

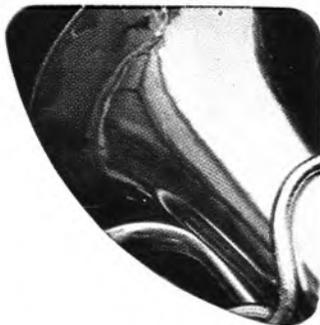
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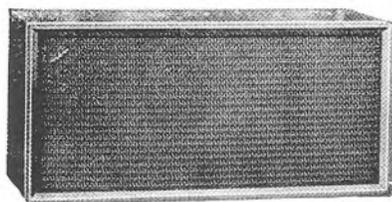
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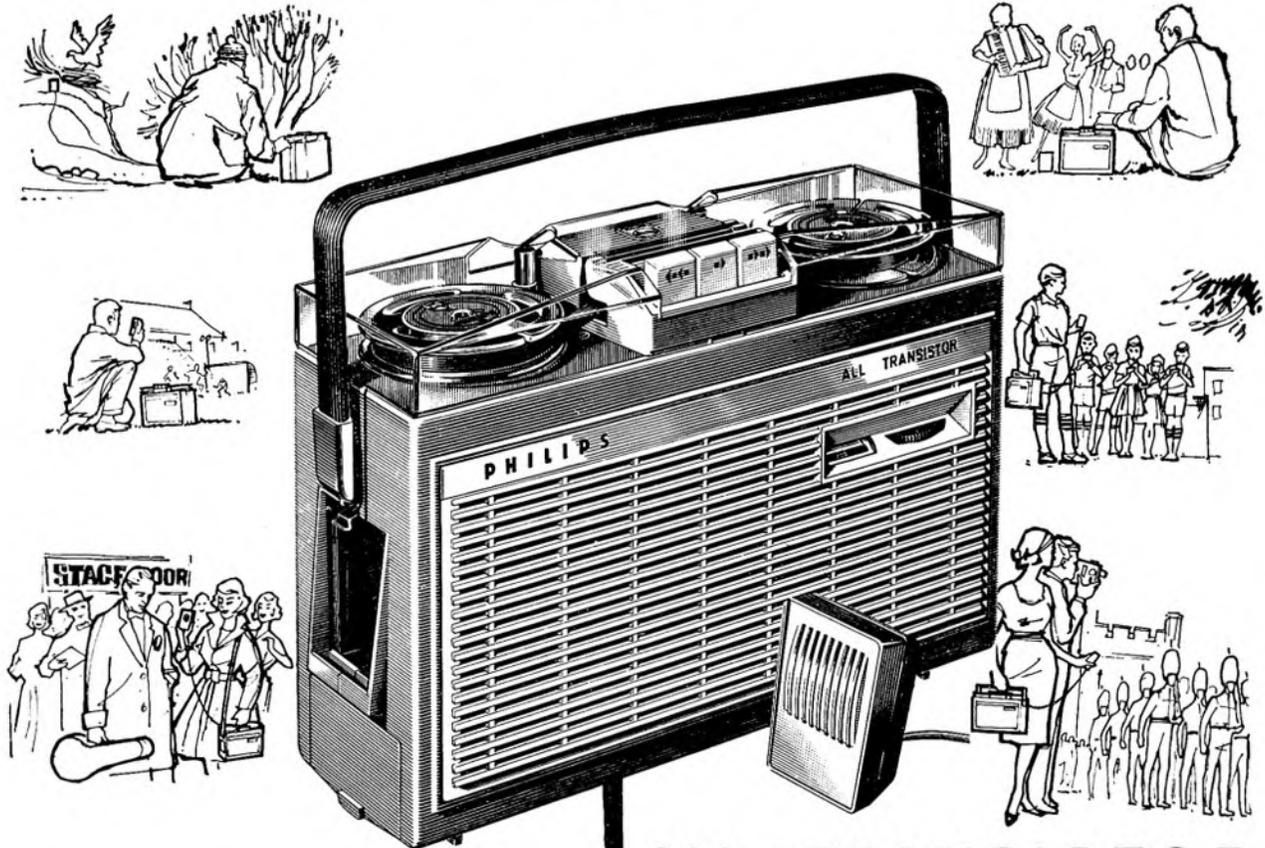
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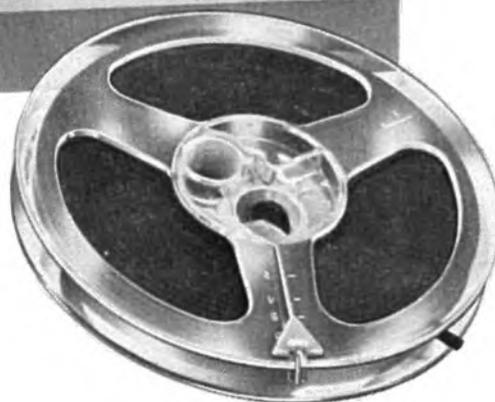
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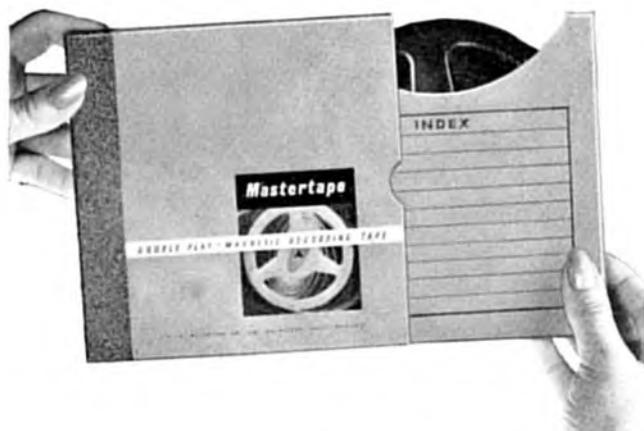
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tronically in the Radiophonics Workshop to create unusual effects.

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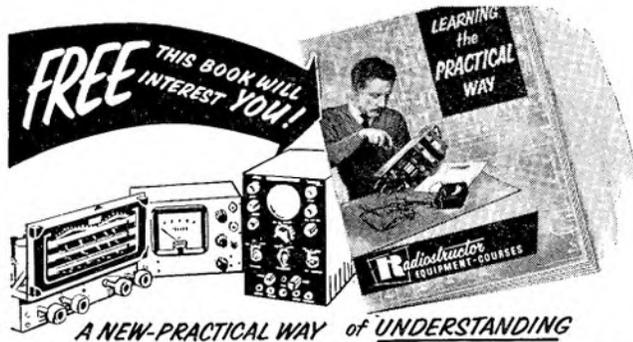
The BBC rely on Emitape for the great majority of their recordings. Standards must be high. One recording fault could mean dozens of complaints.

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Vol. 5

No. 14

12th July, 1961

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

THE British Institute of Recorded Sound has just published the first issue of a new magazine called *Recorded Sound*. Until now the Institute has had to depend on a duplicated bulletin, most of which has been taken up with listing the recordings in its archives.

This catalogue of the Institute's collection of recorded literature and drama has now grown so large that it must be published separately, and Associated Television has made a grant of £350 towards the cost of printing.

So we gain all round, for *Recorded Sound* is clearly going to be a valuable magazine for serious students. The first issue, for example, contains an article on "Copyright and Performing Rights," by Mr. C. B. Dawson Pane, the Manager of the Copyright Department of E.M.I. Records Ltd.

It contains much fascinating historical material, as clear an exposition of the existing law as you are likely to find anywhere, and a useful insight into the thinking of the record companies.

At the same time, I must say I detected little evidence in Mr. Pane's piece that amateur recording enthusiasts can hope

for any satisfactory clarification of the law in the near future.

A second interesting article is on the BBC Gramophone Library, written by the Librarian, Mr. Valentine Britten.

Recorded Sound is to appear quarterly and will be sent to anyone who enrolls as a Friend of the Institute. The minimum annual subscription is one guinea. Single copies cost 7s. and the address is: British Institute of Recorded Sound, 38, Russell Square, London, W.C.1.

International conference

THE International Federation of Sound Hunters Secretariat has considered an idea for an international study conference for tape recording enthusiasts in Switzerland in July or August of 1962. Plans will be discussed and decided at the annual congress of FICS in Berlin next October and readers of this magazine will, of course, be kept fully informed.

It would be a splendid thing if Britain, which has now established a sound reputation for its creative tape recording, were represented by a strong group at such an international event. The obvious thing is for individuals to consider it as part of their summer holiday.

This makes good sense, for the event is planned to take place at the famous resort of Interlaken. Hotels and camping facilities can be found on the shores of a delightful lake and day excursions are possible to the Bernese Oberland, to Jungfrau, or into the cities of Berne and Lucerne.

The idea considered by the Secretariat is that those attending would make day trips during which they would obtain recordings. In the evenings there would be playbacks, lectures, instruction in the use of the latest equipment, and collaboration with professionals from radio and industry. There would also be a big social evening at the Kursaal at Interlaken.

Readers who think they might be interested in attending such an international gathering are asked to let me have their names and addresses on a postcard. This will not be a definite commitment, but will give some preliminary indication of the degree of interest. It will help the British delegates at the FICS Congress to indicate how far British participation can be expected.

Northern Audio Fair

THE outlook seems to be a little uncertain regarding tape and audio exhibitions. Everyone agrees that this year's International Audio Festival in London was outstandingly the best of the series to date. This event is established as the great meeting ground for amateurs, professionals, manufacturers, dealers and all who are in any way concerned with audio. As such, it serves an invaluable function.

But there seems to be a good deal less certainty about the advisability of a Northern Audio Festival during the autumn. Soundings have been made among potential exhibitors. It now looks as if there will be sufficient support for a Fair in Harrogate—probably on October 27-29.

Nor does the Audio Hall at this year's Radio Show look like being a record success. One or two of the biggest firms in the field have decided not to exhibit at all at this year's Show.

It seems that the industry is re-thinking its attitude to exhibitions and shows.

LAUGH WITH JEEVES



"And there we must conclude our recorded visit to the YNGUI Firework Factory"

Mr. Wheatley's

NOTEBOOK



Modifying the microphone plug of the Fi-Cord

LREAD with sympathy about the experience of A. C. Wilson who had two failures when recording on a transatlantic liner (*May 17 issue*). Both breakdowns were due to broken connections in the plug of the microphone used with the Fi-Cord recorder.

When first I handled the Fi-Cord I could foresee trouble of this kind. At the BBC we got over the difficulty by modifying the microphone plug used for the EMI 12 portable recorder to make it suitable for the Fi-Cord.

The EMI plug is fitted with four flat pins and a secure cable grip, and its part number is 631869A.

This plug is also known as a Jones plug and there are some still available in Government surplus radio shops quite cheaply.

Having got one, this is the best plan:

1. Dismantle the Jones plug and remove the four flat pins.
2. Drill a hole right through the centre of the base large enough to take a three-inch long 6BA bolt.
3. Dismantle the Fi-Cord microphone plug. Unsolder the connections by applying an iron to the two microphone pins—the two closest together—and the wires will pull out if tugged.
4. Drill another hole in the exact centre of the Jones pin base, 6BA size as before, but do not bolt the pin base to the Jones plug base until the connections are safely made.
5. Pass the end of the microphone cable through the Jones plug metal cover and then one wire through each of the slots vacated by the flat pins removed in (1) above. Enough slack will be needed to bare the ends of these wires and still be able to push them right through the Fi-Cord pins ready for soldering.
6. When this is done, bolt the two bases together with the 6BA bolt. An important point is not to forget to insert a shake-proof washer before applying the nut and tightening up.
7. Fasten on the metal cover, and fix the cable grips so that the cable is under no strain.
8. Make a test recording.

Soldering hints

ONE or two tips on the soldering aspect may not come amiss.

Firstly, make sure no bits of solder are clogging the hollow pins before inserting the wires, and have enough wire bared to allow it to project about one sixteenth of an inch out of the pin end.

When applying the soldering iron to this a nice blob should form. This blob will secure the wire, running over the end of the pin and giving a good grip on the walls of the corresponding socket in use.

If you are using a co-axial cable, one connection will be the braiding. Separate the weaving strand by strand until enough is obtained to reach the pin end.

SO LARGE . . . so small . . .

I WAS reminded of these comparisons recently when taking some visitors through my beautiful Vinney Ridge Enclosure towards Brockenhurst.

I had my Fi-Cord with me and my thoughts went back to my first mobile recording assignment for the BBC. It must have been about 1935. Our equipment was a twin direct disc recording channel mounted in a huge vehicle like a moving van.

The equipment must have weighed about three tons, and there we were chasing down this very ridge trying to catch up with a fox hunt to record the effects. Our driver was so concerned about the frail bridges over streams and ditches we came across that before he would drive over we had to get out and jump on them to see how they stood the strain.

The bridges did what they were supposed to, but we nearly succumbed to what the Master of the Fox-Hounds said when we eventually got near the hunt in our three-tonner.

Needless to say, we never recorded

CAN ANYONE HELP ME?

ONE of the most pleasant features of tape recording to many people is the ability to send messages to folks overseas especially, and airmail by choice. However, it is seldom that a full three-inch reel is needed, particularly as the most favoured speed for this is 3½ ips.

My own family greetings will often go on a few yards of tape, so what I need is a small plastic spool. About one-inch diameter would do nicely, if it has a small hub.

This could go into an airmail letter at the lowest cost, whereas even the 8 mm film spool is much too big and puts up the postage unduly.

Has anyone ever come across such a spool?

I have tried a plastic chicken ring, but it is too large for the tape recorder spindle; pigeon rings are too small. The former need not have flanges for a short run of tape, as the recipients would wind the message on to a normal spool for playback.

Another method is to solder a short length of insulated flex to the braiding and pass this flex into the pin end. Whichever method is selected, the secret is to have good, clean wires and pins. This will ensure a sound first-time soldered connection.

Now you will have a microphone plug large enough to get hold of easily and a cable securely gripped. Mr. Wilson's experience will not be yours.

even the smell of a fox that day. However, we did capture the scene and effects of the Vederers Court in the King's House at Lyndhurst and the bells of Winchester Cathedral.

Bryan Myatt was driving that day, Arthur Phillips was the Programme Representative, and Leonard Lewis and I were recording. Happily they are all still going strong in the BBC whilst here I was with a Fi-Cord weighing only 4½ lb with nine minutes recording duration on one small tape.

Now I can record the hunt, riding on a horse with the Fi-Cord tucked under my Hunting Pink and the MFH would never know . . . just supposing there was a hunt, I had a horse, and could ride.

Well, in our three-tonner days we did not, even in our most inspired moments, dream of 4½ lb recorders—on or off horseback.

But it comes to pass, and it has been done. Two or three years ago I trained the versatile Master of Chislebury to use a portable recorder. I wonder, was it him,

WRITING FOR TALKING...

MANY of the scripts I receive from would-be broadcasters make excellent reading but would fail at the microphone. They are good English Literature, ten out of ten as essays, but not good enough as radio talks. There is a difference between writing for reading and writing for talking. That is one reason why you are sometimes disappointed when you read in the cold print of *The Listener* a talk you have enjoyed immensely on the air. As a producer I have to read with my ears.

Are your pupils aware of this difference? When you ask them to do a report for broadcasting on the school play, or the sports, or the day by the sea, or a piece on the history of footwear from sandal to stiletto, do they look upon it as a different exercise from writing an essay? They should. Good written prose and good speech have much in common, of course, but there are noticeable differences. What makes a good script for a talk?

It is worthwhile listening to a BBC talk with a class and analysing it.

Good examples would include Alistair Cooke's *American Letter* or a *Woman's Hour* item.

You might even ask certain members to look out for certain points such as the use of words, of illustrations, the plan, the way it begins and ends, rhetorical tricks—like they do in a sermon class in a theological college—and don't forget to have the man in the pew to comment on the general impression.

**BBC Producer
JACK SINGLETON,
offers advice on
scriptwriting**

One of the finest talkers radio ever produced was the late John Hilton. During one of his last talks in 1937, in his series called *This and That*, he talked about giving a talk. Let me quote a paragraph.

"There've been bits in the paper sometimes about my broadcasts. The bits I've always liked best are those that refer to John Hilton 'who just comes to the microphone and talks. So different from listening to something being read.' Oh

... listening and watching for learning

FOR the last three years we have been using an audio-visual French course for beginners in a Grammar School. The material was first tried out at SHAPE, the NATO headquarters near Paris, where a rapid, high pressure course for adults was developed successfully.

The basic idea is quite simple. The pupil must hear, acquire and master, structure patterns used in everyday conversation. These patterns must be "overlearned" by constant repetition in meaningful situations. Vocabulary as such is kept down to a strict minimum, and grammatical explanation comes only after the material has been mastered by instinctive acquisition. The rules come after the known examples.

How is this achieved in the classroom with young beginners? Clear, simply coloured film-strips which give instantly-recognised situations are flashed on a screen and accompanied by synchronised tape recordings in which native French speakers give question and answer at natural speed with natural rhythm and intonation.

By seeing, hearing and understanding a simple situation the pupils can be led

A new approach to language teaching S. R. INGRAM

(East Ham Grammar School)

to imitate intelligently what they have heard and understood. Finally, having imitated and assimilated new sounds and ideas, they can be induced to react correctly to a given stimulus and eventually to transfer material acquired in one situation to a slightly different but parallel "new" situation.

Our classes have five forty-minute lessons of French per week and the cycle usually follows the pattern of one audio-visual lesson, then three follow-up lessons and finally a consolidating audio-visual lesson to drive home the material which has been worked on. The teacher is free to use any variation in method or presentation which his experience shows to be more effective.

An audio-visual lesson as such usually begins with an introduction to the material, in English if necessary. However, if the picture is well drawn, the situation is immediately understood, and the first impact can and should be in French. We dispense with an English introduction as soon as possible.

By skilful arrangement, structure pat-

terns of speech are introduced and practised in a variety of meaningful situations. The children look at a series of pictures and listen to what is being said about them in French. Each statement is repeated after a pause and the pupils are relatively passive, as they look, hear and understand but do not speak. (They are, however, encouraged to ask for the tape to be stopped and for an explanation to be given if they could not understand.) These pauses can also be used to give factual information about differences between French and English habits and customs.

There are about thirty frames in each film strip, and this first play-through of the material lasts about ten minutes. The next section of the lesson repeats the same thirty situations, but this time the pupils take an active part, imitating each group of words immediately and exactly. For this purpose, an appropriate pause is left on the tape, and the pupils repeat the exact sounds, rhythm and intonation of the original French. This is something they enjoy doing and usually do very well. This active section lasts about 15 more minutes.

The material used in the audio-visual lesson is then worked through in the three follow-up lessons. The teacher can use any method he likes in the classroom, but most success is likely to come from the use of an oral method.

(Continued on page 23)

Another of our regular series of articles introducing children to tape recording

yes, I like that. For, of course, I read every word of every talk. If only I could pull it off every time—but you have to be at the top of your form. Yes, of course, every word's on paper even now . . . this . . . what I'm saying to you now . . . it's all here. 'Talking! Just as it comes to him! Right out of his head!' I hope it sounds so, it's meant to. If it does . . . well . . . this is one of my good days."

As a piece of written prose how scrappy it looks. But you try reading it aloud with a slight Lancashire accent and it springs alive. What's the secret?

First it is sincere. It reflects the man. And what a boy or girl writes should mirror their own personality—not what they think teacher wants them to be like. A talk is not a disembodied voice, the individuality of the speaker must come through.

Second syntax may be thrown to the winds. Grammar, like the Sabbath, was made for man and not man for grammar. What counts is communication: am I getting myself, what I think, what I feel, across? This may be heresy for the English specialist who spends so much blood, tears, toil and sweat on teaching punctuation, and sentence construction; something "up with which I will not put." But speech remember is colloquial. To quote Hilton again:—

"I was dealing with retirement pensions. I was tired. Tired to the point of writing that awful jargon that passes for English. I'd written something like 'I don't want what I've said to discourage you from pursuing this question further; rather I would wish that my arguments should prove an added stimulus. . . .' At that point I said to myself; 'Now, come on, John, pull yourself together. That won't do: what is it you're trying to say?' And I pulled myself together (tired as I was)—I pulled myself together and searched and found it. 'I don't want to put you off. I want rather to set you on.' That was all. Two simple sentences: Put you *off*. Set you *on*. Each ending with a preposition."

His maxim is—"to write as you would talk. you must talk while you

write." I hope your classroom is soundproof!

Third, notice how monotony is relieved by varying the lengths of the sentences and how . . . is, as it were, a good example of silence used as a "sound effect." Monotony, greyness, is the bogey of all talks producers and it begins in the script. A good talk has light and shade, narrative passages when pace can be increased and reflective when it can be lessened.

Fourth, when you read an essay your eyes, willy nilly, are scanning several words or phrases at a time. You are looking back and forwards as well as at. Anything you do not understand you can read again. Not so in a talk. The words are winged, the arrows spent beyond recall. So you must first know what you want to say, and then say it simple and clearly, building up your argument or your picture stage by stage.

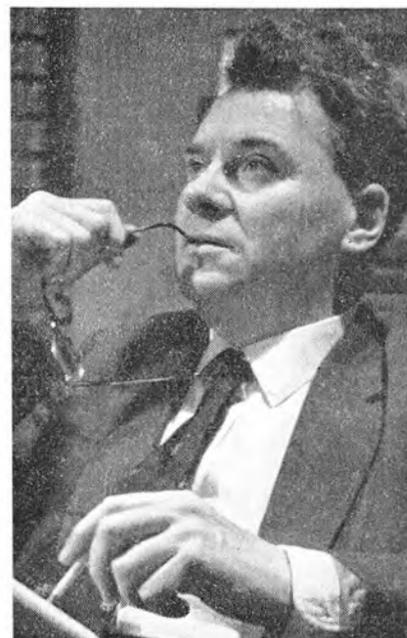
A psychologist once analysed the impact of *Topic for Tonight* on a group of ordinary listeners and found that they could only take in *three* distinct points. The tendency is to pack a talk too tight instead of saying the same few things in several ways.

This brings me to my *fifth* point—but this is an article and not a talk—the choice of words and images. Good talk has something in it of good

TAPE IN THE SCHOOLS

poetry, where words have undertones and overtones, stimulate the imagination, and awake echoes in the feelings. Radio is a blind medium but lights up the telling phrase, the vivid picture, as there is no competition from another sense.

Thirty years ago I heard a small boy say about a place, "The only sign of life was the smoke from the crematorium chimney." The image has stuck. "A needless 'that' in a printed sentence," says Hilton, "is . . . why, like a stone in a currant bun. Three needless 'thats' in a talk is like . . . it's like sand in spinach." Your teeth grate just to hear it.



The author

Illustrate the strange by the familiar. "Troy is about the size of New Street Station Birmingham" puts me in the picture straight away. Figures too must be translated into experience. For example, "Yorkshire has 3,889,432 acres, that's more than there are letters in the Bible."

I've said nothing so far about shape, which is common to both talk and essay. You can usually begin a Scott novel fifty pages in, and I can cut the first paragraph of most scripts I receive. The beginning—first impression—is most important otherwise listeners will switch off. And so too is the end with its last, and one hopes, lasting impact.

Bernard Newman once began a talk on spies, "The girls aren't going to like this, but I must say it at once: generally speaking, women make rotten spies." That made both the boys and girls sit up—if for different reasons. The introduction of dialogue too can give variety to a talk and speed the action. All these things give a talk what I call texture, before you even begin producing the speaker.

Further examples and guidance on this aspect of recording may be obtained from *The Radio Talk* by Janet Dunbar. This book is published by Harrop at 8s. 6d., and is worth getting for the school library.

ALAN
EDWARD
BEEBY'S

TAPE TALK

I HAVE in front of me as I write, a small scrap of paper torn from a recent issue of an American trade magazine. It is part of a report of speeches given by various senior recording engineers at a College Dinner and reads as follows:—

"Mr. Cahn's prediction was even more startling than that of the previous speaker. Magnetic recording-heads as we know them today, he said, were already well on the way to becoming as dated as the Edison Phonograph and, within three years, would be practically obsolete."

Now, I have no wish to go around spreading alarmist yarns which have no foundation in fact, but it happens to be the fifth rumour of this sort I've heard inside two months. Would some Knowledgeable Electronic High-Up, therefore, have the goodness to put me in the picture on this score? Then we can all get some sleep!

I have to report a current difficulty in obtaining a certain type of speaker-grille consisting of silver-coloured, perforated metal. In the course of my inquiries over the past few weeks, I find that a number of other individuals and groups engaged in building their own equipment-housing have been up against the same problem. Will any dealer or manufacturer who can help please contact me, c/o Tape Recording Fortnightly?

WE Take the View" recently reported (*January 25 issue*) that the Committee of Justice is keeping a careful eye on tape recording developments with special regard for the problem of preventing unscrupulous editing of tapes produced as evidence in a Court of Law.

I suggest that one way of dealing effectively with this problem would be to use a specially-built recorder serving two spools of tape simultaneously. The person making the statement could surely be permitted to operate the machine himself, thus ensuring that no underhand use was being made of the "pause" button during the recording.

Afterwards, the person concerned would, *himself*, retain one copy of the recording, the authorities the other. Then, if any question should arise as to the genuineness of the "authority" copy, the first one could be produced as proof of any monkey-business.

Naturally, the two copies should be identical, since they were both recorded on the same machine at the same time.

"WHAT'S HE DONE NOW?" DEPARTMENT. Shirley answered the door last night to a policeman.

"Mr. Beeby," he inquired, "tape recording chappie?" The wife said that was correct.

"Is he in?" "No, I'm afraid he isn't."

"All right, I'll call back tomorrow." That's this evening.

"Dear Diary: Have spent busy day erasing every tape in sight." Pardon? Guilty conscience? Who, ME?!!

AMERICAN Doctor of Philosophy, Frank Greibel, once wrote a fascinating book entitled, "Reasons." The opening line of the book runs thus: "Two of Man's greatest inventions have been the Wheel and the Hinge." We already have the Wheel in the tape recorder . . . now what about the Hinge?

Someone brought a machine round to me the other day for inspection, during the course of which I found it necessary to remove the head cover. "You unscrew the deck-plate first," the owner informed me, "then you turn it upside down, release the two securing clips, ease the right-hand section down a fraction to get at the locking screw, undo that, then slide the cover to the left and it comes straight off."

Pausing only to ask what the blazes some of our tape-recorder designers are playing at, I shall now offer a very simple comparison. The most important part of a car is the engine. The part of a tape recorder which is of the most vital and immediate concern to the average enthusiast is the head-assembly. If you want to get at the engine of a car, you simply lift up the bonnet. If you want to get at the head assembly in the majority of tape recorders . . .

WAKE UP, SOME OF YOU DRAWING-BOARD BODS!

THIS MONTH'S BACKGROUND-MUSIC RECOMMENDATION: Historical scenes and similar: "Historical Themes" by Alfred Kluten, (JW 172-3 and 4). This music has been specially composed and recorded with suitable instruments to give maximum feeling of authenticity to genuine historical scenes—Medieval to Elizabethan. Obtainable from Josef Weinberger Ltd., 33, Crawford Street, London, W.1.

NOTE.—Background-music records recommended in this column may be purchased only by members of the Institute of Amateur Cine-photographers. However, I understand that certain changes in the conditions governing the sale of these items to the public are at present taking place. I will report further on this issue as soon as I have full details.

THE PROPOSAL FOR A NEW MAGNETIC RECORDING INDUSTRIES' TRADE ASSOCIATION TO SETTLE TAPE PRODUCTION AND MARKETING POLICIES—PUT FORWARD BY MR. G. E. SPARK, MANAGER OF THE TAPE DECK DIVISION OF GARRARD—HAS AROUSED WIDE INTEREST. WE PRINT A FURTHER SELECTION OF REACTIONS FROM LEADING FIGURES IN THE INDUSTRY.

Present facilities

I AM very much in sympathy with many of the sentiments expressed by Mr. Spark in advocating the formation of a new association of Manufacturers in the Audio Industry.

However, before any definite steps are taken towards such an association, I do feel that there should be a close examination of the costs of such an association and of the facilities already available for promoting the aims proposed by Mr. Spark.

Inevitably any association costs money, and, if this is to be a separate entity, then one can anticipate costs of direction and administration. In addition, I presume that for a separate organisation we would have to provide a separate centre. The cost of doing so could be extremely high and undoubtedly the next step would be "a centre worthy of the prestige of the Audio Industry."

The purposes of the M.R.I.A., in the United States, quoted by Mr. Sparks, are typical aims of such an association. I think it would be more valid to consider the needs set out in some detail by Mr. Spark, namely:

- (a) Promotion of export trade.
- (b) Improvement in the standard of retail selling.
- (c) Standardisation of equipment.

In regard to the promotion of export trade, I feel that the problem is largely one for individual companies at present. Already we have organisations willing and anxious to provide information on export markets. To name only two most helpful organisations I would put forward the Board of Trade and the Federation of British Industries. No association can sell for us; we can only make use of information and assistance provided, and then get down to organising and selling at levels which make us competitive in the international market. As a final comment on this point, I have

Settling tape policies

not in my experience found any association of manufacturers giving any better help than that which can be obtained from the two organisations I have named.

Next we come to the poor standard of retail selling. There is in this perhaps an implied criticism of those associations of manufacturers which have been in existence for many years, who must have a similar situation and who, if we are to accept Mr. Spark's comments, have not achieved much in this direction. The comments of such associations may make interesting reading especially since the publication of Mr. Spark's article.

For my part, I feel that, whilst training facilities for retail Salesmen could be provided—indeed I believe that such courses are available in evening classes in centres in various parts of the country—this will not fully solve the problem. The retail dealer is in business for profit, and no amount of training is likely to dissuade him from carrying and pushing quick selling lines giving him a fair margin. I find it difficult to blame any dealer for such an attitude, provided it is allied to a principle of selling the quality of equipment and after-sales service which will enhance his reputation and that of the manufacturer. Here, I think the manufacturer must look to his own position and ensure that, when he appoints dealers, he gets active established firms to the standard he requires. Such dealers are available; the public knows them; it is up to the manufacturer to find them.

The question of standardisation is one which I feel is most important for the benefit of both manufacturers and users. I also feel that it is a problem which may well merit the attention of that admirable and vastly experienced body, the British Standards Institute. Without awaiting the formation of any new association I would suggest that, undoubtedly, unless some national (and preferably international) standard is settled in these matters there will remain the continual embarrassment of changes being introduced on the basis of designers' whims, inadequate market research and the expenditure of large sums to promote the persuasion of customers to standardise—"on any standard so long as it's ours."

Again I would pose the question before deciding to form a separate association, can we say that we are making sufficient use of those facilities and organisations already available? Perhaps the most cogent comments would come from those leading names in the Audio Industry who are non-members of B.R.E.M.A. or R.E.C.M.F., and, of course, from these organisations themselves.

Finally, may I say that if my comments

appear in some respects argumentative, this is intentional. It is so because I feel that the issues raised by Mr. Spark are of paramount importance to the Audio Industry and equally to the users we serve.

A. A. HAINING,
Simon Equipment Ltd.

Contact needed

MR. SPARK has spoken to me in the past regarding the formation of a Magnetic Recording Industries Association in Great Britain, pointing out that the R.E.C.M.F. have a "Panel T" that is supposed to represent the tape manufacturers interests. But he pointed out that the last time this panel met was some three years ago.

I personally agree with Mr. Spark's views, as obviously the recording industry should have an association covering all the various aspects and drawing together not only the manufacturers but also the component manufacturers, such as ourselves, who specialise in tape and record/replay and erase heads.

I hope to attend the next "Panel T" meeting sometime in July.

D. M. SHEIL-SMALL,
M.S.S. Recording Co. Ltd.

Too many already

WHILST we have some sympathy with the matter outlined by Mr. Spark we would comment as follows:—

1. The writer is not aware that the whole industry is bedevilled by problems and it has no effective central forum.

2. As far as the standards are concerned Mr. Spark will be well aware that the British Standards Institution has been operating in this matter for some ten years. In the course of that time the B.S.I. has established standards for reel sizes, tape sizes, direction of travel and various other matters which are now simple international standards.

3. Since there are only three tape manufacturers in this country it should not be difficult for them to get together without an expensive association, and to decide whether leaders should be in one colour or the other. This would appear to us to be elementary.

4. In the writer's view there are

already too many trade associations in every branch of electronics, and the fewer of these we can now put up with, the better it will be for all of us. They are expensive and in many cases are simply repeating work over and over again, which is already being done by those capable of doing it.

5. The number of tape recorder manufacturers is very small. There is of course a whole host of assemblers who purchase tape decks and attach thereto electronics of their own devising, but these cannot by any means be called tape recorder manufacturers. I would have thought that those who are basically doing the engineering in this field, could easily get together and solve such problems as may be found urgent or necessary very quickly.

R. W. MERRICK,
British Ferrograph Recorder Co. Ltd.

Public reaction

WHILST many of the points that Mr. Spark has raised are correct, and attention to them is desirable, I do not feel that an association would be of particular personal benefit to us. The reason for this is that, of course, "Irish" Brand Tape is manufactured in America and therefore, to a great degree, productwise we are confined by the dictates of the factory.

However, to quote one example, we arrange with the factory that all "Irish" Tape are colour coded to conform with the proposed B.S.I. recommendation. The fact that this can be done without any association of manufacturers proves that if the manufacturer or distributor is sufficiently interested in serving the demands of the public, this can be effected without his being a member of an association.

I also do not believe that there would be any psychological benefit to customers by the formation of a trade association. I am of the opinion that the vast proportion of the public might, to some degree, be wary of any ulterior motives through an association of manufacturers having been formed.

Concerning the safeguarding of the public against unsatisfactory goods, surely this is already being done to some extent by the very admirable service which most magazines undertake in their technical reviews.

A. J. WILLIAMS,
Wilmex (Distributors) Ltd.



The author, with a Koshnai, a double clarinet, which exists throughout the Islamic world

The first of a three-part series on travel with a tape recorder

TAPE recording in far-off places requires techniques and talents vastly different from those needed for studio or home recording. Indeed, I often think that knowledge of good recording practices is necessary, like money and good health and reliable equipment, but that training in a dozen other fields will determine the success or failure of a recording trip.

Take, for example, the trip to Soviet Central Asia which I made in February and March of 1960.

It was successful, measured in terms of the quality and quantity of tapes I brought back, and it achieved my other aim as well: I learned which instruments exist in Soviet Turkestan and what they sound like, something of their history, who plays them and on what occasions, and how both the instruments and music are changing.

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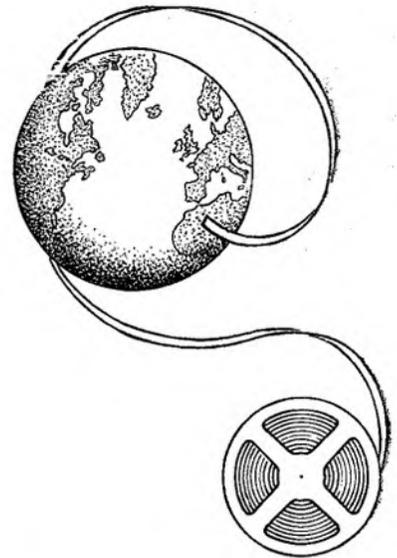
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By JEAN JENKINS

Recording in Central Asia at 30° below



But when I ask myself upon which factors the success of the trip depended, I find a strange list. Training in archaeological and anthropological fieldwork, in languages, cooking, sewing, first-aid, riding and map reading—these helped. So did the willingness to eat or drink whatever was put before me, to sing or dance whenever requested, to work eighteen to twenty hours a day, seven days a week, and to laugh at myself but never at others.

Most important of all, however, was forethought. I took literally the Boy Scout motto "Be Prepared," and listed every contingency, likely or wildly improbable. At the same time I had to calculate, to balance the risk of not taking certain equipment and clothes against the certainty of having far more baggage than my free air allowance permitted. At 15 shillings a pound excess luggage, only essentials could figure on the final list.

Recording equipment came first. By far the best tape recorder for fieldwork, I feel, is the Swiss-made Nagra. The price (approximately £250) seemed to make it impossible until a friend, hearing that I had at last got a visa which would allow me to record in areas whose music has been totally unavailable to us, loaned his machine.

It worked on clockwork and could run 5½ minutes on one full wind-up. The advantage of this clock-work motion is that the speed is absolutely constant—unless, of course, you let the clock run down. It also uses transistorised batteries and ordinary torch batteries.

In the end I took four pairs of transistorised batteries, two microphones, ten yards of lead, a complete spare clock-work motor, 35 five-inch reels of long-play tape, and a tripod for the microphone. A spare tape recorder, kindly offered by the BBC, I rejected; the additional thirty pounds of excess weight made it impractical. More tape? I might need it, but probably the local radio stations would have some. In that

case, I would need spare five-inch reels which, although bulky, are light in weight.

Another heavy piece of equipment presented a problem. My five-string banjo (it originally belonged to my great-grandfather) weighs 13 pounds, and it's an awkward shape to carry. But previous collecting trips in Norway and in the Balkans had convinced me that the best way of getting really traditional songs from people was to sing and play to them myself. So the banjo came along—and proved to be one of the most valuable pieces of equipment I possessed.

The sort of weather I would meet was difficult to assess. Opinions varied: In-tourist said that Central Asia would be warm, while the Royal Geographical Society's weather map indicated that in some areas I was hoping to visit the thermometer might reach forty degrees below zero.

After reading the century-old diaries of the Rev. Woolf, with their tales of blizzards and frozen wastes, I decided that the Royal Geographical Society was

IN THE NEXT ISSUE

Recording the music of the Uzbeks and the Kazakhs

probably right, and that all the equipment would need protection against the cold. I made a quilted eiderdown case for the Nagra, and, upon reflection, a variety of cartridge belts for the batteries. I wore this around my waist, and while it was extremely uncomfortable, it worked. None of my batteries froze, although the weather was often thirty degrees below.

Not only my equipment required protection; I needed it myself. Two varieties of protection, in fact, were neces-

sary: outer and inner. The outer consisted of a fur coat. "It's far too warm ever to wear in England," the wife of a Finn assured me when I protested that I couldn't take her only warm coat. Riding britches, large enough to take under-ski pants, string vests, fur-lined boots—all proved invaluable.

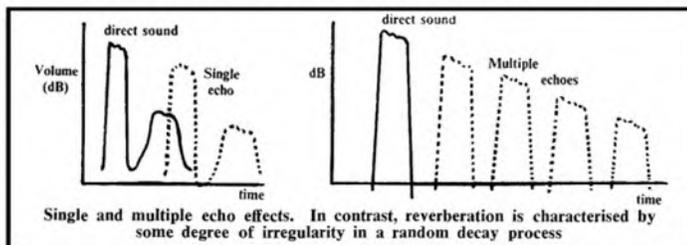
The inner protection consisted of a singularly nasty batch of shots: small-pox, typhoid, cholera, tetanus and bubonic plague were all warded off, and I was further armed with anti-biotics and a couple of dysentery remedies.

Cameras, light meter, film, notebooks, copies of my handbook *Musical Instruments* to give to Soviet musicologists, photographs of Afghan and Persian and Indian instruments for comparison—I packed these with the Nagra and spares and added them to the four other cases. Clive (my husband) and I then weighed this great pile of luggage only to discover that it was nearly seventy pounds over.

We eliminated almost all my spare clothes, put the cameras around my neck, spare motor in my handbag, microphones in my pockets and batteries in their belt and got the weight down to rock bottom: 46 pounds excess. It may have looked like a nineteenth-century exploration party to the Arctic or a one-man assault on Everest, but it stood up to the acid test: nothing returned unused, and I needed nothing (except a few good dresses to uphold western standards) which I had not brought.

The cheapest way to the Soviet Union is by boat to Leningrad. But when I attempted to buy a ticket, I was informed that the last boat had left early in December, since all the Baltic ports freeze before Christmas. I was therefore left to the joys of a long winter train journey—or rather, to four trains and three boats, no porters and five pieces of heavy luggage. After Harwich, Kiel, Copenhagen, Stockholm, Turku, Helsinki, I reached Leningrad after three days' travel. A blinding snowstorm was taking place, the temperature was 28 degrees below zero, and I felt that my trip was now properly begun.

SHAPING SOUND—6 DELAY TECHNIQUES



In previous issues, ALEC NISBETT has described BBC equipment and techniques for providing artificial echo. In this the final article of the present series, he talks about methods available to the amateur.

His new series, starting in the next issue, will be on BALANCE, and the introductory article will deal with "The Ribbon Microphone."

THE amateur generally cannot hope to have the paraphernalia (or space) to set up a sort of semi-professional echo-chamber in the basement (and what a rabid attack of the tape-recording bug the very idea conjures up!). In fact, as I indicated in my last article, there is rarely any reason why he should want to, as most of the dramatic effects the professional achieves with the use of an echo chamber can generally be managed in some other far less complicated way.

But he can, provided he has suitable equipment, try one or two echo tricks based on delay techniques. Such devices can be a great deal of fun, but should be used with discretion for programme

work, as many of the techniques produce highly characteristic effects which tend to sound somewhat inhuman. In fact, to me they often produce no more exciting mental image than that of a bit of tape whizzing round in a tape recorder.

The BBC, having adequate reverberation facilities, uses such methods as these very rarely indeed—except perhaps in the radiophonic workshop where the equipment is even more comprehensive than in the studios and is handled by operators who are both skilled and creative. As far as amateur programmes are concerned my own view is that gimmicks should not be used for serious work unless there is no other convenient way

of achieving the results required; and even then only if you have a technical mastery of the methods. With this warning, I will describe a few of the devices I have tried myself, or which have been used on gramophone records.

Some of the more effective delay techniques depend on having a recorder with a separate replay head. We recorded a few examples as illustrations for a programme in the BBC "Sound" Series,

Fighting your own voice

IF you've never tried it, you may like to have a go at talking against a delayed version of your own voice. If you're listening at a normal level, you'll soon find your tongue twisted and your senses reeling, and if you play your tape back you'll probably find it recorded with gibberish. The same sort of thing will happen on short wave radio circuits if by any chance you can hear your own voice coming back to you; the delay involved in sending a signal across the Atlantic and back is enough to make speech decidedly uncomfortable.

Curiously enough, American reporters contributing to networks in the United States are able to manage a conversation while hearing their own voices on headphones—and the reason for this seems to lie in the American accent; the drawled speech without strongly enunciated consonants fares better than clipped staccato English speech. To prove this to myself I've tried it both ways—and in this case I found that it was certainly easier to speak to the American in his own language!

This feeding back will not occur on international telephone circuits; the two routes are kept completely distinct. But where broadcasting is concerned this could easily not be the case, as "cue programme" has to be fed to the contributor and the easiest way of doing this would be to send back the output of the mixer.

In order to deal with this problem on international hook-ups a system of "clean feed" circuits, whereby each source hears everything but itself, has been devised. If you try and work out what the circuitry must be for a multiple channel clean-feed mixer you will see what a complicated job this is. For the

system to work satisfactorily each speaker should listen on headphones. If it is absolutely necessary to listen by loudspeaker (as in the CBS inter-continental television film programme *Small World*) the microphone and loudspeaker must be arranged to give as little spill as possible.



A BBC studio manager testing a transatlantic line for Sports Report. "Clean feed" circuits are used for overseas contributions into a programme (so that no one hears a delayed version of his own voice coming to him). On this panel there is provision for as many as seven such circuits at the same time, each with individual talk-back, cue programme and prefade facilities

SHAPING SOUND—6 DELAY TECHNIQUES

using a recorder playing at 15 ips with a three-inch spacing between the heads, so that we were working with a basic delay of a fifth of a second.

The first and simplest of these is direct feed-back—and even this may not be anything like as simple as it sounds. How it can best be managed will depend on the recorder. At least one firm (Veritone) advertises that its recorder provides this facility, and has backed it up with demonstrations of “pop” singing which were quite effective even by the standards the record industry sets itself.

Working along the same lines with an EMI BTR/2 we tapped a water-glass and let the signal go round and round, using a fader to keep the level constant. This is a game that will quickly show up any peaks in the frequency response of the circuit; in our case, however, it was half a minute before the characteristic of the system completely swallowed the original sound.

If you try this, you should experiment using a control unit if possible; use of the bass and treble filters may alter the character of the result. When this technique is used for providing echo effects for programme purposes a suitable degree of attenuation must be set.

There will be a distinct difference between this form of echo and the genuine reverberation obtained from studio acoustics or an echo chamber or echo plate, in all of which sounds will die away by a random decay process.

Random decay gives a warmth which compares favourably with the mechanically repetitive quality of feedback echo. As normal reverberation dies away there is a continual interchange of energy between different resonant modes. (For an illustration of this in a simple case, record a sustained piano note and dissect it to make loops which you can play forwards and backwards, listening for the change of tone-colours at the joint.) In the case of feedback echo, there will simply be a gradual build-up of a single pattern of coloration as the sound dies away.

Another disadvantage is that the proportion of direct to indirect sound is governed by the straight line decay law. The ratio of direct sound to first echo, and first echo to second echo, and so on, is constant. Of course, all this may well fit in with the desired effect.

A second form of this delay technique is slightly more complex, in that it requires a second recorder. The direct sound is split

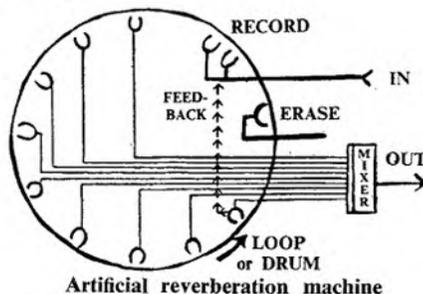
and one leg goes to a record/replay machine which supplies the delayed signal (the duration of the delay being determined by the speed of the tape and spacing of the heads). The other leg is passed through a small amplifier and recombined with the recorder output (the purpose of the amplifier is to avoid feed-back on the loop, and any other suitable means may be used). Result: a single echo.

Variations on the above lay-outs using loops, varying speeds, flutter and so on, can easily be imagined. Odd effects can be made by playing about with loops—for instance: try taking a short loop, and re-recording at a much slower speed; making a second loop from this and replaying at the original speed, fading it to make a “ringing” echo to add to the original sound . . . but I think that tape loops, while amusing to play with, are boring to talk about (other people’s tape loops are in this respect like other people’s children!).

There is another technique which I might describe in this context; and although it is hardly likely to be of practical use to the amateur it may account for some of the sounds heard on records, better than do the devices already described.

This uses a loop with a number of replay heads spaced along it, each having its own separate fader for mixing into the “echo.” If a multi-track system with staggered recording heads (at progressively increasing attenuation) is used, the number of “reflections” is the product of the numbers of recording and (full-track) output heads. It is usual to place the earlier heads fairly close together in order to avoid amplitude flutter—if “pure” artificial reverberation is what is wanted.

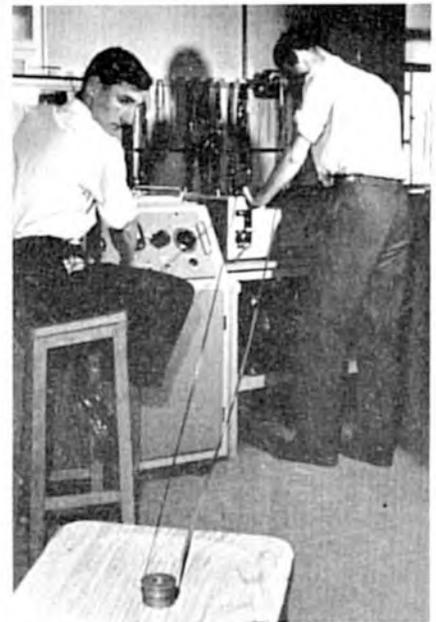
As an added refinement the last reproduction head may be used to feed back into the recording head at an appropriately lower level, so that the process may continue beyond the duration of one circuit of the tape-loop (or coated wheel). For “freak” effects the positions of the output heads, as well as their volumes, can sometimes be altered.



A number of records have been made using this sort of arrangement for “gimmick” effects; individual sounds, words or phrases are switched through the device and recombined with the original sound.

There is one particular type of delay which produces an entirely different effect; this is the case where the original sound and the “echo” are equal and are almost, but not quite, in sync. Instead of an echo effect a completely new sound quality is created.

What happens is that depending on the phase relationship between corresponding



A tape loop in the BBC Radiophonic Workshop. Dozens more hang on the hooks on the wall

sinusoidal elements, certain frequencies are reinforced and others are cancelled. Thus, for frequencies such that an integral number of cycles occur during the delay, the output is doubled; but at all the intervening half-cycles the two will be 180 degrees out of phase, and there will therefore be no signal at such frequencies.

BBC studio managers are well acquainted with this form of distortion, as we constantly have to watch out for it when setting up ribbon microphones close to each other; if they are antiphase, trouble may occur. Another example of this occurs in short wave radio pick-ups where the signal sometimes has a continuously varying “whooshy” quality, as the coloration consequent on this process sweeps back and forth across the audio frequency range.

Similar effects can be obtained by playing two gramophone records or tapes almost in sync. I have tried this, varying the delay by using the fine adjustment of speed available on Garrard 301 turntable.

Generally speaking such effects are regarded as undesirable, but some time ago I came across a “pop” record the instrumental backing for which sounded to me as if it had been created in just this way. This was a Top Rank record of Toni Fisher singing “The Big Hurt” (JAR 261)—and I turned out to be wrong about how the curious sound was made, because Ken Wild, Technical Manager of Top Rank Records told me that “it was done with wind noise running at various speeds, with echo added. . . .” So that’s another way of creating the effect of phase distortion!

At one time engineering efforts were concentrated entirely on the removal of all forms of distortion, in order to make reproduction as truthful as possible. Today this is still generally the aim—but there are times when distortion can be controlled and used creatively.

Our argument was distorted by M.C.P.S.

WE feel it is necessary to reply to the letter sent by the Mechanical-Copyright Protection Society (*June 28 issue*), if only because, in an attempt to refute our arguments, they have had to represent them in a distorted fashion.

Firstly, with regard to Mr. D. C. Comper's letter, we were not attempting to discredit his argument, but to clarify it. This was surely evident from the fact that we agreed with him, as Mr. Dinning noticed, that an author should be paid royalties. But Mr. Comper's presentation of the law glossed over all its intricacies, and was simplification to the point of irrelevancy.

The M.C.P.S. has seized upon our example of an exception from copyright infringement provided by the law, that of copying a page from a book, in order to cast doubt upon our argument.

"Of course," your correspondent states, "This would commit infringement under Section 2(5)(a) of the Act." So it would, if Section 2 (5) (a) were the whole of the Act, but, surprisingly, there is a Section 2(6) which modifies Section 2(5) and which we quoted (*May 27 issue*), and which Mr. Dinning quoted (without inverted commas) two paragraphs before the above quotation.

The truth is that you can copy out portions of a book without infringement of copyright, provided it is for research or private study. The amount you can legally copy depends on the interpretation a judge would put upon "fair dealings." With regard to the definition of "private study," your correspondent infers that the law says this is the sole prerogative of students. This is ridiculous, if it is the case, but his use of the word "seems" would indicate that he is upon uncertain ground.

But, despite the quibbling of the M.C.P.S., our original argument stands just as firmly. To repeat it, as explicitly as possible: the general Act, relating to the copyright of literary, artistic, musical works, etc., contains many exceptions by which copying may be done without infringement. The special section of the Act, relating to sound recordings allows of no exceptions at all, not even for the simple cases of a person copying for his own purpose a record he has bought.

(It is worth mentioning here that BBC transmissions, except where they contain such copyright recordings as gramophone records, etc., may be recorded without copyright infringement, provided they are replayed in private.)

We can understand why the M.C.P.S. is unable to accept our proposal for the insertion of an extra clause in the Act to provide for the private copying of a recorded work by the owner (not, as Mr. Dinning wrongly quotes, *altering* the Law, which implies a radical departure from it) but their stated argument is far from satisfactory. We fail to see how an owner of a record "takes advantage,

for nothing (our italics) of the skill and labour of both the composer and record manufacturers" should he copy it on tape. He paid the composer, the artists, the technicians, the recording company, the wholesaler and the retailer when he bought the record. What real difference is there in playing back to oneself a record one owns, or a tape one has made from it?

This is the absurdity we would like to see removed.

Mr. Dinning's seventh paragraph is monumentally ludicrous, and we wonder how he ever came to dictate it. In the first sentence he remarks that we consider the whole controversy to be based on the complete prohibition of copying a recording (which we always have done), and then in the second sentence asks whether we have noticed that you may not copy a recording in any way. The neatest closed circle of pointless logic that we've seen in a long time.

We were interested to note the reaction to our calling the threats of legal action "idle." If the most current legal action Mr. Dinning can quote is a fortnight old, the percentage of copyright infringers prosecuted per year must be very small indeed. We should be interested to hear more of the cases settled out of court. We doubt there are many of those either.

This was Mr. Dinning's "first point" in his defence of the Law, but having asked us to remember it, and having built up the climax, we looked for point number two, and found . . . there wasn't one! He had not attempted to refute our argument, and by his silence, apparently agreed with us, that for the vast majority of cases the Law is unworkable.

But if the Law is inconsistent, and moreover, unworkable, surely it should be amended?

Returning to the particular question of the royalty we paid for the song, "Who's Sorry Now," which is entirely separate from the above argument, despite the fact that it was confused with it in Mr. Dinning's letter, must we *again* repeat why we complained about the fee? We were using the song as an incidental background for our entry in the B.A.T.R.C., yet we were charged as though it were our main entry.

We are all agreed that the composer must get his royalty, but it follows from normal business principles that the fee should be proportional to the use of the work. To say that there is a minimum economic charge may be true, but we wish to pay a royalty for the use of a song, not for the expenses (and profits) of the Mechanical-Copyright Protection Society.

P. TUCKER,
D. J. GARRETT,
R. A. S. GOULDSWORTHY.

Tonbridge, Kent.

Letters to the Editor

My advice to 'budgie' owners

I HAVE a Telefunken 76KB and I was somewhat surprised to find a photograph of a similar model, in fact the 76T, illustrated in "Equipment under Test" (*May 31 issue*) which dealt with the 75-15 model.

The models are similar but the track selector buttons at the apex of the head cover are not incorporated on the machine reviewed.

I wonder how many readers spotted this error?

Incidentally, while writing, I would like to suggest that if anyone recording through a microphone has trouble with a budgerigar, they should place the microphone near the cage and record a few minutes chatter. Play it back to the bird and see if that keeps him quiet. It works with our bird.

Since purchasing my tape recorder, I have become an ardent reader of your magazine, which I find very interesting and informative. Many thanks for many hours of pleasant reading.

L. W. ITHELL,

Birkenhead, Cheshire.

EDITOR'S NOTE: Our apologies for the photograph mix-up.

Lofty, pompous . . .

YOU mentioned in a recent issue that it was about time the slanging match between customer and manufacturer finally ceased.

In the past fortnight I have had occasion to write to three well-known names on behalf of various owners. In one case no less than *eight* complaints were levelled at one extremely well-known name.

These were complaints of faults in expensive gear, all of which came to light inside seven days' usage. The answer from the makers could not have possibly been loftier or more pompous. All possible responsibility was immediately waived.

Whatever you like to say, the average customer simply does not complain enough . . . and until British manufacturers start giving the buyer a bit more interest the slanging match will go on and on. There are exceptions, as we all know, but all too few.

DAVE WISEMAN.

Acton, W.3.

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

Letters to the Editor

Any ideas?

IN about twelve months time I am going to build my home, and as I am a music lover, I will go to great expense to get the most genuine "ultimate sound" in stereo.

I would like some guidance on the size of room required, the material, and the equipment to use, and any other details that will achieve the desired perfection.

I wonder if any of your readers who have tackled a similar problem, would care to enlighten me.

C. CON,

North Queensland, Australia.

EDITOR'S NOTE: We have a 5 in. reel of tape for the reader who submits the best practical solution to Mr. Con's problem. The winning letter and others, will be published in a future issue.

Special word of thanks

I JUST HAD TO WRITE AND RECORD MY APPRECIATION OF YOUR FINE MAGAZINE.

AS A VERY AMATEUR TAPE RECORDING ENTHUSIAST, I HAVE RECEIVED A GREAT DEAL OF HELPFUL HINTS WHICH HAVE FURTHERED MY TAPE EDUCATION ENORMOUSLY. I HAVE A SPECIAL WORD OF THANKS TO KIRKBRIDE FOR HIS "COMMENTS" IN A RECENT ISSUE (MAY 17). THIS WAS THE FUNNIEST CARTOON I HAVE EVER SEEN. IT IS THE FIRST TIME I HAVE LAUGHED OUT LOUD AT A CARTOON. WELL DONE!

R. J. CORNE.

Hackney, N.I.

Interference

IN your April 19 issue Alan Edward Beeby refers to outside interference during recording, and asks to hear from others with similar experiences.

My flat faces one of the main thoroughfares in St. Helier. Whilst recording on my Stella ST445 recently a police car stood outside in a queue of traffic and I noticed one of the occupants using a radio-telephone. When the tape was played back the message recorded by my wife was found to have been completely obliterated by the police message.

There can be no doubt that the interference came from this radio, as the information given tied up with the position of the police car. The distance from the recorder to the car could not have been more than thirty feet, and the signal received was very loud.

D. B. BURNETT,

Jersey, Channel Isles.

WHY I NEED SIX TAPE RECORDERS

By

GUY LAWRENCE

(Johannesburg Tape Society)

I AM convinced that it is a changing world in which we live, for if anyone had told me five years ago that within a short period I would have a need for a literal half-dozen tape recorders, I would have regarded him as being crazy! But truth to tell this is no idle remark, as within a brief space of time I have found that I cannot get along in life without a veritable bevy of them.

I commenced tape recording operations modestly, with a medium price recorder, which was quite adequate for my requirements. All I wanted was a slow speed ($1\frac{1}{2}$ ips) for speech, and a standard speed ($3\frac{3}{4}$ ips) for music. Well, I played around to my heart's content, and eventually came to realise that there was absolutely no way of transferring my recording achievements onto another machine, to share with my newly acquired tape pals.

Clearly there was now a desperate need for a second machine for dubbing purposes. I convinced myself pretty quickly that I had to have it; for what if my precious original recorder broke down? The very thought of being without a recorder for even a day was unthinkable.

Inevitably my stable was increased to two, and my frustration was relieved for the time being.

In between sprints of dubbing, I had tried out my first recorder in the office where I try to earn a living, to keep up with all my taping needs in the way of tape and additional microphones. I soon found that one of the new fangled telephone induction coils was very handy in my line of business. This led to my keeping the machine in the office all week and laboriously carrying it home on weekends, and sometimes during the week too, if I had some special dubbing to do.

Yes, you've guessed it. This weekend carrying home racket came to a full stop after several sidewalk collisions. I thereupon ordered a really dandy machine from the local retailer of the equipment.

By this time I had acquired quite a number of tape pals. Some of these boys were very good and set a very high standard, even on their outdoor recordings, which were fast becoming the latest development in the hobby field. Of course, it is disturbing to be left behind in the race, so I was compelled to buy at great personal sacrifice a natty portable job.

Well, I was doing fine, for my first

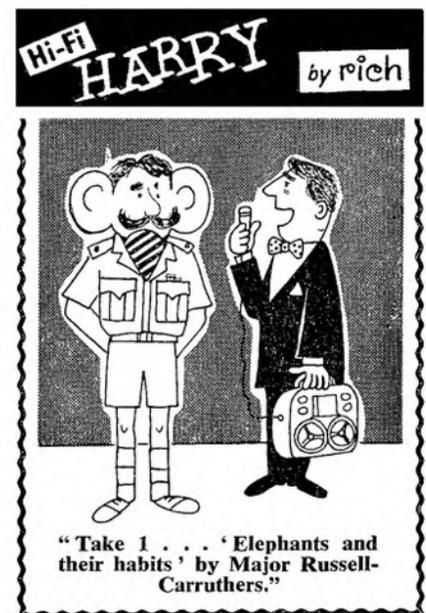
stable now numbered four, and I could talk impressively about my numerous bits of equipment, such as mixers, reflectors and the like. Nothing, no nothing, could upset my happiness.

Ah, but the next shock to my ego and my bank balance was just around the corner. There came the announcement that stocks of the new four-track stereo jobs were to hand. A devilish fever was upon me, and I resisted for all I was worth. However, as I was only a frail mortal, ultimately I succumbed to the temptation.

So of my five machines, you may imagine that the original one is now surplus to requirements. Not a bit of it! Being a *blind* person, I make the fullest use of my tape recorder and so I have nobly and generously lent my original machine to my family, to record book readings for me.

"But what about the sixth one?" you say—that is if you are still counting. Well, dash it all, I only took over that bargain as a spare in case one of them goes wrong sometime.

So there you have it. I really can use and do need all my beloved tape recorders, for to a blind person the recorder is the most wonderful aid, friend and hobby.





HAVING coped with the recording of a small band, perhaps the problems of the recording complexities, as explained by one or two expert authors who subscribe to this magazine, will really come home to the enthusiastic amateur when he himself sets about recording a large jazz band.

To avoid confusion in the photograph, the brass is arranged to be merely representative of the usual strength of that and the woodwind section. Again the multi-microphone technique is employed and careful choice of microphone types is essential, to avoid the unwanted overlapping of microphone fields.

Such a group really requires a serious approach and with modern techniques, many microphones are required—practically one for each section and some over. In practice, a good method is to place a microphone where experience dictates you should get a good result, and one or two other microphones close by so that on the monitor circuit the results from each microphone in turn can be weighed up and the best one selected.

All being well and after an initial discussion with the band leader and the musicians, the recordist will have to prepare his music sheets with notes to assist him in correct microphone control at the *precise moment* of an uprising or individual effects.

MICROPHONE PLACING—8

By Naomi Archer

A cardioid microphone or the condenser type, if available, to capture the detail to be expected from the trumpets and trombones can be placed quite close to this section without fear of overload. Naturally, if the second bank is playing from a rostrum so much the better and nothing is lost to the boom slung microphone at a height sufficient to impart a little reverberation or colour. The clarinets and saxophones should have a separate microphone and a moving coil type could be placed close to enhance the fullness of these instruments.

It is possible for one microphone to serve two sections, for instance, if the banjo is facing the clarinet section then the bi-directional ribbon might serve; but a further point about two facing sources is the reduced microphone control. For example, the banjo rhythm in the traditional style could be lost in the face of a build-up by the saxophones and that means it is impossible to lift the banjo level on the mixer without adding relative strength to the saxes.

A number of solo interjections can be expected from the piano and in truly

recommended position can be seen the ribbon microphone. Note too that the microphone could pick up a vocalist providing this position is acceptable and the pianist is co-operative. Generally a separate microphone for a vocalist is provided for the sake of height readjustment as one good reason.

In a recent issue, I commented on proximity to the lower toned instruments. The bass will by its nature require the cardioid or bi-directional microphone at a distance of not less than three to five feet. Bear in mind that in Jazz playing there is often an exhibition of enthusiasm where the strings may be pulled too heavily giving rise to edginess. In order to capture some of the better sound quality the microphone may have to be moved away from optimum position. If one has to adjust the microphone in this way then be clear that all you are doing is to enable a recording to be made which may be worthwhile listening to. This does not necessarily compensate for the musicians deficiencies.

Likewise the proximity of the small boom microphone to the cymbals and side drum is closer than it is to the bass drum and will pick up the sparkle and "ting" which characterises a live performance. It has been necessary to provide the drum with an extra microphone depending on the effects desired.

An interesting study with a single microphone can be made by comparing the result with the mixed product for the purpose of evaluating the effectiveness of each microphone.

A new approach to language teaching

(Continued from page 12)

It is the impact of the spoken language in readily-understood situations which is important in this approach. The actual introduction of new vocabulary as such is kept to a minimum, for it is the aim of the authors to present the language in groups of words rather than isolated units.

After a few weeks at the beginning of the session we introduce a written text, as we want the pupils to fix firmly in their minds what they have mastered orally. The written text is read and learned by heart and forms the basis of dictations and oral compositions. The pupils do not see the text until the full impact of the spoken presentation has been felt.

Finally, the fifth lesson of the weekly cycle is another audio-visual one. Invariably the pupils do very much better in this, as by now they have thoroughly



-C'est un pantalon à repasser. Pouvez-vous le repasser ?

-Mais c'est impossible ! (French 0)

Clear simply-coloured film-strips accompanied by synchronised tape recordings of native French speakers giving question and answer at natural speed with natural rhythm and intonation

mastered all the material, and obviously enjoy the feeling of doing something well.

People who have not used a tape recorder and a film strip as aids are apt to suppose that the classroom work must

be rather mechanical and probably dull. This could be so, but any method at all can be dull if the teacher allows it to be. Admittedly there can be something hypnotic about the constant bombardment of the eye and ear with French. There is something almost subliminal in the use of a tape recorder for 25 minutes on end.

If you like, it is a form of elementary brain washing, designed to condition the learner to react to certain specific stimuli. We have proved to our own satisfaction that it *works*. There is no doubt that by this method we can get at our more unwilling pupils, for they discover, maybe despite themselves, that they are taking part in a concentrated and carefully organised language experience.

We do not claim that this method does your teaching for you. On the contrary, the teacher is more important than ever. However, the drill that is necessary at the beginning of any language can to a large extent be taken off the shoulders of the teacher by the machine.

The tape recorder is tireless; it is just as fresh at three o'clock in the afternoon as at nine in the morning. It can produce beautiful French by 15 different French voices, at the turn of a switch and will continue to do so at your command. This is a tremendous advantage.

The pictures on the film strip are models of clarity and widens the scope of material available in a class-room far beyond what even the best artists among us can do with chalk and blackboard. The luminosity of the screen rests the eyes of 99 per cent at least of our pupils, and these latter seem to enjoy the whole experience.

We now use an audio-visual approach with all our Grammar School forms in their first year. Other experiments have shown that pupils in comprehensive and secondary modern schools are equally able to benefit from this method.

The very fact that the emphasis is on oral work is a distinct advantage in teaching French to the slightly less gifted of our pupils. Their achievements in the spoken language are far ahead of their written work and there is no reason why a completely oral course should not be used. Secondary Modern children can be extremely uninhibited, and, pro-

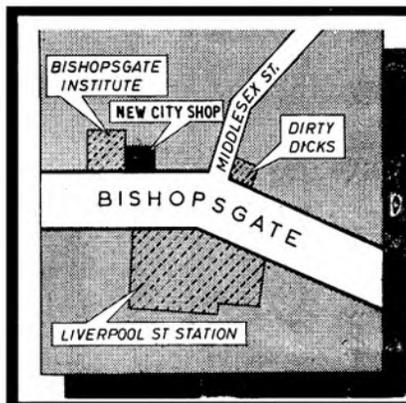


THE new Ampex Universal 351 professional recorder manufactured by Ampex Electronics Ltd. of Reading, with attractive operator Miss West of England (Freda Burton of Dartmouth).

This recorder can be switched at will between CCIR and NARTB equalisation standards, and has a built-in multi-volt input transformer for operation on any of the world's standard voltages.

vided they are given the right kind of encouragement, and can be made to feel that they are in fact making progress, they can enjoy the discipline of a foreign language.

There also seems to be a real opportunity for Junior Schools to offer French, possibly in the last few months after the 11-plus examinations. At least four such schools are experimenting with the first ten lessons of our course and in each case the Head is delighted with the results. If the introduction of these young children to the foreign language is well handled, they too can enjoy the effort and the discipline of a new study, and have their appetites whetted for their Secondary course, whatever method they follow later on.



OUR NEW CITY SHOWROOMS!!!

NOW OPEN. We proudly announce the opening of our new City Tape Recorder Centre. This superbly equipped and stocked tape recorder paradise is easily reached by bus, train, tube and road. (See drawing.) Our Unique H.P. Terms, Free after-sales servicing, Free Technical Information, Pamphlets, etc., are readily available both here and at our other well-known branches.

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GRA 6543

Equipment Under Test

THE designer of a tape recorder is faced with a number of problems, not the least of them being how the final machine shall look when it is presented to the customer. Part of this particular problem is obviously concerned with the lay-out of the tape transport mechanism, especially in so far as this affects the size of tape reel that can be accommodated.

On the one hand the necessity for a long playing time per reel points to the need for the largest possible reel size, but if a large reel is to be accommodated the tape deck and hence the size of the machine will also tend to be rather large.

For a given playing time this situation can be somewhat eased by the use of smaller reels and thinner tape, but if large reels could be accommodated without an increase in the size of the machine then thin tape would give a corresponding increase in playing time.

The Countess provides an ingenious solution to this problem. Although it is

THE COUNTESS

only 13½ inches long, 11½ inches wide and 7½ inches high it can accommodate seven-inch reels of tape. This might be thought to be impossible since two seven-inch reels will take up fourteen inches and the largest dimension of the machine is only thirteen and a quarter but nevertheless it has been achieved.

The trick is to place the take-up spool on top of the feed spool and not beside it, so that two spools virtually take up the space of one. The spindle upon which they turn is in fact two spindles concentrically mounted so that the variations in speed as the tape moves from one to the other do not conflict.

The designer's ingenuity does not end here, however, since a difficulty arises in that the tape has to climb from the feed spool at the lower level, past the heads to the take-up spool at a somewhat higher level. It is obviously necessary that the tape should pass all the head at right angles to the gaps, so that no azimuth error occurs, or tapes recorded on this machine would not be playable on another machine.

This could of course be done by arranging that the heads were mounted in such a way that the gaps were always perpendicular to the sloping tapes, but this would complicate the design. Instead, the heads are mounted in the normal way on the flat deck plate and a lever coupled to the starting mechanism pulls the tape down as it is set in motion, so that it runs horizontally past the heads before rising to the take up spool.

The machine is provided with a number of controls. From left to right these are firstly the selector switch for forward, replay, rewind and record; and secondly the microphone recording level control, followed by the "pick-up or radio" recording level control. These two controls provide mixing facilities for the two inputs during recording.

Next follow three push buttons. The first is the motor on/off switch which controls the capstan motor; the second, when depressed, starts the mechanism, and the third is the speed selector for 7½ and 3½ ips. Each of these three push buttons is of the locking type, in other

TAPE RECORDING HANDBOOKS

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



ADVICE ON BUYING A TAPE RECORDER

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

INTRODUCTION TO THE TAPE RECORDER

Charles Langton
3/6 (post free)

HI-FI FOR THE MUSIC LOVER

Edward Greenfield
3/- (post free)

TAPE AND CINE

John Aldred
3/- (post free)

HOW TO RECORD WEDDINGS

Paul Addinsell
3/- (post free)

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

By

H. BURRELL HADDEN

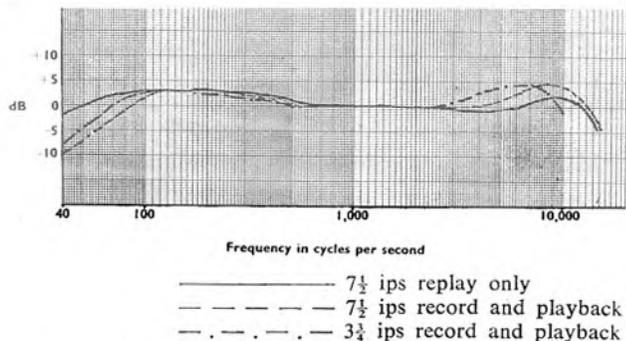
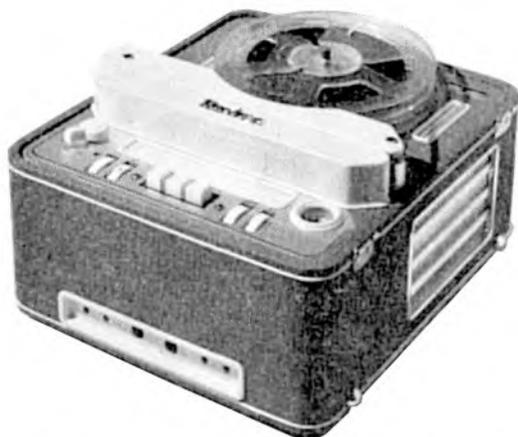
words one push and they lock down, the second push and they return to the up position.

The motor on/off switch and the mechanism stop/start are interlocked so that although it is possible, even desirable, to start the motor with its button before pressing the second button to set the tape moving, thus ensuring clean rapid start of the tape, it is not possible to switch off the motor before the mechanism has been stopped. A further interlock occurs in that it is not possible to move the selector switch whilst the stop/start switch is in the start position. This prevents accidental erasure of tapes. Two further controls complete the operating

cover is easily removable.

The Countess has a further very important feature—it is fitted with three tape heads: erase, record and playback.

This feature according to the handbook supplied, enables the record and playback amplifiers to be better designed for their respective functions. This statement is undoubtedly true, but a far more important outcome of the three head design is that the replay head is used while recording to feed a low level signal to



The frequency response of the Countess

equipment, the playback tone control and volume control. Recording level indication is by means of a very clear "magic eye" and a "clock" type tape duration indicator is provided.

Input sockets for microphone at high impedance and for "pick-up or radio" are provided on a panel below the controls on the front of the cabinet. Also on this panel are two sets of output sockets, a screened type for a medium impedance feed to an external amplifier and the second a pair of sockets for an external loudspeaker. The right hand socket of this pair incorporates a switch which mutes the built-in loudspeaker when a plug is inserted. Plugs for all these sockets are provided with the machine. The microphone provided with the machine is an Acos crystal type.

Some further unusual features for a machine in this price range are worth mentioning. No pressure pad is used on any of the heads or guides to maintain tape tension, the necessary tension being provided by reverse action of the two spooling motors during record and replay. This is a feature seldom found in domestic equipment, and enables marking of the tape on the replay head so that accurate editing can be carried out. In order to do this the front head

the loudspeaker so that the actual recording on the tape is monitored.

This facility is unique in a machine at this price; indeed, in most domestic machines at any price the monitoring during recording is only a feed from the input to the machine and gives no guarantee that the signal is in fact being recorded on the tape. It is a pity that the designer of this machine omitted a switch by which the input and output could have been compared. It is, however, comparatively simple to rig up such a switch if the equipment is used with an external amplifier.

Yet another useful facility with this excellent machine is that it may be used as a "straight-through" amplifier with mixing facilities for microphone and pick-up by switching the system selector to "forward" but not starting the tape.

The machine was subjected to the usual technical tests and the replay response to the standard tape at 7 1/2 ips, together with the record/replay curves for 7 1/2 and 3 3/4 ips are shown in the accompanying graph. These responses are close to the maker's quoted specification having a slight rise in the 8-10,000 cps region, where this particular model was 1 dB outside the specification.

Some compensation could be made for

this by using the tone control, but the 12,000 cps response was then slightly reduced. Wow and flutter were negligible at 7 1/2 ips and barely perceptible at 3 3/4 ips. The signal-to-noise ratio was good.

The mechanical design and construction of this machine is what one would have expected from its specification and performance. The whole assembly is mounted on a heavy die-cast deck plate for maximum rigidity, and the electronic department is well laid out for ease of servicing, should this become necessary.

The motors are large in size, the two spooling motors being most ingeniously mounted in one assembly. The capstan motor drives the capstan assembly by means of a belt and a very large and heavy fly wheel, together with a larger than usual capstan diameter, plays no small part in the low wow and flutter content.

This machine originally retailed in this country for 89 gns., and at that price it was well worth the money. It is now available at the extraordinary price of 30 gns. and at this price is undoubtedly the bargain of the year.

MANUFACTURER'S SPECIFICATION

Speeds: 7 1/2 and 3 3/4 ips.

Rewind speed: 1,800 ft. in 95 seconds.

Frequency response: 60-12,000 cps ± 3 dB at 7 1/2 ips; 60-8,000 cps ± 3 dB.

Wow and flutter: 0.2 per cent RMS at 7 1/2 ips; 0.25 per cent RMS at 3 3/4 ips.

Input sockets: Microphone (500K ohms—2 mV); Radio or pick-up (500K ohms—300 mV).

Output sockets: Extension loudspeaker with muting switch; amplifier (10K ohms).

Power output: 2 1/2 watts.

Loudspeaker: 6 x 4 in. elliptical.

Consumption: 75 watts.

Supply voltage: 200-250 V AC, 50 cycles.

Valves: EL95, EL84, two ECC83s, EM71, OA85 germanium diode, and a B250/C.75 selenium rectifier.

Size: 13 1/4 x 11 1/4 x 7 1/4 in.

Maximum spool size: 7 in.

Weight: 30 lb approx.

Distributors: Radio Clearance Limited, 27 Tottenham Court Road, London, W.1.



Sound announce 22-guinea recorder

AN attractive compact tape recorder operating at 3½ ips is the way Tape Recorders (Electronics) Limited describe the latest addition to the Sound range.

At only 22 guineas, the new recorder, the Sound Riviera, is ideally priced for the mass market at which it is aimed. Capable of three hours playing time, using double play tape, the Riviera has a quoted frequency response of 40-10,000 cps.

Facilities include monitoring from headphones, extension loudspeaker sockets, and inputs for microphone, radio/pick-up, and telephone adaptor. The output is rated at three watts through an elliptical loudspeaker.

Printed circuitry is incorporated, plus edge-wise operational controls, and a magic eye recording level indicator.

Housed in a lightweight three-colour carrying case with a detachable lid, and with gilt trim and fittings, the Riviera has a pleasing appearance as can be seen from our photograph, top left.

It is supplied complete with crystal microphone, 5½ inch spool of tape, a take-up spool and recording leads. Provision is included for microphone and mains lead stowage in a cubby with a sliding door.

The overall size is 13½ x 11½ x 6½ inches.

*Tape Recorders (Electronics) Limited,
784-788 High Road, Tottenham, London,
N.17.*

NEW CAROUSEL RADIOTAPE

A JUNIOR version of their Carousel Radiotape recorder is announced by Stereosound Productions Limited.

The new 29-guinea model is a half-track recorder providing a single speed of 3½ ips, using the BSR Monardeck. The quoted frequency response is 60-12,000 cps, and total power output is rated at 2½ watts.

Inputs are provided for microphone and radio/pick-up, and there is a high impedance output socket. The loudspeaker is a 9 x 5-inch elliptical, which can be muted when using an extension speaker. Straight-through amplification facilities are incorporated.

Other features include monitoring, variable treble control and a power socket for a special AM radio tuner, which may be fitted for an additional eight guineas. This tuner covers long and medium wavebands, and in conjunction with the record amplifier may be used as a radio receiver for ordinary listening.

The power supply is 200-250 v, AC 50 cycles.

Maximum spool size is 5½ inches, allowing 1½ hours playing time per track using double-play tape.

The Junior Radiotape is installed in a polished veneer cabinet measuring approximately 20 x 10 x 10 inches. It



stands 23 inches high on specially designed legs.

*Stereosound Productions Limited,
Capital Works, Wakefield Road, Brighouse, Yorkshire.*

TAPE and DISC REPRODUCER

TWO versions of the Gramdeck Multi-player combined record reproducer and tape recorder are announced by Andrew Merryfield. The two units—single play and auto-change—incorporate the standard Gramdeck with four-speed record changers which provide playing speeds as follows: 16 rpm—1½ ips; 33 rpm—3.20 ips; 45 rpm—4.33 ips; and 78 rpm—7½ ips. Rewind is by hand or, using turntable motor, 600 ft. in approximately four minutes.

Controls for volume, bass and treble are incorporated, and the models are each fitted with a 7 x 4 inch loudspeaker. Printed circuitry is used, and the valves are one ECC82 and an ECL82.

Claimed frequency response is 100-8,000 cps, and wow and flutter is given as better than 0.15 per cent RMS, measuring all components from 0-300 cps. Maximum spool size is five inches.

A function switch selects straight-through amplification, record, playback and gramophone, and inputs are provided for microphone or radio/pick-up.

Facilities for superimposition are included.

The output socket for an extension loudspeaker automatically cuts out the internal speaker. A neon recording level indicator is fitted. Both models have portable cases finished in two-tone red and grey.

The single play model uses a Garrard SP4 unit with a case measuring 12 x 9 x 6 inches and the price is £29 8s. 0d. The auto-change model, with a 12 x 9 x 8 inch case, uses a BSR Monarch unit, and costs £31 10s. 0d.

*Andrew Merryfield Limited, 29-31
Wrights Lane, Kensington, London, W.8.*

Saga to issue Concertapes

SAGA RECORDS announce that they have gained exclusive rights to the American Concertapes, issued by Concertapes Inc., a recording company run by The Fine Arts Quartet, described as a group of virtuoso musicians who combine hi-fi and music.

This is the group who have fooled American audiences by miming their playing halfway through a performance while the unsuspecting public continued to listen to a completely realistic pre-recording.

Names featured in their range of recordings to be released in September include Dick Schory, Red Nicholls, Leonard Sorkin and Reginald Kell. Show tunes, jazz and dance albums, folk songs, percussion orgies and sound effects are in

the catalogue, as well as a selection of orchestral and chamber music.

Saga will issue tape records from 32s. 6d. (mono) to 84s. (stereo), and discs from 29s. 6d. and 39s. 6d.

*Saga Records, 127, Kensal Road,
London, W.10.*

FERROGRAPH

THE London offices, showrooms and service department of the Ferrograph Company Limited (incorporating also The British Ferrograph Recorder Co., Rendar Instruments, and Wright and Weaire) have now moved to permanent headquarters at 84, Blackfriars Road, London, S.E.1. (Tel: WATERloo 1981).

New Products

PHILIPS INTRODUCE BATTERY PORTABLE

A NEW light-weight battery transistor tape recorder has been introduced by Philips. Their new model, the lowest priced in their range, is the Model EL3585, which will sell at 24 guineas, including microphone.

The overall size is $11\frac{1}{2} \times 3\frac{7}{8} \times 7\frac{1}{2}$ inches. It weighs only 8 lb., and features a meter for use as a recording level indicator when recording, and as a battery voltage level on playback.

The frequency response is quoted as 120-5,500 cps ± 3 dB. Wow and flutter is given as less than .5 per cent and signal-to-noise ratio as better than -40dB.

Power is supplied by six 1.5 U2 type batteries which can quickly be fitted in the stowage space provided. The output through a four-inch loudspeaker is rated at 250 mW.

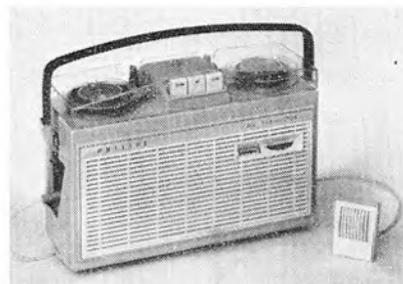
Simple operation is by means of three push buttons with a safety interlock to prevent accidental erasure. A transparent plastic cover is supplied to protect the heads and mechanism from dust. A

playing time of thirty minutes is available per track of the three-inch reels accommodated, using double-play tape at the single speed of $1\frac{1}{8}$ ips. If the plastic shield is removed, four-inch reels can be used thereby doubling the available playing time. Fast forward wind is approximately 110 seconds for 300 ft. and fast rewind is approximately 90 seconds.

The vertically-styled cabinet is in grey plastic polystyrene, and the detachable carrying-handle can be replaced by a shoulder-strap. The shoulder-strap and matching carrying-case are optional extras priced at 45s.

This company have also announced the issue of their magnetic tapes in colour-coded packs. These are green for standard types; red for long-play; and blue for double-play. Their spool sizes are unaltered at 3, 4, 5, $5\frac{1}{2}$ and 7 inches.

Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

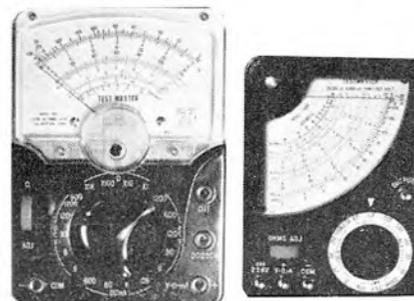


The Philips EL3585

T.S.L. market test meters

TWO test meters have recently been introduced by Technical Suppliers Limited.

The first is said to combine all the functions, sensitivity and accuracy of the most elaborate laboratory type of instrument with the small size of the tiniest meters made.



Left: The Testmaster Super, and right, the Testmaster X18

A total of 18 ranges is provided, covering measurements of AC and DC voltages, direct current, resistance, capacitance and power. The sensitivity is 20,000 ohms per volt; a most important factor in the accurate measurement of valve and transistor circuits where it is necessary that the effect of the meter resistance on the quantity to be measured should be negligible.

Measuring $4\frac{1}{2} \times 3\frac{1}{2}$ inches on the face, this meter, the TSL Testmaster X18 with test prods, costs £6 19s. 6d.

The second meter, the Testmaster Super, costs £9 19s. 6d., and is described as possibly the most comprehensive pocket meter ever produced. Although it includes a number of ranges, covering resistance, capacitance, decibels, AC and DC volts, and direct current, it is small enough to be carried in the pocket, measuring only $5\frac{1}{2} \times 3\frac{1}{2} \times 1\frac{1}{2}$ inches.

Designed for constant use in the laboratory and in field servicing, particular attention has been paid to the robustness of the casing, meter and switch, and the dial has been designed for maximum clarity under all conditions. Compensation is provided to cope with changes in temperature and climatic conditions.

Technical Suppliers Limited, Hudson House, 63, Goldhawk Road, London, W.12.

New Wilmex Accessories

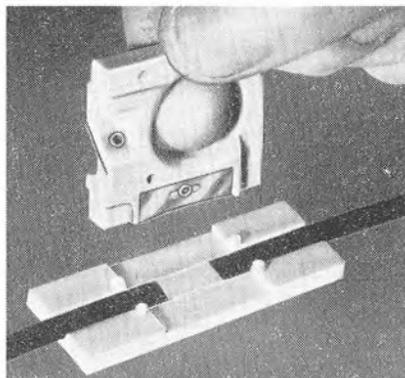
A TAPE splicer of original design is the latest accessory to be introduced by Wilmex. As can be seen from our photograph (right), the new splicer is held in the hand—in direct opposition to current splicers. It has a diagonal cutter on one side, and a “Gibson Girl” cutter on the other.

The initial cut divides the tape ends diagonally so that they butt together exactly, and by turning the instrument through a 90 degree arc the cutter is replaced by two cutting edges which will trim the tape with two slight concave indentations giving the “Gibson Girl” shape, and leaving the edges of the tape free of adhesive material.

Contact adhesive, on the back of the splicing block enables it to be easily mounted on a tape deck. There is a blade cover to protect the blade when not in use.

The price is 18s. 3d.

Other recent additions to their range include a Jockey Cloth, JCT-2, for cleaning the tape and administering a protective coating (6s.); tape clips, TC-12, to prevent tapes unwinding on a full or half empty reel (3s. per dozen); reel labels, SL-30, ready printed and self-adhesive (3s. for 30); and metal storage cans for safe storage of tapes—TC-7, for 7-in. reels (5s. 6d.) and TC-5 for 5-in. reels (4s. 6d.). There is also a Tape Kare Kit, TK-2, which contains head cleaning



fluid and tape cleaning cloth (12s. 6d.).

They are also currently producing their own splicing tape, ST-500, packed in a plastic container. On a Mylar base, the splicing tape is $\frac{1}{2}$ -inch wide and sells for 3s. 3d. for 100 ft. lengths. By far the most interesting of the products is the Tape Threader, TT-1. After placing the tape against the hub of the reel, the threader is slipped on to hold it in place and with one turn of the crank the spool is threaded. The price is 5s.

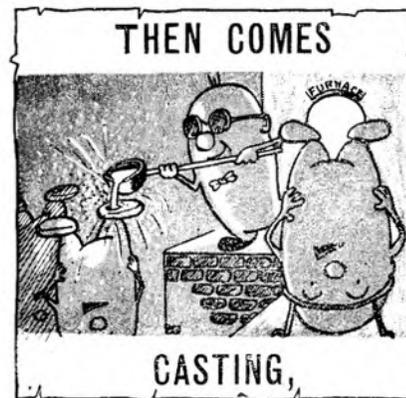
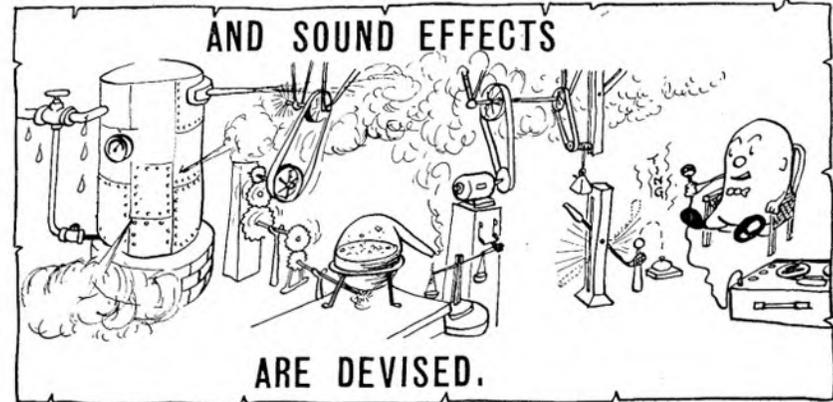
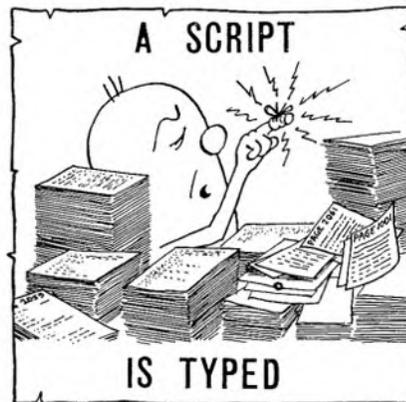
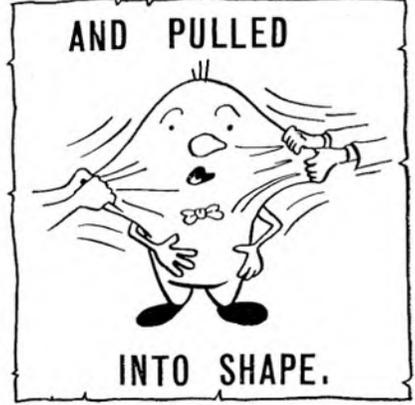
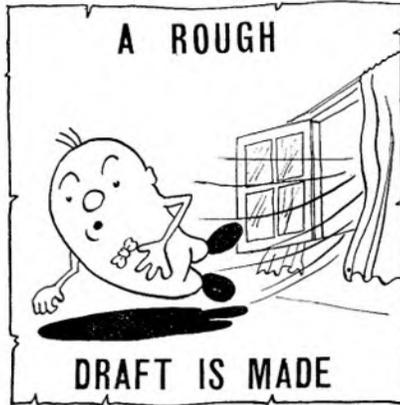
Wilmex Distributors Limited, Wilmex House, 151-153, Clapham High Street, London, S.W.4.

Change of Address

THE Tape Recorder Centre Limited announce that the address of their Head Office is now 447, Green Lanes, London, N.4. Tel.: FIT 2316-8.

A TAPE IN THE MAKING

By Terry Devereux



News from the Clubs

IN a recent issue we published details of some of the international tape societies. There are, of course, a number that have not been brought to our attention, and we would like to begin this issue with news of some of these.

The main idea of these international societies must be tape correspondence, but among the addresses published below, and from those in our May 3 issue, the club members may find a fellow enthusiast with whom to share his hobby, and exchange technical information.

The first organisation is the **Universal Tape Network**. The President is Larry Duhamel of Box 50, Main Street, East Douglas, Massachusetts, USA.

The main function of the club is tape correspondence, and membership is world-wide. Annual subscription is 15s., which ensures regular delivery of their newsletters, annual directory and supplementary directories. There is also a proviso that those enthusiasts wishing to be listed in the directory but not requiring any of the publications may be accommodated freely.

A second society is the **Tapeworms' International Tape Recording Club**, which provides facilities for listing and exchanging enthusiasts' names and addresses for no charge whatsoever.

The secretary is Mr. M. Chism, 129, South Broad Street, Carlinville, Illinois, USA. This club has been in existence for nearly three years, and although it does not issue any publications, it provides the means for contacting American enthusiasts.

Then there is the **Union Mondiale des Voix Francaises**, started six months ago in New York by M. Emil Garin, the American correspondent to the French magazine *Revue du Son*. This society, as the title implies, includes the opportunity of taking part in round-robins in the French language. It has received enthusiastic backing from M. Jean Thevenot, president and founder of the Federation Internationale des Chasseurs de Son.

The object of the UMVF is to become a world-wide organisation to help establish contact, cultural or social, between individuals or associations in French. It is also intended to produce an annual list of members, sound magazines, radio programmes, and exchanges of tape between schools.

The popularity of the round-robin exchange, known as "tours-aux-rubans" in French, is rapidly spreading in

America, Canada, France and Belgium and also in Hawaii and Japan. At present there are only two members in Great Britain, but when sufficient members are enrolled a British representative will be elected. Anyone wishing to keep up or improve his French is welcome to join. Each member contributes six to ten minutes to the tape sent to them, and membership is free. M. Garin's address c/o the society is, 886, Bushwick Avenue, Brooklyn 21, New York, USA.

Although not essentially an international organisation, the **Association of South African Tape Recording Clubs** may be of interest. They have recently elected Mr. Fred Rimmer of 21, Mount Pleasant, Sutton-in-Ashfield, Nottingham, their British representative.

He informs us he would be pleased to forward membership forms, a list of tape correspondents and other details to any club or individual wishing to join this association.

The general conception of these societies is, as many of them quote in their literature, the furtherance of world understanding. Such a description is applied to the Australian Section of **World Tape Pals**. In conjunction with the Brotherhood of Nations, this society is organising a world-wide essay competition with a 16-21 age limit. This requires an essay, not exceeding 2,000 words, on: (1) Can world peace be achieved? (2) Does youth understand the world better than the adult? or (3) What is wrong with mankind?

The closing date of the competition is October 31, and entries should be addressed to The Secretary, BON, 2, Mills Street, Newnham Street, Tasmania.

Incidentally, the correct address of the U.K. Representative of **Stereo International** is R. V. Huddleston, 9, College Avenue, Melton Mowbray, Leicestershire. We hope this clears up the error in our May 3 issue.

Members of the newly-named Muleyphonic Workshop tape group, winners of the club section in last year's BATRC, prepare this year's entry. Left to right are Andrew Tucker, Miss P. A. B. Spring, P. Tucker, D. J. Garrett and R. A. S. Gouldsworthy



Although the first tape correspondence societies were formed in America, it was in the U.K. that the first locally organised clubs came into being. This, mainly due to the vast areas to be covered which prohibited groups meeting other than at very rare intervals.

However, we now hear that the American enthusiasts are following our example and already four localised clubs are in formation. Three of these are affiliated to World Tape Pals, although they are run independently. They are identified as follows: **Dallas WTP Reel 1**, **Seattle WTP Reel 2**, and **New York WTP Reel 3**. There is also the **Indiana Recording Club**, and another is being formed in **Hawaii**.

No further information is available on these clubs. Research is continuing, and we shall be pleased to receive any details for publication. Meanwhile let us take a look at the latest news from the home front.

The May 26 meeting of the **LEEDS** club was devoted to a talk by the regular speaker, Mr. Pape. He urged the production of feature tapes and similar activities, and demonstrated a number of productions he had made.

At the following meeting on June 9, members visited the local hospital to examine the studio and meet the team who produce weekly request and sport programmes, and features with interviews of visiting personalities for the patients. The Leeds club treasurer is one of the members of the hospital broadcasting team and he took the members on a detailed tour of the equipment. The visit followed an exercise earlier this year when members provided a programme for the patients. The visit is hoped to result in a repeat of the exercise in the near future.

Also included in their future plans are a demonstration of battery portable recorders, at the July 21 meeting, and a film show for that of August 4.

Since the earliest days of the club's formation, the **LEICESTER** members have felt the urge to film the members in action. Their objective was achieved on June 16, when an entire evening was devoted to this end. Indoor and outdoor shots are now "in the can" and awaiting editing. Snags were met, however, and although at one stage they had

(Continued on page 31)

TAPE

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MAGNEGRAPH

1, Hanway Place, London, W.1.
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When writing to manufacturers for information about new products, please mention that you saw it in "Tape Recording Fortnightly."

News from the Clubs

(Continued from page 29)

2,000 watts of additional lighting, they were still not able to cope in every respect.

At an earlier meeting the members were entertained to a demonstration of the Timbra recorder, which is reviewed in this issue under its new name of the Countess, and at their May 5 gathering, John Buckler demonstrated his recently constructed Mullard design ten watt amplifier. For his presentation he used a reflex cabinet, a Ferrograph and various microphones.

During the same month, the members contributed a continuous demonstration of recorded material to the annual audio show organised by the local Co-op Society. Among titles heard was *So now you have a tape recorder*, illustrating do's and don'ts of the hobby and showing how sounds are achieved for theatrical use, and *The Voice of Leicester* consisting of actuality recordings made on portable equipment throughout the city.

To avoid the confusion of a multitude of speakers all giving forth at one time, the members used several sets of headphones connected to the recorders in use.

Other meetings have included a talk by Mr. King of Gramotape Limited, who attempted to explode some of the myths about stereo tapes. He demonstrated the advantages and otherwise of two- and four-track systems and generally presented his fellow members with an entertaining evening.

For their July 7 meeting, the members expected to welcome representatives of Decca Limited. Once again stereo was to be to the fore, and members were promised some of the finest stereophonic operatic recordings to be produced by this company, plus generally popular discs.

Another club taking to filming is that situated in **SOUTH-WEST LONDON**. Seven of its members hired a mini-bus and went on a Sunday outing early in June. Their first stop was London Airport where they both recorded and filmed the air traffic. The use of a cine camera is new to the society, but they hope to produce a creditable, if short, film of the whole trip.

The party then continued to Henley, where having dined in a pub or enjoyed a picnic on the river bank, they re-joined forces for a trip up-river in a motor launch. Although bereft of recordable material, the trip proved quite worthy for filming. After a short stop in a Buckinghamshire village and a chat with the locals the members turned for home. Even then their recorders were able to obtain some unusual effects, for the members found themselves preceding not so far in advance of President Kennedy and so the last stages of the trip were made past the crowds lining the route.

Drastic action by the caretakers of the Technical Institute where the **WANDSWORTH** club members meet followed a recent technical demonstration. The members had invited Mr. K. Short of Recording Devices to demonstrate the Stuzzi range of recorders. They became so engrossed in his talk that they eventu-

ACTON: Alternate Fridays at the King's Head, Acton High Street. (July 21.)

BATH: Alternate Wednesdays at St. Mary's Church Hall, Grove Street. (July 26.)

BETHNAL GREEN: Every Friday at Shoreditch Tabernacle, Hackney Road.

BIRMINGHAM: Every Monday at the White Horse Cellars, Constitution Hill.

BIRMINGHAM (SOUTH): Alternate Mondays at Stinchley Institute, Hazelwell Street, Stinchley. (July 17.)

BLACKPOOL: Every Wednesday at "Habonim," Lonsdale Road, off Lytham Road.

BOURNEMOUTH: Alternate Tuesdays at the Civil Defence Centre, Holdenhurst Road. (July 25.)

BRIDGWATER: Alternate Tuesdays at Erio's Radio, West Street. (July 25.)

BRIGHTON: The Brunswick Arms, 38, Ditchling Road. (July 19.)

BRISTOL: Alternate Wednesdays at Redcliffe Church Hall, Guinea Street, Redcliffe. (July 19.)

BRIXTON: Every Tuesday at The White Horse, Brixton Hill, S.W.9.

CAMBRIDGE: Every Wednesday at the Mitre Hotel, Bridge Street.

CATFORD: Every Friday at St. Mary's C.E. School, Lewisham, S.E.13.

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate. (July 24.)

COTSWOLD: Fortnightly, alternating Monday and Thursday, at Baysill Hall, Royal Well Lane, Cheltenham. (July 13.)

COVENTRY: Alternate Thursdays at Queens Hotel, Primrose Hill, Coventry. (July 13.)

ally had to be thrown out of the building. In spite of the fact the meeting was held on a beautiful summer's evening, one hundred per cent attendance was recorded. Part of Mr. Short's lecture was delivered on a pre-recorded tape played on the Tricorder and illustrated with slides actuated by the Tricomat used with a Braun automatic slide changing projector.

Also seen were the Stuzzi 4M and Magnette, their tape tuner, and a Minerva AM/FM radio. Particular attention was paid to the Tricorder, with the ultra-slow speed of 15/16ths ips, which was operated by remote control.

What have been described as two very interesting and easy to understand talks were recently held for members of the **BOURNEMOUTH** club. The first, "Simple cutting and joining of tapes" was presented by Mr. W. Rawlins, and the second delivered by Mr. A. C. Rees of the technical group dealt with *Removing unwanted clicks and sounds*. Since the lectures, the quality of members' tapes is said to have shown a great improvement, and some particularly good quiz tapes have been produced by Miss D. Slack and Mrs. S. Ward.

The members are currently working on a play written by member Mr. J. Snell.

Having recently produced a feature tape on the Audio Festival, members of the **BRIXTON** club now find themselves challenged with the 1961 Lambeth Festival. They claim they are capable of covering the vast programme of exhibitions, demonstrations, performances, etc., but are particularly keen to welcome new members who may be able to assist with interviews and commentators. "If it's hard work with its consequent fun and interest you are after, join our club," says secretary R. G. Garrett, who may be contacted at 56, Rattray Road, Brixton, S.W.2.

CLUB MEETING DIARY

Is your club included in this list? If not, send details, on a postcard please, including date of the next meeting.

CRAWLEY: 1st and 3rd Mondays in month at Southgate Community Centre.

DARTFORD: 2nd and 4th Thursdays at 41, Windsor Drive, Dartford.

DOVER: Alternate Mondays at The Priory Hotel. (July 24.)

DUNDEE: Alternate Mondays at The Salvation Army Hostel, 31, Ward Road. (July 17.)

EASTBOURNE: Alternate Saturdays at Hartington Hall, Bolton Road. (July 22.)

EDINBURGH: 1st and 3rd Fridays at 22, Forth Street, Edinburgh 3.

ENFIELD: Alternate Wednesdays at Bush Hill Park School, Main Avenue, Enfield. (July 19.)

GRANTHAM: Weekly, 1st week in month, Wednesday; 2nd, Monday; 3rd, Thursday; 4th Friday at Grantham Technical College, Avenue Road.

GRIMSBY: Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road. (July 18.)

HARROW: Alternate Thursdays at St. George's Hall, Pinner View, North Harrow. (July 13.)

HINCKLEY: Alternate Wednesdays at The Wharf Inn, Coventry Road. (July 19.)

HUDDERSFIELD: Ring Huddersfield 5820 for details from S. Blackstone Esq.

ILFORD: Every Tuesday at the RAFA Rooms, Cranbrook Road.

IPSWICH: Alternate Thursdays at the Art Gallery, High Street. (July 20.)

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms. (July 12.)

KETTERING: Alternate Wednesdays at the Rising Sun, Silver Street. (July 19.)

LEEDS: Alternate Fridays at 21, Wade Lane, Leeds 2. (July 21.)

LEICESTER: Alternate Fridays at the Newark Girls' School, Imperial Avenue. (July 14.)

LONDON: 2nd and 4th Thursdays at the Abbey Community Centre, Marsham Street, S.W.1.

LUTON: 2nd and 4th Tuesdays at Flowers Recreation Club, Park Street West, Luton.

MAIDSTONE: Every Thursday at the Ex-Services Club, King Street.

MANCHESTER: Every Saturday, 6 p.m., at 20, Naylor Street, Hulme, Manchester 15.

MIDDLESBROUGH: Every Tuesday at 130, Newport Road.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Heathcote Street. (July 13.)

NORWICH: 4th Tuesday at the Golden Lion, St. John's Maddermarket.

PONTYPOOL: Every Monday at the Hospitality Inn, Crumlin Road.

PLYMOUTH: Alternate Wednesdays at Virginia House, Plymouth. (July 12.)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (July 13.)

SOUTHAMPTON: 2nd and 4th Thursdays at The Bay Tree Inn, New Road.

SOUTH DEVON: Alternate Wednesdays at the Y.M.C.A., Castle Circus, Torquay. Next meeting is on September 13.

SOUTH-WEST LONDON: Every Wednesday at Mayfield School, West Hill, S.W.18.

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (July 25.)

STEVENAGE: Alternate Tuesdays at the Tenants' Meeting Room, Marymead. (July 18.)

STOCKPORT: 1st Friday at the Unity Hall, Greek Street.

STOKE NEWINGTON: Every Wednesday at 53, Londesborough Road, N.16.

WALTHAMSTOW: Alternate Fridays at 22, Orford Road, E.7. (July 21.)

WARE: 2nd Tuesday at the Old Brewery Tap, High Street.

WARWICK: 1st and 3rd Wednesdays in Room 18 of the Royal Leamington Spa Town Hall.

WEST HERTS: Fortnightly, alternating at the Cookery Nook, Watford (July 26) and Heath Park Hotel, Hemel Hempstead. (July 12.)

WEST MIDDLESEX: 2nd Thursday at the Railway Hotel, Station Road, Hampton, and 4th Thursday at St. George's Hall, Lancaster Road, Southall Broadway.

WALSALL: Every Wednesday at Bluecoats School, Springhill Road.

WEST WALES: 1st and 3rd Thursdays at The Meeting House, New Street, Aberystwyth.

WEYMOUTH: Alternate Wednesdays at The Waverley Hotel, Abbotsbury Road. (July 12.)

WINDSOR: Every Thursday at The Royal Adelaide Hotel.

WINCHESTER: Every Friday at The Ship Inn.

WOOLWICH: Alternate Mondays at the North Kent Tavern, Spray Street, Woolwich. (July 17.)

YORK: Every Thursday at 62, Micklegate.

Unless otherwise stated, meetings start between 7 and 8 p.m.

What a performance!

the brilliant
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HERON is

*only 25 gms
complete!*



with microphone
850 ft. of tape, spools
and spare plug



At last it's an accomplished fact—a really smart-looking mains tape recorder with a performance quite unique at the price. The secret is an entirely new audio valve and a 7" x 4" speaker with 10,000 lines gauss (and if that means nothing you'll just have to hear the "Heron" for yourself). But that isn't all. The case is as modern as a space flight—elegant and distinctive in blue-grained Swedish fibreboard. All in all an achievement in design which has to be seen and heard to be believed.

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"The TK 1 is a most simple machine to use"

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"There is nothing at all shoddy about this machine. The construction is solid and sensible and the electronic components are all of good quality and in the main mounted on a single stout printed circuit board."

"The equal of the better transistor radios and playback through a good quality amplifier and speaker is quite indistinguishable from that of many mains powered machines of higher cost."

"It was found that the machine would perform perfectly satisfactorily resting on edge, on its back, or carried by the handle."

"It holds the spools even when the machine is held upside down."

"The built-in loudspeaker gives ample playback volume and surprising fidelity"

"In all cases very good recordings were obtained without any difficulty or the need for specialised knowledge."

"The really acid test, on which many transistor machines show up badly, is to play back their tapes on a superior semi-professional recorder. This was done and found to give excellent result."

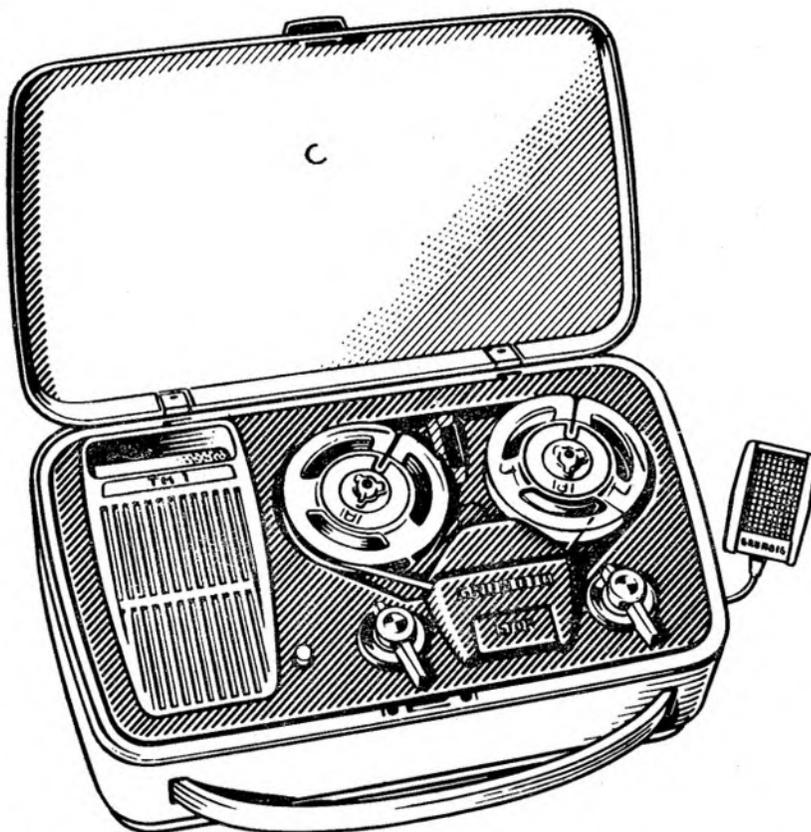
"Summing up therefore, we can say that the Grundig TK 1 makes a first rate collector of sounds for the enthusiast who also possesses a heavy mains machine, and it may also be recommended to anyone who has neither the financial or space resources for a mains job."

"Remarkably neat and attractive appearance. This little recorder should be greatly favoured by our feminine recording enthusiasts."

"Tapes recorded on the TK 1 can be played back on other machines with a standard running speed and is useful therefore for tape-sponding."

"Considerable attention has been given to suppression of this motor."

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

MISCELLANEOUS

FRIENDLY FOLK ASSOCIATION, 87, Terrace, Torquay. Leading International Correspondence Hobby Club since 1943. Now included, facilities for Tapesponding. Details free.

WAL GAIN transistorised pre-amplifiers. Many applications, extra gain for Mics, Tape Heads, P-U's, etc. Mono version, £5. Stereo, £7 10s. **WAL BULK TAPE ERASER**, both tracks 8-in. reel erased 30 sec., £7 18s. 6d. **WAL TRAK** transistorised oscillator, 1,000 cps, indispensable for Service, £6 10s. Full technical literature sent, supplied through all leading dealers. Wellington Acoustic Laboratories Ltd., TRC Dept., Farnham, Surrey.

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"**STICKING TAPES**"? Not if you keep them in polythene **TAPE PROTECTORS** to guard against dampness and atmospheric change. Per dozen, 3 in. 1s. 6d.; 4 in. 1s. 8d.; 5 in. 1s. 9d.; 5½ in. 2s.; 7 in. 2s. 4d.; 8½ in. 2s. 8d. From your dealer, or from **SWAINS Paper-craft Ltd.**, Dept. 6, Buckhurst Hill, Essex.

Ask your dealer for American Ferrodynamics "Brand Five" recording tapes: the best tape value!

Do you use the telephone? If so you will find a Dektron Telecon the most useful of all your recording accessories. The Telecon is not just a novelty but a unit which you will use frequently for both family and business purposes. You will be surprised by its efficiency. Just stand it behind the phone (no connection is necessary) and both sides of the conversation can be recorded, or, if you wish, amplified and broadcast to listeners in the room. The price—only 27s. 6d. post free. To ensure delivery by return post write today to Dektron, 2, Westbourne Road, Weymouth.

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PRE-RECORDED TAPES

Unique 40-page catalogue listing all makes, Mono, Stereo, 7½ and 3½ ips. Send 2s. 6d., refundable on first tape record purchased. Dept. 6, Teletape Ltd., 33, Edgware Road, W.2. PAD 1942.

New Saga and every pre-recorded tape available supplied post free. Send large S.A.E. for free catalogues. W.S.L. (Tape Dept.) 106, Greyhound Lane, S.W.16.

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GRUNDIG/PHILIPS/TELEFUNKEN sales and service. London area. Phone BAYswater 6622.

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COSSOR 1602, absolutely as new, with mic, tape, leads, manual. Genuine snip, £27. Izard, 35, Cornfield Road, Reigate, after 7.

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SITUATION available in Central London Area for young man with some knowledge of tape recorders. Apply Box 419, *Tape Recording Fortnightly*, 1, Crane Court, Fleet Street, London, E.C.4.

TAPE EXCHANGES

TAPE recorder owners who would like to make contact with others of similar interests to exchange news and views by tape are invited to send their name, address, sex, age and special hobby or interest (but only one, please) for this special new section.

It will be assumed that all tape contacts will be made using a speed of 3½ ips, on half-track tape. If space permits, additional speeds, or track usage will be published. Maximum spool size only is given.

Barron, Charles (16). 260-30, 75 Avenue, Glen Oaks, Queens, New York, USA. Sports, jazz, electronics.

Binnion, Edward (47). 9, Sunny Road Lodge, Wrexham, North Wales. Ham radio. 7-in. spools. 3½ ips. Four-track. Anywhere.

Branch, David. 949, Gartloch Road, Glasgow, E.3. Neapolitan music and opera, great interest in Italy. 8½-in. spool. 7½, 3½ ips.

Corlett, Norman (18). Woodlea Villas, Crosby, Isle of Man. Ham radio and pop music. 5½-in. spool. 3½ ips. Anywhere, especially France.

Dillon, Bernard (25). 21, Cowesby Street, Moss Side, Manchester 14. Music, scootering, films and general subjects. Prefers message spools. 7½, 3½, 1½ ips. Female contacts required.

Hawkins, Clive J. (18). 43, Chesil Street, Winchester, Hampshire. Basketball. 5-in. spool. 3½ ips. British Isles.

Hill, Mrs. N. (38). 29, Ellerton Road, Surbiton, Surrey. General subjects, including music. 5½-in. spool. 3½ ips. Contacts anywhere.

Huddleston, R. V. (Male). 9, College Avenue, Melton Mowbray, Leicestershire. Anything stereo. Any size reel, any speed, 2- or 4-track.

Leupe, Bob (30). 36a, 's-Gravenweg, Rotterdam-16. Holland. Modern combo and big band jazz. 5½-in. spool. 3½ and 1½ ips. British Isles.

Matthews, G. J. (Male). 23, The Drive Mansions, Fulham Road, London, S.W.6. Family tape exchanges. 5½-in. spool. 7½, 3½, 1½ ips. Four-track.

McNulty, Clive S. (26). 24, Tuckett Road, Woodhouse Eaves, Loughborough, Leicestershire. Constructing electronic organ; all music bar heavy classic. 7-in. spool. 7½, 3½, 1½ ips. Girl contacts preferred.

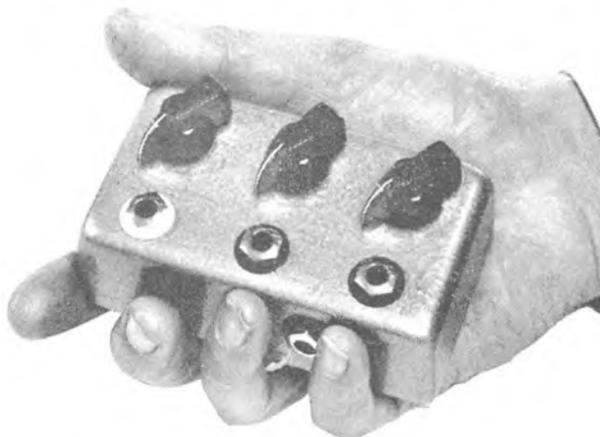
Sedgwick, Harry (49) and **Emily.** 34, Tavistock Square, London, W.C.1. Yorkshire exiles with general interests. 5½-in. spool. 3½ ips.

Towers, Charles L. (45). 35, The Gardens, West Harrow, Middlesex. Colour slides, travel, unusual recordings. Prefers message spool. Two or four-track at 3½ ips. Northumberland and overseas.

Wells, G. (46) (Male). 94, Dupont Road, Raynes Park, London, S.W.20. General interests, all music bar Chamber. 5½-in. spool. Two- or four-track at 3½ ips. Anyone anywhere.

Watt, William (28). 21, Gibson Terrace, Edinburgh 11, Midlothian. Sport, popular music. 7-in. spool. Two- or four-track at 7½, 3½ and 1½ ips. Anywhere.

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A TAPE RECORDER IS A VERY FLEXIBLE MACHINE; ITS FACILITIES CAN BE GREATLY EXTENDED, AND ITS USES INCREASED, WITH PROPER ACCESSORIES. DEKTRON SPECIALISE IN THE PRODUCTION OF INEXPENSIVE ITEMS WHICH WILL DOUBLE YOUR TAPE RECORDING INTEREST AND ABILITY.

2 THE NEW IMPROVED MIXER-FADER

With this mixer-fader you can blend together three separate input sources to produce a single recording. Items can be faded in or out in professional style. Skilful use of this instrument can save you hours of tedious editing work, too. Now available for either three microphone inputs or two microphones and one high level signal, e.g. radio feeder. Restyled and attractively finished in hammer green it represents outstanding value at 45s.

3 THE MONITOR

It is of great assistance to know exactly what you are recording on a tape. This transistorised unit gives you full monitoring facilities. Used in conjunction with the mixer-fader, it acts as a pre-amplifier and gives you the essential basis of a home recording studio. The price is five guineas.

1 THE TELECON PICK-UP

This is a very simple, but highly efficient, instrument that enables you to record both ends of a telephone conversation and—if you wish—to amplify and broadcast it simultaneously to listeners in the room. It is of great value for family and business purposes. The pick-up is simply laid on a desk or table beside the 'phone and plugged into the recorder. The price is only 27s. 6d.



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Authentic Sound takes on an even finer note. The new specially treated, mirror-smooth magnetic coating is now available on **all** BASF tapes. Of particular value for four-track recording, it ensures the closest contact between tape and recording head... gives improved reproduction of higher frequencies and greater purity of tone. The popular advantages of BASF tape — mechanical strength, magnetic stability, resistance to print-through — remain unchanged. They help to preserve the sound that only BASF tapes are made to take and give!



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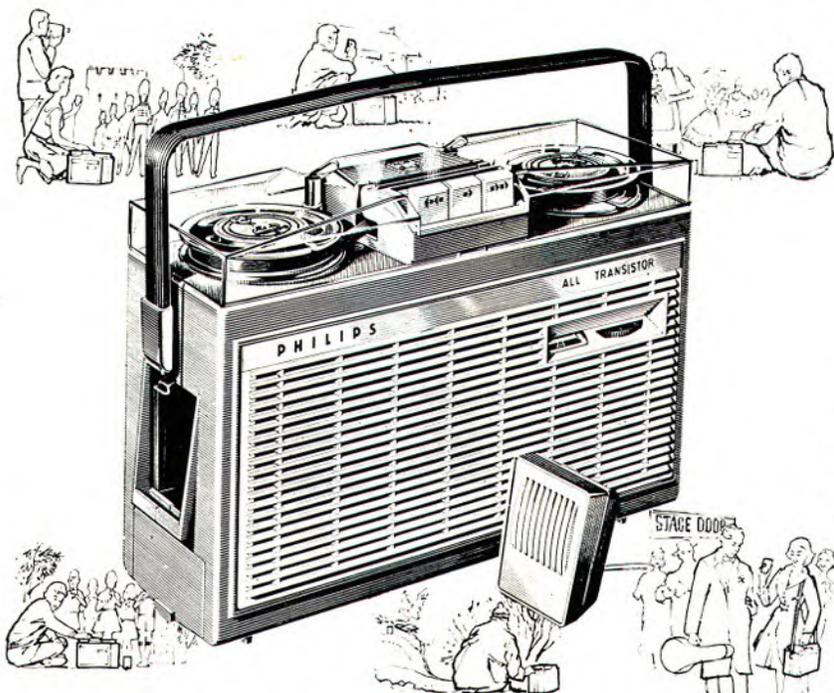


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ALL-TRANSISTOR BATTERY TAPE RECORDER

The portable recorder with the lifelike sound

At last you can capture any sound you want—from a military band to a bird in a tree, from touch-line commentaries to folk singing—play it over whenever you like. For this brilliant new Philips Battery Tape Recorder goes wherever you go; record's or plays anywhere, any time—even while being carried; recreates each living moment with vivid reality. Light, easy to operate, completely independent of mains electricity, this is the tape recorder for you. See it at your dealer's, today!



- Fully transistorised for economical battery operation and true-to-life reproduction.
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Excluding batteries.
Optional extra:
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strap 45/- complete

Made in Holland

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FIRST AND FOREMOST IN THIS FIELD

THE ZODIAC

TAPE RECORDER

with new improved motors for the Collaro deck

2 track **39** gns.

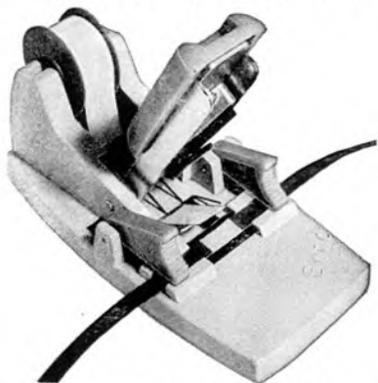
4 track **45** gns.

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THE BOND RECORDING TAPE SPLICER

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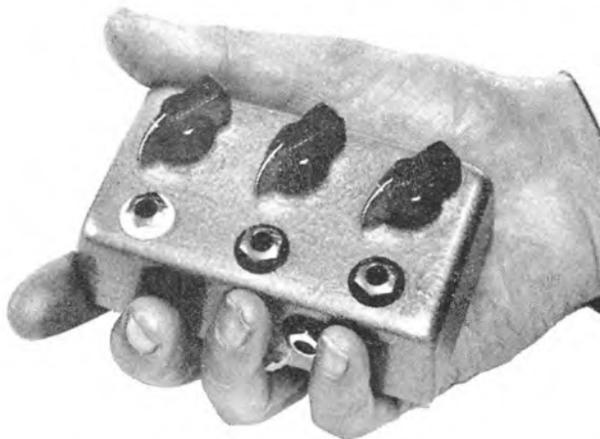
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Vol. 5 No. 15 26th July, 1961

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

A FASCINATING glimpse of the possibilities for tape that lie a few years ahead was provided by the recent National Association of Broadcasters' convention in Washington, USA. "Tape automation" is the term used by our American contemporary, *Tape Recording*, to describe the new trend demonstrated there.

The machine which sounds most fascinating to me is called a "Spotter" and is made by a Californian firm. Using a telephone dial, one can "dial" any desired spot on a tape with it.

More than that, you can dial any number of spots—up to 200—and they will be registered for playing in sequence automatically.

Using standard recorder decks and some very complicated electronics, the device operates fast forward or fast reverse when a number is dialled, brings the tape to exact cue position, provides a visual indicator when all is ready. The operator simply presses a button and playback begins.

In this way a whole day's programme for a radio station can be set up automatically in advance.

It will be radio stations, of course, which will pioneer the use of such equipment, which is extremely expensive. But domestic applications are bound to follow on behind.

In this country, of course, there is still a strong BBC preference for disc when

it comes to inserting extracts of a recording into a programme. It is easier to mark the groove and to jump from one extract to another by raising and lowering a stylus than it is to use existing tape equipment.

The latest American development suggests one more decisive move towards tape as the ultimate medium for studio work.

Red Tape!

RUSSIAN tape recorders seem to have jumped right into the news recently, after almost two years of attempting to gain information of their design, performance and price ranges, etc.

Jean Jenkins, whose second article in her travel series appears in this issue, provides a general description of the models she met whilst in the USSR.

Although her trip was made almost a year ago, her experiences of the type of recorder found behind the Iron Curtain seems not to tally with ours, for I recently had the opportunity to have a look at the models featured at the Soviet Exhibition currently in London.

There are actually four models on

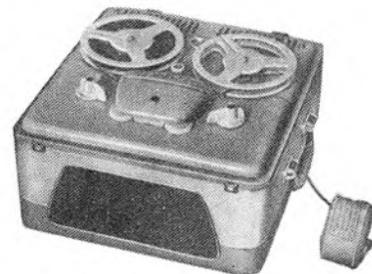
show, and it is understood that each is representative of its particular class. Although the general appearance of the Russian machines was somewhat austere compared with many of those found in the Western world, the specifications of their models match up to quite a number of our inexpensive machines.

I was particularly amused to see a half-track three-speed model which at first sight appeared to be a Grundig. Closer inspection proved that not only the outward appearance of the machine tallied in this respect. The general layout of the deck and even the spools were almost identical. Are the Russians copying the familiar Japanese behaviour or is the barrier between East and West Germany not so acute?

Unfortunately, during my brief first visit to their stand, I was not able to have all my queries satisfactorily answered. The language problem was of course the main difficulty, and even when an interpreter was found it turned out that he was not technically informed.

In addition to the "Grundig," which sold at £64 (using the official rate of exchange), there was a two-speed, 3½ and 1½ ips, transistorised portable model selling at about £40; and a single (7½ ips) speed, stereo half-track recorder which was incorporated in a console with a seven valve, five-band receiver. This cost 250 roubles, approx. £100.

Only one machine had a specification leaflet handy. This was the Yauza-5, illustrated below.



The quoted frequency response was 50-12,000 cps at the top speed of 7½ ips. Its second speed, 3½ ips, had a response of 60-8,000 cps.

Rewind was said to be roughly 1½ minutes with a 5-inch reel of about 820 feet of tape.

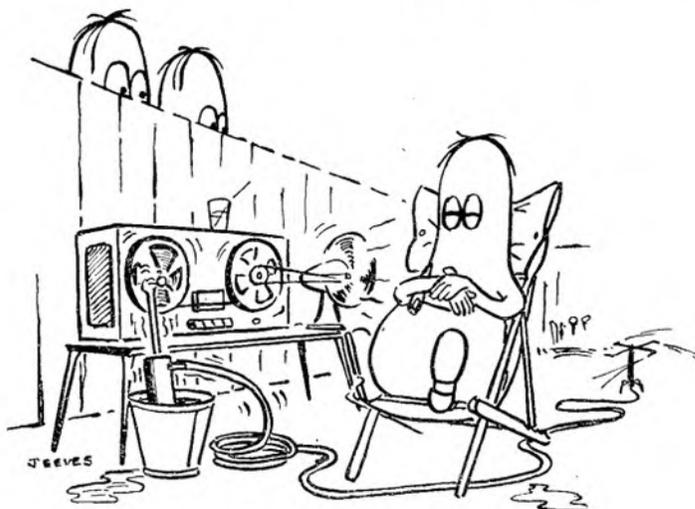
Two dynamic loudspeakers are incorporated providing a rated output of 1½ watts (maximum 2½ watts). The estimated consumption was 75 watts.

Input voltages are: microphone (3mV), pick-up (0.2V), and radio (2V).

It measures 15 x 14½ x 8½ inches and weighs 28½ lbs.

The Yauza-5 retails at 160 roubles, approx. £64. For this the Russian enthusiasts receive two full reels of tape and one spare reel, a dynamic microphone with cord and telephone plug, a recording lead for pick-up, etc., three spare fuses for 127 or 220 volts, and a spare rubber drive belt.

LAUGH WITH JEEVES



"That's the chap who wrote the book, '101 uses for your tape recorder'."

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LADIES

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monthly feature

Edited by
Vivienne Gooding

CHILDREN'S CORNER

DO you like reading story-books? There are so many different kinds of story books, aren't there? Stories about pirates, fairies, animals and even some just about boys and girls.

It must be very difficult to write a real story-book. I shouldn't like to try! But it's great fun making up stories. It's the writing down part that's such hard work. Stories are only written down on paper because that's the easiest way to keep them and to tell other people the story by letting them read it.

First of all, though, we have to make up our minds what our story is to be about. I know, let's decide to have a story about boys and girls and some of the things they do. They could have an adventure, couldn't they?

Now we have to do a lot of thinking to make up the story itself. We must make up our minds just what kind of an adventure the children are going to have, and we must be quite sure that we know how it's going to end, otherwise the story would be spoilt.

All you have to do now is to pretend that you are telling the story to a friend, but first ask Mummy or Daddy to switch their tape recorder on and to arrange the microphone for you. Now if you "get stuck" with your story it doesn't matter at all because the machine can be turned off while you think of what happens next.



My Diary

HIGH summer and a heat wave to our credit. Days by the sea, sun-burn peeling; nights under canvas and the flutter of a moth around our candle lamp. Yes, life is good and I still have a summer holiday to look forward to.

Yet somehow I'm still finding time to spend with my tape recorder. There was a Sunday morning just three weeks ago when by judicious study of official time-tables I decided to pull off a double feature by recording both the changing of the Horse Guards at Whitehall and the Scots Guards at Buckingham Palace on the same day.

If you can get to Horse Guards Parade about a quarter to ten there's plenty of time to place yourself in a strategic position before the New Guard comes trotting through the arch at ten o'clock. That's a most dramatic moment. The clock has a very sweet and distinctive chime, and as the sound blends with the ring of the horses' hooves in the courtyard one can truly imagine oneself to be back in mediaeval England.

It's the kind of effect that tape excels in capturing, but your recording will be even better if you take it when the Queen is in residence in Buckingham Palace. Then the Guards carry their Colours and a trumpeter sounds a salute as they approach.

If they're on time, and with the precision we have come to expect from these famous units they invariably are, the trumpet, the horses' hooves and the chiming clock will all be recorded together and you'll have a tape you'll never want to lose. It so happens it's also a fairly easy event to record, so I regard myself as something of a specialist. . . !

A hurried tumble into the van and over to Wellington Barracks just in time to see the band forming up ready to play their troop as the officers inspect the

parade. Being rather late arrivals we didn't have much choice of position and so we found ourselves standing under a very leafy tree, with the Fi-Cord's microphone thrust through the railings in the direction of the band like small children at the zoo offering a morsel to a very large and splendid animal.

The one great feature of Wellington Barracks is the wind. It cuts across that parade ground, swirls up Birdcage Walk and blows itself silly against the buildings at the other end of St. James's Park. The tree under which we stood was leafy, very leafy, and leaves rustle.

We were not so close to the band as I would have liked, but the recording commenced.

The spools had scarcely started to revolve before he started—perhaps the music inspired him! A dear old London sparrow sat on a branch immediately above our heads and sang his little heart out. The whole of the time we were recording he sang and the leaves rustled. The result? Not quite what we'd set out to get, but a recording that's full of the spirit of summer; a recording of a bird, a tree and a band—a recording of England.

One has to be careful to keep the wind noises off the microphone, of course, and that's not easy, but otherwise it wasn't difficult. One of the delights of tape recording out of doors is that if you don't always get exactly what you want you might end up with something very much better. We might have *tried* to get a recording like that for a very long time, and then failed, but as it was we did it quite by chance.

I had an invitation in the post yesterday. A very pleasant invitation too. I have been asked if I would care to record the annual summer festival which is about to be held in one of our stately homes. A glance at the programme frightened me to death, there are so many top names in the musical world connected with it. A glance at the programme by my husband frightened him to death; I hadn't noticed that the main events take place in an open air theatre in the grounds. What price our poor ribbon microphones at the mercy of every puff of breeze? What a problem! But what a thrill to be able to do it.

I'm keeping my fingers crossed and trying to beg, borrow or steal a few wind-proofed moving coil mikes!



UP and coming young star, Kim Tracy, under contract to Associated British Pictures rehearses at home with her new Grundig TK1 tape recorder. With her eyes firmly fixed on stardom, Kim takes her work very seriously and already has a number of successful films and TV appearances to her credit.

Recording in the U.S.S.R.

ON my first day in the Soviet Union I discovered that the use of the tape recorder is widespread and imaginative. Unable to see anything of Leningrad—it was snowing so hard that I couldn't see across the street—I headed directly for the Museum of Musical Instruments.

This is divided into two parts: a magnificent collection of classical instruments (the basis of it assembled by Mahallion who also collected the instruments in the museum of the Brussels Conservatoire), and a folk music section devoted to the music of the peoples of the USSR. Case after case was filled with the instruments of the Tatars, Armenians, Latvians, Uzbeks, Turkomens, White Russians, Ukrainians, Ostiaks, Mongolians, Siberians and Eskimos—all the diversified nationalities living within the borders of the Soviet Union were represented.

Tape recordings were used to bring the instruments to life. While I was there a class of ten-year-old girls came in from one of the country districts—

JEAN JENKINS continues her travel series with descriptions of her visits to Moscow, Leningrad and the Southern States of Russia.

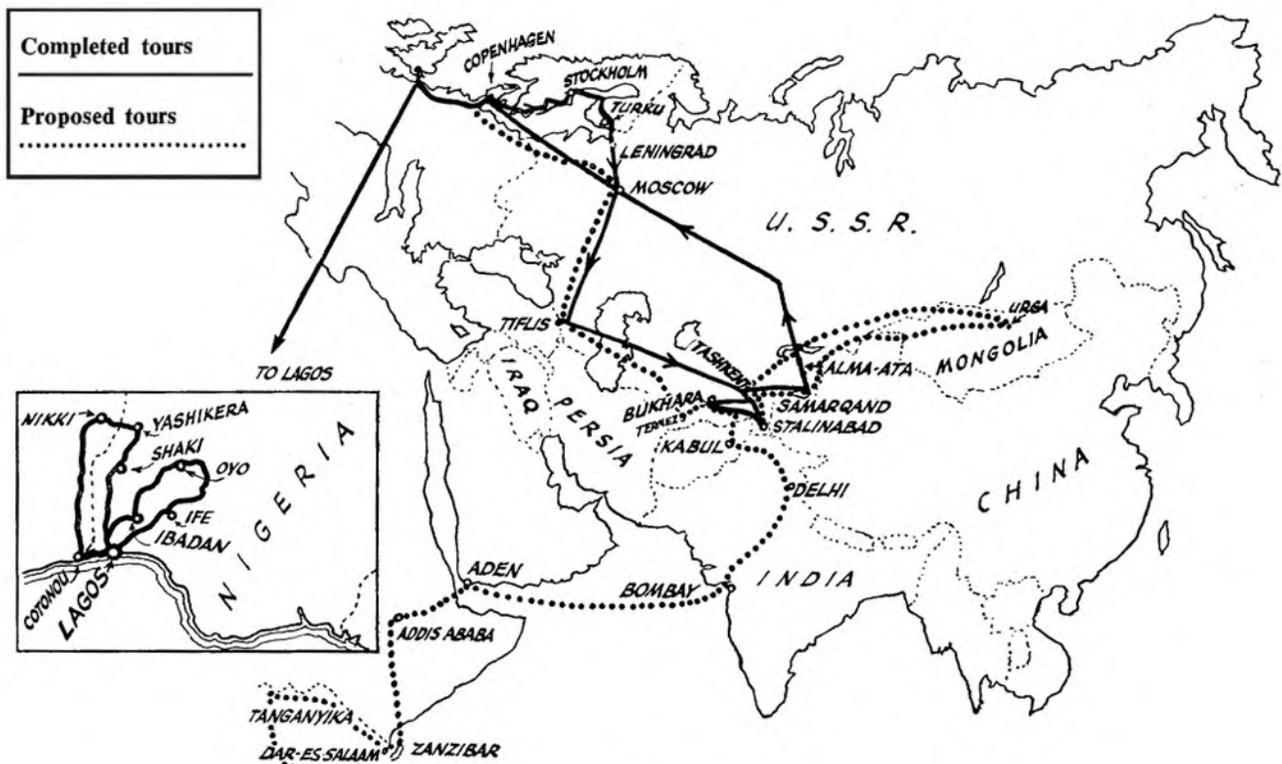
navy-blue pinafore dresses, white blouses, long blond braids tied in red ribbons. The guide-lecturer in the museum indicated the major points of interest, illustrating his talk with recordings of the instruments. The girls heard how differently a spike fiddle from Persia, Uzbekistan and Tajikistan could sound, and conversely how alike music from the totally dissimilar-looking fiddles of the Mongols and Kazakh and Kirghiz is. Point by point, the lecturer demonstrated with field recordings, scales, methods of tuning, capabilities of each instrument, similarities and dissimilarities.

The museum, I discovered, had attached to it an Institute of Scientific Research, whose staff collected record-

ings in the Leningrad area, and analysed recordings made by members of similar institutes in other parts of the country. I found that such institutes existed in each of the republics I visited, and that long interviews with the research workers were among the most useful introductions to the music of any new area.

Searching for Central Asian instruments took me to another museum: Leningrad's famous Hermitage. I am ashamed to say that I rushed straight on through the huge building, refusing to glance at the magnificent collection. (All the reverent art-lovers were appalled, and the English may have earned an undeserved reputation for cultural barbarism because of me).

This single-minded pursuit of musical instruments brought me to the rock frescoes I was seeking. A frieze, from Airtam near the Syr-Daria (Oxus), shows three musicians. Their instruments are



Recording in the U.S.S.R.

NEXT ISSUE

From 30° below to 100° above—the
author visits Nigeria

a barrel-shaped doubled-sided drum, a short-necked lute played with a plectrum, and a bow harp. The instruments and the methods of playing them are very clear, although the frieze is two thousand years old.

That evening, in the eighteenth century elegance of the blue-and-gilt opera house, I found another instance of the uses to which tape recorders are put. Sitting beside me, following the musical score of *Traviata*, was a dark, attractive young girl. During the intervals, solemnly promenading arm-in-arm, she pointed out to me in rather halting German the different interpretations of various composers and singers.

"Where did you hear all of them?" I asked, knowing that opera tickets, although cheap, are booked up months in advance.

"We have a very large library of tape recordings," she replied. All significant performances are taped, and copies made available to schools, music teachers, conservatories, and community-centres (which are called palaces of culture).

Inevitably, travelling with a tape recorder and often speaking of the recording I hoped to do, I saw a number of Soviet tape recorders, some were console models, dark walnut or mahogany, in the homes of musicians. Looking rather like old-fashioned radiograms, they had one speed only, no gadgets, and appeared simple to operate.

At the other end of the scale were the custom-built battery portables, smaller than the Nagra, used for recording in the field by folk music researchers. I discovered also that Soviet radio stations preserve their material on tape, instead of putting it onto discs as the BBC does. It is hard to tell whether the quality is impaired, since recordings made many years ago were made on far less satisfactory machines. Certainly I saw no signs of cracked tapes—and I have seen collections housed both in ideal conditions—air-conditioned rooms with the humidity carefully controlled—and in plain steel cabinets which can become blisteringly hot in the summer.

To Moscow by jet—the TU104—takes an hour. My hotel, comfortable and Victorian, overlooked the Kremlin and the fantasy church with golden domes and gaily painted twisted towers. But the atmosphere (not the temperature, which continued to remain at 28 degrees below zero), was very different from Leningrad. I had spent my time there much as I would have done in Paris or Brussels in mid-winter, working through

"Moscow . . . and the fantasy church with golden domes and gaily painted twisted towers"



musical instrument collections, going to the opera or concerts at night, sightseeing when time or weather permitted.

Moscow, however, was clearly the seat of power of a large and unfamiliar country. In its administrative offices were the men who would determine finally where I could go and how much co-operation I would be granted. Interviews were arranged, so instead of working systematically through a museum collection, I sat in my hotel room, waiting to meet the leading Soviet authority on musical instruments. These included Mr. I. Z. Ahlender; the directrice of the Moscow Conservatory; members of the Union of Composers (which has a section for musicologists); and Academician Vinogradov, the outstanding theoretician on folk music in the USSR and authority on Kirghiz music. At last it was decided that I could go to Uzbekistan, Tadzhikistan and Kazakhstan. Early the following morning I took off for Tashkent, capital of Uzbekistan and largest city of Central Asia.

Unlike legendary Samarkand, capital of Central Asia under Tamerlane in the 14th century, and capital of Uzbekistan until the 1930's, Tashkent is very largely a new city. It covers as wide an area as Moscow, for all the houses are built low to the ground in order to minimize the dangers of earthquakes (we had three, all relatively mild, while I was there).

Its international airport is a main stop on the Air India route; it has a university, medical school, teachers' training college, agricultural institute, radio station, opera house, palace of culture, theatre, large modern hotel, a museum, a conservatory, a branch of the Union of Composers, a research institute on the arts and an Institute of Oriental Studies. And all of these institutions proved useful in my quest for Uzbek music and instruments.

The theatre gave me my first taste of the "folk song ensemble." Based on popular folk music, harmonized, (there is no indigenous harmony in Central Asia), all the local folk instruments are combined into an orchestra. Every town, I was soon to discover, and in some places not only every village but also every collective farm, had its own folk song ensemble. And it was necessary to record these, to avoid hurt feelings. On the first evening at the theatre I was able to record the instrumentalists separately after the performance, and by dint of insisting on *stari musik* (old songs) I did get several genuine folk tunes.

By the following morning, news of the foreigner who wanted old music had spread throughout the Tashkent musical world. Messages and invitations came from the conservatory and the director of the opera house. The Union of Composers offered to produce the best folk singer in Tashkent for me to record; the Research Institute on the Arts wanted me to inspect their tape archives; the University and Museum and Institute of Oriental Studies wondered how they could help the search.

I told the University Archaeology Department and the Museum that I was interested in the early evidence of music and musical instruments in Central Asia, and the Oriental Institute that I would like to see any illuminated manuscripts, miniatures or pictures of instruments. And all of them were able to provide several pictures or statuettes.

Thus the pattern for recording was set. It was quite formal; there was no wandering out in the market places with a tape recorder slung over one's shoulder. Instead, appointments were made; subsequent appointments with the same man or with others that he knew, or thought I would be interested in, were

(Continued on page 18)

SCHOOL TAPE CLUB

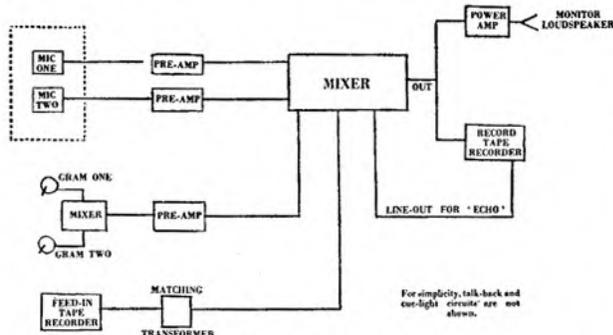
2: Temple Studio Reproduction

The aim of this new series is to encourage schools interested in tape recording to form their own clubs through reading accounts of existing ones.

Please let us know what you are doing.

FOR the past six years considerable experiment in tape recording has been conducted at Temple Secondary School, Rochester, by Graham Jones, a specialist teacher of Speech and Drama. He has found a valuable stimulus to written and spoken English in the production of "radio" programmes—ranging from documentaries on local history, and careers, to plays written by individual boys.

Initially, equipment was limited to a Clarke & Smith tape recorder, a Lustraphone high impedance ribbon microphone and a reel of tape. But soon enthusiasts among the boys began to build auxiliary equipment to widen the technical scope of their programmes. Two 78 r.p.m. gramophone motors with crystal pick-ups were obtained. A simple four-channel, passive mixer was built so that the outputs of gramophones, microphone and second tape machine could be combined.



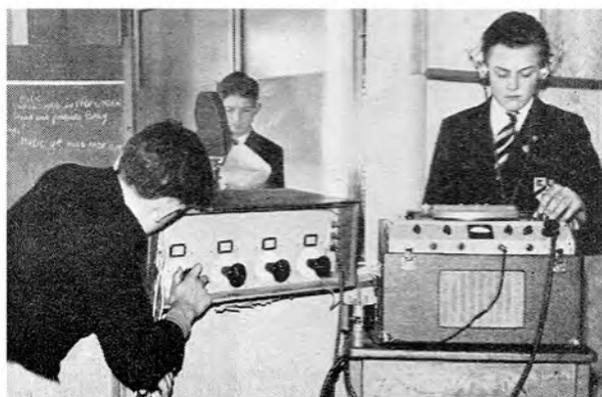
The Temple Studios' circuit layout

Only one room was available, so recordings were monitored by headphones plugged into the monitoring output of the recorder. The microphone circuit was sensitive, so that mechanical noise from the tape recorder, gramophone motors and studio operations often intruded upon the finished programme. Obviously if recording quality was to match the material available, a second room was needed.

A small store-room adjoining the school boiler room was the only acoustically "dead" room available. The stage above became the control room and the wiring was passed beside the hot-water pipes, through the floor, into the studio beneath, it proving simple enough to extend the microphone leads with co-axial cable. Talk back had to be provided to enable Graham Jones to talk to his cast without needless climbing up and down stairs—a three-bank Yaxley switch, a second microphone and the amplifier of the school gramophone achieved this. A simple battery and bell-push operated a cue light system. Monitoring could now be done on a loudspeaker via the audio amplifier of the school's "portable" radio.

Technically, this worked well, but rehearsals were punctuated by the casts having to go aloft for "breathers." Sulphur fumes and heat eventually forced them to borrow a classroom adjoining Mr. Jones'. The equipment readily transferred to its new home.

At this stage, plans for a new school building were under discussion. The architects agreed to adapt a classroom and its neighbouring study into a studio and cubicle, complete with sound insulation and double glazed observation window, and a most generous gift of professional type apparatus made it possible to redesign the whole technical layout to suit the new studio.



Peter Lynn (left) and Keith Pope (right) set up their equipment while Robert Baker in the sound cubicle provides a test reading

The new equipment consists of two ribbon microphones, three microphone pre-amplifiers, a four-channel mixer, a similar three-channel mixer and two gramophone pick-ups. This is capable of good quality reproduction and has the advantage of being on 300 ohm balanced line, which makes it virtually free from hum pick-up.

The school fund has bought two new four-speed turn-tables and crystal pick-ups. Their outputs are mixed on a panel mounted on the front of the gramophone console and then taken to the gramophone amplifier. The 300 ohm balanced output of this is fed to a third fader on the main control panel.

A second tape recorder—the earlier machine demoted at the arrival of a shining E.M.I. TR51D—is connected to the fourth channel on the mixer. The output of the mixer unit feeds the TR51 and the monitoring loudspeaker.

The input of this loudspeaker's amplifier is split at a Post Office type key switch, which provides cross-over from recording channel to talk back. Two studio cue lights are fed via spring-loaded key switches from 12 volt batteries, rechargeable in the school Science lab. A fourth key in its "up" position allows playback in the studio and in its "down" position



Geoffrey Rivers at the amplifier rack. In the foreground is the E.M.I. TR51 D, and left, the school-built console housing a mixer and two grams

brings into play echo colouration from the monitor head on the recording machine. The reverberation level is controlled from a fifth fader on the mixer.

Finally a group of boys, under the direction of Mr. D. S. Phillips, the school's metal-work master, provided a rack for the four amplifiers, and their associated power units; while in the wood-work rooms a gramophone console and a control desk were designed by Mr. C. T. Cox and built by the boys.

While this represents an enviable array of equipment, it is not an end product in itself, and a watchful eye is kept on its use. It would be too easy to produce programmes full of technical tricks whose intrinsic value as teaching material would be small. Every attempt is made to use the recording equipment when only by its use can the boys be stimulated to produce original and imaginative work.

TAPE IN THE SCHOOLS

GEOFFREY HODSON

edits the latest news

— and comments

QUOTE OF THE MONTH

Facing on the single track

—head to head

(Francis Brett Harte)

THE tape recorder must now be accepted as an essential part of the range of modern teaching aids. This was the major conclusion of the Interim Report on "The Tape Recorder in Education" considered by the National Committee for Audio-Visual Aids in Education earlier this month.

This important piece of research has proved that there is an active and growing interest in the subject, covering all age ranges from the Infant School to Training Colleges and University Departments of Education. Examples have been cited from all parts of the school and college syllabus.

By May 26 322 completed questionnaires had been received, and the N.C.A.-V.A.E. reports that this is the best response they have had to an inquiry. It has been particularly gratifying to receive replies from Grammar Schools and Training Colleges.

Further data is still required. October 31 has been set as the closing date, and

this column urges you all to co-operate—both by completing questionnaires, and by talking about the research to your colleagues.

* * *

WHY? What will you get out of it? First and foremost, not all Local Education Authorities, School Managers or Head Teachers, regard the tape recorder as anything but a frill. Obviously in a specialist magazine such as this, undue importance may seem to be attached to tape in education.

This is not intended. We recognise that the effectiveness of any teaching aid depends, not only on the skill and imagination of the teacher, but also on his discrimination. Tape has only a minute place in the whole fabric of education. But it does have a place, and the more teachers who help to make this research a broad one, the more scholarly and practical will be the result.

Secondly, one of the most important

proofs to come out of the interim report is that tape work stimulates creative activities. The interest of the most apathetic class can be aroused, and the children themselves impose the highest standards on their work. This is echoed many times, and an article on a School Journey to be published in *Tape Recording Fortnightly* shortly talks of children responding to a sense of occasion when they are recording.

* * *

HOW can this be regarded as a frill? If children want to speak clearly, if they choose their words with care, and if they make sure that their grammar is correct so that their meaning is clear and unambiguous—how can this be interpreted as other than a distinct improvement on some current teaching methods?

The report refers to a vitilising effect on the children's attitude to work produced by some tape work. Few teachers can ignore this. An alternative approach to encourage children to discover themselves and the world about them is worth knowing about. One of the by-products of the research will be an analysis of a very representative cross-section of teacher opinion to substantiate this claim. This will be worth reading. Clearly it is also worthwhile helping to provide the facts, figures and opinions.

* * *

THE urgent need for courses of instruction on the use of the tape recorder in education is noted by the N.C.A.-V.A.E., and they are considering publishing a guide on planning and organising them.

The pioneer work of the Rose Bruford Training College in running the National Tape Recording Courses is acknowledged. But these types of courses will have to be duplicated all over the country before any real impact can be made on the teaching profession as a whole.

Next Easter it is understood that two full-time courses for teachers will be organised in addition to the Fifth National Course. This is a sign of the times. Meanwhile, more tutors have to be found.

FULL HOUSE

A FULL house is reported for the Tape Recording section of the 1961 E.D.A. Summer School at Trinity College, Carmarthen. Many applications have had to be turned down.

The students will produce programmes of their own choice, learning the basic techniques of tape recording as they proceed. Tutor John Weston says that the main thing they will have to learn is how to listen.

The course lasts two weeks—August 5 to 19.

What is a good school tape recorder?

WHAT are the main requirements of a tape recorder to be used in schools and colleges? According to the N.C.A.-V.A.E. report, the three qualities most frequently praised are: good quality of recording and reproduction; simplicity of operation; and robustness of machine, connections, and plugs.

And the most frequently criticised quality? WEIGHT. After that—complexity of operation, and difficulty of finding the precise place of a recorded item.

But the report reveals that there is much untutored thinking and knowledge about the mechanics of a tape recorder. Whilst wanting simplicity of operation and a light-weight machine, some teachers are also wanting a maze of facilities and superb quality in the one unit.

To clarify these issues the National Committee is asking its parent organisation, the Educational Foundation for Visual Aids, to examine the technical aspects of the design of a general purpose school tape recorder. The Foundation is also being asked to prepare a short publication for the guidance of teachers in choosing tape equipment and operating it in the classroom.

These booklets will not only be of interest to the teaching profession—but also to the manufacturers. Commercially, the education field is an important market which deserves very careful study. Manufacturers should note what is said, because the Educational Foundation represents a considerable body of teacher opinion.

In the autumn, "Tape in the Schools" is inviting some authoritative contributors to discuss how they would like to see audio equipment for schools developed in the next five years. Many recorders used in schools at present represent out-of-date thinking. How can quality, weight, flexibility—and economy, be reconciled? The answer has not yet appeared.

FULL REPORT NEXT MONTH

A full report on the "Tape Recorder in Education" discussion at the National Committee's Annual Conference at Whitelands College this month will be given in our August 23 issue.

The National Committee research on tape in education so far shows that:—

- * * nearly half the machines in use have been supplied by L.E.A.s.
- * * 42 per cent favour 3½ ips for recording, and 36 per cent 7½ ips.
- * * 60 per cent use seven-inch spools.
- * * only a small proportion of teachers use any equipment additional to the normal recorder and microphone.
- * * a wide use is made at all stages of recording BBC broadcasts for subsequent use at suitable times in individual college/school timetables.

Close finish to Stuzzi Contest



Above: Mr. Victor Blackman, 38-year-old Press Photographer of Badgers Mount, Kent, with the Grampian DP/4 used to create his prize-winning tape



Above: Mrs. Phyllis Copinger of Kilmarnock, Ayrshire, and, left, Mr. James Radford-Evans of Manchester

<p>VICTOR BLACKMAN <i>"A week in Sierra Leone"</i> Equipment used: Fi-Cord</p>	<p>THE roar of a DC7 flying to Sierra Leone for the Independence Day celebrations, crowd scenes in Freetown, tribal dances and an interview with a witch doctor highlight this tape, which comes to an end with a musical farewell from Mr. Blackman's guitar-playing native driver.</p>	<p>WYNFORD VAUGHAN THOMAS <i>comments—</i></p> <p>NO question but that Mr. Blackman had the most sensational material, I know West Africa well and his sounds brought all the atmosphere back to me. Maybe there was less even presentation than Mrs. Copinger's, but for me the freshness of the material outweighed any small roughness.</p>
<p>MRS. PHYLLIS COPINGER <i>"Weekend, North-West"</i> Equipment used: Stuzzi Magnette 671B and Simon SP/4</p>	<p>A TRAIN arrival, church bells, children playing in a park begin this holiday in Scotland. The local market, a flock of sheep, and gossip of the local wives plus bargaining by a market auctioneer are also included before a skiffle group playing at the railway station brings the weekend to a close.</p>	<p>HER post card in sound had a pleasant nostalgic quality—this was a Scottish seaside place without any frills. I like her dry little comment on the "foreign" language spoken by the Scots' ladies. She got a nice range of sound effects and everything was clearly and soundly presented. I missed, perhaps, a feeling of excitement—but maybe this is my Welsh blood clamouring for sensation.</p>
<p>JAMES RADFORD-EVANS <i>"The Letter"</i> Equipment used: Stuzzi Magnette Studio and Fi-Cord</p>	<p>THE tape represented a letter written by a little boy on holiday in Blackpool. Sounds of the "Golden Mile," including the "Laughing Man," promenade trams, and the invitation cries by a fair-ground tout intersperse the general narrative.</p>	<p>THIS competitor had the most original idea—a post card from a small boy at Blackpool. It was presented with great wit. He got the sounds of Blackpool nicely "taped" and again I recaptured the atmosphere of this most robust of Britain's holiday towns.</p> <p>Judges comments continued on next page</p>

Novice wins Paris holiday trip

ONLY a very few points separated the finalists in the Paris Holiday Contest organised by Recording Devices Limited, importers of the Stuzzi recorders. The four judges, all experts in the tape field, differed in their choice, and the final decision was taken from the total points awarded in each case.

THIS close decision proves once again the interest and competence of the enthusiasts in this particular field, and backs up Stuzzi's belief that the battery portable can find its place in any tape enthusiast's home.

A spokesman for Stuzzi said they were quite pleased with the result, although a little disappointed that the winning tape was not made on their Magnette. They received some encouragement with the news that both the other finalists' tapes were made using their model.

The winner, Mr. Victor Blackman, who receives the prize of a five-day holiday in the French capital is a comparative novice with a battery portable tape recorder, although he started recording some eight years ago. Describing his progress to a battery recorder he said that to begin with he went through the usual phase which included recording the conversation of friends and switching on at parties, and being intensely disappointed at the result. The novelty soon wore off and he used the machine as nothing more than a means of playing background music.

This period lasted until about six months ago, when he acquired a battery portable, specifically for recording on-the-spot details of photographs. Overnight he saw that he could also get a lot of fun out of his portable, and started using it whenever he found something of interest.

He started a tape "scrapbook," was introduced to *Tape Recording Fortnightly*, and was soon "firmly caught in the meshes of recording—and loving it." For the first time he began editing tapes, and discovered how enjoyable this could be.

When he was sent to Sierra Leone on a photographic assignment, he took his Fi-Cord and a good supply of tape along with him. He had just started to edit the mass of recorded material when he saw the announcement of the Stuzzi Contest. He had never made a feature tape before, and thought it would be a simple task to produce a five-minute tape out of the hours of recording he had obtained, and even thought it could be "polished off in one evening."

Seven weeks, and about a dozen "see how you think this sounds, darling" to his "bored but patient" wife, had elapsed before the tape was completed. It was hard work, but worth it, he says, not just for the Contest but for all he learned whilst making it. He now claims to have the deepest respect for the producers of even the simplest BBC programmes.

His equipment consists of a Grundig TK830D; Grundig mixer, Fi-Cord and Grampian DP/4, 25 yards of extension cable, and monitoring headphones.

Although he claims his restricted experience does not really qualify him to advise, he would like to pass on some tips that he believes helped him. First, read all the literature available on recording, both magazines and from the library; second, go out and record here and there and everywhere; third, however heartbreaking, ruthlessly edit your material; and lastly, have a tolerant wife who will not mind tiny chippings of tape that the vacuum cleaner refuses to pick up, who will forgive you for screaming at her when she interrupts a recording session, and who will say "Yes dear, I think its wonderful" every time you play her one of your masterpieces—even if she is reading throughout!

ELIZABETH COWLEY comments—	KENNETH S. SHORT comments—	DOUGLAS BROWN comments—
<p>THIS was a most interesting tape. One would have thought the producer had had professional experience. He had a most marked Richard Dimbleby style. I would have liked to have heard more of the interview with the witch doctor—only a few phrases were audible. Another suggestion would have been to omit the reference to 'plane trouble at the start, or, having made it, to have included a coughing engine or passenger comment.</p>	<p>THE quality of this is good although the voice suffers from a form of hissiness one would normally associate with the simpler type crystal microphone. This rather mars the recording. The commentary has been made with a professional sort of approach although I felt that the editing leaves something to be desired as the transitions from one recording to another are rather sudden.</p>	<p>WITH this sort of material, it is difficult to go wrong. But Mr. Blackman shows great skill in linking his actuality sequences with a commentary that gives pace to the whole production. A very good example of what can be done in the way of spontaneous, unscripted out-of-doors recording.</p>
<p>AN imaginative tape with some well recorded effects. The personality was most evident, and the narrative was clear and concise. The programme gave a fair indication of the type of holiday being enjoyed, but somehow became very 'postcardish' with short snappy remarks.</p>	<p>THIS tape is recorded at 3½ ips, but I found that in practice the loss of quality was surprisingly small. My only complaint with this recording was that again in the beginning the voice is perhaps a little flat. There is just a trace of wow on the bell recordings, otherwise I liked this best.</p>	<p>TECHNICALLY, very good; and a sound idea, too. But I felt it lacked "bite." The commentary was delivered in too "matter of fact" a tone of voice and the actuality recordings, though interesting and varied, consequently lacked adequate linking. A dominant theme was lacking. The introduction, for example, of a broad Scots voice, repeated at intervals to give better continuity, might have been sufficient to have made Mrs. Copinger the victor.</p>
<p>IFELT he could have done much more with the idea. He had an excellent script, but only very few sounds. What effects there were were well recorded, but the author depended to a large degree on the voice of the small boy. The whole programme was well done.</p>	<p>IFOUND the composition quite good although the type of recording picked up was rather limited in scope. The worst feature of this recording is that it is distorted throughout due to over-recording.</p>	<p>EVIDENTLY a lot of forethought and, I suggest, careful scripting went into this piece. The result was that the speech was much better than the accompanying sound effects. Blackpool is such a cacophony of sound that it should require very little commentary to convey its flavour, and I felt this tape was too "literary," rather than a specific exercise in sound.</p>

PROBLEMS OF BALANCE

Part One: Ribbon Microphones

How they work and the way to use them

By Alec Nisbett

I solid virtues, not the least of which are robustness and reliability. They just don't wear out—almost an embarrassment in the case of the BBC's type A ribbon which was developed in the early 'thirties and, with relatively minor modifications remained in use for 25 years.

It is sad that their becoming obsolete (their shape and size precludes an extended top response) has meant taking out of service a model which seemed to show every sign of going on for ever. Over the years it had become—quite literally, if you look in the *Radio Times*—the symbol of sound radio.

The principal British ribbon microphone in professional use today is the ST & C 4038, which is also based on a BBC design, the PGS. The maker's claims for the 4038 are shown in the diagrams, the frequency response being that for normal incidence.

At oblique angles, particularly in the vertical plane, the top response is rather more erratic; but within the main working area—about 100 degrees in the horizontal plane on either side of the microphone—there is no significant trouble from this.

Now, there is one main difference between

It is a well-known fact that for studio work the main microphones used by the BBC are ribbons. For many amateurs this is justification enough: the ribbon must presumably be the best, and for many a recordist who is still at the stage of having only the crystal microphone that came with his recorder, it becomes his ambition to own one. And although there are special uses for which other microphones may be preferred, moving coils for "location" work, or condensers for the highest of hi-fi music, it is indeed true that for most general studio purposes there are few microphones to beat a good ribbon, and none at comparable cost.

the 4038 and the less expensive ribbons which are suitable for amateur use, and this once again is a difference in size. There will be a smaller magnet and a smaller path difference from front to rear of the ribbon: this in turn means lower sensitivity and a poorer signal-to-noise ratio. But it does not mean a poorer frequency response: scaling down in size, as we have seen, should in fact have the reverse effect.

In this cheaper range, by the way, it is worth noting that the descriptions "ribbon" and "bi-directional" are no longer quite so freely interchangeable as they are with the 4038 and related types. For there is at least one ribbon available at a price which makes it attractive to amateurs, which can make some claim to having "unidirectional" properties. This is, in fact, an ordinary figure of eight microphone with a felt pad inside the back of the case which reduces the high frequency response on that side. As it happens this instrument also has rather a peak in the top response—no disadvantage when being used for work where high in-

telligibility is of primary importance (e.g. in PA work, or when used with equipment with poor signal-to-noise ratio, etc).

But for studio work it is best used the other way round from that recommended by the manufacturers, because, as it turns out the response is actually more even on the "back"—the peak is effectively smoothed away by the pad! (And being a compact microphone of good quality it is used like this for certain purposes in BBC television.)

A ribbon can also be so housed as to lose its figure-of-eight characteristics completely: if one side is enclosed completely (except for an acoustic labyrinth) it will stop working as a pressure gradient microphone and become pressure operated; that is, except for the screening effect of the case itself at high frequencies, it will be truly omni-directional.

When it is used like this, the ribbon acts in much the same way as the diaphragm of a moving coil (except that there is only one "wire" between the pole-pieces—the ribbon



* * *

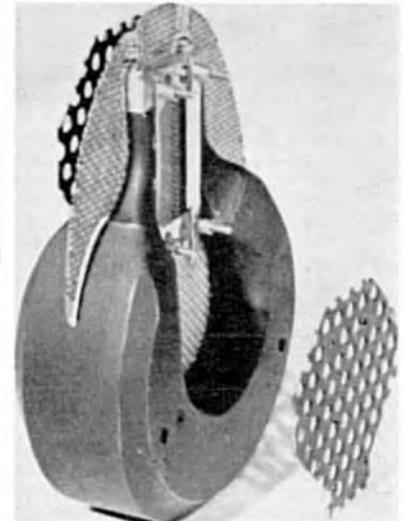
Right: The magnet, pole-pieces and ribbon of the AXBT. It is well-known that bi-directional microphones of this type are operated by the pressure gradient of the sound wave: the sound has to travel about an inch further to get to the back than it does to get to the front (for normal incidence). But this is not the only mode of operation—indeed if it were, for sounds whose wavelength equals this path difference there would be complete cancellation. But as it happens the obstacle effect due to the ribbon and pole-pieces causes pressure doubling at high frequencies, so the microphone changes over to pressure operation.

Baffles, at the front and rear of the ribbon, act as reflectors at certain frequencies and keep the response smooth. A further effect occurs at the extreme top end of the frequency range: the failing response is lifted somewhat by the resonance of the V-shaped cavity between the pole-pieces. At the extreme bass, the effect of acoustic damping is to reduce the response; but a baffle, out to the sides of the pole-pieces, extends the path of the lower but is transparent to higher frequencies—so the response does not drop.

* * *

Left: BBC-designed ribbons—old and new. The upper is the AXBT (meaning: type "A" with modifications—X-foil, Balanced wiring, and Ticonal magnet). This was a splendid microphone, marred only by its sheer bulk, to which its limited top response must be attributed. With the prospect of high quality broadcasting it became necessary to design something smaller; a linear scaling down to two thirds of the size would result in a half-octave extension of the h.f. range—from about 9,000 cycles to, say, 14,000 cycles. Two new designs were tried out. One had a magnet at each end of the ribbon, was half the weight of the AXBT and had the same sensitivity. This was the PGD (Pressure Gradient Double)—it looked rather like a longish sardine can. Half the size again and rather lower in sensitivity (and therefore giving rise to a slightly greater signal-to-noise ratio) was the single-magnet PGS (see bottom left). Of these two the smaller PGS proved the most acceptable—its small size more than offsets the slightly lower sensitivity. As the PGS came into service, the AXBT began to be relegated to the job of standby microphone (as here).

The PGS proved so successful that it was immediately adapted for commercial production. Minor changes in design included a new casing, dished on either side of the ribbon—this did the job which in the PGS was accomplished by specially mounted baffles inside the microphone.



BBC Photographs

PROBLEMS OF BALANCE

By Alec Nisbett

Part One:

Ribbon Microphones

itself). And since like other omni-directional microphones it works by measuring the pressure of a sound wave (nominally) at a single place on the wave, it doesn't much matter how close you get to it—the only important effect on signal is to increase it equally at all frequencies.

But with the figure-of-eight microphone—the ribbon in its more usual mode of operation—pressure gradient working means that the sound wave is being sampled simultaneously at two separate points, and the force of the diaphragm is due to the difference in phase between those two points in the wave.

BASS TIP-UP

At low frequencies the phase difference between successive points an inch or so apart will be small, so the pressure difference due to this will also be small. But so that if by any chance there is a significant loss in power in the wave as it travels that inch or so there will be a much bigger pressure difference due to this than to the phase difference. At frequencies in the middle of the audio range the phase difference itself will be much greater and this effect will therefore no longer be significant.

Now, the principal way in which there can be a loss of power in a wave is due to the effects of spherical radiation close to the source. As you stand in the middle of a room and talk, the sound waves travelling away from your mouth will diminish in intensity by about 6 dB for each doubling of the distance. At distances of, say two feet or more, this means that there will not be

much loss of power as the wave travels an inch or so—and it is generally arranged that the frequency response is flat when working at this distance.

But if the microphone is only a few inches from the source, there will be a significant drop in power in the wave as it travels the distance round the pole-piece of the magnet. This will have an effect of lifting the bass more than the top—in fact, we will get bass tip-up, as it is called.

There are a number of points to note in connection with this effect, and the effects of spherical waves in general.

1. Bass tip-up is more troublesome for some voices than others—it depends very much on the fundamental frequency of the voice, and as men's voices are in general about an octave lower than women's it is naturally to be expected that tip-up should be more noticeable and will cause more trouble when male voices are being balanced. It is often possible for a woman to speak at less than the recommended distance without distortion being apparent.

2. If the microphone you are using has a tendency to be "toppy," and if this effect is a fairly smooth one and not due to an isolated peak or peaks, then working at a distance, of say, 18-20 inches will tend to compensate for this. Minimum working distances tend to be lower for microphones showing this effect.

3. Alternatively, if you have a pre-amplifier with a tone control, some degree of bass correction can be introduced if you wish to work closer than normal. Experiment will indicate suitable settings and distances. (In small BBC studios bass-correction circuits are often used in this way.)

4. If you stand at about twenty inches from the microphone and move your head backwards and forwards there will be a change in intensity of 3 dB for about seven inches of movement—more than enough to be obvious. If you control the level to compensate for this there will still be a change in the ratio of direct to indirect sound, and therefore a change of quality—and there may also be a noticeable variation in the amount of bass. So don't move about if you can avoid it!

5. The changes in volume and frequency characteristics that go with any change in distance will be even more noticeable when a corrected microphone is used for close working. Do not move at all! (N.B. the lip-ribbon has special design features to keep its distance from the mouth constant, as well as to protect the ribbon from explosive consonants and from "wind" effects from the breath.)

6. It is sometimes possible to work very close to a ribbon for whispers, but speak at an angle to the microphone to minimise the effect of "popping"—blowing the ribbon momentarily out of the gap with sharp p's and b's. Try to round off these consonants a little. Good results are difficult



ST & C 4038, a ribbon microphone based on the BBC-designed PGS

to achieve, so allow plenty of time for experiment—or use an omni-directional microphone.

7. Bass tip-up is a characteristic of all figure-of-eight or cardioid microphones—i.e. it goes with directional properties and not the type of transducer used.

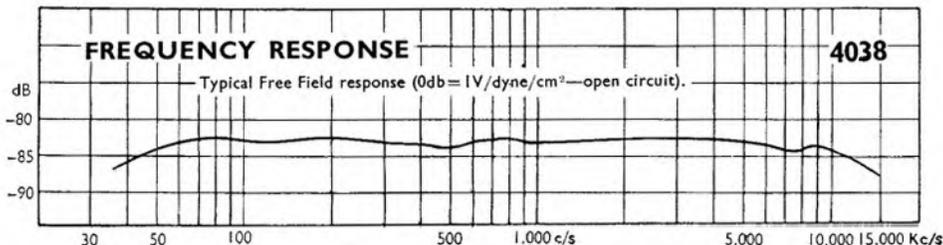
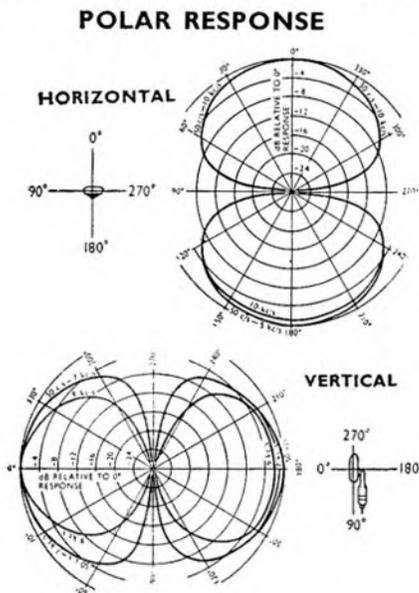
BALANCE TESTS

The ribbon being essentially a "studio" microphone there should generally be opportunities for balance tests, and these are invaluable for checking the most suitable working distances—which for any particular voice in a particular studio may be anything from 18 inches to three feet for the best effect.

The best way of doing this is to make a series of recordings one after the other on the tape, with your "voice" identifying the position in each case. If he is sitting at a table let him stay put in a comfortable position and move the microphone instead, numbering and marking the various positions with a chalk or pieces of paper; it will be easier to find the best place for it again at the end of the test. Replaying the test tape over the best loudspeaker that you have (and preferably not the recorder's internal speaker) it will be easy to judge which positions give noticeable bass tip-up and which produce an excess of studio acoustic and atmosphere.

And don't assume that the best position for one voice will necessarily be the best for all. Carry out a number of tests with different types of voice.

Left, and below, the manufacturer's claims for the ST & C 4038



With a recorder in the USSR

(Continued from page 11)

fixed. One travelled by car or plane to keep these appointments, or if the trip was too long or dangerous in mid-winter the folk singer was brought in from his farm or village to the nearest city. Sometimes on a farm or at a recording session at the home of a singer or instrumentalist a party would develop as more and more friends came to watch the stranger from so far away, and a festive spirit prevailed.

In general, however, a singer would appear by appointment at a palace of culture or other pre-determined place, bow low with his hand over his heart, sing or play the songs he liked best, bow again and depart. If questioned (I usually used an Uzbek interpreter who could speak German, finding the Uzbek-Russian, Russian-English too laborious), he would answer courteously and helpfully, but the spark of pleasure which comes from communicating one's favourite songs was often missing at the beginning.

In an attempt to dissipate this formality, I decided to sing to the Uzbek singers. Carefully choosing those American folk songs whose scales were closest to Turkestan modes, I began. The response was immediate. Broad smiles, head noddings, a feeling of rapport. When I asked to be taught one of their songs, and when they understood that I preferred their music to western classical music, the barriers ceased to exist. I sang to all subsequent singers *before* recording them, and certainly the results were greatly improved.

Old-fashioned traditions of hospitality still prevail in Turkestan. To break bread, I discovered, is not a figure of speech; it means that a flat, crusty, delicious new loaf is broken with a guest, and green tea is poured before any talk commences. Home grown raisins, nuts, pomegranates, melons and pistachios are usually offered, and a full scale meal often follows.

Among the Kazakhs the welcome tends to be somewhat overpowering—koumiss (fermented mare's milk) and water-tumblers of vodka are the drink instead of green tea. There is no native bread, and the greatest delicacies are the lumps of white fat from a sheep and its eyes, as well as a type of hard horse-meat sausage. And the guest *must* eat whatever is set before him—often, indeed, two or three portions to indicate appreciation!

Tashkent — Samarkand — Bokhara — Stalinabad — Alma-Ata: gradually the tapes accumulated, as did my knowledge of Central Asian music and musical instruments. Time was far too short; I needed months there, to piece together musical connections with other parts of the Moslem world, to search for instruments no longer in use, and to record. I knew that I had barely begun to scratch the surface, and made plans to return (after a trip to Africa), as soon as money and time off from the museum would allow. I hope it will be in 1961.

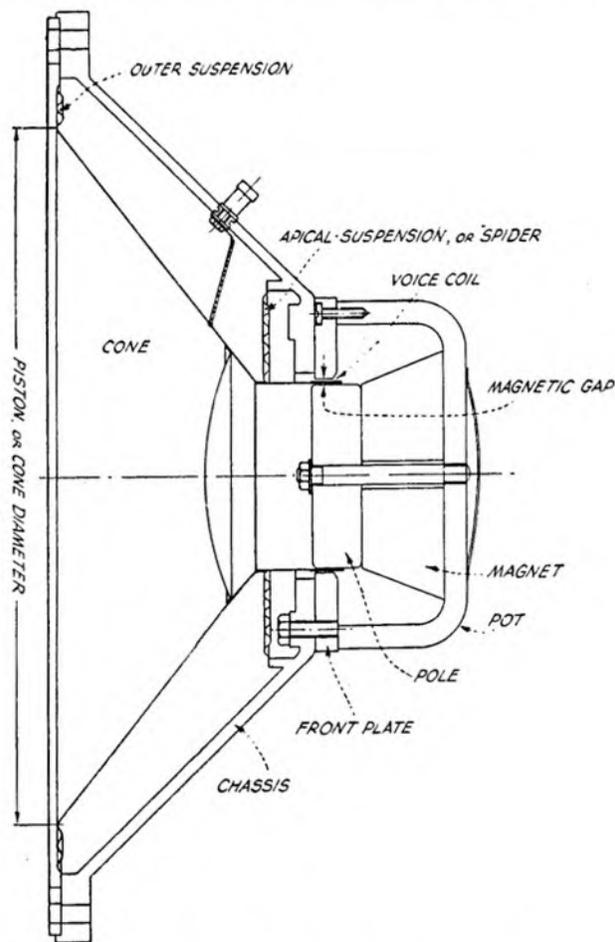


Fig. 1. The construction of a typical loudspeaker

It is appropriate at this stage to consider the basic requirements of a loudspeaker, and in the light of these, to define the terms of reference and the future scope of these articles.

Broadly speaking, it is the object of a designer of high quality loudspeakers to provide a unit, which when complete with its load, will give an exact replica in terms of sound pressure, of the electrical potential appearing across its input terminals. This is not the same as stating that the loudspeaker should always sound pleasant, or the music impressive, since in their way, these can be descriptions of distortion.

Ideally, a loudspeaker, or a pick-up for that matter, should have no character of its own, yet it is astounding how great are the differences between systems bearing the label "High Fidelity."

The aims of a designer can be subdivided and it can be said that the perfect loudspeaker would have the following properties:—

The unit would be 100 per cent efficient, i.e. all the electrical power would be converted into sound.

The acoustic output would be independent of the frequency of the applied voltage.

The output would be entirely free from all forms of distortion.

Transient voltages would be reproduced as accurately as the steady state signals.

The distribution of the sound (polar response) would suit exactly the conditions under which the loudspeaker was being used.

Bearing in mind the above requirements, the loudspeaker and its housing would be as small as possible.

It must be realised that the design of a high quality loudspeaker is usually undertaken with a reasonable disregard for the price involved, but since the great majority of loudspeakers are intended for the "commercial" market, a brief discussion of their requirements will be of value.

PETER R. MILTON CONTINUES HIS SERIES ON THE NATURE OF SOUND, AND CONSIDERS:

The basic requirements of a loudspeaker

The perfect loudspeaker, assuming it to exist, must also be assumed to have a perfect input. Unfortunately this is not always available and so the commercial unit must give an output which compensates for, or masks in some way, the imperfections existing at its input. Also, the performance is often governed by the price which the user can afford.

reduced to its simplest terms, consists of a conical diaphragm supported at its apex and edge, driven by a coil moving in a magnetic field.

Mechanically this can be represented quite simply. The suspension in restoring the coil to its correct position in the magnetic gap, exhibits the properties of a spring. Power radiated by the loudspeaker can be re-

will decrease with increasing frequency. There is a point where the tendency to increase is counterbalanced by the tendency to decrease and the velocity of the weight reaches its maximum value, being governed only by the amount of friction present. The system is then at *resonance*.

The opposition to the motion offered by either the mass or the stiff-

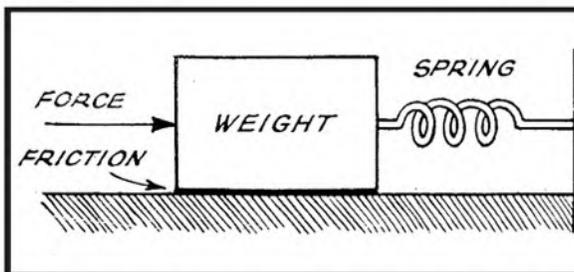


Fig. 2 (left) The mechanical equivalent of a loudspeaker. Right: The electro-acoustic analogy can be derived from this equation

$$\text{Force} = M \frac{d^2s}{dt^2} + R \frac{ds}{dt} + Ks$$

$$\text{E.M.F.} = L \frac{d^2q}{dt^2} + R \frac{dq}{dt} + \frac{q}{C}$$

In the mechanical equation, M = mass, R = friction, K = stiffness, s = displacement.

In the electrical equation, L = inductance, R = resistance, C = capacitance, q = charge.

So it is that the average loudspeaker has a carefully adjusted response. For instance, a rising treble may be required, to compensate for the fall in high frequency response in an amplitude modulated receiver. A treble fall might be needed in another case to disguise needle scratch and distortion due to a cheap pick-up. Again, steep treble cut-off, or a dip in the region of 8,000-10,000 cycles might have to be arranged to eliminate the annoying whistle which is often obtained from a television receiver.

The efficiency of these loudspeakers has to be as high as possible in order that in using the minimum of magnetic material, the price can be in shillings rather than in pounds. Any discussion of loudspeakers has therefore to be divided into three main sections:—

1. The construction and performance of the unit itself.
2. Its relationship with the cabinet.
3. The effect of the room and the audience.

Referring to Fig. 1, it can be seen that a moving coil loudspeaker, when

garded as power used in the mechanical system and this can be represented by the effects of friction. The mechanical equivalent of a loudspeaker is therefore a sliding weight attached to an anchored spring. (Fig. 2.)

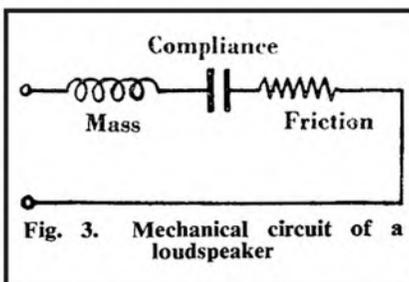


Fig. 3. Mechanical circuit of a loudspeaker

Consider now an alternating force of constant magnitude applied to the weight. At very low frequencies, the velocity of the weight will be limited by the stiffness of the spring and the increase in velocity will tend to be proportional to the increase in frequency.

At higher frequencies, the velocity will be controlled by the mass and it

ness is known as the *reactance* and the combined effect including if necessary the resistive term (friction) is the *impedance*. The relationship between these quantities is:—

$$\text{Velocity} = \frac{\text{Force}}{\text{Mechanical impedance}}$$

It is very often more convenient to regard the loudspeaker as a purely electrical circuit and in order to obtain an electro-acoustic analogy, we adopt the convention that the velocity in a mechanical system is analogous to current in an electrical circuit. The well known formula

$$\text{Circuit} = \frac{\text{Voltage}}{\text{Impedance}}$$

gives the next two analogies and working from the fact that the reactance of both mass and inductance increases with frequency, we obtain Fig. 3.

In the next issue we will examine the analogy in more detail and go on to discuss the radiation of power from a rigid diaphragm.

GOOD NEWS—

for Americans!

America has recently established a stereophonic broadcasting system. In this article H. Burrell-Hadden describes the new method, and compares it with the possible systems available in Europe.

$$E(t) = [A(t) + B(t)] + [A(t) - B(t)] \cos \omega_s t$$

THIS mathematical equation represents the wave-form which will shortly be transmitted by many VHF radio stations in the United States. In April this year the Federal Communications Commission (FCC), of the United States announced that as from June 1, 1961, stereophonic broadcasting was to be permitted. Although in their announcement they specified the wave-form which was to be transmitted, they did not say how this was to be achieved. In fact the wave-form can be produced by the American GEC and Zenith systems.

The FCC announcement was preceded by a great deal of laboratory research and practical tests carried out over the past few years, the object of which was to find the best system for use in stereophonic broadcasting in the particular conditions in existence in the USA. Furthermore, such a system would have to satisfy a requirement which would also be necessary in any system chosen for European use, namely, that a monophonic listener should be able to receive a satisfactory programme from the stereophonic transmission. In other words the system must be compatible.

This has been achieved by the present specification.

In order to understand the system chosen, it may be of interest to go through the major points of the FCC announcement.

The first of these states that "the modulating signal for the main channel shall consist of the sum of the left and right signals." This ensures that the compatibility criterion is fulfilled, and any receiver without the necessary stereophonic adaptor will reproduce this sum signal, which can, in most cases, with

careful studio technique, produce a satisfactory monophonic sound.

Secondly, the FCC state that "a pilot sub-carrier at 19,000 cycles plus or minus 2 cycles, shall be transmitted, that shall frequency modulate the main carrier, between the limits of 8 and 10 per cent." This is followed by the statement that "the stereophonic sub-carrier shall be the second harmonic of the pilot sub-carrier."

The system, therefore, is to be a multiplex system, and the next statement of the FCC is that "amplitude modulation of the stereophonic sub-carrier shall be used."

It might be thought from above that two sub-carriers might be present in the combined signal. This, however, is not true, the FCC stating that "the stereophonic sub-carrier shall be suppressed to a level less than one per cent modulation of the main carrier." In other words, the stereophonic sub-carrier is removed during the amplitude modulation process, and only the side bands produced by that process are in fact used to frequency modulate the main carrier.

The 19,000 cps pilot signal is the only sub-carrier actually radiated as such, and is used by the receiver in the stereophonic demodulation process. Next, "the modulating signal for the stereophonic sub-carrier shall be equal to the difference of the left and right signals." This, then, gives us our second signal which in a stereophonic receiver can be processed with the sum signal from the main channel to recreate the left and right signals to be fed to the appropriate loudspeaker.

A number of other conditions are laid down by the FCC, mainly concerned with factors affecting the separation between the two channels, the frequency response of the overall system and provisions for including other sub-carriers for advertising purposes.

This, then, is the basis of what will undoubtedly become known as the "American" system for stereo broadcasting. It might be of interest to discuss some of the problems which have to be faced when deciding upon a system of stereo-

phonic broadcasting and to look briefly at some of the possible solutions.

The simplest method of all, and undoubtedly that which will produce the best results, is to use two complete transmission chains, all the way from the studio to the listener. This, of course, is not satisfactory from the economic point of view, since it is necessary to use two transmitters and two sets of land lines to connect the studio to the transmitters. However, against this must be placed the fact that both transmitters are working perfectly normally and can be fully modulated by their respective channels, whereas with other systems, some reduction of modulation depth is necessary and this means that the ratio of the wanted signal to the unwanted background noise at the receiving location will be reduced. The amount of this reduction will depend on the particular system used.

Another difficulty arising—with the twin channel system—is that whilst a stereophonic transmission is in progress, neither of the two channels will be carrying all the information originating in the studio. Because of this, a monophonic listener, listening to either of the channels, will not hear such a good balance of sound as he would have done listening to the usual monophonic transmission.

Since many listeners will not possess stereophonic equipment, and will still wish to listen monophonically to programmes transmitted stereophonically, it might well be necessary to transmit the monophonic programme from yet another radio transmitter. Thus, in order to transmit a given programme stereophonically and monophonically at the same time, three complete channels might well be necessary, entailing great expense.

It is clearly desirable that an attempt should be made to find a system whereby the stereophonic listener requiring two channels and the monophonic listener requiring the same programme on one channel can both be satisfied using only one transmitter. Various systems have been proposed to do this, but all of them have limitations in one form or another.

The systems all have one feature in common. This is that the signal transmitted in the normal manner by the single transmitter consists of the sum of

. . . while the European Broadcasting Union continues to seek a suitable system for broadcasting under European conditions

the two stereo channels—the left and right signals added together. Provided suitable care has been taken at the studio end in the setting up and mixing of the microphones, this sum signal will give an acceptable monophonic sound from a normal receiver for this type of broadcasting.

The systems differ in the manner in which they transmit the extra information necessary in order to separate the left and right signals again at the receiving end.

* * *

In the EMI "Percival" system, the left and right signals are combined as above and in addition they are processed by special circuitry to produce a "directional signal."

This signal has a very narrow bandwidth, and can be transmitted along with the "sum signal" from the one transmitter, suitable filters being used to ensure that the directional signal is not heard as sound during the final reproduction.

At the receiving end the sum signal is fed to both loudspeakers and the directional signal, having been extracted by suitable circuitry, controls the relative gain of the two loudspeakers in such a manner that any given sound will appear to come from the appropriate place in the reproduced "picture." The system makes the supposition that a "persistence of hearing" exists which will enable the brain to build up a complete sound picture in space.

This system has the advantage that not only can it be transmitted by one transmitter but also by one land line from studio to transmitter, and therefore is very economical. Its main disadvantage is that some degradation of the stereophonic picture is produced and the amount of this degradation will vary with varying programme material. The signal strength for the monophonic listener is very slightly reduced, but the amount would normally be insignificant.

* * *

The Mullard system operates by means of an extremely fast switching device, which switches first the left-hand channel, then the right-hand channel, alternately to the transmitter at some 32,000 times per second.

At the receiving end, a switch in the receiver synchronised to that in the transmitter, extracts the two channel signals again and routes them to their respective loudspeakers. The monophonic listener, not having the switching device, will hear both signals out of his one loudspeaker, and so will receive a satisfactory programme. There will, however, be a slight reduction in the signal-to-noise ratio for the monophonic listener, which may or may not be significant, depending on the location of the receiver and the type of receiver in use. The stereophonic listener, on the other hand, will receive a less strong signal than he would were he

listening to a normal monophonic transmission from the same station. The increase in background noise in some circumstances could be serious, although it might be possible to improve matters by using a better receiver.

* * *

The FM Sub-Carrier system operates somewhat differently. The sum of the two channels is transmitted in the normal manner, and in addition to these, a sub-carrier at supersonic frequency, say 50,000 cps, is also transmitted.

This sub-carrier is itself frequency modulated, but this time with the difference between the left and right signals. Suitable circuits in the receiver extract the sum and difference signals and process them to separate the left and right signals to feed to the loudspeakers.

Again, the monophonic listener will receive the sum signal, but, in this case, at a somewhat reduced signal strength, since the modulation depth of the transmitter has to be reduced in order to accommodate the sub-carrier with its modulation.

Furthermore, the stereophonic listener will again suffer considerable loss of signal, which may be worse than that encountered with the Mullard system. Again the effect of this loss may not be serious for listeners close to the transmitter and other listeners may be able to improve matters with a better receiver.

* * *

The AM Sub-Carrier system is similar to the FM system in that the main channel is frequently modulated with the sum signal, but the sub-carrier carrying the difference signal is amplitude modulated. It is a variation of this system which has been chosen for use in the United States. In this case, as stated at the beginning of this article, the sub-carrier is at 38,000 cps and only its modulation sidebands are in fact retained, the sub-carrier itself being re-

moved during the modulating process. The sidebands are then frequency modulated on the main carrier together with the sum signal.

At the receiving end it is necessary to put back the missing sub-carrier, and in order to do this, a pilot signal is radiated at 19,000 cps, half the sub-carrier frequency, to synchronise the local receiver.

Again the monophonic listener will hear the sum signal, and it is claimed that he will only lose one decibel in signal strength, a negligible amount. This occurs because the 19,000 cps pilot is radiated at very low level, and so the programme information can almost fully modulate the transmitter. Furthermore, it can easily be shown that when the sum signal is at a maximum, the difference signal is at a minimum, and vice versa, so that the difference signal can modulate the transmitter to the same extent as the sum signal, the two signals "interleaving." Some considerable degradation of the signal-to-noise ratio to the listener still exists with this system.

In addition to the problems of compatibility and signal-to-noise ratio outlined above, other problems exist with all these systems, which may mean that a system suitable for the type of broadcasting found in one country may not be suitable in another. The European Broadcasting Union, of which the BBC is a member, is actively investigating all the proposed systems for stereophonic broadcasting, including of course the FCC approved system, to find out whether any of them is suitable for broadcasting under European conditions, and it is hoped that they will soon come to a decision which will enable listeners in this country to enjoy stereophonic broadcasting, along with their cousins on the opposite side of the Atlantic.

KIRKBRIDE COMMENTS



Equipment Under Test

IT was a big day in the development of tape recording when Grundig entered the field with a battery portable recorder, but the excitement was attenuated when it was discovered that the "Cub," as the original machine was called, did not operate at a standard speed throughout.

This shortcoming has now been rectified, and a number of other important improvements have been made, in the new Model TK1 produced by Grundig. This, it may be said at once, is a machine that meets all the reasonable demands of the average amateur enthusiast. It should play a big part in popularising out-of-doors recording.

It is most elegantly styled. In its cream plastic case, with a morocco-grain surface and rounded corners, it looks at first glance almost like a ladies' handbag. It is not as big as some of those are—the overall dimensions are $11\frac{1}{2}$ x 7 x $4\frac{1}{2}$ inches.

THE GRUNDIG TK1

When the lid is removed, the dark-grey plastic deck has a business-like look about it: a speaker grille on the left, with a recess for the microphone beside it; the two three-inch spools neatly recessed into the deck plate, with an exclamation-mark type magic eye level indicator between them; and two principal control switches.

The one on the left is the function switch, providing for off-on, playback, record (in conjunction with a small

white safety button) and fast rewind. There is no fast forward, but this is not a serious deficiency on a portable machine of this kind.

The second control, on the right, provides for tone control and for volume on playback and level on recording.

Between these, neatly cradled in the head-cover, there is a large switch marked "stop"; it would be more correctly described as a pause control,

Who wants a concert hall?

THE modern tendency to reach conclusions with the aid of slogans, catch-phrases and "off-the-peg" definitions is all against the achievement of a proper understanding of the value of stereophonic sound.

It is so much easier to grab the tidy over-simplification and jump to a false conclusion from it than to learn about the true nature of stereo and think the whole thing through to its varied array of advantages.

Take the popular over-simplification "Stereo brings the concert hall into your sitting room"—an inspired attempt by publicity experts to educate and convert the casual passer-by with one swift blow to the pelvis.

Treated as an approximation, a poetic pointer towards the truth, the phrase has much to commend it. Unfortunately, however, these efforts by the publicity boys to do all and sell all in the split second of time wrenched from the rival attractions of refrigerators and television sets, often come to be regarded as the whole truth and nothing but the truth on the subject.

And what follows? Large numbers are ready to accept without question that having a concert hall in their parlour must be good for them, but a substantial

Stereo Notes

By D. W. GARDNER

group of thinking people react by saying "I don't happen to want a concert hall in my room, so you can keep your stereo."

It would be nearer to the truth to tell the world that stereo brings closer than ever before the ideal of having music in the home that can be heard there as well, and enjoyed as much, as if you were in the very place where the music was being performed. But this kind of definition, although it might prevent many misconceptions, would not do for the sales people who seek to make an immediate impact on the millions.

Concert halls are not the cosiest of places, and I have some sympathy with those who react against the idea of importing one into their supposedly comfortable sitting room—apparently as a permanent feature of listening; but I have no sympathy with their failure to put their sense and discrimination to better use by digging out the truth behind the catch-phrases.

The first thing to do with an objector of this kind who falls into your hands is to ask whether he listens only to chamber music. If the answer is yes then he can be told that stereo recordings of chamber music bring with them the

atmosphere of a small room and not of a large concert hall.

If, on the other hand, he tells you that he likes listening to symphonies and similar big works sometimes then he should be assured that the only alternative to the stereo effect of a concert hall in the room is the mono effect of having too much sound in too small a space. There is nothing cosy, you might suggest, about having eighty people trying to play a symphony behind the armchair. It is much better, and fairer to the performers, to invite them to bring their natural habitat into the room as well as their violins, cellos, trombones, double basses and tympani.

As for the advertising boys, it would be a relief if more of them discovered that the music that music-lovers love is not necessarily tremendous and overpoweringly glorious. Appreciation of music almost invariably progresses from admiration of the swelling symphony to delight in the subtler beauties of the smaller works. They could spare a thought for these more advanced types whose tastes are perfectly in line with the potentialities of recorded music.

Perhaps they are afraid that the advantages of stereo are less pronounced in the case of such smaller combinations. If so they should get themselves straightened out, for nothing could demonstrate the superiority of stereo over mono better than the string quartet—especially for those who like string quartets.

By
J. H. HUGHES



for it does not stop the motor. It can, however, be moved forward—and has a lip to make this easier—and the tape can then be held stationary without keeping a finger on the control.

For convenient operation the TK1 needs to be set down on the four rubber feet on the underside and the lid removed. It must be recognised that this is a limitation on a battery portable recorder; there are many occasions when it is important to be able to switch on a machine quickly, without having to remove a cover, and there are great advantages, also, in being able to operate while the machine hangs over the shoulder.

Ideally you need to set the machine on a small table for operation, but you will have no difficulty in using it perched on your knees, if circumstances demand. A problem will only arise if you want to use it while standing in a crowd, or while walking along. Then you will worry about a safe spot to put the lid when you have removed it and you will need to operate it while holding it vertically by its sling handle.

It should be emphasised, however, that even if there is some slight inconvenience in this, there is no effect on performance. The TK1 operates equally well whether horizontal or vertical. The spool spindles have small plastic collars which can be turned to hold the spools in place. I found, in fact, that the machine operated satisfactorily even if held upside down.

Another thing that should be said is that it is extremely light—about eight pounds, with batteries—so that one can handle it for a long time without getting weary.

Let me now get out of the way a statement of one or two other limita-

tions of the machine before we try to give a final summing-up.

The head cover is an integral part of the deck and is not removable to give access of the heads from above. This is of no great consequence, however, for one would not normally try to edit tape, for example, on this type of machine.

A very neat little dynamic microphone is provided, with seven feet of co-axial cable, but the recess in the deck is not quite large enough to accommodate the microphone and its cable. This is a minor inconvenience, but could easily be rectified.

Having made these points, however, it is necessary to repeat that this recorder should eminently suit the average enthusiast.

It is well made. The outer case is entirely of plastic, but beneath the deck plate there is a motor board of metal that gives a very solid anchorage to all the components. There is very easy access to the underside; a single bolt holds the back cover in place. Once this is removed, the six 1.5 leak-proof batteries are easily inserted, or renewed.

Three more screws will then release the protection plate covering the printed circuit of the recorder. Seven transistors are used in the design.

The four-inch speaker delivers an output of 250 mW and battery life is quoted at about 20 hours, on the assumption that the machine is used for not more than two hours daily.

The speed is constant at 3½ ips, so that double-play tape on the three-inch reels will give 2 x 15 minutes' playing time.

Frequency response is quoted at 80 to 8,000 cps plus or minus 3 dB and signal-to-noise ratio at 40 dB.

The TK1 can be used for straight-through amplification.

In use, I found the level of motor noise was surprisingly low and quality of recording and reproduction surprisingly good. One does not expect a battery portable in the popular price range to stand up to rigorous laboratory tests in every respect, but it can be said that for all practical purposes the TK1 gives a thoroughly satisfactory account of itself.

For recording speech and simple actuality and sound effects it is first-class.

I tried it on piano music with quite reasonable results. One cannot ask for better than that.

This is a vastly improved machine when compared with the original Grundig "Cub." It is as good as anything on the market in its price range.

The TK1 retails at £30 9s., complete with tape, batteries and two connecting leads—one for high and one for a low level input.

MANUFACTURER'S SPECIFICATION

Speed: 3½ ips.
Frequency response: 80-8,000 cps ±3dB.
Signal-to-noise ratio: 40dB.
Output power: 250 mV.
Spool size: 3 inches.
Battery complement: Four 1.5 Volt Monocells, leakproof Ray-O-Vac Industrial type 3LP; Two 1.5 Volt Monocells, Ray-O-Vac type 1LP.
Battery life: Approx. 20 hours.
Transistors: One OC 74, two TF 65, two OC 72, one OC 602 special.
Loudspeaker: Five Ohms, four-inch dynamic loudspeaker.
Size: 11¼ x 7 x 4¼ inches.
Weight: 8 lb.
Makers: Grundig (Great Britain) Limited, 39-41, New Oxford Street, London, W.C.1.

VERITONE ENTER PROFESSIONAL DECK MARKET



Left: The Nagra 111B battery or mains-operated portable recorder

The "Rolls Royce" of battery portable recorders

ALTHOUGH not strictly a new product, the Swiss manufactured Nagra 111B finds its place in this column on the strength of the first availability of a photograph.

The Nagra is described as a portable self-contained professional tape recorder with motor and amplifiers run off self-contained batteries. Special accessories enable it to be used off the mains or car batteries also.

It embodies a wealth of experience gained in the construction of portable recorders, and will withstand very severe operating conditions. It is unaffected by dropping or other impacts, tropical and polar climates, altitude, sea air, and general open-air use.

Although perhaps a little above the pockets of the average enthusiast—the price is £293—the Nagra affords a performance quality up to the standards required for broadcasting, recording and cinema work, and many readers may be interested in a description purely from the aesthetic point of view.

Three speeds, 15, $7\frac{1}{2}$ and $3\frac{1}{2}$ ips are provided. The respective frequency responses are claimed as 30-15,000 cps \pm 1dB with signal-to-noise ratio: 52 dB and wow and flutter .15 per cent; 30-12,000 cps \pm 1.5 dB, signal-to-noise: 51dB and wow and flutter: .2 per cent; and at $3\frac{1}{2}$ ips 50-7,000 \pm 3dB, signal-to-noise: 50dB, and wow and flutter .35 per cent.

Twelve 1.5 volt torch batteries provide 20 hours service, or, using alkaline batteries, 70 hours is available. The electric motor has an electronic speed control.

Three heads, erase (65dB, 1,000 cps), record, and playback are incorporated, with separate record and playback amplifiers. Facilities for monitoring through headphones are provided, the phones being switched to the playback amplifier. Pre-recording testing is possible using the headphones switched to the input amplifier without the motor running. Mixing facilities are also available, the microphone signal mixing with

the playback signal and the headphones switched to line output.

The Nagra will accommodate seven-inch spools when used with the lid open, providing a maximum of just over two hours playing time per track. With the lid closed, reel size is restricted to five inches providing 64 minutes per track. These figures are provided when using double-play tape.

The dimensions are $12\frac{1}{2}$ x $8\frac{1}{2}$ x $4\frac{1}{2}$ inches, and the weight, including batteries, carrying belt and tape is approx. 16 lbs.

Consumption is rated as follows: Testing: 70mA, playback 120mA, and record 180mA.

A fascinating feature of the Nagra is automatic recording. When set to this function, the recorder itself controls microphone sensitivity and attenuates low frequencies to improve the intelligibility of speech.

Livingston Laboratories Limited, 31, Camden Road, London, N.W.1.

VERITONE LIMITED have announced their entry into the semi-professional tape recording market with the introduction of a new tape deck.

The new tape transport system, designated the 825, has been developed in conjunction with the head manufacturers Scopetronics Ltd. It is said to incorporate many of the features which up to now were only available in professional equipment.

Included in this list of features are three heavy-duty squirrel type motors, with a high hysteresis running torque, and wrap around self-aligning, self-compensating brakes. Simple interlocking controls are incorporated, and the deck will accommodate $8\frac{1}{2}$ in. spools. Rewind for 1,800 ft. of tape is 75 seconds.

Three stereo half-track Scopetronics heads are standard fittings, and facilities are included for fitting a fourth head if required.

Ease of editing, a must for professional use, is available by the use of fingers which keep the tape in contact with the heads. Pressure pads are not used. A further aid to editing is provided with the omission of a front cover for the heads. An easy loading, self-aligning tape run is incorporated, and the capstan runs on the glossy side of the tape.

Two speeds are incorporated, $7\frac{1}{2}$ and $3\frac{1}{2}$ ips, and change of speed is accomplished by electrical change of capstan motor poles. Wow and flutter figures are given as .15 per cent at $7\frac{1}{2}$ ips, and .2 per cent at $3\frac{1}{2}$ ips.

The 825 measures $16\frac{1}{2}$ x 14 x 6 in., and is available with or without pre-amplifiers, or complete within the Veritone 16 tape recorder. It will be available in early September.

Veritone Limited, 16, Station Close, Potters Bar, Middlesex.



Two of the recently announced Japanese Sony recorders by Tellux. Left, the 61-guinea Model 262, providing two watts output through a 6 x 4 inch loudspeaker, and with a quoted frequency response of 70-10,000 cps at $7\frac{1}{2}$ ips. The Model 101, right, costs 49 guineas, has a 50-10,000 cps frequency response at the same speed, and provides a total output of 2 watts. Both models have an additional speed of $3\frac{1}{2}$ ips and accommodate 7-inch reels.

Tellux Limited, 44, Brunel Road, London, W.3.

New Products

GRUNDIG CHANGE STYLE FOR NEW MODEL

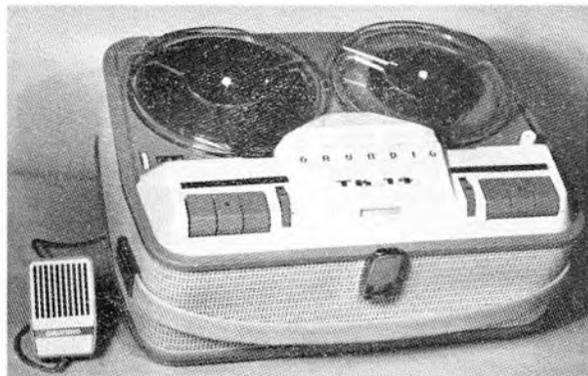
GRUNDIG have introduced some new and revolutionary ideas into the design of their latest tape recorder, the TK14. For the first time they have entered the popular price range although the performance of the new model is claimed to surpass that of many of the more expensive machines on the market.

The TK14 is a single speed machine, operating at $3\frac{1}{2}$ ips. Supplied with 1,200 feet of long play tape on a $5\frac{1}{2}$ -inch spool it provides a total of two hours playing time. The quoted frequency response is 40-12,000 cps, and the signal-to-noise ratio is given as 50dB. Wow and flutter is rated at 0.2 per cent, and a ceramic magnet is used in the construction of the $5\frac{1}{2}$ x $4\frac{3}{8}$ inch loudspeaker, providing an output of $2\frac{1}{2}$ watts.

Contact between the tape and recording or playback head is maintained by a new Grundig development—a "Pressure Tape" fitted to the pressure roller arm—ensuring intimate contact between the tape and the head over a large surface of the head face.

Input facilities for microphone and radio/pick-up are provided as well as a high impedance and extension loudspeaker output. A magic eye recording level indicator, a digital precision indica-

Right:
The Grundig TK14



tor. and valves of the type ECC83, and ECL86 plus two metal rectifiers are also incorporated.

The machine is extremely easy to control, with fast forward, rewind, stop, start and pause controls by simple push button operation.

The TK14 boasts an impressive technical specification, and offers a number of facilities, although the internal lay-out is surprisingly uncomplicated. Printed circuitry is used, designed so that each component is easily accessible reducing service problems to a minimum.

In appearance the TK14 has broken away from the well known Grundig design, and is enclosed in a two-tone grey case. The machine is easily portable at just under 20 lb., and it measures $14\frac{1}{4}$ x $11\frac{1}{2}$ x $6\frac{3}{8}$ inches.

The price complete is 35 guineas which includes a Grundig long-play tape, spare spool, connecting lead, main lead, and their moving coil microphone, GDM18.

Grundig (Great Britain) Limited, 39-41, New Oxford Street, London, W.C.1.

New Japanese recorder

A NEW name to appear in the tape recorder field is Coltmo Limited, who have recently announced a new Japanese manufactured tape recorder, the Victoria.

The basic equipment of this portable transistorised machine comprises the recorder in a black leather case with two variable length carrying straps; microphone in matching leather holder; tape; crystal earphone; and batteries.

The Victoria uses five transistors and incorporates two speeds— $1\frac{1}{2}$ and $3\frac{1}{2}$ ips. The power source is six pen-torch batteries.

Output is rated at 200 mW through a $2\frac{1}{2}$ inch loudspeaker.

Using long-play tape, up to 64 minutes playing time is available at the slower speed.

Operation is by an edgewise volume control and rewind-stop-play-record lever. A magic eye recording level indicator and a trigger pause control are also featured, and a safety control prevents accidental erasure.

The machine is enclosed in a steel case finished in two-tone grey, and can be operated in any position including the inverse.



The Coltmo Victoria

Dimensions are $7\frac{1}{2}$ x $5\frac{1}{4}$ x $2\frac{1}{2}$ inches. The weight is $3\frac{1}{2}$ lb., including batteries, and the price for the basic equipment is £44 2s. Optional accessories include an AC converter—five guineas; a foot switch—two guineas; and a telephone attachment—two guineas.

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TAPE RECORDS

ESOTERIC PRODUCTIONS LIMITED announce that they have completed arrangements with Recotape, Protone, Livingston Audio Products and Vox Productions, for the release of their monaural and stereophonic tape records. The catalogues include classical, semi-classical and pops.

In an initial announcement, Esoteric state no effort will be made to compete with the major labels already established in the high classical field. Classical issues will, in the early instances, be of works not yet issued on tape on this side of the Atlantic.

Among artists to be included in their catalogue will be the Vienna State Opera Orchestra, the Fred Martin Orchestra, Josh White, and the New York Jazz Quartet.

The first issues of some seven tapes have already been cleared for copyright, and will be duplicated in this country on Ampex equipment from American submasters. They will be available in two-track form at $3\frac{1}{2}$ and $7\frac{1}{2}$ ips. Details of prices may be obtained from the manufacturers.

Esoteric Productions Limited, 22 Coastal Chambers, Buckingham Palace Road, London, S.W.1.

REFLECTOGRAPH CHANGES HANDS

PAMPHONIC Reproducers Ltd, a Pye Group company, announce the acquisition of all rights in the Reflectograph tape recorder from Multimusic Ltd.

As from June 30, Pamphonic are responsible for the servicing of all existing Reflectograph recorders and will continue the manufacture of this instrument. All outstanding orders on Multimusic Ltd. will be executed by Pamphonic.

G.B.C. price increase

G.B.C. announce that they have been compelled to increase the price of the mains converter unit for their Clarion Mark 1 tape recorder from 4 to 5 guineas.

G.B.C. Electronic Industries Ltd., 121-123, Edgware Road, Marble Arch, London, W.2.

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From: Tape Recording Fortnightly, 7 Tudor Street, London, E.C.4

News from the Clubs

IN an endeavour to bring up to date the complete list of clubs currently operating within the UK, we have recently circularised a letter asking for details of club meetings and addresses. At the time of writing we have received about fifty replies to this letter—not a bad figure considering only six days have lapsed since the cards went out. However, we would like to make a special plea to any of those clubs who have not replied to let us have some notification at the earliest opportunity.

When complete, this list will provide full details of every club in this country, and the list, or details of any club will be available from our offices on request. One of the first assignments for this list will be to appear in the 1961-62 Yearbook currently being prepared.

If any club has not heard from us concerning this letter we will gladly furnish a copy on the receipt of a post-card.

Such a list will prove invaluable to all concerned, and will prevent mistakes similar to one in our June 28 issue when Jeff Langley was mistakenly described as the secretary of the **Iford** club. Our apologies to Mr. Dave Bolton of 13, Gloucester Road, Manor Park, London, E.12, who currently holds that office.

Following their resounding success at organising an exhibition in October last year, the **WAKEFIELD** members are planning to repeat their project on a more lavish scale this year. Over 1,000 visitors were recorded last year, and the members have every hope of passing this total, having gained some idea of the publicity needed to promote such an exercise. They have managed to secure the patronage of Lord St. Oswald, a notable figure in the North of England, and a keen tape enthusiast. He will perform the opening ceremony for the exhibition which is to be held on October 7.

Holmfild House, a large mansion sited in a picturesque parkland less than a mile from the city has been chosen as the venue. It provides a large licensed public restaurant, and a private bar which will be reserved for exhibitors and friends.

Some of the biggest names in the tape field exhibited in 1960, and the club hopes to repeat this attraction this year, although they will not overlook the need for demonstrations of their members' capabilities and recent activities.

A slight re-shuffle of officials took place at the club's July 3 meeting—their A.G.M. Joan Mills retired from her post as secretary, and her place was filled by Mr. S. Gaunt. No address is as yet available, details of the club may be obtained by writing to Mr. Gaunt at the York Street Hotel, Wakefield, where the members meet on alternate Mondays.

When the **WEST MIDDLESEX** members held their A.G.M. on May 18 they discussed an aim to buy equipment for club use. During the evening, they had welcomed along Mr. Hans Spring, Chief Engineer of Grundig, who provided valuable information on the production of his company's equipment, especially concerning the design of the deck motors and heads. On show were the TK35 and the new battery portable, the TK1, which the members described as impressive. In fact, so impressed were they that they have since purchased one of these models and it is to be used to expand their Hospital Message Service.

Another recorder they have recently examined was the Cinecorder. Of particular interest to members was the facilities incorporated in this machine to ease the task of synchronising tape and cine. The Cinecorder, built around the B.S.R. deck, was presented by Messrs. K.G.M. Electronics, the manufacturers.

The club sent two representatives, chairman Ken Phipps and secretary "Sandy" Saunders, to the Annual Congress of the **Federation of British Tape Recording Clubs on June 10**. Describing his visit afterwards, Mr. Saunders said the meeting was very useful in cementing the ties which bind all the clubs together, and it is only to be regretted that not every club is affiliated. He also gave members the news that founder member Fred Gazely and Ken Phipps had been elected to the Committee of the Federation.

Their latest meeting, on June 22, featured the playback of the London and Glasgow tracks of a round robin triangle of which they form one corner. Their next meeting, scheduled for July 13, was to take the form of a "Bring-a-tape" night, and on July 27 Phil Pratt will give a talk on valves and their application to tape recording.

Yet another change of venue is in sight. The secretary has been in touch with the Southall Education Officer, and it is hoped shortly to make a permanent move into a school within that area. An additional hope is that they may be able to meet there weekly when established.

The **COVENTRY** members are also on the move. On July 5 they held their first meeting in the Holyhead Hotel where they have secured themselves a room capable of holding over 100 persons. The members will not be lost within such an area, for they can now boast a membership of sixty.

Their out-of-doors activities are also prospering. Chairman Roy Penfold reports a team of interviewers recently went into the city centre to quiz passers-by on topics such as "the coloured problem." A Stuzzi Magnette and a Boosey-Hawkes were operated respectively by Mr. Penfold and Roy Reynolds, and they hope to turn the material obtained into a documentary later. But first they are after the views of a few prominent civic officials and of the City's coloured residents.

Mr. Penfold was out again on July 1, when he attended the Annual Boat Rally of the Coventry Canal Society. I have it on good authority that he did not meet any of the bridges that defied description in our May 3 issue.

Accompanied by Les Skingley he did however manage to secure an interview with the 71-year-old caretaker of the Basin where the Society's boats are moored. This venerable old gent had spent a lifetime on the canals and was full of reminiscences. The two tape club members also made some recordings on the canal itself when they were taken for a short trip.

At a meeting held on June 22 the members welcomed back an old friend—Dan Woodcock. He had taken along his Philips recorder and a speaker mounted on a baffle board.

A veritable bevy of recorders appeared at this meeting among them being Howard Freer's home-built model, Keith Longmore's Stella, and John Innes Chaytor's Stuzzi Magnette. Keith Longmore had also taken along a home-constructed speaker unit housing an ex-WD speaker. Roy Penfold played parts of the interview tapes he had recorded, and Les Skingley played a tape of an interview he had recorded with the Coventry Carnival Queen. A third tape heard was another Les Skingley interview, this time with visitors to a Concentration Camp Exhibition.

During the general discussion that followed, the members agreed to contact the **Leicester** club members with a view to arranging a social evening. It is suggested that they should take them on at darts and skittles. How removed from recording can you get?

(Continued on page 29)

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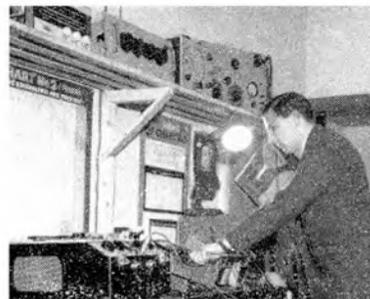
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"Tape Recording Fortnightly."

News from the Clubs

(Continued from page 27)

A new secretary has been elected. He is Mr. L. S. Day of 41, Moseley Avenue, Coventry.

Contact between nearby clubs has also featured at the **CRAWLEY** club meetings. One recent meeting was described as quite a jolly affair, the main part of the evening being given over to listening to a tape from the **Bridgwater** club and taping a reply. The recording was made on John Musselbrook's Ferrograph using Jim Burtshaw's home-made microphone.

Their following meeting on May 15 was devoted almost entirely to a demonstration of the new Gough Enclosure which was built for the club by Fred Whittingham. With the aid of some local publicity, the meeting was well attended and several visitors appeared to hear this speaker for themselves.

The demonstration was later described as very effective, and proved that a quality reproduction could be built at a cost of less than £5. Unfortunately, just as the meeting was warming to the subject the lights went out. Candles were produced and the meeting proceeded as a discussion group. As nobody seemed to possess a converter suitable for "candle-power to AC" the meeting eventually broke up.

Other recent activities have included a visit to Parmans Electronics Ltd., and a visit by Mr. Roger Aslin, the new secretary of the Federation, who gave a report on the June 10 Congress.

The Federation members are really travelling around of late. Mr. Stableford, who of course is well known for his unflagging interest in the clubs and all things tape, is now reported to have been seen at the **CAMBRIDGE** club. There he described the foundation and work of the Federation, and played some of the winning tapes in last year's International Contest. The Cambridge members, now affiliated to the Federation, sent two representatives to the Congress.

A ninety-minute programme of recordings was recently prepared by members for playback to a local Old Folks' Home. Included in the tape was a short ghost story written and narrated by Mr. Carl Mustow, a BBC writer. Following their successful programme, the members have been asked to provide further entertainment to other homes in the area. These are now in the course of production.

Membership of this club has now risen to 30, and a further dozen enthusiasts have promised to join. Together with four honorary members the club seems to have progressed well since their inauguration ceremony last December.

And now, thanks to a letter received from a neighbouring village College, the society has opened a "branch section" at Melbourne, about ten miles distant. If the idea is successful, they hope to expand along these lines.

Among plans made for their July meetings have been a film show presented by Wilmex Ltd., the Irish Tape distributors, and a tape competition.

Other recent meetings have included a demonstration by Cosmocord Ltd., when members were shown the Acos Hi-Light stereo pick-up by Messrs. Wells and Adams. Mr. Wells provided an

amusing account of how the crystals were "grown," processed and finally assembled into Acos microphones and pick-ups.

At the meeting a week later, June 14, Mr. D. M. Hartley, an Acoustical Consultant, demonstrated the Robuk RK3, during a lecture on many causes of poor recordings and their remedies. He also dwelt at length on the consumer versus dealer and manufacturer problem.

Mr. Frank Parrington, who provided many interesting meetings for club members when with Walter Instruments Ltd., continues to do so now that he has joined BASF Chemicals Ltd. With Mr. Wilson, Sales Manager, and Messrs. Nichols and Lowenberg, also of BASF, he prepared a tape/slide show, and presented that old favourite *The Magic Tape* at their May 24 meeting. Also presented were *Competition in C*, and a stereophonic demonstration.

Other events during the past month

have included the answer to a last-minute request to record a wedding. With less than 24 hours notice, Chris Lindsay and secretary Mike Renshaw made a very successful recording, which after the necessary editing and dubbing was presented to the happy couple.

A series of six practical lectures and demonstrations has been started by the technical sub-committee. Sessions will be devoted to different types of microphones and their uses, constructing speaker enclosures, portable recorders, dubbing and editing, stereo, and electronic music. The first of these was held on June 28, and the remainder are planned for fortnightly presentation.

The **British Recording Club** now has a permanent headquarters in London's West End quarter, with its own restaurant and bars. It is administered by a new company, known as Audio Industries Club Ltd., and membership costs £3 9s. a year.

CLUB MEETING DIARY

Is your club included in this list? If not, send details, on a postcard please, including date of the next meeting.

ACTON: Alternate Fridays at the King's Head, Acton High Street. (Aug. 4.)

BATH: Alternate Wednesdays at St. Mary's Church Hall, Grove Street. (July 26.)

BETHNAL GREEN: Every Friday at Shoreditch Tabernacle, Hackney Road.

BIRMINGHAM: Every Monday at the White Horse Cellars, Constitution Hill.

BIRMINGHAM (SOUTH): Alternate Mondays at Stinchley Institute, Hazlewell Street, Stinchley. (July 31.)

BLACKPOOL: Every Wednesday at "Habonim," Lonsdale Road, off Lytham Road.

BOURNEMOUTH: 2nd and 4th Tuesdays at the Civil Defence Centre, Holdenhurst Road.

BRIDGWATER: Alternate Tuesdays at Erio's Radio, West Street. (Aug. 8.)

BRIGHTON: Every Wednesday at The Brunswick Arms, 39, Ditchling Road.

BRISTOL: Alternate Wednesdays at Redcliffe Church Hall, Guinea Street, Redcliffe. (Aug. 2.)

BRIXTON: Every Tuesday at The White Horse, Brixton Hill, S.W.9.

CAMBRIDGE: Every Wednesday at the Mitre Hotel, Bridge Street.

CATFORD: Every Friday at St. Mary's C.E. School, Lewisham, S.E.13.

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate. (Aug. 14.)

COTSWOLD: Fortnightly, alternating Monday and Thursday at Bayshill Hall, Royal Well Lane, Cheltenham. (Aug. 10.)

COVENTRY: Alternate Wednesdays at Holyhead Hotel, Coventry. (Aug. 2.)

CRAWLEY: 1st and 3rd Mondays in month at Southgate Community Centre.

DARTFORD: 2nd and 4th Thursdays at 41, Windsor Drive, Dartford.

DOVER: Alternate Mondays at The Priory Hotel. (Aug. 7.)

DUNDEE: Alternate Mondays at The Salvation Army Hostel, 31, Ward Road. (July 31.)

EASTBOURNE: Alternate Saturdays at Hartington Hall, Bolton Road. (Aug. 5.)

EDINBURGH: 1st and 3rd Fridays at 22, Forth Street, Edinburgh 1.

ENFIELD: Alternate Wednesdays from 1st Wednesday in month, at Bush Hill Park School, Main Avenue, Enfield.

GRANTHAM: Weekly, 1st week in month Wednesday; 2nd, Monday; 3rd, Thursday; 4th, Friday at Grantham Technical College, Avenue Road.

GRIMSBY: Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road. (Aug. 1.)

HARROW: Alternate Thursdays at St. George's Hall, Pinner View, North Harrow. (July 27.)

HINCKLEY: Alternate Wednesdays at The Wharf Inn, Coventry Road. (Aug. 2.)

HUDDERSFIELD: Ring Huddersfield 5820 for details from S. Blackstone Esq.

ILFORD: Every Tuesday at the RAFA Rooms, Cranbrook Road.

IPSWICH: Alternate Thursdays at the Art Gallery, High Street. (Aug. 3.)

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms. (July 26.)

KETTERING: Alternate Wednesdays at the Rising Sun, Silver Street. (Aug. 2.)

LEEDS: Alternate Fridays at 21, Wade Lane, Leeds 1. (Aug. 4.)

LEICESTER: Alternate Fridays at the Newark Girls' School, Imperial Avenue. (July 28.)

LONDON: 2nd and 4th Thursdays at the Abbey Community Centre, Marsham Street, S.W.1. No meetings in August.

LUTON: 2nd and 4th Tuesdays at Flowers Recreation Club, Park Street West, Luton.

MAIDSTONE: Every Thursday at the Ex-Services Club, King Street.

MANCHESTER: Every Saturday, 6 p.m., at 20, Naylor Street, Hulme, Manchester 15.

MIDDLESBROUGH: Every Wednesday and Friday at 130, Newport Road.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Heathcote Street. (July 27.)

NORWICH: 4th Tuesday at the Golden Lion, St. John's Maddermarket.

PONTYPOOL: Every Monday at the Hospitality Inn, Crumlin Road.

PLYMOUTH: Alternate Wednesdays at Virginia House, Plymouth. (July 26.)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (July 27.)

SOUTHAMPTON: 2nd and 4th Thursdays at The Bay Tree Inn, New Road.

SOUTH DEVON: Alternate Wednesdays at the Y.M.C.A., Castle Circus, Torquay. Next meeting is on September 13.

SOUTH-WEST LONDON: Every Wednesday at Mayfield School, West Hill, S.W.15.

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (Aug. 8.)

STEVENAGE: 1st and 3rd Tuesdays at the Tenants' Meeting Room, Marymead.

STOCKPORT: 1st Friday at the Unity Hall, Greek Street.

STOKE NEWINGTON: Every Wednesday at 53, Londesborough Road, N.16.

WALTHAMSTOW: Alternate Fridays at 22, Orford Road, E.17. (Aug. 4.)

WARE: 2nd Tuesday at the Old Brewery Tap, High Street.

WARWICK: 1st and 3rd Wednesdays in Room 18 of the Royal Leamington Spa Town Hall.

WEST HERTS: Fortnightly alternating at the Cookery Nook, High Street, Watford (July 26) and Heath Park Hotel, Hemel Hempstead. (Aug. 9.)

WEST MIDDLESEX: 2nd Thursday at the Railway Hotel, Station Road, Hampton, and 4th Thursday at Southall Community Centre, Bridge Road, Southall.

WALSALL: Every Wednesday at Bluecoats School, Springhill Road.

WEST WALES: 1st and 3rd Fridays at The Meeting House, New Street, Aberystwyth.

WEYMOUTH: Alternate Wednesdays at The Waverley Hotel, Abbotsbury Road. (July 26.)

WINDSOR: Every Thursday at The Royal Adelaide Hotel.

WINCHESTER: Every Friday at 45a, St. Swithen's Street.

WOOLWICH: Alternate Mondays at the North Kent Tavern, Spray Street, Woolwich. (July 31.)

YORK: Every Thursday at 2, Micklegate.

Unless otherwise stated, meetings start between 7 and 8 p.m.

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TAPE EXCHANGES

TAPE recorder owners who would like to make contact with others of similar interests to exchange news and views by tape are invited to send their name, address, sex, age and special hobby.

It will be assumed that all tape contacts will be made using a speed of 3½ ips, on half-track tape. Maximum spool size only is given.

Barron, Charles (16). 260-30, 75 Avenue, Glen Oaks, Queens, New York, USA. Sports, jazz, electronics.

Binnion, Edward (47). 9, Sunny Road Lodge, Wrexham, North Wales. Ham radio. 7-in. spools. 3½ ips. Four-track. Anywhere.

Branch, David. 949, Gartloch Road, Glasgow, E.3. Neapolitan music and opera, great interest in Italy. 8¼-in. spool. 7½, 3½ ips.

Corlett, Norman (18). Woodlea Villas, Crosby, Isle of Man. Ham radio and pop music. 5½-in. spool. 3½ ips. Anywhere, especially France.

Dillon, Bernard (25). 21, Cowesby Street, Moss Side, Manchester 14. Music, scootering, films and general subjects. Prefers message spools. 7½, 3½, 1½ ips. Female contacts required.

Hawkins, Clive J. (18). 43, Chesil Street, Winchester, Hampshire. Basketball. 5-in. spool. 3½ ips. British Isles.

Hill, Mrs. N. (38). 29, Ellerton Road, Surbiton, Surrey. General subjects, including music. 5½-in. spool. 3½ ips. Contacts anywhere.

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