if he is in a foreign country. He should, however, reply in a few days, but this is not always feasible. A tape to USA takes between ten days and a fortnight to get there by surface mail. If your friend keeps it a week it may be five weeks before you get your tape back. If you send it to Australia you needn't expect it back for about three months. Don't get too impatient, therefore, if it seems to take a long time before you hear from your new friend. Eventually your tape returns and you enjoy for the first time the thrill of hearing someone talking to you from the other side of the world.

Listen to it a second time if you are unable to reply at once, and make a few notes particularly about any questions which may have been asked or points on which you may wish to comment.

REPLYING TO A TAPE

You may, if convenient, start your reply at once, having noted what you intend to say. However there is no reason why you should not leave it until later, but if you do this, it is better to play it over a third time in order to help you to get into the right frame of mind. Always reply promptly at least within a week of receiving a tape. Don't forget to answer any questions you may have been asked. It is very frustrating to ask a question on tape and have it completely ignored. Introduce a new subject in your reply and put forward some ideas of yours and ask for his comments. Give him some music, tell him what you think of it and ask if he likes it.

TACT ON TAPE

Certain subjects should be avoided with caution when talking with friends, particularly new friends on tape from foreign parts. Avoid politics and religion in the early stages. Try not to be too dogmatic on any subject unless you are sure of your ground.

Avoid saying the obvious. A tape friend of mine in the States frequently says: 'Well, I don't have too much to say.' It would be much better just to say, 'Now, here's some music' or just to close the tape. When approaching the end of

Track 1 it is a good thing to warn your friend to be prepared to change to Track 2, as he may not be watching the tape recorder. Avoid saying at the start of Track 2, 'Well, here we are on Track 2.' Do not feel that you have to fill the tape. Some people have the idea that all the tape must be used. Why? It doesn't matter. It is not a radio programme running to a set time. If you have said all that you have to say before the end of the tape, then say your goodbyes and close the tape explaining that the rest of the tape is blank. You could of course finish the tape with music which you know your tapespondent will enjoy. Remember that if a member of a club sends you the first tape, it is his tape. You should never keep it, or cut or mutilate it or copy any of it without his permission. If you want to keep it you may do so only with his agreement, and you must then replace the tape with one of a similar quality and size. You should always use the best tape you can get for tapesponding, not only to obtain good quality but also to ensure that it plays well on your friend's tape recorder, which may be old or a bit worn. Some old tapes with splices may stick in or damage another tape recorder, or if the tape is old and brittle it may frequently break on another newer tape recorder. Should you lose or damage a reel of tape belonging to another member you should replace it.

TERMINATING A TAPESPONDENCE

The time may come when you feel that no useful purpose can be served by continuing to tapespond with a particular person and you wish to make a break. You should be tactful and try to judge an appropriate time and method of terminating. If it is his tape, when sending it back tell him that, much as you have enjoyed the meeting, you feel that, due to pressure of other commitments, you have been forced to reduce your number of tapespondents and regretfully this must be your last tape to him. You could, of course, pave the way on earlier tapes by telling him how busy you have been, etc. If it is your tape, adopt a similar procedure, but when getting the tape back write and explain.

THINGS TO TALK ABOUT

Here are a few ideas on subjects to talk about:

Heard any good jokes lately?
Read any good books lately?
What did you do last week-end?
What would you do with a big football win?
Seen any good films, plays or concerts lately?
Happy Tapesponding.

Above: Marguerite prepares a tape programme in French for her friends in UMVF

Below: Marguerite listens to a French tape friend while she prepares lunch.



LIST OF INTERNATIONAL TAPE EXCHANGE CLUBS

Amateur Tape Exchange Association:
Joseph G. Vella, 1680 Couvrette, St. Laurent, Montreal 9, PQ, Canada.

Brisbane:
George Todd, 70 Langshaw Street, Brisbane, Queensland, Australia.

Catholic Tape Recorders International:
A. D. Chadwick, 91 Manor Drive, Upton, Wirral, Cheshire.

International Police Association:
Les Silcock, 42 Greenwood Road, Sheffield 9, Yorkshire.

International Voices of Youth:
P.O. Box 3041-C, Sab Mateo, California, U.S.A.

Johannesburg:
Anita Stuart, Box 11326, Johannesburg, Republic of South Africa.

L'Union Mondiale des Voix Francaises:
Mrs. Phyllis Copinger, 2 Seaford Street, Kilmarnock, Ayrshire, Scotland.

New Zealand: Jan Grefsted, 8 Bishops Street, Green Bay, Auckland, SW4, New Zealand.

Stereo International: Roy V. Huddleston, 9 College Avenue, Melton Mowbray, Leicester.

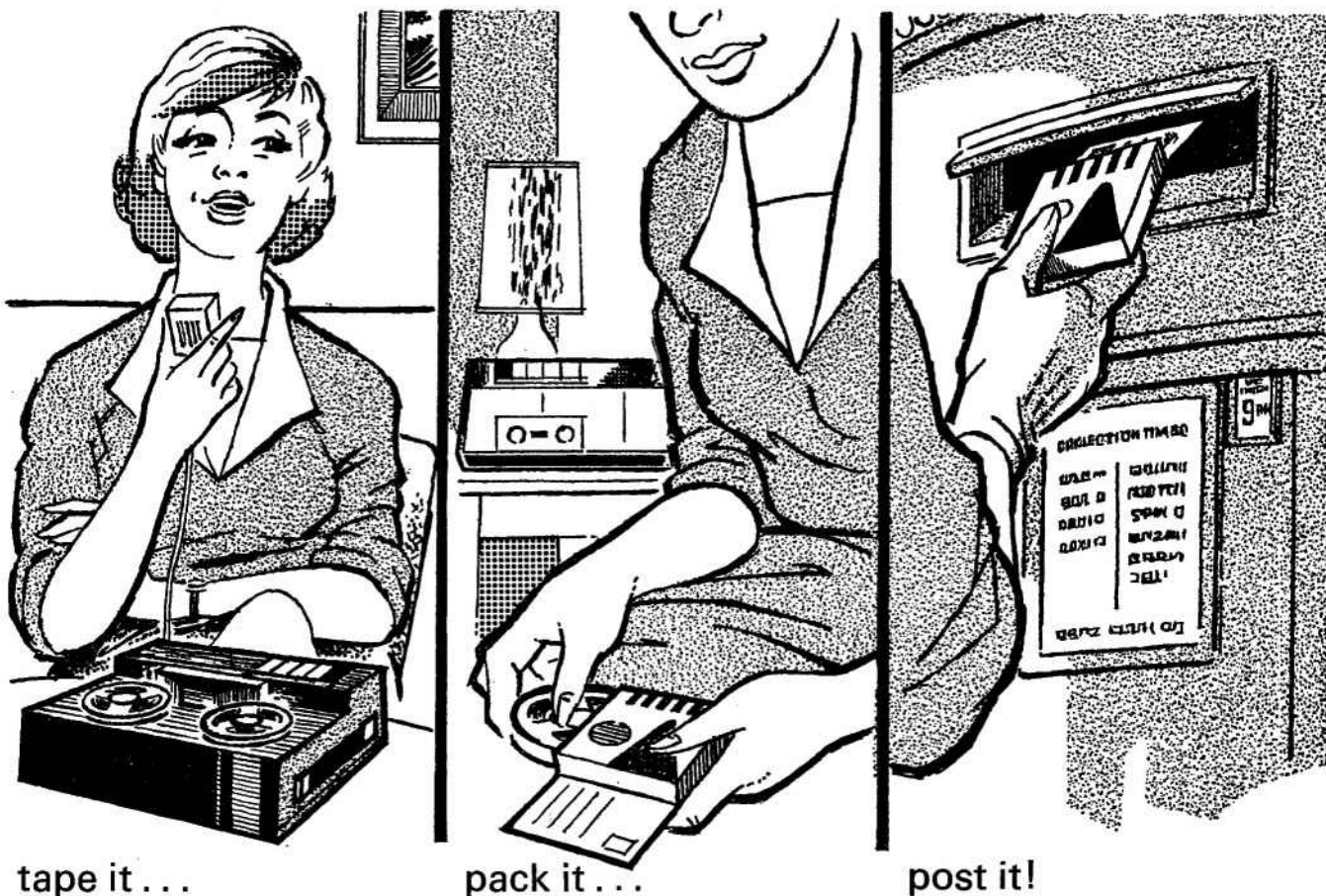
Tapeworms: R. L. Preston, 4 Queen's Road, Maidstone, Kent.

The Voicespondence Club: Robert Coote, 27 Royal Oak Road, Bexleyheath, Kent.

Transworld Tape Exchange: John W. Howe, 84 Sproat, Detroit, Michigan 48201, USA.

World Tapes for Education: John N. Davies, 19 Wythenshaw Road, Sale, Cheshire.

Worldwide Tape Talk: Charles L. Towers, 35 The Gardens, Harrow, Middx.



tape it . . .

pack it . . .

post it!

for 'tapesponding' at its simplest insist on Philips Audio Letter!

Sending your voice to friends and relatives just couldn't be simpler than Philips have made it with their wonderful Audio Letters! All you do is buy an Audio Letter—a snip at only 5/6—record your message, pop the tape into its 'ready-to-post' pack, stamp and address it then post it. It's that simple. What's more, Philips Audio Letters incorporate all the superb qualities that have made Philips magnetic tape the first choice of recording experts throughout the world. See how much more *you* can get out of Philips Audio Letters—get a supply at your Philips dealer now!

AUDIO LETTER PLAYING TIMES (Approx)

	$\frac{1}{2}$ ips	1ips	$3\frac{1}{2}$ ips	7ips
4-track Mono	2hrs 8mins	1hr 4mins	32mins	16mins
2-track Mono	1hr 4mins	32mins	16mins	8mins

Another memorable product from



PHILIPS

-the friend of the family

LETTER TAPES

Do you send message tapes abroad, or to friends in this country? Do you sometimes find the quality of incoming tapes poor and lacking in high frequency response?

Do you sometimes find a background of another recording on tape sent to you?

Do you receive complaints of any of the above faults on your own tapes? If so, this article is meant for you and describes a simple remedy for most of these troubles.

Lack of high note response is often due to imperfect azimuth alignment of the record or playback head, or both.

Snatches of old recordings or continuous interference can be due to vertical misalignment of the heads.

The tape recorder manufacturer should use a special test tape recorded with a high frequency tone to set the azimuth of each head so that the gap is exactly at right angles to the edges of the tape, but even test tapes vary, and one manufacturer's 'perfect' azimuth may be slightly different from that of another.

Vertical placement of the head is definitely a job for an expert, even when means are provided for such adjustment. Some decks have no height setting facilities, but rely entirely on the head manufacturer to maintain high accuracy in the placement of the gaps.

Complete erasing across the full width of the tape is one way of ensuring that no earlier recordings will interfere with a newly recorded tape no matter on which machine it is played. Vertical alignment of the heads will then cause only slight changes of level or signal noise ratio.

At this point you may be saying 'this is all very well but an azimuth alignment tape may cost £2, an output meter £5, and a bulk eraser a further £6!' True — but have you heard of White Noise Tape or Magnetic Rubber? Short lengths of both these valuable commodities can be obtained for only a few shillings and, properly used, solve all the tapesponder's problems.

White noise is generated by a special gas discharge tube and has the unique characteristic of constant amplitude distribution of noise peaks over the full audio frequency range so that all frequencies are heard simultaneously but with a completely random phase relationship. This means in practice that the sound quality is not affected by small changes in the position of a listener in an ordinary room. By contrast a continuous 8Kc/s tone may vary in loudness by very large amounts if the observer's head is moved only a few inches due to the presence of standing waves produced by multiple reflections from the room walls.

A white noise tape is recorded across the full width of the tape on a machine set to exact azimuth so that, regardless of the height of the head, it can be used to align the playback head of any other recorder 'by ear' without any test gear at all. The reproduced white noise sounds like a rather 'hissy roar' and if the playback head is rocked off true azimuth the hiss disappears, leaving only the low pitched roar which provides a constant reference. Tests have shown that an unskilled operator can set the azimuth 'by ear' to within 1dB of a pure tone setting using an output meter.

Magnetic rubber is semi-flexible and soft and consists of a plastic base impregnated with Ferroba ferrite powder. It can be cut with a knife

to any desired shape or size. Placed against the base or oxide side of a moving tape it will completely erase any recording, even at peak overload level. Thus a reel of tape can be fast-spooled over a piece of this material with the assurance that every scrap of recorded material will be wiped from the tape!

A half inch of magnetic rubber will erase a lifetime of tape, and a 10ft length of white noise tape playing for 30 seconds at 3½ ips provides ample time for adjusting the most difficult head.

Minimum quantities of 2 inch lengths of magnetic rubber, and 40ft lengths of white noise tape are now available so that you may continue the distribution by sending samples to your tapesponding friends. If we finish with even 50% of message tapes clean of background noise and unwanted snippets of old recordings and bang on azimuth, we shall have taken one further step along the path of better communication which, after all, is the prime purpose of our hobby.

(The Tapesponding Kit is available at 5/- from Tutchings Electronics Ltd., 14 Rook Hill Road, Christchurch, Hants.).

The following are the main manufacturers of 3" letter tapes: BASF, EMI, Irish, Mastertape, MMM, Philips. They cost between 3s. 3d and 5s 6d (Standard Play) and weigh approximately 2ozs.

Smaller letter tapes are also manufactured by Mastertape. These cost 3s. and weigh only ½oz complete with packing.

All letter tapes may be sent by ordinary letter rate. Inland letter rate is now 4d for first two ounces, with 2d for each additional two ounces. The GPO letter rates to overseas countries have not been changed.

THE TAPE DIRECTORY

AUSTRALIA

N. PARIDAENS, 29, cab driver, 62 Manchester Road, Gympie, New South Wales, Australia. General, colour slides; folk music. Philips stereo, 7 in. 15/16, 1 1/2, 3 1/2, 7 1/2. **Anywhere**, English, German or Dutch speaking.

ROY A. OSBORNE, 19, Maintenance and Child Welfare, c/o Parkerville, Western Australia. Tapesponding, breeding goldfish, other ways of life abroad; brass bands, dance, pop, melodies, etc. Telefunken 96 4-track, Philips 4-track, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere** English speaking.

NEW ZEALAND

WILLIAM CLEAVE, 45, New Zealand Railways, 23 Weaver Street, Oamaru, New Zealand. Colour photography, fishing, outdoor life, general; light and bright, humorous. Sony 521, Collaro 2-track, 7 in., 3 1/2, 7 1/2. Male or female **anywhere** English speaking. Wife will also participate.

A. EDWARDS, 38, accountant, 26a Mafeking Street, Christchurch 7, New Zealand. People, life and customs, tapesponding; any music. Philips EL 3520, 5 in., 3 1/2. **Isle of Man, Norway, Sweden.** English speaking.

BARRY MARX, 24, welding engineer, Te Kura Road, Otomanga, New Zealand. 35mm slides, 8 mm cine, both sync tape, motoring, travel, hosting tourists, Jaycees, FX; show, light, classical and organ. Uher stereo 4-track, 7 in., 1 1/2, 3 1/2, 7 1/2, 15. **Anywhere**, any age. Air Mail. No need to write.

SOUTH AFRICA

NORMAN JACKSON, 48, fitter and turner, 38 Namaqua Street, PO Conera, Virginia, Orange Free State, South Africa. Recording, model making, 35 mm photography; pop. Wilcox-Gay 2-track, Philips 4-track, 7 in., 15/16, 1 1/2, 3 1/2, 7 1/2. **Anywhere** English speaking.

USA

BRUCE ALPER, 16, student, 4435 Kings Highway, Brooklyn, New York, USA. Light music. Webcor Royalite, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere**.

ZAMBIA

R. S. GILBERT, 38, refrigeration engineer, 129 Maybin Avenue, Mufulira, Zambia. Travel, golf, photography, amateur dramatics; comedy and sentimental. Grundig TK 8, 7 in., 3 1/2. **Britain, USA, South America, Europe.**

BRITISH FORCES

22292307 **SGT. POGSON**, A. A., 32, Serviceman, 17 Rear Vehicle Depot, RAOC, BFPO 40. Football, cinema, theatre, sound track, Westerns; country and Western, pop. Philips EL 3585, 4 in., 1 1/2. **All countries.**

BEDFORDSHIRE

DAVE BESWICK, 34, billposter, 63 Ashton Road, Luton, Beds. Sound effects, spiritualism, tapesponding with view to

friendship; classics and some modern. Cossor 4-track, 7 in., 1 1/2, 3 1/2. **Great Britain, Kenya.**

CHESHIRE

PETER McLACHLAN, 19, apprentice joiner, 40 Whitford Road, Birkenhead, Cheshire. Cycling, electronics; classical, pop, and some jazz. Grundig TK 23, 5 1/2 in., 3 1/2. **British Isles**, preferably female.

A. WILSON, 24, film projectionist, 228 New Chester Road, Birkenhead, Cheshire. Films, travel, stereo sound, 8 mm photography; light classical and pops. Grundig TK 60 2-track, 7 in., 3 1/2, 7 1/2. **Anywhere** English speaking.

DERBYSHIRE

GEOFF MITCHELL, 45, teacher, 190 Broadway, Derby. Aviculture, tropical fish, 8 mm cine; light and show music. Fidelity Playmaster 4, 5 1/2 in., 3 1/2. **Anywhere** English speaking.

KENNETH WALTON, 17, apprentice, 6 Victory Road, Derby. Ways of life; pop and R & B. Philips 4-track, 7 in., 1 1/2, 3 1/2, 7 1/2. **USA only.**

ESSEX

ROBERT BARDOT, 22, school teacher (secondary modern), "Mountainview," Bracken Mount, Basildon, Essex. Hi-fi; bluegrass, C & W. Uher Record III stereo, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere**, especially Nashville and other C & W strongholds.

BRIAN HEARD, 30, sales clerk, 34d Church Hill, Loughton, Essex. Civil Defence, tape recording, cartooning, general chatter; any music except very serious. BSR mono, Sony stereo, 7 in., 3 1/2, 7 1/2. **Anywhere** English speaking.

HERTFORDSHIRE

IRIS HENDRY (Mrs.), 27, secretary/progress chaser and housewife, 21 Masefield Avenue, Boreham Wood, Herts. Little of everything, sense of humour; all kinds of music. Fidelity Argyll, 3 in., 3 1/2. **Anywhere** English speaking.

COLIN SEEAR, 16, wireworker, 60 Holtwell Road, Watford, Herts. Tape recording, short wave listening, radio, TV; pop music. Philips EL 3542 4-track, 7 in., 1 1/2, 3 1/2, 7 1/2. **Australia, USA, UK**, **anywhere** English speaking. No letters needed.

KENT

W. AINSWORTH, 66, retired, Lower Flat, 31 Leyburne Road, Dover, Kent. Evangelism, expository, Esperanto; any music except jazz and "beat." Revelation Silverstone, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere**, anyone English speaking.

ANTHONY BROOKS, 20, carpenter, Sea View, 2 Gloster Way, Ropewalk, Dover, Kent. Recording; pop music. Elizabethan LZ 30, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere**, female preferred.

CHAS. A. BROWN, 35, ambulance driver, "Studio One," Woodlands Avenue, Birchington-on-Sea, Kent. Location recordings, sound tracks, etc; all music

except rock and roll etc. Brenell Mk V (two) 8 1/2 in., 1 1/2, 3 1/2, 7 1/2, 15. **Anywhere**, no letters.

CHARLES COOK, 52, permanent civil servant, 41 Park Way, Maidstone, Kent. Cricket, photography, stamps, radio; theatre musicals. Philips EL3541 4-track, Philips portable, 7 in., 1 1/2, 3 1/2. **Detroit USA, Brisbane Australia**, or **anywhere in Africa.**

GRAHAM COX, 17, student, 40 Ashmore Grove, Welling, Kent. Photography, cycling, railways; pop and classical. Walter battery/mains, 5 1/2 in., 3 1/2. **UK, USA.**

LANCASHIRE

CAROL BEATTIE, 13, schoolgirl, 21 Ashworth Street, Preston, Lancs. Needlework, cookery, talking of things in general; pop music. Noris, Telefunken, 7 in., 7 1/2, 3 1/2, 7 1/2. Boy or girl in **USA, New Zealand, Canada, Australia.**

EDWARD COX, 40, engineer, 62 Cedar Road, Aintree, Liverpool 9. Anything unusual, either directly or by technique; anything except pop. Truvox, Fi-cord, 7 in., 3 1/2, 7 1/2. **Anywhere.**

R. W. GRAHAM, 43, mechanic, 42 Maryville Road, Prescott, Lancs. Learning Italian, carving, rugmaking; organ and recorder music. Tandberg 62, 7 in., 1 1/2, 3 1/2, 7 1/2. **UK, Italy.**

BASHIR MUSTIF KHAWER, 30, business, 14 Upper Hulton Street, Whalley Range, Manchester 16. Reading, attending musical audiences, sight-seeing; all types of music. Telefunken 96, 7 in., 3 1/2, 7 1/2. **Caribbean, France, Arabia, Italy, England, Germany, South America, India, Pakistan.**

CYRIL PEARSON, 34, bus conductor, 12 Bairstow Street, Preston, Lancs. Motoring, records, photography, films; pop, C & W, light classical, some opera. Civic T 72, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere**, male or female.

JOHN & MARJORIE PENNINGTON, 39, driver, 9 Crookings Lane, Penwortham, Preston, Lancs. Anything and everything; if you are interested, we are. Wyndor Trident, Philips EL 3541, 7 in., 1 1/2, 3 1/2, 7 1/2. **Anywhere** English speaking.

PETER THOMPSON, 20, electrician, 30 Cumberland Road, Kirkholt, Rochdale, Lancs. Hi-fi, motoring, photography; pop, R & B, light orchestral. Ferrograph, 7 in., 3 1/2, 7 1/2. **Sweden, France**, females aged 16-21.

LINCOLNSHIRE

RICHARD F. GREEN, 19, university student, "The Chalet," Wragby Road, Sudbrook, Lincs. Electronics; all good music, not pop. Ferrograph 4 A/S, Ferrograph 5 A/N, Repts R 10 Mk II, Vortexion CBI 2-track. Any serious enthusiast over 20, in **UK, USA or South Africa.**

LONDON

DAVID BANDY, 19, telephone engineer, 59 Dylways, Denmark Hill, London SE5. Driving, bowling, dancing; modern top ten music. Grundig TK 20 2-track, 5½ in., 3½. **Anywhere**.

GORDON GOMPERS, 40, accounts typist, 50 Woodfield Avenue, Streatham, London SW16. Sound effects, journalism, boats; classical and folk songs. Grundig TK 14, TK 21, 5 in., 3½. **Australia, Canada, USA, Zambia**.

JOHN MARLOW, 27, cycle messenger, 11 Cheeseman Court, Sydenham SE26. Tape recording and records of all types, 16 mm film projection; classical and pop. Philips 4-track, 7 in., 3½. **America or anywhere** English speaking.

BRIAN & PATRICIA MORAN, 35 and 32, fitter, housewife, 28 Pearl Road, Walthamstow E17. Stamp collecting, 16 mm cine; all kinds of music. Brenell Mk V M, 8½ in., 1½, 3½, 7½, 15. **Holland, Germany**, English speaking.

PATRICK MULLINGS, 69, retired draughtsman, 20 Grange Park, Ealing W5. Photography, movie and still, bee-keeping, nature study; light opera and folk music. Ferguson 3204 4-track, 5½ in., 1½, 3½. **Austria, Germany, Switzerland**, English speaking.

ALFRED PINCHING, 38, switchboard operator, 47 St. Peters Street, Islington N1. Anything and everything; pop music of all kinds. Ferrograph 422 U stereo, 8 in., 3½, 7½. **Anywhere** (male only).

MICHAEL RILEY, 25, hatter, 39 Alexander Street, New Cross SE14. Youth hostelling, cycling, photography, travel, Unitas club; pop, classical, light music. Marconiphone 2-track, 7 in., 1½, 3½, 7½. **UK, Eire**.

CHARLES STANDEN, 65, trombonist, 32 Paton House, Stockwell Road, London SW9. Jokes, humour, laughter, having a good time: from R & B to classical. EMI TR 90, 10½ in., 3½, 7½, 15. **UK, Japan, Jamaica, Greenland**. No need to write.

NORFOLK

KENNETH SMITH, 34, carpenter, 25 Stuart Close, Magdalen Estate, Gorleston, Gt. Yarmouth. Live recording, recording in general; pop, some light classics. Sony 262, Grundig TK 6, 7 in., 3½, 7½. **Anywhere**, anyone. No need to write first.

JOHN TURNER, 17, student, 397 Unthank Road, Norwich, NOR 26E (holidays), Wilson House, Epsom College, Surrey (term-time). Scientific research, hi-fi, electronics, chess; classical and pop instrumental. Philips EL 3541, 7 in., 3½ (holidays), EL 3585, 4 in., 1½ (all year). **Anywhere** English speaking, especially abroad.

NORTHAMPTONSHIRE

ALAN CHANDLER, 17, apprentice plumber, 64 Scotney Street, Peterborough, Northants. Collecting souvenirs, stamps, coins, playing tape; any music,

mostly pop. Truvox 4-track, 7 in., 3½, 7½. **Anywhere** English speaking.

ROBERT H. PARR, 21, estimates clerk, "Westdene," 54 Federation Avenue, Desborough, Kettering, Northants. Motor cycling, chess, photography, many general interests; guitar, pop, light, classical. Stellaphone ST 459, 4-track, 7 in., 15/16, 1½, 3½, 7½. **New Zealand, USA, Hawaii** (English speaking). Females welcomed.

DON SANDERS, jr, 26, shoe operative, Josita, 111 Avenue Road, Rushden, Northants. Amateur acting, films, theatre; most pops, show music. Truvox R 82, 2-track, 7 in., 1½, 3½, 7½. **USA**, anywhere (English-speaking male preferred).

NOTTINGHAMSHIRE

PAMELA CLIFF, 12 years, grammar schoolgirl, 94 Russell Avenue, Wollaton, Nottingham. Drama, reading, cycling, bird-watching; pop music (Beatles, Stones, etc.) and oldies. Grundig TK14, 5½ in., 3½, 2-track. Either sex, in **France, Holland or UK**. English speaking, 12-15.

SUFFOLK

JOHN C. AYERS, 25, engineer, 41 Kirkley Run, Lowestoft, Suffolk. Records, films, shows, 35 mm photography; pops to classics. Stella ST 455 4-track, Truvox PD 84, 4-track, 7 in., 1½, 3½, 7½. **Anywhere** English speaking, but special interest in **Canada**.

SURREY

SINENY AJAMOS, 28, projectionist, 10 Worplesdon Road, Guildford, Surrey. Tapes and music films, sound recording, all music. Cossor ¼-track stereo, 5½ in., 1½, 3½. English speaking **anywhere, Southern Ireland**.

THOMAS F. POSTANS, 34, storeman, 30 Broughton Road, Thornton Heath, Surrey. Tapesponding, photography, cine and still; country and Western, guitar and Spanish. Brenell Mk 5, 7 in., 3½, 7½. **New Zealand, Australia, USA, UK**.

JACK G. REDDALL, 18½, student, 52 Stratford Road, Thornton Heath, Croydon, Surrey. Poetry, cars, scenery, travel, films, the sea, organs; classical music, organ music, some mod jazz, certainly not all pop. The Shadows, etc. are great! Truvox R64 4-track, 7 in., 3½, 7½. **France** preferred, **Sweden, S. Africa**. "n'importe quel sexe."

STAFFORDSHIRE

LYN HAYDON, Secretary - International Society, Smestow Secondary School, Castlecroft, Wolverhampton. Way of life in other countries; any. Brenell Mk 5 S2, 7 in., 1½, 3½, 7½. **Any English** speaking group, 11-13 years.

F. D. PARSONS, 32, electrician, 135 Masefield Drive, Leyfields, Tamworth. 35 mm transparencies, short wave radio; light classical. Stella 4-track, 7 in., 1½, 3½. **Commonwealth**, English speaking, **USA**.

SOMERSET

MRS. MARGARET BROOKING, 25, housewife, 37 Upper Church Road, Wes-

ton-Super-Mare, Somerset. Tape recording, knitting, TV, radio; all pops, except jazz. Grundig TK 20, TK 35 2-track only, 7 in., 1½, 3½, 7½. **Anywhere** English speaking. Don't write, all tapes answered. **H. SYDNEY COX**, 35, model and sports retailer, 22 Baker Street, Weston Super Mare. Still and cine photography, naturism, driving; light classical music, singing. Walter 101, 5 in., 3½. **UK, S. Italy, Greece, Holland, Germany** (English speaking). Male only.

DAMIAN McMILLAN, 17, do-it-yourself sales assistant, 28 Charles Road, Yeovil. Radio controlled models; catholic tastes in music. Elizabethan LZ 29, 4-track, 7 in., 1½, 3½, 7½. **Australia, America, Canada**.

RICHARD F. SAVAGE, 21, rotary gravure printer, 22 Pinewood Road, Mildsomer Norton, Nr. Bath, Somerset. Pop recording, 8 mm cine, outdoor recording; all pop and light music. Robuk RK 3, R 10, Mk II, 2-track, 'Q' Cord, 7 in., 3½, 7½. **South Island, New Zealand**.

ALAN WALCH, 36, tablehand (bakery), 210 Bloomfield Road, Brislington, Bristol. Tape recording, films; American folk, blues, jazz. Truvox 92, Stella 2-track, 7 in., 1½, 3½, 7½. English speaking **abroad**.

SUSSEX

JOYCE BANNISTER, 40, musician, 43 North Farm Road, Lancing, Sussex. Music, taping, motoring, talking; modern jazz. Vortexion, Ferrograph, 7 in., 3½, 7½. **Anywhere in this country**.

ROY BANNISTER, 43, piano tuner, musician, 43 North Farm Road, Lancing, Sussex. Tape recording, tapesponding, general interests; modern jazz. Vortexion, Ferrograph, 7 in., 3½, 7½. **Anywhere**, English speaking. Just send tape. Prompt replies.

DAVID DIPLOCK, 16, plumber, 375 Seaside, Eastbourne, Sussex. Aircraft, sound effects, travel; any kind of music. Robuk RK44, 4-track, 7 in., 1½, 3½, 7½, Bush TP 50, 4-track. **Outside UK**.

T. FOSTER, 25, steward, Merchant Navy, 45 Wilson Avenue, Brighton. Recording, photography, camping; semi-classical, popular. F 36, Revox and Philips portable, 9½ in., 1½, 3½, 7½. **Anywhere**.

WARWICKSHIRE

BARRY DOUGLAS PORTER, 21, driver, 77 Duchess Road, Edgbaston, Birmingham 16. Territorial Army, judo-karate; pops, The Shadows. Ferguson 3204, 4-track, 5½ in., 1½, 3½. **Anywhere**.

HOWARD FRANCIS ROSE, 17, scholar, 29 Potters Road, Bedworth, Warks. Hypnotism, topical events, science; classical, pop. Civic T62, 7 in., 1½, 3½, 7½. **USA or UK**. Male and female.

WILTSHIRE

JACK R. DODD, 29, postman, 34 Hastings Road, Corsham, Wilts. Short wave listening, tapesponding, films; Dixieland, Strauss. Cossor CR 1604, 7 in., 1½, 3½. **Anywhere**.

C. HILL, 15, schoolboy, 38 Manor Crescent, Merdon, Swindon, Wilts. Reading; all music. Ferguson, 5½ in., 1½, 3½. **Australia, USA, Canada**.

TEST REPORT

AUDIOVIEW SCOTT 200B AMPLIFIER

The name H. H. Scott, although perhaps new in the UK, is one that enjoys great respect in the USA. In 1947 Scott introduced one of the first true high fidelity amplifiers, their 210A, which had many features that were later copied by others and which are to be found in many amplifiers today.

Their latest hi-fi amplifier, the 200B, continues the Scott tradition of value for money and a reliable performance. The Scott 200B delivers 15 watts per channel RMS, has high and low pass filters, tape monitoring, low volume frequency compensation and last but not least, separate tone controls for each channel.

The front panel and controls follow the conventional pattern found in America and are extremely pleasing to the eye. The finish will harmonise with almost any furnishing scheme and the amplifier can be mounted either in a cabinet or on a shelf, in which case a rubbed wood case is available.

The circuit layout is very clean and there is plenty of space around the components. This not only means easy servicing but a longer life due to cooler running. The 200B was one of the coolest running amplifiers I have ever tested. This is undoubtedly helped by the non-magnetic electrolytic aluminium chassis construction.

Magnetic and ceramic pick-up inputs are fed into the first half of a 12AX7 double triode which is coupled via a radio tuner pick-up switch to the second half of the 12AX7. Equalisation is applied between the anode of the second half of

the 12AX7 and the cathode of the first. The RIAA record curve was with ± 1 dB. The radio tuner input is fed directly to the second half of the 12AX7, the frequency response via this input being flat. Tape recorder output is taken from the anode of the second half of the 12AX7. The anode of this valve also feeds the next stage via the tape monitor switch. When switched to tape replay the signal goes direct to the third stage which is half a 12AX7 used in an integrated tone control and treble filter circuit. The anode of this stage also connects via a 'loudness' low level frequency compensating circuit and volume control to the triode section of an ECL86 triode pentode. The anode of this triode connects to a further ECL86 triode which is used as a phase splitter to drive the two output pentodes in push pull.

The power supply consists of a full wave rectifier using a GZ34 with resistance capacity smoothing for HT. A half wave semi-conductor diode provides DC bias to the output pentodes and there are also separate balanced 6.3v AC heater supplies for each channel. Each channel has a hum balancing control. A fuse is provided in the mains input and the pilot lamp is a neon which lights up only when the amplifiers have warmed up and are ready for use.

Tests were made to check the performance of the 200B under various conditions. The power output was 15 watts per channel at 1,000 cps.; a very good power response indeed. Harmonic distortion was checked at various power outputs by using an input signal at rated input sensitivity and reducing the volume for each power level, i.e., normal signal conditions. The total distortion was almost constant at 0.75% between one and fifteen watts. However, at the higher power setting the distortion consisted mainly of higher order harmonics which would perhaps give the effect of slightly more audible distortion than would be apparent at lower power settings.

Hum and noise was measured as follows: Tuner -76 dB; Pick-up -44 dB; Tape -76 dB. The -44 dB of the pick-up input is not as good as claimed and was just audible during soft passages of music. The filter response curves can be seen from the graphs together with the 'loudness' compensation at various volume settings.

A squarewave gave a good wave form with a 5 micro-second rise time at which the amplifier was found to be completely stable. The range of the tone controls was +14 dB to -13 dB at 50 cps. and +8 dB to -10 dB at 10 Kc. Balance between channels is by means of a dual concentric volume control and could be maintained to within ± 1 dB over its range.

SPECIFICATION

Maximum power output each channel at mid-band (IHFM)
method: Music waveforms

Steady state
Maximum total harmonic distortion at rated output
Frequency response

Intermodulation distortion

Signal for rated output—Mag. (RIAA), equalization at 1 kc

Signal for rated output—Ceramic, equalization at 1 kc

Signal for rated output—Tuner

Signal for rated output—Playback (tape monitor)

Signal-to-noise ratio with loudness at minimum

Signal-to-noise ratio at Tuner input

Signal-to-noise ratio at Mag. phono input

Scratch filter (switchable)

Rumble filter (automatic)

Tone controls — Treble (at 10 kc)

Bass (at 50 cps)

Input impedance — Mag. phono

Input impedance — Ceramic

Input impedance — Tuner

Input impedance — Playback (tape monitor)

Speaker output impedance

Minimum recommended load resistance on tape outputs

Maximum recommended cable capacitance on tape outputs

(with 10 ft. cable)

Range of line voltage and frequency

Power consumption — 230 volts at 50 cps (AC only)

15 watts

12 watts

0.8%

± 1 dB 30 to 20,000 cps

-3 dB at 20 cps*

1.0%

5.0 mv

0.30 volts

0.50 volts

0.65 volts

77 dB down

66 dB down

57 dB down

Above 5 kc

Below 20 cps*

8 dB boost/12 dB cut

11dB boost/14 dB cut

50 k. ohms

3.3 m. ohms

470 k. ohms

150 k. ohms

4, 8 and 16 ohms

100 k. ohms

330 mmFds.

210-250 volts/50-60 cycles

120 watts

* All H. H. Scott amplifiers and pre-amplifiers incorporate a sharp cut-off filter (12 dB or sharper per octave) which becomes fully operative below 20 cycles.

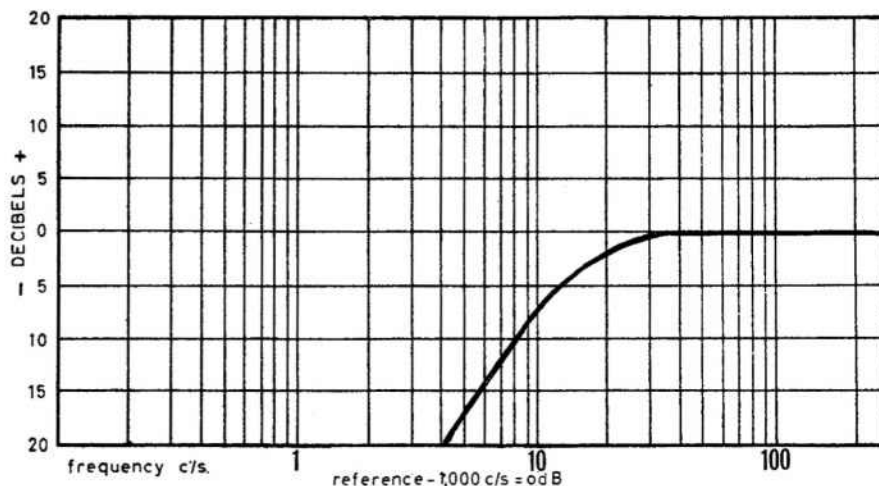
Other features include a two selector control which selects the mode of operation of the amplifier. It has seven positions. Bal.L combines signals from both left and right inputs and feeds them to the left hand speaker only; Bal.R functions as Bal.L but feeds to the right hand loudspeaker. These two positions are part of the Scott patent balancing system; Mono is used when a stereophonic pick-up is being used to play mono records; Stereo is the normal position; Rev.stereo reverses the two channels; L.input feeds signals on the left input only to both speakers; and R.input functions as L.input but feeds right channel signals only to both speakers.

To balance the system using the Bal. L and Bal. R selector positions is very easy. By feeding the combined channel inputs to first one and then the other speaker, any change in volume or quality due to differences in speakers or room acoustics can be readily heard and the separate volume and/or tone controls adjusted accordingly.

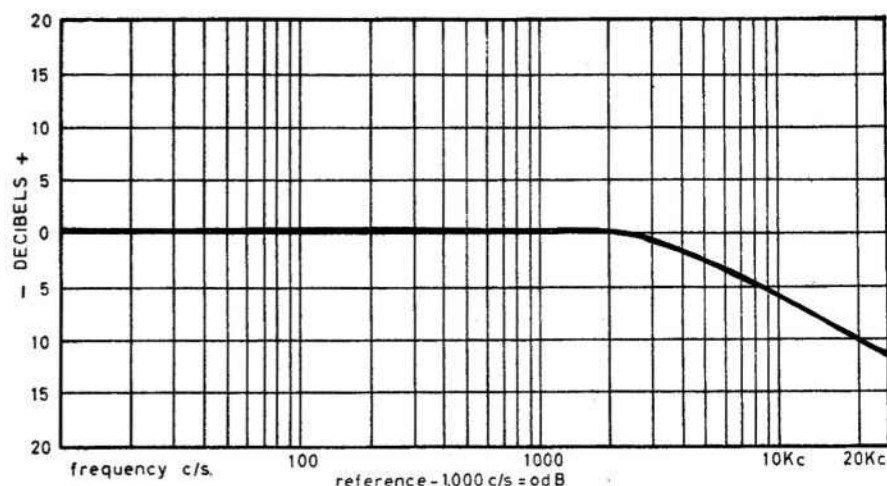
A switch is provided on the chassis, as well as two sockets, for checking the output valve biasing. Simple instructions are given in the comprehensive instruction manual and 'spot on' matching of output valves is possible.

The treble or scratch filter provides a roll-off of about 4dB per octave above 3,000 cps, and is very useful in removing hiss and other high frequency noises from certain signal sources. The rumble filter response curve can be seen in the graph. It is not switchable, but cuts out all sub-audio frequencies and prevents intermodulation distortion caused by such things as turntables and recorders, which, however good, always produce some very low frequency noises.

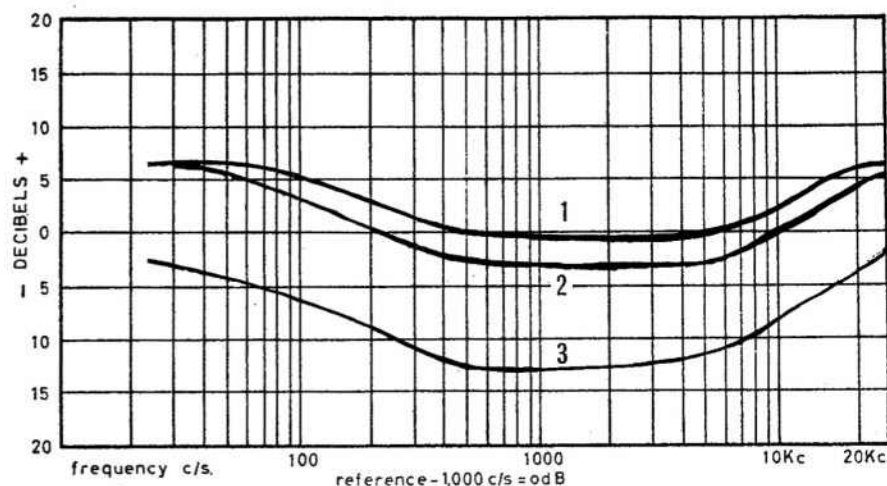
The standard of workmanship is of a very high order (although one dry-soldered joint did cause the volume control to fail), and it is obvious that a great deal of careful inspection and testing is carried out in the factory. Home tests included using an FM tuner and a ceramic pick-up, both of which provided very satisfying results. The only fault found with the 200B amplifier was the slightly audible hum when using the 'magnetic' pick-up input. This may have been due to a minor fault in the amplifier I tested and not therefore applicable to other models. F.M. sound was excellent, and even at loud volume no distortion was apparent when using the amplifier with Wharfedale W3 loudspeakers. I can fully recommend the Scott 200B stereo amplifier, which is distributed in the UK by A. C. Farnell Limited, Templar Street, Edward Street, Leeds 2, who will be pleased to send further details on request. The 200B amplifier complete retails at 82 gns.



Rumble filter response.



Response of treble filter.



Loudness response with various settings of the volume control.

NEW PRODUCTS

*The new EMI
BTR-4 professional
tape recorder*



AUDIOVIEW

EMI BTR4 PROFESSIONAL TAPE RECORDER (fig.1).

Features not previously found in studio tape recorders are included in the BTR4 professional tape recorder — a streamlined version of the Type 311 — now available from EMI Electronics Ltd. BTR4 is suitable for a wide range of applications, varying from studio sound and television broadcasting to scientific, industrial and medical research.

It is available in half or full track monaural, two track on 0.25 in tape (the head block is easily changeable) or three and four track on 0.5 in tape versions, in rack mounted, console or transportable form. Simple conversion from one mode to another is possible. Individual track erasure is available on the multi-track versions. Variable spooling in either direction is provided, with automatic removal of the tape from the heads by retractable guides. Automatic action is governed by a manual over-riding control which can be locked in the running position during spooling.

A three position switch enables record/replay equalisation characteristics to be changed between CCIR,

NAB and IEC standards. The BTR4 is fully tropicalised.

GRUNDIG AT SCHOOL (fig.2).

Grundig tape recorders have many uses in schools. For instance, they can be used for learning languages by the student repeating a passage again and again until it is pronunciation perfect. For learning shorthand too, the tape recorder simplifies the teacher's work. He can record pieces at exact timings to be taken down by the pupils. In the English class a Grundig tape recorder is often used for recording plays, poetry and prose. For voice production, it is a must. A tape recorder can be used for many other lessons and in any school activities. The school choir will find a Grundig very useful to improve their performance and to record their best songs. What could be nicer than to be able to record important school events such as Prize Giving Day, or a concert for parents? Without a doubt, a tape recorder is a very important item of equipment in any school.

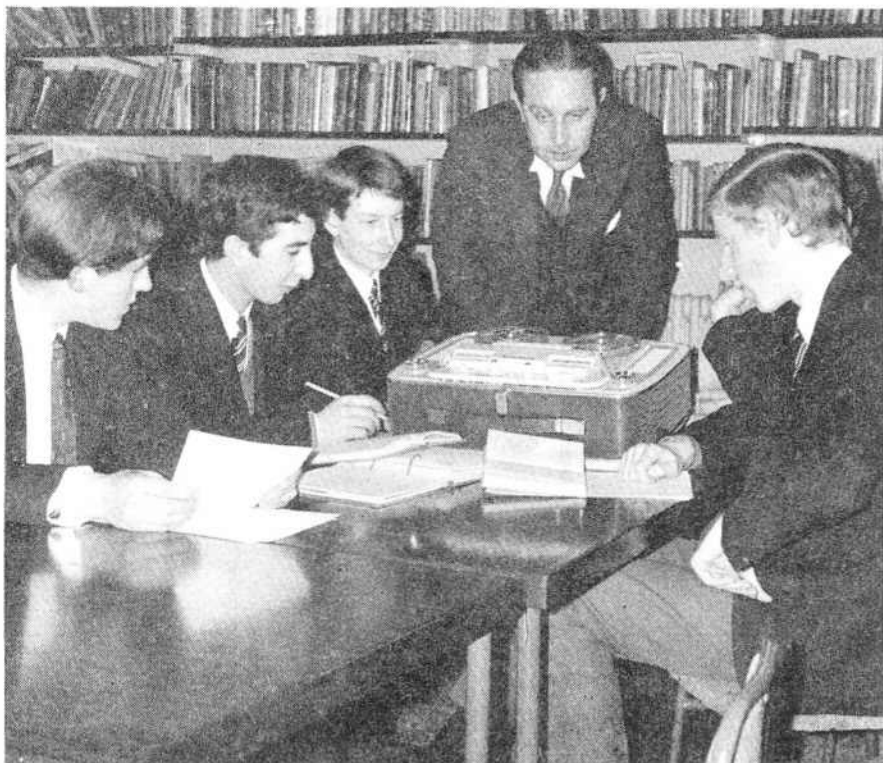
A SCHEME TO EXPAND THE HIGH FIDELITY MARKET:

Group 4 is a new name in the field

of high fidelity but its sponsors, Messrs. Armstrong, Goldring, KEF and Record Housing are firms all well and truly entrenched in this field. They are co-operating with each other to expand the market for high fidelity equipment by designing a complete high fidelity system incorporating standard components of the four manufacturers.

This system, which will be in the form of a radiogram, will provide superior performance and will be widely advertised in several mass circulation media whose readers have not yet become aware of the merits of high fidelity. The system will comprise the Record Housing G4 Equipment Cabinet, the Goldring GL58 fitted with CS90 Stereo Ceramic Cartridge, the Armstrong 227 Tuner Amplifier and separate KEF G4 Speakers, the total cost of which will be £125 for mono and £150 for stereo. The cabinet has been specially designed to facilitate the mounting of the amplifier and turntable, in that it is supplied with inter-connecting leads and pre-cut fascia and motor boards.

It is proposed that interested retailers



*Left:
Grundig tape
recorders have
many uses
in schools and
colleges*

will make up the equipment from the standard components which will be made readily available to them through normal channels of supply. Group 4 thus will not make or sell anything to anybody; it is merely a joint effort by the four manufacturers to drum up business from areas outside the present hi-fi market.

TEST TAPES

New from Tutchings Electronics Ltd. is a series of tape recorded test tapes as follows:

Test Tape No. 1 — Pure tones 40-10,000 c/s with voice identification of each band. Recorded to new CCIR 70 microsecond characteristic at $7\frac{1}{2}$ ips. Track 2 carries continuous 7,500 c/s tone for azimuth alignment.

Test Tape No. 2 — Pure tones 40-7,500 c/s with identification of each band. Recorded to new CCIR 140 microsecond characteristic at $3\frac{3}{4}$ ips. Track 1 carries four identical frequency runs. Track 2 is recorded with continuous c/s tone for azimuth alignment.

Test Tape No. 3 — White Noise, one third octave bands 40-10,000 c/s with voice identification of each band. Recorded to new CCIR 70

microsecond characteristic at $7\frac{1}{2}$ ips.

Test Tape No. 4 — White Noise, one octave bands 100-6,400 c/s centre frequencies with voice identification of each band. Track 2 carries full range unfiltered white noise. Recorded to new CCIR 70 microsecond characteristic at $7\frac{1}{2}$ ips.

Test Tape No. 5 — Azimuth and vertical head alignment tape. Full track unfiltered white noise with track 3 blank. Can be used without test equipment at all tape speeds on two or four track recorders.

All tapes on 3" reels. Trade price 30/- each including postage.

The older CCIR characteristics of 100 and 200 microseconds for $7\frac{1}{2}$ ips and $3\frac{3}{4}$ ips respectively can be supplied if required.

Full track recordings of any single frequency can be supplied with very low wow and flutter content at 25/- per 3" reel.

Further details from Tutchings Electronics Ltd, 14 Rook Hill Road, Friars Cliff, Christchurch, Hants.

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SOUND INITIATIVE

Graham Harris

A DEMONSTRATION given by a tape recording society is one of the best forms of advertising for the world of magnetic tape. For the commercial world, it can sell equipment. For the enthusiasts, it can induce people to join tape societies. However, done without thought, it can deter potential fans.

When a request comes to a tape society for such a demonstration, it is commonly presupposed that the audience knows little or nothing about tape recording. This may be the case, but there is little value in the demonstrators turning up as a herd of highly trained technicians and with a close resemblance to an experimental electronics laboratory, only to show a lack of initiative in the use of entertainment as persuasion, boring the audience to restless tears.

There are thousands of tape recorders bought during a year and many, too many, end up in far corners gathering dust. The audience will probably contain such owners and it is at these people that the demonstration should be aimed. These are the people who confess, rather quietly, 'Oh yes! I bought a tape recorder some time ago, but what can

I do with it?' One very obvious point that should be put over is the waste of using such a machine as an expensive record player (besides having the evil tendency to create criminals of the owners in the eyes of the copyright kingdom).

Primarily important, and also difficult to establish, is what the audience expects from a demonstration of this sort. Obviously they will want entertainment and at the back of their minds will be the questions of what tape recorders can actually be used for and where does the tape recording society fit in?

The demonstrator who stands up and after the initial applause has withered away, clutches the microphone and says, 'Lo! Here is a mic. I switch on, you speak' winds the tape back and then exclaims with pseudo wonderment, 'Eureka! Hear your voice!' is outdated and boring. Yet this form of treatment does go on. The days when people fell into ecstasy when they heard their recorded voices are over. Enthusiasts who must fall into this hackneyed procedure, should reserve it for an audience of jungle cannibals! At the other end of the

scale there is the hyper-fanatic who will cheerfully waffle on about 'flutter, wow, dB, impedance' and mystical modulations, leaving the audience in a state of high powered inertia. The lay audience will not be impressed and will leave the room no wiser than when they came in. Tape society demonstrators must be prepared to go to some lengths to organize a session. After all, every enthusiast should know that a recorded programme, no matter how short it may be, entails time, thought and patience, if it is to represent the quality that holds attention. Demonstrations must also have these requisites. They must be the result of rehearsals. Like any programme worth any favourable comment, brevity and strict timing is essential.

Three demonstrators are better than one. More than three will tend to confuse the audience. (And there's another thing not to be overlooked, if there is more than three it is possible that demonstrators will outnumber the members of the audience!) A smaller number can make the session somewhat stilted and biased, unless the speaker is a professional and in which case it is doubtful if the ses-



"LO, HERE IS A MIKE."



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CHOPPED UP
INTO A
THOUSAND
PIECES."

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Side 1—Fire engines with bells. Fire engine—alarm and sirens. S.S. Queen Mary siren. Factory siren. Telephone bell. Door bell.
Side 2—Clock chime. Alarm clock. Westminster chime. Bow bells.

B AFX/1—WILD ANIMALS

Price 7/6

Side 1—Male and female Lions, Gibbons, Chimpanzees, Bell bird, Rattlesnake, Baboon, Viper, Emperor Geese, Fish Eagles, Mountain Lion (Puma), Kookaburra (Laughing Jackass).
Side 2—Elephants, Mississippi Alligator, Indian Tiger, Sea Lions, male Lion. In the jungle (a background of typical sounds).

C BGX/1—BACKGROUND SOUND EFFECTS

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Side 1—Sea (breakers). Wind (howling—eerie). Thunder (light rain).
Side 2—Rain (heavy shower). Factory sounds (industrial). Traffic (busy street).

D EFX/1—ELECTRONIC SOUNDS AND MUSIC

Price 7/6

Side 1—Space ship—take-off. Space vehicle—imaginary take-off. Space vehicle—imaginary landing. Ring modulation—tonal Modulated tone glide (descending). Modulated tone glide (ascending). Sibilant—white noise (pitch octave low).
Side 2—Sibilant—white noise (pitch). Sibilant—white noise (pitch octave high). Three-tone ululation. Filtered noise Stridor (tonal). Ring modulation and sibilant.

E EFX/2—ELECTRONIC THEMES AND MUSIC CONCRETE

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Side 1—Delta F Study in Sine tones.
Side 2—Sound object Montage.

F HMV/1—HAUNTED HOUSE, MYSTERY SOUNDS AND MUSIC

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Side 1—Lion roaring. Twin piston aircraft landing. Building and debris fall.
Side 2—Spooks. Intruder. Creaks. Fright. Dungeon Ghosts. Ghouls. Maniac laughter.

G MFX/1—AUTHENTIC HIGH-FIDELITY SOUND EFFECTS

Price 7/6

Side 1—Lion roaring. Twin piston aircraft landing. Building and debris falling. Road drills and compressor. Ship's siren. Steam train leaving station. Small steam loco and whistle. Cell door, keys and lock.
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

Side 1—American police car with siren—arriving. American police cars with sirens—departing. American police car escort with sirens—passing. American

police motor-cycle patrol with siren—stopping. Applause (hand clapping). Orchestra tuning up. Car crash. Glass breaking (repeat).
Side 2—City and Waterloo tube train—arriving. City and Waterloo tube—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

Side 1—March past—Guards and crowd sounds, etc. Royal Salute—Parade commands and National Anthem. Drums and pipes—with parade commands.
Side 2—Aircraft—low-level attack (bombs, machine-gun fire, aircraft). Artillery—tanks—rifle fire, etc.

J TFX/1—AUTHENTIC BRITISH TRAIN SOUNDS

Price 7/6

Side 1—Train departure—main line. Train arrival—main line. Express train passing—with whistle. Fast goods train passing—with whistle. Express train passing. Small tank loco—passing.
Side 2—Local passenger—arrive and depart. Fast goods train—passing. Central London tube train—arrive and depart. Train over points and crossing. Slow goods train passing—with whistle.

K MFX/3—HORSES

Price 7/6

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sion will be a club activity.

Editing should be an essential inclusion in the demonstration. One of the greatest and foulest deterrents to the fraternity is the long, garbled, unedited original recordings that are so often forced into polite but bored ears. Coughs, ums, over recorded cackling and inches of silence are strained unrelentingly into the room until it become a labour to appreciate the main essence of the thing. With the case of those after dinner speeches, the demonstrations should show the eminence of a five minute edited version over a half an hour jumble of inanities. Obviously splicing and dubbing should be shown as methods of editing. The laity still fail to recognise the fact that tape can be chopped up into a thousand pieces and yet remain functional. There's nothing quite like the unsuppressed reaction from such an audience when they hear a stuttered speech 'cut' to a refined discourse. Since splicing is an intricate and timely process, there is no need to do it actually before the assembly. To show a 'before and after' example should be sufficient. The demonstration, is, in fact, a form of an aperitif.

Subject matter is a subject rarely raised, but it's important. Certainly it takes in a good deal more than the top twenty. The man or woman in the audience wants to know how the tape recorder will fit in with his family. Baby's first cry and the consequential howls are subjects blurred in the sales leaflets but rarely put into practice. It's best to depend on a more topical subject like the holiday. Most people have them and most like to share the memories but lack the ability to put it over. One thing to realise is that slides are here to stay. They are a normal mark of affluence. A sound backing gives life to these projected memories.

It's often been said after a tape slide show, that the tape has 'made it.' certainly this is a sound recommendation for tape. It's not in the scope of the first demonstration to show how quality is put into such 'videoscopic' projects. This, it is to be hoped, will come later. It's a sad thing to say, but television is largely preferred to radio and the sound purists, on realizing this, tend to live like hermits denouncing anything suggestive of vision. However, vision in the

shape of 35 mm. slides can and should be exploited to elevate the position of tape. Over the years the tape and slide advocates in a society must take and collect various pictures of activities involving the tape recorder. Such material can be pooled for the purpose of a demonstration. The audience can and will, of course, be told that the tape society met at a garden party to record the abandoned merriments and 'here is a recording of it!' The audience will be more attentive if they can also see a picture of the project.

To repeat, the initial demonstration is only an aperitif. It should whet the appetite of the audience so that they will clamour for more. The next time they can be told the right way to interview people, how to assimilate the sound of a tractor engine in labour or what is involved in entertaining old people.

A demonstration must be brief, lucid but not too simple, entertaining and persuasive. Your club has vacancies for membership, so don't tell the audience too much. They should be impressed with the tape recorder, not your of knowledge

RIBBON MICROPHONES AND WIND-GAGS

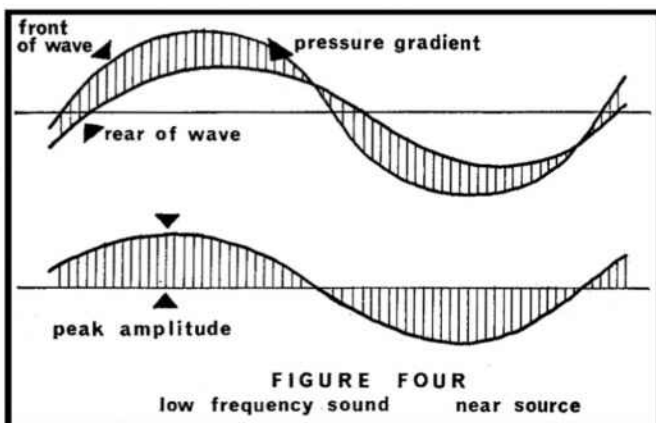
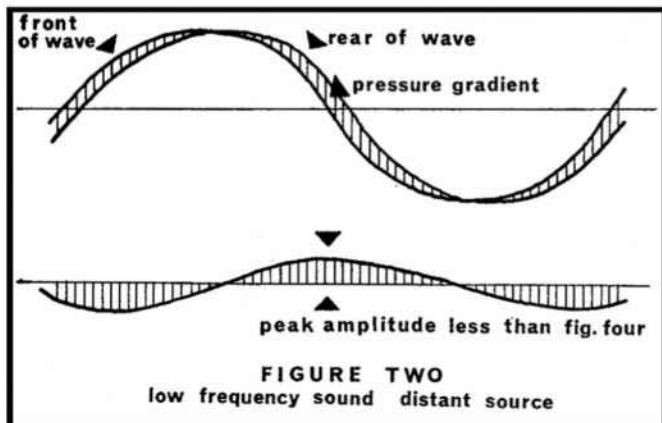
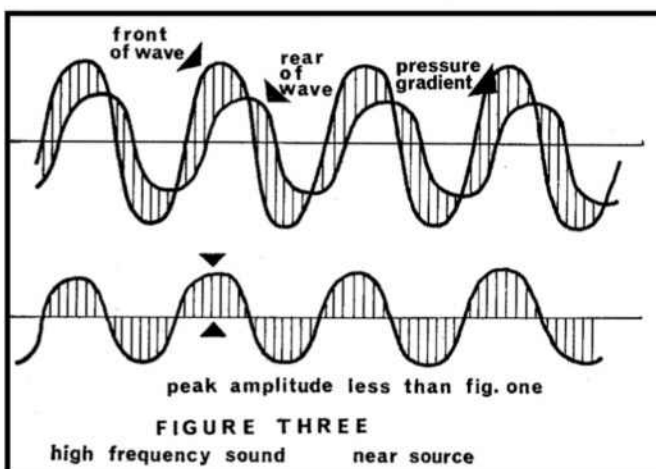
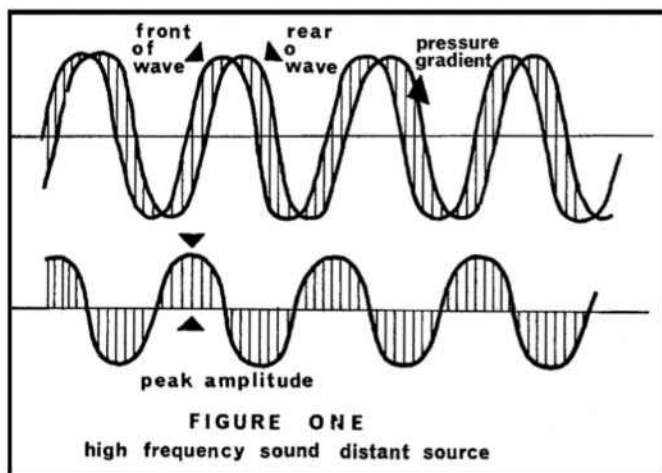
by G. Jones

THE conclusion of last month's article was that the best type of microphone for location recording is a moving-coil, either the simple or the modified type. Ribbon microphones were eliminated because of their instability in even moderate wind conditions. However one must not dismiss them altogether because of this defect. They do have special properties which

make them extremely useful for recording indoors and as a narration microphone in a film dubbing theatre. A ribbon microphone has a figure-of-eight polar diagram and so discriminates against sound from the side. This can be put to good effect where the acoustics of the room are very 'lively' i.e. the surfaces of the room are highly reflective thus producing unwanted echoes. With normal binaural hearing a 'lively' room is no great defect as it makes the human voice sound quite pleasant – to oneself that it. It is no coincidence that people like singing in the highly reflective confines of the bathroom where they can actually hear their own voice rather than the somewhat limited frequencies usually transmitted through the bones of the head. A monaural microphone, however, is not as selective as the human ear and sounds recorded in an acoustically lively room tend to be jumbled and confused. A ribbon microphone dampens down the acoustics by its discrimination against side echoes.

Incidentally never trust your own ears to test the acoustic of a room. Rather trust your ear in the singular. Plug one ear with a finger and listen. What you hear approximates pretty closely to what the microphone will pick up. Try listening to the radio or television this way. You'll be surprised just how lively your room is.

There is another phenomenon of ribbon microphones which can be of great use – or a nuisance if you're not aware of it. If ribbon microphones are placed too near the subject they will attenuate the higher frequencies and amplify the lower frequencies of any voice. This can be explained by considering the *pressure gradient* of high and low frequencies at a dis-



tance from the microphone (in practice over four feet) and the same frequencies near to the microphone. (Note—Figs. 1, 2, 3 and 4 Sine Wave graphs of pressure gradients all at same scale.)

High frequency sound from a distance strikes the front of the ribbon, generates a current and later strikes the rear of the ribbon generating another current of equal magnitude. The *pressure gradient* is the difference between the two (fig. 1).

Low frequency sound has exactly the same effect except that by the very nature of the sound there are fewer cycles per second (fig. 2). The reason why *hf* is attenuated and *lf* increased in a near sound source is due to one of the few hard and fast rules in the subjective science of sound.

$$I = \frac{1}{d^2}$$

The intensity of a sound wave varies inversely in proportion to the square of the distance. To give a practical example; if a sound source is radiating at an intensity of twenty (never mind the units) and one foot away the intensity is nineteen, i.e. decreased by 1. Two feet from the source the intensity would be reduced by 4, three feet away by 9 and four feet away by 16. At this point the intensity of the sound would only be four.

INVERSE SQUARE LAW AND RIBBON MICROPHONES

The distance between the front and back of the ribbon is in the region of one inch. This is too small to affect materially the intensity of the sound wave at the rear of the ribbon when the source is more than 48 inches away (four feet is the usual working distance). But when the source is only ten inches away from the mic, then the front-to-back distance is enough for the inverse square law to take effect and the following phenomena occur.

The intensity of the *hf* at the rear of the ribbon is reduced hence the output is reduced. Reference to fig. 3 will show that the *pressure gradient* is now less than in fig. 1. Hence *hf* is attenuated.

The intensity of the *lf* at the rear of the ribbon is also reduced but if it is plotted on a graph (fig. 4) the resultant *pressure gradient* is greater than it was in fig. 2. Thus *lf* is increased.

AUNT ADA AND UNCLE ALF!

If you have a home movie and want to use the voices of Aunt Ada and Uncle Alf but are worried by Ada's ill fitting dentures which cause her to whistle on every sibilant, or if you are even more worried by Alf's unnaturally high voice, a ribbon mic can help you out of this difficulty. Place them both very near to the mic and in the case of Aunt Ada tilt the mic to 45 degrees. Voila, Aunt Ada doesn't whistle half as much as she did before and uncle Alf could almost qualify for 'Mr. Masculinity' himself.

SECOND MICROPHONE

On balance, I would not advise the amateur to buy a ribbon microphone as his first. I am a great believer in using microphones as a photographer uses lenses. Each has its advantages and is applicable to particular circumstances. The ribbon's chief advantage is for static indoor recording and should be the amateur's natural choice as a second microphone. The first microphone is, of course, a moving coil.

continued overleaf

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Aluminium voice coil
Bass resonance 38/43 c/s.
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Flux density 17,000 oersteds
Total flux 190,000 maxwells
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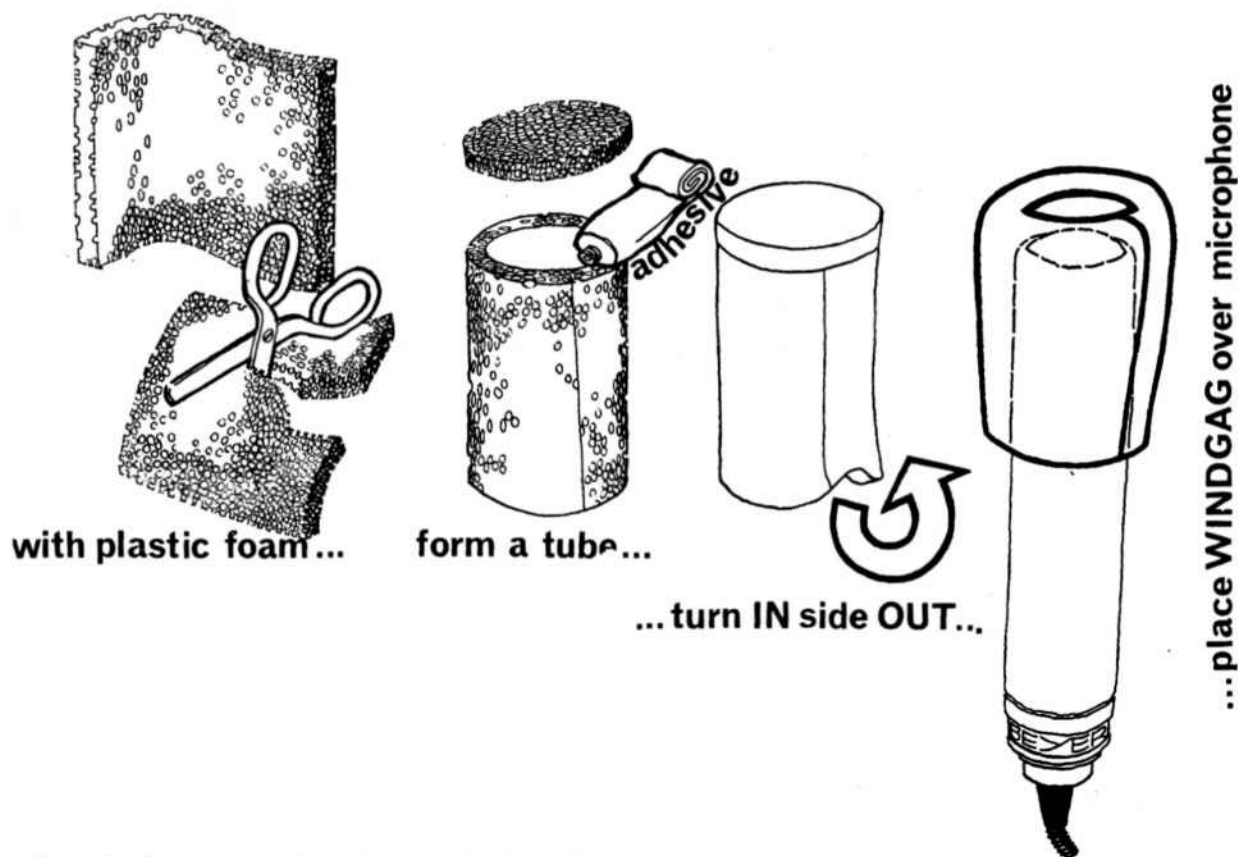
WIND-GAGS

Before attempting to record outdoors one must be armed with a wind-gag to eliminate wind rumble. Wind rumble comes under the heading of unwanted extraneous noise, and to me anything other than what is required on a sound track is as bad as film fogged by light and just as inexcusable. Of course, wind-gags are not the complete answer to problems caused by the wind, but at least they enable one to make recordings which would not otherwise be possible. Wind-gags can be bought for moving-coils similar in shape to, say, the Grampian DP/4. But it is almost as effective and much cheaper to make one at home. The only materials required are a 6" square of thin gauge foam plastic (Woolworths sell it), a small tube of Bostik No. 1 and a pair of scissors.

Cut a strip of the plastic two inches wide and a quarter inch longer than the circumference of the microphone. Stick the

ends together to form a tube. On one end stick a circle of the plastic, trim the edges and turn the whole thing inside-out to present a smoother exterior surface. Place the wind-gag over the microphone and if the fit is not snug enough secure in place with a rubber band. This simple wind-gag is sufficient to reduce wind rumble by about 6dB. It doesn't mean that one can happily record in a howling gale on Beachy Head, but at least one need have no fear of a light breeze. Fig 5 shows full details for construction. This same construction can also be applied to the modified moving-coil, but it will adversely affect the directivity pattern, as the foam plastic covers the holes in the body of the microphone just below the diaphragm which gives this type of microphone its special characteristic. One is advised to buy the proprietary job. Beyer, for example, make one for their own microphone.

(Wind shields are now available for the Grampian DP4 microphones—Ed.)



Four simple steps to make an inexpensive but efficient wind-gag.

THE MARRIAGE OF TAPE AND SLIDE

GORDON J. KING

NOW becoming extremely popular is 35 mm photography giving colour transparencies or slides as the end product. Such slides require some sort of optical arrangement for viewing them. One arrangement takes the form of a personal viewer. Here the slides are viewed through a lens against a white background illuminated by a small battery and bulb. Much more satisfying, and essential for group viewing, is the slide projector (see photograph). This enables the slides to be projected cinema-wise onto a large screen.

There are two types of projector. One, which is wholly manual, demanding the manual change of each slide in turn. The other is semi-automatic. The slides are loaded into a special rack in the required order and are then changed in the projector simply by the operator depressing a button on a remote control unit attached to the projector through a cable. A second button is often incorporated for remote focus control.

It is this semi-automatic type of slide projector which can easily be used in conjunction with a tape recorder so that the tape can provide the commentary and other background effects to tie up with the slide display on the screen. To employ a tape recorder in this way calls either for the operator to depress the slide-change button at the end of each commentary or for some electronic device to do the job automatically.

THE PERFECT MARRIAGE

Here, then, is the perfect marriage of tape and slide, for once the system is set up, the programme of slides will be displayed automatically and in synchronism with the partnering programme of sound recorded on the tape.

The tape recorder, in other words, does two jobs; it produces the sound in the ordinary way, and in addition it acts as a "control" for the automatic slide-change unit.

A semi-automatic slide projector embodies an electrical drive to work the slide rack and to change the slides. There is also a switch which starts the drive when a remote or a local control button is depressed. A switch is also mechanically-coupled to the drive so that once a slide change cycle has been instigated current continues to flow to the drive motor until the cycle is completed, at which time the switch opens and the drive motor stops, only to be started again for the next slide change.

This works something after the style of self-parking windscreen wipers on cars. When the wiper is switched off, the wiper continues to work until it reaches its parking position. At this position a switch opens and cuts off current to the wiper motor.

ELECTRIC SLIDE-CHANGE DRIVE

The basic circuit of the electrics of a semi-automatic slide projector is shown in Fig. 1. Current passes to the drive motor only when S1, S2 or S3 is closed. Now, when either the remote

Fig. 1 The slide-change drive system in a semi-automatic slide projector.

Fig. 2 The set-up required for producing a tape-slide programme.

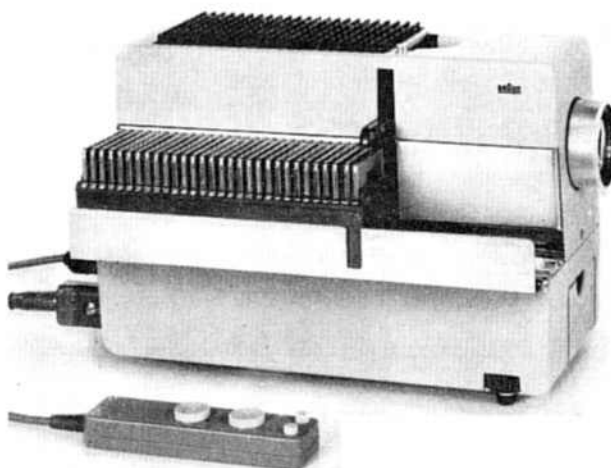


fig. 1

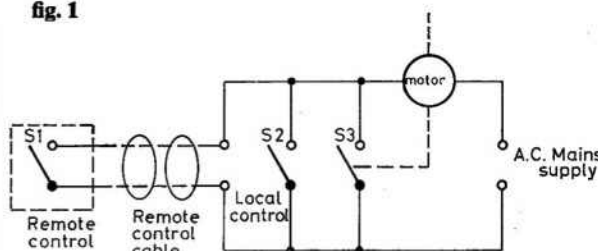
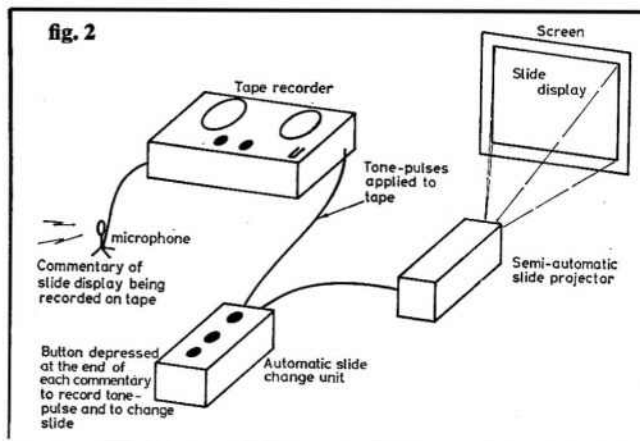


fig. 2



or local control switch, S1 or S3 is closed the motor starts. As soon as it starts, S3 closes, due to a coupling from the motor drive. Thus, the motor continues to operate, even when pressure is taken from S1 or S2, and S3 opens only when the motor has completed a complete slide-change cycle.

Normally, then, one projects a slide and gives a commentary about it while it is being shown. A control button is depressed and the slide changes. One then starts a commentary on this slide, and so on. . . . This is all very well and quite exciting at first, but after a number of showings the commentary tends to lose its zeal and one tends to forget certain points of detail. Moreover, one finds that there arises considerable differences between commentaries on the same slide unless a script is used.

By far the best idea, and the most interesting, is to let the tape recorder look after the spoken commentary and change the slides as well. Such a technique also has great potential in education, industry and commerce, as we shall see.

For the tape to change the slides, therefore, a signal of some kind must be recorded on the tape subsequent to each commentary, and this signal must be processed so that it will operate automatically a switch which is connected in parallel with one of the switches in the circuit of Fig. 1.

tone pulses

The conventional idea is to record, on the tape, signals in the form of tone pulses at points in the spoken commentary corresponding to slide changes. These tone pulses are then translated to electrical signal by a playback head, amplified and rectified so that d.c. voltage pulses are created suitable for working a control relay. Clearly, at each tone pulse point on the tape the relay will close a switch and operate the slide-change cycle. It will be understood, of course, that a tone pulse needs only to cause an instantaneous closure of the relay switch to instigate the slide-change cycle.

Readers already using a semi-automatic slide projector may dispute this, since they have probably discovered that it is necessary to hold the slide-change button in depression for a second or more to get the slide-changing cycle started. This is true. Nevertheless, it is possible to get exactly the same effect with an instantaneous switch action by the employment of a fairly large value capacitor across the relay contacts. This capacitor charges and does the same thing as a switch which is held in depression for a second or so. The capacitor discharges, and as far as the projector is concerned, this is the same as the switch being held on.

We now come to the question of how and upon what track we are to record our control pulses. The pulses are often produced by a small oscillator, giving a tone signal when a button is depressed. The control relay and associated circuits and also

the oscillator and its activating push-button are generally housed in one case, the whole being called an automatic slide-change unit or tape/slide synchroniser.

HOW SYNC IS EFFECTED

Synchronising the commentary to the slides is straightforward, and this is how it is done. The slides are loaded in programme order and the synchroniser is connected to the slide-change projector and the tape recorder, the latter being loaded with fresh tape and set up with microphone for recording speech.

The projector is switched on to show the first slide and at the same time the tape recorder is started. A commentary is then given on the slide, this, of course, being recorded. At the end of that particular commentary, the tone-pulse button is depressed and also the control button to change the slide. The commentary corresponding to the slide then showing is given, and the process is repeated for each slide.

Some automatic slide-change units are arranged so that when the tone-pulse button is depressed the slide is also caused to change. This avoids having to depress two buttons at the end of each commentary.

To exhibit a slide and tape programme so synchronised simply means setting the slides and the tape back to start, switching the slide-change unit to "auto" and then starting the tape on playback with the first slide being projected. The pulses recorded on the tape will then take over the complete control of the projector, and one needs to do nothing more until the end of the programme.

Fig. 2 shows the set-up for recording the commentaries and for synchronising them to the slides, and Fig. 3 shows the set-up for exhibiting a tape/slide programme.

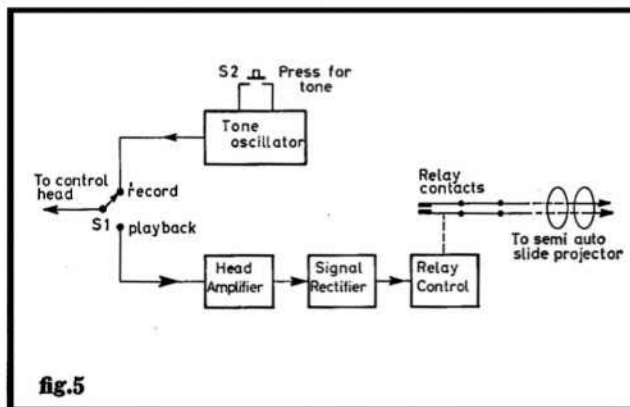
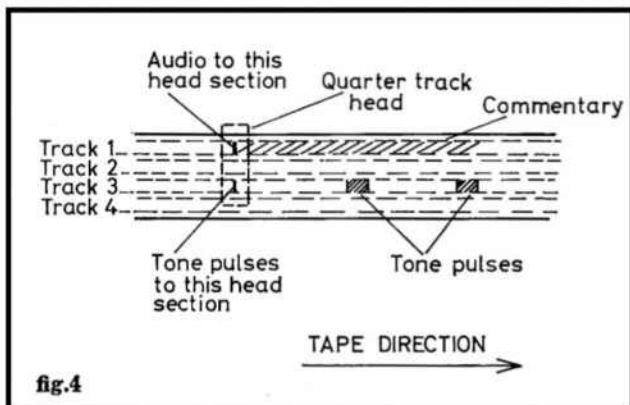
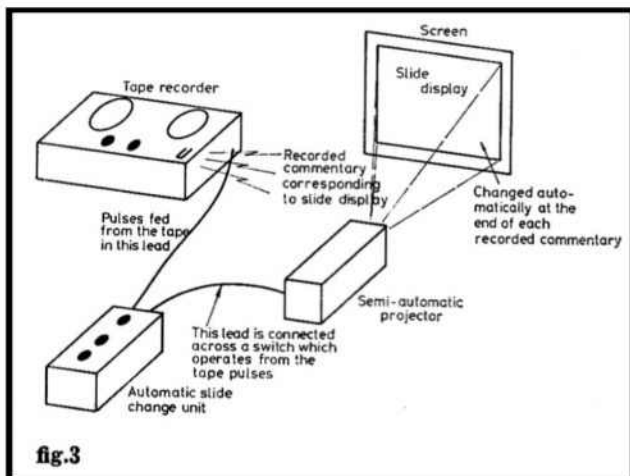
Now we have seen the fundamental features of tape/slide synchronising, let us investigate the workings of various systems. A second track on the tape, called the "control track" is commonly employed exclusively to carry the tone pulses. This arrangement calls for the use of a second head or, with quarter-track machines, the use of the head section which is not employed for the audio of the particular track utilised for the commentary.

Thus, when the commentary is being recorded, at points corresponding to required slide changes, an audio signal current is injected into the "control head" or into the winding of the spare section of the quarter-track head so as to record tone pulses of short duration on the control track. (Fig. 4). Here we see the technique related to a quarter-track machine, where track 1 carries the commentary and track 3 the tone pulses. With the tape inverted, of course, track 4 would carry the commentary and track 2 the tone pulses.

Fig. 3 Here the slide projector is under the complete control of the tape on playback.

Fig. 4 The spare head section of a quarter-track recorder can be utilised to produce a control track, as explained in the text.

Fig. 5 Block diagram of tape-slide synchroniser.



Most quarter-track machines possess facilities whereby the head section not in use at the time can be connected to some external equipment for monitoring a track already recorded, for recording in synchronism with an already existing recording on a complementary track or for stereo applications. This spare head section is generally under the control of a head selector switch and is terminated across a couple of tags, terminals or a socket, depending upon the type and design of the machine.

It is not a difficult matter, therefore, to inject into this head section, during the commentary, audio pulses from an oscillator. On playback this same head section then translates the pulses to electrical signal for working the slide-change control, as has already been described.

The same idea is adopted with half-track machines, but with these it is often necessary to fit a second head to operate on the lower track, thereby making this the "control track."

To avoid all this complication, it is possible to superimpose the control pulses on the commentary. This means, then, of course, that only a single track is necessary for both commentary and control. There are two chief disadvantages of this method. One is that the tone pulses are heard above the commentary just prior to a slide change and these can prove highly disconcerting and break continuity, particularly where the programme is of an educational nature. The second is that to enable the control to discriminate adequately between ordinary audio signals and the tone pulses, the latter must be recorded at a considerably higher level than the former.

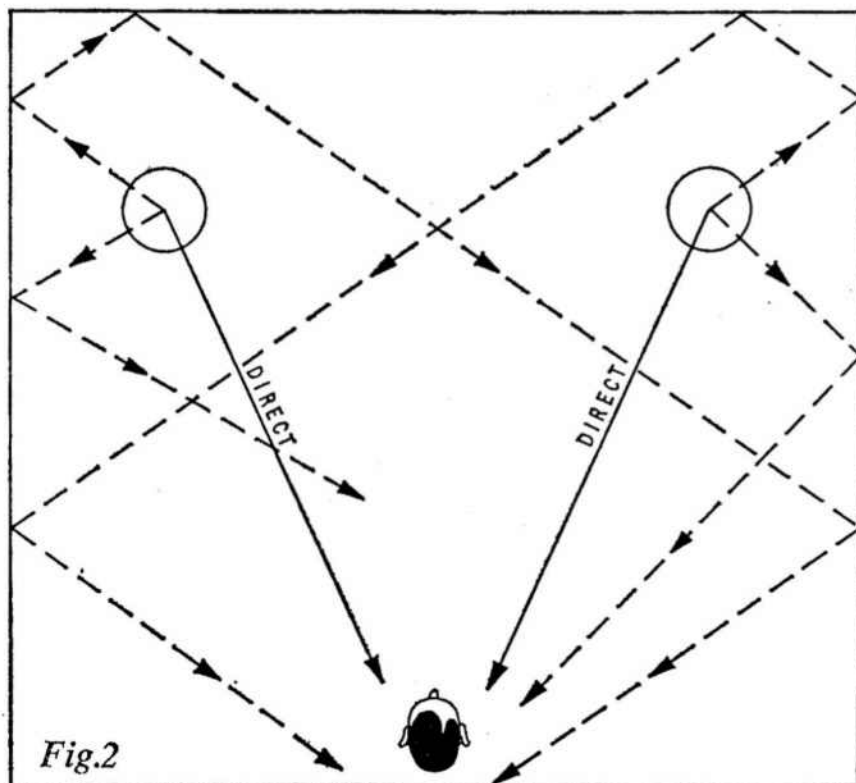
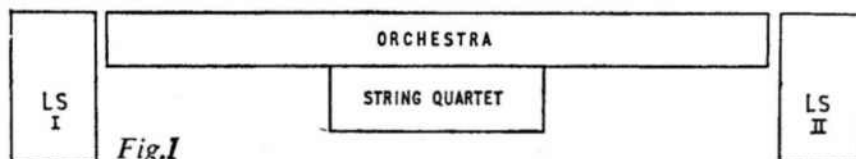
Even if the control circuits are made frequency-selective to match the frequency of the tone-pulses, there is always the danger of an audio note of the same frequency working the projector at the wrong time. Nevertheless, the arrangement has the attributes of simplicity and ease of connecting to almost any kind of recorder.

Fig. 5 shows a block diagram of the basic items of a tape/slide synchroniser. In the "record" position, switch S1 directs the tone signal, produced by the tone oscillator on the depression of S2, to the control head. In the "playback" position, S1 switches the control head to a head amplifier. Here the tone pulses are greatly amplified and are then fed to the signal rectifier, where they are changed to d.c. pulses. These operate the relay control, and the closing of the relay contacts operate the slide projector automatically.

Next month we will look at some circuits for this system, and also an entirely new arrangement which does not need the recording of pulses, or indeed, a control track, and can, if required, be operated without being electrically connected to the tape recorder!

INTRODUCTION TO STEREO

STEREOPHONIC SOUND REPRODUCTION H. Burrell Hadden.



Much has been written in the past about high fidelity sound reproduction, and no doubt much more will be written in the future, but the object of this article is not to talk about this aspect of the art of home sound entertainment but to consider how best stereophonic sound can be reproduced under domestic conditions. It is often assumed, quite erroneously, that stereophony and high fidelity in this day and age are one and the same, but this is certainly not the case, and it is perfectly possible to have either with, or without, the other. So for the moment we will leave aside all questions of high fidelity and concentrate on those factors which will enable the best stereophonic reproduction to be achieved.

What do we mean by stereophonic reproduction, if it is not high fidelity? Let us consider for a moment the producer of the recording or radio programme in the original studio. He is, of course, concerned with the programme material, the artists performing it, and the accuracy with which it is performed in relation to the intention of the composer or author. He is also the supervisor of the technical quality of the recording, the fidelity of the sound that you will finally hear, and, if the production is a stereophonic one, it is the producer who will decide the position on the reproduced sound stage from which you should hear every individual part of the sound picture. It is the reproduction of the directional information produced in the signal as a result of these last decisions of the producer with which we are concerned here.

The directional information is contained in the minute differences which exist between the sounds fed to the left and right hand channels, particularly the differences in amplitude. As was shown in a previous article, it can easily be proved that interchannel differences in amplitude will be heard by the listener as interaural time differences. It is very important, therefore, that the interchannel amplitude differences are transmitted to the listener with the minimum of distortion, if the reproduced images are to be distinct and in their correct places. It has been argued by some writers that accurate

placing of images is not important as long as "areas" of sound are in their correct places, but as far as I am concerned this is just not good enough. It may be that for the reproduction of music such a vague representation can be acceptable in some instances, but it can hardly be termed good stereophony, and when we come to the reproduction of a dramatic or operatic item the accuracy of the positions of the characters can make or mar the performance.

How can this accuracy of reproduction of the directional information be achieved? Since this information is contained in amplitude differences, it is of prime importance that the two halves of the amplifying system are accurately matched as to gain. This matching should, ideally, be within 0.5dB at all the reproduced frequencies; if this is not so, the positions of the images will be displaced sideways from their true places. It can quickly be shown that a difference of 1dB will produce a perceptible movement, and 10dB will move a centre image almost over to one side. It is important that the balance is held over the available frequency range, since otherwise a solo violin, for example, will move about depending on the pitch of the note being played; not a very satisfactory state of affairs!

From the foregoing it will be evident that for accurate stereophonic reproduction, (that is, reproduction of the intentions of the people who made the original recording or programme), all volume and tone controls on the two channels of the reproducing apparatus must be accurately ganged together. It will also be necessary to provide a balance control to take care of any unforeseen variations in the balance of the programme material. Such variations can occur, for example, in the transfer of recorded material from the master tape to the disc which we eventually play. Separate volume and tone controls for the two halves of the equipment just will not do, since it is almost impossible to set these up accurately enough to obtain the required balance.

To digress slightly whilst on the subject of controls on the amplifying equipment, it is a pity that few

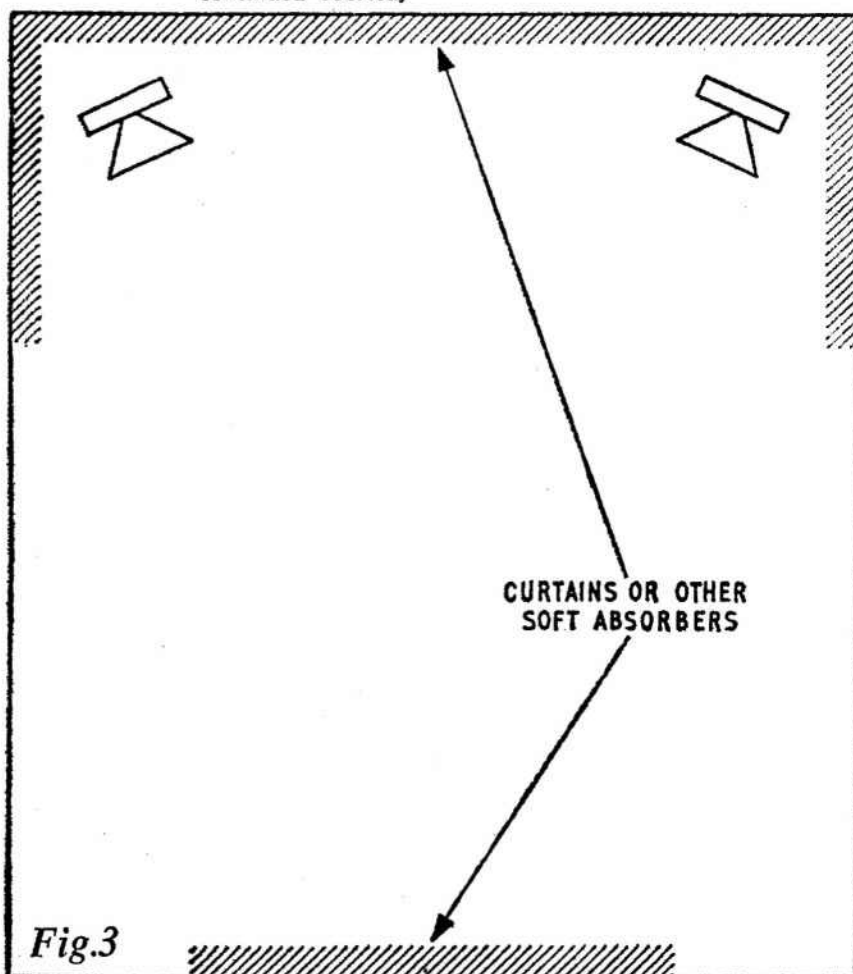
manufacturers have seen fit to include in their list a control which will vary the width of the reproduced picture. A simple narrowing control of the crossmix type would be all that was necessary, so that if, for example, a piece of chamber music, or a small jazz group, was played after a piece from a large orchestra, then the relative sizes of the two layouts could be reproduced in their correct proportions to each other (fig.1). This, to this author's mind, at any rate, is the only occasion when it is right to alter the intention of the producer of the programme; he will naturally, at the time of production, fill the available width of the sound stage, so as to make the most of his available resources, and if all large scale works are being reproduced, or all small scale ones, then a width control is unnecessary. It is only when a mixture of say, orchestral items, and solo songs with piano,

continued overleaf

fig.1: Desirable relative widths for orchestra and string quartet.

fig.2: Omnidirectional loudspeakers producing delayed reflections.

fig.3: Simple acoustic treatment.



are to be played, that any control of the reproduced width is needed.

To return to the requirements of good stereophonic reproduction, it goes without saying that the need for accurate balance as to amplitude response discussed above must also apply to the loudspeakers. The two loudspeakers must be as identical as possible; if they can be specially matched so much the better, but they must at least be identical types in identical enclosures. It has been suggested that since, say, an orchestra has a preponderance of high frequencies on the left, the lower frequencies on the right, then it does not matter if the left hand speaker is lacking in bass. A moment's reflection will show that, in order to reproduce ANY sound in the position intended by the producer, the component of that sound fed to BOTH channels must be reproduced, and in the correct proportions. So any economy that might have been effected by this means is unfortunately not possible.

From loudspeaker balance to type of loudspeaker system. Some authorities have argued that since a good distribution of sound in the listening room is desired, omnidirectional loudspeakers, enabling sound to be reflected off nearby walls and other surfaces, should produce the best results (fig.2). This in fact is a misconception, since any reflected sound must by the very nature of things arrive at the listener's ear later than the sound direct from the loudspeakers, and it can easily be shown

experimentally that any interchannel time differences will only confuse images which would otherwise be clearly reproduced. The effect produced by omnidirectional speakers can be likened to that of a soft focus technique in photography; instead of a sharp image, you get a muzzy one. It is desirable then, that the loudspeakers should send sound directly to the listeners, and that all reflected sound should be eliminated. In order to do this completely, a "dead" room would be necessary, but such a room would be most unsuitable for a domestic living room, although stereophonic reproduction in it would be almost perfect. Fortunately good reproduction can be obtained under the normal living room conditions if some precautions are taken. If the room has the normal complement of soft furnishings, a carpet and an upholstered lounge suite, then little else will be necessary. The loudspeakers should, if possible, be placed across corners, preferably on the short side of the room, so that they will be some ten feet apart. Distances greater than this are possible, but under some conditions it may be difficult to avoid a hole in the middle when the spacing is large.

A minimum distance of about eight feet is necessary to enable the full stereophonic effect to be realised. It is important that the wall area between the loudspeakers should be as dead, or non-reflecting as possible (fig.3), and a simple way to achieve this is to place the loudspeakers one on either side of the window, so that

the curtains can be drawn to give the necessary sound absorption. Of course, more elaborate means of acoustic treatment can be employed, but soft curtaining can be very effective, and make for much sharper images. If this curtaining can be extended round the corners on either side of the loudspeakers, so much the better. The other area which should be non reflecting is the wall opposite to the loudspeakers, and curtaining can equally well be applied here.

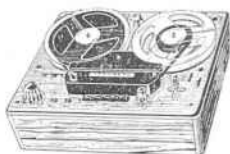
It is important that there should be no obstruction between the loudspeakers and the listeners, so that the vital direct sounds should be heard. It is also necessary that the listeners should be as close to the centre line as possible. Fortunately the average home audience rarely exceeds three people, and so this last is of little difficulty. Incidentally, stereophonic sounds intended for domestic reproduction are made in a different way from those intended for a large audience, say in a cinema, and domestic stereophony cannot easily be reproduced for a large audience.

If the above instructions are followed, good stereophonic reproduction should result, regardless of the fidelity of the system. High fidelity equipment will, of course, give more realistic and satisfying sounds, but even with "low-fi" the improvement gained with good stereophony is well worth while.

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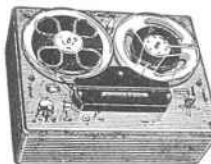


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RECORDING DIARY

WHERE TO RECORD IN JULY

UNUSUAL CEREMONIES are always worth
taping, if only for the fact that many of them are
fast dying out. Tapes of such events often acquire
a rarity value, and could become almost collectors'
items. Throughout Northern Ireland there are
numerous pageants and displays to commemorate
the Battle of the Boyne (12) and a pageant with
"Sham Fight" at Scarva, Co. Down (13). In the
Isle of Man the Manx Government participates in
the ancient ritual of the Tynwald Ceremony (5),
while at nearby Peel there is a grand Viking
ceremony (15). Swan-apping on the Thames
(during month) and Jethart's Callants Festival at
Jedburgh (9) are two more unusual events worth
taping.

SUMMER CARNIVALS continue in abundance.
Cromer (28), Dartmouth (30 June-3), Eastbourne
(3-10), Exmouth (19-26), Shanklin (21, 22) and
Worcester (27 June-3) all celebrate with their
annual carnivals, and in Jersey (29) there is the
famous Battle of Flowers.

FOLK MUSIC, singing and dancing come to
Parliament Hill Fields, London (10), Keele
University (16-18), St Albans (17), Stratford-on-
Avon (30-6 August) and Sidmouth (31-7 August).

SPORTING EVENTS this month include the
National Archery Championships at Oxford
(30 June-3), water polo at Blackpool (16, 17),
croquet at Hurlingham (26-31), and bowls at
Buxton (28 June-3). The sound of rifle shots can
be heard—from a safe distance—at the National
Rifle Association Imperial Meeting at Bisley (5-25).

ANIMALS are much to the fore in shows this
month. You can tape all the cattle noises you want
at the cattle shows at Alnwick (17), Bedford (17),
Blackpool (21-24), Detling (14, 15), Eastfield
(20-22), Guernsey (15), Harrogate (13-15), Liver-
pool (15-17) Llanellwedd (20-22), Manchester
(7-10), Morecambe (26-1 August), Norwich (30
June, 1), Rayleigh (17, 18) and Stoneleigh (6-9).
Sheep dogs are on show in the Isle of Man (13)
and Limvady, Co. Londonderry (31), and Basset
hounds (20), fox hounds (21), and Beagles (22)
are on show at Peterborough.

MOTOR RACING at Silverstone (10), the Bouley
Bay Hill Climb, Jersey (22) for both cars and
motorcycles, and the annual scooter rally in the
Isle of Man (26 June-3) should provide the engine
noises for this month.

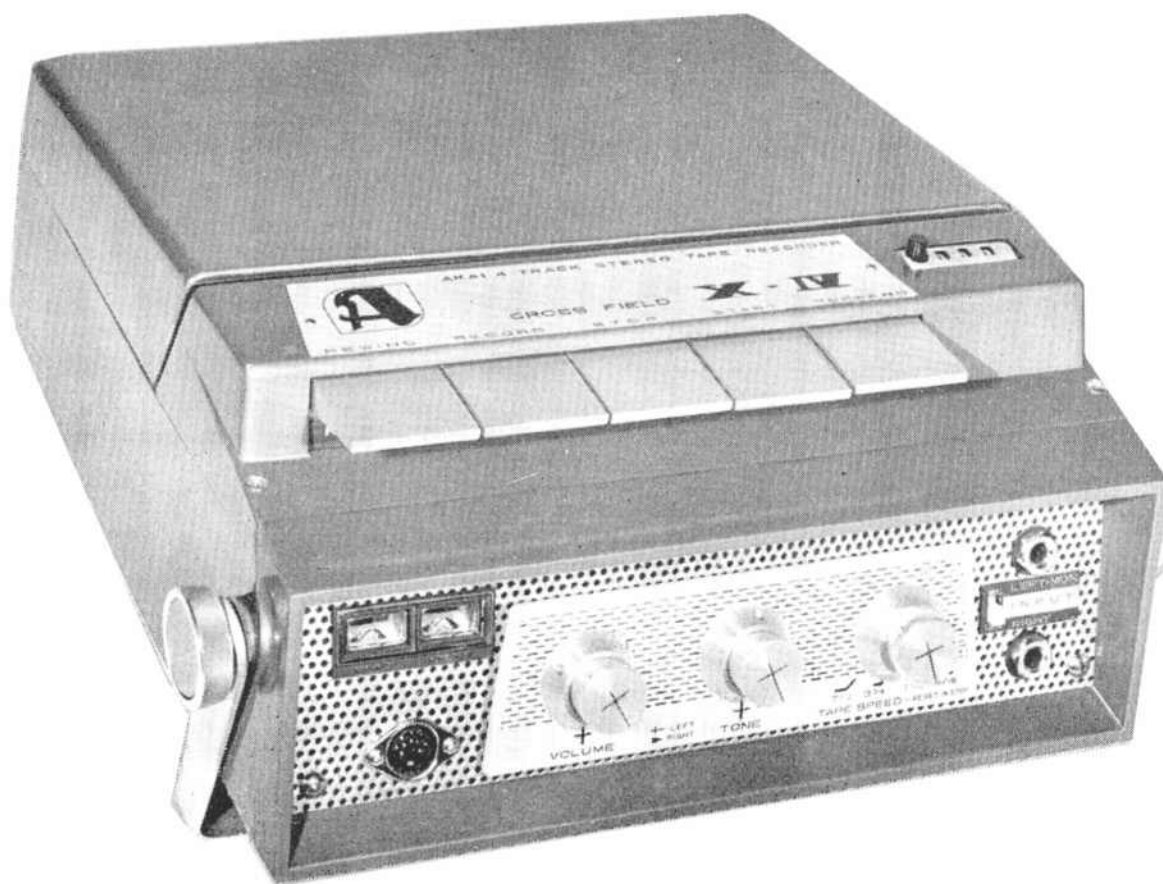
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SOUND SCENE



Akai Contest winner A. R. Chantler receives his X-IV from ATR Editor F. C. Judd.

ATR Akai Contest Winner

Of the 1,131 entries received for our May issue contest, in which the Akai X-IV four-track stereo portable was the prize, not one gave an all-correct answer. The judges, Mr. A. G. Smith and Mr. T. Wheeler, of the Pullin Photographic Company (UK distributors for Akai), and ATR Editor, F. C. Judd, decided that the correct order was as follows: C H I F G A B E D. The nearest correct entry was that of Mr. A. R. Chantler, of 47 Havard Road, Isleworth, Middlesex. Our congratulations to Mr. Chantler (seen above receiving his Akai X-IV from F. C. Judd), who gave as his additional design feature "inclusion of twin VU meters for recording level and battery check."

Other features which entrants found particularly outstanding included: large reel capacity, accessibility of controls, inclusion of rev-counter, low wow and flutter, and the use of Akai cross-field heads.

Mastertape Contest Results

Visitors to the Audio Fair will have noticed another competition in progress — the Mastertape Tape Clip competition. A number of clips had been placed in a transparent container, and visitors to the Mastertape Stand had to guess how many there were. The actual number of clips was 4,726, and as nobody guessed this correctly the prize of twelve 1,200 ft. LP tapes went to Mr. George H. Singer, of 16 Berkeley Road, Tunbridge Wells, Kent, whose estimate of 4,567 was the nearest

below the actual total. Consolation prizes of one 1,200 ft. LP tape were awarded to the next six nearest estimates, above and below. These prizes went to David Norris, London, E2; W. L. Smith, Kilburn, London; P. Johnson, Cleethorpes, Lancashire; J. Hone, London, W12; Robert Smith, Shenfield, Essex; Mrs. Mary Webb, Tunbridge Wells, Kent; D. J. N. Davis, Cambridge; Richard Jones, London, SW13; L. A. Rauscher, London, WC4; R. G. Cumming, London, E17; L. Rudd, London, SW1; and R. A. Hatt, London, N21.

Wild Life Sound Recording Course

The University of Bristol, in conjunction with the Natural History Unit of the BBC, recently completed a Wild Life Sound Recording Course for amateur tape recordists. The course, which was held in Bristol, attracted twenty enthusiasts, who heard lectures with demonstrations given by such expert wild life recordists as Lawrence Shove, John Burton and John Kirby, with Rex Haworth of the BBC Staff Training Centre. A follow-up course was held at Woodchester Park Field Centre when Victor Lewis and John Burton demonstrated field recording techniques. Mr. R. S. Burrows, B.A., the university's resident tutor for West Gloucestershire, felt that these courses were very valuable in bringing together people of similar interests from various parts of the country who were able to discuss mutual technical problems. It is hoped that the courses will be repeated next year.

A King's Story

The original sound track of the Jack Le Vien production "A King's Story," has now been released on a special LP. With narration by HRH The Duke of Windsor and The Duchess of Windsor, this disc recounts the personal trials of the Duke and his divorcee bride during the difficult times leading up to the abdication and after. Available in stereo (SAL 3507) or mono (AL 3507), "A King's Story" is a Philips release.

New Accessories

Metro-sound have now introduced three new additions to their range of audio accessories. The Metro-Mat is a carbon-impregnated anti-static turntable mat which discharges static from all LP records and eliminates statically-induced noises from recordings. The Hi-fi Stylus Cleaning Kit comprises bottle of special cleaning fluid, fine brush applicator and dirt remover. Safe to use with all pick-ups, the cleaning kit removes dirt, dust and other foreign matter from the stylus point of any hi-fi pick-up. The Metrostrobe is a tape recorder test stroboscope of a new design. With a reversible dial for either 50 or 60 cycles, the Metrostrobe will check the accuracy of tape recorder speeds at $3\frac{1}{2}$, $7\frac{1}{2}$ and 15 ips.

The Metro-Mat costs 12s. 3d., Hi-fi Stylus Cleaning Kit 7s., and the Metrostrobe 12s. 6d.

TAPE CLUB NEWS

I notice this month that a number of clubs are making reference to their taping activities — taping with other clubs or with individuals. Certainly tape correspondence can be enjoyed just as much by clubs as it can by individuals, and the advice of Patrick Copinger (page eight) is as valid for one as it is for the other. Perhaps one of the less apparent advantages of taping, from the club angle, is the possibilities it offers for getting unusual sound effects. So many clubs nowadays find themselves helping out with drama productions, reviews, hospital programmes and feature tapes for the blind, etc., and wanting a wide variety of sound effects normally unobtainable in this country. Whether a tape production requires American sirens, the tinkle of Swiss cow bells, or the chatter of an Eastern market place, the job is much easier if you have the genuine sound on tape from a friend in USA, Switzerland or Hong Kong. And quite apart from these side advantages, taping for its own sake can be such fun, something in which everyone, technical or otherwise, can take part, that it really can hold a club together and give it added zest.

CLUB OF THE MONTH

One club which has recognised the advantages of taping with another club is the **Newcastle and District TRC**. Malcolm Hill, the club expert on this subject, recently gave a talk to other members, and a general discussion followed on the best kind of approach to another club and which club they would like to tape with. At another meeting the club acquired a good selection of microphones for their discussion on microphone technique. As an audio oscillator was not available on this occasion, a steady tone was produced by making a tape loop of acoustic feedback. This tone was used to compare the outputs of a number of microphones, including various ribbon and moving-coil types. Secretary of the Newcastle club is Mr. D. A. Wright, of 31 Ridgewood Gardens, South Gosforth, Newcastle-upon-Tyne 3.

VICTORIAN MUSIC

Birmingham is fortunate in having a famous science museum, which now boasts a new music room, housing an exceptional collection of mechanical instruments. Members of **Birmingham TRAC** were lucky enough to be given a private preview, with full facilities for recording the collection, including old musical boxes, barrel organs, a cylinder phonograph, polyfon, a pianola, and a very large Orchestral organ (1879), which was originally played at Blackpool Tower. The instruments were automated from paper-roll programmes, including a full percussion section which just asked to be recorded in stereo! When the collection opens to the public, tape recordings of most items will be played continually, while the instruments themselves will be silent and safe behind glass walls. Members of the Birmingham club were again invited by the Midland Amateur Radio Society to attend their annual North Midlands Mobile Rally at Trentham Gardens. They recorded the radio messages transmitted to and from cars travelling to the rally. These recordings were later played back to the "hams" so that they could compare the quality and strength of their own transmissions.

100 NOT OUT (1)

Rugby ATRS recently celebrated the 100th edition of their magazine, "Tape Life." The first issue of "Tape Life"

was produced by club secretary Mike Brown in August 1958 and took the form of a single quarto news sheet. The 100th edition boasts eight pages plus covers, and is, as always, packed with useful information. Rugby, too, have been taping avidly with New Zealand. A tape from the Palmerston North Club included messages from members talking about their work and interests and plenty of details of how club members make the most of their meeting times. Palmerston tapers come from Camberwell, Birmingham, Crewe and Wellington in this country, as well as Spain, Canada, Germany and USA. A tape from Joyce Lawson, former secretary of the Bournemouth Tape Club, who is now living in New Zealand, revealed that an N.Z. driving licence costs 5s. 0d., as does the driving test, which is conducted by a traffic policeman. Miss Lawson also revealed that road tax costs £5, and petrol is 3s. 5d. a gallon. The grass on the other side of the fence . . . !

100 NOT OUT (2)

Congratulations also to **South Devon TRC**, who have recently celebrated their 100th meeting. To honour the occasion, secretary Gordon Furneaux, assisted by David Pletz and Mr. D. Davies, presented a programme entitled "100 Not Out." In this he recalled, with the aid of a variety of mono and stereo recordings, some of the highlights of the first 100 meetings. The club, formed in October 1960, has met fortnightly since then, mainly during the months from September to June.

Following the club's recent AGM, Gordon Furneaux, of 45 Kenwyn Road, Ellacombe, Torquay, remains secretary.

UP TO THEIR EYES

Members of the **Thornton Heath TRC** are still up to their eyes in outside work. Chairman Ed Bashford has now fixed up his studio for the Mayday Hospital programme very professionally, with special announcer's booth and separate control room which houses all the equipment, including a Brenell, a Vortexion mixer, and a new Garrard deck. Vice-chairman Morris Webb has also been hard at work organising outside events, and as a result the club now has a full programme through to November, covering fetes, fairs, parties, plays and a wedding.

The recent annual London to Brighton Historic Commercial Vehicle Run brought club members out to collect otherwise unobtainable sounds of early fire-engine bells, sirens, klaxons and clattering early buses, which have been added to the club's SFX library.

CLUB FOR RICHMOND

Customers at the Sheen Tape Recorder Centre have recently been approached with a view to forming a club in the **Richmond** area. Mr. Len Francis, of Sheen, has arranged for the distribution of introductory letters to his customers. As the Centre has a very extensive clientele, the club should get off to a good start, and once the initial meeting has been arranged, lecturers and demonstrators will be invited to visit the club. Anybody interested in joining this club should contact Mr. Len Francis at the Sheen Tape Recorder Centre, Station Parade, Sheen Lane, London, SW14.

IPSWICH EXHIBITION

The four main sections (Hi-Fi, Blind Services, Cine and Outdoor Recording) of the **Ipswich and District TRC** each made contributions at the club's exhibition and subsequent meetings. The Hi-fi group's contribution included mono and stereo recordings, presented by Mr. H. Dix, Mr. J. Benfield and Mr. P. Rutterford. Mr. I. Pinch and Mr. M. Green, of the Blind Services group, gave examples of recordings made specially for blind people. Outdoor recordings, made by Mr. D. Lockwood, Mr. E. Bull, Mr. P. Cross, Mr. C. Lockwood and Mr. S. Goy, included interviews, folk-songs, recording of the Ipswich Town Band, and excerpts from "The Pirates of Penzance." Films with tape recordings shown by the Cine group included those made by Mr. R. Cross, Mr. J. Steggall, Mr. D. Lockwood and Mr. E. Bull. The film "Washday Dilemma" recently won them the Nacton Cup for the best cine film at the local photographic society exhibition.

THE STORY THAT NEVER ENDS

This is the title of the documentary being compiled by members of the **Radio Scotland** Tape Section on the club's own activities. This looks back over the events of the club since it first started and will be added to as time goes by, to keep it up to date. Looking back even

further, John Anderson gave a talk and demonstration of "Hi-fi Through the Ages" from 1898 to the present day. Outdoor recordings included a mammoth Sunday session in which members crossed the Clyde on the Renfrew ferry, went to Renfrew Airport to record aircraft sounds, and then continued to another local airport to record radio-controlled model aircraft. Still recording, they crossed the Clyde again by the Erskine ferry and rounded off by recording a motor-cycle scramble meeting.

RECORDINGS OF SPRING

Members of the Brighton Tape Recording Club recently had a very seasonal meeting playing back "recordings of spring" made by various members. Recently other clubs in Sussex were invited to attend a meeting at Brighton, but unfortunately none turned up. In fact, the only answer received was from Miss Dee Harris, former secretary of the now disbanded Eastbourne club, who is now living in Jamaica. However, the club hopes to tapespond with Miss Harris to keep her in touch with the club situation in Sussex.

BATH HOSPITAL PROGRAMME

Bath Sound Recording Society has now combined with the local Toc H and the hospital board to form the Bath Hospital Broadcasts Society. This is now producing two request programmes a week, which are replayed by landline from the club room in Green Park to the Bath Hospitals each Monday and Thursday. In addition, over each holiday period, individual members have recorded their own programmes for Tuesday relays.

TAPES FOR CZECHOSLOVAKIA

In conjunction with the Brooklands Little Theatre Group, members of the Coventry Tape Club have completed three 7" tapes containing English lessons for a school in Bratislava. This was done in response to a request by Dr. Lili Hrozienickova, who is in charge of a new language laboratory and found herself with very little spoken English material. In return, club treasurer Peter Warden has received a tape recorded by Dr. Hronziencikova of Czech folk music.

NIGHT SCHOOL FOR RECORDISTS

A number of members of the Derby Tape Club have been attending classes in tape recording at a local night school, and, as a result, have managed to record a complete play. The whole thing had been edited and dubbed using just two recorders and was presented to other members at a recent meeting.

AROUND THE WORLD

Mr. James Moodie, secretary of the Edinburgh Tape Club, is at present touring the world with Mrs. Moodie. In his absence, Helen Latus, of 16 Valleyfield Street, Edinburgh 5, is acting secretary. However, Mr. Moodie will still be working for the club, collecting recordings in

Australia, Tasmania, New Zealand and Canada. Mr. Moodie also acted as an envoy for Helen Latus, taking a tape to her brother in New South Wales.

WIVES INCLUDED

The list of members of the British Ferrograph Owners' Club is growing fast, and more Round Robin tapes will soon be doing the rounds to include new members. Club badges are being made available to members from club secretary R. D. Littler. To encourage members' wives, a special wives' tape is planned, in which the ladies will have the chance of swopping typically feminine items.

NEW SECRETARY

At a recent AGM, Tony Andrews regretfully announced his resignation from the post of secretary of the Friern Barnet tape recording club. Stephen Robinson, of Flat 3, 11 Woodside Avenue, London, N12, was elected in his place. The club continues to meet twice monthly for lectures and discussions, and also does recording and construction work.

ENCOURAGEMENT

To encourage its members to produce articles for the club magazine, International Tape and Cine Society is awarding a 3" reel of tape for the best light article in the issue. A recent winner was Alec Mollison with his "Portable Editing Bench" contribution. Club members are still preparing their entries for the annual tape competition.

DISASTER ON TAPE

Members of the North London club have been set a very unusual competition theme. The subject is the "Titanic" disaster, and members have been invited to carry out any research necessary to produce a commentary or documentary tape of the sinking of the great liner.

WHERE THE IRK FLOWS

The North Manchester Soundtrackers are now busy producing a documentary entitled "Where the Irk Flows." Built around the course of the local river, the documentary will combine its early history and modern connections. Location recordings and historical research have revealed many interesting items, and it is hoped that the tape will also be used in conjunction with a cine programme.

TOP TEN FOR JULY

- 1 Newcastle
- 2 B-TRAC
- 3 Rugby
- 4 Thornton Heath
- 5 Richmond
- 6 South Devon
- 7 Ipswich
- 8 Radio Scotland
- 9 Brighton
- 10 Bath

THE LEAGUE TABLE

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13	Hinckley	18
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18	Boston	14
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34	Edinburgh	4
34	Epping	4
34	Esperanto	4
34	Gateway	4
34	Hazells	4
34	Kettering	4
34	Leicester	4
34	North Manchester Soundtrackers	4
34	Slade	4
34	Stereo International	4
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34	Thanet	4
34	Ulster	4

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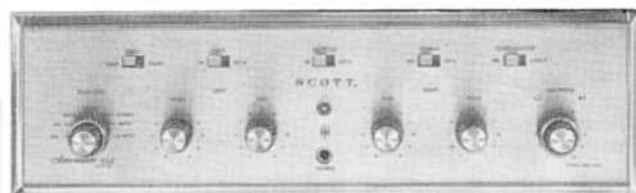


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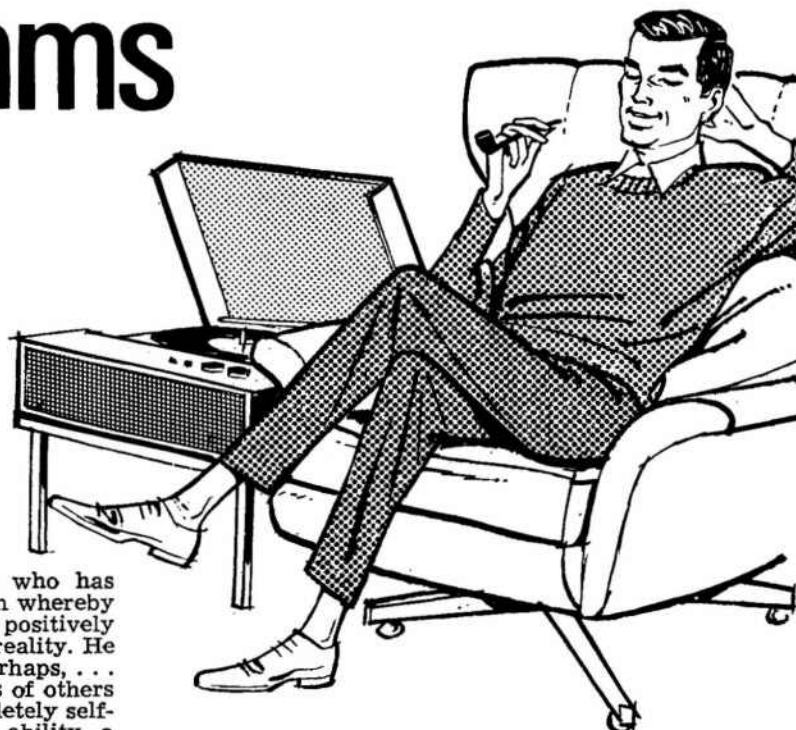
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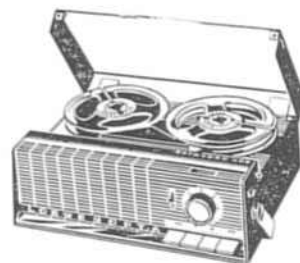
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