

TAPE

RECORDING MAGAZINE

APRIL 1965



IN THIS ISSUE

- Do-it-yourself kit for recording TV programmes
- British Tape Recording Contest
- How we made a documentary contest tape
- Adding sound to cine films
- Test Bench report on a stereo recorder
- New products, news from the clubs, tape exchanges, etc.

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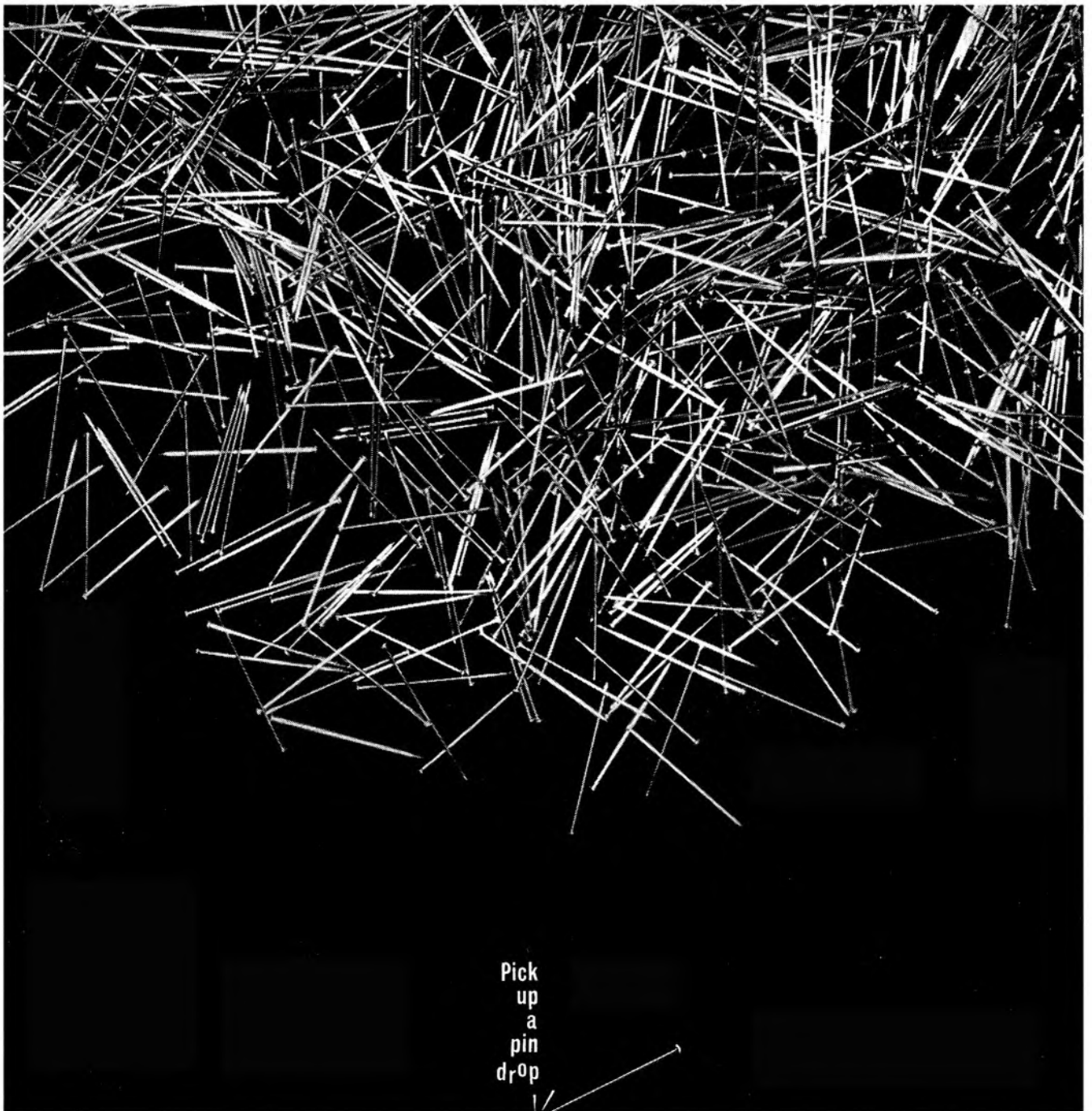
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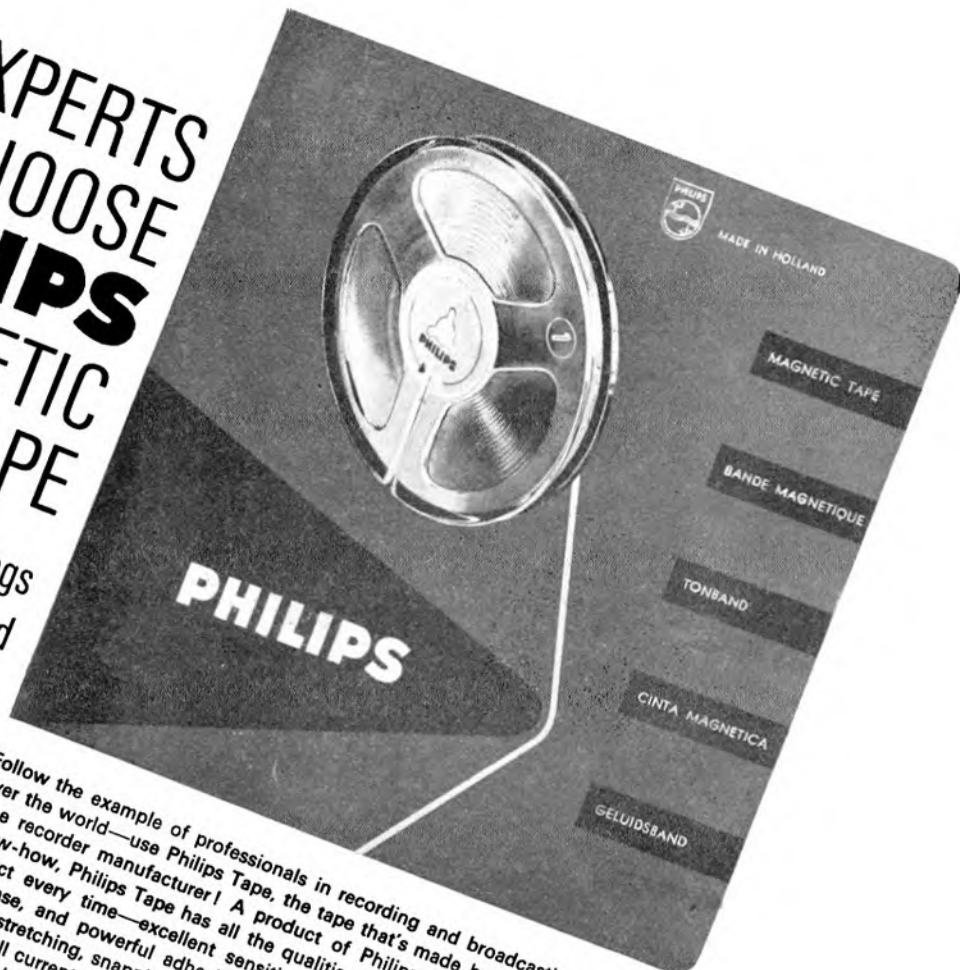
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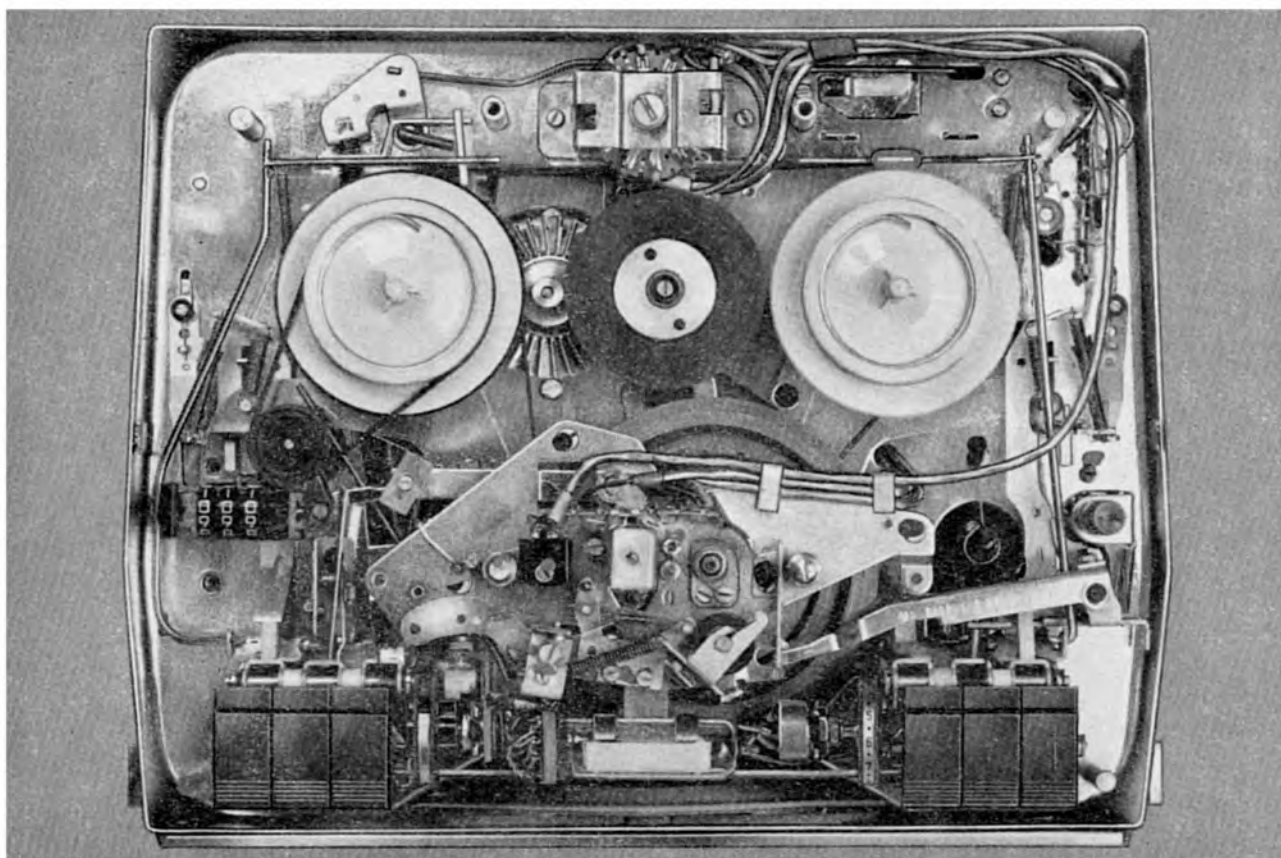
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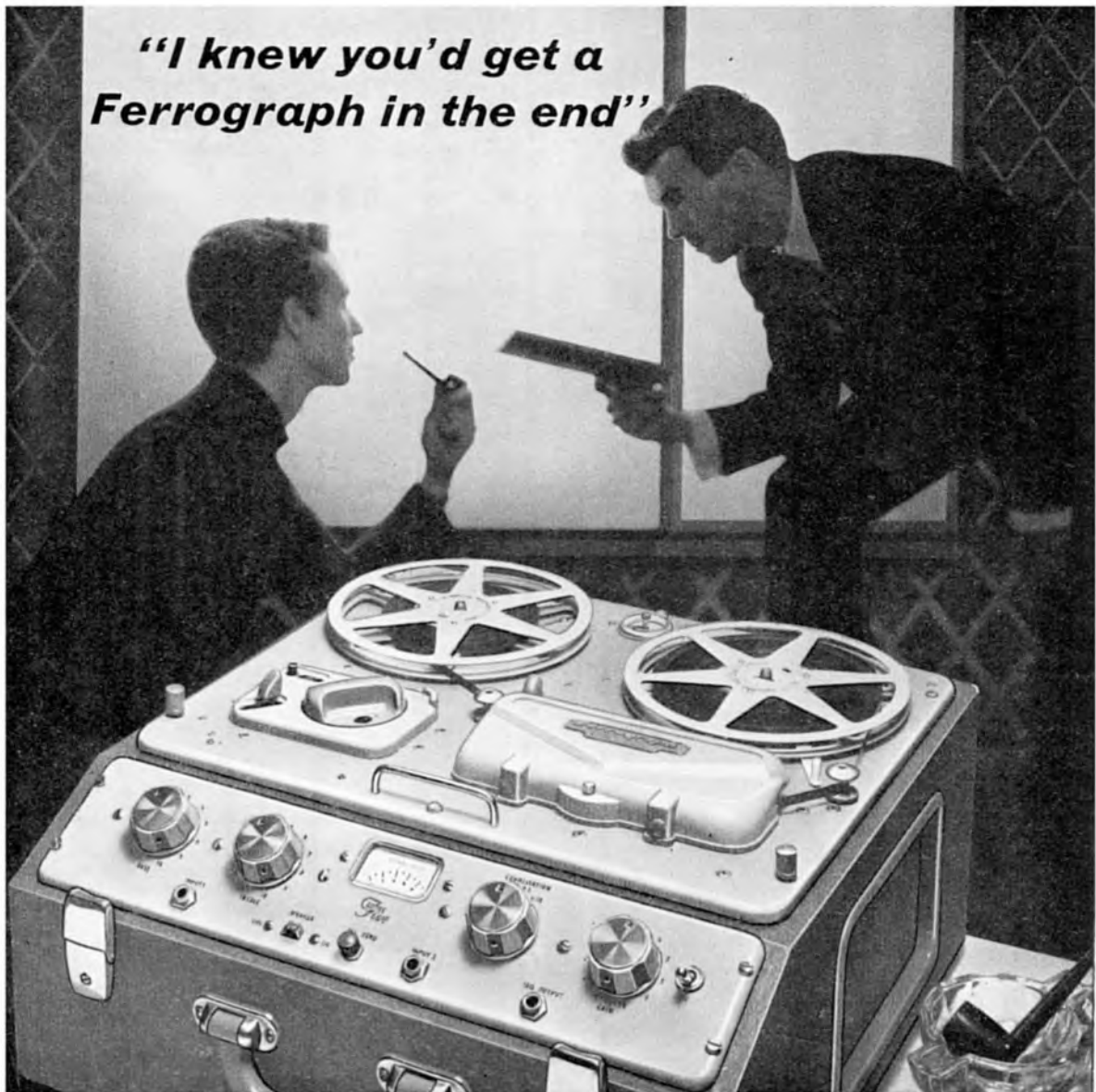
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TAPE

RECORDING
MAGAZINE

Vol. 9 No. 4 April 1965

IN THIS ISSUE

Tape trends and tape talk	140
<i>By the Editor</i>	
Producing a feature tape	141
<i>G. E. West</i>	
"Tape" visits Grundig factory	143
<i>Special report</i>	
Do-it-yourself VIDEO	144
<i>Peter L. Bastin</i>	
British Tape Recording Contest	146
<i>Prizes and advice for entrants</i>	
Dramatape Miscellany	149
<i>By Perspective</i>	
Test Bench	150
<i>Uher Royal Stereo</i>	
Alan Edward Beeby	151
Tape and Cine	154
<i>Peter Ryde</i>	
New Products	156
News from the clubs	159
Tape exchanges	159
Tape Bookshop	161
Advertisement Inquiries Service	165

COVER PHOTOGRAPH: Sixty per cent of the labour force of Grundig's Northern Ireland factory are women, and our illustration shows one of the Irish colleens putting the finishing touches to one of the Grundig tape decks. Further news of a recent visit to Grundig's factory is given in a special report on page 143.

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EDITORIAL

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FRED CHANDLER

Tape trends and tape talk

By the Editor

IT IS TIMELY TO take a long, cool look at the prospects for video tape recording. Naturally, it is a subject that arouses a lot of excitement and we are all anxious to see this new field of activity opened up to the amateur as quickly as possible. *TAPE Recording Magazine*, as is evident to our regular readers, is committed to providing the fullest and most up-to-date coverage of video developments.

But it seems unlikely now that amateur video recording will become commonplace before the end of 1965. The best that is likely to be achieved this year, is the making of the first pioneer amateur video tapes by a few enthusiasts who may get access to the new equipment.

The situation, as of now, is that first-class dependable equipment is available, but at a price which puts it beyond the range of amateur enthusiasts; while relatively cheap equipment may soon be available, but may be received by amateurs with some reservations.

The limitations of the Wesgrove video recorder, reported upon fully in this and last month's issues of this magazine, arise from its operating speed. At 120 inches per second, wear on tape and on tape heads must be heavy. With the Telcan machine, predecessor of the Wesgrove equipment, the triple-play tape was reported from America to be almost worthless after about 400 hours of combined playback and recording. When one uses tape at such a rate, this could be a significant factor. And heads probably need replacement after about 100 hours—though they are modestly priced.

In America, the Fairchild Company has now introduced a video machine which also operates at 120 ips, but with a 60 ips alternative provided.

Having made these reservations, however, this equipment is obviously going to interest those enthusiasts who want to do pioneer work. We look forward to reporting to our readers the special tests with the Wesgrove equipment which we are keen to make, but to date it has not proved possible to secure a machine for operation away from the firm's premises.

* * *

IT LOOKS AS IF THE major break-through may come towards the end of the year, when Sony promise to introduce a machine operating at $7\frac{1}{2}$ ips with either half-inch or one-inch wide tape. I expect the price to be about £250 to £300. There is no information yet about the design of this machine.

Two video recorders which are known to be ready, but which cannot be offered at the right price for amateurs, are the Philips and Loewe-Opta machines. The Philips equipment has actually been demonstrated in this country and the Loewe-Opta machine is understood to be ready for demonstration. But prices are expected to range not far short of £1,000 and this puts the equipment in the range for use by organisations (industry, police and army, hospitals, etc.) but not by individuals.

It is largely a matter of head design. The Philips and Loewe-Opta machines use rotary heads similar to those familiar in the professional equipment used in TV studios. The Wesgrove-Fairchild machines use fixed heads, basically similar to those on audio recorders.

Summing up the situation today, it seems to me that the video recorder will now be used over a much wider field than heretofore, but that it may well be three more years before it becomes a commonplace in the home. And, beyond that, it will probably co-exist as a junior partner to cine-photography for many more years.

While trying to get the subject into proper perspective, we remain convinced that, in the long run, the most exciting days of amateur recording—of sound and picture—are still ahead.

* * *

A CORRESPONDENT ASKS WHAT has happened to the various trophies awarded in the British Amateur Tape Recording Contest in previous years, but not yet mentioned in the prize list for this year's Contest. I can offer an immediate assurance that they will all be awarded again and, in general terms, for the same sort of tapes as in the past.

The simplification of the Contest, by dividing it into three main categories, has called for some re-consideration of the way the trophies are allocated and full information will be available in our next issue. But, meanwhile, amateurs may be assured that their chances of gaining a handsome cup or shield are in no way reduced by the new arrangements.

Posters and leaflets which incorporate an entry form are now available from the British Tape Recording Contest at 7 Tudor Street, London, E.C.4. The closing date for receipt of tapes is May 31.

LAUGH WITH JEEVES



"It produces $2\frac{1}{2}$ watts of stereo at $3\frac{3}{4}$ or $7\frac{1}{2}$ ips over 40-10,000 cps \pm 3 dB with .001 per cent wow and flutter, whatever all that means!"

CONTEST WINNERS' STORIES

Our first entry wins second place

"The Knocker-up" a documentary feature tape by the Middleton Tape Recording Club was placed second in the club section of the 1964 British Amateur Tape Recording Contest. Below, G. E. WEST describes the production of their tape.

OUR entry for the British Amateur Tape Recording Contest was born by chance rather than choice.

One of the most popular and regular of our club activities is the session devoted to live interviewing. For this members form into groups of three, and each group is given one of a number of previously sealed envelopes containing various assignments. The groups proceed to act according to instructions, returning later the same evening to replay their tapes. The recordings made are then discussed for interviewing technique and subject interest.

One such assignment undertaken by John Gates and myself was to find out local opinion and general knowledge about the historic character of the Knocker-up—the man who practised the now obsolete trade of waking early morning workers by tapping on their windows.

We realised immediately that here lay scope for an interesting sound subject that was original and allowed plenty of scope to portray the Lancashire character.

After much pub-crawling we had unearthed sufficient material on the subject to encourage further investigation. We decided to gather as much material as possible at the first instance, and not concern ourselves at this stage with any final ideas.

So it was that one Sunday afternoon we found ourselves in Oldham's Alexandra Park armed with the Philips EL 3585 battery portable tape recorder. Our immediate problem was to locate inhabitants who could recall personal memories of the habits and work of the Knocker-up.

Subsequent interviews led to the discovery that there were some of these characters, having retired during the past ten to fifteen years, who were still alive. Further research—and this was the back-breaking task of the whole project—brought us into direct contact with one or two former Knockers-up. We were able to interview them, and also record the sound made by the tool of their trade.

Many hours were spent recording interviews, and then came the playback of the collected material. It was quickly obvious that we should have to classify the answers to our questions into several sections, in order to present a documentary which would not only recall what the Knocker-up did, but also tell a story from beginning to end.

We decided to grade the material into six sections: beginning with the reason for his popularity followed in turn by the reliability of his service, the price paid and how the payment was made, what attracted people to the trade and finally the reasons for his disappearance.

After reviewing these sections, we realised our story was beginning to take shape. We had now to decide how to treat the material we had at our disposal, and eventually chose to let the characters themselves tell the story, adding any additional information in the form of a narrative.

Most of the initial recordings were made on the Philips battery machine at $1\frac{1}{2}$ ips.

Right: Members of the Middleton Tape Recording Club. Left to right are Brian Gilbert, John Gates and George West



The sections required were copy edited onto a mains machine at $7\frac{1}{2}$ ips, and these were edited into their appropriate sections.

Next we wrote a script which gave information relative to each section. The scripts were arranged so that the narrator asked a question which was followed by answers by the interviewees. In this way we kept the story flowing smoothly.

At this stage it became necessary to select a narrator whose voice would not become confused with the various recorded voices. One of our fellow members, Ron Hooper, had a voice which made an excellent contrast to the Lancashire material and he accepted the job. During the making of our tape, Ron moved to another district making it necessary for us to post the completed script to him. Using a Grampian DP4 microphone and his Ferrograph 422, he recorded his narrative and returned the tape to us. He had made several recordings in order to achieve correct pace and voice inflection, and we selected the most suitable of these recordings, editing it together with the live material to form part of the master tape.

With the exception of the clogs, all sound effects and interviews were recorded for this production, the clog sounds having been recorded some two years earlier by one of our club members. To bring greater realism into our production we recreated the sound of the Knocker-up as he went about his task. We spliced together the tapes of the clatter of clogs together with the sound of his stick tapping the window making a tape loop. This was used to give the impression of him walking down the street making his daily calls.

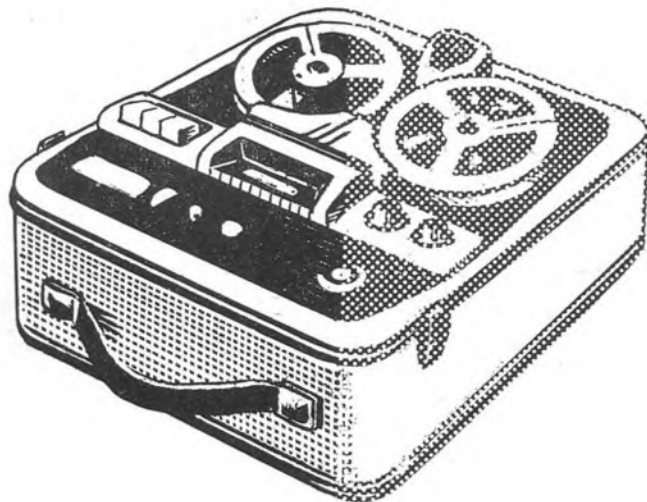
Further realism was achieved by recording the last tap of his stick as heard from inside the bedroom making it appear he was actually knocking-up the listener.

Our programme ended with the rather brash sound of the earlier form of rising contrasting with the more suitable sound of a musical alarm clock. This was achieved by recording the tick of an ordinary alarm clock and dubbing in music recorded from a Victorian Autogluckenolyphon. This special form of music, recorded by Bob Luxton, served two purposes. It enabled us to assimilate a musical alarm, but more important it avoided any possible copyright difficulties.

With this section complete we had nearly finished the tape. Some finer editing had still to be done before final dubbing, and then it was ready for the opening announcements and credits, recorded by Brian Gilbert. And then it was ready for the final judging by all the club members.

This then was the project finished, and we were all fairly pleased with the success at our first attempt. The biggest contributing factor was, we feel, that of recognising our own limitations. This was our first attempt at a contest tape, and it has proved a good experience in producing a documentary feature. This year we hope our entry will be successful as "The Knocker-up," and we're certainly going to try to improve our performance.

IS HALF YOUR TAPE RECORDER WASTED?

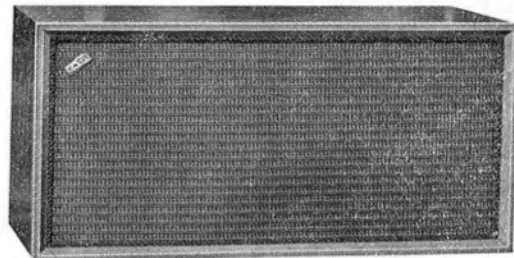


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FOCUS on production

Over 500 tape recorders per week produced at Grundig factory

THE new range of Grundig tape recorders just announced comes from a bright and impressive Grundig factory in Northern Ireland, which its managers confidently describe as the biggest tape recorder factory in the United Kingdom. When I was there a few weeks ago it had a floor area of 110,000 square feet, nearly 1,000 workers and a daily production schedule of between 500 and 600 machines.

But work was then well advanced on an extension which will make the factory half as big again.

Some Grundig machines sold here are still made in Germany, but increasingly they now carry the tag "Made in the UK." At Dunmurry, in pleasant countryside a few miles outside Belfast, they are made with the most modern equipment in the world. All the "know-how" which Grundigs have acquired over their exceptionally long experience in the business has been freely available in the design of the Dunmurry factory and in devising production techniques there.

Mr. T. Niedermayer, the General Manager, who received me at Dunmurry, was an experienced Grundig executive in Germany before he moved to Ulster. Other German technicians worked with him in the early period after the factory opened, but most of them have gone back now and their places have been taken by men recruited locally.

Not only top executives move freely across the frontiers. Girls with experience on the bench at Dunmurry are given the opportunity to work for a year at the Grundig plant in Nuremberg. There are about a score of them there now and altogether about 80 have been to Germany.

Sixty per cent of the labour force are women. Unlike most other parts of Britain, Northern Ireland is able to offer new factories and labour of high quality to staff them. Efficiency on the production lines seems, to the visitor, to be matched by an exceptionally harmonious spirit in personal relationships within the factory.

The basic product is determined in Germany. This means that the work of the 350 design and research engineers employed by Grundig is available to Dunmurry. Much of the machinery also comes from Germany, where it has been proved in use.

Thus the machine which tinplates many of the parts for recorders is one of only

Special report by THE EDITOR

three of its kind in the world and both the others are in Germany. The £25,000 moulds which turn out parts of the plastic castings are of the latest German design.

Standardisation plays an important part in mass production and, consequently, in hitting a price at which there is a popular market. Thus six different recorders in production at Dunmurry all share the same steel deck plate—though the punchings in them subsequently vary.

Each deck plate is stamped out on a giant press and then the metal sides of the recorder cabinet are secured to it by eighteen spot welds made by a single machine in a single operation. This gives a unique strength and rigidity to the cabinet and removal of the plastic playing deck or the base of the cabinet gives easy access to all components mounted above or below the deck plate. It is a brilliant piece of design.

There are over 2,500 components in an average recorder and you can see them all being manufactured at Dunmurry. Two vitally important elements in Grundig machines are, in fact, imported still from Germany—the motors and the heads. The firm has tried using British-made motors, but failed to secure a product to satisfy its requirements and reverted to the German product. It sticks to the German heads in order to get the full benefits of mass production at a German plant which produces 8,000 heads every day.

After the various stages of manufacture and assembly, an impressive proportion of the bench-space is devoted to testing procedures. To supplement these standard tests, there is a works laboratory for more careful investigation when it is called for.

And, despite all this activity at Dunmurry, when the machines are imported for sale in Britain, they are again tested by Grundig (Great Britain) Ltd. at Newlands Park!

There are no "moving belt" production lines in this Northern Ireland factory—Grundigs have tried that technique abroad and have discarded it. But the methods of factory organisation adopted are clearly as scientific and sophisticated as you are likely to find anywhere and work flow and production targets are watched minute by minute.

On the desk of the general manager there is a small panel with illuminated bulbs.



Mr. Paul Spring (right) Technical Director of Grundig (Great Britain) Ltd. and Douglas Brown, Editor of "TAPE Recording Magazine" watch coil winding for mains transformers. Ten coils can be wound in one foot-controlled operation

When one shows yellow it indicates that a particular production process has only enough of its essential components in hand to last for thirty minutes. If one shows red it signals the fact that production is actually being delayed by absence of a component.

In order to safeguard against unforeseen contingencies, production is maintained several weeks ahead of final delivery requirements, so that there is always a comfortable reserve capacity in hand.

Grundig (Great Britain) Ltd. is just starting a major new campaign to promote its new range of recorders. Details of the new machines will be found elsewhere in this issue and we shall hope to publish test reviews in due course. What can be said immediately and without reservation is that the factory from which they come is one of the finest of its kind in the world.

PART-TIME SERVICES

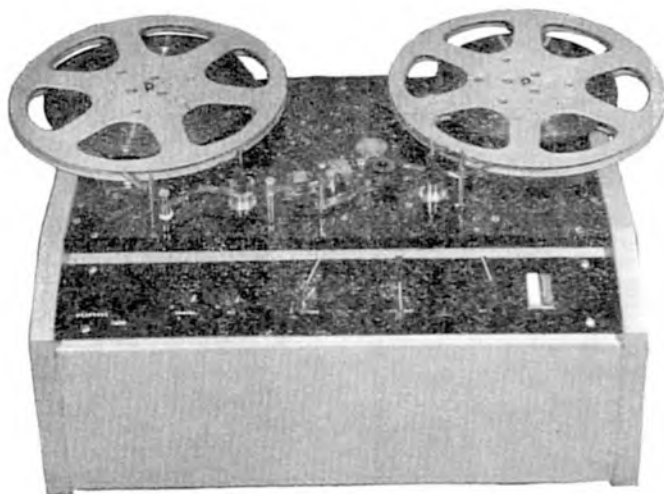
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DO - IT - YOURSELF

VIDEO

By PETER L. BASTIN

LAST month I described my first encounter with a video recorder, the VKR500, designed and manufactured by Wesgrove Electric of Worcester. Through the courtesy of Wesgrove's Mr. Jack Jones, I have now had the opportunity to try out an assembled model.

The recorder is marketed in two forms—the kit at £97 10s. and a factory-assembled machine at £150. It was the latter, assembled model, which I tested. The deck and electronics were mounted in a “temporary” lidless cloth-covered wooden cabinet (later models will be

veneered). The control panel at the front is angled, and the finish to the deck and control panel is gloss black formica. The whole machine is remarkably light and can quite easily be described as portable, although the eleven-inch reels make true portability rather inconvenient.

The controls consist of five bar-type knobs and are, from left to right on the control panel: video tone (replay), contrast (replay) and recording level. Two knobs on the deck control the record/replay functions and on/off tape transport. A permanent magnet is built into the record/replay knob and there is an azimuth control adjoining the heads. In addition, there are camera and microphone inputs on the left of the control panel and on/off power warning lights on the right-hand side. A modulation meter for accurate recording levels is to be incorporated in future machines. Four leads exit from the back of the machine and disappear into the television set.

Two heads are employed, a conventional audio record-head and a video head manufactured by the firm. This video head is not flat on the face, as an audio head is, but is angled. Contact is made by a metal plate which drops quite simply on to the top of it. The head, which is made of copper and mu-metal, is merely lifted off when a replacement is required.

Operation of the machine is quite simple. Power is switched on and the television feed set is allowed to get up steam. The signal on the TV set is adjusted to normal viewing requirements and the function switch on the recorder set to record. The speed of the recorder is set, by capstans, to either 90, 120 or 150 inches per second. The machine is set in motion by turning the tape transport switch to “on.” The machine which I tested had no modulation meter, so the recording-level knob was set at a pre-marked point of optimum modulation.

The speed at which the reels travel is astonishing at first and you tend to think that you are rewinding tape instead of recording it. There is a tendency for this very fast tape speed to be noisy and disturbing but I think you get used to it after a while.

The recording function, although basically controlled by the recording-level control on the recorder, is largely dependent upon the signal being issued from the TV set. Whatever picture appears on the screen will be recorded and all the normal brightness, contrast, frame-hold, etc., controls on the set will show themselves on the finished record-

Letters to the Editor

HOW FAR HAS AMATEUR TAPE RECORDING PROGRESSED?

NEARLY all my tape recording requisites are obtained from a local “one man size” photographic dealer who deals also in tape recorders and accessories for same. He also knows enough about recorders to be of considerable help in discussing problems.

A week ago I was in Birmingham and remembering that I required some 7/32-inch splicing tape, called in a photographic dealer only to be told they did not stock it. Making another call, at a very well known photographic dealers with branches all over the country, I was told that their other branch in the town specialised in recorders and would be able to supply my needs.

At this second branch I was shown into a special department which appeared to cater for projectors and tape-recorders. Once again I was informed that no accessories, other than tape, were kept in stock. I was half expecting this reply but my surprise was complete when the assistant in this “specialist” shop suggested that I should try a certain well known multiple store the name of which immediately brought to mind ladies wear and soft furnishings!

Now this experience set me wondering just how far amateur tape recording really has progressed—three specialist shops in a large city and not one could supply any sort of splicing tape. It speaks for itself but to be fair I should say that one general electrical shop could offer a splicing kit.

We now have manufacturers interested in the “British Tape Recording Contest.” In some respects that is a good thing but I would suggest to them that they must get some of their retail dealers to wake up a bit if they want to see expansion in the hobby.

And talking of “The Contest” I think it's a bad thing that the word “Amateur” has been dropped, and undesirable that Amateur and Professional should run together. I do not remember it being done in photographic circles with which tape recording is so often compared. Is it fair that the amateur should have to compete with the professional for the “Tape of the Year.” One result of this union has been the alteration of the rules for the British Contest. Though there appears to have been some desirable relaxation of these rules I think there will be considerable confusion with the unchanged International Rules.

R. A. MARGOSCHIS.

Mancetter, Warwickshire.

* * *

AIRCRAFT SOUNDS ARE REQUESTED

IAM very keen to obtain records or tapes of aircraft, especially the old timers like the Tiger Moth, Spitfire, etc.

Would any of your readers have recordings made at the Farnborough Air Show, or at the Shuttleworth Air Show at Old Warden, Bedfordshire. Both shows were held early in 1964, but unfortunately I was unable to attend either.

W. R. STEVENS

5, Delaval Avenue, North Shields, Northumberland.

Following last month's description of the latest effort to market a video recorder for the amateur enthusiast *TAPE Recording Magazine* leads the field once again with the publication of the first independent test report on the Wesgrove equipment.

Exciting moves are afoot regarding this equipment. Further details will be given next month, together with the first article in a new series on recording television images on tape.

ing. The contrast control on the TV set acts as a fade control, enabling a recording to be faded in or out at the beginning and end.

When the 12,000 feet of tape has whipped its way past the heads, the reels have to be reversed and the tape rewound. There is virtually no difference in speed, the same motor speed being used for all purposes. When the tape is rewound and put back in its original position, the machine is set to replay and the tape transport set in motion. The picture quality is controlled by the video tone and contrast knobs, with a watching brief held by the azimuth control. There does not appear to be any control over the audio output volume at the recorder end.

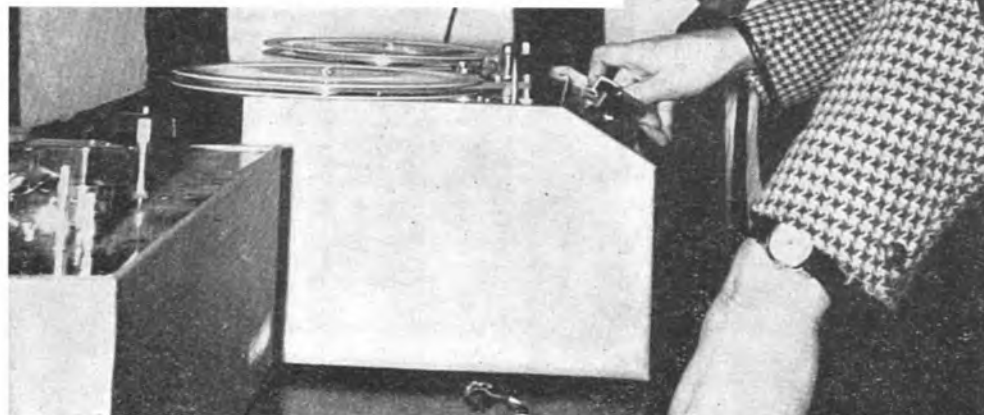
I spent some 2½ hours on a Saturday afternoon, continually recording from normal TV transmissions. The programmes were not, in my opinion, ideal, being sports items with their attendant wild panning of cameras and blotchy close-ups. However, that's all there was available, plus a few chocolates and BO commercials.

I found that the machine was simplicity itself to operate. The recording function was controlled by only two knobs—the tape transport control and the recording level control—although I found that the absence of a modulation meter was disturbing, being an audio recordist who places complete reliance on these things. The control knobs worked smoothly and positively and all controls were accessible and easy to handle.

I found that threading the tape past its numerous guide posts, heads and tension spring was a little frustrating at first, especially as the 11-inch reels were not the easiest things in the world to manipulate! The method of attaching the tape leader to the hub of the take-up reel is rather crude and requires more thought: possibly a spring-loaded hub like the Ferrograph reels would be the answer. I was not too happy about having to take off the large reels and invert them to rewind: a reversing motor or a belt system would surely make this more convenient. The vision head is detachable in a most delightful way and can be removed and replaced without trouble after its one hundred-hours-plus life.

So far as the actual recording was concerned, I felt that I was missing something because of the lack of a visual indication that the signal was reaching the recorder. The future provision of a modulation meter will no doubt correct this psychological omission!

The playback results, to be frank, were



Peter Bastin operates the VKR 700 ready-assembled unit selling at £150, at the Worcester factory of Wesgrove Electrics Ltd.

not outstanding, but some weight must be given to the fact that the TV programme content was not ideal. Nor, for that matter, was the TV signal quality. The playback results were below the standard of the original programme material and it would be false to suggest that they were almost as good. I found that I had to manipulate the contrast, video tone and azimuth controls considerably to obtain optimum results.

I did not detect superfluous flaws—blank spots, tearing-up or frame shift—in the recording. The pictures went through quite smoothly and maintained an even brilliance over the screen. I did note that the video head, after some hour or so, became very warm. I changed the head and that one, too, became quite warm. I was told later by Mr. Jones that both these heads had had just about their lot and were due for replacement.

It must be remembered that this machine, together with all similar machines now in the experimental stage, operates on the linear head system—that is, the sound and vision signals are recorded in exactly the same way as on an audio machine, i.e., horizontally past the heads. Professional machines, to minimise tape speed, record with rotating heads on wide tape, making a signal pattern across the tape. Manufacturers of video machines in the "domestic" range prefer to concentrate on the use of standard quarter-inch tape which is con-

siderably cheaper than even the cheapest Japanese video tape (which, it is understood, costs about £68 a reel).

To summarise, this is a very useful machine indeed and I would have liked to see it operate with a camera, but none was available. I think that the recorded signals from TV are fair, but a good deal depends on the quality of the signal from the TV set and, of course, the programme source. Audio replay is, of course, good, for any tape recorded at a minimum speed of ninety inches per second is bound to be good!

Wesgrove Electrics are the first in the field in this country and America with a video recorder which is within the reach of the pockets of enthusiastic amateurs and it is to be hoped that the machine receives the acclaim it deserves. I feel, personally, that there is room for improvement in the picture quality, but this sort of modification could appear overnight, making any review out of date almost immediately!

I understand Wesgrove intend to market a "player unit"—a video equivalent of the record player—to retail in the £30-£40 bracket. Five-inch-reel tapes would run for 2½ minutes and contain a different artist on each side. The price would be equivalent to comparative audio discs. At the present moment, however, there is no production of the pre-recorded tapes, so this brave new approach to video in the home is likely to be delayed.

THE CONTEST TROPHIES

These are the trophies that will be awarded to the winners of the 1965 Contest.



Agfa Cup



Acos Cup



3M Cup



Emitape Challenge Cup

TWO FURTHER TROPHIES ARE TO BE DONATED BY KODAK LTD. AND MASTERTAPE (MAGNETIC) LTD.



F.B.T.R.C. Shield



Philips Shield



Irish Trophy



BASF Trophy



THE question most Tape Recording Contest competitors ask is: "What do the judges look for?" But the wisest ones try to give them something for which they are not looking: to *surprise* them into sitting up and taking notice.

That is not easy. But I have seen it done in a number of different ways. Ray King did it last year by the skill with which he wove together the simplest kind of sound effect—escaping water in a wash-basin—and a sophisticated and humorous commentary. Norman Paul did it a few years earlier by the *scope* of the organisation and activity that lay behind his tape-drama *The Rest is Silence*. A Swiss competitor did it by the novelty and ingenuity of a tape which created complex sound effects from a recording of a single musical note.

But, in the nature of things, only a minority of tapes entered in any contest can have this element of surprise which makes the judges sit up and take notice.

The majority must depend upon other virtues. What are the essential minimum requirements upon which any jury will insist?

First and foremost, the available equipment must be used efficiently. If a competitor uses an interview in his tape, there must be a proper balance between the two voices. If one of the two participants sits on the dead side of the microphone, or too far away from it, the results will be unsatisfactory. The available microphone may have limitations, of course, and the judges will allow for this; that is why entrants are asked to list the equipment they have used. But, with any microphone, there is a right way and a wrong way to use it, and the right way is easily found by trial and error. The judges naturally expect that this will have been done before even the merest novice makes a contest tape.

Similarly, a little experience shows how to control the level of a recording on any particular machine and a tape that is heavily over- or under-modulated will not stand much chance in a contest.

An intelligent operator will learn the potentialities of his equipment inside a week. And when the mechanical and electrical limitations have been established, imagination takes over.

The making of a contest tape is not simply a technical operation: it is an art as well as a science. The selection of a suitable subject, for example, often calls for a great deal

How to make a tape to please the judges

BY DOUGLAS BROWN

who has been concerned with organising the British Tape Recording Contest since its inception in 1957. He has been on the juries of the British and International Contests for a number of years. In the picture he is seen (left) with Alan Stableford, chairman of the Federation of British Tape Recording Clubs, during the judging of the 1961 CIMES in Berlin.

of careful thought; although, occasionally, it may come as a sudden flash of inspiration.

When the subject has been decided, it is a good scheme to let it revolve in your mind for a few days while you think about the right treatment.

Suppose, for example, that you decide to make a tape called "My Father." This, as a subject, may be interesting, or it may be dull. The treatment will be all-important. It will almost certainly be a failure if you do no more than sit father down in front of a microphone and let him talk—unless he is a raconteur of quite exceptional ability (and even then his words will need to be severely pruned by editing).

You could, however, resolve upon four separate elements to build up such a tape. They might be the voice of the father, comments by one of his acquaintances, a linking narrative and a musical background.

The structure of the tape should be worked out with some care, using pencil and paper. It might begin with some music: possibly a period song of the decade in which he was born. Then a few reminiscences of his childhood world. Then the narrator could provide a link to the biggest achievement of the subject's career. Father could speak of this highlight and then his acquaintance could be brought in to say something of the same events, from a different viewpoint. This could be a very effective exercise in count—counterpoint, depending upon the character of the material available. Then some more music, a little more of father's voice and a closing sequence by the narrator.

Such a tape could easily go on for an hour, of course. Then it would stand no chance in any contest and would probably be boring to everyone except the family involved. But condense it into a tight, disciplined ten minutes and it might well have very wide interest.

It is a general rule that cannot be too often emphasised that contest tapes should be kept as brief as possible. Never take the whole of the permitted duration unless you feel it to be absolutely essential for the success of the tape.

In the example I have quoted above, it is obvious that the recording will need to be broken up into a number of self-contained sequences and that these will then need to be linked together to make the final tape. This should not deter even the beginner.

Unless the tape has the simplest possible structure, it will be sensible to make a list of the sequences and to indicate under each heading the sort of things you will want to get on to the tape and the approximate duration. Do not try to prepare a word-for-word script of speech.

Then record each sequence separately. You may do this in the order in which they will follow one another on the completed tape, or you may do all the musical links together, then all the narrative, then all the speech by the main character, and so on. In this case, you will have to cut the tape between each separate sequence (carefully labelling each piece) and then put them together again with splicing tape in the desired order. If you have not done this before, it will be your introduction to editing and you will find that it is very simple.

Some beginners shy at the prospect, however, and seek instead to record the tape in the order of the finished production. This can produce a good result, but it is tricky. There is a danger of getting *clicks* recorded on the tape when you switch the recorder on and off. If you turn the level right down to avoid this, you may get overlong pauses between one sequence and another. It is, in fact, much easier to cut and splice.

The above advice for a brief documentary feature called "My Father" can be easily adjusted for any other type of feature tape, from a musical recording to a full-scale dramatic production.

But many highly successful tapes in earlier contests have tackled a much simpler exercise, and beginners, at least, may wish to dip their toes before taking the plunge into editing, fading, mixing, and so on.

It is quite possible, then, that a recording enthusiast who hangs around a harbour long enough will eventually get a few minutes of recording of the sounds of water, birds, ships and seamen which will be a perfect cameo without any editing or treatment of any kind. Or it may be the song of a nightingale. Or the voice of a famous politician speaking in a market place. Or a child singing. More often than not, however, the simplest of tapes can be improved by judicious cutting out of sections to produce a tightly-knit programme.

Let us summarise, then, what the jury, having all the above considerations in their minds, will be looking for. They will want to assure themselves, first, that the competitor has taken the trouble to learn how to use

his available equipment properly. They will not expect the youth with a £25 recorder and nothing more to equal the achievement of the enthusiast with two near-professional mains machines, a battery portable, a series of microphones, a mixer and so on. The man who has all that will lose marks if he fails to achieve a recording quality that is virtually professional. But the modest novice must do the best he can with his equipment if he is to score marks. Over-loading of the tape, failure to position actors so as to get a proper balance between their voices: these sort of shortcomings will seriously prejudice chances of a prize.

But, assuming the equipment is used intelligently and the technical results are up to scratch, what do the judges look for next? Care in choice of a subject and skill and ingenuity in treatment of the subject.

This is where the art of creative recording comes into the affair. Originality always scores. Humour always appeals. The organisation of a complex dramatic programme, with a big cast and background music and sound effects, will not in itself win any more marks than a tape where the recordist sits in his armchair and chats. But, if as has sometimes happened, the major drama work is brilliantly conceived and executed, it will, of course, emerge as a potential prize-winner. Such productions were Norman Paul's *The Rest is Silence* and the Triumph Motor-Cycle Club's *Breakdown*.

The treatment of a subject consists of something more than the literary linking of its components. The judges will also study the technical methods used; for example, a competitor who has the equipment to fade out from one sequence and into another will lose marks if he fails to use it and instead leaves sudden, jerky changes of scene.

There are some types of tape production where the recording skill is almost everything: the sort of tapes which come in the category of technical experiment. This includes all attempts at electronic music and music concrete, where patterns of sound are created from musical notes, *sine* waves or virtually any collection of miscellaneous sounds. The man or woman who tackles this type of exercise, however, will have had plenty of experience of recording and should not need advice at the level offered in this article.

The thoughts expressed in this article are prompted by the experience of eight years as a member of the jury of both the British and International Contests. Probably, during that time, we have heard every conceivable type of amateur tape production. Perhaps not. If you can produce something in 1965 which has the authentic ring of originality, which will make the judges sit up and take notice, you are almost certainly going to be a prize-winner.

It can be done. It was done—last year. I am sure Mr. Ray King, who won both the British and International Contest principal prizes, would agree that his tape could have been made by almost any keen amateur with a minimum of equipment . . . if they had thought of the idea!

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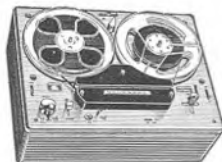


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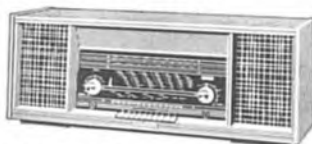
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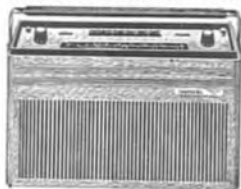
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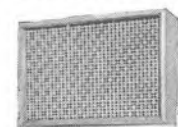
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Dramatape miscellany

By PERSPECTIVE

TOO many people still fight shy of starting, or even joining, a dramatape society because, to put it bluntly, they are scared stiff. They see a dramatape society as a somewhat exclusive place—involving an expensive and disciplined studio.

True, that aspect does exist. Some of us come to regard drama-on-tape as worthy of the highest ideals. But many of the happiest groups are virtually domestic. The "society" is merely a married couple who invite round a friend or two! And they read and record a short play from the public library. The "studio" is an ordinary sitting-room.

Yet they can create wonderful scenery in that sitting-room: spiral staircases, mountain-crags, courtyards and forests.

It is this that makes drama recording such a fascinating and variable hobby. Unlike film-making or theatricals, it is the most informal and inexpensive of all dramatic media. Enter it and you enter an invisible dimension. Could anything be more irresistible?

ENDS AND CORNERS

"What a marvellous room for making dramatapes!"

My wife's first reaction to entering our new flat proved correct. We have a long lounge, floored with Marley tiles. We can thus make a "dead end" and a "live end" in this our studio—simply by moving all the furniture down to one "end," and leaving the other "end" clear. How convenient it is! The characters can easily "progress" from one acoustic to another. They can step between curtains from (say) a stuffy railway-carriage and enter an echoic station.

However, you don't necessarily need a long room to obtain the same facilities. *Any room will do.* A square room, for example, can be divided in half to form two useful triangles. The divider (i.e., curtain) should run across the diagonal—two wire "stretchers" will support it. You thus have a "live corner" and a "dead corner."

Contrary to belief, these acoustic spaces need *not* be enormous. And don't forget the ceiling. A microphone, raised towards a blank ceiling-corner, will often yield a "live" acoustic in a small, dead-ish room.

ENTER THE DALEK

One piece of apparatus is indispensable if you're making sponsored dramatapes. Mine has been nick-named "the Dalek"—which proves that television is not yet dead.

It is simply a stout, upright wooden box (about four feet high), equipped with a variety of bolts, locks, latches and door-knockers. It also exhibits a sliding door/window, a shop-bell, a letter-box—all the things that feature in the type of work I undertake.

And why is it on castors? Well, this enables me to push it quickly into any desired position. For example, an actor might "exit" from a room after putting

down a nearby telephone. The door-latch, therefore, must emanate from a suitably-distant part of the studio.

I could use a *real* door—and most of us would normally do so. But the use of real "props" often means re-arranging the microphone and the actors. As an amateur, one has the time to do this. Arranging furniture around the microphone is all good fun. A chest-of-drawers (for example) can be lugged in to represent a sliding door—as well as the real thing. (It can even represent the rumbling wheels of a railway-carriage. Empty the top two drawers and push them in-and-out, in-and-out.) But sponsored dramatapes have to stick to a schedule. The "dalek" can be positioned in a fraction of the time—with everything to hand. Its value is obvious.

But it costs very little to make; and serious amateurs would certainly find it useful. Note: it's best to incorporate detachable panels, as this saves time yet again. For example, a door-knocker might be operated at one side of the room—but the gate-latch (preceding it) a little nearer the microphone. Rather than swivel the "dalek" during the recording, you can detach the panel (to which the item is affixed) and position the effect beforehand.

What's inside it?—that's the question most people will ask you. One useful function is that of a repository for other "props." It's also a very good place for hiding your cigars.

ABOUT GROOVES

Sound-effects on disc are very useful in the drama studio. But the modern 45 makes groove-selection rather more difficult than with the old 78's. (In passing, I would mention that BBC radio drama still use 78's.)

For ambitious work, we should (in my view) record our own sound-effects. But you won't catch me throwing my old discs away! Those "clashing swords" and "angry crowd murmurs" might not be hi-fi. Indeed, they are highly scratchy. But we go on using them out of sheer nostalgia for dead-and-gone theatricals. Oh, yes... discs are very much a part of our tradition.

But why do some of us adopt such unnecessary contortions in selecting grooves? Some drama-fans allow the stylus to rest on a stationary groove; they cue the effect with a flick of the turntable—relying on a guessed-at speed! Others mark the groove with a blob of lipstick. They hover over the revolving disc, watching that blob for dear life. Eventually, they drop the stylus in and (somewhat giddily) "lift" it—all of which can damage the grooves.

The easiest method, of course, is not to select grooves manually. Simply dub the entire band on a piece of tape—and cut the tape up accordingly. The particular bits needed are either spliced directly into the dialogue-tape or "mixed in" from a second tape recorder. You can cut a dubbed tape

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to incredibly fine limits, often splicing a split-second effect between (say) two words of a phrase.

Occasionally, voices must "blend" with the effect—where two characters are talking against a distant background. What if you don't possess a mixer?

Simply time the requisite length of dialogue (in a rehearsal) by recording it. This gives you a pre-determined length of tape. Dub your background on this same tape—which, of course, erases the rehearsal-dialogue. Then use the tape again at the live session—superimposing the dialogue over it.

FAKING A TYPEWRITER

Mrs. Angela Fox writes from her dramatape society in Brighton, Sussex: "I now have a talented play-reading group of nearly two dozen members. All of them, despite my initial misgivings, needed no persuasion. In fact, I am obliged to curtail membership."

Mrs. Fox is producing an office-thriller. She works in the City of London, but ironically, has no access to a typewriter at her home in Brighton. Determined to improvise the effect, she confesses defeat over the keyboard sound. "Can you," she asks, "suggest a simple solution?"

Four ingredients will make a modern typewriter: (1) **The roller-action:** run a short stiff comb against a sharp wooden edge. Use a "chopping" action to imitate the hand turning the roller. (2) **Key-board sound:** curve a small piece of acetate (or visiting-card, etc.) in one hand. Flick the extreme tip with the two fingers of the other hand—imitating a rapid "typing" action. (3) **Carriage-return:** run a long stiff comb against a metal edge. (4) **Ting of bell:** tap alarm-clock bell with pencil.

Ten-second tape sketch by David Haines

A monthly exercise in perspective, acoustics and sound-effects

The extract below provides a typical exercise in groove-selection. Suitable discs are: HMV 7FX2; HMV 7FX12.

TAXI!

(*Fade in general street noises*)

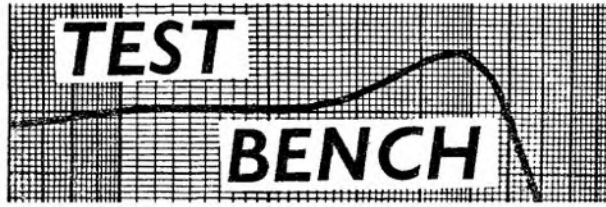
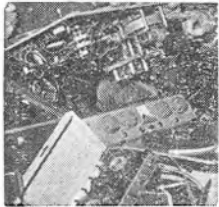
MAN: (*calling urgently*) Taxi! Taxi!
I must have a taxi! Taxi! Taxi!

(*Taxi draws up and stops, motor running*)

DRIVER: Where to, Guv'nor?

MAN: Follow that parking space!

(*He jumps in taxi, slams door. Taxi departs at speed*)



UHER ROYAL STEREO

By John Borwick

I AM not a betting man, but until this Uher stereo recorder came along I would have been prepared to wager that you could not combine such a wide range of facilities in a single machine weighing only 23½ lb. and measuring only 14 x 13 x 7 inches.

This is easily the most versatile tape recorder I have been called upon to test. The circuit complexities are naturally reflected in the price of the machine and the many operating controls—including an eleven-position function selector switch. So if you will never want to do anything more than record family chit-chat or mono radio programmes, this machine is probably not for you.

But if tape recording is your hobby, keep on reading. This recorder enables you to record mono or stereo, record a second track while monitoring the first, re-record from one track to another while monitoring and adding a new recording (you can repeat this process as often as you like and end up with a "one-man sextet"), record with built-in echo, record control pulses for automatic operation of a slide projector, mix two inputs.

THE CONTROLS

Let's begin with the controls and operation for straightforward mono recording. Selecting the required speed (7½, 3½, 1½ or 15/16 ips) on a bar-type switch also switches on the mains and illuminates a blue light. (The latter is actually a double-stacked rectangle: the upper or lower half is lit to indicate whether the upper or lower tracks have been selected, 1-4, or 3-2; and both halves light for stereo. A similar helpful pair of red lights operates when the "Record" condition is selected.)

Below the speed switch are three identical control knobs, for playback volume, balance and tone. Then comes a row of piano keys for pause, stop and start, with beneath these a clever slide bar for fast winding. You push this to right or left for right or left spooling; a gentle push gives you the "edging" facility for accurate cueing of passages on the tape, or a harder push engages a lock-on position. By the way, there is a solenoid-operated automatic stop which operates on the usual metallised stop-foil—during fast winding as well as playback and recording.

We then come to three more cylindrical knobs. The first is the "Record" button (to be pushed simultaneously with the start key for recording) and the other two are gain control knobs of which I will say more later.



There is a dead straight slot in the head cover, which makes tape threading extremely easy, the cover also carrying a pair of identical meters for indicating the recording level in the left and right channels. A four-digit tape position indicator is mounted on the deck proper, with a reset-to-zero button alongside. There are three DIN microphone input sockets on the left hand side of the recorder, and sockets for radio, gram, two external speakers, remote control and automatic slide projector at the back.

We now come to the *pièce de résistance*, the eleven-position function switch. The positions marked 1-4, 2-3 and Stereo are simple enough, and merely select one or both tracks for recording or playback.

Positions marked "Synchro Play I and II" are used for parallel track, sound-on-sound recordings. Having made the first recording, say on Track 1, you wind back and then, listening on headphones, make a second synchronous recording on Track 3. When you come to play back, you can adjust the relative loudness of the two tracks by means of the balance control—the uses of this feature in tape learning and mixing commentary with music or sound effects are obvious.

Taking this a stage further, the selector switch has two positions marked "Multi-play I and II" which allow you to transfer a recording from one track to another while you add a second recording—on this occasion the two gain controls are in use for suitably adjusting and mixing the levels of the two signals. By alternating between positions "Multi-play I and II," the combined recording can again be dubbed back to the first track and back again at will, while you build up a synchronised mixture of as many individual parts as your ingenuity can produce.

As is usual with tape recorders having separate record and playback heads, the stacked playback heads follow the record heads in the direction of tape travel. When separate record and playback amplifiers are included, as they are on this machine, this allows off-tape monitoring—which is a much safer way of recording than the more usual system of simply monitoring the recorder *input*. Yet another clever feature of the Uher Royal Stereo is that, during recording, you can change over from monitoring the input and monitoring off the tape (and so compare the input and recorded quality), by rolling over the balance control from its anti-clockwise to its clockwise position.

Since the off-tape sound is delayed by a fraction of a second, equal to the time taken for the tape to travel from the record head along to the playback head, a distinct echo would be heard if we could listen to both signals together. This fact is employed on the Uher to give a controlled echo effect, which is useful for echo scenes in plays, and of course is the secret of the so-called double-tracking of many "pop" singers' voices. Turning the selector switch to positions "Echo 1-4" or "Echo 2-3" produces a condition rather similar to Multi-play in which the input signal plus its echo (from the playback head) are automatically recorded on the appropriate track. Once again, you have independent control of the volume of the signal and the echo effect on the two gain control knobs.

The last two positions of this unique selector switch are marked "Dia-Pilot I and II," and are intended for use in conjunction with an automatic changer slide projector. Having made a mono or stereo recording with commentary, music, etc., to accompany a sequence of colour slides, it is merely necessary to plug in the remote control unit

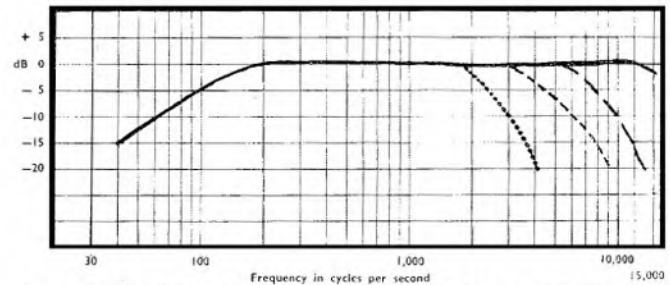
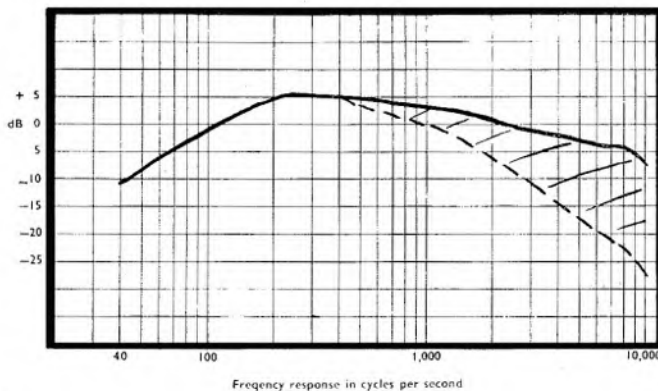


Fig. 1 (left) Replay response using CCIR Test tape at 7½ ips. Shaded area shows tone control range. Fig 2 (above) Record/replay response at each speed 7½ ips ——— 3½ ips - - - - 1½ ips 15/16 ips

ALAN EDWARD

BEEBY

A TAPE recording of an alleged conversation between two of the accused was introduced in evidence at the January 13 hearing of the football conspiracy trial at Nottingham Assizes. Det.-Insp. Roderick Jones, Sheffield Police, apologising to the Court for the extremely poor quality of the recording, explained that earphones were needed to hear it properly.

Pausing only to ask what the devil our betters(?) think they're playing at, I shall now offer two very simple words which, I feel, might profitably be added to a well-known maxim:

"Justice must not only be done, but also seen and heard to be done."

CLEANING the "Imp" the other morning when this bloke strolls up and taps me on the shoulder. "I expect you remember me," he began. "Er . . ." I hedged, trying to place the face. "My daughter's asked me to come and see you,"

he explained. The wife, cleaning the upholstery inside the car, did the old "Oh, yes?" bit with her eyebrows. "She's just had a baby." The wife was now hammering on the window and yelling at me to let go of the door-handle. "And we were wondering," the bloke went on, "since you were kind enough to make a tape of her wedding, whether you'd do the same thing for us at the christening next month?"

Say what you like, thirty-five's a funny age for shocks!

SUDDENLY, everybody's interested in tape-editing. A letter from reader F. Philips, of Middlesex (October issue), asking why there wasn't a book available on the subject, seems to have sparked-off a veritable wave of enthusiasm. So—a tip.

If you've kept all those old issues of *TAPE* filed safely away (you have, haven't you?), a glance back to 1961 will pay good dividends. In the issues dated October 18 and November 1 and 15, Alec Nisbett contributed three memorable articles on tape-editing which, to my mind, have never been bettered by any other writer.

My appeal last October for someone to organise a tapespondence group for the benefit of sound-effects enthusiasts has been answered by Donald Jeater of Weymouth.

Donald has considerable experience and knowledge of effects-work himself, and has proposed a Round Robin-style tape containing such items as brief "sample" extracts from the various effects-tapes and discs available, members' own effects, hints and tips on composition, an Effects Library and a members' "wants, offered and exchange" section.

Anyone interested in supporting such a project is invited to write direct to Mr. D. Jeater, The Old Manor, Radipole, Weymouth, Dorset.

WITH the usual Beeby talent for sticking this long-suffering neck of mine firmly on the editing-block, I shall now proceed to describe a disturbingly traumatic experience which recently befell a certain friend of mine.

We were half-way through a long and wearisome effects-session, he and I, and had just finished taping the required sounds in their correct sequence. "Better start time-cutting 'em in now, I suppose," I said. He nodded, and I began to search out the splicing-kit from the unit-drawer. "Here," he remarked, handing me a small reel of transparent adhesive tape, "you don't need this." I said I did need it. "It's Sell-O-Tape," he said, mouthing the word carefully like someone trying to explain something to an idiot. "Yes," I said, "I know it is." "B-But you . . . you can't use that stuff for splicing," he protested, "it'll 'bleed' all over the shop!"

"When I am composing sound-effects," I replied, "and using my own tape, I always splice with Sellotape for the very simple reason that I know I can rely on it not to slip. Sellotape is sticky; your so-called 'proper' splicing-tape is simply tacky. Stickiness—in my limited experience—sticks; tackiness merely tacks, which is just not good enough, especially where one short effects-section is being continually lugged back and forth across the heads all the time. And," I continued, "until I am offered a brand of 'proper' splicing-tape which I consider does the job equally efficiently, I intend to go on using Sellotape." "Tell your precious readers that, if you dare!" he challenged. "Will do," I promised. Have done!

" . . . WHERE IT'S DUE " DEPARTMENT: Harryhausen, Lampron, Fulton, Belcher, Kellogg . . . How many times have you sat in a cinema and watched these names roll regally past in the opening credits of a George Pal space-age spectacular, a De Mille epic or one of the countless Universal-International horror-offerings of the 'forties? Masters, all five of them. Creators of the unreal, the breath-taking and the fantastic. Special effects men, both in sound and in vision. American TV, too, has produced its own giants in the field. Crutcher, Rose, Lane, Bergman, Myers. . . And what of little ol' Great Britain? You may well ask! Can you recall the last time you saw sound or visual effects chalked up to anybody on the small screen? But wait. . . Do these tired old eyes deceive me? The BBC, no less, actually admitting that a *human being* was responsible for the background-noises in their "Great War" series? Yes, there it is, large (well, nearly as large) as life. "Sound-effects by Bill Read."

Mind you, there's an embarrassing little story going around that it was, in fact, a toss-up 'twixt Bill and the bloke who stokes the Television Centre boilers for the honour of padding-out that impressive, ten-minute credit list, but no matter. The ice has been broken, and a precedent established. What will the Radiophonic Workshop do now, poor things? Turn it in, I should hope!

TEST BENCH

(Continued from facing page)

of the projector, set the tape and slide magazine to the beginning and start playback. Each time you want to change the slide, you press a "Dia-Pilot" key on the tape deck. This simultaneously operates the slide-changer mechanism and records a pulse on Track 4. You therefore finish up with a tape sound track and a synchronous track of pulses which will run the show for you automatically.

PERFORMANCE

I have not left myself much space to comment on the technical performance of this recorder, but I expect some of my enthusiasm has already shown itself. Sound quality is very pleasant, even on the built-in loudspeakers which—particularly when the machine is placed across a corner—also give a fair stereo effect. Using a pair of good quality external loudspeakers is of course recommended. The measured frequency response is well above average. Fig. 1 shows the result of playing a 7½ ips CCIR test tape. The gentle downward slope at high frequencies suggests that NARTB equalisation is used, but this is of little consequence except when CCIR tape records are being replayed. For all other purposes it is the record/replay response that matters. This is shown in Fig. 2 for each of the four speeds, and the remarkable performance at 7½ ips and to a less extent 3¾ ips can be clearly seen.

I ought to explain that all these measurements were made across one of the loudspeaker outlets, loaded with 7.5 Ohms. No doubt the bass response extends further at the low level "Radio" outlet than I have illustrated. Wow and flutter are inaudible at the higher speeds, and the mechanical noise is very low indeed. Two advantages of the all-transistor circuitry are the immediate start, with no warming up time re-

quired, and the fact that there is no heating up: the machine is still quite cold after several hours use. Fast wind and rewind of the seven-inch reel of Agfa Long Play tape supplied took approximately 3¼ minutes.

I have much enjoyed putting this versatile recorder through its paces. The Echo is very effective, and at the very low speed of 15/16 ips introduces a delay of as much as 0.8 second which is most useful for producing "Dr. Who" types of effect. The stereo microphone supplied has a built-in stop/start switch which operates the pause control on the recorder. The relative angle of the two sections of the microphone can be adjusted at will, to suit the kind of stereo scene being recorded. And, something else I have not seen before, the top section pulls off to fit on another base (also supplied) to produce two separate microphones which can be mixed as required. Certainly versatility is the keyword of this machine and, considering also the excellent frequency response, I can strongly recommend it to active recording enthusiasts.

MANUFACTURER'S SPECIFICATION

Tape Speed: 7½, 3¾, 1½, and 15/16 ips.
Number of Tracks: four.
Maximum Spool Size: seven-inch.
Magnetic Heads: standard quarter track giving mono, stereo or simultaneous two-track recording and playback; separate record and playback heads.
Power Supply: 110-250 volts, six-position switch, 50 cycles.
Audio Output Power: 2 + 2 watts stereo.
Frequency Range: 50-20,000 cps at 7½ ips; 50-16,000 cps at 3¾ ips; 50-8,000 cps at 1½ ips; 50-4,000 cps at 15/16 ips.
Inputs: two mono and one stereo low impedance microphones, radio and pickup.
Wow and Flutter: ± 0.15 per cent at 7½ ips.
Dynamic Range: 50 dB.
Channel Separation: 50 dB.
Dimensions: approximately 14 x 13 x 7 inches.
Weight: approximately 23½ lb.
Price: £141 15s.

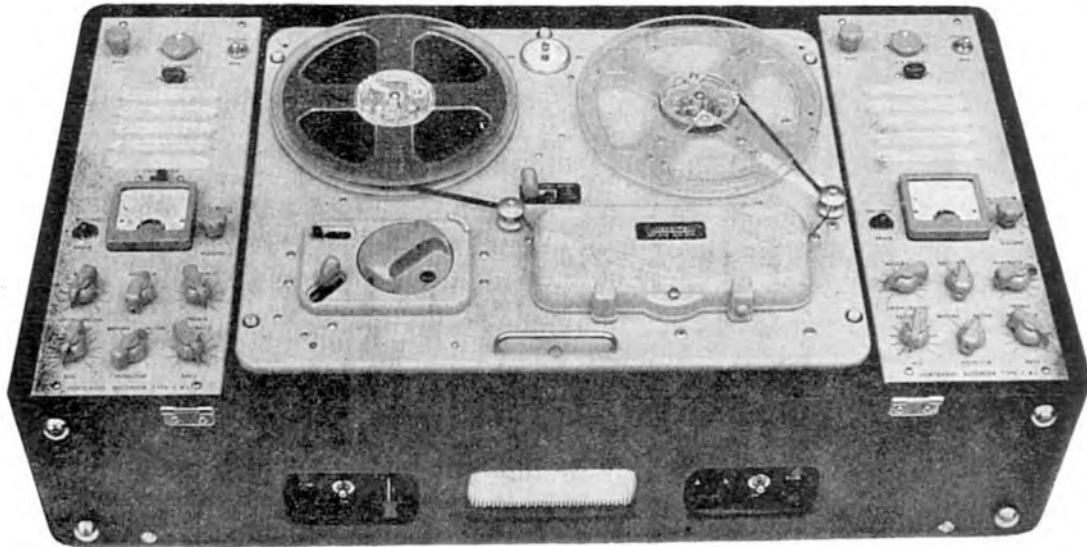
UK Agents: Bosch Limited, 205 Great Portland Street, London, W.1.

CORRECTION

The price of the Telefunken M96 reviewed last month is £72 3s. not as printed

Vortexion
quality equipment

TYPE C.B.L.
TAPE RECORDER



Here is a versatile stereophonic recorder which has no equal in its price group.

IT CAN record monaurally or stereophonically with its own mixed inputs from Gram, Radio or other sources and from high grade low impedance balanced line microphones. With good microphones, etc. the result is a suitable master for disc manufacturers. "Before and After" monitoring is provided together with adjustable metered bias for perfection.

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

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TAPE AND CINE. The fifth article in our new series giving advice on the exciting possibilities when tape is linked with cine photography. This month our expert considers the merits and faults of stripe.

Tape or stripe: which is best?

By PETER RYDE

SO far in these articles we have been mainly concerned with film sound tracks recorded on a separate tape. It is now time to consider the popular alternative of Stripe—a narrow magnetic track which you can have bonded onto the film itself.

Although there does exist a small number of stripe cameras, and it is perfectly possible to stripe unexposed film and to process it without damaging the recording, stripe is generally considered as a *projection* system only. In almost all cases, the magnetic track is added to the film after editing, and, as with tape, the recording is not done until after all other processes have been completed.

On 8 mm film, the stripe is situated between the sprocket holes and the edge of the film, and it is invariably bonded to whichever side of the film is away from the screen when in the gate. On originals, and "right-way-round" copies, this means that the stripe is on the base side of the film. On "wrong-way-round" copies, the stripe is on the emulsion side, and this has been found to be less satisfactory, since the magnetic track may eventually come away.

There are two different kinds of stripe—liquid and laminated. The former is deposited on the film in liquid form and allowed to dry. The latter is exactly like a very narrow recording tape on specially thin base, and is actually stuck or bonded onto the film. It is frequently claimed that laminated stripe is smoother and thus gives a better signal-to-noise ratio, and at the same time causes less head wear, but good results are obtainable with either.

Recently, a number of machines have been advertised which, it is claimed, enable the amateur to stripe his own films, thus saving considerable expense and avoiding delay. At present, these devices are largely untried, but it must be pointed out that, particularly with 8 mm, the permissible tolerances are very small indeed, and there is a grave risk of an inexperienced operator failing to do the job satisfactorily. Furthermore, it is rather doubtful whether the average amateur has enough stripe footage for the ultimate saving to balance the initial capital expenditure. It is perhaps wiser all round, for the present at any rate, to send film away to be striped.

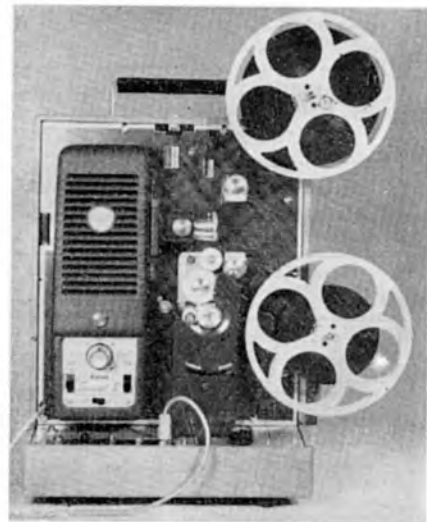
The cost of this is 2d. per foot, irrespective of gauge, and the film is usually away for only two or three days—so that if you finish editing one weekend, you ought to be

able to get the film striped ready for a recording session the next. Several firms undertake striping, and your dealer will give you a full list. The best known is Zonal Film Facilities, Westfields Road, Acton, London, W.3.

Before sending film away to be striped, you should see that it doesn't completely fill the reel it is wound on. The stripe adds extra thickness to the film and reduces the capacity of the reel.

You should also check the splices carefully, and re-make any in which the two ends of film are not perfectly aligned. Otherwise they will upset the accurate laying of the stripe and cause poor reproduction. It is quite permissible to use butt splices rather than the more usual cemented overlap type, but you *must* see that the joining tape is trimmed so that it does not cover the area to be striped; the magnetic track will not adhere properly to the tape. (A well-made join of either type should be virtually undetectable on replay if it is made before the striping is done. If you have to splice film which carries the stripe already, a butt join is very slightly preferable.)

You have a choice between two basic kinds of equipment for playing or recording striped film. There are complete stripe projectors, and there are add-on units for use with silent projectors. Although the latter may well cost you less, and may possibly suit you if you already have a silent projector and don't want to part with it, there is little



The Kodak Sound 8 stripe projector.
Cost: £185

doubt that the complete sound projector is a far better bet in the long run, both as regards sound quality, and convenience.

A major disadvantage of the add-on units is that they seldom allow you to maintain the standard 56 frames separation between sound and picture. On all sound projectors, of whatever gauge or type, the sound head must be some distance away from the picture gate so that the jerky motion imparted to the film by the intermittent movement can be filtered out and changed into a smooth motion suitable for sound recording and replay. In order to maintain synchronisation, a standard separation between sound and picture has to be used on all equipment, and on 8 mm this separation is 56 frames—a distance based on the dimensions of a projector with the sound head built in. With add-on units the distance is usually rather more, and while this does not matter for personal films, it means that you cannot play library sound films, or other people's films, nor can your own films be played by other people.

Anyone embarking on cine sound obviously wants to know which of the two is the better system, tape or stripe. Before attempting to answer this, I had better make it clear that this is a very vexed question indeed, and there are vehement advocates for both sides. But my own experience may be summed up as follows:—

- There is no doubt that, in absolute terms, tape at 3½ ips can give you better results from 8 mm stripe, even if the film is running at the sound speed of 24 fps. Distortion and wow and flutter are less, and the signal-to-noise ratio is better. It is also easier to compile a sound track on tape.

- But for film work, maximum sound quality may not be the only consideration; it may pay to sacrifice quality to ease of replay. There is no doubt that it is much easier to give a show with stripe than with separate tapes which need a synchroniser, and many people find stripe quality adequate, if no more, especially since the clatter of the projector debases the sound anyway.

- Stripe is improving, and will continue to do so. The equipment will also become cheaper. But neither of these points affects the fact that to get the best out of stripe you need to work on tape *as well*. Initial recording, and some of the compilation can be done on tape, but the final track is built up on stripe for ease of replay.

Of course, stripe *can* be self-sufficient. If all you want to do is to add a commentary with very simple background music, you can probably manage to record it all directly onto the film, using a microphone, a record player, and a mixer (if one is not already built in to the projector). But if you are at all accustomed to working on tape, you will find direct recording onto stripe very unsatisfactory. You cannot stop and start the projector quickly, for there is no equivalent of the pause control; you cannot edit the recordings at all; and you cannot (on 8 mm at any rate) use any kind of split-track or multi-track technique, because the stripe is only 0.8 mm wide anyhow.

It is also generally acknowledged that to get the best out of stripe you need to hit off the recording level exactly. With the very narrow track, and the poor compliance of the film, the signal-to-noise ratio is poor, and you cannot afford to under-record: yet distortion is immediately apparent at the first hint of overloading. This problem has been overcome in the new Eumig S projector, which has automatic gain control, a feature not to be scorned in the circumstances, whatever you happen to think of it in general. But on other equipment the recording level has to be controlled manu-



The Eumig Mark S stripe projector.
Cost: just under £100

ally, and it is difficult to get the best results with direct recording since there are so many other things to worry about at the same time. Then, of course, there's the old trouble of projector noise. So, altogether, it's better, if you can, to do some of the preliminary work on tape (perforated if necessary) and to dub the end product onto the stripe.

Yet it seems that you merely exchange one set of problems for another, because as soon as there is any dubbing to be done, up crops the problem of keeping synchronisation. The great beauty of stripe as a projection system is that you cannot lose synchronisation *once you have got it*. But just try getting it!

There are two ways you can tackle the job. If the track is to consist of several elements, each of which requires fairly accurate synchronisation, then you can do the preliminary work on tape, up to the last stage, but leave the final compilation until you do the dubbing onto the stripe. Thus you could record the commentary wild on tape and run this on one recorder; music, specially edited if necessary, would run on a second recorder; effects, also wild, on a third. All three would be connected via a mixer to the projector.

The procedure would be as follows: First, start the film, and fade up the music on cue. Then, at the appropriate moment, release the first sentence of commentary by means of the pause control, stopping the speech tape again when the sentence is complete. At the next cue, the next sentence is released, and so on. The same is done for the effects. The person in charge of the mixer balances the inputs and checks the overall recording level.

You need several people and a good deal of rehearsal to make a success of track laying by this method, but it can be done.

Another approach is to record the entire track on tape first, using a Synchrodek to link the stripe projector to the recorder, just as if the projector were a silent one. When the tape is absolutely complete, you use the same set-up to dub from the tape onto the stripe. You can thus compile on tape, but dub back to the stripe in synchronisation (lip-synchronisation, if you use perforated tape). The only snag with this method is that a stripe projector does not have a variable speed control and it may be difficult to get the Synchrodek to work with it. Even if you do succeed, you may find that monkeying around with the stripe projector's speed introduces wow. If you seriously contemplate using this method, you would be well advised to seek guidance from the manufacturers of the various items of equipment concerned.

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NEW PRODUCTS

**AKAI INTRODUCE
MORE
STEREO MODELS**

TWO new stereo machines added to the range of Akai recorders now available in this country were recently shown during a luncheon at London's Hilton Hotel

First of the new machines is the Akai M8, successor to the familiar M6 and M7 models. This is a four-speed, two or four-track stereo recorder incorporating the Akai cross-field head system, and selling at 151 guineas.

The quoted frequency response at the three speeds are 30-25,000 cps (40-21,000 \pm 3 dB) at 7½ ips, 40-18,000 cps \pm 3 dB at 3½ ips, and 40-10,000 cps \pm 4 dB at 1½ ips. A tape speed of 15 ips is obtainable for high speed duplication of tapes, by simply substituting the capstans supplied. Wow and flutter at the basic speeds are given as less than 0.15, 0.25, and 0.35 per cent at 7½, 3½, and 1½ ips respectively.

The M8, illustrated in its vertical position right, will accommodate seven-inch reels, providing a playing time of 64 minutes per track using standard-play tape (1,200 ft.) at 3½ ips. Rewind for 1,200 ft. of tape takes 75 seconds. This model will play two- or four-track stereo or mono tapes, and record stereo or mono four-track.

Among the many features incorporated are facilities for sound-on-sound recording allowing the production of duet and trio type recording from the voice of one person, straight-through amplification, vertical or horizontal operation, a four digit rev. counter with push-button zero reset, pause control, VU meter recording level indicators for each channel, interlocked operating controls, separate bass and treble controls for each channel, a built-in tape cleaning device, and an automatic shut-off switch which re-

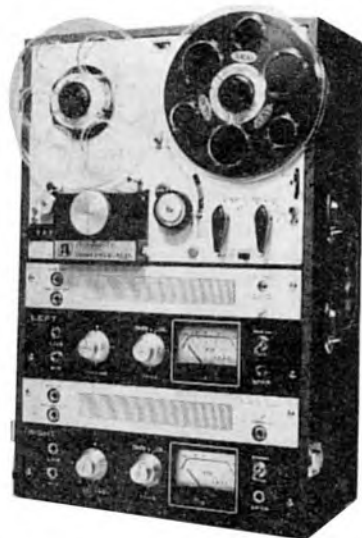
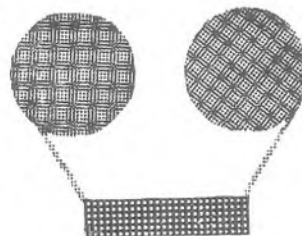


turns all functions to stop, and disconnects the power supply when the end of the tape is reached during record and playback.

The M8 measures 20 x 13 x 9 inches with the case closed, and weighs 47 lb.

The rated power output is six watts maximum on each channel, handled through the two built-in four-inch loudspeaker units.

The second of their new machines is the Universal Model 44S (illustrated above). This is another four-track, four-speed machine capable of stereo and mono recording and playback, and it sells at 100 guineas.



With provision for 15 ips, the frequency response quoted is 30-17,000 cps (40-14,000 \pm 3 dB) at 7½ ips, 40-8,500 cps \pm 3 dB at 3½ ips, and 40-4,500 cps \pm 3 dB at 1½ ips. Wow and flutter figures are given as for the M8 described above.

Accommodation is available for seven-inch reels providing a playing time of 64 minutes per track using standard-play tape (1,200 ft.) at 3½ ips. Rewind for 1,200 ft. is 75 seconds.

One five-inch monitoring loudspeaker unit is incorporated. The power output is three watts per channel, six watts combined. Other features include two VU meter recording level indicators, three digit rev. counter, facilities for vertical or horizontal operation, interlocked operating controls, tone controls, and the shut-off device featured on the M8.

The Akai 44S measures 15½ x 10 x 8½ inches, and weighs 36½ lb.

Pullin Photographic, 11, Aintree Road, Perivale, Middlesex.

**FOUR RECORDERS
ADDED
TO GRUNDIG RANGE**

GRUNDIG announce an increase in their range of recorders with the introduction of four new models this month.

First of the new models is the TK14L, illustrated overleaf. This two-track recorder has a single tape speed of 3½ ips. It will accommodate 5½-inch spools, providing a playing time of 45 minutes per track using a standard-play tape (850 ft.). Selling at 37 guineas, it has a four-track version the TK17L, at 43 guineas.

The quoted frequency response, common to all four of the new machines, is 40-12,000

cps \pm 3-5 dB. Signal-to-noise ratio is given as 48 dB and wow and flutter as within 0.2 per cent.

Among the features of the TK14L are digital rev. counter, magic eye recording level indicator, pause control, and inputs for microphone (2 mV/0.5 M ohms) and pick-up (100 mV/1 M ohm). Additional features on the four-track version include separate inputs for diode (2 mV/22 K ohms) and pick-up (100 mV/1 M ohm), and facilities for headphone monitoring using the Type MA.2 monitoring amplifier. Signal-to-noise ratio on the TK17L is given as 45 dB.



The remaining two new models are the TK18L, selling at 41 guineas, and its four-track version the TK23L (illustrated below), at 49 guineas.

This is again a single-speed machine operating at 3 $\frac{1}{2}$ ips. Identical in appearance to the TK14L, it incorporates the Grundig Magic Ear device providing automatic recording level adjustment.

Its four-track version has additional facilities including automatic tape end stop, and both automatic and manual recording level operation, and facilities for headphone monitoring as for the TK17L.

All four machines operate from 110, 130, 220, and 240 volts, 50 cycles, AC only (60 cycles conversion obtainable). Power consumption varies from 45 watts for the first two machines, and 52 and 58 watts respectively for the latter two. All incorporate



output sockets for extension loudspeakers (5 ohms) and for high impedance (700 mV/15 K ohms). Power output is rated at 2 $\frac{1}{2}$ watts.

Valve line-up for the 14L and 17L include an ECC83, ECL86, EM84, plus two selenium rectifiers. An EF86, ECC81, EF83, ECL86, EM84 plus three selenium rectifiers are employed in the 18L and 23L.

Each recorder is supplied complete with a GDM311 moving coil microphone, spare tape spool, reel of long-play tape (two-track models) or double-play tape (four-track models), connecting lead, and a tape library container.

The machines measure 13 $\frac{1}{2}$ x 10 $\frac{1}{2}$ x 6 $\frac{1}{4}$ inches, and weigh 22 lb.

Grundig (Great Britain) Limited, 40, Newlands Park, Sydenham, London, S.E.26.

NEW BATTERY MODEL BY E.M.I. ELECTRONICS

A NEW portable professional battery-operated tape recorder is announced by E.M.I. Electronics Ltd.

Providing five additional facilities over the company's previous portable models at no extra cost, the new model, designated Type L4, has a versatility beyond its predecessors the "Famous L2" and its transistorised version the RE321, which were specifically designed for broadcasting work. The price of the L4 is £120.

The extra facilities include provision for the installation of a fourth magnetic head for sound sync., choice of tape speeds, 7 $\frac{1}{2}$ and 3 $\frac{1}{2}$ ips, remote control facilities, press-button operation, and mixing of two microphone inputs.

The Type L4, illustrated below, has a quoted frequency response of 50-12,000 \pm 2 dB at 7 $\frac{1}{2}$ ips, and 50-5,000 cps \pm 2 dB at 3 $\frac{1}{2}$ ips. Signal-to-noise ratio is given as better than 45 dB unweighted, and wow and flutter as better than



0.2 and 0.3 per cent (RMS) respectively. Speed stability at a constant 14 volts is said to be not greater than \pm 2 per cent of the mean speed throughout a tape. With accommodation for 4 $\frac{1}{2}$ -inch spools, the L4 provides a playing time of forty minutes per track using double-play tape at 3 $\frac{1}{2}$ ips.

Generally a half-track machine, it can be supplied with full-track heads, and can also be supplied with a synchronising head for film applications. Erase and power rewind facilities are incorporated, together with a remote stop-start control which can be embodied in the microphone.

Among other features are facilities for mixing, separate record and replay heads and amplifiers, push-button controls, meter recording level indicator, line-in and line-out jacket sockets, built-in loudspeaker with separate 200 mW amplifier, and complete tropicalisation providing full function within a temperature range of 10-40 degrees Centigrade.

The L4 can be operated with the clear plastic clip-on lid in position, and all aspects of the deck in view.

The power required for operation is 14 volts supplied by a re-chargeable battery. Power consumption is rated as not greater than 250 mA with the deck and electronics in record/erase condition. A battery charger suitable for 100-250 volts, AC only, is available as an accessory. Further accessories include carrying case, microphone and headphones.

The type L4 measures 11 $\frac{1}{2}$ x 7 x 6 $\frac{1}{4}$ inches, and weighs 10 $\frac{1}{2}$ lb., including batteries.

E.M.I. Electronics Limited, Blyth Road, Hayes, Middlesex.

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News from the Clubs

BATH

The production of hospital broadcast programmes has been the main activity of the Bath Sound Recording Society during the winter months. The club produces and relays two hour-long request programmes each week, as a result of the 60-70 requests received. When the number of requests dropped at the beginning of the year, four members stepped in to provide their own recording choices, and these were broadcast instead.

A committee meeting with a difference was held during February, when members visited their hospitalised chairman in Bath Hospital. He was able to give a first-hand account regarding reception of the club's programme, until the Matron adjourned the meeting.

Secretary: C. J. Griffie, 26 Court Farm, Willsbridge, Bristol, Gloucestershire.

BIRMINGHAM

The club were faced with a difficult task in January, when they had to decide which of their recently produced tapes to enter in the contest organised by the Association of Midland Tape Recording Clubs. Several ten-minute tapes had been produced including one of an interview with athlete Ken Mathews, which culminated in his thoughts on being awarded a gold medal at the recent Olympic Games. Other tapes entered included Stan Finister's report on the life of Louis Armstrong and Trevor Gilbert's tape on continental sports car rallies. The climax of his tape came with twenty cars being driven at speed through the central Paris rush hour, including the sirens of the police motor-cycle escort.

The tape finally chosen was that submitted by Terry Morris. Terry exchanges tapes with many enthusiasts throughout the world, and he illustrated the fun to be achieved maintaining friends in this way. Examples of the mannerisms of certain of his tape friends was followed by his impression of what might happen during a tape exchange with a famous personality.

For the following meeting members welcomed visitors from the various Midland clubs who arrived to take part in the judging of the annual tape contest.

Kidderminster's entry—a documentary feature on sugar beet—was eventually chosen as the winner. Terry Morris's tape shared second place with an entry entitled "Music Boxes" from the Stoke club.

Secretary: Mrs. Dawn Knee, 23 Holly Lane, Birmingham 24, Warwickshire.

BRIGHTON

Over sixty per cent of the recorders owned by members of the Brighton tape recording club are British. This was revealed during a recent display of equipment by members in conjunction with a demonstration organised for club members and guests by local dealers John King Ltd.

Nine manufacturers were represented by the club members' machines. For the demonstration the dealer put Akai, Tandberg and Grundig recorders through their paces, and also operated and described the Swiss Revox machine. After the demonstration members were highly amused by a short demonstration of an audio oscillator built by member Mr. Shanks.

The following week further hilarity was provided when members were assigned to achieve unusual sounds with actual or fake recordings. A bus crash, a cow chewing the cud, and early morning tea were some of the

sounds required, providing light relief from the more serious type of recording which followed. This was playback of stereo recordings made by Louis Goldberg and Ralph Vivian. They had used Ferrograph recorders and E.M.I. ribbon microphones for their recordings.

Secretary: Keith Upton, 47 Kingsley Road, Brighton, Sussex.

DARTFORD

Members of the Dartford club have been active over the past few months producing items for inclusion in the Catford club's "Inter-club tape" programme. One of the items reported on the members' visit to a local generating station where members were shown the work of providing power, light and heat for the area.

More recently, members welcomed a visit by Mr. Raine of Brenell Engineering, who showed the models made by his company. One of the highlights of the evening was Mr. Raine's introduction of the new Brenell STB2 tape recorder, to be shown publicly for the first time at next month's Audio Fair.

Further visits from manufacturer's are planned. These include Grundig, Fi-Cord and Lustraphone, and are to be organised in conjunction with the local cine society.

Currently, members are engaged in planning a return visit to the Dartford Tunnel, to record a report on its first year's working.

Secretary: E. H. Foreman, 117 Westgate Road, Dartford, Kent.

FERROGRAPH OWNERS

The newly-formed club for Ferrograph recorder owners now has four tape round robins in circulation, and has recently issued the third edition of "Ferro," their twelve-page bi-monthly newsletter. One of the items included in the third issue was a highly informative write-up and technical drawing of how to build a time-switch switch for all Ferrograph recorders.

Membership is on the increase. One of the newest recruits wrote from New Zealand, where the Series 5 recorder retails at over £200.

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

FI-CORD OWNERS

Continuing the trend of establishing clubs of owners of specific model tape recorders, Dennis Osborne writes from Birmingham. He seeks to form a club with members owning Fi-Cord battery portable machines.

Owners of these machines are invited to contact Mr. Osborne direct at 75 Millmead Road, California, Birmingham 32, Warwickshire.

GLASGOW

Members' home-built equipment was demonstrated at one of the most recent meetings of the tape recording section of the Radio Club of Scotland.

John Wilson started the ball rolling with a description and short demonstration of his home-constructed microphone. John Knowles then showed his converter unit using car batteries.

The club recently received a request from the Dundee club who required material for a documentary feature currently in production. This was duly arranged, and the Glaswegian members travelled to a lighthouse on the Firth of Clyde to obtain the required material.

Among future activities lined up for members is a visit by representatives of B.A.S.F. Chemicals Ltd., who will be showing the popular B.A.S.F. film "The Magic Tape."

Secretary: J. A. Douglas, 113 Navar Drive, Hyndland, Glasgow, W.3, Scotland.

LEICESTER

A change of secretary is announced for the Leicester club with Malcolm Parker taking over from Peter Starie

who has officiated for over three years.

Secretary: Malcolm Parker, 74 Copdale Road, Leicester, Leicestershire.

NATIONAL FEDERATION

The Annual General Meeting of the National Federation of British Tape Recording Clubs is to be held at the Hotel Russell, Russell Square, London, on Saturday, May 15.

Among topics for discussion will be arrangements for the Fourteenth International Amateur Recording Contest. This is to be held in London this year, following the ninth Congress of the International Soundhunters (FICS) from October 22 to 26.

Secretary: E. R. Aslin, 53 Whitehouse Avenue, Boreham Wood, Hertfordshire.

RUGBY

Keith Fisher was awarded the Terry Davis Trophy and a cheque for two guineas for the maximum number of marks achieved in the Rugby tape club's annual tape contest. Second and third places were awarded to president Len Stephens and Bill Long.

Attending during the evening were four members of the Coventry society who had adjudicated for the Rugby enthusiasts. Ken Preston, Bob Tucker, and Mr. and Mrs. Rupert Gillard played back the six entries and announced the results of the judging.

During the evening one of the regular Rugby quiz tape programmes was arranged. Devised by Tom Reader, it resulted in a tie between Bob Tucker of Coventry and Mike Brown of Rugby who each received a prize. Tony Hollingshead of Rugby received a consolation prize.

To conclude the meeting Coventry's Ken Preston demonstrated some of his recording equipment and afterwards invited the hosts to Coventry's eighth birthday meeting to be held in March.

Secretary: Michael Brown, 219 Clifton Road, Rugby, Warwickshire.

THORNTON HEATH

The eagerly awaited visit of Mr. Tim Eckersley, Assistant Head of Central Programme Operations (Recording) at the BBC, was the highlight of one of the Thornton Heath club's most recent meetings. Members were joined by visitors from the Epsom tape club for his programme entitled "The World of Sound." Inciting the club members to greater production of feature tapes, Mr. Eckersley recalled some of the past entries in the British Amateur Tape Recording Contest.

Another recent visit was by Mr. Wycraft and Mr. Boate of the 3M Company. This January demonstration included the showing of the latest "Sootch" film "Magnetic Memory," and was well received by the increased audience attending.

March saw members welcoming representatives from Truvox Ltd. and Armstrong Audio for demonstrations of their respective equipment. Future items of interest are to include a return visit from Derek Chatterton of the British Council, and recording excursions to London Airport and the Bluebell Railway.

Their monthly tape contests last year culminated in vice-chairman Morris Webb being awarded the club's "Tape of the Year" trophy with his tape "Interview with an Elkhound." He has now assumed the role of sole judge for 1965, relieving John Bradley of the post. In the January contest Mr. Bradley just pipped chairman Ed. Bashford to take first place with his tape "The Traffic Problem."

The edited tape from their marathon recording session at the annual conference of the Church of England Men's Society has been completed and copies are being distributed at home and overseas. The C.E.M.S. expressed delight at the results achieved and have promised to provide accommodation so that the club can record this year's conference to be held at Birmingham.

Secretary: H. J. Bradley, 8 Canning Road, Addiscombe, Surrey.

TAPE EXCHANGES

TAPE recorder owners who wish to contact others with similar interests, to exchange news and views by tape are invited to fill in and return the form on page 162 giving their name, age, address, special hobby or interest for this section.

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

Barrow, Frank (34). 12, Penn Court, Colindale Avenue, London, N.W.9. Photography, travel, motorising, music. 3½ ips. 5-inch spool. Tesla Sonet Duo recorder. **Canada** only.

Brown, Syd (41). "Dauphin," Ball Hill, Woolton Hill, Near Newbury, Berkshire. 35 mm photography, woodwork. 7½, 3½, 1½ ips. 7-inch spool. Truvox PD93, four-track stereo. **Sweden, Canada.**

Button, David John (22). 121, Brandon Road, Watton, Thetford, Norfolk. Live recording, dancing. 7½, 3½ ips. 8½-inch spool. Ferrograph 5A/N.

Carpenter, Leonard (52). 58, Newport Road, Newbury, Berkshire. Humour, organ music. 7½, 3½ ips. Seven-inch spool. Grundig TK60 stereo. Letters not needed.

Clarke, Donald (37). 34, Central Road, Drayton, Portsmouth, Hampshire. Family taping. 7½, 3½, 1½ ips. 7-inch spool. Elizabethan LZ29. Letters not required.

Cleeve-Sculthorpe, A. C. (30). 82, Lichfield Road, Colehill, Warwickshire. Photography, folk-lore stories, exploring, swimming, etc. Elizabethan FT3, Alba, Ferguson 3204, Sherpa PL-2229, and Fi-Cord. Seven-inch spool. 7½, 3½, 1½ ips. Letters not required.

Cockell, Brian David (21). 119, Gurney Court Road, St. Albans, Hertfordshire. Photography, amateur radio, sport, classical and pop music. 15, 7½, 3½ ips. Seven-inch spool. Collaro Mk II tape deck with Sonomag pre-amp and Armstrong amplifier. Female contacts preferred in UK, USA, Australia and Canada.

Cummings, Fred. V. (34). 21, Avon Green, South Ockendon, Essex. Most music, not jazz. 7½, 3½ ips. Seven-inch spool. Three Elizabethan recorders.

Davies, Joseph (69). 23, Heathways, Southall, Middlesex. Sea travel, variety programmes. 7½, 3½ ips. 7-inch spool. Voicemaster 65, four-track, and a battery portable.

Day, Robert (33). 5, Doherty Road, Plaistow, London, E.13. Photography, art, physical culture. 3½ ips. 5½-inch spool. Ferguson 3206.

Davy Bruce (21). 61, Julian Street, Grimsby, Lincolnshire. Radio, pop music. 7½, 3½, 1½, 15/16 ips. 7-inch spool. Uher 4000 Report-S, Philips EL3548.

Dodds, David F. (48). 109, Avondale Crescent, Cardiff, South Wales. Evangelical music and missions. 7½, 3½, 1½ ips. 7-inch spool. Simon and Butoba battery portable.

Eastwood, Denys H. (42). 11, Caserley Road, Colne, Lancashire. Travel, reading, music. 3½ ips. 7-inch spool. Philips, two and four-track.

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

Harrison, Mrs. Myrtle (23). 48, St. Wilfred's Road, Standish, Wigan, Lancashire. Photography, oil painting, gardening, pops and light classical music. 7½, 3½, 1½ ips. Seven-inch spool. Truvox PD82. Female contacts only required.

(Continued on page 162)

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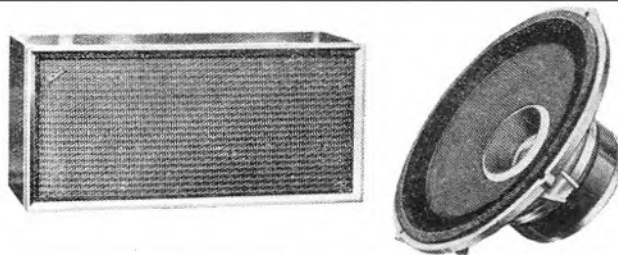
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Which! What! How! Where! Why! The answers are given and the comprehensive book contains chapters on Preliminary Considerations, The Tape Deck, The Amplifier, and Testing Tape Equipment.

A to Z in Audio by Gilbert A. Briggs (1960). 224 pages, 140 illustrations. 15s. 6d.

A first class book of reference.

Cabinet Handbook by Gilbert A. Briggs (1963). 112 pages, 90 illustrations. 7s. 6d.

Intended for the do-it-yourself man, and contains vital information on design and acoustic principles particularly in relation to compact enclosures which are now so popular for stereo.

Hi-Fi for the Music Lover by Edward Greenfield (1959). 40 pages. 3s.

Mr. Greenfield, well-known music critic of the "Guardian," sets out to help musicians and music lovers to cope with the baffling technicalities of recorded sound. He aims at giving the music lover at least a basic know-how to become a hi-fi enthusiast without developing into a hi-fi maniac.

High Fidelity Pocket Book by W. E. Pannett. 304 pages. 40s. Clear explanations of each item in the chain of a high fidelity installation are accompanied by practical hints for the enthusiast.

How to Record Weddings by Paul Addinsell. 32 pages, illustrated. 3s.

Covers in great detail this important event—Preparatory Work—Microphone Positioning—Equipment, etc.

Loudspeakers (5th edition) by Gilbert A. Briggs (1963). 336 pages, 230 illustrations. 25s.

All aspects of the design and performance of loudspeakers and enclosures are dealt with in non-technical terms.

Practical Hi-Fi Handbook by Gordon J. King. 224 pages. 25s. A guide to choice, installation and servicing of equipment, for dealer, engineer, and amateur enthusiast.

Practical Stereophony by H. Burrell-Hadden (1964). 159 pages. 37s. 6d.

The author, an instructor at the B.B.C., has been actively engaged for many years in research in this field. As a result the book is mainly directed towards those who make this art their profession, but there is much for the amateur enthusiast as well.

Sound Effects on Tape by Alan Edward Beeby. 66 pages. 3s. 6d.

How would you get on to tape the sound of a storm at sea, or a ghost in a haunted house, or a man splashing through a sea of mud? Answers in simple language to these and many other sound effects problems are given in this first-class little book.

Tape Recording and Hi-Fi by Douglas Brown (1961). 160 pages. 5s.

This interesting, informative and down-to-earth book by the Editor of "TAPE Recording Magazine" is now available as a paperback.

Transistors Work Like This by Egon Larsen (1962). 10s. 6d. In the "Science Works Like This" series the book is well-illustrated and intended for the youngster.

You and Your Tape Recorder by Norman Paul (1962). 4s. Very good value by a past winner of the British Amateur Contest.

Introduction to the Tape Recorder (Revised edition 1964-65) by Charles Langton. 48 pages, many diagrams. 3s. 6d.

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TAPE EXCHANGES

(Continued from page 159)

Hook, Keith (21). 13, Caxton Street, Castleton, Rochdale, Lancashire. Music concrete, Hawaiian, and C/W music. 7 $\frac{1}{2}$, 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. Seven-inch spool. Elizabethan LZ511, stereo. **USA, Hawaii, Russia.**

Horne, Edward (37). 17, Thorpe Road, Tottenham, London, N.15. Fairground organs, street organs, films, jazz and pop music. 7 $\frac{1}{2}$, 3 $\frac{1}{2}$ ips. Seven-inch spool. Sanyo battery recorder, Philips, and Wyndor recorders.

Knight, Leslie (25). 129, Fentham Road, Aston, Birmingham 6, Warwickshire. 8mm cine, TV, vocal jazz music. 3 $\frac{1}{2}$ ips. 5 $\frac{1}{2}$ -inch spool. Stella, four-track. Male contacts only required in **UK.**

Macdonald, John (47). 47, Bognor Drive, Herne Bay, Kent. Short wave-listening. 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. 5 $\frac{1}{2}$ -inch spool. HMV, four-track.

Molloy, Jim (37). 156, Aberporth Road, Gabalfa, Cardiff, South Wales. 7 $\frac{1}{2}$, 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. Seven-inch spool. Philips EL3534, four-track stereo. **UK, USA, Continent, Australia.** Letters not needed.

Murrell, Arthur (48). 32, Calthrope Road, West Earham, Norwich, Norfolk. Most music. 3 $\frac{1}{2}$ ips. 5 $\frac{1}{2}$ -inch spool. Ferguson 3200. **USA, Norway, France.**

Palmer, Ron (40). 154, Stanmore Lane, Winchester, Hampshire. Penology, musical shows, organ music. 15, 7 $\frac{1}{2}$, 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. 8 $\frac{1}{2}$ -inch spool. Brenell Mk. 5M and Sound Studio recorder.

Pountney, D. E. (21). 10, Sandy croft, Abbey Wood, London, S.E.2. Photography, motorizing. 3 $\frac{1}{2}$ ips. Seven-inch spool. Philips EL3541.

OVERSEAS READERS

Edgington, Bill (40). 927, North Monterey, Alhambra, California, USA. Photography, physical culture, sunbathing, camping, discs, old movies. 7 $\frac{1}{2}$, 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. Male contacts preferred in **Scandinavia, Holland, France.**

Hahn, Gerard (38). 239, Flensburg, Tegelberg 7, Germany. 8 mm cine and 35 mm photography, bird recording, operas. 3 $\frac{1}{2}$, 1 $\frac{1}{2}$ ips. 5 $\frac{1}{2}$ -inch spool. Telefunken 76, Grundig TK4, and Saja Mk 4 tape recorders, two and four-track. English or German speaking contacts required. Letters not necessary.

Pais, Antonio Carlos (29). Dundo, Lunda, Angola, Portuguese West Africa. Photography, classical, light and jazz music, reading. 7 $\frac{1}{2}$ ips. Seven-inch spool. Ampex recorder. **England, Switzerland, Germany, USA, France.**

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Recorder owned

Special areas to be contacted

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INDEX TO ADVERTISERS

A. Brown & Sons Ltd.	167
Agfa Ltd. Back Cover	
Armstrong Audio Ltd.	160
Berean Forward Movement	165
Brenell Engineering Co. Ltd.	134
C. Braddock Ltd.	167
City & Essex Tape Recorder Centres	161
Cussins & Light Ltd.	157
Daystrom Ltd.	131
Elstone Electronics Ltd.	148
Fairbotham & Co. Ltd.	155
Francis of Streatham	167
Global Products	165
Gramplan Reproducers Ltd.	164
Grundig (Great Britain) Ltd.	136
Higbiate Acoustics	153
Howard Tape Recorders	163
Hilford Ltd.	127
International Audio Festival Fair	139
Kodak Ltd.	137
K. J. Enterprises	160
Lee Electronics	154
Magnetaph	154
Massey's Centre of Sound	165
Mastertape (Magnetics) Ltd.	154
Philips Electrical Ltd.	129 and 135
Pullin Photographic Ltd.	132 and 133
Rapid Recording Service	157
Recording Machines Ltd.	156
Resolound Ltd.	128
R.E.W. (Earlsfield) Ltd.	164
Sheen Tape Recorder Centre Ltd.	164
S. Lowe & Co.	143
Sony U.K. Sales Division	126
Tape Recorders (Bournemouth) Ltd.	156
Tape Recorder Centre (Blackpool)	157
Tape Recorder Centre (Halifax)	157
Tel-Lee-Radio	155
The Ferragraph Co. Ltd.	138
The Recorder Co.	131
Tom Molland Ltd.	155
Truvox Ltd.	130
Tysonic	155
United Africa House	158
United Technical Supplies Ltd.	165
Vortexion Ltd.	152
Wharfedale Wireless Works Ltd.	142 and 160
Worthing Tape Recorder Centre	156

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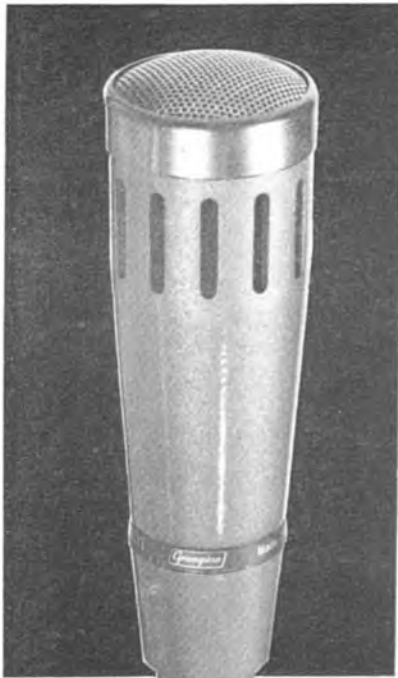
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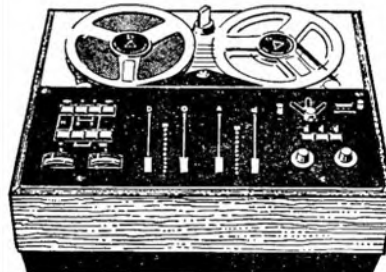
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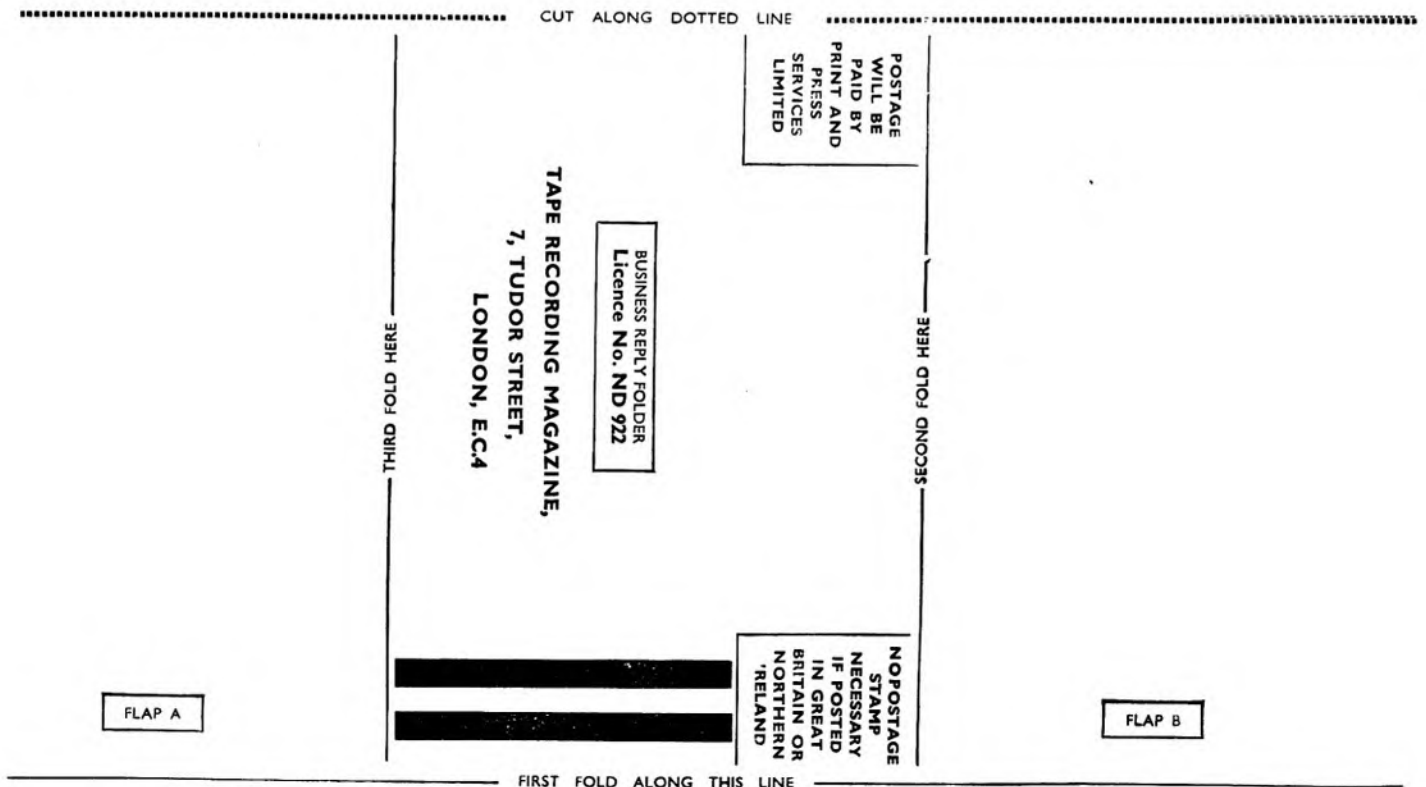
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