

**1961 TAPE  
RECORDING  
CONTEST** (see  
page 17)

# TAPE

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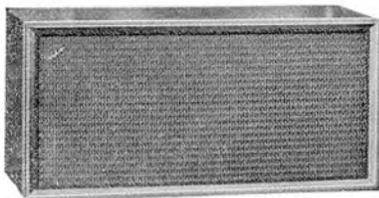
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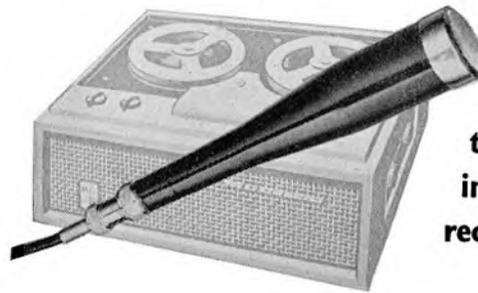
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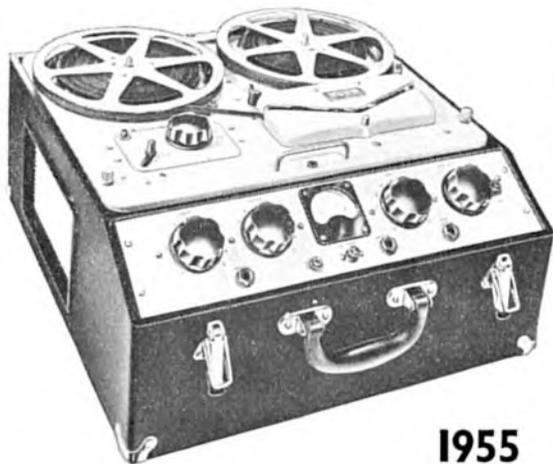
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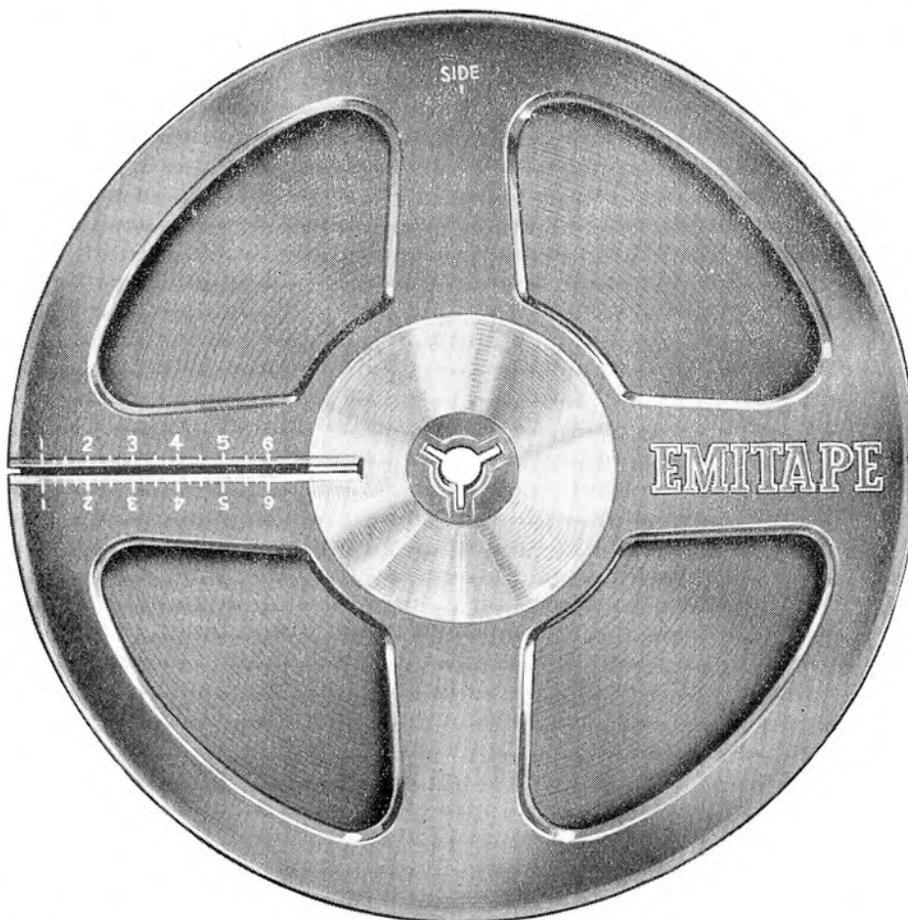
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# TAPE

RECORDING  
FORTNIGHTLY

Vol. 5 No. 1 11th January, 1961

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"Tape Recording" is published fortnightly, on alternate Wednesdays, by Print and Press Services Ltd., from 7, Tudor Street, London, E.C.4.

The Editor is always glad to receive articles, news items, illustrations, etc. intended for publication. When not accepted, material will be returned if a stamped addressed envelope is enclosed, but the Editor cannot accept responsibility for the safety of such material.

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Back numbers, if still in print, are available at 2s. 6d. per copy for issues up to November 1959, and 2s. per copy for later numbers.

**EDITORIAL** Editor, R. D. Brown

Address all communications  
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# We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

**T**HERE is going to be plenty of encouragement this year for the amateur enthusiasts who are prepared to do some creative tape recording. The details of the 1961 British and International Contests appear in this issue. There is nearly six months in which competitors may devise, plan, record and edit their entries.

Britain, during the four years since the Contest was inaugurated, has developed a good reputation and we look to our readers to sustain it this year with some first-class tapes.

A stimulus to this type of recording activity is likely to be given by the new programme on Radio Luxembourg which began last weekend under the title, "Make a Tape." Curry's Ltd., the recorder retailers, are inviting amateurs to send their recorded items on three-inch tapes which will be supplied for the purpose on application.

The entries will be judged professionally and the best of them will be broadcast in the Luxembourg programmes each week. Musical items are expected to make up the majority of the entries (watch copyright!) but nothing is barred.

Readers who enter will find on the tape they receive some useful advice on making a recording from Norman Paul, winner of both the British and International Contests last year.

## Foreign market

**J**APAN is now exporting between 50,000 and 60,000 tape recorders every month, I read. Most of them are going to the United States.

One Japanese model now available uses a magnetic sheet, instead of tape, and each sheet can be written on, as well as carry a three-minute recording, which can be erased in the usual way.

A reader has sent me a cutting from a Russian magazine showing one of the latest Soviet machines; unfortunately, it is not suitable for reproduction, but it looks a solid and handsome enough model—a combined radio and recorder.

I saw a few of them myself some months ago in a department store on the Nevsky Prospekt in Leningrad. My impression, based on a quick examination, was that the Russians haven't much to learn from us or to teach us.

In July we shall have the chance to examine Soviet progress in this field more closely. I hear that a number of recorders will be among the exhibits at the first Soviet Exhibition at Earls Court.

## Speed formula

**T**HE Consumers' Association, which has just completed a survey of tape recorders, has reached the conclusion that about £8,000,000 of business a year is being done in recorders and tape.

The Association also offers this convenient formula for ascertaining how much playing time is available on a given tape:—

$$N \times L$$

$$300 \times S$$

Where N represents the number of tracks, L the length of tape in feet, and S the tape speed.

## My privilege

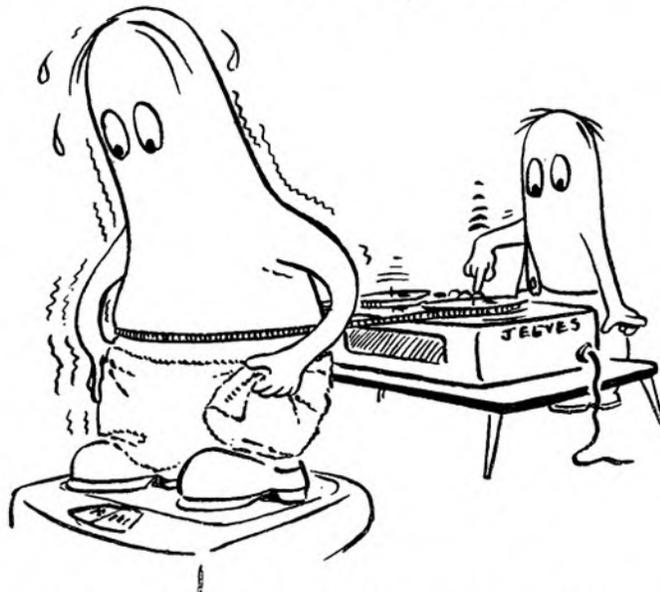
**I** SEEM likely to be spending more time in studios in the future. I had the pleasure of introducing Norman Paul on the Curry tape when it was recorded in commercial studios in London recently.

Now I am looking forward to meeting many other leading figures in the world of recording and hi-fi—old friends and new ones—in the fortnightly BBC Network Three programme, "Sound."

As listeners will have heard, John Kirby, who has regularly compered the programme, has now decided to rest awhile and I have been asked to take over.

I have always felt that "Sound" has a very special part to play in the development of intelligent and vigorous recording activity in this country, and it will be a privilege to be associated with it.

## LAUGH WITH JEEVES



"Wind on, wind back, on, back, on . . . you'll have to speed up your changes, I've only lost an ounce!"

# TAPE IN THE SCHOOLS

GEOFFREY HODSON

"WILL YOU BUY ANY TAPE?"

edits the latest news

— and comments

## Do-it-yourself classroom tape dramas

"Plays for Reading and Recording"  
by T. S. Love and W. D. Cumming.  
(Harrap) 6s.

THIS book is a very useful addition to the literature of drama on tape. Two Belfast schoolmasters have collected eleven plays they have written for reading or recording in the classroom.

The plays can be used as they are now, or—and this is the main point—the authors are making—they can serve as guides to do-it-yourself classroom tape drama.

The eleven plays fall into four subject categories—Legend and Mythology, History, Literature, and Original (a detective and a western). They also illustrate various approaches—narration (either personal or third person), flash-back, non-realistic dialogue, realistic dialogue, serial form, and plays complete in themselves.

Because the plays were written for a boys' school (?), the last play is thrown in as a sop to the girls. Even a play about St. Joan skillfully manages without that famous French peasant girl (and, incidentally, is a good little play).

The introduction to the book is on the short side, but there is sufficient there to start the reader thinking.

Second to the do-it-yourself idea, the authors make the excellent point that sound effects should be used only where necessary. It is a pity that they don't follow their own precept on this point, because the old enemy "foot-steps" appears too often. There is the even more improbable one of "Sounds of coats, etc., being put on."

"Play up" is a new technical term to me in radio drama; one more associated previously with a certain poem.

This book contains a few instructions which more properly are the producer's function, partly because the authors have the dual purpose in mind of writing and production. I shall return to this topic in our February 8th issue when I refer you to two excellent books on radio drama production.

Meanwhile, have a look at *Plays for Reading and Recording*. The plays are examples that Messrs. Love and Cumming have presumably used themselves, and now offer as starting off points for similar work in other classrooms.

(*Autolycus*, "Winter's Tale,"  
*Shakespeare*, IV. iv. 322)

EXCHANGING tapes with other schools at home and abroad is one of the really exciting possibilities of tape recording work in schools. They can widen classroom horizons so that your class can talk freely with children hundreds and thousands of miles away. If film or slides go with the tape, the contact will be even closer.

Such exchanges are worthwhile for both Junior and Secondary children, although examination considerations may affect some of the latter. The benefit is twofold: both in the preparation leading up to the recording of a tape, and the excitement of playing back one received from another school. Incidentally, it is an act of kindness to send a full script with each tape if possible.



MR. GORDON PEMBERTON, a Yorkshire headmaster, recently sent me a batch of recordings he has received from Canada, Australia, and New Zealand. Technically they vary in quality from the Canadian tape which was made in the local professional radio studio, to the more familiar classroom recordings from the Antipodes. But they must have all created tremendous interest when they were played back to the Yorkshire children.

Listening to these and other overseas tapes recently I am reminded yet again of the importance of the time factor with school recordings. We hope tape programmes will entertain, but we are also using them as educational aids and demand nearly 100 per cent concentration from the children.

As teachers we recognise a maxi-

mum span of attention for any given activity, and just listening with little or no visual stimulus is most tiring. This is the problem professional broadcasters have always had to face with their school broadcasts. A United Nations report published in 1949 showed that many had found twenty minutes to be the maximum useful time for a programme directed to the classroom.

With non-professional material and equipment at our disposal it is important that we check this point carefully. Group listening is not easy, especially with so many distractions going on all around as in school. A part answer is that we can always stop the tape when we like, and replay certain portions. But I feel this is only a partial answer because one of the positive values of tape in the classroom is that it can improve concentration.

Another factor requiring attention when preparing an exchange tape is to have plenty of variety in presentation. One of the New Zealand tapes Mr. Pemberton sent me contained fifteen short talks averaging about a minute each. The research work and writing involved was obviously considerable, and with careful follow-up in the Yorkshire classroom there would be equal benefit there, too. But need there have been fifteen short talks? Could not some of the same information have been got over in short dramatisations or interviews (real or mock) or as discussions or as eyewitness accounts?

I suggest that you have a look at Chapter 3 of Richard Palmer's book "School Broadcasting in Britain". The whole book gives a most useful insight into the thinking and planning behind school broadcasts, and this particular chapter lists the varieties of presentation techniques they use.

## WHO SHOULD PAY?

A columnist in *The Bucks Herald* recently got hot under the collar because the Aylesbury Divisional Education Executive decided to pay the whole cost of a tape recorder for a school. He agreed with the principle that a school willing to pay a proportion from school funds would be helped by the Executive.

Now it is a nice point of education policy about whether the Local Education Authority should pay for such items as tape recorders entirely from their own pockets or whether they should ask schools to pay a proportion. It is interesting, for instance, that Surrey and Middlesex have come to opposite conclusions.

But the pith of the Bucks writer's comment was "I have heard no educational evidence of the necessity of tape recorders." Now what about that?

The Editor of *Tape Recording Fortnightly* would be interested to have your views on this subject to pass on to the Bucks Authority. Furthermore, as an extra reel of tape is always useful in school, he will give a 5 inch reel of tape to the best letter received at this office by February 28.

# FADING AND MIXING

**THE FADE:** *This is one of the simplest operations that the professional or the amateur recordist has to perform. And, as much as anything else, it is the way that fades and mixes are carried out (and more particularly the way they are timed) that distinguishes the polished, finished recording from the one which sounds amateur—in the worst sense of that word.*

*In a series of three articles, I shall be describing some of the techniques used by BBC studio managers when handling fades and such simple mixes as the addition of pre-recorded effects or music to programmes.*

*Sometimes linking music can be cut in by editing the tape, but even so some tailoring of the insert will generally be necessary. More often, however, a simple mixer—with just two faders—is the minimum requirement (unless superimposition is used; but this is a method that I shall not be dealing with—it has no place in professional work).*

*The techniques involved in mixing will be dealt with in future issues; this first article is concerned with a description of some of the many types of fade you might find in a radio play or feature.*

**W**HEN we talk about the fade, the first thing that springs to mind is the use to which it is put in dramatic productions: the convention is that each scene starts with a fade in, and ends with a fade out. Narration, on the other hand is cut off almost square—so that there need never be any difficulty in distinguishing between story and storyteller.

The type and rate of fade, and the length of pause, each have their own information to give to the listener, so you must decide just what it is that you are trying to convey. The means at your disposal are much more slender than those available in film, which can employ cuts, fades, dissolves and wipes, besides all the elements of camera technique: pans, tracking shots, and so on. A lot has to be said in sound radio by slight variations on the techniques of fading.

When a situation calls for a scene

change the simplest form that this can take is a slow fade away to inaudibility over about ten seconds, a pause of three or four seconds, and an equally slow fade in. Such a fade implies a complete discontinuity of time and action.

Faster versions of this simple fade will imply shorter lapses of time or smaller changes of location. For instance, the "Maybe its down in the cellar, let's go and see if it's there . . . well, here you are, have a look round" type of fade can consist of a very quick out and in, just enough to establish that a slight time lapse has taken place and not just a move off mic and on again.

Moving off and on, perhaps helped by small fades, is used for still smaller changes of location—say from one room to the next. It is convenient to assume that, in general, a microphone is static within the field of action (although this itself may be a moving object, such as a

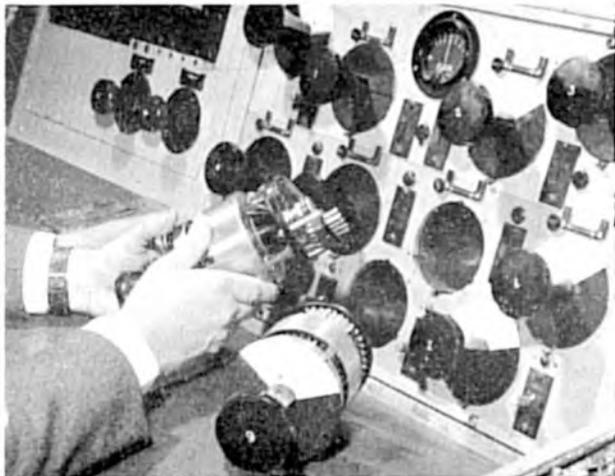
car). Any departure from this convention must be clearly signposted with dialogue or effects, otherwise the listener will be confused. Even in a simple case such as, say, a scene that starts near a waiting car which then moves off, will often create a moment of confusion during which it is not clear whether the microphone is with the car or not.

To a limited extent, moves on and off microphone are interchangeable with fades. In tests carried out in the U.S.A., it was shown that listeners found a fade gave just as adequate a subjective impression of a move off as an actual move (in which the level was held constant).

However, taking this the other way round: if a move is used to represent a fade, I think the change in acoustic perspective will usually be clear enough to give the game away—or at least, make the effect sound rather odd. In the studio, a self-fade by the actor (i.e. a move) is seldom used for this purpose, and can hardly be expected to work except in acoustically dead conditions—although the amateur who is on his own, may be compelled to try this expedient. Just occasionally in the studio a fade may be combined with increasing artificial echo to suggest a move off in reverberant surroundings.

But there is one case where, whenever possible, a fade is definitely preferable to moving off; and this is when outdoor scenes are being recreated in the studio. Open air scenes are—or should be—characterised by lack of reverberant sound, and when played indoors in a confined "dead" area, moves off microphone will inevitably show up the limitations of the acoustic treatment, and possibly pick up some reverberation from the open studio. A fade, on the other hand, may result in temporary loss of "atmosphere", so it may be necessary to cover this with some light background atmosphere mixed in from grams . . .

All this could get an inexperienced amateur into very deep water; and for outdoor scenes he would be advised, I



(B.B.C. Photographs)

**Standard equipment in BBC Studios for most of the post-war period, these BBC designed type "A", bridged-H faders are interchangeable in the control desk**

*We regret the captions to the upper two photographs of Mr. Nisbett's last article (November 30) were inadvertently transposed*

# ALEC NISBETT RESUMES HIS SERIES OF ARTICLES COMPARING AMATEUR AND PROFESSIONAL TAPE RECORDING TECHNIQUES

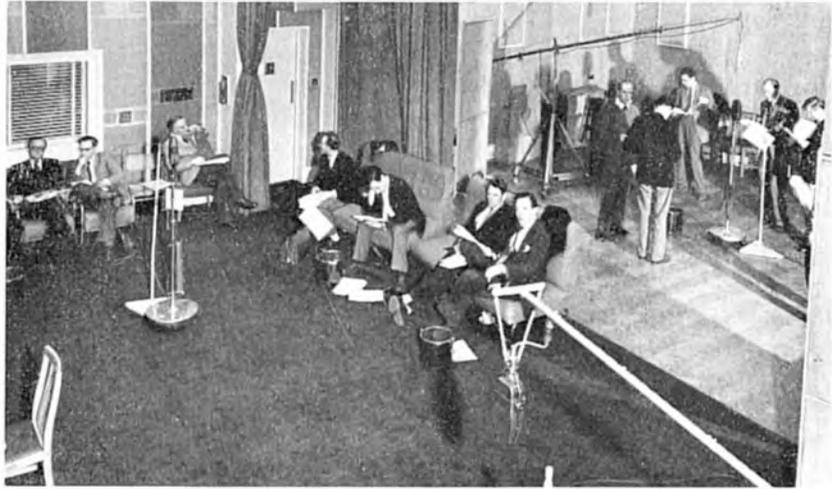
think, to try actually taking his microphone outside if he considers this element of location is sufficiently important—and if there isn't too much risk of the Battle of Bosworth Field sounding like the Battle of London Airport.

Another sort of difficulty arises if a scene starts off with some such instructions as "Enter Wilberforce"; and here the trouble is that it is not really possible to establish a location, and the entry of the first-speaking character into it, clearly in just a few seconds. In order to make it quite clear what is going on, it would be necessary to fade in on effects of other people talking, and then "Enter Wilberforce".

As a more likely alternative, just forget the instruction and rely on the text, acoustic and effects to establish the situation for you. In any case, if you combine a microphone-fade with a self-fade by the actor the result will be a "double fade" and Wilberforce will sound as if he is entering by catapult.

It is better, in fact, to go to the other extreme with fades, exits and entrances, and be very deliberate about them. And remember there is not much use in fading during a pause. This may seem obvious, but in practice it's a point that is often ignored. So, if Wilberforce has two lines to speak during his approach, you should do most of the fade in, or get him to make most of his move in to the microphone, while he is doing the talking and not during the intervening line. And the same is true of any fade-in: I usually break up a fade, holding it up momentarily if there is a pause in the speech. It may be necessary to reset, jumping up or down a few dBs between lines from different speakers, if the overall effect of the fade is to be smooth.

An interesting example of a complex fade had to be devised when the new *Ten o'clock* series went on the air. Initially it was decided to broadcast the chimes and only one stroke of Big Ben fading out completely before the



Studio 6A in Broadcasting House: a play is in rehearsal. "Live" and "dead" ends of the studio provide contrasting acoustics. Further variations can be achieved with absorbent and reflecting screens, and by using artificial echo

announcement—practically an impossible fade if the result is to be tidy. The only way of doing this was as follows: The fade begins slowly, just a few dBs off the last phrase of the chimes, and stops as we wait for the first stroke. On the stroke the fade is resumed, and is taken a little faster. Then, after three-and-a-half seconds the rest of the sound must be chopped off (to avoid the next stroke) and the announcer cued to speak. Result: a four-stage fade.

However, we were always conscious that even this fade was barely satisfactory and have now abandoned this in favour of a longer fade taking three strokes with parts of the opening announcement between them—still quite tricky from the point of view of the levels.

"Door opens": this is another instruction which may head a scene. If such an effect is to be clear, it will have to be recorded at getting on for normal level, and the fader will then have to be taken back a little to the fade-in proper. But, in general, a short spot-effect of this sort is not really to be recommended for the start of a scene.

How deep should a fade be? Obviously, if a scene has a good curtain line it must not be faded very much; or if the first line of a new scene contains important information

to be established, a quickish fade-in will be necessary. In either of these two cases we have to ensure that the other fade of the pair is of the conventional slow-fade type, otherwise the impression of a scene change will be completely lost—the result could easily sound like a pause in the conversation.

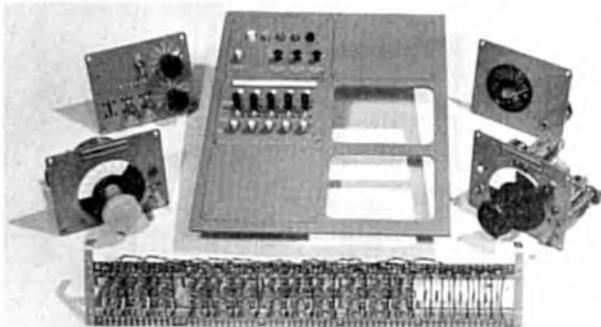
But apart from such special cases, most fades fall into one of two main groups, or programme types.

First, there are the full scale dramatic productions. These tend to have long, deep fades, taken almost to inaudibility before being cut off. The second group consists of feature programmes cast in the form of narration and actuality recordings (or narration and dramatic scenes presented in a documentary style); and in these, fades of 6, 10 or 20 dBs are common, as against the slow fades of perhaps 30 to 50 dBs which are to be found in plays.

Schools broadcasts, whether dramatic or documentary in style, generally have relatively light fades. Here part of the cause lies in listening conditions in the classroom; the radio set may not be of high quality, and the room itself may be boomy. The producers of these programmes make a point of listening under the same conditions as school audiences from time to time—and as a result tend to prefer a high intelligibility type of construction, with low dynamic range and background effects held well down so that they do not interfere with speech too much.

In amateur work listening conditions may be somewhat similar to this: sometimes only a narrow range is available between noise and distortion levels of the recorder, or a small internal speaker may be the only one available for playback.

And if this is the case, a form of presentation that uses fairly shallow fades will be necessary.



In 1953 a new, and smaller type of fader was introduced by the BBC Designs Department. It had been found unnecessary to carry fully balanced circuits throughout the studio chain. Circuitry was therefore simplified within the mixer, the fader itself being reduced to a bridged-T type. Faders, PPM, and other controls were designed for unit construction, so that whatever the requirements of the studio they could be met relatively easily

# OUT-OF-DOORS WITH A PORTABLE

A monthly feature of News and Views



The advantage of taking a portable tape recorder on holiday is once again proved by a British tourist who brought back some interesting recordings—and pictures—from a holiday trip to Tangier. He reported some excellent on-the-spot recordings of local "talent," often made without the knowledge of those taking part. Our photograph shows Arab musicians with a Grundig Cub.

## REMOTE CONTROLLED MILKMAN

My pal is a local milkman and had never had a real holiday with the family for some years. When I suggested to him in fun that he could use my transistorised tape recorder to train a deputy, he took me seriously.

After some thought, he claimed that it would take too long to teach someone else to do the job as efficiently as he insisted on doing it himself, and so he decided to carry the recorder on his rounds. He made four delivery runs before being satisfied that the tape was correct.

When the deputy took over a week later, I ensured that he knew how to operate the recorder, and the milkman went off on his holidays.

I still have the tape in my library and an extract would sound something like "... and turn left into George Street. Pull up outside the third house on the left-hand side, ... this is No. 5, leave two bottles, and one pint in the can. Now cross straight over the road ... Miss two houses going up the street, and into No. 14.

Watch out here, sometimes they forget to put the dog on the chain. If he comes out barking, call him "Spot" and don't worry about going in. But when you are leaving, shine your torch in his eyes and do *not* run ... " ... is 237. There's always a flask of coffee when it's cold. It's in the bread-box, on the right on the verandah, so check, but don't drop the bread-box lid. Leave two loose and one bottle, except on Saturday and Sunday then three loose and one bottle ... miss three houses to 245, and this lady pays bi-weekly. The money and the bill goes into the plant-pot on the verandah, leave four. ... "

And so it goes on. There are about 80 minutes of instructions, on both tracks, and these took the deputy some 4½ hours to complete the run, as against the owner's four hours.

John F. Wallen,  
A.T.R.A. Secretary,  
Adelaide, Australia.

## TAPE RECORDING HANDBOOKS

These pocket-sized guides to tape recording should find their way into the hands of every tape enthusiast. Definitely a **MUST** for the newcomer



### ADVICE ON BUYING A TAPE RECORDER

J. F. Ling  
2/- (2/6 inc. postage)

### INTRODUCTION TO THE TAPE RECORDER

Charles Langton  
3/6 (post free)

### HI-FI FOR THE MUSIC LOVER

Edward Greenfield  
3/- (post free)

### TAPE AND CINE

John Aldred  
3/- (post free)

### HOW TO RECORD WEDDINGS

Paul Addinsell  
3/- (post free)

Available from "Tape Recording Fortnightly", 7 Tudor Street, London, E.C.4

*Sm Wheatley's*

NOTEBOOK

**W**HEN I retired last August, my friends and colleagues at the BBC presented me with a complete Fi-Cord equipment. The BBC itself now has nearly 40 of these machines in use or on order, and before its decision to buy them I made a thorough test with a machine borrowed from the manufacturers.

The Fi-Cord has been the subject of a test report in "Tape Recording Fortnightly" and I will not cover the same ground. The following thoughts which arise from my experience in using it, may be of interest.

## SUGGESTIONS FOR THE MICROPHONE

*IT is possible to provide yourself with a good, relatively cheap, small and inconspicuous, alternative microphone to that provided with the machine. There is more risk of damage or loss in the sort of field-work one does with a battery portable, and it is best to have a spare microphone.*

*My friends in the BBC Research Department had given me a Ronette crystal microphone insert without any mounting. The crystal insert is listed as a Ronette MC 65 and it is handled in this country by Trianon Electric Limited.*

*This I fixed in a rubber handlebar grip. The diameter was just right and the elasticity of the rubber gripped the crystal case firmly.*

*The high impedance of the crystal has to be reduced by means of a transformer to suit the input of the Fi-Cord, which required about 800 ohms for best results.*

*Ardente, the deaf-aid people, make*

*such a transformer, known as the D3021, and it can be obtained from them or from Fi-Cord direct.*

*Both these items are quite inexpensive, but the transformer is in skeleton form and should have its fine wires anchored to soldering tags mounted on a small piece of insulating material.*

*The transformer can be fitted in the rubber grip, secured with sorbo-sponge packing. The microphone cable, which should not be heavy stuff, can emerge through the hole in the bottom end of the grip.*

*Do not try to use more than 5 ft. of lead for ordinary interview work, or it will get in the way. Should you later require to have the microphone a long way off, it will be best to make up a connecting lead. Remember there is a limit and that you have not got a full mobile recording outfit in the cigar box.*

## FIELD TESTING THE FI-CORD

**I** TESTED the Fi-Cord near BBC transmitters for we have had occasional trouble with other battery recorders when used quite close to mobile transmitters, such as taxis and fire-control vehicles.

I recall one occasion when an irate reporter rang me to say he had an "unwashed" tape and it had spoiled his interview with an LCC official. There was music on it all the time, he complained. I found he was on the Crystal Palace site doing the interview and he had been recording the television transmission trade-test signal. A valve recorder can act as a rather

inefficient receiver if it is near enough, and the signal thus detected goes right through to the tape.

For my test we drove right up to the gates of two transmitters in turn, where I checked with my engineering colleagues on duty that they were on the air. Then I recorded a piece, literally on their doorstep. The test was very conclusive; not a whisper of the radiation from these stations could be heard on the tape.



S. M. WHEATLEY, seen above with his wife in their Hampshire garden, has been described as "The King of the Midgets", as a result of his work within the BBC battery recorder division. His "Notebook" appearing for this first time in this issue, will be a regular feature in future

Watch that gain control!

**I** TOOK the Fi-Cord to a garden party to see how well the little microphone picked up the speeches. I did not want to be "up in the front" for this test. I put the microphone in my breast pocket and edged my way in front of one of the column speakers at the side. BBC engineers had rigged the P.A. system for this occasion and some very nice quality was coming out of the speakers.

In fact the recordings made by the Fi-Cord were very good, despite the fact that they were second-hand from the speakers. If I had been "up in the front" I should have got good volume from the official who had made the opening speech, but the gracious lady who was to declare the fête open had much less voice. It would have been much weaker on the recording. I could have turned up the gain of the recorder but this, in turn, would have built up the traffic noise in adjacent streets. Worse still, the shuffling and asides of nearby people would have increased too.

As it was, the engineers turned up their gain control when they observed a decrease in volume, and after the first few words from Lady Janet, her voice was increased, so far as the loudspeakers and my Fi-Cord were concerned. This is another of those things to watch out for when recording at public functions and you are just one of the crowd. A great deal depends on the P.A. quality.

## HIGH FIDELITY CAN BE FUN

**A to Z in Audio**, by Gilbert A. Briggs, with R. E. Cooke as Technical Editor, Wharfedale Wireless Works Ltd., 15s. 6d.

MR. BRIGGS has had a brilliant idea, and he has executed it with the skill and wit one might have anticipated. He declares that this is not intended to be a dictionary nor a complete reference book, but it has something of both about it.

In 224 pages, with 160 illustrations, Mr. Briggs and his collaborator explain straightforwardly about 400 audio terms or techniques. The need for the book is indicated by the author's discovery that about 80 per cent of the terms used in the world of audio are not to be found in the standard dictionaries.

Most of them are here. If you are still puzzled by such words as decibel, farad, dyne, sone, hysteresis and gauss, treat yourself to a dose of Gilbert Briggs!

If you want a brief exposition of the principles of stereo, of pick-up design, of microphones or of room acoustics, you will find it in this book.

Naturally, there is an interesting essay on column speakers. Mr. Briggs tells you just how to assemble 2½ cwt of concrete builders' bricks in your sitting

room in order to get good listening results.

There is a full account, too, of his experiences in organising the series of live versus recorded sound recitals which have become associated with his name over the past seven years. He reveals that he has lost quite a lot of money in staging them.

There is an element of journalism in the book as the author reports and analyses sales trends in recent years with different types of equipment.

There is an element of mature judgment, as when Mr. Briggs declares it would be the "height of folly" to try to introduce domestic three-channel stereo.

And there is, blessedly, an element of humour too. We are told, for example, that "pink noise" is derived from white noise by applying a rising bass characteristic through the range, with the comment: "When used for comparing speakers, it has a much warmer tone than white noise, just as a pink gin has a warmer taste than plain white gin."

Incidentally, Mr. Briggs draws attention to the changes in fashion in tape recorder speed and points out that 112 of 120 machines he has listed include the most popular speed of 3½ ips. There are 76 with 7½ ips and 41 with 1½ ips. Only 19 recorders now provide 15 ips.

## Building a recorder at home

**High Fidelity Tape Recorder for the Home Constructor.**

Clive Sinclair, Bernards, 2s. 6d.

THIS booklet gives full constructional details of a home assembled tape recorder, and is worth reading by all who are contemplating such activity. In 24 pages the author gives photographs, diagrams and clear point to point instructions and it is felt that the average enthusiast could easily tackle the job successfully.

The recorder is based on the B.S.R. "Monardeck," and in order to simplify construction the amplifier is supplied complete on a printed circuit board tested and ready for use. This removes one of the big headaches for the beginner.

The complete kit contains five main units, in addition to the Monardeck, and may be purchased with or without the carrying case. This will enable the constructor to build the instrument into any cabinet he may desire, the total cost, less cabinet, being below £20.

There is no reason why satisfactory results should not be obtained, for the design of the recorder follows accepted standards of practice.

The machine has a single speed of 3½ ips, half-track working and takes up to 5½-in. reels. The frequency response is claimed to be 30-10,000 cps ±3dB. A simple joystick type function switch is used on this deck.

The amplifier is a variation of a successful Mullard design, and is compensated for the recording characteristic at the speed employed. A variable top cut control is included. Overloading of the

recording amplifier can be avoided by making use of the magic eye modulation indicator. Facilities for superimposing a recording are provided.

In addition to those readers about to enter the field of tape recording by constructing their own instrument, this book offers an opportunity to those already in possession of a recorder to add a second machine at low cost.

## HI-FI GUIDE: Microphone to Ear

**From Microphone to Ear**, by G. Slot (Philips' Technical Library), Cleaver-Hume Press, 21s.

THOUGH only about one-eighth of this book deals specifically with tape recording—it was the subject of an earlier, and very comprehensive, volume in the same series—no keen recording and hi-fi enthusiast should fail to read it.

It is an outstandingly competent review of the wider field of sound recording and reproduction technique, sufficiently technical to secure the approval of the expert, sufficiently readable to guide the behaviour of the beginner.

The entire chain of equipment from the disc-cutter to the loudspeaker is fully examined and performance characteristics are fully described and discussed. The very latest advances are taken into account.

There are sections on disc cutting and pressing, on the function, types and characteristics of pick-ups, on the care of

## IDEAS FOR YOUR BOOK TOKENS

Educate and instruct yourself with some of the publications reviewed below.

## A bargain book on stereo

**The Stereo Sound Book** by Frederick Purves. The Focal Press, 12s. 6d.

THIS comprehensive book covers all the aspects of stereophony that the layman is likely to encounter, and possesses the further advantage of being easy to refer to, by way of the well-documented index and sensible lay-out.

Two chapters are devoted to stereo on tape, and, in keeping with the rest of the book, these pages are instructively illustrated with the characteristically drawn "no-nonsense" line blocks. Advice is given on making stereo recordings including tips on how to deal with the various types of material which can be enhanced by twin-channel tapes.

One of the most pleasing features of the book, is the obvious intention to simplify the complications of circuitry and interconnection of units for the newcomer. In this respect the illustrations are very helpfully produced and leave the reader in no doubt as to "what goes where."

At 12s. 6d. the book is a bargain and is to be warmly recommended.

needles and discs, on record-players, on amplifiers and on speakers.

There is also a masterly survey of the stereo situation.

Mr. Slot offers a carefully balanced assessment of tape v. disc. He refuses to take sides, but he marshals the arguments more clearly than is usually the case when these long-term prospects are debated.

He reaches the conclusion that "music tapes will supplement, rather than supersede, gramophone records," but immediately qualifies it by pointing to the possibilities of thinner tapes and wider use of four-track recorders.

He thinks the industry will have to experiment further before there is general agreement that a satisfactory form of magazine loading can replace orthodox spools.

Every amateur enthusiast will echo this view, which he puts: "A condition for success is that one particular construction is accepted by the entire industry, in order that magazines of all manufacturers will fit tape recorders of all manufacturers, just like any record can be played on any record changer."

# BRITISH AMATEUR TAPE RECORDING CONTEST 1961



1



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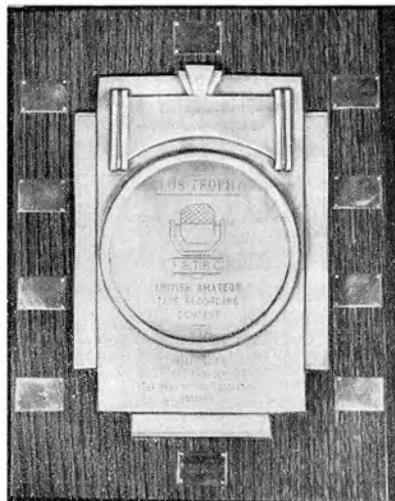
## PRIZES

include cups, plaques, medals and cash

**T**HE best entry in any class will be selected as "The Tape of the Year." It will be awarded the *Emi-tape Challenge Cup* (1 above) to be held for one year, with a replica to be kept permanently.

The best Schools tape will win the *Grundig Challenge Cup* (2 above), with the Grundig Shield for permanent possession.

The best Club tape will win the *Amphlett Club Trophy* (4 below), awarded by the Federation of British Tape Recording Clubs.



4

There are a number of other special awards:

The *WyndSOR Gold Medal* (5 below) goes to the competitor who submits the best technical production.

The *Acos Cup* (3 above) is awarded to the best entry in either the music/speech or compositions classes.

The *Irish Trophy* (of which photograph and details will be published shortly) is a new award this year and will go to the best entry in the documentaries and "reportage" section.

In addition to these awards, *Tape Recording Fortnightly* offers a prize of ten guineas to the best entry in each of the seven classes.

Messrs. E.M.I. Sales & Service will be hosts to all the winners at a special Emi-tape luncheon at the Savoy Hotel, London.

Grundig (Great Britain) Ltd. will organise a special social gathering for the pupils who help to produce the best schools tape.



5

**T**HE 1961 British Amateur Tape Recording Contest—fifth in the series—will follow the same lines as in previous years, with five different sections for individual entries, one for schools and one for clubs.

The list of prizes has grown—details are printed below.

The best entries in the British Contest will again be forwarded, automatically, to the International Recording Contest on the Continent, where they will compete for further valuable prizes.

In 1959 and 1960 British tapes have won the Grand Prix in the international event.

Preparations are being made for a record entry in the British Contest this year. Tens of thousands more recorders have been sold since the last contest.

Many more schools are now using recording techniques to aid teaching and they are urged to include the preparation of a school tape in their curriculum now.

Clubs should also begin to plan without delay.

The closing date will be June 30, 1961. There is no entry fee, but all competitors must complete the entry forms printed on page 19. Further copies can be supplied on request.

## CATEGORIES

The Contest will be divided into seven classes:—

1. **Compositions** — Radio plays, dramas, sketches, etc., not exceeding 15 minutes.

2. **Documentaries and "reportage"** —not exceeding ten minutes.

3. **Music or Speech**—not exceeding 4 minutes.

4. **Actuality**—unusual voices, historic moments, etc., not exceeding four minutes.

5. **Technical experiment**—not exceeding four minutes.

6. **Club section**—feature tapes of any character on any subject, not exceeding 15 minutes.

7. **Schools section**—see details on the right.

There will be prizes for the best entries in each category.

Prizes will be presented, and a selection from the best tapes played, at a special function which will be organised in London at the time of the 1961 Radio Show.

The Contest will again be organised with the support of all the most important tape recording interests in Britain. The Federation of British Tape Recording Clubs will be closely associated with the event.

It is hoped that the winning tapes will again be broadcast by the BBC, as they were last year.

A number of leading firms are co-operating closely.

## RULES OF THE 5TH BRITISH AMATEUR TAPE RECORDING CONTEST

1. Only bona fide amateur recordists may enter and the production of tapes submitted must be entirely the work of the person submitting, both as regards recording and editing.

2. If recordings are of singers, players, actors, etc., the quality of their performance in these roles will not affect judgment of tapes.

3. No tapes submitted may contain anything taken from radio transmissions or commercial recordings, nor any matter of which copyright is held by another person, and an undertaking to this effect must be signed by the entrant.

4. Only individuals may submit tapes in Groups 1 to 5 (Compositions, Documentaries, Music, Actuality, Technical Experiment); group efforts are excluded. Groups are catered for by the Clubs section for a fifteen-minute feature tape. There is also a special section for School entries only.

5. Only one tape in each category may be submitted by a single individual. (Duration: Compositions, 15 mins.; Documentaries, 10 mins.; Music or Speech, 4 mins.; Actuality Recordings, 4 mins.; Technical Experiment, 4 mins.)

6. Tapes must not include any matter other than that which forms the entry. The programme must commence at the beginning of the tape and only one track may be used (when judging, there will be no reversal of spools to hear second tracks). Tape should be prepared between white or coloured "leader" tapes.

7. Recordings may have been edited in any way desired, but entry forms must give details of all equipment used.

8. Recordings must be made at either 7½ ips or 3½ ips. No other speeds can be accepted. Stereo recordings may be entered, but they must be of the "stacked-head" type.

9. All tapes will be returned to competitors, provided adequate return postage is sent with entries. But *Tape Recording Fortnightly* will retain copies of the winning tape and the six runners-up tapes. Copyright of these will be the property of their owners, but *Tape Recording Fortnightly* reserves the right to arrange for the publication of the whole, or parts, of any or all of them, by radio, disc or tape, or by any other means. In such event, half of all payments received will be retained by the sponsors of the contest and the other half divided between competitors proportionately to the use of their tapes.

10. The decision of the judges will be final and no appeal may be made, nor correspondence entered into.

11. The closing date for receipt of tapes will be Friday, June 30th, 1961. No entries received after that date can be considered in any circumstances. The winner and the six runners-up will be notified by telegram.

12. Every tape entered must be adequately packed and properly stamped and must be addressed "Contest," *Tape Recording Fortnightly*, 7, Tudor Street, London, E.C.4. An entry form, fully completed, and return postage, must be included with the tape. Name and address should also be written on a small label firmly affixed to the tape spool and to the containers.

## RULES OF THE 10TH INTERNATIONAL AMATEUR RECORDING CONTEST

ART. 1.—The Tenth International Contest for the Best Amateur Sound Recording is organised to fit into the framework of the International Sound Hunters Federation and of the broadcast programmes reserved for such recordings (i.e., in most continental countries, but not in the U.K.) and is patronised by the following organisations:—

*Austria*.—Oesterreichischer Tonjaeger Verband.

*Belgium*.—Institut National Belge de Radiodiffusion. (French and Flemish Transmissions). "Chasseurs de Sons."—Federation Belge des Amateurs de L'Enregistrement Sonore.

*Denmark*.—Dansk Magnetone Klub.

*Great Britain*.—British Amateur Tape Recording Contest, 7, Tudor Street, London, E.C.4.

*France*.—Radiodiffusion-Television Francaise.

Ministere de L'Education Nationale (Haut-Commissariat la Jeunesse et aux Sports).

Federation Nationale des Industries Electroniques et Syndicat des Industries Electroniques de Reproduction et d'Enregistrement.

*Holland*.—Nederlandse Vereniging van Geluidsjaegers.

*Sweden*.—Svenska Magnetofon Klubben.

*South Africa*.—T.A.C. Tonband Amateur Club.

*Switzerland*.—Societe Suisse de Radiodiffusion.

Radio Lausanne.

Radio Berne.

Association Suisse des Chasseurs de Sons.

International Centre of School Correspondence (France).

ART. 2.—The Tenth I.A.R.C. takes place on the Continent, at a venue to be arranged, in October, 1961.

ART. 3.—The I.A.R.C. is a contest between amateur recordists and not between the singers, players, actors, etc., whose performance they may have recorded.

ART. 4.—Each competitor is free to choose his own subjects. He can take part in the contest in one or more of the five categories as indicated in article seven or even in the five of them simultaneously, but he cannot enter more than one monophonic or stereophonic recording in each category. The recordings may be edited and can have already been broadcast. They can have been used in commercial records provided that the author still has the entire copyright and provided he sends the original recordings, which he himself made, for the contest. Apart from commercial records made from such originals, the only recordings which are excluded are those which have been submitted to, or awarded a prize in a previous I.A.R.C.

ART. 5.—Copies of commercial recordings and of broadcast programmes even when recorded at home, cannot be submitted.

ART. 6.—Only one recording may be submitted to the I.A.R.C. on each disc or tape, and if on tape it must commence at the beginning of the reel. With multi-track magnetic tape recordings, one track only is to be used. The other tracks must be erased or left blank. Tape must be prepared between two white or coloured editing tapes.

ART. 7.—The competitor may indicate the category in which he wishes his entry/entries to be entered, but the jury is at liberty to allocate the recordings to other categories or even to create new categories with appropriate prizes.

*Categories*.—

(a) Compositions (Radio plays, drama, sketches, etc.)—Maximum duration 15 minutes.

(b) Documentaries and "Reportage."—Maximum duration 10 minutes.

(c) Music or Speech (Solo singer or player, orchestras, choruses, poems, imitations, monologues, etc.)—Maximum duration 4 minutes.

(d) Actuality recordings (Unusual voices, Historic moments.)—Maximum duration 4 minutes.

(e) Technical performance—4 minutes.

In addition, a scholastic category has been included for schools or colleges using sound recording in their classes. The inter-school prize will be given for the best recording in this category. For the 1961 contest it may be on any subject and may have a maximum duration of 15 minutes.

ART. 8.—Recordings must be addressed to **The Tenth International Contest for the Best Amateur Recording** at one of the following addresses, and must be received before 14th September, 1961.

*Austria*.—Oesterreichischer Tonjaeger Verband, Anastasius-Grungasse 25, Vienna 18.

*Belgium*.—Chasseurs de Sons, Maison des Arts, 147 Chaussee de Haecht, Brussels 111.

*Denmark*.—Dansk Magnetone Klub, Vesterbrogade 19, Copenhagen V.

*Great Britain*.—British Amateur Tape Recording Contest, 7, Tudor Street, London, E.C.4.

*France*.—Radiodiffusion-Television Francaise, 107, rue de Grenelle, Paris.

*Holland*.—Nederlandse Vereniging van Geluidsjaegers, Slotlaan, 154, Zeist.

*Switzerland*.—Association Suisse des Chasseurs de Sons, Case 1251, Berne-Transit.

ART. 9.—Each recording must be accompanied by an envelope containing a form similar to that attached herewith. **If this is not done, the entry will not be accepted.** For one recording this actual form may be used and similar forms written out for any others. **The script must also accompany all speech recordings and any others made with a script.** Competitors are invited to send photographs of themselves for publicity use in connection with the I.A.R.C.

ART. 10.—In each country taking part in the 1961 I.A.R.C. the National Jury will make a selection of a maximum of five of the best recordings (monophonic or stereophonic) in the category or categories it chooses, plus one recording (mono. or stereo.) in the schools category. Recordings from competitors of countries not taking part are grouped in one class from which the I.A.R.C. Committee will likewise select a maximum of five recordings.

For every speech recording, of whatever nature selected, the National Jury (and for entries from non-participant countries the I.A.R.C. Committee) must make a written translation in the language or languages of the other members of the International Jury. Any stereo tapes submitted will be judged separately and not with the other categories. Stereo tapes recorded on "staggered-head" machines will not be accepted.

ART. 11.—The International Jury, which consists of a maximum of four delegates from each National Jury, will only have to judge the recordings selected by the National Juries.

ART. 12.—The International Jury will choose its Chairman and make its own internal regulations at its first meeting.

The technical standard reached by the competitors in the fullest meaning of the term will have the jury's first consideration.

ART. 13.—Prizes:—

Grand Prize of the I.A.R.C., 1961 (Monophonic).

Grand Prize of the I.A.R.C. (Stereophonic).

### MONOPHONIC

First Prize for Category "A"—Compositions.

First Prize for Category "B"—Documentaries and "Reportage."

First Prize for Category "C"—Music or Speech.

First Prize for Category "D"—Actuality Recordings, etc.

First Prize for Category "E"—Technical Performance.

International Prize for Inter-Schools Contest.

Other prizes may be given in all five categories, particularly a prize for the research, technical or artistic merit of a recording.

The International Jury may also give a prize for the best national selection, the first prize in Categories "A," "B," "D," "E" and the Schools Contest will be more valuable than that for Category "C."

### STEREOPHONIC

Similar prizes may be awarded under this heading.

ART. 14.—All the announced prizes must be awarded, but the jury has the right to divide them and, if they are prizes in kind, to rearrange them or combine them so as to reward the competitors as fairly as possible.

ART. 15.—The best recordings will be broadcast during special programmes by the broadcasting authorities who are interested in amateur recording.

ART. 16.—Whether selected or not and whether prize winners or not all the recordings will be sent back to their owners, perhaps after having been broadcast in one or more of the programmes devoted to amateur recordings.

ART. 17.—Both the National and International Juries have the right to eliminate any recordings which do not conform to the above rules.

ENTRY FORM

**BRITISH AMATEUR TAPE  
RECORDING CONTEST**

Name (Block letters) .....  
Address .....  
.....  
.....  
Age .....

I declare that the enclosed tape feature is entirely my own work, that I have no professional status as a sound recordist, and that I have not included on the tape any copyright material from radio, commercial recording, or any other source.

Signed: .....

Title of your entry .....

Duration of your entry .....

Categories in which you wish your tape entered:  
.....

Make of recorder used .....

Recorded at a speed of ..... inches per second.

Make of magnetic tape used .....

Any other equipment used (i.e., microphone, mixer unit, tape splicer, etc.). Give details and manufacturers:  
.....  
.....  
.....

How long have you been doing amateur recording?  
.....  
.....

Titles of works used. Names of authors, composers, etc.  
.....  
.....  
.....  
.....

ENTRY FORM

**INTERNATIONAL AMATEUR  
RECORDING CONTEST**

Name and Address (In block letters) .....  
.....  
.....

Age ..... Occupation .....

Other hobbies besides amateur recording .....

How long have you been doing amateur recording?  
.....

Special interests .....

Data on the attached recording:

(a) Title—If there is one .....

(b) Exact duration .....

(c) Category in which you wish it to be entered:  
.....

(d) System used (i.e., tape, wire or disc, speed, make of apparatus, if tape, is it single or multi-track? *In the case of multi-track only one track may be used*):  
.....

When and where was the recording made .....

Titles of words used. Names of authors or composers, duration, etc. ....  
.....  
.....

Names of any assistants and how they helped in making the recording:  
.....  
.....  
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.....

**IMPORTANT NOTE.**—Any competitor who has fully or in part used any literary production of which he is not the author or composer and which is still in copyright, must obtain authorisation from the author, composer or organisation owning or controlling the copyright and must produce proof of such authorisation. This proof must be submitted with this form and must state expressly that the author, composer or the organisation owning or controlling the copyright forgo any payment by the broadcasting organisations which transmit the recording. (This does not imply that, in the countries where they apply, the normal rights of payment arranged by the organisations owning or controlling the copyright are relinquished.)



**GRUNDIG TEA PARTY:** Left to right are Mr. P. Earl, Miss B. Marriott, Mr. Alan Stableford, and Mr. P. J. Kingston. Right: "Our School" 1960

## FINAL PRIZE PRESENTATIONS

**A**S people grow old they tend to generalise about their school-days. Either it was a case of heavy Victorian architecture and a heavy-handed sadistic schoolmaster or it was all sweetness and light. Time distorts the picture into what that particular person wants to remember.

The pupils of Stanground V.C. Primary School in 1960 will be allowed no such licence as they grow older. For, providing the school's prizewinning entry in the British and International Tape Contests is preserved, there will be a permanent record of what school was like "back in the old days."

Apart from the interest it will offer those pupils when they become adults, it was an agreeable experience to listen to it when it was in front of the judges. The curiosity, the wholehearted eagerness to participate and the tendency to overact, which were present in most of our childhood lives, was there to examine and enjoy.

Before Christmas, the cast and director (Mr. P. J. Kingston) of this memorable tape were suitably rewarded for their performance, by a special tea party organised by Grundig (Great Britain) Limited. Present for the occasion were Mr. Peter Earl, and Miss B. Marriott of the Grundig Publicity Division, Mr. Alan Stableford, Secretary of the Federation of British Tape Recording Clubs, and Mr. Fred Chandler, News Editor of *Tape Recording Fortnightly*.

After Mr. Stableford had congratulated the school on their achievements, he presented the Grundig Shield to Mr. Kingston as a permanent memento for the schools success in the British Contest, and handed over a cheque for £35 14s. 3d. (500 francs) their award for the best tape in the school section of the International Contest.

Then followed a playback of the tape, and an exciting half-hour of magical entertainment provided by D'Arcy.



The feting of Norman Paul, winner of the British and International Recording Contest of 1960, went on almost to the end of the year.

The final event in the social programme was a special dinner at Kettner's Restaurant, London, given by Philips.

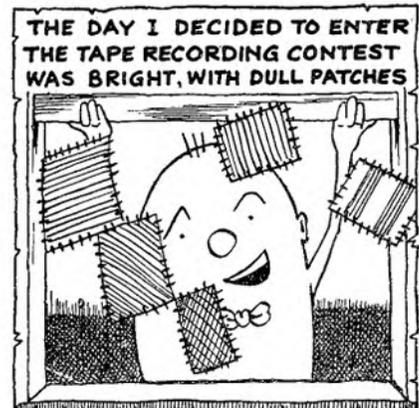
At this function Mr. F. Gould, of Philips, formally presented Mr. Paul with the Philips four-track stereo recorder part of the Grand Prix which he won in the international event. The presentation is seen in the accompanying photograph.

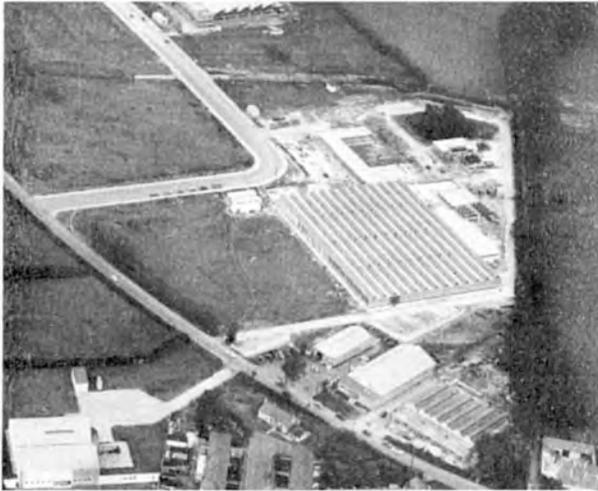
## Proudly Presenting

**R**EGULAR readers have already been introduced to Terry Devereux both in our club section, and as a result of some of his cartoons which have appeared in recent issues.

He is now to appear regularly with our other cartoonists, and starts the year off with a swing by introducing a strip cartoon series. He simply refers to the hero of his series as "Just Mike!"

On the previous three pages we announce details of the 1961 British and International Contests, so what better than that Mike's first adventures should deal with the idea of entering a tape for this contest.





The photograph on the left is an aerial view of the new Grundig factory on the Dunmurray Estate near Belfast. With 72,000 sq. ft. of floor space, the factory is one of the most modern and well-equipped, and will provide employment for nearly 1,000. The recorders manufactured here will be mainly for distribution by Grundig (Great Britain) Limited.



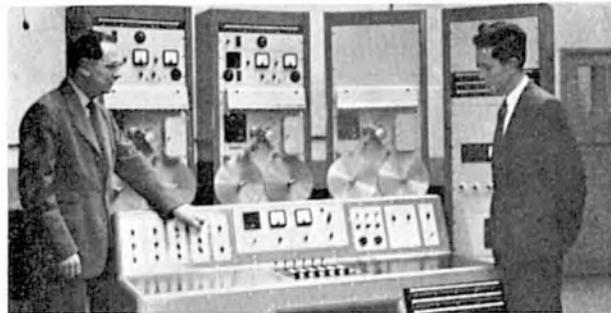
"Well if it isn't 'Joke-a-minute-star-of-the-tape-Harry' of last night's party"

**TAPE RECORDING COURSE**

THE Fourth National Tape Recording Course will be held at the Rose Bruford Training College, Lamorbey Park, Sidcup, Kent, from April 10 to 15, 1961.

As with the former courses, there will be thorough training in the basic techniques of tape recording, and programme exercises in drama production, magazines (including interviewing with battery recorders), and music.

Tutors will include Jack Singleton, Daphne Oram, Sam Wheatley, Desmond Briscoe, Graham Jones, John Borwick, Richard Burwood, and F. C. Judd. The course has been devised again by Geoffrey Hodson.

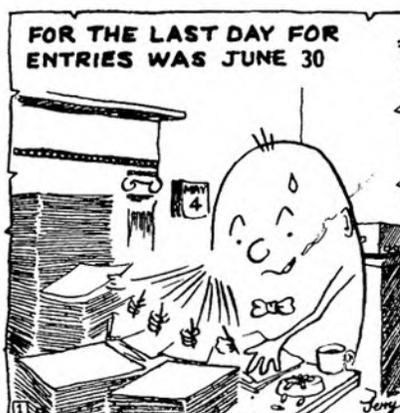


THE Westrex Company are about to deliver studio recording equipment to the value of £10,000 to the Lebanese Recording Company for use in their new studios in Beirut. Mr. Stanley Khouri, Chief of Sound of the Lebanese company, recently carried out acceptance tests on the equipment, which comprises; a control console with six of the latest Westrex slider type mixer potentiometers, a number of re-recording effects equalisers, volume indicator meters, patch panels, and a talk-through system. Also included in the order are two cabinet rack mounted magnetic recording channels, a magnetic re-recording/reproducer, and the central patch bay required for the complete system. The order will be shipped out shortly.

Our photograph shows Mr. Khouri and a Westrex Engineer discussing details of the recording Console at the Company's Cricklewood works.

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B	S	C	U	N	I	T	E			
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Solution to  
Crossword  
published in  
December 28  
issue



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# An Important New Feature

## THE ELIMINATION OF HUM AND NOISE

ONE of the many problems that concern both designers and users of tape recorders, is the elimination of hum and noise in their equipment. In the first article of this series, it is proposed to deal with hum caused by induced currents from near-

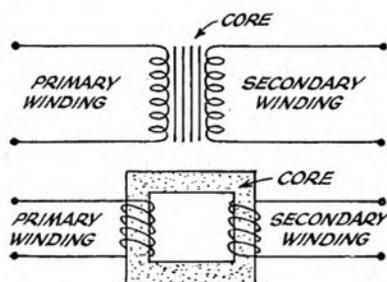


Fig. 1.—Theoretical diagram of simple transformer (above) and pictorial diagram (below)

by mains transformers and/or motors. Quite often a complaint of hum is answered by the phrase—"it may be an earth loop." This mystic saying often baffles the newcomer to audio electronics, and an explanation of what earth loops are, and how they cause hum, may be of help in understanding them and avoiding hum from this source.

Fig. 1 shows a simple transformer. If an alternating current is passed through the primary, an EMF will be induced into the secondary, resulting in an alternating voltage between its ends. This voltage may be higher or lower than the one applied to the primary winding, depending on the turns ratio between this and the secondary. If the turns in the secondary are reduced, then the output will also be reduced. If the number of turns are reduced to one half-turn we arrive at the condition shown in Fig. 2a. Although there is now only a half-turn, this will still have a voltage induced into it, and therefore, a voltage across its ends.

These are well-known basic facts, but what may be not so well-known, is the fact that if the half-turn is removed, and a metal chassis put in its place, the current will be induced into the chassis instead, Fig. 2b. If a meter were connected across the ends of the chassis a voltage would be measured.

In order to avoid any confusion, this induced voltage will be called the hum voltage for the rest of this article.

The way in which the occurrence causes hum can be seen from Fig. 3a, which shows the input stage of a tape recorder with the input valve's cathode earth point at the valve base, and the tape head earth point at the input socket. The thick line is the chassis which has a hum voltage induced into it from a mains transformer. This is the basis of the earth loop and the loop in this case is made up of the tape head, back to the cathode, through the tape head, back to the cathode. It can be seen that the hum voltage in the chassis is

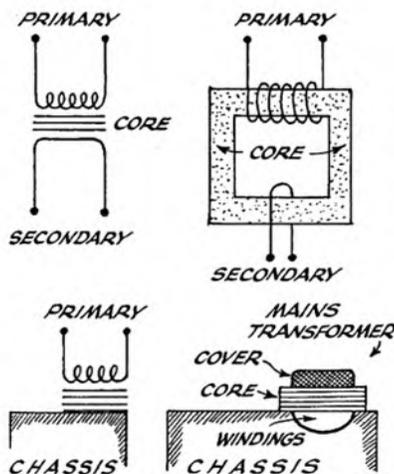


Fig. 2a (above) and Fig. 2b (below).—Demonstrating how a metal chassis acts as a half-turn secondary winding

**HUM AND NOISE ARE ANNOYING OBSTACLES TO GOOD RECORDING AND LISTENING, AND THEY ARE OFTEN DIFFICULT TO TRACE. IN AN AUTHORITATIVE SERIES, E. A. RULE DISCUSSES THE METHODS OF THEIR PREVENTION.**

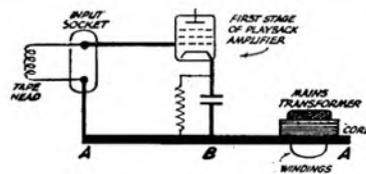


Fig. 3a.—The part of the chassis from A to B is in series with the input. Hum voltage is developed from A to A

in series with the output voltage from the tape head, and will be amplified, with the signal, by the valve and any following stages.

A not-so-obvious example of an earth loop is shown in Fig. 3b, which illustrates a loop made between the earth points of the cathode in stage two, and the anode decoupling capacitor in stage one. The hum voltage developed in the chassis between these two earth points is fed by way of the decoupling capacitor through the anode load resistor and on to the grid of stage two, where it is amplified in the same way as our first example.

If the hum voltage in any circuit is more than one-thousandth of the signal voltage (-60dB) it would be

# THE ELIMINATION OF HUM AND NOISE

by E. A. RULE

## PART ONE

audible on a good speaker system and it is obvious that these loops must be avoided. To achieve the required low hum level, it is necessary to rearrange the wiring as shown in Fig. 4a and 4b. With the cathode and grid earth points in the same place, there cannot be any hum voltage developed between them.

It must be made clear at this point that the use of a Bus bar for earthing, does not avoid earth loops, and the same precautions in placing the various earth points must be made. As far as the alternating magnetic field is concerned, one conductor is as good as another and a hum voltage will be induced into a Bus bar just as easily as a metal chassis.

The only way to avoid earth loops is to arrange the wiring so that each valve has a common earth for its grid and cathode circuits, not forgetting

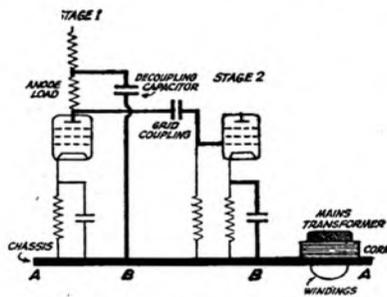


Fig. 3b.—Hum induced by way of the anode decoupling capacitor of stage 1 through its anode load resistor into the grid of stage 2. The part of the chassis B to B is in series with the grid circuit of stage 2 and the hum voltage is induced from A to A

that the anode decoupling capacitor of a stage is in the grid circuit of the following stage, as far as hum voltages are concerned.

One last example of an earth loop is Fig. 5a which represents a mistake that some people make when wiring up the negative feedback circuit of a tape recorder. This type of loop can result in quite large hum voltages being fed back into the cathode circuit of an earlier stage. A method of avoiding this is shown in Fig. 5b.

If an external speaker is used it should not be earthed to any other equipment without first checking for an earth loop. One loop from this source is shown in Fig. 6a where two recorders are being used for special sound effects. It can be avoided by using a 1:1 ratio screened transformer between the two recorders as in Fig. 6b. Another method is by disconnecting one of the earth connections as in Fig. 6c.

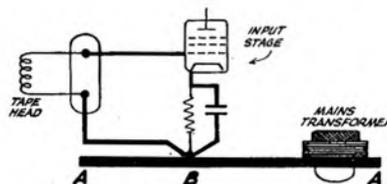


Fig. 4a.—Solution to situation in Fig. 3a. The common earth point at B avoids any hum voltage being developed between grid and cathode

The signal lead to a grid and its earth return must be kept close together to avoid a "wiring loop." Hum can be induced into a loop of this type in the same way as the half-turn in Fig. 2a, and it produces an alternating voltage between the grid and earth. By keeping the two wires close together, any induced voltages are similarly phased in each, and therefore cancel each other out. Fig. 7 will help to make this clear.

The reader who tries to remove an earth loop from existing equipment

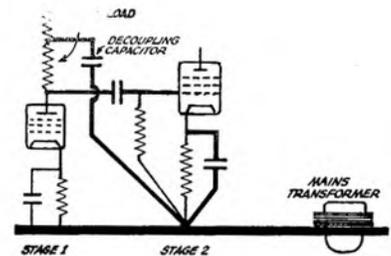


Fig. 4b.—Solution to situation in Fig. 3b. Once again re-arranged wiring avoids earth loop

may find that at first, the hum is worse. This is because when there is more than one loop, it is possible for the hum in one to cancel out the other. The best way to go about it is to start at the output stage and work back towards the input. The use of an oscilloscope will make the job very easy, as it is much more sensitive than listening on a loudspeaker.

Having dealt with earth loops, let us now take a look at some other sources of induced hum. One example of this type is that induced directly into the tape head. The voltage induced into the tape head from a fully modulated tape is only in the order of a few milli-volts at the most, and thus it is quite easy to get an induced hum voltage of the same magnitude if the tape head is placed in the alternating

(Continued on page 24)

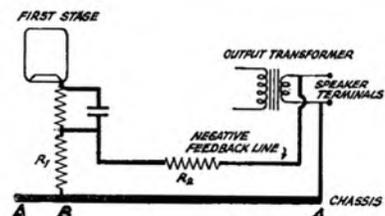


Fig. 5a.—The hum voltage between BA on the chassis is developed across R1 by way of R2 and is in series with the cathode circuit

# THE ELIMINATION OF HUM AND NOISE

(Continued from page 23)

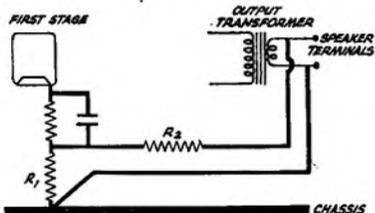


Fig. 5b.—The solution to the problem shown in Fig. 5a as described in the text.

magnetic field of a nearby transformer or motor.

One way of reducing hum from the transformer is to position it so that its magnetic field axis is at right angles to that of the tape head. This should be performed with the gain control at maximum and by turning the transformer until the hum falls to the lowest possible value.

To reduce hum from nearby motors requires the use of a small coil of wire, about one inch in diameter and consisting of about 50-100 turns for the high-impedance head and about 10-20 turns for a low. This is connected in series with the earth side of the head, as close to it as possible, on the underside of the deck. It is then adjusted until a position is found where the hum picked up in this coil, cancels the hum picked up directly in the tape head. A large rubber or plastic grommet makes a suitable coil former, and is easy to mount. Once a suitable position has been found, the

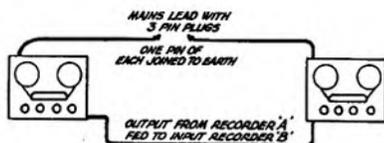


Fig. 6a.—The loop is made up by a common mains earth and earth lead between recorders

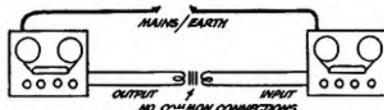


Fig. 6b

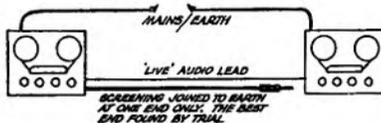


Fig. 6c

coil should be sealed in place with a little wax. This type of coil is known as a hum bucking coil.

Another source of hum is created when the mains transformer induces a hum voltage directly into the output transformer. This is normally audible as soon as the recorder is switched on, although it may die away when it has warmed up. The only cure is to mount the two transformers as far apart as practical, and to keep their cores at right angles.

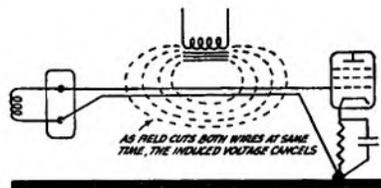
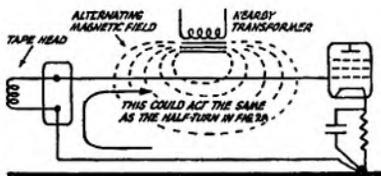


Fig. 7

One source of hum that is often very hard to trace is caused by a first stage valve mounted within the alternating magnetic field from nearby transformers or motors. This causes the electron stream from the cathode of the valve to be modulated by the field and this modulation hum is added to any signal passed through this stage. The only remedy is to keep all input stages well away from mains transformers and motors.

In my next article I shall be dealing with electrostatic hum and hum from power supplies.

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“100” Super Play

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North London: 75 Grand Parade, Green Lanes, Harringay, N.4. STAmford Hill 1146 / 2097

## The perfect speaker?

REPORTS of a cabinet costing "about £5" which, with a 12 inch speaker mounted in it, "could fill St. Paul's Cathedral with almost perfect high-fidelity sound" (Peter Schirmir writing in *The Observer* on November 27th), may well foreshadow a useful development, but it is not very encouraging when such phrases as this are used, together with the one attributed to the inventor, Mr. Jabez Gough, that his invention "produced an aura of sound which filled the room evenly, as opposed to the beam of sound which customary units project."

Any sound let loose in St. Paul's Cathedral has got St. Paul's Cathedral to contend with, and the chances of it being ultimately almost perfect are not very great—whether it begins as the natural voice of a choir or a reproduced sound.

The same thing applies in the drawing room, and it does not help the cause of music reproduction very much to foster the old myth that equipment can "fill" a room with sound something in the manner of a golden mist.

I think it is safe to say that we must reconcile ourselves for ever to the fact that sound always comes in waves, and that these waves insist on chasing about all over the place, refusing to fill a given space in a neat and well behaved manner. Good speaker assem-

blies can, backed by good equipment, already launch sound waves that approach perfect fidelity, but what happens to them after that is something that the speaker itself cannot control. The room and what you do with it, and where you place the speakers, are vital factors; and sometimes the room limitations may prohibit perfect results, whatever the quality of the equipment.

Mr. Schirmir also quotes Mr. Gough as saying about his speaker that "It is diametrically opposed to the principles of all other cabinets—it is open at both ends, need not be made of heavy materials and needs no interior padding."

This reads a little oddly to me because I remember trying out a T.S.L. speaker quite a long time ago that exactly corresponds with this description. It worked very well.

I sincerely hope that Mr. Gough has really accomplished something in the way of a cheap but excellent speaker cabinet, because it would encourage many more people to go in for stereo (providing it proves to be suitable for stereo, which it may not be if the sound is too dispersed); but I do wish that hints of Canute-like accomplishments could be avoided when such innovations are introduced. Waves will be waves, I feel sure, just about as long as gravity will be gravity.

QUESTIONS crop up quite often among the stereo-minded with regard to compatability of pick-ups and discs. Instead of offering a list of do's and don'ts to be followed blindly I prefer to point to the basic facts governing the situation.

Remember, then, that a mono stylus will ruin a stereo record, that is practically all there is to it, for anything else will work within reason.

It is quite possible that you will get excessive scratch when using a stereo stylus on mono discs that have had a good deal of mono wear, but there will be no actual harm done.

If you are using a stereo pick-up on a mono or stereo record and the amplifier is mono, it is simply neces-

sary to join the pick-up leads so that the two signals merge. The same thing applies if you want to play a stereo tape with a mono amplifier.

You can then use one or two loudspeakers, but the use of two speakers, though an improvement on one, will not give you stereo, for left and right have achieved holy wedlock between the pick-up and the mono amplifier and cannot be cast asunder.

If you have a stereo amplifier, remember that it is harmful to feed a signal into any channel unless it has an appropriate outlet. Follow the makers instructions for dealing with the signals and speaker connections in various circumstances and no harm will be done.



### New rev. counter for accurate cueing

COLTON and Co. (Lapidares) Ltd., announce the introduction of their "Call Boy" tape position indicator which is designed to give accurate cueing on tape recorders with no rev. digital counter built in.

It comprises a three figure counter with reset wheel having a rubber sucker enabling it to be fitted instantly to any smooth surface. The drive is taken from the tape spool through a flexible drive shaft which is attached to the spool by means of a rubber clip. This can be connected or disconnected in a matter of seconds.

Simple and accurate in operation the "Call Boy" is available at 42s. 6d. Colton & Company (Lapidares) Ltd., The Crescent, Wimbledon, London, S.W.19.

### CARRYING CASE FOR THE BUTOBA

SPECIAL new carrying cases for the Butoba MT5 portable tape recorder are now available. The price in plastic will be £3 17s. 6d., and in pigskin leather, 7 guineas. These cases are extremely attractive, and have side pockets for spare reels, microphones and other accessories.

Denham & Morley Limited, Denmore House, 173/175, Cleveland Street, London, W.1.





# New Products

## ELIZABETHAN ADD LOW-PRICE MODEL

Elizabethan  
Popular

### OVER SIX HOURS PLAY ON A FIVE-INCH REEL

THE ultra low 15/16th ips is a feature of the three speed (1½ and 3¼ ips also) 42 guinea, Elpico Geloso G 258 which has recently become available.

The maximum spool size is 5 inches but at the lowest speed this will give 6 hours 24 minutes of recording time using both sections of the tape. Dimensions are 13 x 8½ x 6¼ inches and the machine weighs 12½ lbs.

Output is said to be 2½-3 watts and the frequency response at 3¼ ips is quoted as 50-12,000 cps.

Controls are by push button and there is a clock-type position indicator.

Separate output sockets are incorporated for feeding an extra loudspeaker and external amplifier and the recording level indicator is of the magic eye type. The G 258 is supplied with a pedestal

microphone with swivel head, 900 ft. of long-play tape and a spare spool.

Lee Products (Great Britain) Ltd., Elpico House, Longford Street, London, N.W.1.



THE 19½ gn. Popular, briefly mentioned in our November 30 issue, is the latest addition to the Elizabethan range of recorders, and is the lowest price machine offered by this company.

Incorporating the B.S.R. deck the Popular can accommodate 5½ inch spools and operates at 3¼ ips. Frequency response is given as 60-8,000 cps and output as 2½ watts.

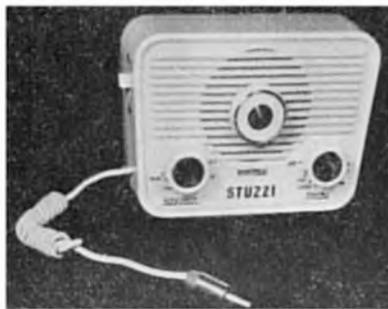
A twin-track machine, the design includes a magic eye recording indicator, 7 x 4 inch loudspeaker, tone and volume controls. It is supplied with Elizabethan crystal microphone, tape, spare spool and a radiogram connecting lead. The cabinet includes storage space for spare spools and is finished in red leathercloth and grey and blue vynair. A carrying handle is fitted.

Elizabethan (Tape Recorders) Ltd., Bridge Close, Oldchurch Road, Romford, Essex.

## Stuzzi tuner

CONVERT your tape recorder into a radio for only five guineas. This is the basic idea of a radio tuner introduced recently by Recording Devices Limited.

Measuring only 5½ x 4½ x 1½ inches, the new tuner plugs straight into the input or microphone socket of a tape recorder. A slide switch on the left hand side selects the long or medium wave band, and the left hand knob on the front is the on/off switch and sensitivity



control. On the right hand side is the tuner, and in the centre is a fine tuner to perfect reception.

The running costs of this transistorised tuner are claimed to be almost negligible. A set of four U12 batteries, price 1s. 2d., lasts for several months.

Recording Devices Limited, 44, Southern Row, Kensington, N.W.7.

## REDUCED PRICES FOR AUDIOGRAPH

CHITNIS Electronics announce price reductions for their three tape recorders. The new prices are as follows: Model KM22, 48 guineas; Model KM33, 54 guineas, and Model 9S4K, 56 guineas. In future all three recorders will be supplied with a reel of BASF tape, but the KM22 and KM33 will be without microphone. Distribution is to continue through wholesalers.

With the price reductions, the manufacturers announce that their instruments

will in future be marketed under the name *Audiograph*.

Chitnis Electronics Limited, 1, Long Acre, London, W.C.2.

## B.A.S.F. form new company

THE formation of a new trading company to handle the distribution in the UK from 1st January, 1961, of B.A.S.F. Magnetic Recording Tape has been announced.

The new company, called B.A.S.F. Chemicals Limited, will have its offices and warehouse at 5a, Gillespie Road, London, N.5. (Telephone: CANonbury 2011) where suitable premises have been acquired.

Commenting on the new arrangement, Mr. B. Wilson, the Company's General Manager, said "The Company's aim will be to give the best possible service and maintain the closest contact with both wholesalers and retailers, and a strengthening of our field representation will be the first step to achieving this."

## GARRARD GO 4-TRACK

THE Garrard Magazine deck is now available with quarter track head assembly and the retail price will be £18 5s. 6d. The other attributes of the deck will remain unaltered.

Prices of accessories to go with this deck have been adjusted and are now as follows: loaded magazine, 33s. 4d.; reel of tape, 24s.; empty magazine with one spool, 8s.; empty 4 inch spool, 3s.

The Garrard Engineering and Manufacturing Co. Ltd., P.O. Box 4, Newcastle Street, Swindon, Wiltshire.

# You'll be proud to own a Stella

## Stella 'Stellaphone' Model ST454

### 4-track tape recorder (MADE IN HOLLAND)

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#### Superimposing facilities

... which allow extra sound to be added to existing recordings at the simple touch of a button.

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- *Very wide frequency response—50 - 14,000 cycles.*
- *Magic-eye recording level indicator.*
- *Built-in tape revolution counter with zero reset.*
- *Printed circuit reliability.*
- *Can be used as a straight amplifier.*
- *Socket for reproduction of stereo tapes, with additional equipment.*
- *Attractive Red/Grey cabinet.*

And all this for just **37 gns**

Complete with sensitive crystal microphone, 5" reel of D.P. tape and empty 5" spool.



## Stella 'Stellaphone' Model ST455

### 4-track tape recorder (MADE IN HOLLAND)

This is the Hi-Fi of tape-recording. Almost every worthwhile development of sound reproduction is here. 4-tracks and three international tape speeds give up to 16 hours' playing time on one 7" reel of D.P. tape.

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**Stella**  
The ideal companion

# Equipment Under Test

## STELLAPHONE

### ST454



By G. H. Russell

ONE can imagine the heated discussions that must be going on in the council chambers of tape recorder manufacturers all over the world. . . . How many models? . . . What price ranges? . . . How many speeds? . . . Which speeds? . . . Why do people buy tape recorders? . . . What do they use them for? . . . Do they want stereo? . . . and so on.

No-one really knows the answers to all, or indeed, any of these questions. The result is seen in the examples of magnificent compromise all around us, mainly erring in the direction of trying to give too much for too little. For, in the absence of any real knowledge of the market, the manufacturer must fall back on the ultimate compromise between what his engineers know they can make and what his salesmen think they can sell.

Now comes the Stellaphone ST454. This machine resolves one question—that of speed. It runs at  $3\frac{1}{2}$  ips only—but what a  $3\frac{1}{2}$ ! A frequency response that runs up beyond 10,000 cps and is within  $\pm 3$ dB from 40 to 10,000 cps, no audible wow or flutter and a very low level of tape hiss are some of its outstanding virtues.

Whoever was ultimately responsible for putting this machine into production certainly had the courage of his convictions. This is no mean botched up little affair but beautifully finished and obviously designed for large quantity production with a number of plastic pressings, prefabricated metal sections and two printed circuit panels containing most of the amplifier wiring.

It is my guess that the basis of the production run is the European Common Market and this brings me to another point.

I have had the unfortunate experience of having had two British machines submitted to me for review recently. One, which was cheaper than the Stellaphone was so bad that I had to reject it as unreviewable—it was nothing more than a toy. The other, which was around the same price as the one under review here, had a fundamental fault which was so serious as to make an unqualified recommendation from me impossible. In neither case was the finish in the same class as this machine.

Now, it is not part of my job to teach manufacturers in this country their business—the normal cut and thrust of the competitive market should take care

of that. But I do earnestly beg them all to have a look at this machine if they want to stay in business at all in the years to come.

The price of the Stellaphone is 37 guineas and for this price it offers four-track mono record and playback and two-track stereo playback with an external amplifier (not supplied), it will take 7-inch reels which means  $8\frac{1}{2}$  hours playing time (mono) with double play tape, it has superimposition facilities and a three-digit, belt-driven mechanical counter. A microphone is supplied and the input from this may be mixed with the radio/gram input with the two separate volume controls. Outputs are provided for an external amplifier or loudspeaker and the internal amplifier may be used separately with the microphone or a record player.

The deck is driven by a single motor, cooled by a small fan and governed by a  $5\frac{1}{2}$ -inch diameter flywheel. Forward and reverse wind are a bit slow for my taste—two minutes for 1,200 feet. Pro-

tection against accidental recording is achieved with an interlocking device between the record and start buttons which have to be pressed simultaneously for record. An "interrupt" button gives immediate start and stop with no tape wastage.

The electronic section contains five valves, two of which are used for power rectification and record level indicator. The microphone amplifier is an EF86 low-microphony pentode. An ECC83 double-triode does duty for a two-stage voltage amplifier and an ECL82 triode-pentode is used for the output stage and bias oscillator. A variable tone control is provided and the loudspeaker is the usual 4 in. diameter type.

These are the bare bones of this recorder but I have the feeling that were I to elaborate at great length on these things I would not be able to convey the real point about this machine, which is this: for 37 guineas you can have a four-track recorder which will give excellent quality, do practically anything anyone could wish to do with a tape recorder, is pleasing to look at and has very few vices. Ventilation is an excellent case in point, I have had the thing running for hours and it has remained as cool as a cucumber.

A small vice is that a certain degree of inaccessibility could raise servicing costs.

But this is a small price to pay for the results. The clarity is amazing. Listen to it on a good speaker if you can and I think you will be suitably impressed.

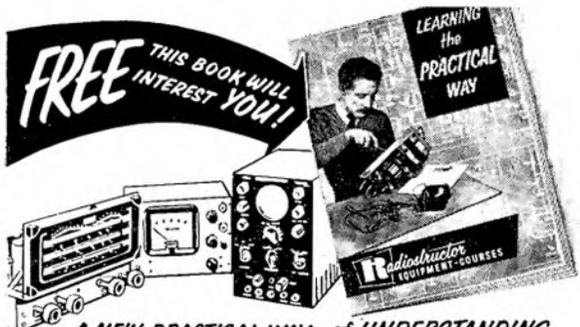
One might count it as a vice that the Stellaphone ST454 will not run at  $7\frac{1}{2}$  ips and therefore is unable to play many of the commercially available pre-recorded tapes. I would like to suggest that this is an oversight on the part of the recording manufacturers rather than a fault in this machine. After all, it is only a matter of time before other manufacturers produce machines equally as good as this one and there may be one or two on the market already.

Every now and then in a reviewer's life something crops up which appears to herald a new era. I think that this is one of those events. Have I overstated the case? I can only plead that I am not usually given to eulogising.

My last word on the Stellaphone ST454 is this. I do not think you will find anything to better this at 37 guineas or anything like this price. The only qualification is that it will not play the  $7\frac{1}{2}$  ips pre-recorded tapes. But in my opinion this machine outdates them.

#### Manufacturer's Specifications

- Speed:  $3\frac{1}{2}$  ips.
- Recording sense: Four-track, left to right.
- Frequency response: 50-14,000 cps.
- Signal-to-noise ratio: Better than 40dB.
- Wow and flutter: Less than 0.3 per cent.
- Loudspeaker: Four-inch.
- Output power: 2.5 watts.
- Mains voltage: 110, 127, 200-250 volts, A.C. 50 cycles.
- Mains consumption: Approx. 60 watts.
- Valves: EF86, ECC83, ECL82, EM84, EZ80.
- Rewind time: 1,200 ft. of tape in two minutes.
- Maximum spool size: Seven inches.
- Microphone: Crystal.
- Playing time: LP tape—5 inch reel—4 x 45 minutes; DP tape—7 inch reel—4 x 120 minutes.
- Inputs: Microphone and pick-up.
- Outputs: Radio or amplifier, headphones, and external loudspeaker.
- Dimensions:  $15\frac{1}{2}$  x  $12\frac{1}{2}$  x  $6\frac{1}{2}$  inches.
- Weight: 19 lbs.
- Cabinet: Wooden, with moulded plastic lid, covered in two-tone plastic cloth. Storage space provided.
- Makers: Stella Radio and Television Co. Ltd., Astra House, 121/3 Shaftesbury Avenue, London, W.C.2.



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**TAPE RECORDERS**  
**218 HIGH ST. BROMLEY, KENT. RA.V. 4477**

# News from the Clubs

**T**HREE smash and grab raids were carried out simultaneously at Watford on November 19. Nothing was taken, no report appeared in any newspaper, and the local police took no action. The reason was quite simple, the "raids" were carried out by members of the **West Herts** club and did not involve any law-breaking (we hope!).

In an activity becoming increasingly associated with this club, members split into three teams and two teams were sent out to create a tape of a smash and grab; the remainder attempted the same job using home sound effects.

Equipped with a Grundig and a Minivox portable recorder each, two of the teams of four members set about recording cars, footsteps, and the usual sounds implicated in this type of thing. One episode may have been described by Alan Beeby as "going too far," for one of the brick-throwing extracts was carried out on the window of a disused car (so they said).

When the mobile crews returned the tapes were compared and the home team's hilarious attempt was easily declared the winner. It may be of interest to note the method used by the home team. At first it was decided to slam a fridge door to produce the sound of the gang's car, but as it still contained milk bottles, the members decided to use a milk float for the raid. Vera Jackson, as the "driver," is alleged to have driven the float straight through the shop window, despite leader Dennis Millard's frantic attempts to put the vehicle out of gear.

A welcome visitor to the club was Pete Rogers, Secretary of the **R.A.F. Tape Society**, who exchanges tapes with club member June Boyce. He had taken along his Vortexion and later agreed to demonstrate it.

The following meeting on November 30 was devoted to dubbing tapes for members' personal libraries. On December 9, a tape exhibition was held in conjunction with a number of local dealers. The results are not as yet available, but if this exercise was carried through with as much exuberance as others it should prove a great success.

Their December 14 meeting opened with a demonstration of the Brenell Mk. V recorder. This was presented by the secretary Peter Holloway who also made some attempts at composing musique

concrete. Then followed the members' quiz tape. For this, six unusual sounds were played by members who were at liberty to double or half the speed of the tape to disguise the sound. Many baffling noises resulted. Dennis Hill produced the most difficult to guess and the prize was his.

Other activities of the club have included the recording, by Bob Scarborough, of the dedication of a local church. Conditions for this were such that he was unable to hear the actual service and the whole thing was achieved by monitoring. Some pretty quick guesswork, I should imagine, if tape economy was to be considered. The completed tape has since been presented to the vicar.

June Boyce attended the Area Table Tennis Finals at Watford at roughly the same time, and recorded the events and prize-giving. As a result she was invited to visit the Town Hall with her recorder when the Mayor of Watford sent a Christmas message to the blind and hospitalised.

John Grainger and Jean Stearn made three location recordings. Their first visit was to record the Armistice Memorial Service at Langleybury Church, and the second was to the Scout Gang Show in Hemel Hempstead. Excerpts from this latter tape will be used in the blind and hospitals service tape newsletter.

Their third visit during the month was to record an interview with Chris Barber when he appeared with his band at Watford.

A design by Heather MacRae, entered in the club's emblem contest, was selected by Mr. Sutherland, the Head of the Art Department of the Watford Technical College. Her material prize was a three-inch spool of tape, and the design itself is to be incorporated in the club's stationery and lapel badges.

Attempts at musique concrete also took up a large part of the November 10 meeting of the **London** club. Three tape recorders were in use, and these were operated in conjunction with a collection of sounds including a child's xylophone, a duck call, and a cuckoo's call. The first part of the evening was spent recording these and other noises. The recordings were then dubbed on to a tape for each member. These tapes were to be taken home, edited, and produced in musique concrete form at the following meeting.

The second half of the meeting featured a talk by Roger Aslin on microphones.

The Christmas spirit seemed to hit the members a bit before time, for the following meeting did not go at all to plan. The proposed quiz programme was the first to be abandoned, and only one attempt at a musique concrete tape, produced by Terry Devereux, was forthcoming.

Roger Aslin again came to the rescue—this time with a talk on the history of tape recording.

Malcolm Clarke devised and presented an instructive and entertaining lecture entitled "Sound—its properties and effects" for the December 2 meeting of the **Leicester** club. Lavishly illustrated, his talk explained how sound travels and the difference between musical and discordant noises. Members were shown how to determine the velocity of sound through the air using relatively simple apparatus. Beat frequency and complex waveforms were also discussed and demonstrated.

Less technical, but equally as invigorating was the club's answer to a recent request. This was for a record to be played to one of the men stationed at an R.A.F. base in the Middle East. To tie in with the record, members recorded an interview for the Aden Forces Broadcasting Association. This fact provided extra publicity for the club when the local paper reported the request and published the story with pictures.

Further publicity is required, and members are to make a series of recordings for use by Leicester dealers. The idea is for a tape to be played on the newly acquired recorders beginning with the statement "So now you've bought a recorder." After providing some instruction on the best use of the equipment, the tape closes with a punch line to the effect that the new owner should "join the Leicester club." A neat idea, and one which I think has not been tried before. The members deserve every success.

The club's next meeting will be on January 13, and will take the form of their Annual General Meeting. This will be held at the Newark's Girls School, Fosse Road South, Leicester.

A tape and slide show entitled "A year in Leamington Spa" was presented by founder-member Miss Eileen Jones at the December 7 meeting of the **Warwick and Leamington** club. Miss Jones had captured many of the important functions which took place during 1960, including the opening ceremony of the Riverside Youth Centre, and the Jive Marathon held earlier this year. A Guy Fawkes night barbecue, a veteran cycle rally, the Mayoral procession, Remembrance Sunday, and children at work in Leamington's oldest day school were all featured in her tape. Highlight of the show were photographs and recordings of the Jephson Gardens firstly in their springtime splendour, and again floodlit by the "Lights of Leamington" a display which ended with a mammoth firework show.

The initial meeting of the **CATS** (Cambridge Amateur Tape Society) was held on November 21. Present for the meeting were Peter Rogers and Mike Renshaw, producer of the monthly *Tapeorama* news magazine, and a member of E.S.T.R.A.

Provisional meeting dates were made for the second and fourth Wednesday of each month, starting from January 11. On this date, an "introductory meeting" will be held at the Mitre Hotel in Bridge Street.

(Continued on page 33)

## Classified advertisements

Rate—Sixpence per word (minimum 5s.); Trade, ninepence per word (minimum 10s.); box numbers, one shilling extra. Payment with copy. Copy should be sent to Advertisement Department, "Tape Recording Fortnightly," 1, Crane Court, Fleet Street, London, E.C.4.

### SERVICES

Tape recorder need repairing? Then let London's Largest Tape Recorder Specialists do it for you, expertly and economically. Essex Tape Recorder Centre, 2, Maryland Point Station, Stratford, E.15.

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GRUNDIG sales/service in your area: High Wycombe phone 457, Newbury phone Thatcham 3327, Wallingford phone 3083, Orpington, Kent, phone Orpington 23816, New Malden phone Malden 6448, Watford phone Garston 3367.

### WANTED

Ferrograph endless cassette required urgently. Box W502, *Tape Recording Fortnightly*, 1, Crane Court, London, E.C.4.

**Something to sell?—equipment for exchange?—looking for a job in the hi-fi tape field?—seeking a tape contact abroad?—tape-to-disc services to offer?—expert staff needed? A classified advertisement in *Tape Recording Fortnightly* will bring you quick results—cheaply.**

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Tape to Disc—All Speeds. Rendezvous Records. 19, Blackfriars Street, Manchester 3. Leaflet on request.

### MISCELLANEOUS

"Hideli" £1 Tapes are "sound value." Get this "well taped" (acetate) 1,200 ft. standard 7-in. reels, 20s. Boxed, overseas factory. Sole distributors: Langley Liaison, 9, Randall Close, Langley, Bucks.

**STEREO TAPE LIBRARY.** Linden, St. John's Road, Brecon, S. Wales. Specialists in the sale and hire of Stereo tapes. Hire charge 1s. per tape. If sufficient members are interested we are prepared to start a "Pop" and "Jazz" section. Send stamped and addressed foolscap envelope for particulars and lists.

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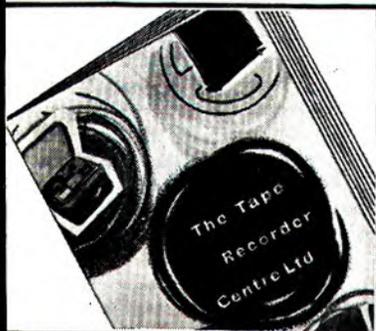
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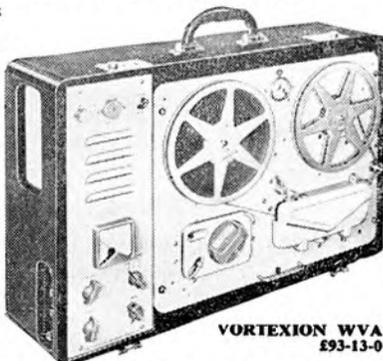
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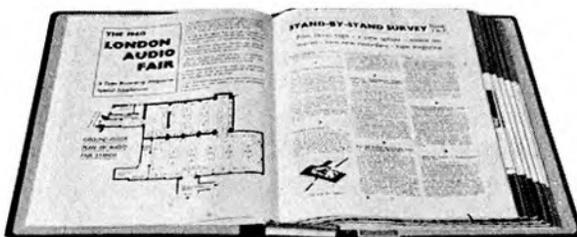
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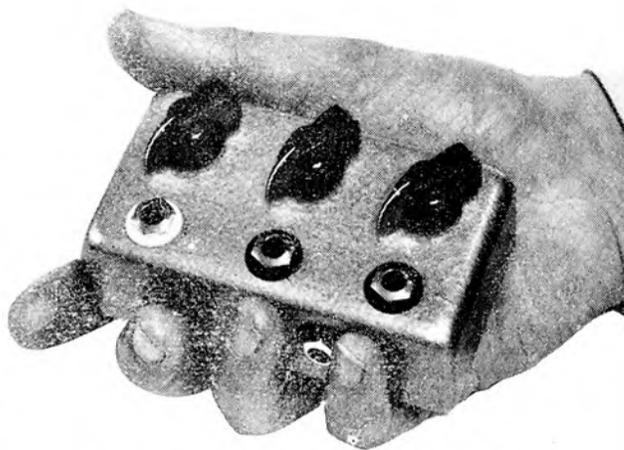
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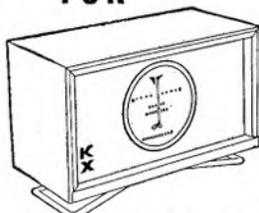
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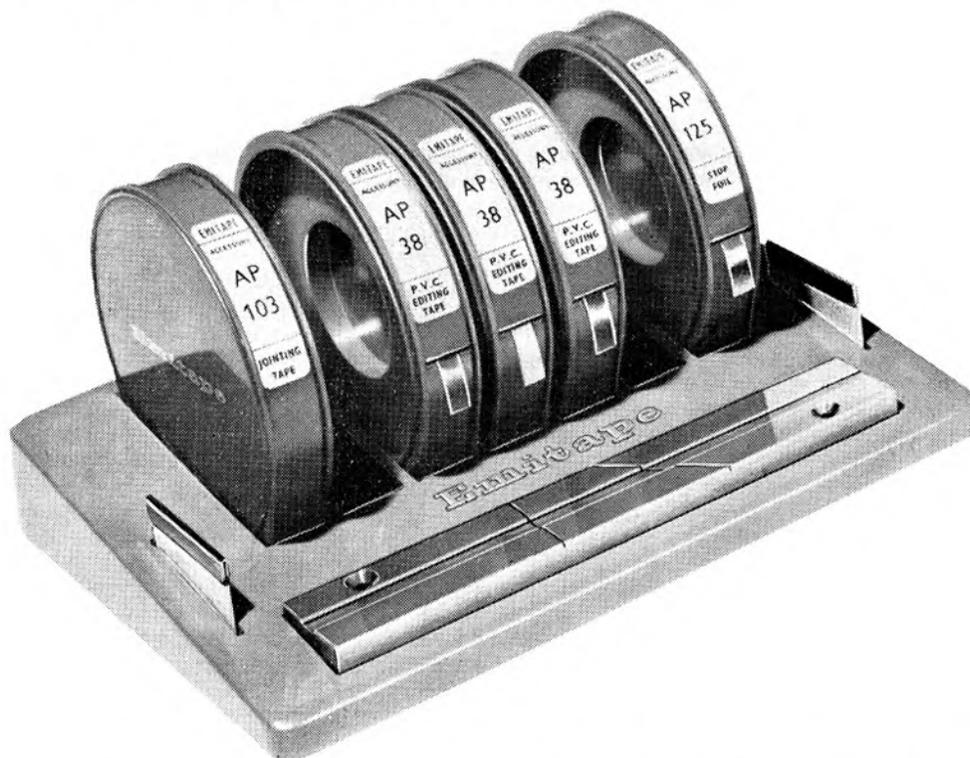
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# TAPE

RECORDING  
FORTNIGHTLY

Vol. 5 No. 2 25th January, 1961

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# We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

WHEN a representative of the Consumers' Association called on me about a year ago and revealed that they were about to start a programme of testing tape recorders, I warned him that some tricky problems would arise.

Now, in the January issue of the Association's magazine, *Which*, the results are published for the first time. And it is admitted that, technically, the tests proved to be some of the most difficult the Association has made during its 3½ years' activities.

Nonetheless, *Which* bravely comes up with a recommendation on what is the "best buy" among the particular recorders which it included in its test programme. It is the Corsor CR1602, which sells at £38 17s.

Five other models are selected as giving good value for money—the Brenell Three Star (£60 18s.), the Ferrograph 4AN/1 (£85 1s.), the Grundig TK20 (£44 2s.), the Philips EL3542 (£61 19s) and the Simon Minstrelle (£40 19s).

It goes without saying that many of the findings reported in *Which* will not be universally popular; some of them may be challenged.

In judging quality of sound, it was necessary, of course, to fall back on subjective listening tests, with a panel of people "experienced in listening to tape recorders" hearing playback recordings of speech and piano music which had been made live on the same machine. The panel voted without knowing the identity of the particular machine it was hearing.

On this test alone, the Brenell and the Ferrograph emerged supreme.

The main fact that emerges from the C.A. tests, in fact, is that almost every one of the 16 machines tested had particular virtues of its own.

So one is led back to the importance of the customer's answer to the question which C.A. poses at the outset: for what purpose is the recorder primarily to be used?

The evidence presented in *Which* is, nevertheless, worth study as an honest attempt to tackle a very difficult and delicate problem.

The only danger now is that inadequately informed customers will close their minds to recorders other than the "top six" in the *Which* table. That would be a ridiculous attitude for anyone to take.

For one thing, only 16 models out of the 180 available were tested by C.A.

For another thing, the human element admittedly counted for more in these judgments than in the average C.A. tests and, as we know from long experience, different reviewers often offer very varied opinions on the same piece of equipment.

## International Contest

I EXPECT to hear soon from the International Federation of Sound Hunters news of the venue for this year's Congress and judging of tapes in the International Recording Contest.

The possibilities include Germany and Italy.

Last year several British manufacturers sent representatives as observers to the judging in Amsterdam and I hope they will take a lively interest again this time.



The Wyndor Gold Medal

The Wyndor Recording Company has decided to award a gold medal as a prize in the International event; it will be similar to the one they award annually in the British Contest. This is the first award from a British firm for the 1961 Contest, but I hope others will come later. In previous years,

Continental manufacturers have been generous in making up an attractive list of prizes for the International Contest.

## Tape in Court

LEGAL men are taking a keen interest now in the dangers of accepting tape recordings as evidence in court. The Committee of Justice has just reported on the need to keep a close watch on tape recording developments.

But the Committee has realised just how difficult is the task it has set itself. How to safeguard against a dishonestly edited tape produced as evidence?

They thought at first of a printed code on the reverse side of the tape, which would reveal any cutting. Alternatively, they considered a second sound recording, on the other track on the tape.

But then they recognised that there would be nothing to stop unscrupulous persons copying parts of one tape on to another!

The latest idea is for a locked cassette and recording on two separate tapes simultaneously, one of them in the cassette. But who would keep the key? And what if the person taking the recording made careful use of the pause control to reject any inconvenient material?

## LAUGH WITH JEEVES



"Did you remember to start the recorder?"



# PICTURE PAINTING

is the way NAOMI ARCHER describes her endeavours with a tape recorder. In this article she discusses the preparations made and the techniques used when recording the performances for an amateur talent contest.

**M**ETAPHORICALLY speaking, my brush is my worthy tape recorder endeavouring to produce a good sound picture rivalling the wiles of an able colour artist.

At one time this philosophy had not reckoned on some of the more intricate details of faithful sound recording and composition. Until just a few weeks ago.

I received a tall order and was privileged to record a gaily coloured cross-section of amateur talent in a contest where the judging would depend entirely on the fidelity of playback—quite an unnerving thought! Perhaps a brief description of the preparation and how the recordings were made would have an interest for some readers.

The old parish hall, where the recordings were made, proved to be surprisingly good at the stage end which was equipped with heavy curtains and batten screens. An adjacent store-room provided the right place for the monitor loudspeaker glued to which was Daniel, my husband and my most critical listener. He found that here was the heaven-sent opportunity to compare the monitored sound with the "live" on the spot, merely by the turn of a door handle!

I should like to explain that Dan and I usually divide our serious recording programmes in order to avoid making too many mistakes with the complex gear in use. He concerns himself solely with the design and manufacture of the equipment required, the technical continuity, and the all-important monitoring on a wide range speaker set-up. My time is devoted to microphone positioning, balancing with the use of headphones (subject to the monitoring approval), and recording.

## Clear stage

The stage was kept clear except for the three microphone stands and a light-weight boom on wheels with a reach of about twelve feet. This particular gear was designed to allow freedom of placing a microphone up to twenty feet above an orchestra or choir. The recording equipment and cue lights were placed in the wings, with long lengths of cable from the microphones to the mixer. Ten to twelve yards of flex served the monitor room.

As each class of performer stepped on to the stage so the microphones were



adjusted. For instance, one vocalist had what was described as a "microphone voice," that is, the voice obtained substance and power with the use of a mic placed fairly close and naturally this method suited most popular songs. For the final recording of the "pop singer," and after one or two "tests," I used a Reslo ribbon some eighteen inches away and about five feet high. Subsequently this competitor, although unaccompanied was highly commended for a pleasant tone.

Another competitor in the vocalist class possessed a powerful soprano quality. I had had previous warning on the test recording that this voice was capable of a much wider dynamic range than the previous singer. The S. T. and C. "ball and biscuit" was, I thought, favourable here, placed a good three to four feet away and about four to five feet from the floor.

I brought the piano accompaniment closer by the use of a ribbon placed low and only two feet or so from the bass end. When the two inputs used were finally balanced on the mixer, and with the "thumbs up" signal from Dan, there resulted a fairly realistic performance without distortion. At the judging later,

this vocalist was acclaimed the winner of the section.

To save confusion, I would mention that my choice of microphone placing here may seem unusual and contrary to general recommendations, but in this particular case a technique was called for which would help to soften the strident pitch of the old upright piano (which did not improve with several tunings).

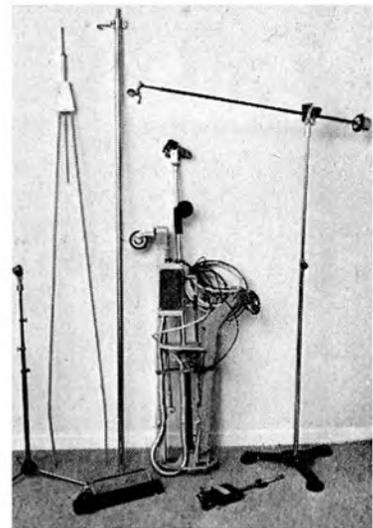
For normal upright piano recordings I favour one microphone a few feet from the floor to the player's right in order to bring up the weaker strings. This method was indeed used for one of the solo pianists at her home when a master tape was made to provide the disc cutting.

Of course, most of the recordings were not all plain sailing. Had I test recorded all evening I would not have felt that I had really done justice to a fine artist. Perhaps most of us are *never* quite satisfied. In sound reproduction perfection can hardly ever be obtained in its true literal meaning. It seemed that after making two or three trial runs there was always the risk of tiring or irritating the artists to the extent of reducing the original quality of the performance. (Do professionals always get it right first time?) However, I soon learned to

There is no more difficult problem to the inexperienced recording enthusiast than correct microphone placing. Good results come with experience, but to help achieve them we have arranged an entirely novel series of features, to be published in future issues.

We shall create, with models, a series of representative problems of microphone placings. These will be illustrated and described and advice will be offered by Mrs. Naomi Archer.

Mrs. Archer and her husband have wide experience of all types of recording as the article and photographs on these pages indicate. That on the right shows the microphone and associated equipment used by the author.



accept what I hoped was the best compromise in all the aspects of making a recording.

### Folk songs

One interesting presentation was a foursome who specialised in folk songs, some of which I believe were originally sung by mass groups of negro workers. Here, I did have the advantage of test recording while the group was practising and where one microphone method suited one song, it did not necessarily follow with the second. In the first case a moving coil (D.19) was used for the female voice, whose lullaby was well in the foreground. The effect of a distant male backing was achieved by placing the live microphone (S.T.C.) on the boom slung high above the three male singers, with their guitars and banjo, standing several feet behind the soloist. A word with Dan on the monitor confirmed the desired illusion of depth. For their second song, the group was arranged in a semi-circle round the "ball and biscuit" (four feet high), and all voices being about equal, there was sufficient blending and character of instruments to suit a lively atmosphere. During the finals of the contest, the folk singers received long applause and were highly commended.

Two microphones were eventually used for the rock'n'roll band. The monitor speaker proved that the ribbon needed shielding from the drums and even when it was turned with the "dead" side towards them, the recording was ruined by the ribbon "blocking." Again, after two or three "takes" the S.T. & C. won, standing three feet distant from the electric guitars' amplifier and a good seven to eight feet away from the cymbals and drums. The "rock" singer appeared to embrace the D.19 mike with the stand set five feet high, and although he did move about all the time, the level of his voice, fortunately, remained constant. Where the musical groups were more elaborate, three microphones were used to maintain balance and it was felt this method ensured that none of the indi-

viduality, where shown, was lost to the judges.

On the headphones, the monologue artist sounded a trifle lifeless. Dan suggested I might have switched to the wrong compensation! Originally I used the Reslo at a distance of about eighteen inches on a level with the speaker's chin. The recording was clear enough but by no means did well to a performer who was putting his heart and soul into a rendering of a Bransby Williams tale. I decided to cut halfway through and had a long consultation with the "listener." It was odd how a seemingly straightforward speech recording presented such a problem in that particular hall.

While the time slipped by, other competitors began to queue up and this became so disconcerting enough to impede any normal trend of thought for a while. Eventually, I used two microphones angled side by side at a distance of about seven feet and, orthodox or not, this method produced a slight echo with both inputs similar but maintaining the original recording level of one microphone at eighteen inches from the performer. Now there was a little colour and depth of voice to one who deservedly won his class with flying colours.

The two comedians were "happy" with the microphone four feet six inches high. Their act necessitated various movements away from the mike and the S.T. & C. coped splendidly all along with the recording meter showing little deviation.

### Cue lights

The piano accompaniment used the Reslo only thirty inches high and near the bass end. One might question the use of an extra microphone in such cases when the "ball and biscuit" alone would obviously have coped. I think there was an important difference in bringing the instrument into the picture at a low level in preference to having the echo of one in the background, since on that occasion the piano was situated on the stage end.

Those taking part in the contest seemed in favour of taking their cue from the

"Stand-by/Record" sign. On other recording sessions the wild waving of arms and head shakes had only served to confuse, the groups especially. It was quite remarkable how, when I switched to "stand-by", absolute silence prevailed. In my opinion this indicator is one of those necessary extras, for it allowed me to set the tape running and to synchronise the level control with the "record" cue.

One of the reasons for using the boom was to eliminate floor noise, accentuated by the fact that all the performances were recorded on the stage. For instance, one pianist persisted in stamping his foot in time with his playing and although it was impossible entirely to obliterate the stamping sound, it became less irritating from above and the transmitted shock was avoided. Probably, had the pianist been more co-operative, all the irrelevant sounds could have been checked.

### Calamity

Another pianist competitor felt she could play much better with all the stage lights out (what we amateurs have to put up with!). Thus each row of lights were dimmed until shadows were just discernible. This was all very well but the equipment could not run on candles and it was heartbreaking to discover yards of tape wound round the slowing capstan.

Later, a happy compromise was reached with the temperamental musician, who gave a highly technical performance of Chopin, using two microphones concentrated round the piano, and one row of stage lights! On playback transistor or tape hiss was audible through the quiet passages, but Dan considered it did not mask the musical performance.

Experience had shown that in the hall, the guitarist needed one microphone at vocal level (D.19), and one to meet the instrument towards the edge of the sound box. Here, we found the ribbon was kind to the lower mellow notes. Both mikes were not more than two feet distant. Had the hall been less lively, the S.T.C. alone would have been used un-

(Continued on page 10)



# My Diary



Vivienne Gooding

**T**URNING back the leaves of my diary for the past few weeks brings back very vividly all the fun and jollity of the Christmas holiday. It also reminds me of all the hard work I had to do.

For a fortnight before Christmas my husband was out nearly every night recording and my activities were restricted to producing numberless cups of coffee as the men sat up until one or two o'clock in the morning listening to the playback of their tapes. When volunteers were called for carol singing they didn't even ask me—they just pushed a collecting tin into my hand and shoved me out into the cold night air to fare as best as I could and I still had to make the coffee when we came shivering home.

The twenty-fifth itself was my day. After the family chaos had subsided in the early evening I settled down by the fire to listen to some of my favourite operatic tapes. A glass of wine, the room lit by fairy lights on the tree and soft, sweet music. Could one ask for more?

On two evenings in January I've been

## TRADE NOTE

**A** RETAILER confesses that his radio and television business relies mainly on its sales of tape recorders and associated equipment. Asking how many women bought machines from him during the past year we found on checking his records that the answer was just three.

**Does this mean that his lady customers are singularly unenterprising or are they too coy to allow their names to appear on an invoice?**

out with my own portable recorder. It's funny how some people are only too pleased to talk in front of a microphone whilst others have to have the words dragged out of them. A dear old Chelsea Pensioner I spoke to just wouldn't shut up. He was still talking as I backed quietly away. For all I know he may still be talking.

I didn't record any children's parties this year, but I do have a forward engagement this month to attend a bun fight. If I survive I'll let you know what happens.

## PICTURE PAINTING

(Continued from page 9)

hesitatingly for the guitar and string performances, since its quality surpassed that of previously-tried-out microphone combinations. The photograph on page 8 depicts a typical recording session in a "deadened" room, making use of the "ball and biscuit" microphone.

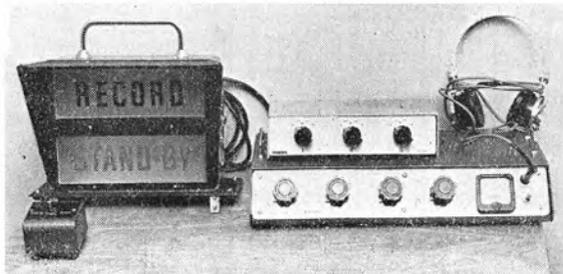
The climax to the talent recording session came with the performance of a twenty-five-strong choir which proved to be one of the most difficult subjects. In certain cases I have found the dynamic range a choir can reach has exceeded that of a large church organ. Although this group was comparatively small, it boasted a competent and powerful soprano who, on the test recording, charged the meter reading to its end stop and forced Dan out of the monitor room like a cannon ball!

To cope with such proficiency the S.T.C. was placed in front of the sopranos and altos; a ribbon was slung high over the heads of the tenors and basses; and the piano accompaniment made use of the D.19 coming in at a low level through the mixer.

Finally, with the three inputs nicely balanced, out came Dan, this time with the "thumbs up" signal. (On occasions we have used an intercommunication set-up, but it is so easy to accidentally record undesirable comments!) It was pleasing to learn that the recording had not lost the choir the well-earned Van Slochem Trophy and cash prize, as well as a disc cutting which each of the six finalists received of their individual performances.



**Right: The "stand-by/record" sign which eliminates the "confusing head shaking and arm waving"**



Needless to say, however experienced or otherwise one may be, much was learnt from this unusual and compressed recording feat in which over forty performances were recorded for the contest in the space of sixteen hours.

The playback programme was more relaxing and enjoyable from my point of view as it was simplicity itself to select a counter reading (often twice) for the judges to give serious consideration to each and every competitor in one evening's hearing through wide-range loudspeakers.

Recorded entries were considered very seriously by the younger competitors as free auditions. Indeed as a result of some of the playbacks the fortunate performers have been approached by talent agents.

Despite the appraisal of some of the recordings, the picture as a whole was not all success by a long way. The gear

fulfilled its purpose admirably but recordings of this quality tend to require the resources of a small studio and a much more experienced recording technique. However, I think the most notable deficiency was the absence of other professional type microphones of varied directional patterns, although, fortunately, the recording failings were readily distinguished from the talent shortcomings.

Of course the final tape for the library required some editing, added commentary, and applause, to lend itself to thirty minutes of representative entertainment.

Glancing back at this picture and others, guides me into thinking how important quality can be in serious amateur tape recording. I am now convinced that to reproduce shows more realistically, specially for judging purposes, then stereo is desirable. Techniques are already being prepared for the next talent contest to be recorded in this medium.

# Make way for the

# LADIES

## THE GIPSY'S WARNING

A new regular  
monthly feature

Edited by  
Vivienne Gooding

IS yours one of the many households which now proudly boasts a brand new tape recorder for the first time? A Christmas present, perhaps? A frightening gadget with too many knobs and the immediate prospect of bangs and flashes if it's handled by anyone other than a (male) qualified engineer?

Or are you just beginning to tinker with your husband's machine on the quiet while he's slaving his poor heart out to provide you with those luxuries which are always going to arrive but somehow never do?

Then I must warn you that the day might dawn when you'd rather invest your spare fifty bob on a new tape than on a new hat, and from a woman that's a horrible admission!

I've been through the mill myself. I've been just as scared as you of blowing the wretched thing up! I've faced my husband with many inner qualms after having accidentally erased one of his favourite—and as he was careful to point out not once but many, many times—irreplaceable recordings. Oh yes, I know what recording mania means, and so will many of you before the New Year is out.

Molly Hobson has just bought a new machine and she hasn't used it yet. She isn't sure if she knows how to. Shall we see how she gets on with it in the next month or two?

Very sensibly she started off by writing to the secretary of her local tape club and I'm going to see her again after she has been to one or two meetings. In the meantime she has bought another recorder for her eighteen-year-old son, Colin, so that proves she's enthusiastic. I wonder if the bug will bite them as it bit me?

### Personality of the month. 1

Mrs. HAZEL  
ELEMENT



COME along with me down a street of neat, terraced houses and say hello to our first "Personality of the Month." Hazel Element is her name, and her blue eyes sparkle as she welcomes you into her comfortable, tidy living-room. Even the warmth of her conversation doesn't prevent you casting stealthy glances at the dominating feature of the room, an enormous grand piano.

Hazel is a pianist and she teaches music to some twenty aspiring musicians. Hazel's husband, Peter, is also a pianist and he gives concert performances, many of which are broadcast. A tape recorder was an obvious necessity for the Elements, so more than three years ago they acquired a Grundig TK5. It is still in almost daily use.

"It's most important job," explains Hazel, "is to record all Peter's broadcasts. I was terribly nervous the first time I did it—more nervous than poor old Peter at the studio, I expect! Now I just do it as a matter of course.

"Of course, I use the recorder quite a lot with my own pupils. It's quite the best way of demonstrating their mistakes. I wish you could see some of their faces when they listen to the playback of what they thought was a particularly good practice piece. Sometimes I don't let them know they're being taped. . . ."

Our conversation is interrupted by noises-off from the bedroom, and Hazel returns full of apologies.

"Sorry about that. The children were having fun pulling the feathers out of their pillows. They're restless because I often have the Grundig in their room at this time in the evening. I record "Listen with Mother" during the afternoon and let them hear it when they're tucked up in bed."

I begin to realise that this is a household of some character when Peter suddenly appears; the room thrills to the music of Liszt as his fingers flash along the keys.

"Sometimes I record Peter's practising. That's especially useful for checking programme timing when he's planning a recital. He very rarely needs to use a tape to check the accuracy of his playing. That's what it means to be a virtuoso."

Listening to the flow of the notes I understand.

"Oh no, I don't have any help in the house. I just about manage the pupils and the children myself. Sometimes I'm pretty rushed, but things sort themselves out."

I am filled with admiration for this vivacious ash blonde who is able to pack more into her life than most of us dare even to think about. I wonder what kind of a mess I should make of things if I had to live her life.

## CHILDREN'S CORNER

HAVE you tried recording the sounds of your new toy? They're not so new now, are they, because Christmas was a whole month ago. If you have a clock-work train set you'll find it sounds jolly real when you listen to the playback. Girls can try recording their dolls; of course, you'll have to make them speak in different voices and they will all really be you, but it's easy once you try.

Won't your friends be surprised if you get Mummy or Daddy to play the

tape for them, because they won't know how it was done!

If you have a party there are lots of games you can play with a tape recorder. A good one is to write down the names of animals like horse, cat, pig, sheep on pieces of paper, shake them up and let each child take one. He then goes into another room and records the sounds that the animal on his paper makes and when the tape is played you have to guess not only what the animal is supposed to be but also who did the recording! Older children can play the same game but they have to pretend to be that animal eating its food. Some of those can be very funny.



# SPLICERS AND EDITING BLOCKS...

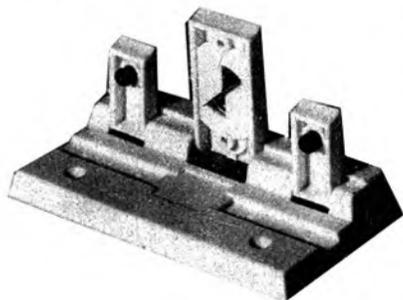
## A SPECIAL FOUR-PAGE FEATURE ON TAPE ACCESSORIES

**H**AVING purchased his tape recorder, the creative enthusiast may now be faced with the problem of choosing from the many accessories that have been designed to help him in his hobby. Here, and on the following two pages, we have outlined the range of four such accessories—tape splicers, mixers, bulk erasers and telephone adaptors. Each can increase the use of a recorder and each will certainly solve many of the problems faced in programme production.

**T**HERE are now a very great variety of instruments available for performing that very necessary operation of splicing tape. Since this is an exercise carried out very, very frequently by any user of tape, we have collected together a representative collection of the various types of splicer and this review will attempt to evaluate these.

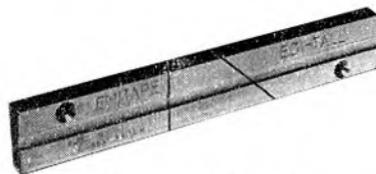
It would seem that there are two distinct schools of thought in the design of tape splicers. Both of these attempt to perform the same function, that is of joining the tape by means of an adhesive backing strip, ensuring that any adhesive from the strip cannot easily get on to the coated surface of the tape, thereby causing the tape to stick either to itself or to the tape heads and guides. In addition these splicers all enable one to cut the tape accurately and to butt the two ends accurately together.

How then do the two basic types differ?



The Metro-splicer

The first group seem to owe their ancestry to the amateur cine film splicer, in fact one of them can be simply converted to splice 8 mm film. Five of this type of splicer were examined, the Easysplice, the Metro-splicer, the Bib splicer, the Irish tape splicer and the Sonocolor SM6 tape



The E.M.I. Edi-Tall

splicer. All of these have one thing in common, a groove to fit the tape and two pressure arms which can be brought down to clamp the tape in position while it is being cut. In the case of the Easysplice and the Bib splicer the cutting operation has to be performed by hand using a razor blade, whilst with the Metro-splicer, the Irish splicer and the Sonocolor SM6, a built-in cutting device carrying its own razor blade is provided.

The type of adhesive tape to be used with these splicers also varies. The Easysplice and the Metro-splicer use sticky tape slightly less than the  $\frac{1}{4}$  inch width of the recording tape with the intention that it should be so placed on the recording tape that it does not quite reach either edge, so that the adhesive cannot flow on to

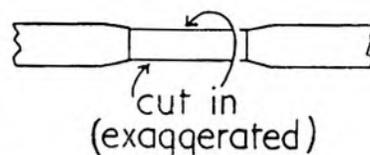
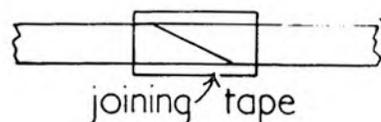
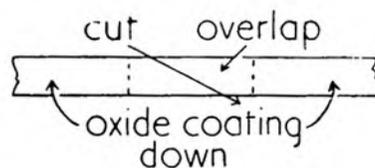


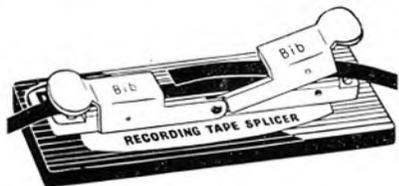
Fig. 1. The general system used to effect a satisfactory tape splice

the recording surface. The Bib and Irish tape splicers use  $\frac{1}{2}$  inch wide tape. This is placed perpendicularly across the recording tape and then trimmed off to the edges afterwards. In the case of the Bib splicer this is done by running the razor blade along two slots provided, and in the case of the Irish splicer by moving a special cutter into position which trims the surplus adhesive away and cuts a slight "waist" in the tape to ensure that the sticky edges do not touch the tape guides. An idea of the "waist"



The Irish SP 3 Splicer

# SPLICERS AND EDITING BLOCKS...

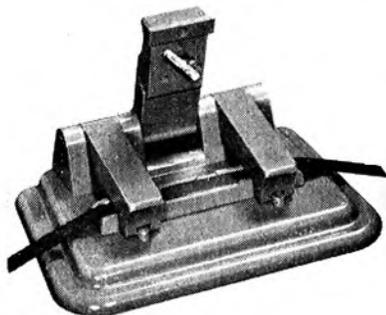


Left: The Multicore Solders Bib splicer, and (right) the Easysplice



cut can be seen in the bottom sketch of Fig. 1. Any of these splicers, which, as can be seen from the table at the end of the article, vary in price considerably, are capable of making a very good tape joint.

In my view the two automatic ones are simpler to operate, but this is as it should be, since one usually expects more for paying more. The Metro-



Sonocolor SM6

splicer, incidentally, is the one referred to above which will join 8 mm. cine film.

Whether one chooses one of the above types of splicer, which all use clamps to hold the tape, or one of the second group in which the tape is held by a specially designed slot is a matter of taste and possibly experience. The first group is probably easier for the beginner to the hobby, whereas the second group, which is similar to those used by professional tape editors, is probably better for the more experienced recordist. The splicers of this type which have been reviewed are the Editape, the Quik-splice and the E.M.I. Edi-tall and the Editing block. These all have a channel slightly less than  $\frac{1}{4}$  inch wide on its upper opening, but undercut slightly and so shaped that the tape can be pressed into it, and will be gripped firmly (Fig. 2). A fine slot crossing this channel is provided in order that a 45 degree cut can be made with a razor

blade. In the case of the Edi-tall, a 90 degree cut is also possible.

The Editape and the Edi-tall are intended for use with adhesive jointing tape slightly less than  $\frac{1}{4}$  inch wide, and the design of the channel is such that it is easy to place the sticky tape on the recording tape, the undercutting ensuring that a slight gap is left at each edge.

The Quik-splice has a small compartment beneath it which houses its own razor cut Mylar splices, each one backed with paper. This backing can

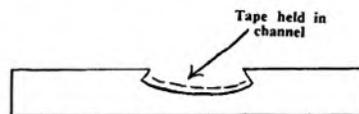


Fig. 2. The tape channel featured in the Edi-Tall, Quik-splice, Editape and Romagna Editing blocks

be removed as the splice is applied, in a similar way to the backing on a well-known brand of adhesive plaster.

Whether one uses the ready made splices or cuts ones own, any of these three splicers will make very accurate joints in a minimum of time, since no clamping levers have to be moved in order to place the tape into the instrument and remove it again. Having seen professional tape editors at work, the speed at which this can be achieved is quite phenomenal. However, some practice is needed in using one of these blocks and they may not be to everybody's taste.

In conclusion, all the splicers reviewed do their job well, and it is hard to recommend any one as being better than the others, although I must admit to having a slight preference in favour of the non-clamping type.

## PRICES OF SPLICERS AND BLOCKS

<b>Bib splicer</b> .....	18s. 6d.
<i>(Multicore Solders Ltd., Multicore Works, Hemel Hempstead, Herts.)</i>	
<b>Easysplice</b> .....	5s. 0d.
<i>(Easysplice Co., 30, Lawrence Road, Ealing, London, W.5.)</i>	
<b>Editing block</b> .....	7s. 6d.
<i>(Romagna Reproducers, 2, Sarnesfield Road, Enfield, Middlesex.)</i>	
<b>Edi-Tall</b> .....	10s. 6d.
<i>(E.M.I. Sales &amp; Service Ltd., Emitape Division, Hayes, Middlesex.)</i>	
<b>B.A.S.F. Splicer set</b> .....	5s. 0d.
<i>(B.A.S.F. Chemicals Ltd., 5a, Gillespie Road, London, N.5.)</i>	
<b>Irish SP3 splicer</b> .....	£3 7s. 3d.
<i>(Wilmex (Distributors) Ltd., St. Stephen's House, Westminster, London, S.W.1)</i>	
<b>Quik-splice</b> .....	17s. 6d.
<i>(David Williams (Cine Equipment) Ltd., 5-9, Glasshouse Yard, London, E.C.1.)</i>	
<b>Sonocolor SM6</b> .....	£1 12s. 6d.
<i>(Tape Recorders (Electronics) Ltd., 784-788, High Road, Tottenham, London, N.17.)</i>	

# ... MIXERS

Part two of our special review on tape accessories currently available

"We have a programme of holiday sound snapshots, and we desire to add a linking commentary. Which is the best way of ensuring our sound levels are correct?"

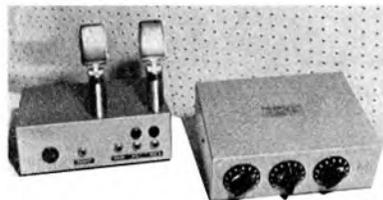
A mixer provides an essential link in the solution of this query, but this is only one of the applications it can be put to. Its true function is to provide a junction where two or more sound sources may be blended, and increased or decreased in volume before they are fed to the recorder.

It is essential, if large-scale feature tapes are planned, and is also a basic piece of equipment in the recording of a musical group.

The application of mixing is being dealt with by Alec Nisbett in his current series on professional techniques and their relation to amateur uses.

**B**ASICALLY the mixer units now available can be divided into two groups. Easily distinguishable by their prices, the less expensive units do not incorporate pre-amplifiers and the signals passed through into the tape recorder therefore receive no boost.

This, of course, does not seriously detract from the use of these units—the limitations being that only high output sound sources, such as moving coil microphones, etc., should be used. The use of low output sources necessitates pre-amplification, and therefore a more elaborate unit is necessary.



The Unimixer I and II

A number of mixers are available complete with pre-amplifiers which bring the signal up to the strength necessary to feed the tape recorder.

Firms manufacturing the mixers without pre-amplifiers include Brenell, Dektron, Technical Suppliers Limited, Lee Products and the Welmec Corporation. In general the specifications of these units do not differ to any great degree. The differences are limited to weight, size, and type of housing. Quality aside, the number of inputs would tend to be the deciding factor in most cases, and so in the details published below we have kept our descriptions of this type of mixer to prices and the number of inputs.

First and least expensive available is the **T.S.L. Universal**. At £2 2s., this is a high impedance unit permitting controlled feeding in and out of one, two or three separate signal sources. Next is the **Dektron Mixer/Fader**, which provides inputs for either three microphones, or two microphones and one high-level signal (radio feeder). It retails at £2 5s.

The **Brenell** unit follows, with two inputs each separately controlled with a rotary control knob. The price is £2 18s.

Also with the same number of inputs is the **Lee Products N9018**. This was specially designed for use with the Elpico G256 and G258 recorders, and has two inputs separately handled and mixed by two independent gain controls. It costs £3 3s.

Last in this range is the **Welmec** mixer unit, serial number 966759, which costs £4 5s. and provides two inputs suitable for microphone, radio or pick-up. The controls are independent and of the rotary type.

**Dektron** also market, at five guineas, a transistorised monitor to provide amplification and information about the output of the mixer/fader.

The **Sound News Production Unimixer I** is the lowest-priced of the units with pre-amplifiers incorporated. It has three independently controlled inputs for two microphones and one gramophone or similar input.

A unique feature of the Unimixer is that the microphone inputs are duplicated to permit the use of either high impedance crystal types, or low impedance ribbon or moving-coil types. Frequency response from 30 ohm input is 50-10,000 cps  $\pm$  3dB. The price is £9 9s.

The **Unimixer II** at £15 15s., again



The Saba Regiemixer

with three inputs as for the cheaper model, has the advantage of amplifying the microphone channels before mixing. This permits high-level mixing with consequent reduction of noise. Of special interest to Ferrograph or Vortexion users is their connecting cables type F/1 and V/1 which enables the Unimixer to obtain its power supplies from the recorders without any alteration. Frequency response is 40-12,000 cps  $\pm$  3dB, and the quoted noise level is -35dB (with reference to .775 V output).

**Grundig GMU3**. This provides mixing for up to three microphone inputs, and one additional channel. A built-in pre-amplifier enables a total of four separate sound sources to be independently mixed. A magic eye recording level indicator ensures the correct degree of modulation. Price: £16 16s.

The **Spectone Electronics Mixer** is another with three inputs, in this case for radio or tuner, microphone, and either a high-output or low-output pick-up. Three independent gain controls govern the signals applied to the corresponding sockets.

A selector switch is incorporated providing equalisation for LP and 78 records. In the "F.R." position, the disc input assumes the same characteristics as the microphone input, and permits the use of two microphones.



Grundig GMU3

each separately controlled. Two models are supplied, Model 142 (£17 17s.) is suitable where HT and LT is available from associated equipment, and Model 142A (£22 1s.) requires connection to the mains supply.

**Saba Regie-mixer 100.** Up to four sources of sound can be mixed independently on this transistorised unit which has a quoted frequency response of 20-20,000 cps. Hum level, below average output:  $\pm 65$  dB. The price is £18 18s.

**Uher M153A.** Another transistorised unit with four inputs for attenuation-free and re-action free mixing and fading of four different signals. With press-button operation, and using conventional Ever-Ready PP9 batteries, the unit sells at £21.

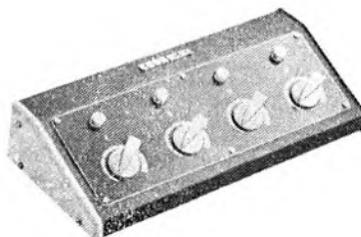
Finally there is the **Vortexion Four-Way Electronic Mixer** unit. As the



The Vortexion Four-Way Electronic Mixer

mixer, which has an output meter which indicates transient peaks.

An additional input marked "Ext. Mxr" will accept the output of the four-way mixer, converting the unit into a seven-way controlled unit. Eight valves and a selenium rectifier are included in the circuit of the three-way mixer, the price of which is available on application.



The Uher M153A



Lee Products N9018

name implies, four channels can be handled by this unit and it is claimed that microphone hum and background noise have been reduced to a minimum. Standard 15-50 ohm shielded transformers on each input are arranged for balanced line, and the primaries are screened to prevent H.F. transfer when used on long lines.

For any output impedance between 20,000 ohms and infinity, half a volt output is available, and special models can be supplied for 600 ohms at equivalent voltage. The price of this 18 x 10 $\frac{1}{4}$  x 6 $\frac{1}{4}$  inch, 22 lb. unit, is £40 8s. 6d.

Vortexion also produce a three-way

## BULK ERASERS

**T**RACES of a previous recording which appear in the background of a tape that has been erased by the normal method (running the tape through the heads with the gain turned down, and the machine set to record) can be due to over-modulation during low frequency passages.

This erasure method is a time-wasting occupation, and the two problems together can prove quite tricky when a "clean" tape is needed in a hurry.

The way to overcome both of these problems is to purchase a bulk eraser, which will provide rapid and complete erasure of tapes. By simply placing the tape on one of these units, and leaving it for a few seconds a completely clean tape, ready for re-recording, may be obtained.

The most inexpensive bulk eraser currently available is the **Osmabet Instant Bulk Eraser** at £1 7s. 6d. Next is the Wellington Acoustics **WAL Bulk Eraser**, suitable for any size reel at £7 18s. 6d.

The **Harvey Electronics** range varies from the £6 5s. unit suitable for 2 $\frac{1}{4}$ -inch spools of quarter-inch tape, to the 12-inch spools holding one-inch tape, which costs £15 10s.

Leavers-Rich Limited market three erasers. First is the **LeeRaser Junior ER30A** at £6 5s.; then the **Standard ER31B** at £9 10s.; and finally, the **Senior ER32B** at £15.

## .... AND TELEPHONE ADAPTORS

**T**HE telephone adaptor is a handy item to have close to your recorder. With it, it is possible to record both sides of a telephone conversation without the extraneous noises met when attempting the job with microphones.

It is a simple device consisting of a pick-up coil, housed within a case, which is actuated by simply placing it alongside the base of a telephone. The line transformer of the telephone produces a magnetic field which is induced into the pick-up coil. The signal thus produced is then passed through the microphone input of the recorder in the normal manner.

In some cases, a small rubber suction pad is attached to the case of the coil. This is used to secure the adaptor to the telephone's base. A system of trial and error will provide the exact location for the pad which is fixed where the strongest signals are detected.

If your tape recorder has straight-

through amplifier facilities, the adaptor may also be used to amplify a telephone conversation for others in the room—fun at parties, and a blessing for long-distance calls where a relayed message would increase the cost of the call.

Prices for these instruments vary from one to three guineas, and it is largely a matter of individual taste for the design which would decide a purchase. The companies producing adaptors at the former price include **Cosmocord**, **Elizabethan** and **Truvox**.

Next in ascending order of prices comes the **Dektron Telecon pick-up** and the **Lee Products AT10**, both at £1 7s. 6d. These are followed by the **Welmec** model, serial number 8266743, which costs £1 15s., the **Wyndor T.A.** at £1 19s. 6d., the £2 5s. **Saba T.A.**, available from Henri Selmer's; and the **Uher 801**, at £2 10s. from Tedalex (London) Limited.

The **Grundig TA3** and the **Philips EL3969/11** top the list at £3 3s.

# FIRST CATCH YOUR BUS



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**I** HAVE received several requests from readers to take a recording of an ordinary bus trip and describe the results and how I obtained them.

It would seem that a number of readers have already attempted projects of this kind and have been dissatisfied. Without having heard the tapes it would be impossible for me to say with any certainty where they went wrong, but it is likely that they may have made a mistake in the fundamental approach to the subject. It is very easy to be physically aware of sounds which appear to be self-explanatory and yet after recording they are found to be nothing more than a disjointed collection of noises.

In order to produce features of the quality that makes the listener sit up and take notice (if he doesn't do that he will either fall asleep or escape from you with the greatest possible speed) it is important that every sound recorded should be a clear cut representation of what it purports to be. It should require no explanatory comments made directly to the audience by the operator when the final result is heard.

To produce a tape which opens with a few deep rumbles and mechanical thumpings in the lower register and then to stand proudly by telling your long suffering friends that this is the noise of the engine before the bus started will only make them regard your tapes with the same ill-concealed horror they would have of being taken on a personally conducted tour of the family photograph album. To get a good recording of a bus trip requires something more than merely paying your fare, switching on the recorder and hoping for the best.

The very first essential is to find a co-operative driver and conductor, both of whom know what you are doing. Obviously attempting to enlist the help of such people in the centre of the city when they are trying to cope with the petulant rush-hour crowds would be to ask for trouble, and at best you would get a refusal whilst at the worst you would be told in forthright language the sort of things you definitely don't wish to record.

On the other hand, if you take the trouble to start your trip at the most convenient terminus you will not only find buses in large numbers but also a collection of drivers and conductors in various shapes and sizes, all bored to tears and probably only too eager to investigate the mysteries of your recorder as they wait for the time to move off.

When the driver of a London Passenger Transport bus presses his starter button a most distinctive sound is heard, immediately recognisable by the vast majority of people, and it is at once followed by the rumble of the engine. The passenger is accustomed to hearing the self-starter from his seat, so record that inside the bus near the back of the driver's partition. The interior of the bus is intentionally insulated as much as possible from the engine noise and this should be recorded from the outside near the bonnet. The sound level as the driver revs up is fairly high, and with your machine modulated well down to avoid overloading the result on playback at home will be to make the listener instinctively sit up in startled surprise as all ninety-seven horse power roars through the living room.

It didn't take me long to find a conductress who was charmingly intelligent and eager to co-operate when I explained what I was doing. It must always be remembered that however willing a member of the public may be to help they may prove very self-conscious when they know a live microphone is in front of them, and so I told her that I should only be recording for a short time but that I would like her to address her remarks to

# FIRST CATCH YOUR BUS



*The author gathering material*

the passengers from a position near to me and in as loud a voice as possible so that I could "set my recording level."

At first she sounded very artificial because she was over-eager to please, but I reminded her that I was not yet recording and she was soon perfectly at ease. Unknown to her I was getting some excellent recordings of, "Hurry along there . . . Wait until the bus stops . . . Fares please!"

To make things simpler I chose a seat just inside the bus being careful not to sit in a direct line with the draught from the open doorway as this could cause wind noises on the microphone.

The first recording I ever took on a bus was spoiled because I sat too close to a rattling window. Mechanical vibrations of this kind are rarely noticed by the ordinary passenger, but the recording engineer has to be keenly aware of the relative values of secondary sounds of this nature. There is a great danger of producing, as I did then, an excellent recording of a window rattling on a bus rather than of the vehicle itself.

As you experiment with your field recording you will come to understand that the human ear is highly selective and conveys to the brain with considerable emphasis those sounds on which the listener's attention is focused, but it shuts out extraneous noises which may be at an even higher level. This was admirably illustrated by my rattling window, because I had heard it when recording but only subconsciously, and on playback I at first wondered where the peculiar noise in the foreground had come from and then immediately ex-

claimed, "Of course! That wretched window was rattling the whole time."

Unfortunately the microphone is non-selective in this sense and the recorder not being gifted with the power of thought will tell the tale of what actually took place rather than what you, as the human observer, willed yourself to hear. An appreciation of these facts is essential to the production of a good recording of any sounds not clearly defined and isolated.

To give some colour and realism to the recording it was going to be necessary to include the sounds and voices of the passengers, but these I kept well in the background and scrupulously avoided recording anything which would be regarded as private conversation.

This must always be a matter of honour with outdoor recording enthusiasts and should never, under any circumstances be violated. The actual recordings which you might take of the passengers' voices will be largely a matter of chance. It may even be necessary to make several journeys on the same bus before you get the kind of background talk and comment that you really want. It is strange how frequently one hears brilliant examples of earthy humour on public transport, and yet how rarely this happens when you are geared up to record. However this is something worth listening and waiting for and sooner or later you are bound to get a few remarks so naturally spontaneous that they will lift your whole recording on to a higher level of reality.

It may well be that your particular recording of a bus trip is subsidiary to another main subject of the tape. The recording I took especially for this article told a more important story than the mere journey itself. My trip was from a suburban terminus to the West End of London, and was intended to describe the Christmas lights decorating the streets. This immediately posed a much more serious problem, for such things are entirely visual and call for an accompanying spoken commentary.

In giving my descriptions of what I saw I was fortunate in finding a young family on the upper deck of the bus. The children held an uninhibited conversation right next to me and although the parents knew what I was doing the youngsters didn't, and their exclamations of wonder and delight immediately conveyed to the listener the gaiety and sparkling excitement of the scene.

My conductress was genuinely sorry when it was all over and I may even have found in her another recruit to the fast growing army of recording enthusiasts. All the people to whom I spoke and whose help I asked were only too ready to assist and as usual I met with friendly interest wherever I went.

I shall soon be off again recording subjects especially requested by you. I have received some very original ideas from readers recently, but have you written yet yourself? I really shall be pleased to hear from you and to undertake your personal request, so why not write today?

# BUILDING A STEREO MIXER

**T**HE main topic in this instalment is the circuit design of the microphone pre-amplifier stages. As with the mixer unit, each of these pre-amps is built on a small sub-chassis for ease of construction and since there are several of these units in the complete mixer, it is convenient to have them substantially the same.

In our early discussions we decided that two stereo channels and two monophonic channels would be the minimum requirement and this will necessitate six of these pre-amp chassis. Four of these would be for the two stereo channels and will be identical in circuit design and the other two will have identical early stages to these, only differing in their output circuitry.

In the interests of low noise, an essential factor in any microphone pre-amp, the first stage is a "cascode," consisting of a twin triode type 6060, which is the selected low noise version of the 12AT7. The slight extra cost of this valve is well worth while in this position, although of course, if any reader has access to a large quantity of 12AT7 valves and can do his own selection, this would be well worth while.

The second stage of the amplifier is another twin triode type 12AX7 (ECC83) the first half of which acts as a straight-forward voltage amplifier and the second

as a simple slit load phase-splitter. The reason for the phase-splitter will be apparent if we remember that for reasons discussed in an earlier article, we are taking the "sum" and "difference" of our stereo channels. The phase-splitter at the output end of each pre-amp unit will give one "positive going" and one "negative going" output and the respective outputs from each half of the stereo pair can be combined in the desired manner.

set panel control, the two switches, one from each half of the stereo pair being ganged together. In order to provide a small variation in gain between the two halves of the pair, one pre-amp has a variable resistor included in the feedback group. This resistor is also front-panel-mounted and is used for balancing the two halves of the channel.

In the pre-amp units for the two monophonic channels, the valve line-up is essentially the same, indeed the cir-

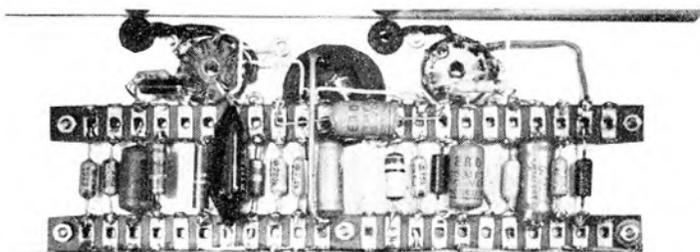


Fig. 1

In order to stabilise the gain of the amplifier and to provide a convenient method of varying this gain, negative feedback is applied from the cathode of the phase-splitter to the cathode of the first stage. This feedback is variable in four steps on a switch operated as a pre-

cuitry is identical, except for the last stage. Differences will obviously occur here since only one channel is present and a "pan pot" is to be introduced.

A word about components. If possible all resistors in these pre-amp units should be of the high stability type in order to reduce circuit noise. If for reasons of cost this is not possible, it is absolutely essential that all resistors associated with the first twin triode should be of this type.

Some thought was given to the amount of gain required from the pre-amp and it was felt that this should be sufficient to enable low level pressure gradient (ribbon) microphones to be used. To this end the gain of the amplifier from input grid to output is some 55dB in the maximum position, variable on the switch down to 25dB in 10dB steps.

In the lowest gain position, the amplifier will accept inputs of 200 millivolts safely without distortion and so no other

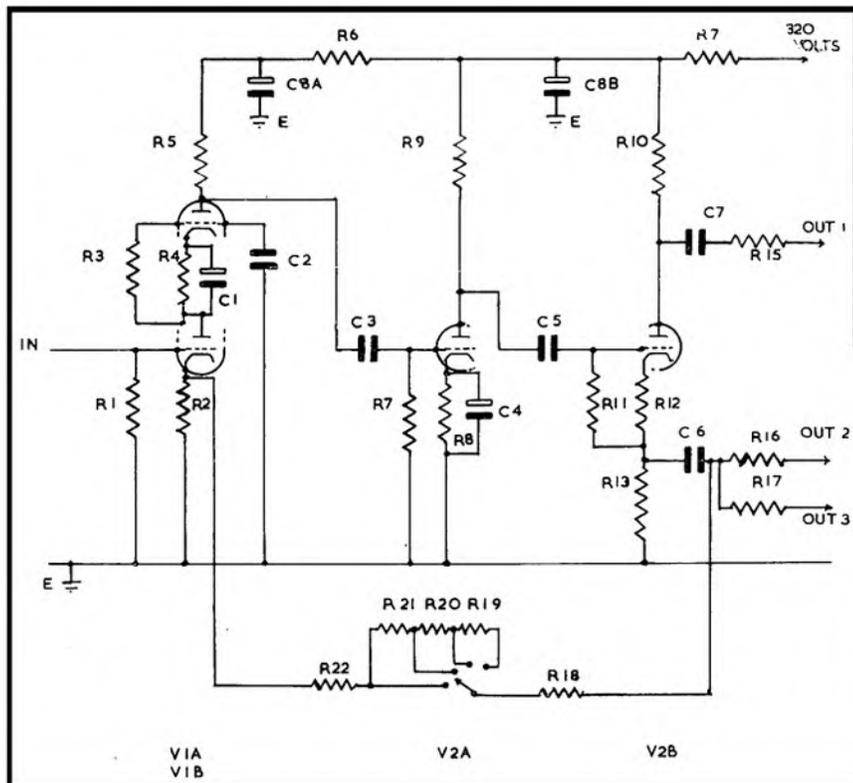


Fig. 2. Circuit diagram of pre-amplifier stage

R1 see text	R18 to be discussed
R2 2.2K	R19 3.3M
R3 470K	R20 470K
R4 2.2K	R21 150K
R5 100K	R22 56K
R6 15K	C1 100mF 6V
R7 220K	C2 .05mF 350V
R8 2.2K	C3 .05mF 350V
R9 220K	C4 100mF 6V
R10 22K	C5 .05mF 350V
R11 1M	C6 .05mF 350V
R12 2.2K	C7 .05mF 350V
R13 22K	C8a 50-50 300V
R14 15K	C8b 50-50 300V
R15 820K	V1 6060
R16 820K	V2 ECC83
R17 820K	

# BUILDING A STEREO MIXER

By H. BURRELL-HADDEN

## Part Four: The circuit design of the microphone pre-amplifier stages

high level input was provided. With a microphone, input will not normally be direct to the grid but via a transformer, unless, of course, a crystal microphone is being used. Room is available on each for fitting a small microphone transformer and the input grid resistor should be the one recommended for the particular transformer used. If the channel is going to be used exclusively for high level inputs, no transformer will be needed and the grid resistor can be conveniently 470K. In this condition as mentioned above, it is essential that this should be a low noise resistor.

Fuller details of the mechanical design will be given in the next article, meanwhile readers might like to prepare for the great construction by acquiring seven identical chassis to the diagram dimen-

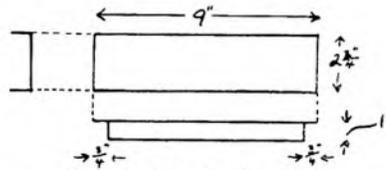


Fig. 3. Chassis dimensions

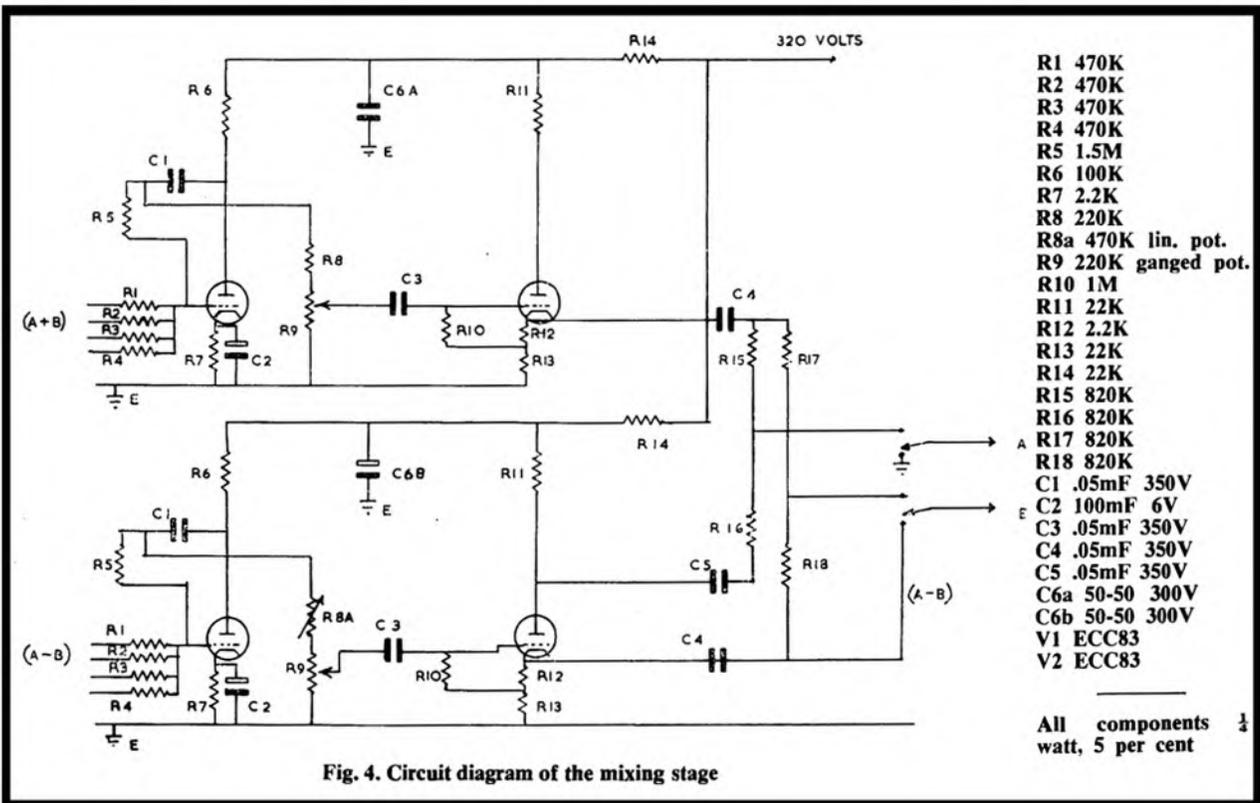
sions shown in Fig. 3. Aluminium will do, but steel is better.

These chassis will all be mounted side by side in a framework, to which a sub-panel is attached carrying all the controls. A panel proper is then mounted in front of this. This main panel is a standard rack panel, 22½ x 5¼ inches, and can be obtained from various makers of instrument cabinets.

The main chassis frame carries all the input and output connections both for signal currents and power supplies and also the final cathode follower output stage. This is necessary to ensure a low impedance output so that the leads to the recorder will not affect the frequency response, and to enable them to be of reasonable length.

Power supplies for the pre-amp/mixer are from a separate unit in order that alternating magnetic fields from the mains may be kept as far as possible from areas where they may be picked up and cause hum.

In the next article layout diagrams of the pre-amp and mixer units will be given and a final article will describe the main frame assembly and the setting up of the complete equipment.



- R1 470K
- R2 470K
- R3 470K
- R4 470K
- R5 1.5M
- R6 100K
- R7 2.2K
- R8 220K
- R8a 470K lin. pot.
- R9 220K ganged pot.
- R10 1M
- R11 22K
- R12 2.2K
- R13 22K
- R14 22K
- R15 820K
- R16 820K
- R17 820K
- R18 820K
- C1 .05mF 350V
- C2 100mF 6V
- C3 .05mF 350V
- C4 .05mF 350V
- C5 .05mF 350V
- C6a 50-50 300V
- C6b 50-50 300V
- V1 ECC83
- V2 ECC83

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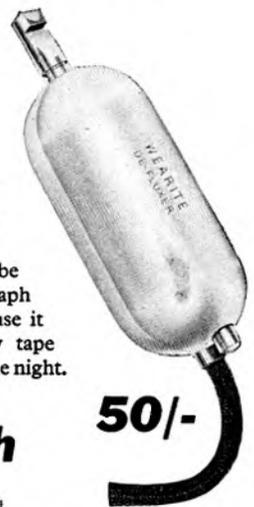
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# Equipment Under Test

## STUZZI 4M

By H. Burrell Hadden



Stuzzi Junior 4 M

**T**HIS recorder with the famous Austrian name is the first to be marketed under that label to be entirely British made. The machine, as might be expected from the makers of the well-known Magnette, is extremely compact, light in weight and thus readily portable. The case size is  $13\frac{1}{2} \times 11 \times 6\frac{1}{2}$  inches, only very slightly larger than the B.S.R. Monardeck, which is the heart of the machine. By extremely careful design, all the controls have been located into a space approximately one inch wide and the length of the deck. The case is finished in an attractive two-toned plastic and is rigidly made of strong ply-wood. A compartment is provided to house the mains lead, microphone and high level input lead.

The machine will record monophonically on four tracks on standard tape, in the now familiar pattern of two tracks in one direction and two the other. At the single tape speed of  $3\frac{1}{2}$  ips, up to six hours recording time on one reel is possible using a  $5\frac{1}{2}$  inch reel of double play tape.

The controls provided on the machine fall into two groups, those concerned with the operation of the deck and those concerned with the amplifier. In the first group there are two controls, the one on the right hand side of the deck controlling the normal running, both for record and play, and fast wind both forward and reverse. The control on the left of the deck is the record/play switch, which is interlocked with the other control in such a way that it is impossible to erase a tape accidentally. It automatically returns to the play position as soon as the deck mechanism is stopped. There are four amplifier controls. In the centre of the panel is the mains on/off switch com-

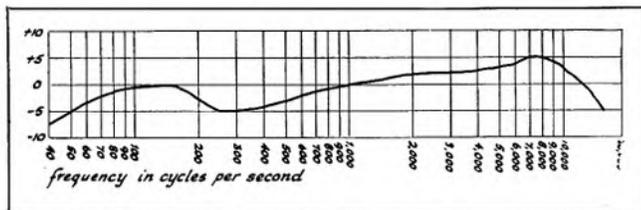
bined with the tone control. To the left of this is the volume control both for recording level and replay volume. To the left of this again is the switch which selects either tracks one and four, or two and three. To the right of the tone control/on/off switch is the magic eye record indicator, which incidentally is illuminated on replay, thus serving as a useful pilot light. To the right of this again is the superimpose switch, the operation of which allows a fresh recording to be added to an existing recording without erasing it.

In the pocket at the left hand side of the machine which carries the microphone, mains lead, etc., are three sockets, one for microphone input, and another for a high level input such as a gramophone pick-up, radio tuner, or a second tape machine. The third is an extension loudspeaker socket.

No switch is provided for muting the internal  $8 \times 3$  inch elliptical loudspeaker when this last socket is used, a facility which might well have been provided. The impedance of the extension loudspeaker should be three ohms.

### Manufacturer's Specifications

Frequency response: 90-9,000 cps.  
Bias and erase frequency: 50,000 cps approx.  
Signal-to-noise ratio: better than 30dB.  
Output:  $2\frac{1}{2}$  watts.  
Supply: 220-250v, 50 cycles, AC.  
Consumption: 45 watts.  
Inputs: microphone, telephone adaptor, pick-up/radio.  
Outputs: extension loudspeaker, 3 ohms.  
Weight: 18 lb.  
Facilities: magic eye, superimposition, tone control, space for extra 4-inch reels.  
Makers: Recording Devices Limited, 44, Southern Row, Kensington, London, W.10.



Record / playback characteristics of the Stuzzi Junior 4 M

Such a compact front panel design would suggest that the internal design of the amplifier would be similarly compact. This indeed is the case and economy of space has been helped by economy of design. Only three valves are used; ECC83, ECL82 and EZ71, with addition of the miniature magic eye indicator type DM71. Access to the inside of the machine for valve replacement is possible by the removal of four screws, two on each side of the cabinet, after which the whole of the assembly can be lifted out.

The usual electrical tests were made on the machine and in typical Stuzzi fashion it gave a good account of itself. The frequency response was somewhat better than that quoted by the manufacturers in terms of the extreme ends of the usable spectrum. The manufacturer did not quote decibel tolerance figures but the machine was within  $\pm 6$ dB between 50-15,000 cps—a very fine performance. Over most of this range the curve is within the  $\pm 3$ dB region as can be seen from the accompanying frequency characteristic.

Wow and flutter were extremely low for a machine in this price range and perfectly adequate for recording music. The signal to noise ratio was better than 40dB. Such noise as was audible when turning the volume control up full was entirely composed of hiss with no audible hum. In this condition, with the volume full, the noise became a roar but the machine would presumably not be used with the control set in this way. Under all normal operating conditions, the noise is almost inaudible.

The frequency response measurements were made with the tone control set to give the smoothest response. This control is of the "top cut" variety, having little effect below 1,000 cps. In the "best" position referred to, there was ample range of control to give both a rising characteristic or a top cut if required.

The microphone supplied with the machine is an Acos crystal type, and gave very good results. In common with many other tape recorders it is as well not to stand the microphone on the same table as the machine or the recording may be marred by vibration pick-up of the tape deck motor.

I have no hesitation in recommending this machine as a very good buy at the reasonable price of 26 guineas.

# BRITISH AMATEUR TAPE RECORDING CONTEST 1961

**T**HE contest season is here. Details of the 1961 British Amateur Tape Recording Contest, announced in our last issue, have stimulated more immediate interest than in any previous year.

British successes in the International Contest last year seem likely to encourage extra effort now to maintain our reputation abroad!

Here is a ready-reference guide to the Contests.

**CLASSES** There are five classes in which individuals may submit tapes: Composition, Documentaries and Reportage, Music or Speech, Actuality, and Technical Experiment. Compositions must not exceed 15 minutes' playing time, Documentaries and Reportage must not exceed ten minutes, the other categories not more than four minutes each.

**CLOSING DATE** All entries must be received by Friday, June 30. They will be judged during the following month and the results will be announced at the end of August, during the Radio Show.

**CLUBS** There is a special section for tape recording clubs and it is hoped that more of them will submit co-operatively-produced feature tapes this year. The Contest is organised in close association with the Federation of British Tape Recording Clubs, who have awarded a handsome shield to be held for one year by the club submitting the best tape.

**ENTRY FORMS** These were printed in our last issue, but extra copies can be obtained on application to 7, Tudor Street, London, E.C.4.

**JUDGING** Names of the panel of distinguished judges will be announced in due course. Some

**Just Mike, having decided to enter the recording contest, sweats it out writing his script . . .**

competitors have suggested that we publish information about the way in which the judging is done: what comparative weight is given to content and quality of entries, for example. An article on these lines will be published shortly.

**PLAYBACK** There will be a public playback of the winning tapes, details of which will be announced later. Consideration is being given to the possibility of issuing a tape record of all the winning entries.

**PRIZES** There will be more prizes this year than ever before. They will include three handsome silver cups—the Emitape Cup for the Tape of the Year, the Grundig Cup for the best Schools tape, and the Acos Cup for the best entry in either the Music/Speech or Composition class. Then there will be the Irish Trophy, details of which will be published shortly, for the best Documentary or Reportage entry. The handsome Wyndor Gold Medal will go to the best technical production. And there

will be cash prizes of ten guineas, awarded by this magazine, in all sections.

**RADIO** Winners of previous Contests have appeared on TV and have taken part in sound radio programmes and we hope that the same thing will happen this time.

**RULES** Basically, the rules are as in previous years. They were printed in full in our issue dated January 11.

**SOCIAL** All winners will be guests at the Savoy Hotel, London, in August, when E.M.I. Sales and Service Ltd. give their annual Contest luncheon. The class which wins the Schools section will be guests at a special social gathering organised by Grundig Ltd. And, judging by experience in 1960, the winner of the Tape of the Year can expect to be an honoured guest at a number of other exciting social functions.

**SCHOOLS** There is a special Schools section, too. Some of the best tapes received in earlier Contests have been made by classes of school-children and, with the increased use of recorders in education, we anticipate a record entry this time. Schools are invited to make tapes, not exceeding 15 minutes, presenting a sound-picture of some aspect of school activity.



# PARTY PIECE by Frank Holland

"WOULD you like me to switch the recorder on?" "Listen everyone, Alan's going to play his recorder."

"My husband's crazy about his new tape machine. If there's nothing being broadcast, he'd rather record atmospherics than switch off."

"Our neighbour has just bought a new recorder—Fred says it cost 95 guineas."

"I'd love to hear Hindemith on one like that."

"Our neighbour's is stereo, of course."

"I know—I'll play the tape we made of Aunt Beau discussing coal prices with Aunt Emmy. It's the one we recorded Christmas Eve after they thought we'd switched off."

"If you had stereo like our neighbour, you could put one speaker where Aunt Beau sat and one where Aunt Emmy sat, for added realism."

"I don't suppose you've taped any Hindemith yet, have you?"

"I'm still trying to find Aunties' tape . . . it must be around here somewhere."

"Our neighbour's machine records at 1.5/16 or  $\frac{3}{8}$  or some funny figure."

"How quaint! we prefer  $3\frac{1}{2}$ . Even if we had more speeds we wouldn't use them, my husband says. He says if you record a tape at one of the funny speeds and send it to someone who hasn't got that one they think you're barmy because you sound like Donald Duck."

"I had a feeling it was in the box labelled 'Baby's First Year,' but it isn't."

"While you're looking, perhaps we could have some Hindemith?"

"Our neighbour says his tape moves so slowly you hardly notice it going along with the naked eye. He gets 16 hours' playing time on a single tape. He says if manufacturers make much slower speeds, they'll have to sell tapes fitted with calendars."

"I suppose the more you pay, the slower they go. At that rate, we've a Jessie Owens Special."

"I wonder why some manufacturers make their cabinets so jazzy-looking?"

"If I were recording Hindemith, I'd insist on a recorder in a plain cabinet."

"Would you all mind standing a

moment while I look under your cushions?"

"I expect it's to appeal to lovers of jazz."

"Our neighbour's a jazz fiend. He can reel off the names of all Chris Barber's instrumentalists. He not only knows who is playing, but who isn't."

"I like to follow Hindemith with the score."

"I wonder if Hindemith was in Chris Barber's band?"

"Our neighbour's wife looks a bit like Otilie Patterson across the eyes."

"Are you sure that's not Aunties' tape stuck across the ceiling with glass balls hanging from it?"

"Our neighbour gets four tracks on one tape. He says if they bring out any more tracks, he'll need a course in railway signalling to get from one to the other in safety."

"My husband got a tape-splicing kit off the Christmas tree. So far, he's mended a torn typewriter ribbon."

"You can get an awful lot of volume for 95 guineas. When our neighbour asked us in for an evening, Fred said not to bother, we could hear just as well from home. Our architect friend said even if we put a soundproof wall up, the soundproofing would need soundproofing."

"I wouldn't mind hearing Hindemith through the wall."

"My husband says our output's nearly two volts, or ohms. I didn't know whether to look pleased or upset."

"Fred says our neighbour's right-hand speaker is louder than the left because he's deaf in one ear. Our neighbour, not Fred."

"There's a programme of Hindemith starting on the Third about now."

"Our neighbour's wife had to get new curtains for their lounge because the 'magic eye' didn't match the colour. Every time it lit up green for recording, she got upset. Fred says she's arty."

"I can't find that darned tape in here. In the meantime, everybody, while I go and look upstairs—here's 800 feet of atmospherics."

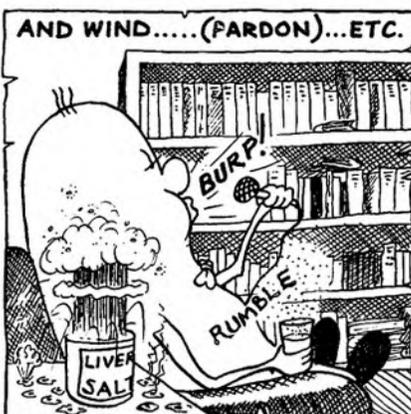


## We hear . . .

. . . that Birmingham Sound Reproducers, one of the world's largest manufacturers of record changers, player units and tape decks—they produce the BSR Monardeck—have had thirty dynamic balancing machines installed at their factories in Old Hill, Staffordshire, and Londonderry. Motors of tape decks and record changers are run at nearly 3,000 revolutions per minute, so it is essential that the rotors are balanced to a high degree of accuracy, in order to keep "flutter" and "rumble" to a minimum.

. . . that the BBC is purchasing two three-track portable and one twin-track console Philips magnetic tape recorders for use in engineering research work.

. . . that stars like Sophie Tucker, Marlene Dietrich, Dean Martin, and Tony Bennett, carry their own microphone around with them. They have found that a microphone can alter the personality of the entertainer's voice, and by using the same microphone wherever they go, these entertainers can control their voice "image".



TO BE CONTINUED

# THE PROBLEM OF SPEAKER SELECTION

**H**OW long do you really need to make up your mind whether you like a speaker well enough to buy it? Dealers tend to think in terms of a week or a fortnight, which may well be enough in a large proportion of cases. I think that some people could do with much longer, however, especially when tricky stereo problems are involved.

It does mean, in such cases, that hiring terms would have to be somewhat lower than would be perfectly reasonable for a short-term project. Perhaps long-term hiring can only be done satisfactorily on a co-operative basis. Tape recording clubs could build their own, or acquire second-hand ones to avoid the sharp drop in value that occurs when the first few scratches appear.

With a good range of different

speakers to choose from the man in search of the best possible stereo in a given room can experiment over a long period—with combinations of column and directional types (two of each) if he so desires.

\* \* \*

Incidentally, for such experiments one appreciates the versatility of modern amplifiers like the Emisonic 555, which enable you to make the best use of even badly matched speakers and thereby discover more about the stereo potential of a room. The 555 also gives you a check on performance in a number of ways, and provides immediate confirmation of phase correctness.

I have had a very helpful letter from Mr. D. Dumville of Northern Radio Services (London) Ltd., who

tells me that his organisation is fully prepared to hire out speakers—confining the scheme to the London area at first. He tells me he would probably think in terms of a hire charge of one shilling in the pound for one week—on the assumption that a person would not need to keep a speaker longer than that to know whether he would like it or not. Delivery would be extra.

Speakers normally available would be the Wharfedale Super 8/FS/AL in Northern Radio Services' own infinite baffle or Wharfedale's PST8 enclosure; the Bronze 10FSB or Super 12/FS/AL in bass reflex cabinet; and the NRS column loudspeaker assembly.

Inquiries should be made direct to Northern Radio Services (London) Ltd., 11, King's College Road, London, N.W.3.

## *Sensational reportage is OUT!*

**A** READER has asked whether it was right and proper for me, and other journalists in the high-fidelity field, to condemn the press reports of the "£5 hi-fi cabinet" invented by Mr. Jabez Gough—suggesting that we should have tested the speaker first before giving an opinion.

"How, otherwise, are you to know," he asks, "that the reports, however fantastic they seemed, might not prove to be true?"

That sounds like a plausible argument, but it is based on a number of false assumptions. It should be realised, first of all, that testing a speaker properly takes a long time and a lot of very expensive equipment, even if the inventor could make the unit or the drawings readily available to all comers at short notice.

Secondly, all the protesting audio journalists and technicians, as far as I know, have kept a completely open

mind about the cabinet itself while condemning the sensational reportage—the raising of extravagant illogical hopes and the exploitation of the ignorance and gullibility of the general public on audio matters, for all of which the inventors are not to blame.

\* \* \*

Most of the reports were demonstrably nonsensical, containing lurid misconceptions concerning existing knowledge of the nature of sound and sound reproduction, and manifest misstatements about the limitations of "customary" designs. It is not neces-

sary to test the new cabinet, for example, to know that it is not unique in apparently departing from the beam of sound "which customary units project". There are thousands of column speakers in use already that distribute the sound evenly in all directions.

Responsible journalists, and others who know something about sound reproduction, are undoubtedly right in warning the public against believing that something has happened which defies known natural laws, when the purveyors of the implication of the "miracle" make such a poor showing scientifically and in the realm of immediately ascertainable fact.

The inventors themselves, poor fellows, will certainly welcome the earliest possible return to sanity, and the normal stage-by-stage assessment of the practical value of their invention and its ultimate cost.

### No splice

**The Hon. Montmorcency: If you marry me, my dear, you will have a monogram.**

**My Dear: Not likely!—I want a stereogram.**

# TWO JAPANESE RECORDERS ENTER UK MARKET

**CROMPTONS** (MANCHESTER) LTD., sole agents in the UK for Sagaya and Co. Ltd. of Japan, are importing two new recorders.

The first machine, to be called the Aristo Model TR101, is a twin-track recorder with two speeds— $3\frac{1}{2}$  and  $7\frac{1}{2}$  ips. Maximum spool size is five inches, providing over two hours playing time at the slower speed using double play tape.

Measuring  $11\frac{1}{2} \times 10 \times 7$  in. it weighs  $16\frac{1}{2}$  lb., and will sell at about £22.

Features include microphone, and radiogram inputs, extension speaker socket and a five-inch loudspeaker.

Four transistors and a  $2\frac{1}{2}$  in. PM

speaker are incorporated in the second new model, the Eiwa Model ME603.

With a frequency response of 200-4,000 cps, this model has a signal-to-noise ratio of 35 dB (1,000 cps) and an output of 180 mW. Power is provided by 12  $1\frac{1}{2}$ V torch batteries.

A twin-track machine, with a single speed of  $3\frac{1}{2}$  ips, it measures  $9 \times 5 \times 2\frac{1}{2}$  in. and weighs 5.3 lb., with accessories, in a special leather carrying case.

With special accessories, which include an AC mains converter, the price will be about £32.

*Cromptons (Manchester) Ltd., 29, Minshull Street, Manchester 1.*

## New dictating machine

**ARROW LTD.**, a member of the Sanders group of companies, has recently announced a new battery-operated transistorised dictating machine.

The dimensions are  $8\frac{1}{2} \times 6 \times 3\frac{1}{2}$  in. and the weight  $4\frac{1}{2}$  lb. Using four standard U2 leak-proof batteries it is equipped with a carrying case and is suitable for mobile commentary as well as office or home use.

A transparent cassette, holding  $3\frac{1}{2}$  in. spools provides easy handling. Standard half-track recording gives a total of 44 minutes recording, and the batteries, on intermittent running, last over 50 hours.

Control is by one small lever with four positions—off, record, fast rewind and playback.

The microphone which can also be used as a loudspeaker, is fitted with a start-stop switch; recording level is automatically maintained. When used for dictation purposes, instantaneous braking avoids loss or partial loss of words on playback for typing.

The case, of shock-resistant plastic material, has a transparent top cover enabling a quick check of tape usage.

## Addition to CQ Audio range

**THE** new recorder from CQ Audio is called the Corona 44 and is a four-track machine selling at 44 guineas. Smaller and lighter than the company's previous model, the Crown, the Corona 44 is said to have a frequency response of 40-16,000 cps at  $7\frac{1}{2}$  ips.

The Collaro Studio deck is fitted giving the three speeds  $1\frac{1}{2}$ ,  $3\frac{1}{2}$  and  $7\frac{1}{2}$  ips. Provision for stereophonic replay is made by the addition of a separate amplifier.

*CQ Audio Ltd., No. 3 Factory, Bush Fair, Tye Green, Harlow, Essex.*

Accessories included in the price of 25 guineas are: microphone, batteries, cassette with spools and tape, a foot-operated switch for transcription purposes, as well as a stethoscope earpiece for the audio-typist, a small speaker unit and a pick-up for recording telephone conversations.

A leather camera-type case is available as an optional extra.

*Arrow Ltd., Gunnels Wood Road, Stevenage, Herts.*

## RESLOSOUND

**RESLOSOUND LTD.**, a member of the Derritron Electronics Group, are about to go into production of two additions to their well-known range of ribbon and dynamic microphones.

The first unit is a transistorised pre-amplifier, Model GE, with self-contained dry battery, complete in a tubular metal case with plug and socket connections for use in microphone lines between amplifier and microphone.

A new pencil-type ribbon microphone, Model PR, also in production, will be a lower-priced alternative to the larger Model RB. With performance equal to this latter model, the Model PR will have the advantage of reduced size for applications where this is important.

*Reslosound Limited, 24, Upper Brook Street, London, W.1.*

## STOLEN

**A** TELEFUNKEN Model 85KL tape recorder, serial No. 82443, has been reported stolen by Welme Corporation Limited. Any information regarding this machine should be addressed to Welme at 147/148, Strand, London, W.C.2 (Tel.: Covent Garden 2092).

## New Products

### More microphones from Shure Brothers

J. W. MAUNDER, UK agent for Shure Brothers Incorporated, announces the release of Model 545 "Unidyne III," claimed as the world's smallest cardioid dynamic microphone.

A slender moving-coil microphone only  $1\frac{1}{2} \times 6$  in. long, the "Unidyne III" is claimed to provide wide-range reproduction of music and speech whilst the unidirectional characteristic largely overcomes problems of feedback and unwanted noise and ensures highly satisfactory performance under adverse acoustic conditions.

For a given feedback level the microphone can be placed at 75 per cent greater distance from the performer than is possible with conventional models.



Shure Brothers Unidyne III microphones. Model 545 (II) and Model 544 (I)

Of dual-impedance, the "Unidyne III" can be connected direct to a 50-250 ohm line or high impedance input. It is supplied complete with 18 feet of high quality shielded cable and plug and with an adjustable swivel adaptor which permits instant withdrawal for hand use.

Also available is the Model 544 Series, comprising the "Unidyne III" mounted on a flexible support for fitting to control desks and consoles.

List prices: Model 545 "Unidyne III" microphone, £29 15s.; Model 544-G12 "Unidyne III" with 12 in. support and flange, £29 6s. 3d.

*J. W. Maunder, 22, Orchard Street, London, W.1.*

# Letters to the Editor

Have you an idea, a complaint, or a bouquet to hand out? Write to us about it. Letters not for publication should be clearly marked

## A grateful customer's tribute

WE hear a great deal of adverse criticism of manufacturers who lose interest in their products the moment they are safely in the hands of the consumer and his cash securely pocketed. Very little is heard of the good people who give excellent after-sales service and, taking a proper pride in their products, continually strive to improve them.

It therefore gives me (and I hope others on both sides of the counter) great pleasure to record three examples of excellent service after sales. The first was from the makers of the Fi-Cord battery tape recorder, who replaced a noisy motor with an improved and much more silent version.

The second was from the makers of the Elizabethan Major who replaced a vibrating and noisy deck with a completely silent one. I am informed that this transformation was achieved by mounting all three motors on live rubber instead of bolting them direct to the metal deck.

It is to the credit of the makers of the deck (Collaro Limited) that, again, this

improvement was passed on to the consumer without extra charge.

For the past eighteen months I have experienced the best of service from Howard Tape Recorders of Bromley, Kent, who are always generous and friendly and eager to help in every way.

There is just one vital function I would ask manufacturers to perform and that is to ensure that a soak test, sufficiently long to show up any faults, is carried out before despatch from the final test bay. Had this been done (to three tape recorders in my experience) much unnecessary annoyance, frustration and expense would have been saved.

In my opinion, the design of British tape recorders is second to none, but the careful setting-up in the final test bay leaves much to be desired. To have equipment break down soon after delivery is no way to uphold the proud reputation of British products throughout the world.

MAJOR K. G. RICHMAN.

*Shrewsbury, Salop.*

## and a happy portable owner

NOTICING the recent items about adaptations for the Clarion I think readers may be interested in the JC3 car recorder which I bought for use on a motoring holiday.

Basically the Clarion recorder, this machine has been converted by inter-continental Office Equipment of Birmingham. By adding a socket to the rear of the machine, remote control is possible with the club and cable supplied. The motor is started first, the plug inserted, and the "stop" key released. The lid can then be fitted and control is through the cable which can be lengthened as desired, allowing really remote control.

Apart from its use by the businessman for dictation whilst driving, it is ideal for tape or film track commentaries when on the move. It is also handy for rally driving where the route can be worked out beforehand. On playback you can hear your directions, average speed checks, etc., as you drive.

The set can be slipped into the majority of dashboard glove compartments and a switch to suit individual tastes can be fitted to the dash panel. A rubber sucker supplied holds the microphone on the windscreen or steering wheel.

Just unplug the control lead and the JC3 becomes the Clarion again.

Although I only obtained the JC3 for my holiday and will be disposing of it as soon as I am able to get something in the higher "fi" range, it served its pur-

pose very well. For the price—about a couple of pounds more than the Clarion—it is an excellent little machine.

Incidentally I would like to praise the manufacturers for their superb after-sales service. A minor fault brought to light after I had made the purchase was corrected and the machine returned within two days of my reporting the fault, despite the fact that two twelve-mile journeys were involved.

Is there a moral in such after-sales service when goods are acquired on a direct maker-to-customer basis. I wonder what would have happened if I had bought it from a local dealer and had the same trouble?

J. BOTTOMLEY.

*Rochdale, Lancs.*

## SWEDISH RADIO

IN your November 2 issue you wrote about radio programmes for recording amateurs. It may interest you to know that the Swedish Wireless (Sveriges Radio) in June this year invited amateurs to a contest.

They received about 400 entries, the best of those have been broadcast during the summer and autumn. The results were given out, and the winning programmes broadcasted on November 5.

MARIANNE EHRLIN.

*Orsa, Sweden.*

## VALUE OF A STEREO MIXER

YOUR series of articles on building a stereo mixer must fill a need in many a stereo enthusiast's requirements, considering the complete dearth of such a piece of equipment at something within the range of the enthusiast's pocket.

Having now had something like fifteen months of live stereo recording, my latest attempt being something concerning an organ and over a hundred voices, the need for a mixer unit such as H. Burrell-Hadden is describing has really made itself felt more and more.

Here's strength to all your arms, and I hope that when the series is concluded we shall be able to obtain from some source arranged by your good selves an already-built unit or, failing that, a kit with step-by-step wiring (this latter is essential for a lot of us if we have to build it ourselves).

R. V. HUDDLESTONE.

*Grantham, Lincolnshire.*

## ENTHUSIAST IN CAPE TOWN

I HAVE just received my first tape recorder and I don't need to tell you how thrilled I am that I now have, at my disposal, the means of creating wonderful friendships, throughout the world, through the medium of Tape-Pals.

I have become an avid reader of your very informative journal. The articles I enjoy most are the machine reviews and articles on the construction of extra equipment. Please give us, your readers, more of this type of article.

Although I am just a beginner, I would be pleased if you would print my name and address in your magazine under the heading of "Tape-Pals Wanted." I obligate myself to reply to all tapes received.

ANTERIO A. AGRELLA.

*7, Chiaffini Street, Cape Town, South Africa.*

## KIND WORDS

THANK you very much for a most interesting magazine. It is indeed a "must" for all tape recording enthusiasts, and in my opinion it is getting better every fortnight.

BIRGER FORMO.

*Alesund, Norway.*

## Where can one hire?

PLEASE could any of your readers tell me of any firm that hires out recording equipment. I have two recorders of my own, one is home-made, the other is a Gramdeck. I want to hire high-quality microphones such as Lustraphone's VR/65, or Ronette, or Gramplan.

I am at school, and the occasion often arises of recording a concert or something similar, and I already have two microphones and a mixer which are sufficient for these. But next term the Music Society is giving a performance of Bach's *St. Matthew Passion*. I have been asked to record this performance, and I badly need extra equipment. I would like to find someone who will hire such equipment reasonably early, so that I can carry out tests beforehand.

I would be much obliged for any assistance in this matter.

RICHARD DANIEL.

Haywards Heath, Sussex.

## Maximum reel size

WHY do you so rarely mention the maximum reel diameter, even in your otherwise very detailed reviews? For instance, in your "over £50 Range" feature you mention over thirty recorders, but the only reference to reel diameter is to a mysterious entity called "a 1,800-ft. reel." What is this? A reel 1,800 ft. in diameter; a reel that can hold at least 1,800 ft. of standard, or of LP, or of DP, or some other tape; or a reel that can just, but only just, do these or one of them?

Maximum reel diameter is a primary characteristic of a recorder. For those having a stock of recorded tapes, it is a decisive one.

R. A. FAIRTHORNE.

Farnborough, Hants.

[EDITOR'S NOTE.—Point taken. We shall not offend again.]

## The price of tape

I THOROUGHLY agree with Peter Turner (*October 19*) and his supporters that the price of tape must be brought down.

Now that the ranks of tape recording enthusiasts are swelling very rapidly, why can nothing be done?

I am informed by an American friend of mine that 1,200 ft. of tape costs about 13s. in his country.

I am quite convinced that cheaper tape would be used to a much greater extent than expensive tape and that everyone would benefit from it. I would purchase many more spools.

R. A. ROBERTSON.

Tonbridge, Kent.

# WE NEED SIMPLE MACHINES —SOUNDLY ENGINEERED

IN a recent "Sound" programme on the BBC a speaker made the astonishing assertion that *because* certain trends had been introduced, *therefore* these things constitute progress! For the love of Mike, why?

One of these innovations is the four-track system. Just how can this be called progress? At a time when, in comparable fields such as photography, the whole trend is towards the adoption of professional standards by amateurs, along comes this preposterous gimmick to widen the gap between amateur and professional standards in our hobby.

This is not progress, it is retrogression: progress would be towards higher speeds and single tracks, not slower speeds and multiple tracks. (There are, of course, specialised fields in which these multiple tracks are a progress; but they should be confined to those fields.)

Once more, the claimed object of this method is tape economy: that and nothing else, for there are no other advantages which even ad-writers can think up. I have just read in an American journal that the price of super-quality MMM tape has been reduced there from five dollars odd to three-fifty for a seven-inch reel of 1,200 feet.

The BBC speaker's other point, if I remember correctly, was the introduction of battery recorders. Here again, surely, what matters is the quality of the machines introduced. One of these is reputed to have begun its life in the country of its origin as a Christmas toy for children. Those I have heard sound like it.

The production of true audio standards in a battery machine demands the most exacting engineering; but, in general, battery recorders are cheaper than mains machines.

In my judgment, it is the duty of the audio press to decide what trends are and are not for the good of the hobby, and to say so with a loud and insistent voice. The cassette can be defended on the grounds of alleged difficulty in threading tape—though I have yet to meet anybody who has failed to master this simple trick, even though it be at the expense of my leader-tape ends—but it should not be elevated into some life-changing advance.

It seems clear to me that development lies along the lines of machines which are basically simple but soundly engineered, with provision for additional facilities as the user develops and needs them. Instead, we get a rapid succession of machines, each of which is supposed to be the last word until its successor appears a few months later.

"Now!", "At last . . .!", "Professional quality at a reasonable price", etc., etc. It's all such *rot*, and so bad for the hobby. I have even been told by a man in the trade that one machine was advertised which existed only in prototype and was succeeded before it was ever produced. Will you not speak out for sanity and standards?

PETER D. TURNER

Stroud, Glos.

## DOUBLE KNOT COST 7s. 6d.

FOR the past year I have been corresponding by tape with a friend in Australia, and am still in a quandary with regard to the amount of postage I should pay.

The first tape I posted cost 11 shillings (airmail). I discovered my mistake was in making it into a "sealed" packet by tying a double knot in the string. With all subsequent tapes I made sure the packets were secured with the minimum amount of wrapping. This brought the postage down to 3s. 6d. each time.

Recently we started to use a three-inch double-play Philips tape merely covering the makers' box with a thin piece of paper and tying with string. This also costs 3s. 6d. I wanted to post another tape as described, at the same weight, and the Post Office demanded 7s. 6d. Not satisfied with this, I went to another branch and was asked 6s. for the same packet. There I learned that tapes are charged at the normal letter rate of 1s. 6d. for each  $\frac{1}{2}$  ounce.

Have I been getting away with my postage or have I been over-charged on this occasion? There certainly does not seem to be any consistency in the Post Office charges.

Can you please give me some indication of what is the best way to send tapes abroad? Do your readers post tapes in the maker's box only? Is there a system to ensure tapes are posted abroad by the best and cheapest airmail method?

E. G. WOODS

Guildford, Surrey.

# News from the Clubs

**M**EMBERS of the **Leicester** club travelled the twenty-odd miles to the club at Rugby on December 15. After "learning what makes the Warwickshire club 'tick,'" they helped to compile a tape to be sent to the **Bournemouth** club.

Before returning home, John Buckler and David Derbyshire with their respective Fi-Cord and Clarion portables, recorded greetings from the President, secretary and others at the Red Lion.

The tapes so obtained, and others recorded during the evening, were played back at the Leicester meeting on December 16, when practically the whole of the meeting was devoted to listening to tapes. One of the tapes heard was of a carol service recorded in the Leicester Town Square by John Buckler on his Fi-Cord.

To close the evening, David Angrave presented a Christmas quiz tape.

Several new visitors were welcomed to the December 13 meeting of the **Iford** Club, when members were entertained to a demonstration by Mr. Neeve of C.Q. Audio Limited.

Among the visitors was Mr. Costain of Simon Equipment Ltd., who was present to arrange a demonstration of his company's equipment on January 17. Among machines expected to be shown is the new four-track model.

Their third meeting of the month, scheduled for January 24, was to include a talk by Mr. Saunders of E.M.I. Ltd., on magnetic tape.

In the latest of their monthly news-sheets, the **Iford** members "look ahead" into 1961. "Last year's failure to produce a tape for the **BATRC**," it says, "should spur members into an all-out attempt for this year." (I hope other clubs will heed this advice, don't forget it is an open subject again.)

The activities section was also given a boost in the newsletter, Ken Hartman particularly being applauded for his work on the Waltham Abbey tape. He was also congratulated on his construction of a speaker enclosure now installed at the club headquarters. Ron Keeble was another who figured in this capacity, following the occasion when he presented his Telefunken at the final meeting last year, and displayed a baffle speaker set-up he had built for this model.

In the chairman's New Year message, which concluded the newsletter, he suggested members give some thought to the link of tape and cine, asking for details to be supplied of slide or cine projectionists. If sufficient interest is proved, they will develop along these lines.

A variety of tapes, ranging from a Christmas skit by a relatively new member, to a tape exchange from another member was heard at the first 1961 meeting of the **Harrow** club. Twenty-two members were present, their average attendance for the previous handful of meetings incidentally, and it was decided the time had come for the formation of a programme committee. Five members were elected, and plunged straight into a discussion following the suggestion that the club should expand their humanitarian activities.

One of the decisions made was that the club should buy up old radio sets, and put them in working order, under the supervision of the club's two technical members. These sets would then be given to the local blind, and old age pensioners.

The **Dundee** club went virtually into recess during the better part of December. They started the month well with a demonstration of the Walter Instruments range, presented as usual by Mr. F. Parrington, but their following meeting was cancelled.

However, a few members kept the spark glowing by working in conjunction with the Toc H hospital broadcast service, who were piping one of their



**Mr. Adams (left) and Mr. R. S. Wells of Cosmocord Ltd., prepare their equipment prior to a demonstration during their second visit to the Rugby club**

feature programmes to hospitals from a concert hall. The **Dundee** members gave a hand with the recordings, editing, and interviews, etc.

Here again a club has its eye on the **BATRC**. Secretary Charles Aitken writes that the club's main job at the moment is to decide what to do individually and collectively in the contest, and then get cracking.

A change of venue has been announced by the **Walsall** club. In future meetings are to be held each Thursday in the Town Mission, Stafford Street.

Going from strength to strength, this fairly new club has included talks and demonstrations on a variety of subjects during its most recent meetings. Among these subjects have been tape editing, stereo, microphones, recording from radio, and disc recording.

Their pre-Christmas meeting revolved around a competition wherein members were asked to produce a "live" carol tape—or pay a small fine.

Details of future meetings may be obtained from the secretary, Mrs. Joan Walford, 41, Mill Road, Pelsall.

The bring-and-buy sale organised by the **West Middlesex** members at Hampton on December 8 was successful only for its happy informal atmosphere. Not very much in the way of gear changed hands, and most people went away with the equipment they had taken along. It was noticed that most of the equipment for sale had only an indirect link with recording, being mainly volt meters, radio receivers and the like. Mused secretary H. E. Saunders—"are all our members so satisfied with their recorders . . . ?"—Never let it be said."

On December 13, members held a successful recording session with the **St. Thomas's** Players for whom they recorded a play. Although the sound effects were generally limited to pouring whisky and opening doors, they enjoyed themselves and learned some useful lessons. Equipment available included a Ferrograph, a Brenell, and an E.M.I. TR51 with Reslo ribbon, Film Industries and S.T.C. ball and biscuit microphones—an impressive array.

There was no meeting for December 23, but the committee got together and made a Christmas message tape for distribution to all members—an activity which is on the way to becoming a tradition with this club. On the following evening, "Sandy" Saunders visited Mount Pleasant Hospital to deliver and collect recorded messages for the patients.

Their January 12 meeting was devoted to a general discussion on the club's intentions for 1961. Arrangements already made include a stereo demonstration and talk by Stanley G. Mace for the first half of the January 26 meeting. This will be followed by a demonstration of the Minivox portable recorder by a representative of Challen Instruments Ltd. This meeting will be a form of anniversary for the club, for it is almost a year to the day since they had to move their club rooms to St. George's Hall.

The **Cambridge** society members have quickly organised their meeting programmes.

At their first official meeting, held on January 11, final details were outlined for the following meeting, January 25, for which date members had been invited to erect a stand at an exhibition being presented by local dealers Messrs. G. P. Reece. It was also announced at the meeting that Messrs. Lustraphone Ltd. and Simon Equipment Ltd., had offered to present demonstrations of their equipment at the meetings for February 22 and March 22.

The **Brixton** club, formed last August, now comprises eleven members. Continuing their enthusiastic start as reported on September 7, members are now holding regular competitions, the sure fire way of holding interest. Points awarded in each contest will be added to a grand score, and it is intended the holder of the most points at the end of the club's year will be awarded a trophy, possibly a silver cup.

One of the first visitors to the club was Mr. F. Parrington of Walter Instruments Limited. He put three of the Walter machines, including the new Metropolitan, through their paces, answered the members questions and, as usual, provided an interesting evening's entertainment.

The secretary of the Brixton club is L. J. Walker, 124, Branksome Road, Brixton, S.W.2.

The Windsor society's taped documentary on the cockpit in Eton is rapidly nearing completion. In anticipation of this members have decided to start research on the "Windsor Story" tape.

Two members will shortly be visiting the local Press offices to look into the history of the paper. While wading through the files of the "Express" they will be on the lookout for articles of historic "and perhaps humorous" importance.

Secretary W. A. C. C. Smith anticipates research for the new tape will take about six months.

With a total membership of 21, the club is to open a library of books, periodicals and tapes at 6d., 3d. and 1s.

per week respectively, the proceeds will go to the club funds.

A sound effects library has also been started. The librarian is Mr. M. Gill and the effects librarian is Mr. D. Windsor.

Walthamstow members are also on the prowl for new members, and in an endeavour to encourage this have been continuing their practice of visiting local organisations to publicise club activities. Latest such expedition was carried out by the chairman John Wells who visited the women's section of the local Labour Party to give a detailed account of his society's formation and progress.

One of their latest meetings was devoted to the art of interviewing. They combined this exercise with another by recording the entire proceedings on paper. This will later be used as a working script when they try their hand at editing by dubbing.

Mr. Wilson of F. A. Hughes visited the club on December 8, and once again presented the B.A.S.F. tape film, *The Magic Tape*.

The Connaught Hospital tape scheme continues, and two of the members, Ron

Avis and Maurice Dudley, visited the wards on Christmas Day to collect the latest batch of record requests.

A demonstration of the Philips four-track recorders was arranged for the New Year. This was to be presented by Mr. Blackledge, who has also promised to fix up a visit to the local Philips factory to see the disc manufacturing process.

Their first meeting, this year, on January 8, was held in their new club room at the Modern College of Music and Drama.

The Cotswold tape society now has new headquarters at the Cheltenham Theatre and Arts Club. Although not appearing regularly in these pages the club has been fairly active in the tape field. The variety of topics covered to date include demonstrations of all grades of portable and mains recorders, practical sessions with sound effects and experiments in tape and cine synchronisation.

A number of technical sessions have also been held. One of these, in recorded form, consists of a 20 minute talk with sound effects illustrating wow and flutter, incorrect bias settings, magnetised heads, head alignment (azimuth error), and correct volume levels. The tape ends with a comparison between AM and FM radio reception. A copy of this tape is available for circulation amongst clubs. Inquiries should be directed to the Secretary, Mr. P. J. Miles, "Treetops", Parton Drive, Churchdown, Glos.

A tape message service is in preparation by a club who until now have not been mentioned in these pages. The club is the T.E.I. Tape Club, composed of members of the staff of Thorn Electrical Industries Ltd., at Spennymoor, Co. Durham.

A small news item appearing in the *Newcastle Journal* publicised the club's intention, and explained that members of the club would be willing to make tape recordings for people in South-West Durham who have relatives and friends serving in the Forces or Nursing Services abroad.

The news item, yet another example of the awareness of tape recording clubs, emphasised the use of tape for Christmas messages.

The secretary of the club is J. E. Wild, 7, Dale Street, St. Helens, Auckland, near Bishop Auckland, Co. Durham.

The Stoke Newington club no longer exists as such, it has amalgamated with a newly formed club at **Bethnal Green**. The new club will meet every Friday but no club room address has yet been supplied. Further details may be obtained from Mr. H. Schaller, 82a, Mortimer Road, Dalston, N.1.

A club is in existence in **Hull**. The secretary is F. K. Fulston, and he can be contacted at 17, Lowfield Road, Anlaby, Hull, E. Yorks.

## CLUB MEETING DIARY

Is your club included in this list? If not, send details, on a postcard please, including date of the next meeting.

**ACTON:** Alternate Fridays at the King's Head, Acton High Street. (Jan. 27.)

**BIRMINGHAM:** Every Monday at the White Horse Cellars, Constitution Hill.

**BLACKPOOL:** Every Wednesday at 173, Church Street.

**BOURNEMOUTH:** Alternate Tuesdays at the Civil Defence Centre, Holdenhurst Road. (Feb. 7.)

**BRIDGWATER:** Alternate Tuesdays at Erio's Radio, West Street. (Feb. 7.)

**BRIGHTON:** Every Wednesday at Fairlight School, Pevensey Road.

**BRIXTON:** Alternate Tuesdays at the White Horse, Brixton Hill, S.W.2. (Jan. 31.)

**CAMBRIDGE:** 2nd and 4th Wednesdays at the Mitre Hotel, Bridge Street.

**CATFORD:** Every Friday at St. Mary's C.E. School, Lewisham, S.E.13.

**CHESTERFIELD:** Every 3rd Monday at the Yellow Lion Inn, Saltergate. (Feb. 6.)

**COTSWOLD:** Every 3rd Thursday at the Theatre and Arts Club, Cheltenham. (Feb. 9.)

**COVENTRY:** Alternate Thursdays at Rotherham's Social Club. (Feb. 2.)

**CRAWLEY:** 1st and 3rd Mondays in month at Southgate Community Centre.

**DARTFORD:** Every 4th Tuesday at Dartford Public Library.

**DOVER:** Alternate Mondays at The Priory Hotel. (Feb. 6.)

**DUNDEE:** Alternate Mondays at The Salvation Army Hostel, 31, Ward Road. (Dec. 19.)

**EASTBOURNE:** Alternate Saturdays at Hartington Hall, Bolton Road. (Jan. 30.)

**EDINBURGH:** 1st Tuesday and 3rd Sunday at 23, Fettes Row, Edinburgh 3.

**GRANTHAM:** Weekly. 1st week in month, Wednesday; 2nd, Monday; 3rd, Thursday; 4th, Friday, at Grantham Technical College, Avenue Road.

**GRIMSBY:** Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road. (Jan. 31.)

**HARROW:** Alternate Thursdays at St. George's Hall, Pinner View, North Harrow. (Jan. 26.)

**HUDDERSFIELD:** Fortnightly, alternate Thursdays and Fridays at the Congregational Church Schoolroom, Great Northern Street. (Jan. 27.)

**ILFORD:** Every Tuesday at the RAFA Rooms, Cranbrook Road.

**IPSWICH:** Fortnightly, alternating Fridays and Saturdays at the Art Gallery Committee Rooms (Jan. 28) and the King's Arms Hotel, Cornhill. (Feb. 10.)

**KEIGHLEY:** Alternate Wednesdays at the South Street Sunday School Rooms. (Jan. 25.)

**KETTERING:** Alternate Wednesdays at the Rising Sun, Silver Street. (Feb. 1.)

**LEEDS:** Every Thursday at the British Legion Club, Albion Street, Leeds 1.

**LEICESTER:** 1st and 3rd Friday at Bishop Street Reference Library.

**LONDON:** 2nd and 4th Thursdays at the Abbey Community Centre, Marsham Street, S.W.1.

**LUTON:** 2nd and 4th Tuesdays at 17, Dunstable Road.

**MAIDSTONE:** Alternate Thursdays at the Corn Exchange. (Feb. 2.)

**MANCHESTER:** Every Saturday, 6 p.m., at 20, Naylor Street, Hulme, Manchester 15.

**MIDDLESBROUGH:** Every Tuesday at 130, Newport Road.

**NOTTINGHAM:** Alternate Thursdays at the Co-operative Educational Centre, Broad Street. (Feb. 2.)

**RUGBY:** Alternate Thursdays at the Red Lion, Sheep Street. (Jan. 26.)

**SOUTHAMPTON:** 2nd and 4th Thursday at The Bay Tree Inn, New Road.

**SOUTH DEVON:** Alternate Wednesdays at the Man Friday Cafe, Torswood Street. (Jan. 25.)

**SOUTH-WEST LONDON:** Alternate Wednesdays at 45, Rusholme Road, Putney, S.W.15.

**STAFFORD:** Alternate Tuesdays at The Grapes, Bridge Street. (Feb. 7.)

**STEVENAGE:** Alternate Tuesdays at the Tenants' Meeting Room, Marymead. (Jan. 31.)

**STOKE NEWINGTON:** Every Wednesday at 53, Londesborough Road, N.16.

**WALTHAMSTOW:** Alternate Fridays at 26, Church Hill, E.17. (Jan. 27.)

**WARE:** 2nd Tuesday at The Old Brewery Tap, High Street.

**WARWICK:** Alternate Wednesdays in Room 18 of the Royal Leamington Spa Town Hall. (Jan. 25.)

**WEST HERTS:** Fortnightly, alternating at the Cookery Nook, Watford (Jan. 25) and Heath Park Hotel, Hemel Hempstead. (Feb. 8.)

**WEST MIDDLESEX:** 2nd Thursday at the Railway Hotel, Station Road, Hampton, and 4th Thursday at St. George's Hall, Lancaster Road, Southall Broadway.

Unless otherwise stated, meetings start between 7 and 8 p.m.

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### MISCELLANEOUS

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It will be assumed that all tape contacts will be made using a speed of 3¼ ips, on half-track tape. If space permits, additional speeds, or track usage will be published. Maximum spool size only is given.

Fieldhouse, Tom, 524, Stanningley Road, Stanningley, Pudsey, Yorkshire. Writing and recording short stories.

Hannah, Arthur A., 17, Blundell Street, Blackpool, Lancs. Do-it-yourself. 7 in. spool, 7½ and 1¼ ips.

Howse, John (46), 27, Blenkarne Road, London, S.W.11. General interests.

Iredale, J. D. (Male—32), 9, Ingfield Avenue, Dalton, Huddersfield. Motoring. 1¼ ips.

Jones, Richard Ll. (27), 71, Penrhos Avenue, Llandudno Junction, N. Wales. Pop music. 5¼-in. spool. 1¼ ips.

Lingwood, Tom (28), 19, Belsize Park, London, N.W.3. Opera. 2- or 4-track.

Lowsley, Robert S. (39), 78, Gladstone Street, Loughborough, Leicestershire. Tape play productions. 7½ and 1¼ ips.

Miller, Kenneth (53), 1500, Grand Concourse, New York 57, New York, USA. Active use of battery portables.

Seaden, Edwin (36), 11, Hereward Road, Tooting, London, S.W.17. Country and western music.

Tomlinson, William J. (47), 62, Beacontree Avenue, London, E.17. General interests. Commonwealth contacts wanted. 5 in. spool.

Wilcock, Thomas (27), 9, Grosvenor Crescent, Arksey, Doncaster. English speaking French contacts wanted.

Young, P. R. (29), 24, Cavendish Gardens, Ilford, Essex. Motoring.

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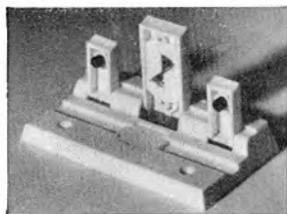
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