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FEATURE
TAPE** pages
18 and 19

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FORTNIGHTLY 1/6
5th, October 1960

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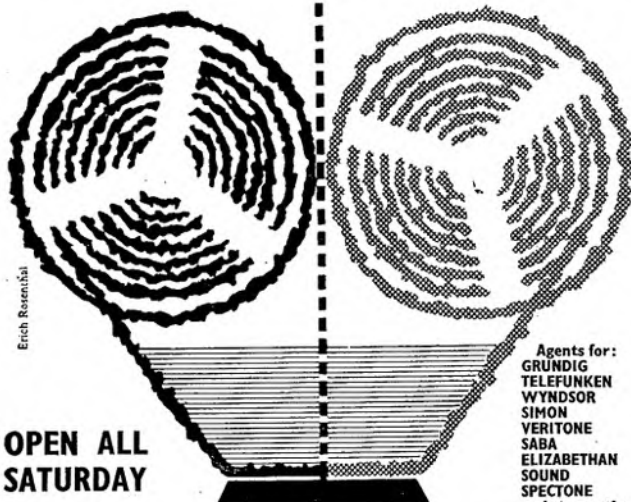
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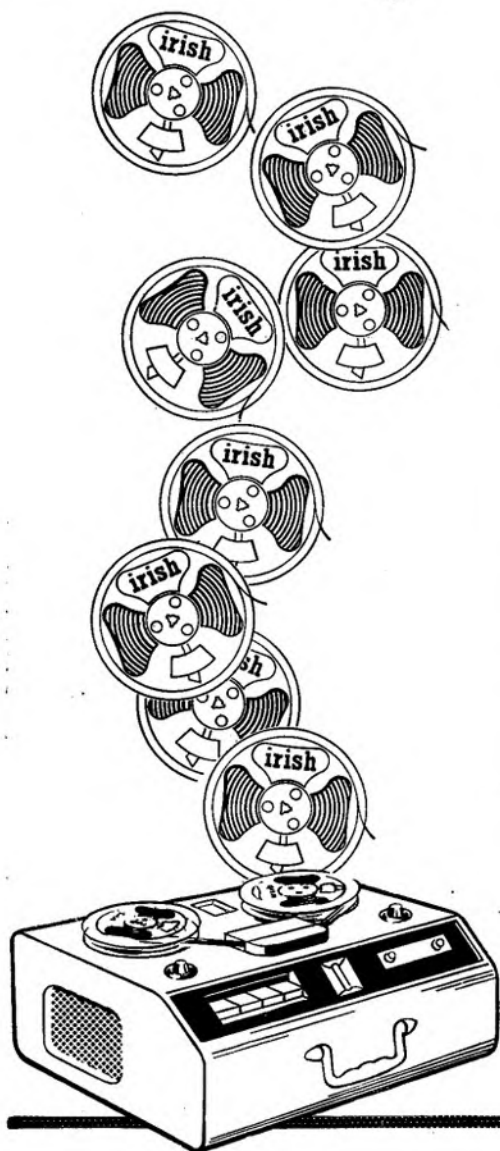
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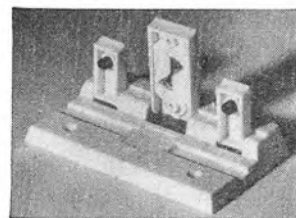
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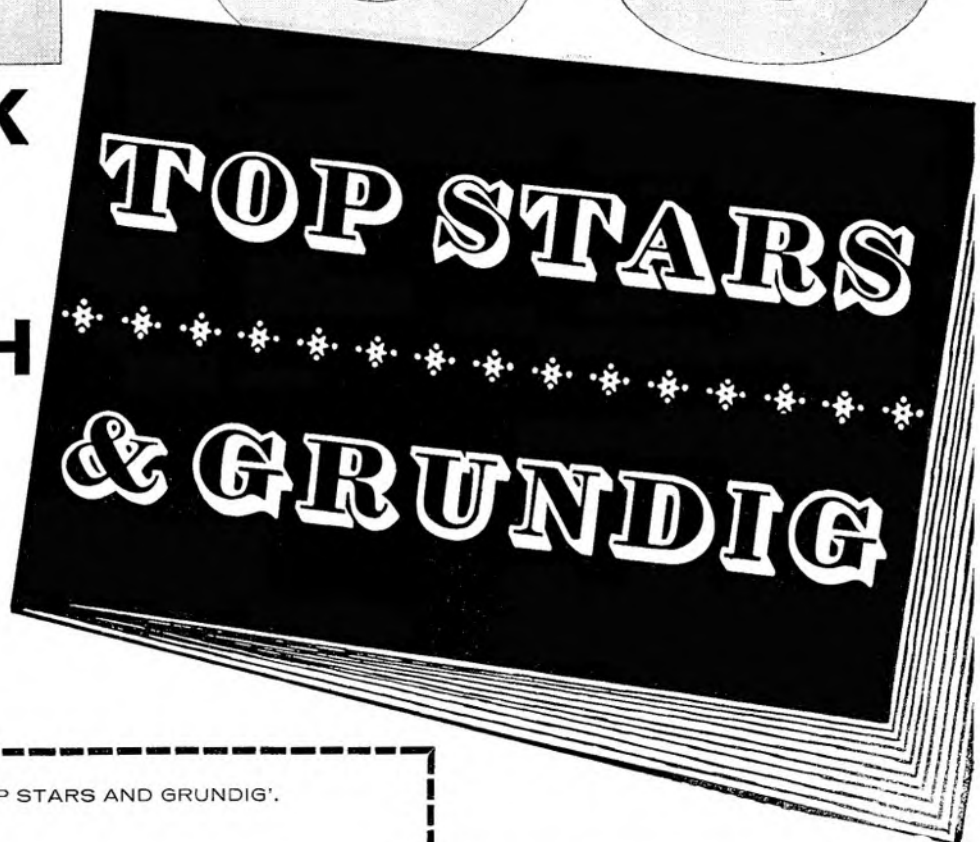
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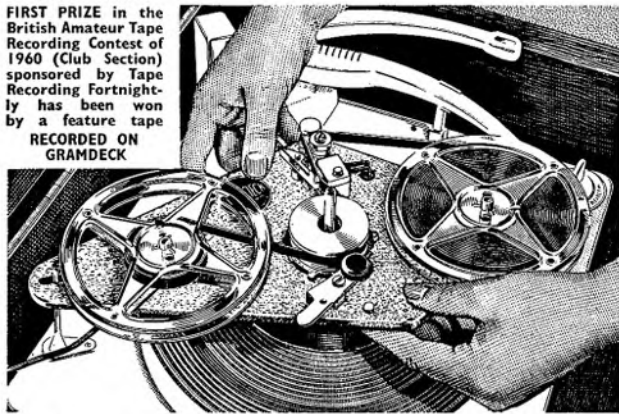
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TAPE

RECORDING
FORTNIGHTLY

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IN THIS ISSUE

We take the view . . . 12

The World of Tape 13
A News Digest

Tape in the Theatre 14
R. D. King

Tape in the Schools 16
Geoffrey Hodson

Converting a recorder for stereo use 17
A do-it-yourself article

Creating a feature tape 18
Kenneth Miller

Meters and their Uses 20
Alec Nisbett

Sound Effects 23
Alan Edward Beeby

Letters to the Editor 24

Equipment under Test 25

Stereo Notes 26
Douglas Gardner

New Products 27

News from the Clubs 31

We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

I HOPE readers did not miss last Sunday's "Sound" programme in the BBC Network Three. If they did, however, they will get another chance next Monday evening. In the programme Norman Paul, who made the "Tape of the Year" which won the honours in this year's British Amateur Tape Recording Contest, discussed the making of it with his close associate, George Halse.

And a substantial part of the tape was played over the air for the first time. I say "for the first time" advisedly, for there is a possibility that the whole tape may later be heard in the BBC Home Service, though no definite arrangements have been made yet. Norman Paul, I understand, is now in touch with some of the drama producers at Broadcasting House and I should not be surprised if the tape which he made for the Contest leads him on to notable activity in this field.

Meanwhile, I hope to be travelling with Mr. Paul and Mr. Halse to the International Contest in Amsterdam in three weeks' time and we look forward to getting the judgment of our Continental friends on what I regard as the finest amateur tape production yet turned out by Britain.

The report to be presented to the fourth congress of the International Federation of Sound Hunters, meeting at the same time as the Amsterdam judging, records that three new groups have formally joined the Federation during the past year—the national clubs of Sweden and of South-West Africa, and the Tape Respondents' International.

The Norwegian association, Norsk Magnetofon Klubb is expected to join shortly, and that will bring total membership to 14.

Clubs in the Argentine, in Brazil, and Canada have also shown interest, and preliminary contacts are being made with Poland and the USSR. It is clearly the case now that the FICS is ceasing to be a purely European organisation and is becoming the first genuinely International Federation of Clubs.

Footplate tape

I HAVE been having a good deal of innocent fun during the last week or two with what I tell my guests is "my latest, most exciting tape." I put it on, throw the switch, and stand back to study their faces.

It is a recording of the noise on the footplate of an express steam locomotive, made during a ride which I had recently from King's Cross to Edinburgh.

It was the trickiest problem of recording level that I have faced yet. I was using a Fi-cord. I kept the Gramian microphone inside one of my pockets and kept my body between it and the main sources of sound. This worked very well and, playing back over a Ferrograph, with the gain control well advanced I can produce the footplate roar very satisfactorily.

Strangers, however, think it is a tape of the arrival of the first nuclear missile.

Biographical tapes

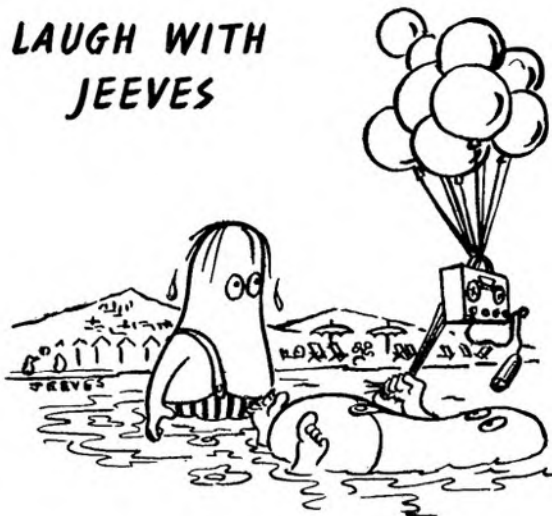
WE reported in *Tape Recording Fortnightly* some time ago that the tape recorder had played a large part in preparing the biography of the American General George Marshall—the man who gave his name to the "Marshall Plan" which aided the reconstruction of Europe after the war. Details now to hand suggest that the techniques used in the Marshall case are likely to become standard practice in the years ahead in the preliminary work on important biographies.

Dr. Forrest Pogue, who is doing the Marshall biography, spent 40 hours with his subject before he died, cross-examining him and recording his answers—and his anecdotes. Anyone with experience of interviewing will know how much more valuable material is likely to result from this method, rather than from asking a man to sit down and write his narrative version of events.

Pogue then made the rounds, with his recorder, of a large number of people who had known and worked with Marshall and collected their stories. He is due in London shortly, with a good supply of tape, to continue the work here.

A number of American universities are now compiling history on tape in a similar way.

LAUGH WITH
JEEVES



"Haven't you ever seen a fully portable recorder before?"

VOICES FROM THE SKY

THE WORLD OF TAPE

New bombardment technique by R.A.F.

TAPE recorders are playing an important part in the psychological campaign against terrorist remnants hidden in the Malayan jungle. They are being used to broadcast messages from aircraft flying low over the jungle in an attempt to encourage the terrorists to surrender. Recordings made by captured or surrendered terrorists are played back to their former companions telling why the men deserted and emphasising how well off they are now.

Operated for the past six years by Austers and Dakotas of the Far East Air Force, the "Voice Flight" has recently made its 10,000th broadcast, and during this period has employed over 3,000 tape recordings.

The broadcasts are made from a height of 2,500 ft., with four loudspeakers mounted under the belly at an angle of 45 degrees providing a sound range of 2,500 yards. A diesel motor fitted to the floor of the fuselage generates the speaker output of 2,000 watts,



An Auster flies over the Malayan jungle

Many experiments were required before it was decided what height to fly, what angle of deflection to give the speakers, and the power output needed. It was found necessary for example to have broadcasters talk in slow measured tones for a limited

period of 30 seconds, the time the aircraft stays within earshot if the pilot flies fairly close to stalling speed. It was found the Dakota had to fly at this speed in order to cut engine noise to an acceptable minimum. The result however was remarkable; every word comes across with perfect clarity.

The crew fly a modified "square search" on a left-handed circuit, starting on the perimeter of its square and working inwards on parallel tracks allowing for a 2,000-yard overlap. In this way it can guarantee that anybody within a selected area will hear the broadcast. Keeping to such a system in mountainous jungle country notorious for severe turbulence and unexpected down draughts poses quite a problem for the pilots.



Eighteen-year-old Bob Alison, and his 20-year-old trainee draughtsman brother John (centre) receive a Stuzzi Magnette recorder from singer Jimmy Lloyd after winning the nationwide talent competition at the recent Boys and Girls Exhibition at Olympia.

Out of over 500 starry-eyed talented youngsters who entered for the tape recorded auditions organised by the manufacturers of the Stuzzi recorders, the judges Cliff Richards, Tito Burns and Gerald Marks, Editor of "Disc," selected Bob and John outright winners.

In addition to the portable recorder, they were also awarded a recording test, and a long weekend in Vienna as the guests of the Stuzzi Company.

Singer Derek Jolly of Leyton, and pianist Chris Holmes of Manchester were the runners-up, and each was presented with a Stuzzi recorder.

Vintage 1960

FIVE hundred and forty years from now the inhabitants of Gainsborough, Lincolnshire, will open a lead-covered box and, if the town possesses a contemporary tape recorder, hear messages recorded by their ancestors of 1960.

This is the plan of Mr. P. F. Morton, Principal of the Gainsborough County Technical College, who is making arrangements to deposit the box complete with tapes, photographs, and other material in the foundations of extensions now being made at the college.

Instructions will be left for the box to be examined every fifty years, and finally opened in 2500 A.D.

This step is being taken following consultation with the British Museum who have also advised the use of airtight bottles, vacuum grease and plastic bags—to hold the various forms of records—and thereby preserve the contents.

TAPE RECORDING IN THE THEATRE

THERE are doubtless many happy, contented owners of tape recorders among you who have produced and recorded little "radio" plays for your amusement and edification. But I wonder how many of you realise the many uses to which an inspired and ingenious producer can put someone else's tape recorder, when doing a "live" show in a theatre or hall.

More and more amateur dramatic companies nowadays have tape recorders available, and use them constantly, but there are still many more whose members, relatives and friends do not possess one of these magic boxes. Sooner or later, however, they come to do a play which requires recordings on tape—and here's where you come in.

Perhaps you told your baker or your butcher, and he told someone else, but it finally comes to the ears of the local dramatic society's producer or stage manager that round the corner there lives a very co-operative recorder owner who might well be "willing to give a hand." And so one day there comes a discreet ring at your bell—you open the door—and that's it!

Before you embark on this little theatrical debut, allow me to pass on a few practical tips and points to watch.

Recordings for plays will generally fall into one of several categories; (a) Taped music; (b) Sound effects; (c) "B.B.C." radio announcements and the like; and (d) Special effects.

Naturally enough, the job falls into two halves; recording and playback—but circumstances and conditions will be quite unlike those to which you are accustomed. As far as recording goes, this is your province; your cup of tea—but be warned. Do your recording at

How would you set about recording a play? RICHARD D. KING, noticing the increasing trend for amateur dramatic producers to use tape in their hobby, describes the problems liable to be met when recording enthusiasts are asked to "give a hand".

On the opposite page, he describes for the specialist a simple yet detailed system of movements when recording in stereo.

home as far as possible, strange things happen "on location," as we shall see.

Taped music, if just from disc, is no problem, and a quiet evening with the discs, the recorder and the producer will solve that one. Please don't forget the Copyright Laws, and remind the producer of them.

Music will be taped to save trying to find exactly the right groove in the half dark during a performance. Sound effects, too, should not be much of a problem, as they can either be faked or collected on your (of course you have one) portable recorder.

Simple radio announcements and the like can be done at home if they only involve one or two actors. I do strongly recommend this procedure, as wandering round a frantic rehearsal with a microphone trying to buttonhole an actor for ten minutes will try your inexhaustible patience to the utmost—I know, I act, produce and record!

Some effects you will have to record at rehearsal, and this is where your problems start—mainly extraneous noise. Let me quote you an example from some recording done for my last show.

I needed a recording of the whole company singing, and not having a portable myself, I invited a friend to come along with his. We were rehearsing in a school that evening, with other classes

going on around, not the least of them being a group of ladies, country dancing to the music of a rather penetrating violin. . . . Need I say more? . . .

Other noises may creep in, depending on your location. You, for instance, may not notice the electrician playing wonderful colour symphonies in light all over the cyclorama, but your microphone will doubtless pick up the ever-present squeaks of his dimmers going up and down. Also, a few mumbling members in a corner rehearsing lines reproduce rather like the first murmurings of the French Revolution!

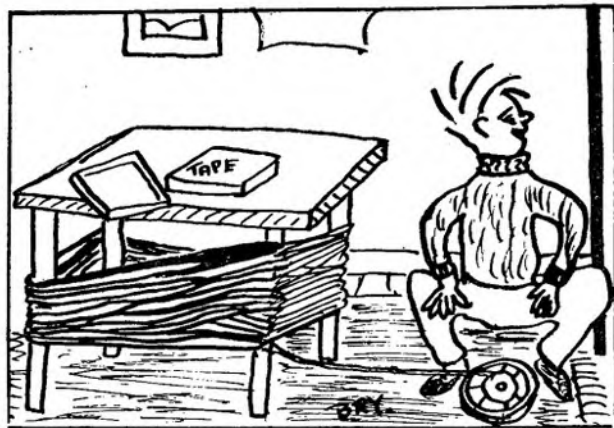
But let us assume that you have somehow overcome all these problems, and your tape is recorded and edited. Now for the show!

When you take the machine along to dress rehearsal, you must ascertain first that the dark, remote corner you have been given back-stage contains a live socket, and that you are positioned such that the sound will reach the audience from the right direction.

These, perhaps, seem a little obvious, but if ignored, can completely ruin any play. For instance, most sockets on the floor of the stage (known as "stage dips") are controlled from the lighting board, and you will probably find them already in use for spots, floods and other paraphernalia. On no account use an adaptor for power for the recorder, for the inevitable will happen—either that circuit will be switched out when you want to use it, or—horrors!—there will be a lighting change in the middle of your play-back, the spot or whatever it is will slowly fade out, and so will the tape recorder. I doubt if many of you have had the experience of your machine slowly running down and stopping, but the result is far from pleasing, artistically or theatrically.

If you *do* have to use a spare stage dip, make certain that the electrician knows you're using it, and keep that circuit off the dimmer or master-switch. If possible, use a socket on the main hall lighting.

As far as your position goes, it is rather dependent on your available power supply, but if it is very wrong, do change it. Check the script and the set,



Willy

"Hey Dad, that reel of double-play tape goes round the table leg 350 times"

TAPE RECORDING IN THE THEATRE

so that your trains don't run through the kitchen, or your cars park in the bathroom. It's just little things like this which make or mar a play. And remember, it's not the things that go right that the audience notices, it's the things that go wrong.

Make certain of your cues. Either follow a script if one is available, and mark your cues in letters of fire, or get the stage manager to give you definite "stand by" and "go" signals. Badly-timed sound, like lighting or curtains, can make a farce of a serious scene. I have seen productions in which radios and record players mysteriously switched

themselves on without an actor within yards. Watch text references to your sound, such as "That must be Freddy's car now," and fade in the car a line or two before. To bring it in on that line produces a very corny effect. I have seen these things so many times, when they could so easily have been avoided with just a little forethought.

Don't forget that the wings will be swarming with actors, actresses, scene-shifters, make-up staff and other *hoi poloi*, and keep your machine well out of their way. Often there will be frantic set changes during the intervals, and the small area around you will be full of

people doing strange things with doors, windows, fireplaces and pieces of furniture.

Lastly, do have a small torch with you; you will find very little light backstage (especially in *your* corner), and you may have to find readings on your counter, or tape markers. And, of course, you have to be able to read your script. I know this sounds a little discouraging for any enthusiasts contemplating theatre work, but I can assure you the fun you will get out of it far exceeds the drawbacks. I wish you luck, and remember, above all things, beware of Leading Ladies who call you "Dar-ling!"

Movement and position in stereo drama

MANY thousands of plays and playlets have been recorded, monaurally, both by amateurs, and professionals, but of late the field of stereo has made a very definite advance, and sooner or later owners of stereo recorders and clubs with stereo facilities will hand their friends and fellow members wads of scripts to be performed and recorded stereophonically.

However, the use of stereo produces complications which are not met with in mono recording—in effect, the necessity for the cast to move from one set position to another, and to know exactly when and where to move. It is necessary therefore to devise some system of movement and position notation which can be recognised and used by the actor without loss of concentration on the play itself. It must also be detailed enough for the producer to plot positions for certain effects.

What, then, are these positions which the actor may need to occupy? They are, simply stated, nearer to or further from, either microphone, and in the middle, nearer to or further from, the centre line.

To pin-point these positions better, it is well to divide the acting area into small, easily recognised areas, each numbered in an obvious way. This pattern of areas can easily develop into too complex a system. What might give absolute positioning for the producer could be impossible for the actor, in that he would have to work out exactly where position A4(a)ii (or what have you) was, so entirely forgetting script, play and character.

I therefore suggest that the following system, or one like it, has much to recommend it, being simple enough for the actor, yet detailed enough for the producer.

The acting area is divided into six imaginary areas, three in front, and three behind the centre line, see illustration.

This pattern is very easy to remember, and the numbering is not dissociated with the pattern areas, 1, 2 and 3 being in front; 4, 5 and 6 behind.

In order to be able to give some indication within each area, a positive sign (+) is used to indicate "nearer to the microphone," and a negative sign (-), "away from the microphone":

So from this, any position it is necessary for the actor to take can be simply indicated by a number and a sign, e.g. 2+, 6-, 1+. If a more exact position is required, the letter "C" for centre can be inserted between + and -.

Hence the producer has 18 different positions relative to his microphones on which to plot his play. At his own time, he can correlate this plan with the polar pattern of his microphones, find the live and dead areas, and plot positions from there.

An arrow preceding the symbol on a script will indicate to the actor "go to" such-and-such a position, after saying the particular line.

The following lines of script will illustrate this idea. Assuming that the positions start as:

Peter, 1+; John, 2C; Mabel, 5+.

John: Would you care for a drink?—3C.

Peter: Don't mind if I do, thanks.

John: Scotch?

Peter: Sure.

Mabel (in alarm): There's no Scotch left!—6+.

Peter: Yes there is. There's some here.

Mabel: No! It's—oh—it's gone off!—3+. Yes—look,—3C it's a funny colour.

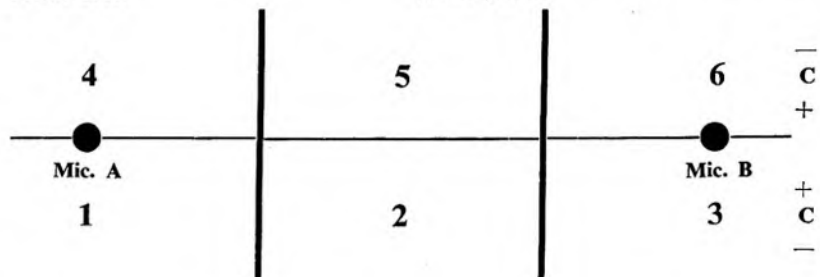
Peter: Gone off?—2+.

Here Mabel's rush to the presumably poisoned Scotch is plotted with three simple symbols, whereas an instruction such as "rush across to John then, dear" might well produce chaos.

On the question of moves, it must be remembered that all moves must be motivated—i.e. there must be a definite reason behind each move known to the actor and acceptable for that character. A "producer's move"—a move with no motivation, used purely for effect, will often sound false and wrong. A voice suddenly crossing from speaker one to speaker two with no immediately obvious reason for the cross will leave the listener wondering, so breaking the continuity and illusion.

Also try to avoid too much cross-talk between two characters on different channels, for it becomes just stereo "gimmick," and reminiscent of the Men's Singles at Wimbledon.

Obviously these few remarks and suggestions are not the "only" way to do it. There can be no "only way" in drama, for each production needs its own interpretation, but they may be of some assistance by suggesting ways of overcoming the problems of moves and positions, and suggesting ways to avoid some of the pitfalls.





TAPE IN THE SCHOOLS

EDITED BY GEOFFREY HODSON

CONGRATULATIONS to Mr. P. J. Kingston and Stanground V.C. Primary School, Peterborough on winning the first prize in the Schools section of the 1960 British Amateur Tape Recording Contest. I have not had the pleasure of hearing his entry yet, but I gather the judges found the liveliness and spontaneity of the children irresistible.

I met Mr. Kingston on the First National Tape Recording Course at the Rose Bruford College eighteen months ago, and although he is coming up to retirement age he left me in no doubt that he continues to be progressive in his educational thinking, based on true values developed over the years. He recently had to go into hospital for an operation, but I am glad to say he is home now and making a good recovery.

The strange thing about the Peterborough success is that for the three years of the competition, the Schools section has been won each time by a Junior school. I say strange because all Education Authorities have been very reluctant to supply tape recorders to Primary schools. The case for Secondary schools is more obvious, and they have been more fortunate. But, for what it is worth, the evidence of this competition indicates that more creative work is being done in the Junior school.

That, of course, is a sweeping generalisation, and it is false to make it without

Geoffrey Hodson has been appointed Inspector of Drama to the London County Council. He originated and directed the three National Tape Recording Courses held at the Rose Bruford Training College during 1959-60. In his new appointment Mr. Hodson will assist Miss Maisie Cobby to inspect and advise upon speech education and drama at the primary, secondary, and further stages of

education, to advise on equipment for dramatic work, and to organise and conduct courses for London teachers.

Both inspectors are interested in tape recording. Miss Cobby has been one of the judges for the annual "Reynolds News" tape competition for the past few years.

The future of the National Tape Recording Courses at the Rose Bruford College has not yet been decided.

hearing many more tapes from all over the country. But I wonder if teachers find any support for it, with the possible reason being that the children are not so fresh and spontaneous. Any comments?

Another possible explanation, as has been pointed out before, is that many teachers quite rightly think that the finished product is not the most important thing about this type of work. They probably therefore do not value this type of competition very highly, and do not enter. More important to them is the preparation and actual performance.

I agree with this wholeheartedly, but surely after some experience it should be possible to pay more attention to making the finished product as good as possible as a skill in itself. Just as we insist on good style and presentation in written work, art, woodwork, and other school subjects. With the proviso, that it is honestly the children who are contributing the work, and not the teacher putting in a lot of enthusiastic homework.

This was a bone of contention about John Weston's booklet "The Tape Recorder in the Classroom" which I reviewed in the 29th June issue. Gordon Pemberton of Waterloo School in Pudsey, Yorkshire, has come out with some very strong feelings about this. His impressions are so useful that I am asking the Editor to publish them in full as a separate article.

I would merely like to take up Mr. Pemberton's comment that the National Committee for Visual Aids in Education has rushed this publication, and that it should not have been the work of one man. I believe this to be true. The time has come when a group of experienced teachers should get together and work out some policy on the use of the tape recorder in education. As a Committee one of their functions might be to issue a booklet similar to the one on the use of film in education published recently by the Association of Teachers in Training Colleges and Departments of Education.

I am very hopeful that this will in fact be done in the next few months. I have been trying to convene such a meeting for some time, and I should be able to give some news in November.

Another function of this committee will be to discuss the possibilities of an Educational Tape Recording Library. I understand the scheme originally put forward by Alan Beeby has fallen through, but the idea is worth further consideration.

* * *

Paddy Randle sends further news from The Gloucester Junior Mixed School, Peckham, S.E.15, this time of a school journey for two weeks to the Isle of Wight during the summer.

The object of such a journey is to thoroughly explore an area from the point of view of History, Geography, Nature Study, etc. It is a good idea too from a health point of view, and also

(Continued on page 33)

"Positive ideas that work"

Book Review.—Of much interest to Junior school teachers is a new series of books by Eric Newton—"Speech in the Making", published by the University of London Press Ltd. This consists of a Teacher's Book and four books for the children.

Although not written with tape recording chiefly in mind, the author hopes that some of his lesson suggestions will be rounded off with a recording session. He gives some very useful hints on lesson planning on pages 38-40 of the Teacher's Book, and each of the children's books outlines a suitable broadcast—a street corner, a farm, the zoo, a railway station.

The important thing is that Eric Newton starts you off with some positive ideas that work and which you can develop yourself. In the broadcast suggestions the whole class is working, and the tape recorder can make a valuable contribution to the lessons by focusing attention on speech in action. Good speech—which Mr. Newton defines in his introduction—is encouraged, and should develop given imaginative handling by the teacher.

A class that has really worked at one of these projects should produce an interesting and constructive discussion after the play-back. Future efforts will therefore benefit, and the results will be largely the children's own work.

THE COLLARO Mk IV DECK MODIFIED FOR STEREO

A do-it-yourself article

THE simplest modification I have ever undertaken was to adapt the Collaro Mk IV tape deck of my recorder for stereophonic recording and reproduction. The total conversion cost was £14.

This deck is perhaps the most popular and widely used in domestic equipment in this country and its particular virtue is that the two-track tape is transported in either direction over the appropriate erase and record/replay heads thus avoiding turning over reels to use the second track.

There is an erase head and a record/replay head to the left of the transport mechanism and the same on the right of it, (Fig. 1).

The modification merely consists of replacing the left-hand erase head by

contact with the heads are not actuated so a strip of foam polythene of suitable thickness wired round the arm is elastic enough to do this very effectively indeed.

Do not be daunted by the mechanical problem of replacing the erase head which is no more difficult than changing a car battery.

I would warn the less mechanically adept of the probability of dropping a screw into the works and reassure them that I have done this myself.

Carefully sliding back any bits of mechanism, the platform can be lifted away from the deck, only the several inches of wires to the heads retaining it. The double lead to the left-hand erase head is then brutally cut and the ends taped up to insulate them.

(I could have warned you about the advisability of switching the power supply off before delving into the innards but if you prefer to work with

everything live, then good luck and goodbye.)

By a suitable spanner or other means (I had to use "other means") the nut retaining the erase head is loosened and the head removed to be replaced with the new record/replay head. The whole is then reassembled with care to avoid pinching any wires or breaking any hum neutralising coil connections.

The new lead wires are brought out at the side and connected to the terminals of the separate tape amplifier. Adequate screening is necessary here, or a 20-turn coil of wire can be in-

cluded in series to prevent radio frequency pick-up and oscillation. However, this is a matter of luck plus fiddling and if the lead is short no trouble will be experienced.

Radio input was used for each channel. Aligning the new head is done by ear, in fact as it always replays the signal it has recorded, considerable azimuthal displacement is tolerable but the neighbouring record head over which the tape passes can be used to replay signals recorded by the new one and the latter adjusted to satisfaction. (NOTE: We now have two adjacent heads which record or replay on the same track.)

The first stereophonic recording was from the Paris regular concert transmissions—Three Elegiac Litanies of Oliver Messiaen being played. Unfortunately the old receiver I was using for the left-hand channel did not appear to be selective enough and interference ruined the record.

The tape travels from right, past the normal record head, through the drive and past the left hand (not recording) and next to it the new one replacing the erase head which is recording from the additional channel (also fed by a radio set). A later recording from a BBC Saturday morning experimental transmission using the television and the VHF third network gave surprisingly good results.

The Rimsky-Korsakov "Capriccio Espagnole" sounded better from the stereo tape than during recording from the monitor speakers, but perhaps this was my delighted admiration.

In some places where I had adjusted the volume a spatial movement occurred and there seemed to be a tendency to a hole in the middle. But these are a matter of adjustment. Phase synchronism seemed all right and I could not detect any eigen value tones knocking about the room.

With this ill-deserved success I announced to my friends, "I have just gone stereo—I've got a second head!"

They looked at me unbelieving, but it is a fact and just try it yourselves.

R. L. TAMS.

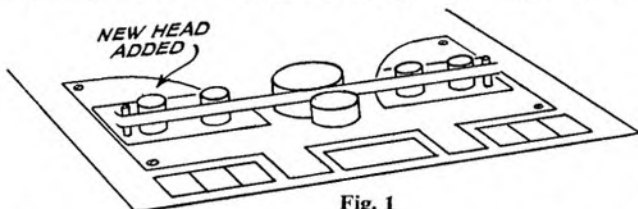


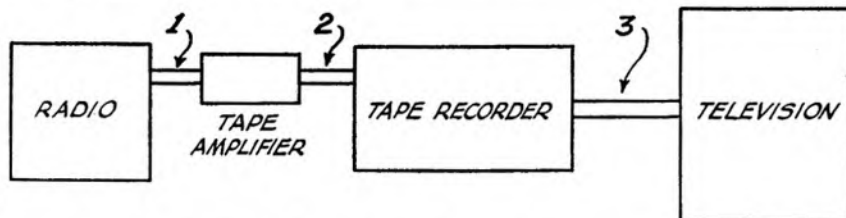
Fig. 1

a record/replay head, the leads from which input to a separate tape amplifier. (There are at least half a dozen tape amplifiers on the market varying in price from £9 to £30).

The new head should be of the same high impedance type as the others and can be obtained from the makers of the deck or various retailers advertising them.

So we have the tape moving past the right hand erase/record heads where one stereo channel is recorded on the half width of it by means of the normal recorder amplifier working as usual; then it moves over the left-hand record head which is inactive and the new one which applies a signal to the other half track of the tape.

The two signals are thus recorded simultaneously but are some inches apart on the tape. However, the stagger is constant on replay on the same machine and from the point of view of magnetic coupling it is an advantage. Incidentally, using the tape from right to left, the left-hand pressure pads which keep the tape in



Connections for Stereophony: 1—Leads from radio to separate tape amplifier; from tape amplifier to newly added lead (2); and from tape recorder to television for recording as normally (3).

PLANNING AND CREATING A FEATURE TAPE

In 1959, Kenneth Miller of America won an award in the International Amateur Tape Recording Contest. In this article he describes his methods for making what he terms "production."

SEVERAL months ago, while thumbing through a magazine, I saw an announcement for an international amateur tape recording contest. I sent for the entry blanks, and, when they came, filled them out and submitted my tape. Several weeks later I received an excited and exciting letter from a friend in London who informed me that I had won the first prize in the composition class. At first I thought that it was a gag, but a follow up contained a magazine cutting, giving the official results, and, to crown my joy, a taped copy of a BBC broadcast with my composition, titled simply, "Contact Microphone."

A contact microphone, as you may know, is a device that picks up mechanical vibrations. When placed in physical contact with a vibrating object, it will pick up sounds not audible to the "naked ear." When attached to a stringed instrument, long after the ear has ceased to hear the twanging, the microphone will continue to pick up the diminishing oscillations. If you connect it to the input of a tape recorder, a permanent sound track will result, to be studied, enjoyed and shared.

I received one of these sensitive gadgets

for a Christmas present and explored its potentialities, touching the microphone to my banjo, a squeaking door, clocks, electric motors and even the valve of the toilet flush. Nothing was safe from my probing investigations, until, one mad day, when a sudden entrancing idea came to my head; doctors employ an electronic stethoscope to study the sound of the heart—that is common knowledge. Why not amplify the sounds of the other parts of the body? What wonderful secrets would be revealed! A revolutionary technique in the diagnosis of ailments!

Heartless?

Feverishly and with trembling fingers, I connected the tiny mike to my recorder. All controls were in the ready position, virgin tape loaded and threaded into the take up reel. I turned the gain control on monitor to full, depressed the key to start, took a deep breath as I pushed the microphone to the spot where my heart beat the strongest. Half fearing a loud thumping from the speakers, half dreading stumbling over an unknown and forbidden threshold of knowledge, I stood there waiting for the sound of my heart.

But all I heard was silence. Oh, you can hear silence. You can taste defeat. It dawned on me that my equipment lacked sensitivity; my amplifiers, ample output.

Well, supposing that I *did* have the proper apparatus—I could go through with the experiments. But I didn't and I couldn't. With the help of my tape recorder and sounds from my library and some newly fabricated ones, I could "make believe." I would follow through with narration and real sounds disguised by slowing down, speeding up, adding echo and continuous loops, boosting or reducing treble and bass. This was how the prize winning composition was conceived.

This article is reprinted from "Tape Recording Magazine" America



Kenneth Miller's equipment includes shortwave receiver, Panadaptor (for visually examining incoming signals), directional FM antenna, AM/FM receiver, three standard recorders and a battery portable

I said conceived, because it was yet unborn. That takes time. The building of a composition—a production—takes time. It takes thinking out. It must have a basic idea, a beginning a middle and an ending.

As a photographer, I have frequently shuffled through a sheaf of dog-eared prints made by an aspirant, who pleaded lack of time and proper equipment. On other occasions, I have been shown just one photograph, skilfully dodged and printed, presenting an idea, and I have glowed with pleasure. It's the same with a tape recording; instead of a collection of disjointed bits and pieces, snatches of unrelated music and a generous sprinkling of clicks, one can make up a handsomely mounted production to one's friends.

A finished production will demonstrate your skill with a recorder. A recorder is a tool and taking advantage and employing its possibilities is the mark of your ability. If you can accept the recorder as a tool, take one step further and regard it as a creative tool. Several years ago, a manufacturer issued a brochure enumerating 1,002 uses for the recorder, and if all you can think of is perpetuating baby's first burp and pirating music off the radio, you still have a thousand ways of making use of your equipment before spreading yourself too thin. Let's try a new one—making productions.

The basic idea

A production is all-embracing: it may be a play or a skit, an exposé, narration or "how-to-do-it"; a recitation, a travelogue or a description of your home town or family life. Behind it all, there must be a basic idea—a subject. This subject is enhanced by sound effects and by music. The ingredients must be carefully balanced. As a trial formula, I would select narration 7, sound effects 2, music 1. Depending on the format and topic, the formula may vary, but I have learned from experience that you can over supply sound effects (you should always leave the listener wanting more). Long passages of music will make the listener restless. It should be employed sparingly and then only as a "bridge"—a transition from one scene to another or to denote a passage of time or distance. Music may be also employed as an introduction or to establish a mood.

As far as sound effects are concerned, the more said, the better. Sounds can make a production, or leave it wanting. They should be of good quality, original if possible and rare. The building of a sound library may be effortless or difficult, depending on how you acquire it. Some people

PLANNING AND CREATING A FEATURE TAPE



All is grist to Miller's mill. Here the Fi-Cord is used to record a telephone call just in case of the unexpected "worth saving" sound

buy a library on tape or records, others edit them out of radio and TV programmes; some swap and others go in for the home-made variety. Too many magazine articles have been printed about the use of two coconut shells for the sound of a horse's hooves, or pouring rice on wax paper to simulate rain. There is a virgin field left to produce sounds electronically with howls, squeals, beeps and percussion as the raw material; continuous loops, tapes perforated at intervals with a $\frac{1}{8}$ in. leather punch, braking the feed reel with the fingers to produce variable speed, stretching a segment of Mylar beyond its normal length. For "out of this world" noises. I have cut fragments from rock and roll music (?) which is usually crawling with gimmicks, echoes and peculiar effects.

Plot development

The basic structure of any production is the idea and its subsequent expansion and development. It needn't be world shaking or soul searing. After all, a great deal of the world's literature has been founded on the theme of "boy meets girl." Your daily newspaper is rich in stories that can be dramatised. Perhaps "something funny happened to me today" will strike oil. A personal experience (or that of a friend) that is off-beat. The subject may be arrived at after much skull scratching or spontaneously. If possible, try to have a twister at the finish—a surprise ending. What may start out as a serious story may turn into a joke or a hoax. As a matter of fact, that is the variety of production that I delight in making and I will give you some story outlines that have worked out successfully.

I meet a girl (ravishing, of course!) at a bar. She tells me that she is locked out of her apartment because the key won't work. I volunteer to assist her, succeeding in opening the door and she invites me in. After serving drinks, she glides over to the piano and runs through "Let Me Call You Sweetheart." The routine develops (in this case, the lady's voice was supplied by a friend overseas and I spliced it in) and the "snapper" at the end is where I say "Just then, I remembered that I had to send you a tape, so, here I am."

Another example?

In a conversational tone of voice, I go through a dissertation on skin diving, employing as many technical terms as possible. I continue by telling of my flight to Key West, hire a motor boat, sail to a likely spot and plunge into the water. Beneath the surface, I enjoy the coral formations and

the fish, when I suddenly get the feeling that someone—something is watching me. I turn my head—it's a man-eating shark! I tap out a frantic SOS on my air tank, hoping that another skin diver in the vicinity will hear me. With a powerful swish of its tail, the shark comes at my throat.

The sound of air bubbles ceases abruptly as the sound of a bellbuoy and gulls screaming fades in. My voice, in echo, comes in once again as I inquire, "What happened after that? I died, what do you think!"

In these two synopses, you can readily grasp the possibilities of the sound effects.

What did I hear you say from the corner of your mouth? You could do better? Good for you! That's the proper mental attitude. As a matter of fact, that's how I began. I felt that I could do better than a lot of the stuff that I had been hearing on the radio, with its ideas men, writers, actors, musicians, sound effects men and assorted technicians and engineers. After I got started, I got my ears pinned back, because I found that I would have to do the work of the whole team. It's all very challenging.

Rich or poor, it's nice to have two tape recorders. It is also advantageous to have a monitoring head on at least one of the machines, for echo effects. Needless to say, a fader-mixer is a pleasant luxury. If you don't own all of the aforementioned, you can work partners with someone else. If this is not feasible, one recorder can do the job. On occasion, as a substitute for a mixer, I move the microphone from the talking position and face it towards another sound source, such as a radio or record player. The transition is smooth and, with a few trials, will give satisfactory results.

Splicer preferred

I do not deny that a pair of scissors or an old rusty razor blade will make an adequate splice, especially if you have three hands. I prefer a splicer. I can join five splices in one minute, rather than one in five minutes, the old-fashioned way. There is a great deal of splicing to be done and ease of handling is conducive to its frequent use. Your splices will eliminate extraneous material and clicks, shorten awkward pauses and perform a myriad of functions.

I do not subscribe to any hard and fast rule regarding the length. The point is, that in this day and age, with all its attractive distractions, it is too much to ask anyone to concentrate on listening longer than a fifteen minute segment. I think that radio

and TV have made us a world of "quarter of an hour at a time" listeners. Seriously, I keep my productions well within the fifteen minute limit because I have found from experience that it demands two hours of work for one minute of usable footage.

While it is possible to bang out a "quickie" at one sitting, without previous thought or planning, in most cases it will be necessary to have a working script. It can consist of a skeleton outline or it can be minutely detailed. It should contain a listing of narrative and musical passages, and cues for sound effects. Some prefer to write it out, word for word, others jot down key phrases. In either method, you should be full acquainted with the subject.

I think that you should try to be yourself as far as the narrating voice is concerned. Any excursion into what I call a "voice of doom" or the rapid fire delivery of a side-show barker will make you less believable. Other voices involved in the script should be gently coached to be natural. I always employ a casual, conversational approach. If you feel more at ease reading from a sheet, be sure to give the material several runs through. Avoid a monotone and above all, that abomination called "background music." It demands skilful and judicious technique to balance the volume ratio of voice to music. I have encountered some examples that contained "background narration."

If you stumble while talking, start once again at the beginning of the thought. The "blooper" can be excised later. On occasions, give an important sentence several versions and select the one that you like best.

At this stage, the unpolished production will be overlong. It will contain false starts, repeated sentences, numerous clicks, duplicated sounds at different sound levels and awkward pauses. My rough cuts sometimes contain a few choice cuss words when things don't go right.

If you listen through your production a few times, you will locate the inferior passages and make a written notation of the ones to be removed, by designating them "take one," "take two," etc. If you have leader tape inserted between items, remove them, too. The second cut should not be edited too tightly because you might chop off the beginning or end of a word. Shorten unintentional pauses and remove a few of the more obvious clicks.

By this time, things should be shaping up and the next step is to put it aside for a day or two. Working so close to it, you will have lost your perspective. The next time that you run the reel, it will sound fresh to your ears and it is now ready for the final cut.



Volume Unit Meter. Used in programme input equipment in the U.S.A. and elsewhere

THERE are various devices which are used for metering sound programmes. In this article I shall describe some of these, and carry on to explain the methods by which programme material can be controlled (whether or not meters are being used) in order to make the best possible use of the range available between the noise and distortion levels of a recorder.

For AM transmitters the audio signal is impressed on a carrier, and distortion sets in sharply when modulation exceeds 100 per cent and the carrier is suppressed for part of each cycle. For FM transmitters and tape recorders the onset of distortion is not quite so dramatic—nevertheless there is a point beyond which distortion does set in pretty sharply—and it is convenient to refer to this as 100 per cent overmodulation. In the case of FM overmodulation at the transmitter would result in peak-chopping on some receivers; transmitters are now generally limited to avoid this.

The simplest type of meter is the American VU meter, the face of which shows two scales: "percentage modulation" and decibels. This meter reads programme volume directly. It is fed through a dry rectifier and ballast resistance, and draws from the programme circuit all the power needed to operate

METERS AND THEIR USES

it. Its ballistic operation means that it peaks to a much higher reading on programme than on pure tone.

Also, although it may have a linear calibration in percentage modulation (the rectifier characteristic should ensure this) more than half the scale is taken up with a range of 3 dBs on either side of the nominal 100 per cent modulation. Since little programme material will peak consistently within so narrow a range, the needle is generally either registering only small deflections or flickering bewilderingly over the full range of the scale.

All in all, the VU meter is a somewhat hit-and-miss method, and it is now generally accepted in this country that the most satisfactory instrument for reading programme volume is the peak programme meter (PPM). Essentially the PPM is a valve voltmeter with a rapid rise characteristic on transients and slow die away. Using the curved characteristic of a variable- μ valve the reading is logarithmic over its main working range of 16dBs (between "2" and "6" on the meter); but there is in fact, little departure from the logarithmic over a much wider range—getting on for 30 dBs.

As a convenient but not absolutely essential part of the design a reversed reading instrument is used—it has its mechanical zero at the right-hand end of the scale and is backed off to its electrical zero on the left by a steady current.

The diagram shows the layout of a BBC PPM. The grid charging circuit has a time constant of 2.5 milliseconds (80 per cent of full deflection in 4 milliseconds: the ear cannot detect shorter periods of distortion) and the discharging circuit $R \times C$ is 1 second (on the meter this reads as 8.7 dBs sec. The N.A.B. standard of 19 dBs sec. would be rather tiring to watch for long periods).

A simpler arrangement is used on the Ferrograph—this uses a diode-triode circuit but retains such features as the rapid rise and slow decay; and uses a reversed

zero meter with a steady state current of 1 mA.

A meter of wider range is used with E.M.I. professional equipment. In this the discharge resistor is tapped off to a second pentode which takes over when the first is nearly cut off. The two pentodes are fed direct (in parallel) to the meter, and have a logarithmic range of 15 dBs each. The useful range of this meter is 50 dBs; and it is widely used outside the BBC.

The BBC PPM is standard throughout the Corporation and is used for several different functions.

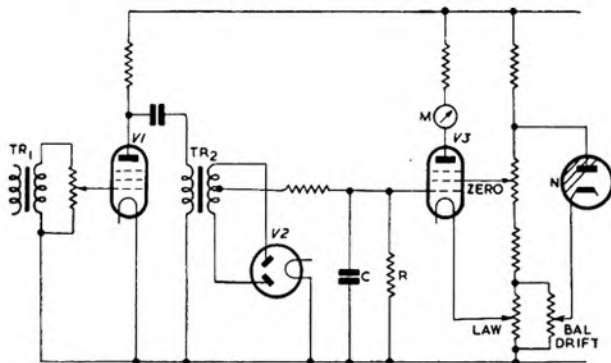
For a start, all equipment is lined up using 1,000 cps tone at 1 milliwatt in 600 ohms ("zero level"). At the transmitters this is equivalent to 40 per cent modulation—so 100 per cent modulation will be 8 dBs above this. At all stages in the programme chain the tone should give the same steady standard reading ("4" on the meter).

The second use for the meter is to provide indications of overmodulation (above "6") and undermodulation (below "1" for concert music, below "2" for speech in plays, and so on, depending on the type of programme content).

The third use for the PPM is to provide a series of reference levels. For instance it is found that if ordinary talk or discussion is allowed a fairly normal sort of dynamic range with occasional peaks up to the maximum, then news-readers who generally speak very clearly and evenly, usually sound quite loud enough peaking about 6 dBs less than the maximum, and so on.

These reference levels are useful for matching at junctions between programmes and for maintaining the average level of a programme over long periods. Experience suggests that certain types of programme content are likely to be "about right" at certain levels.

But slavish use of meters can easily prove misleading—they indicate peak volumes, not loudness—and some instruments, such as bagpipes, harpsichords, clavichords and virginals, are very loud compared with their meter reading. So is "rock." (In fact, the harpsichord has a lot in common with pop music, a fact



BBC-type P.P.M.; basic circuit

The circuit consists of: 1. Buffer valve to give the required sensitivity, and to isolate rectifier from programme circuit. A sensitivity control is inserted at this stage; 2. A diode rectifier charging a capacitor (this charges quickly, but discharges slowly). A full-wave rectifier is used as a wave-form of transients will not in general be symmetrical; 3. The charge on the capacitor goes to the grid of the variable- μ -pentode where it cuts down the anode current and deflects the meter; 4. The screen voltage is stabilised by a neon. (The somewhat complex system of present controls at this stage is to ensure that the many hundreds of PPMs used by the BBC can all be lined up to the same standards)

ALEC NISBETT compares amateur and professional methods of avoiding under- and over-modulation

which has not gone unnoticed by some of the more sophisticated arrangers.)

Balance of these against less noisy music and speech can and must be judged by ear—and this is only a particular case of a general rule: meters are a guide, but ears must be the judge.

And here the B.B.C. Studio Manager has every facility to help him; having set his reference level for the type of programme, and adjusted his loudspeaker to a comfortable level, he can carry on and listen under conditions which are reasonably close to those of a domestic living room.

He will judge divergencies from his average level on the grounds of relative loudness and intelligibility (sometimes these two factors work against each other, unfortunately) and he doesn't have to worry about his meter too much except to watch for marked over or undermodulation. An occasional inadvertent high peak can be dealt with by the limiters at the transmitter, and may be worth risking rather than reduce the service area by undermodulating a whole programme.

He will also check his levels on the meter from time to time to see that he is maintaining the same average volume throughout the programme. The ear is not reliable for this—it tires. At the end of the rehearsal of a record programme, say, I like to check the levels of the first few records again, to see if my judgment of the appropriate level for them has changed; and it usually has.

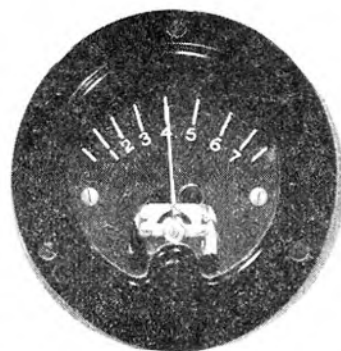
But the amateur's methods must necessarily be very different: generally he will have no monitoring facilities, except perhaps a pair of headphones at the input

to the recording head; and he will probably have rather limited metering facilities, if any at all.

A "magic eye" will give him some indication as to whether he is on the right lines, but it should not be relied on unless the recordist is quite sure of what its indications mean in terms of the programme he is working on at the moment. In particular, it is very easy to miss sudden, loud transients, which may come, go, and be distorted in, literally, the blink of an eye.

The following is a useful procedure for the amateur to adopt as often as he can.

First, choose a passage which contains some of the loudest elements and record it at different levels which look "about right"; carry on until you have one with noticeable distortion. This defines your upper limit. Edge back the volume control a little and your recording level should be correct. If you are so unfortunate as to have a microphone or recording amplifier with a serious peak in its response, this must also be catered for, by testing with scales, or, if possible, by

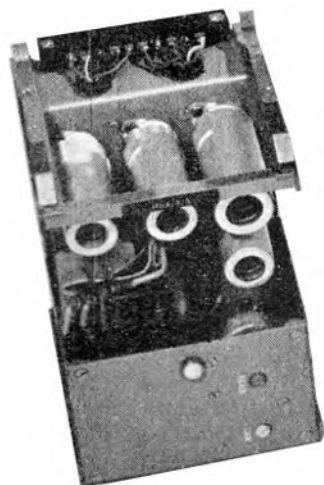


BBC Peak Programme Meter. Each division on the scale (between 2 and 7) represents 4 db's. The meter registers a full scale swing of 24 db's in 5 milliseconds, and the return time is 3 seconds

a full rehearsal. And so you find your highest possible setting.

However, it will often happen that even at this setting the quiet passages will have a poor signal-to-noise ratio. In this case some compression will be necessary. The techniques involved in recording material with a very wide dynamic range will be discussed in my next article.

Photographs and diagrams by courtesy of the BBC.



BBC Monitoring Amplifier. There are two small transformers and four valves (V1, 6060; V2, M8079; V3, 6BA6; V4, 85A2)

THE DECIBEL — a definition

Since the ear is sensitive to ratios of sound intensity on a scale which is very nearly logarithmic, it is convenient to measure differences in intensity (or power, or voltage) in terms of decibels.

Power differences in decibels are calculated as $10 \log_{10} (P_2/P_1)$. Thus, a tenfold increase in power is equivalent to a rise of 10 decibels (i.e., 1 Bel). Doubling the power gives a rise to almost exactly 3 dBs.

In a circuit the power is proportional to the square of the voltage, so the difference between two voltages in decibels is $20 \log (V_2/V_1)$, or $10 \log (V_2^2/V_1^2)$.

Sound intensities are calculated as the power flowing through unit area and are related to a reference level of 10^{-16} watts/sq. cm. (10 dBs). The threshold of hearing at 1,000 cps is at about this level for many young people.

The decibel is a very convenient measure in that it can be regarded (very roughly) as the minimum audible difference in sound level. A change in speech or music level of 2 dBs or less will not ordinarily be noticeable to anyone who is not listening for it.

Meters calibrated in dBs generally show either "peak" or "averaged" volume; for programme purposes the first of these gives an adequate amount of information. Neither type

will, of course, give any frequency information, and it should be borne in mind that low frequencies, in particular, will not sound as loud as a meter will indicate, e.g., a signal-to-noise ratio for mains hum may be quoted as 40 dBs "unweighted" (i.e., not taking into account the frequency characteristic of the ear, which discriminates against bass). This may be the equivalent of 55 dBs at higher frequencies.

Loudness levels are measured in phons. Phons equal decibels at 1,000 cps, and at other frequencies are related to this scale by equal-loudness contours. Since loudness is a subjective quantity depending (amongst other things) on the frequency response and sensitivity of the ear, and since these factors vary enormously from person to person, such scales are limited in their practical applications.

It is, however, convenient to measure acoustic ambient noise levels in phons (using an agreed system of contours), because unweighted measurements would take undue account of the bass which often predominates.

In this series of articles I shall stick to decibels; and when talking about monitoring programme material, will generally be referring to peak readings as indicated on a peak programme meter such as that developed by the B.B.C.

MAKING "NUCLEAR MADNESS"

*R. O. Broome, winner of the
Technical Experiment class in
our recent contest, writes on
his entry*

THE basis of tape recording is noise, without it there could be no recording. The various types of "noise" are too numerous to list here, or for that matter anywhere. "Noise" is with us every minute of the day and night. To such an extent, that a society is now planning ways to abolish it, or if that fails, to control it as much as possible.

We of the tape recording fraternity have an advantage over our less fortunate cousins who do not own recorders, for we have the power to control "noise". Even if it has been produced by ourselves in the first place.

It was with this in mind that I set to to produce a tape for the British Amateur Tape Recording Contest. I decided on a "noise" tape mainly to prove to myself that "noise" could be controlled. My final choice of a Technical entry in the contest decided for me the fact that speech and music must be avoided.

What, then, should I feature? After strenuous thinking and rethinking, the idea came to me one night in bed. Either produce the effect of the first rocket to the moon, or a simulated nuclear explosion.

The next day, I experimented for sound effects by hammering on various objects using both wooden mallets and metal hammers. The sounds produced settled for me the subject "Nuclear Madness".

A start was made, the best results being obtained by hammering on a metal garden barrow and recording at 15 ips on my main recorder. The tape thus produced was then transferred to my second tape deck running at $7\frac{1}{2}$ ips thereby breaking up the sound still further.

This process was repeated several times until a satisfactory effect was

obtained, and the final tape was recorded at 15 ips.

The need for introductory effects before the explosion was a bit of a problem. This was eventually solved by using a home-constructed electronic oscillator. This has four double triode valves, each working as multi-vibrators, with the anode of the first joined to the second valve, the second anode joined to the third valve, and so on. Each valve had switched and variable components, thus making it possible to adjust to the sound required.

To add to the overall effect, I recorded separately on another tape the sound of the oscillator, the ticking of a clock, and a rasping sound from some ex-W.D. equipment (junk), using both upper and lower tracks, so that they overlapped each other.

The next step was to play back this tape on a deck which had the facility for playing the two tracks at once. Recording back on to my main recorder, I now had a tape containing the above noises, some in their natural state, the remainder played backwards.

The count-down pips were managed with a valve photo timer circuit, built in my own workshop. The pips were monitored on headphones, and after each "pip" a number was spoken. This was afterwards put on to a second deck and an echo added.

The two heads of this second deck coupled to a mixer (also home-constructed), were then fed to the main tape recorder.

I now dubbed all the separate recordings on to one tape, timed it, and found it over-ran the four minutes allowed.

I edited the master tape and noticed a number of undesired clickings. Next came a very wearying evening spent running the tape through cutting out



**The author receives the Wyndor
Gold Medal from Jo Douglas**

these "clicks" and other unwanted noises and generally tidying up.

Finally, when satisfied with the finished product and once again ensuring the specified time limit was adhered to, I dubbed the whole on to a final tape and sent the tape away. The rest was up to the judges.

Book Review

Transistor Circuit Manual No. 2.
Clive Sinclair. Bernards. 2s. 6d.

THIS is an excellent little booklet which will appeal to the amateur radio or audio enthusiast who is about to turn his attention to transistorised devices. The forty-four pages are packed with practical instructions for constructing no less than fourteen transistorised circuits ranging from a Metal Detector to a Hearing Aid, from a Short Wave Receiver to a simple Electronic Organ, as well as the more usual audio amplifiers and pocket radio receivers.

The circuit diagrams are clearly drawn and all component values marked. Where coils are used, winding instructions are given. A brief description of the principles involved is included in each case.

Any reader who intends to construct either of the two transmitters should be aware that a transmitting licence is necessary before such can be put into operation.

Many readers will find interest in the circuits which use the more recent high frequency transistors. The FM tuner is an example of this, using an Ediswan XA131 or similar transistor in a super-regenerative circuit which will oscillate up to 250 mc/s. Care should be taken when adjusting such a circuit to avoid interfering with other services.

C. Langton

Sound Effects

ALAN EDWARD BEEBY, who has had long experience in devising and recording sound effects, continues his regular column of advice.

If there is an effect you want, and which is causing difficulty, write to him for guidance.

HERE is another selection of hints, tips and wrinkles on the business of sound effect composition.

FOOTSTEPS IN THE SNOW. Fill a small polythene bag with either French chalk or flour and seal up. Hold the bag close to the microphone and squeeze it sharply in time with the footsteps.

THE "SNAP!" OF AN ELECTRICAL SWITCH can be imitated by snapping the fingers at speaking distance from the microphone.

THE SOUND BOING as often heard in comedy recordings to represent the giving-way of a chair-spring or the string of a musical instrument may be achieved in the following manner. Obtain a thick elastic band and cut this at one point so as to produce a single length. Tie one end firmly around the face of the microphone and either have someone hold it or wedge it so that it can't move about. Pull the elastic fairly taut, set the machine to record, then "twang" the elastic, at the same time stretching it quickly almost to its limit.

This method will cause the sound to travel upwards in pitch. By reversing the procedure, stretched tight to begin with and slackening-off after the "twang", the sound can be made to travel downwards.

SAWING WOOD can be imitated vocally. For the forward cut, place the tongue between the teeth and force the breath out sharply, causing a "Thsss!" sound. For the backward cut, draw the breath back in, bringing the tongue away from the teeth and half closing the back of the throat giving a rasping sound. Keep up a steady rhythm, but with a split-second pause between the backward and forward cuts.

A SAW MILL. Cut, out of a piece of thin sheet-metal, the shape of a 10-inch gramophone record complete with centre hole. Remove the rubber mat from the record turntable and stick, at regular points near the edge, four rubber suction discs. These should have a small, raised knob on which the metal disc can be laid to lift it clear of the turntable surface. This helps to give that peculiar ringing sound to the effect of the saw itself.

Set the turntable in motion at 78 rpm. In the left hand is held a knife with the blade pointing downwards so as to brush the surface of the disc continually. The position of the blade is important because only at one certain angle will you produce the necessary "grating" sound. The actual cutting noise of the circular saw is obtained by holding a piece of rough sandpaper in the right hand and bringing this down, fairly heavily, on to the disc surface at regular intervals.

This effect is best recorded at half speed and timed accordingly. If it's perfection you're after, add a very slight echo to the finished effect by re-recording.

A BLACKSMITH'S ANVIL being beaten can be imitated by tapping sharply on the side of a glass jam jar with a piece of metal and recording the sound at double speed.

TEARING CLOTH noises are best achieved by ripping

down a length of rough emery cloth. Cloth itself sounds muffled when torn in front of a microphone.

RIFLE FIRE. Try it the old-fashioned way. Obtain an empty tea chest and a 12 in steel ruler. Lay the ruler on top of the tea chest and press one end down hard with the left hand. With the right hand, lift the free end of the ruler and let it snap back sharply.

VOLLEY OF RIFLE FIRE. This item is useful for a firing-squad effect. Superimpose about six or seven of the above rifle shots over each other, each one being recorded at a slightly lower level than that of its predecessor. This will help to even-out volume loss on the first two or three items. Don't be too fussy about getting all the shots into perfect synchronisation, though, or it won't sound like a volley at all, merely one loud bang.

MACHINE GUN FIRE. Forget all the well-meant tips on tapping the keys of a typewriter or slowly twirling a football rattle . . . this is an editing job! Record twenty rifle shots, again, as above. Now splice these together so that they follow one another in rapid succession. This, incidentally, was the very first lesson in effects-editing I ever had, from an ex-German radio engineer, about eight years ago. It sounds absurdly simple. Theoretically, of course, each piece should be exactly the same length and all you have to do is join them together. Try it: you'll have quite a surprise!

Now for a query sent to me by A. Andrews of Mitcham, Surrey. He asks: "Is there any sound effect which has beaten you completely?" Ah, well, here goes! Yes, there is one particular effect which I have never been able to produce to my complete satisfaction. The whine of a bullet. Has anyone got any suggestions? I'll feature the three best methods received.

Peter Morbey of London raises, again, the problem of recording *real* explosions which I mentioned in our April 20 issue. Peter is a cine-enthusiast and plans to make a sound film of war-time commando activity complete with realistic explosive effects, ". . . and none of this 'blowing down the microphone' business!"

Well, to Peter and anyone else interested in employing explosives to create realistic audio/visual effects, my advice is to contact I.C.I. at their Midland Office at Britannia House, 50 Great Charles Street, Birmingham and explain just what you have in mind. A hand-grenade explosion, for example, with its attendant "cone" of earth displacement can be simulated quite effectively by burying either a 1.6 oz. cartridge of Gelnite or a Commercial Water-proof Primer, both of which can be initiated by an electric detonator.

Once more, may I remind you that this is dangerous and tricky stuff to handle, and the strictest possible precautions must be taken to avoid damage or injury caused by flying stones and even the smallest pebbles as well as fragmentation of the detonator itself.

It is essential, of course, to hold the appropriate Police Documents before being able to purchase, store or use explosives of this type.

Letters to the Editor

THOSE "STOLEN" RECORDINGS AGAIN

THERE are one or two comments I would like to make in reply to your two correspondents, Dr. Derek Goldfoot and Mr. Norman Paul regarding the subject "'Stolen' Recording Criticised": (I am pleased to see the word "stolen" in inverted commas) in your July 27 issue.

I do not expect Dr. Goldfoot has seen an "artist's contract which includes an amateur tape recording as part of his contractual liability"; I haven't seen one either; I only suggested this as a thing of the future but feel such a clause may have to come when amateur tape-recording evolves out of what Dr. Goldfoot describes as the "New toy" stage.

But why should a society be expected to erase the records of its own achievements as Dr. Goldfoot suggests they should do, as a condition of being allowed to make recordings of professional artists taking part in such performances, given by the societies themselves, when such societies have organised the events, taken the financial risk, paid the artists their fees, and provided a "platform" for them; such a suggestion is surely, audacious.

The difference between "broadcasting corporations" and amateur tape recordists is surely that the former cater for, and draw revenue from millions of people whereas a recording by an amateur for a specific society is heard by a very small number of people and is usually subsidised by the recordist who usually finds himself paying for what would appear to be the doubtful privilege of giving artists free publicity which they are too short-sighted to appreciate. When will artists realise that any recording of them played anywhere cannot but bring their name before the public. As for the question of quality of amateur recordings, the public are, surely, sufficiently educated in hi-fi, to be able to appreciate when a recording is "appalling." I would, on the other hand, suggest that it is quite possible for a "commercial" recording to be made to sound "appalling" by the use of inadequate equipment; artists have no protection against this.

Both Dr. Goldfoot and Mr. Paul raise the question of why societies bother to engage professional artists. If either of them have sat on artist-selection committees, as I have, late into the evening, they will realise that one of the main questions an amateur society has to ask is "Which artist will be the biggest draw to the public." I come back to the same point as in my original letter, that an artist is not always chosen on musical ability but on publicity value because an amateur society must always have its eye on the box office or go bankrupt.

It is again a question of "a prophet

in his own country." Local artists, however first class, do not draw the money-paying public through the concert hall doors; the public want to see as well as hear the people they have heard and seen on radio and television. The "rose-coloured spectacles," Mr. Paul mentions, are being worn by the artists who innocently believe that their musical ability solely and absolutely will see them through all their troubles. I know of a famous instrumentalist whose name was turned down at a selection committee meeting merely because a committee member said that his mannerisms "got on her nerves." The Committee did not say to her, "Well shut your eyes": No! they picked another artist!

I keep returning to this theme because I think artists should realise that they are ultimately in the hands of the amateurs; the great concert-going public who, being only partly musically-educated (and I don't say that disparagingly) temper their assessment of an artist with factors other than musical.

I do not suffer from "outraged indignation" when an artist refuses to be recorded I am only annoyed at the blatant short-sightedness of such artists at getting themselves on the "wrong side" of an amateur society. My task is easy: All I have to do is to record a performance, omit the artists who object and when I play it back I merely say, "I am sorry I cannot play the next item as Mr. So and So refused to be recorded"; then I listen to the murmurs of the members!

REGINALD WILLIAMS.

Chester, Cheshire.

THANKS

THANK you for your most interesting coverage of microphones, it is the type of article one can with purpose put into the files. On the subject of contact mics, and the reference to ex-govt. throat mics, my local surplus stores has these available at 3s. 6d. (by post 4s. 6d.) new and unused.

If any of your readers in remote areas who do not have access to this type of store cares to contact me I will do what I can to supply as far as I can obtain them. S.A.E. please.

W. J. TOMLINSON.

62, Beacontree Ave., E.17.

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

A plea for action

I WOULD like to support your correspondent, D. Wiseman, in his August 10 issue plea for some action to protect the tape recording "customer" from both the "couldn't care less" manufacturers and the unscrupulous retail dealer.

In December 1959 Bill Young, our club president, and myself purchased identical British-made tape recorders costing £100 (all but 5s.). You may be interested to read of our experiences with them.

Both machines gave trouble from the start. Bill Young's had capstan and loudspeaker trouble, and my own suffered because the top track head was badly out of alignment, the balanced input transformer was incorrectly wired, and the drive belt of the position indicator broke—some factory inspection, I think, you will agree!

Mr. Young and I both wrote to the manufacturer complaining bitterly about the condition our machines were in when we received them. Some time passed, and not even an acknowledgment was received by either of us. I telephoned the Managing Director of the firm and asked about the delay. He knew nothing of either letters but promised to investigate and advise us.

Another week passed and then came the long-awaited reply. What did it contain?—an apology about the misaligned head; a statement that "not even the best of men are infallible"; and no mention of the transformer fault. Bill Young received a reply in similar terms.

I felt that these troubles were a bit of a coincidence. So I instituted some inquiries from tape friends about any of their acquaintances who had similar machines.

The result was astounding—a large number had had trouble with these machines, indicating little or no factory inspection.

This is the sort of thing we must try and stop.

The Federation of T.R.C. appears to be powerless—only one manufacturer attended the recent Congress—and that was a continental one.

I would suggest the best move for any purchaser who gets into difficulties is to join either Consumer Association or the Consumer Council of the British Standards Institute. If these organisations get a shoal of complaints they would start investigations and this would make the manufacturers sit up and take notice.

JAMES R. SIME

Edinburgh Tape Recording Club.

Equipment Under Test

SPECTONE 171

THE SPECTONE 171 portable tape recorder is a well-made instrument priced at 39 gns. It weighs 21 lb., and is supplied complete with its own hand-held crystal stick microphone and a spare jack plug.

The instruction booklet is reasonably comprehensive, but the inclusion of a circuit diagram would be welcome. The circuit employs five valves, one being the recording level indicator, and a couple of selenium contact rectifiers. A double triode pre-amplifier (ECC-83) is employed, with the second double triode functioning as recording current amplifier, and a separate pentode (EL-84) oscillator produces a nominal 60 kc/s output for the erase head and recording bias.

When received the recorder did not function on "Record" since the bias oscillator was not functioning; a second unit was therefore obtained, and this was used to take the response curve shown.

Subsequently, the trouble in the original unit was traced to the EL-84 oscillator valve, which could hardly be the fault of the recorder manufacturers, and I therefore had two units on which to base my report.

The overall "Record/Replay" characteristics were obtained by using the microphone input and the amplifier output sockets, the response being substantially flat from 70 cps to 10,000 cps, with the usual sharp fall-off above this limit.

The tape speed is $3\frac{1}{2}$ ips, and the smooth high frequency response is good, although the same cannot be said for the lower end which does not substantiate the makers claim of ± 3 dB from 50-10,000 cps, the small response deviations occurring below 200 cps being due to the geometry of the "Record/Replay" head and of no practical consequence. Response was

By C. T. HEINLEIN

slightly improved by using the radio input, eliminating the first amplifier stage. When used with the internal speaker this reduced bass response is no disadvantage, although it may be so when employing wide-range reproducing equipment. Incidentally, the tape was replayed on the second machine and gave substantially identical results.

The 171 employs the Garrard Magazine tape deck, for which a separate instruction manual is supplied. The magazine holds two 4 in. diameter spools and approximately 650 ft. of double-play tape, with 6 ft. of coloured leader tape at each end—this length of tape provides a total of just over 1 hour running time. The brake mechanism, which controls the tape on fast rewind and prevents spillage during handling, is also incorporated on the cassette. If desired, it is perfectly feasible to use normal 4 in. spools without the cassette, though care must be taken when using the fast rewind since no braking is then provided—however, this presents little difficulty.

When replaying a 1,000 cps steady tone it was possible to detect some wow, but no attempt was made to trace the origin of this. One of the two machines emitted a high-pitched whistle each time the function switch was moved from "off" to "play"—this was annoying but was in no way detrimental to the function of the recorder.

The sensitivities of the two inputs was slightly better than that claimed by the manufac-



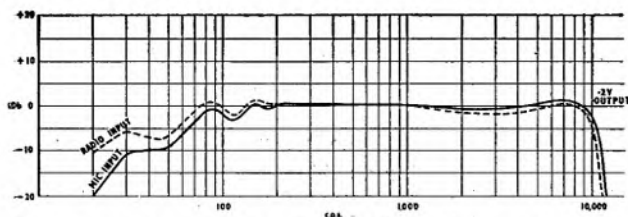
turer (i.e. microphone 2 Mv rms, radio 100 Mv rms).

The response curves mentioned previously were taken with the input volume controls set to maximum and with constant inputs of 500 microvolts and 20 millivolts to the "microphone" and "radio" inputs respectively—these levels were chosen to ensure that the recording pre-emphasis did not cause overloading of the tape at high frequencies. The recommendations in the instruction booklet concerning the use of the recording level indicator were adequate to ensure a fully modulated tape with little danger of excessive distortion.

A maximum top cut of approximately 12 dB at 5,000 cps and 17 dB at 10,000 cps was provided by the tone control used on the internal speaker.

A response of one of the hand-held crystal microphones was taken and was found to be exceptionally well maintained to beyond 14,000 cps, although, of course, the recorder did not make use of this extreme top; the bass end had a falling response which could have an advantage on speech though probably not on musical items. The response of the second microphone was not taken.

(Continued on page 26)



Frequency response of Spectone 171 recorder

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HOW GOOD SHOULD STEREO BE?

IF you take the trouble to go in for stereo recording what degree of stereo "effect" are you going to be content with?

That is one of the first and foremost questions that seems to arise in the sphere of amateur stereo recording judging from correspondence that has followed my recent request for "reports" from people who are trying their hand at this activity.

A good example of this is the question raised by Stanley White (Kettering) who, as most readers know, is a theatre pipe-organ enthusiast. He uses a Ferrograph 808 with Reslo ribbon microphones.

"It is possible," writes Mr. White, "to take down perfectly good stereo recordings of the theatre type of organ if the organ is divided.

"Columbia have recently released two excellent examples of the Blackpool Tower Ballroom Wurlitzer in stereo. The two organ chambers are side by side above the proscenium arch, and the pistons of the organ were altered so that the organ when being played was divided between the two chambers as far as possible. The results are very worth while, as can be heard.

"Other theatre organs—such as the Trocadero, Elephant and Castle, Wurlitzer, which has its chambers on each side of the auditorium, and the 'Granada' Tooting, Wurlitzer, which is installed under the stage and each side of the console—would be equally fine for stereo as the organ chambers are divided.

"My trouble has been with a very large four-manual 22-rank Conacher theatre organ. Naturally, with stereo equipment, one wishes to take down stereo recordings. Unfortunately with this organ, as is the case with many theatre organs, the two organ chambers are placed one above the other in one wall of the auditorium. This means that any hope of dividing the organ is gone, unless one raises one mike very high so that it

Stereo Notes

By D. W. GARDNER

handles the top chamber; but my equipment does not allow me to do this. So the mikes were placed on the floor, looking upwards towards the organ chambers, and a few feet apart.

"The resulting recordings are very good from the point of view that the sound of the organ is well and truly captured, but the only real indication that the tape is in stereo appears when the audience applauds; the sounds of the people clapping does spread out very well. For the organ parts, the sound sits bang in-between the speakers, and if the room is in darkness, it is easy to picture the organ chambers towering up the wall. But the sound does not come from one speaker and then the other as is apparent in recordings made on a divided organ.

"My point is this. Does the recording I have just talked about rate as stereo? The organ does stop in one place, as it actually was heard by me underneath the chambers in the theatre. But is this the thing to aim for with stereo? I know what good stereo sounds like, but would a recording of this nature be better split in some way? I think it is OK as it is; but would a visitor listening to the recording say, 'But this is not stereo'?"

I think that Mr. White really knows the answer to all this, but is torn between personal satisfaction and the desire to demonstrate forcibly to his friends the potentialities of stereo recording.

And, again, the right answer is "no compromise." Stereo is intended to provide positional fidelity, and if an organ is not divided then it is quite proper that the recording and the reproduction should reflect this fact.

It is just not true to say, or to allow oneself to believe, that if the sound comes first from one speaker and then the other we have true stereo and if the sound is bang in the middle or equally

spread (as in the original performance) we have something that is not true stereo.

Only positional truth is the true answer, regardless of whether the results are spectacular or unspectacular. There is no reason on earth why every stereo recording should demonstrate the full spatial range of stereo any more than every monophonic recording should demonstrate the capacity of high fidelity to range from 30-15,000 cps—or any more than every concert at the Festival Hall should consist exclusively of works for full orchestra, just because it is capable of handling a hundred instruments playing at once without a blemish.

Stereo recordists, amateur as well as professional, must have the courage of their convictions and be contented with the simple advantage of authentic atmosphere in cases where the positional element is not pronounced. And misguided friends who expect "tink-tonk" all the time must be educated to understand that stereo has a more important job to do than provoke continued exclamations of wonder.

One frequently hears the remark: "Of course, there is no point in using stereo for the piano." This is the essence of the fallacy. Stereo can make a great contribution to piano recording—so much so that the noted pianist Clifford Curzon has declared that no monophonic recording has ever really satisfied him, stereo being absolutely necessary to convey the authentic quality of a pianoforte performance.

Amateurs who have stereo equipment should not, I think, bother themselves too much with the question of whether two tracks or one would be "appropriate" to a subject. Stereo is always appropriate unless the physical problems are more than you wish to tackle.

And although we are naturally drawn towards subjects that give pronounced positional effects we should be betraying the true cause, I feel, if we put up anything in the nature of a bar against subjects which do not produce striking positional results.

What do you think about it?

3M add new tape

THE 3M Company announce an addition to their range of Scotch brand recording tape—No. 102, a polyester all-purpose magnetic tape.

The company claims that the tape gives professional quality recording and it uses the same polyester base material as No. 150 extra-play tape. No. 102 is available in three spool sizes: 600 ft. at 22s. 9d.; 850 ft. at 30s. 3d. and 1,200 ft. at 38s.

Minnesota Mining and Manufacturing Co. Ltd., 3M House, Wigmore Street, London, W1.

The Spectone 171 (Continued from page 25)

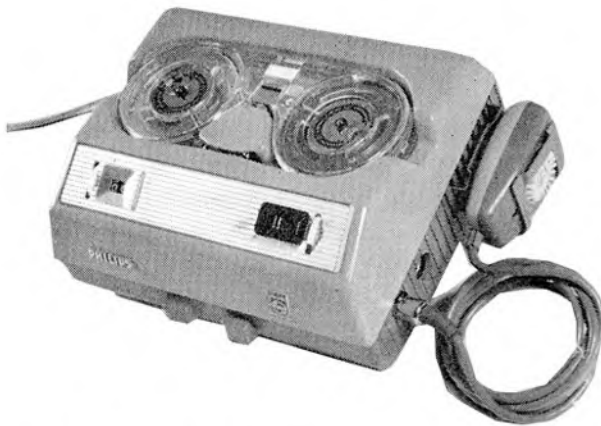
Two compartments, are provided, one at the back containing the five sockets (microphone input, radio input, amplifier output, erase, external speaker), the mains selector panel, and space for the microphone, and a compartment underneath which houses the mains lead. Both of these compartments have detachable covers with rather uncertain rotating catches with

no positive location—these catches and the detachability of the covers appear to be open to criticism—the provision of hinges would prevent the covers being mislaid.

For those who require the undoubted simplicity of a cassette loading machine, and are therefore willing to accept its limitations, this tape recorder may be fully recommended.

PHILIPS INTRODUCE DICTATING MACHINE

40 minutes playing time



The new Philips
EL3581/54

Two new recorders from Belgium

TWO Lugavox models, manufactured in Belgium by A.C.E.C., of Charleroi, are being distributed by the Company's establishment in Dublin.

The first, the Lugavox Acec type 1160, has two speeds (7½, 3¼ ips) and costs £56. Complete push-button control is incorporated and over four hours continuous playing time is available on a single 7½-in. spool. There are sockets for external loudspeaker and amplifier and a clock-type indicator for location of recordings.

Facilities include monitoring, mixing, optical recording level indicator and a mains voltage selector.

Output power is 2.5 watts into two 7½ x 4 in. speakers, and one 2½ in., and the frequency range is said to extend to 15,000 cps.

New Products

The recorder measures 17 x 13 x 8½ in. and weighs 24¼ lb.

Two more speeds, 1½ and 15/16th ips, are incorporated on the Type 1161 which provides 16 hours playing time on a 2,400-foot reel of tape. The price has still to be announced.

Features include superimposition, separate bass and treble controls, recorder mixer circuit with individual volume control, and precision rev. counter. Direct mixing is possible on playback, and a gramophone record and a recorded tape may be reproduced simultaneously.

Measurements are 8½ x 16½ x 16½ in. and two 4 x 5½ in. speakers are fitted. Frequency response is given as 40-20,000 cps at 7½ ips and wow as 0.2 per cent at the same speed.

A.C.E.C. (Enterprises) Ltd., Cromwell House, Fulwood Place, London, W.C.1.



Left: The G375, Garrard Magazine recorder, recently introduced by Electric Audio Reproducers and described in our last issue.

With facilities including mixing, and superimposition, this machine has a single speed of 3¼ ips, a quoted frequency response of 60-9,000 cps, and costs 25 gns.

A NEW version of their dictating machine entitled the EL 3581/54 is now available from Philips Electrical Ltd. The cost is 49½ gns. which includes microphone, foot control and stethoscope headphones, full cassette dust cover and coupon book.

Greater versatility is claimed for the new model which incorporates twin-track recording, snap-in cassette and offers a total of 40 minutes playing time on each reel. The combined microphone/loud-speaker has a lockable start/stop switch and remote control can be carried out by hand or foot. A two-digital rev. counter facilitates location finding.

When metal foil switch tape is used a buzzer warns that the end of the tape has been reached in recording, playback and fast wind.

There is a separate input for microphone or telephone coil for recording two-way conversation, and a selector switch for quick changeover of either input. A warning buzzer sounds if the operator inadvertently starts to record via the microphone when the machine is set for the telephone.

Accessories include a carrying case, a pre-amplifier for the microphone, a stand for the microphone and a bracket for clipping the microphone to the side of the machine.

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

LUSTRAPHONE

LUSTRAPHONE have added to their range of accessories with an entirely new tubular pencil switch adaptor. Although designed to match other components in the Lustraphone range, the adaptor, type GA 159, incorporates a silent-action switch and has a variety of applications.

It is designed for the standard or usual switch requirements and can be adapted for various combinations including double-pole change-over circuit requirements. The price is £1 17s. 6d.

Lustraphone Ltd., St. George's Works, Regents Park Road, London, N.W.1.

Name Change

PA.R. Electronics, manufacturers of the Allegro tape recorders, will, as from October 1, be known as Allegro Sound Equipment. They will still operate from 7, Avery Row, Mayfair, London, W.1.

One of the first of their new products to be issued under the new name will be a twin-channel integrated stereo amplifier, the Allegro 66 Stereo. Further details of this amplifier which supplies 6 watts per channel will be given in an early issue.

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Walter 505	57 gns.	*Vortexion WVA	89 gns.	Fi-Cord	59 gns.
Perth Saja	45 gns.	*Ferrograph 4 AN	81 gns.	*Butoba	69 gns.
*Telefunken 75 KL-15	52 gns.	*Ferrograph 4 SN	88 gns.	Minivox	37 gns.
*Telefunken 85 KL	79 gns.	Sound Prince	34 gns.	Stuzzi-Magnette	69 gns.
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*Grundig TK 25... ..	62 gns.	Sound Studio	42 gns.	MICROPHONES	
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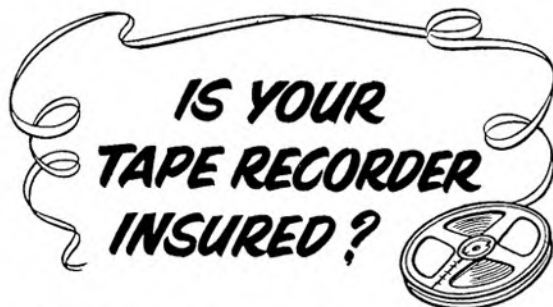
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THE WORLD OF TAPE

OPENED Monday—crowded Tuesday—raided Wednesday! This was the history of the brand new Tape Recorder Centre Ltd, showroom in High Holborn, London.

After having been stocked up with a display of hundreds of models and makes of tape recorders and Hi-Fi equipment, it was crowded out on Tuesday and aroused great interest from the public.

Too much interest it seems, because at 3.15 a.m. on Wednesday morning, September 7, two men drove up on a motor scooter outside the showroom, smashed the plate glass with a dust-bin lid, grabbed a most valuable recorder and made off. The noise attracted the attention of a police officer but the raiders got away on their scooter.

Notwithstanding this sudden increase in overheads, the new showrooms are pressing ahead with their aims.

Many an intending buyer has found it difficult to find all comparable makes of recorders demonstrated in one spot for complete comparison. The Tape Recorder Centre Ltd, now offers precisely this facility, in the West End, too.

The spacious showroom offers ideal conditions to inspect the hundreds of different makes and types of tape recorders and hi-fi equipment always in stock, and demonstrations are carried out by experienced specialists.

TO find out what Greenock's young people were doing in their spare time, leaders of the Greenock and District Youth Association held tape recording interviews in a West End café and in St. Laurence's Youth Club recently.

Their motive in doing so is to try and save the Larkfield Boys' Club which is threatened with extinction owing to a lack of leaders. The Association hope to get a better understanding of what the young people are interested in and so formulate a plan to encourage membership.

TRADE EXHIBITION

A MOBILE Trade Exhibition organised by Truvox Limited is now nearing the half-way mark of its tour round Great Britain. The exhibition, open from 10 a.m. to 7 p.m., and is designed to introduce the R6 and R7 tape recorders. It is primarily for wholesalers and retailers, although the public will be admitted on occasions. Special demonstrations for tape recording clubs are being arranged for certain evenings.

Already the exhibition has visited Birmingham, Derby, Nottingham, London and Cardiff, and its next stop is scheduled for Bristol where it will stay for two days, October 6-7. Further two-day visits will be made to Manchester (October 10-11), Liverpool (12-13), Leeds (17-18), Sheffield (19-20), Newcastle (25-27).

Full details about the exhibition and its venues are available from Truvox Ltd., Neasden Lane, London, N.W.10.

B.I.R.S. plan lecture series

THE British Institute of Recorded Sound have organised a series of ten lectures on the general subject of *The Record Library and Its Problems*.

Among the subjects to be discussed will be: *The B.B.C. Gramophone Library* by Miss Valentine Britten (November 23); *The BBC Recorded Programmes Library* by Timothy Eckersley (November 30); *The performance and care of LP and stereo records* by Cecil E. Watts (January 18); *Commercial Record Libraries* by Ivan March (January 25);

Copyright and Performing Rights by C. B. Dawson Pane, LL.B. (February 1); and *The Documentation of Records* by Geoffrey Cuming (March 15).

The first of these lectures will be held on October 26. Enquiries for further details and applications should be sent, with stamped addressed envelopes, to the B.I.R.S. at 38, Russell Square, London, W.C.1. (MUSEum 4507). All lectures will begin at 8 p.m. at this address. The fee for the series of ten lectures is £1, or 2s. 6d. per session.

Hi-Fi HARRY by Rich



You'll like this one—it's a recording entitled "The History of Design and Ornamentation"

MAGAZINE DIGEST

In this column we draw attention to items published elsewhere which may be of particular interest to readers.

Revue du Son (French): Article on sound systems in the modern theatre.

High Fidelity (American): *Are you cheating yourself on loudspeakers; Amplifier ratings—Fact or fantasy.*

Hi-Fi News: Number five in the "Understanding Hi-Fi" series, *Magnetic Recording*.

Tape Recording (American): *The Handy Dandy "Sneaker Speaker"—making your own low-cost speaker mike unit. Making money with music.*

Hi-Fi/Stereo Review (American): *Stereo cartridge simltest—a laboratory analysis of fourteen stereo cartridges. Power politics—how many watts do you need?*

All issues mentioned are for September.



Audio experts at Broadcasting House—a BBC photograph taken after the first "Sound" programme of the new series. Left to right: Ken Blake, one of the judges for the British Amateur Tape Recording Contest; Roy Maynard, Assistant Producer; Len Thompson, Studio Engineer; R. D. Brown, Editor of *Tape Recording Fortnightly*; Marguerite Cutforth, Producer; Donald Aldous of *Gramophone Record Review*; John Borwick, of *Hi-Fi News*; and John Kirby, compere



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News from the Clubs

Edited by

FRED CHANDLER

AS this edition of Club News is being assembled the rain is falling steadily outside. Although the last remnants of the summer have not disappeared yet, it will not be long before autumn proper is with us.

What does autumn mean to the tape recordist? To my mind it is the period in the year when the battery portable is temporarily shelved and the editing block brought out. It is the period when all the interesting material collected on holidays, outings and other out-of-door activities is trimmed and fashioned into a feature tape or possibly tapes, and labelled "Summer 1960", a permanent sound diary to look back on in the years to come.

But this is also the time when the clubs come into their own. Not every recordist can afford two machines, a factor which makes editing so much easier and less of a gamble. What better way of spending an evening than taking the recorder and the reels of tape round to the clubroom and to do a little dubbing with the help of someone else's recorder? Advice (not necessarily serious, of course) will be close at hand on any tricky problems and there is the comfortable feeling that one is pursuing one's hobby in possibly the most congenial surroundings.

For that is what a club is for. It should be an organisation designed to make tape recording more attractive to its members. It should stimulate the member to attempt things which perhaps he thought were not within his grasp, and it should widen his knowledge in the areas where it might be marginal.

On a broader horizon, the **Federation of British Tape Recording Clubs** was set up to co-ordinate, among other things, the work of the clubs. The federation's latest newsletter contains the following list of addresses for those who might have occasion to correspond with them: Technical enquiries, Mr. Roger Aslin, Fair Lea, Boar's Head, Crowborough, Sussex; Membership, Mr. A. J. Rogers, 35, Ramsbury Drive, Earley, Reading, Berks; Public Relations, Mr. Les Skingley, 1, Roland Mount, Holbrook, Coventry; Trade Association scheme, Sqdn. Ldr. F. Westcott, RAF, 40 Fontwell Park, Ashford, Middlesex. Any other correspondence should be to the secretary, Mr. Alan Stableford, 9, Normandy Terrace, London E.16.

Mr. Stableford reminds member clubs that the BBC is constantly adding to its

library of permanent recordings and many of these additions are by amateurs. Payment is at the rate of one guinea a minute and Mr. Stableford says that he would be pleased to submit tapes to the BBC for consideration although members may, of course, submit contributions direct.

The **Ilford** club were at home to the **Walthamstow** society on September 2. Led by chairman John Wells, and secretary Ken Perks, they competed with Ilford in a quiz, pre-recorded by Dave Bolton, the Ilford secretary. The result was a win for the visitors who were presented with a book on tape editing, by Alan Lovell.

The Walthamstow society had recorded a play and this was heard as well as Percy Ager's recordings of the human heart and Lew Jackson's incomparable tape of a trans-Atlantic telephone mix-up.

A date is being prepared for Ilford to visit Walthamstow.

The chairman Percy Ager, who with Jeff Langley, brought the society into being, is removing and feels he will be unable to continue in his post.

Secretary Dave Bolton is always ready to answer queries about the club. His address is 13, Gloucester Road, Manor Park, London E.12.

Although not feeling too well, Dennis Millard, as promised, demonstrated his Telefunken at the meeting of the **West Herts** society on August 24.

Following the demonstration was an item entitled: "Talk yourself out of this." Here members were able to air

their views on various points such as "Do you prefer 2-track to 4-track?" and "Would you buy a machine with 15 ips?" One member even convinced the club that he prefers monaural to stereo!

Later an interesting experiment was carried out with a dog-whistle. Although it was possible to measure the frequencies put out by the whistle it was very clear that some members were able to hear much higher frequencies than others. Jack King "cut off" below everyone else, but the tone that he couldn't hear was almost ear-shattering to the lady members. Playback at half speed made it clearly audible to all present.

Mr. Tughan and Mr. Torrence, both of Veritone Ltd., attended the September 7 meeting, the latter answering the more technical questions as he is designer of the Veritone machines. They were accompanied by Mr. Wilson of BASF Tapes who added to the demonstration with his comments on tapes and the use of 2-track and 4-track. Mr. Wilson is to pay a later visit and bring film.

A sound hunt was organised for September 11, and three cars each with four members and one battery portable, set out on a tour of the district for sounds and descriptions of items. The clues had been set by chairman John Grainger. Interviews with busmen and barges, train sounds, a school clock and a waterfall were all recorded. All the teams dealt with the interview with the manager of the well-known "treacle mines" at Winkwell in the same manner—business was good but things were getting a bit sticky and some of the tins were being mined without any treacle in them at all. The winning team comprised Dennis Millard, Norman Parker, Jean Stern and a visitor. They were armed with a Grundig Cub.

Back from his holiday, the chairman of the **Coventry** club, Mr. R. Penfold, welcomed some 32 people to the meeting. Two new members were enrolled and

(Continued on page 33)

TAPE TITTER



"Say, Dadda—Dadda
—Dadda— - - - !"

TAPE RECORDING and Hi-Fi YEAR BOOK

“An established institution —

THE Tape Recording and Hi-Fi Yearbook is now an established institution and about the need for such an authoritative reference book there is no longer any doubt. In greeting the third annual publication, therefore, one is only called upon to compare it with earlier issues. I do not think anyone will challenge my view that the 1960-1 edition, now on sale, is the best in the series.

The printing and production standard, for a start, is superior. A square-back binding is used, though the card covers are retained—presumably in order to hold down the cost to 6s., a notably modest price for a reference book of this type. But the whole book has a glossy appearance that makes it much more attractive to handle. Overall, it is the same size as last year—96 pages, plus cover.

Catalogue

The Yearbook is, of course, essentially a reference work and the heart of the book is the comprehensive and detailed catalogue of tape recorders now on sale. Altogether, 139 recorders are described,

in each case with a full specification—type of deck, speeds, frequency response, output, spool size, speaker size, dimensions and weight, microphone supplied, operating facilities, and price.

About three dozen representative machines are illustrated.

Directory

There is a substantial directory section, which has grown since last year, showing the rapid expansion now taking place of tape recording activity in Britain.

Manufacturers of recorders and of microphones are listed, as well as the officials of about 100 tape recording clubs.

This is essentially a book for the new recruit to tape recording; it will save him (or her) no end of worry. Anyone who has not yet bought a recorder but is thinking of doing so will find its guidance invaluable.

There is an opening section “Basic Facts for Beginners” which is the best brief and simple exposition of the principles of a recorder and the points to study that I have seen anywhere.

This is followed by the review of tape recording developments during the past

year, contributed by the Editor of *Tape Recording Fortnightly*, which has become a feature of the Yearbook. It is provocative, as well as informative, and focuses our attention on the more significant trends and problems.

Yearbook then embraces an entirely new feature, called “Twenty ways to use a tape recorder,” which will appeal to newcomers to the hobby. It is a series of brief pointers to the full variety of activity which is possible, and covers the whole spectrum, from music teaching to tape at the party.

Portables

The growing importance of outdoor recording with battery portable recorders is recognised in an article, reprinted from *Tape Recording Fortnightly*, by S. M. Wheatley, the ex-B.B.C. expert in this field.

Other contents include a roundup of the latest position in regard to copyright, a survey of the clubs, full details of the British Amateur Tape Recording Contest, the familiar glossary of technical terms, and a new section listing books available on tape recording.

RUDOLF DYNER.

Classified advertisements

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

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

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

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News from the Clubs

(Continued from page 31)

membership now stands at the 54 mark.

The dubbing machine was brought along by Carl Briggs and is now available to members who wish to borrow it for this purpose. Members will be restricted to three days use of the machine which is based on the Collaro Studio Deck and can take 7 in. reels. Provision has been made to accommodate the connection of loose ends of wire, and so there will be no worry about fitting plugs. The club expresses thanks to Mr. Briggs and others who have been responsible for its construction.

Impressions were given by various members who attended the Radio Show and then two of Roy Reynolds' tapes were heard, causing great laughter and showing evidence of his ingenuity.

Once again the tape from the San Francisco Tape Recording Club was played, for the benefit of members who had not previously heard it. Efforts were made to try and form a group to make a reply, but apart from Carl Briggs and Mr. R. Tisdale, not many members were anxious to tackle the task of replying to this tape. An answer will be sent, however.

The Whipsnade tapes made on August 21, were played back at the September 8 meeting of the West Middlesex club. Freddie Westcott, the chairman, had produced a particularly fine, completely edited effort, which took the listeners on a survey of the zoo, and was neatly introduced by comparing the various modes of transport used to get there.

Ron Topham of the programme committee had paid a visit to Hillingdon Hospital and discussed ways and means

of helping patients with messages to their relatives. Permission has been obtained to visit in non-visiting hours, for the sake of maximum peace and quiet.

The October 13 meeting will be at the Railway Hotel, Station Road, Hampton. The landlord Bruce Bargavel will be singing to piano accompaniment and members are invited to bring their equipment with them.

The club is hoping to obtain some specially written playlets or sketches, suitable for recording, from a local author who has won several prizes for his material, and it is then hoped to arrange recording sessions for putting these on to tape.

The Dundee club has announced a competition on national contest lines, which closes on December 5. The idea is to get members taping entries which can then be polished up for entry into the B.A.T.R.C. next year. There will be three sections: 10-minute documentary and reportage, 4-minute music or speech, and technical experiment.

A group of ten members of the Dover club visited the ITV station at Hougham, and found the experience very interesting. This was the first meeting since July 11. Meetings are now to be held on alternate Wednesdays at the Priory Hotel.

An effort is being made to start a club in Taunton. Anyone interested should contact Mr. R. V. Smith, 83 Priorswood Road, Taunton, Somerset.

The first anniversary dinner of the York club will be held at the City Arms Hotel, Fawcett Street, York on Monday, November 7. Members of the public interested in attending should send their £1 remittances to Mr. H. C. Edwards, 45 Thoresby Road, Acomb, York by the end of October at the latest.

Tape in the schools

(Continued from page 16)

gives the children some training in observation, initiative and self reliance.

From previous experience Mr. Randle knew how concentrated these journeys can be for children. Each evening a certain amount of school work is done—sketches, drawings, essays, etc. The children see so much that inevitably some interesting pieces of information are overlooked or neglected because note-taking becomes a real labour.

This year he experimented with a portable tape recorder to record interesting items at castles, Osborne House, Niton Radio Station, a lifeboat station, at Roman remains—even down a well. These were played back in the evening, and later to the remaining three hundred or so children back at the London school.

"We obtained some very good recordings even though at times I was taken for an official guide by the general public. I talked with the children—giving thumb nail sketches of people such as Charles I and Queen Victoria—and lost sight of some of them amongst the adults. Guides, museum keepers, and coach drivers co-operated well with us. I think people like to hear how they sound on tape, and I always made a point of playing-back to them, and, incidentally, obtaining their permission before recording. One coach driver in particular gave an excellent talk on The Princess Flying Boat, giving its history, details of size and other relevant information.

CLUB MEETING DIARY

ACTON: Every Friday at The King's Head, Acton High Street.

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

BLACKPOOL: Every Wednesday at 173, Church Street.

BOURNEMOUTH: Alternate Tuesdays at the Civil Defence Centre, Holdenhurst Road (Next: Oct. 18.)

BRIDGWATER: Alternate Tuesdays at Erio's Radio, West Street. (Oct. 18.)

BRIGHTON: Every Wednesday at Fairlight School, Pevensey Road.

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

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

COVENTRY: Alternate Thursdays at Rotherham's Social Club. (Oct. 13.)

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

DOVER: Alternate Mondays at The Priory Hotel. (Oct. 17.)

DUNDEE: Alternate Mondays at 59, Strathmartine Road. (Oct. 10.)

EDINBURGH: 1st Tuesday and 3rd Sunday at 23, Fettes Row, Edinburgh 3

GRIMSBY: Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road. (Oct. 11.)

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

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

HUDDERSFIELD: Fortnightly, alternate Thursdays and Fridays at the Congregational Church Schoolroom, Great Northern Street. (Oct. 14.)

ILFORD: Every Tuesday at the RAFA Rooms Cranbrook Road.

IPSWICH: Fortnightly, alternating Fridays and Saturdays at the Art Gallery Committee Rooms (Oct. 8) and the Kings Arms Hotel, Cornhill (Oct. 14.)

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms. (Oct. 19.)

KETTERING: Alternate Wednesdays at the Rising Sun, Silver Street. (Oct. 12.)

LEEDS: Every Thursday at the British Legion Club, Albion Street, Leeds 1.

LEICESTER: 2nd and 4th Friday at Bishop Street Reference Library.

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

LUTON: 2nd and 4th Tuesdays at 17, Dunstable Road.

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

MIDDLESBROUGH: Every Tuesday at 130, Newport Road.

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

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (Oct. 6.)

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (Oct. 11.)

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

WALTHAMSTOW: Alternate Fridays at 26, Church Hill, E.17. (Oct. 7.)

WARWICK: Alternate Wednesdays in Room 18 of the Royal Leamington Spa Town Hall. (Oct. 19.)

WEST HERTS: Fortnightly, alternating at the Cookery Nook, Watford (Oct. 19), and Heath Park Hotel, Hemel Hempstead. (Nov. 2.)

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

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

WEYMOUTH: Alternate Wednesdays at the Waverley Hotel, Abbotsbury Road. (Oct. 19.)

WINDSOR: Every Thursday at the Royal Adelaide Hotel.

WINCHESTER: Every Friday at The Ship Inn, Clifford Street.

YORK: Every Thursday at the Rechabite Hall, Clifford Street.

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

Is your club included in this list? If not, send details on a postcard, including date of next meeting. The list will appear in future as space permits.

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Index to Advertisers

Brenell Engineering Co. Ltd.	9
Deroy Sound Service	34
E.M.I. Sales and Service Ltd.	2
F. A. Hughes & Co. Ltd. ... Front cover	
Fi-Cord Ltd.	3
Gopalco Ltd.	6
Gramdeck	8
Grampian Reproducers Ltd.	4
Grundig (Great Britain) Ltd.	7
High Fidelity Centre	34
Howard Tape Recorders	10
Lee Electronics	34
Magnegraph	34
Metro-Sound Manufacturing Co. Ltd.	6
M.S.S. Recording Co. Ltd.	30
Norwich Union	28
Nusound Recording	25
Perth Radios Ltd.	6
Radiostructor	28
Rapid Recording Service	34
R.B. Tapes Co. Ltd.	4
Recording Machines Ltd.	34
R. E. W. Earlsfield Ltd.	28
Sheen Tape Recorder Centre Ltd. ...	34
Shinns Ltd.	34
Sunderland Sound Services	34
Tape Recorders (Bournemouth) Ltd.	8
The Tape Recorder Centre Ltd.	36
Wilmex Ltd.	5

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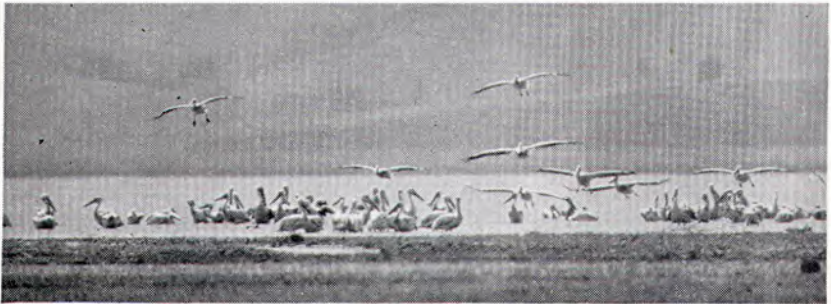
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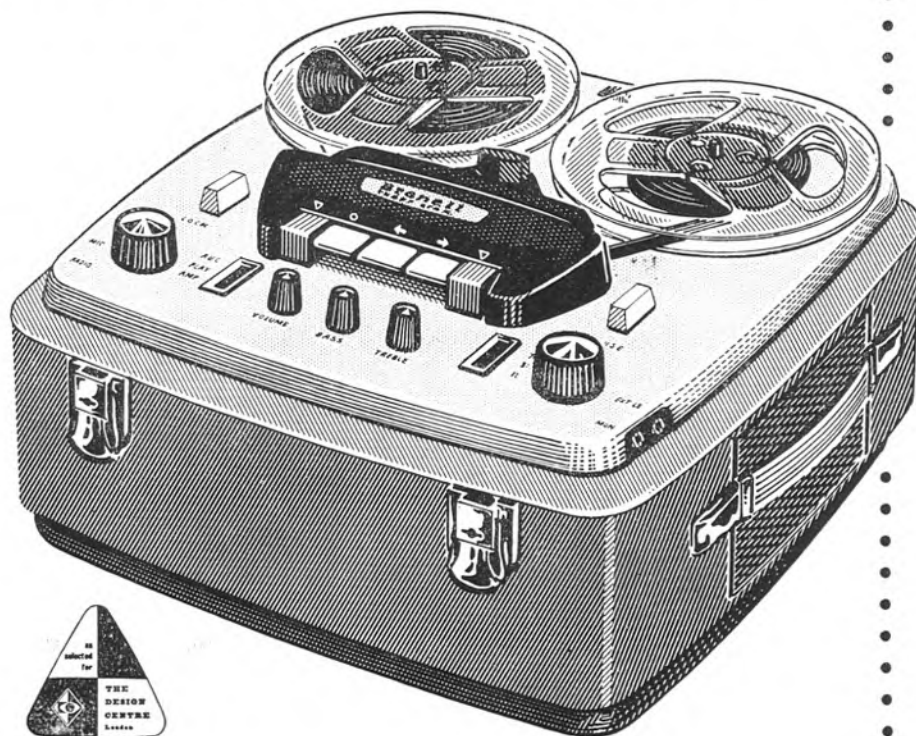
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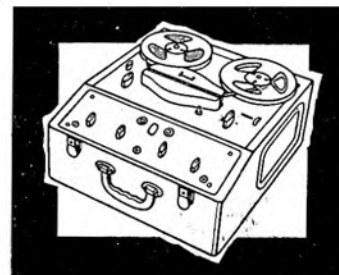
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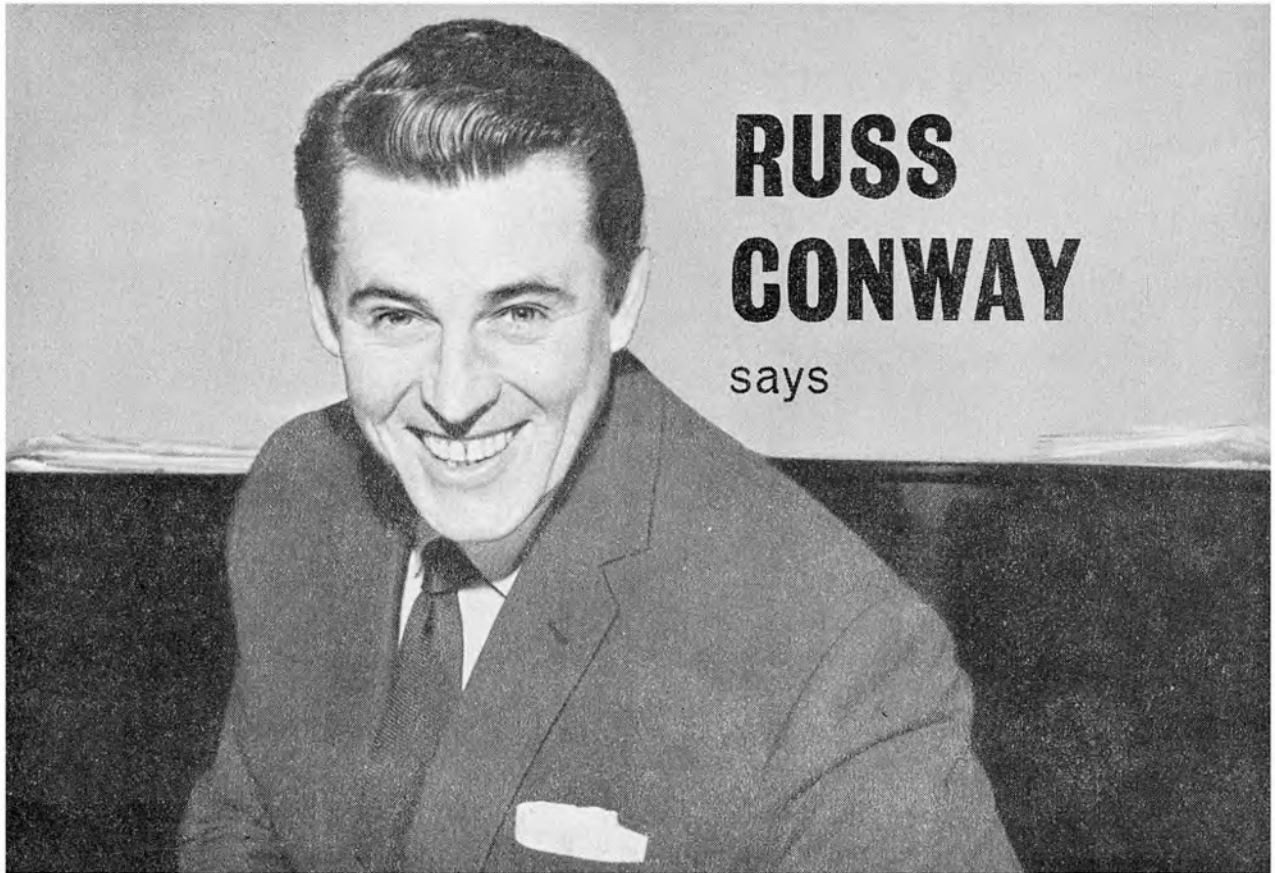
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D. W. Aldous of 'GRAMOPHONE RECORD REVIEW' writes in March issue:—

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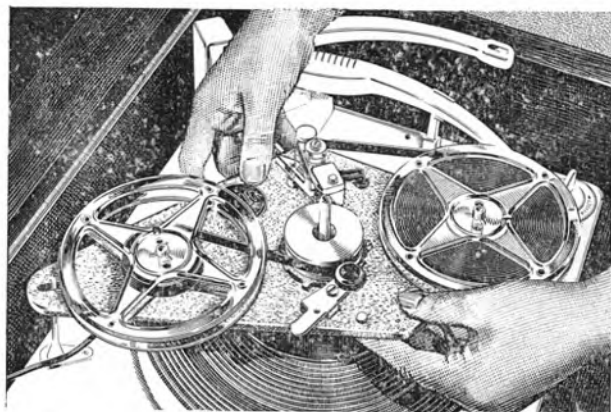
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TAPE

RECORDING
FORTNIGHTLY

Vol. 4 No. 22 2nd November, 1960

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IN THIS ISSUE

- We take the view . . .** 12
- The World of Tape** 13
A News Digest
- Recorder in the Sahara** 14
R. W. Cundy
- Recorder on the Agenda** 16
David Lazell
- Special Assignment** 18
Denys G. Killick
- The Dynamic Range** 20
Alec Nisbett
- Letters to the Editor** 22
- Sound Effects** 24
Alan Edward Beeby
- Equipment under Test** 25
- Stereo Notes** 26
Douglas Gardner
- New Products** 27
- News from the Clubs** 31

We take the view . . .

A SPECIALIST magazine which seeks the respect of informed readers faces a variety of delicate problems. In the case of our own, we must try constantly to "hold the ring" between a number of people who, although their long-term interests indubitably coincide, may occasionally feel some conflict in the short run.

Specifically, we must strive to be fair to consumers, manufacturers, and dealers. Although it is not the only one, the highest loyalty must be to the reader, for without the customer there can be no manufacturer and no dealer.

The views and opinions—even the prejudices, if you like—of customers will, therefore, always find expression in our pages, and wise manufacturers and dealers will welcome and study them. Inevitably, we get some communications from readers which are clearly irresponsible or obviously based on wrong premises or inaccurate facts; in such cases, editorial discretion comes into play. But we are resolved that this magazine shall be an open forum for the freest expression of frank opinions.

At the same time, readers look to us for detailed information about manufac-

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

turers and their products, and we aim to provide them with the fullest and most up-to-date service of this kind than they can hope to find anywhere. We will not, however, fill our columns with free advertising matter disguised as editorial information. We seek to provide straightforward facts and objective appraisals. To do anything else would be stupidly short-sighted, for our editorial standards would immediately be debased and the respect of our readers destroyed.

We count, of course, on the good sense and intelligence of readers in weighing facts, praise or criticism, from whatever source it comes. It is no part of our responsibility to pretend that we can make final judgments on every aspect of tape recording. We are, we repeat, essentially a forum.

Sometimes attempts are made to involve us in disputes which lie beyond our responsibility; for example, disputes between different retailers about trading methods. Or it is suggested that we should refuse certain advertisements on the ground that, in the view of the complainant, the product is in some way deficient.

Anxious as we may be to please, these are matters which we cannot govern. Trading methods are the concern of a trade association, not of a magazine which seeks to "hold the ring." If there

is no suitable association, but the need for one is widely felt, we are willing to play our full part in helping to promote one.

Nor can we exercise a censorship over advertisements. We take reasonable precautions to see that we do not encourage deliberate dishonesty; but we know that the vast majority of advertisers are fair dealers—they could not hope to remain in business long, were it not so.

In our last issue, we printed two items which are relevant to the above comments—a reader's view that the cost of tape is too high, and a dealer's view of servicing standards which followed up some earlier criticism from readers.

We hope that we can count on a readiness among all who are interested in tape recording to show a spirit of give-and-take, so that lively discussion may be a stimulant to further progress.

New ideas

THE idea of radio programmes for recording amateurs is catching on. The pioneers, of course, were Switzerland, Belgium and France. The BBC's Network Three programme "Sound" has begun to give amateurs here a chance to get their best work on the air.

Now I hear of two other countries where a similar development is about to take place. One is Holland, where the International Federation of Sound Hunters meets next weekend. The Netherlands Broadcasting Company will be regularly broadcasting details of the International Recording Contest.

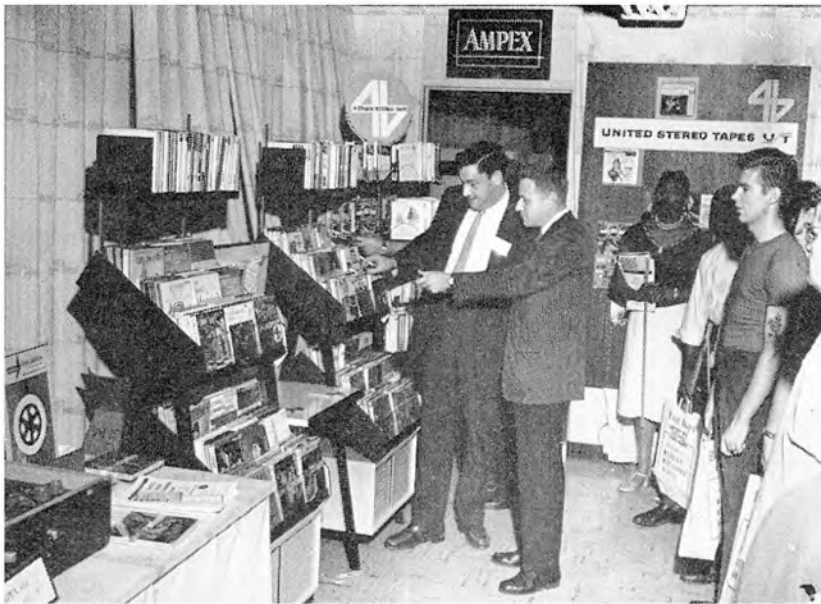
And from Rome I hear that Radiotelevision Italiana is shortly to introduce a programme of amateur recordings. The Federation of British Tape Recording Clubs has been asked to help in providing some examples of British work, and I hope that some representative winners in the British Contests of recent years will be heard by the Italians.

Another revolutionary idea is reported from tape recording laboratories in the Soviet Union. Technicians are developing a new process of making magnetic tape—without the use of magnetic powders.

The process involves the use of "galvanic metallisation" technique, which deposits a nickel chromium layer on the plastic tape.

The process is now being tried out on a production scale at one pilot plant, and one of the advantages already claimed is greater surface uniformity of the tape.





The world
of tape

A NEWS
ROUND-UP

AMERICAN STEREO MOVES BEYOND GIMMICK STAGE

Report from Peter Bardach

NEW YORK
MORE than one hundred leading American and foreign exhibitors put their latest products on display at New York City's annual High Fidelity Show held from September 7-11. As in previous years, four entire floors of the Trade Show Building were devoted to exhibits showing the largest collection of high fidelity and stereophonic components ever assembled.

Visitors to the Show saw a complete range of components from nearly a dozen countries, including speakers, tuners, amplifiers, turntables, tape equipment, audio-stereo recordings, cabinets and other related products.

A special feature, incorporated for the first time, was live performances by the Maynard Ferguson band, plus other prominent recording artists, providing the unique opportunity of comparing live original sound with the recorded stereo versions.

Much trade and consumer interest centered around the series of special closed circuit demonstrations incorporating the Crosby System for FM stereo multiplying. The Crosby system is one of several methods of FM stereo transmission now under consideration by the Federal Communications Commission, which regulates and assigns broadcast frequencies and standards in America.

The uniqueness of the Crosby System lies in its "compatibility" since no special receiver is required. Sets currently in use may receive full FM stereo broadcasts merely by attaching an inexpensive multiplex adapter. Those receivers not equipped with the adapter still hear a complete high fidelity programme—but monophonically.

Among the firms showing tape equipment were American Concertone, Ampex Audio, Bogen-Presto, Crown, Ercona, Heath, Kimberley, Korting, Norelco, Revere, Rizzo, Roberts, Sony, Tanberg, Telectrosonic, Uher, and Wollensak.

American Concertone showed its new "Transicorder." This fully transistorized battery operated portable weighs only four pounds, and yet boasts a real VU meter that serves the dual function of indicating recording level and battery life.

Several model rooms were displayed to demonstrate the placement of high fidelity in family living rooms. The Tanberg exhibit was furnished entirely in Norwegian style, using Norwegian furniture, while another room, part of the British Industries Corp. display, was decorated in typical American style by Lord & Taylor.

Although the 1960 show packed few if any "surprises," visitors found much of general interest. At long last, stereo and "hi-fi" have moved beyond the gadget or gimmick stages. Equipment shown seemed to stress simplicity, such as the elimination of unnecessary controls and knobs. Cabinet stylings are more functional, and thought is being

Some idea of the extensive range of pre-recorded tapes now available in the United States can be obtained from this photograph of a portion of the United Stereo Tapes room at the recently held New York High Fidelity Show. UST processes and distributes virtually all pre-recorded tapes in America, and serves all record labels.

In his special report below, Peter Bardach, our Special Correspondent, describes the current dilemma facing pre-recorded tape manufacturers.

given to the way component parts will look as well as how they will sound.

Our discussions with several exhibitors of pre-recorded tapes pointed out a current dilemma. While virtually every American record label is now releasing product on four-track stereo tapes, the extent of the catalogues has been limited in certain instances to an initial release of about a dozen items. When asked about future releases of new products, the replies were often vague and uncertain. Nearly all of the pre-recorded products issued in the last few months have been culled from best-seller disc lists of the last two or three years, and are limited to a single item per artist. Capitol Records, for example, has just issued a four-track stereo tape of the Frank Sinatra album "Only The Lonely," yet this same material has been available in mono or stereo disc form for at least a year.

It would seem reasonable to assume that most Sinatra fans have already purchased this album on disc, and would naturally be reluctant to reinvest almost twice the cost of the disc in order to get the same material again on tape. By delaying releases on tape, manufacturers are automatically limiting potential sales volume. A fair test of the market size for pre-recorded tapes would seem to call for the *simultaneous* release of both disc and tape versions.

However, in spite of this current handicap, the person just coming in to tape and high fidelity, and *beginning* to build a music library will find much of interest from which to choose on pre-recorded tapes.

INTO THE SAHARA WITH A RECORDER

The author recently returned from North Africa where he had been collecting material for a book on the oil prospecting being carried out in the Sahara. Among the equipment with him on the journey was a portable tape recorder, and in this the first of three articles on his experiences, he describes the initial stages of his trip.

BUT sir," the little steward insisted in rapid French, "if you take a cabin you will sleep tranquille. All the way to Alger. Ca coute 3,000 francs only."

As if to decide for me, he picked up the canvas kitbag slung from my shoulder. He lifted it roughly, as if it contained nothing more than old sandwiches and empty beer bottles.

"Here," I shouted, making a grab for it, "this I guard myself. C'est tres valable at sensitif. It's a tape recorder. Un magnetophone."

He looked so hurt that I started to explain that I was travelling to the Sahara to see how the desert and its people were changing, now that the French had discovered oil there; that I wanted to collect tape recordings as well as photographs so I would have a sound record of the answers to the questions which had drawn me to the greatest desert in the world. Was the desert being tamed by the new roads and gushing artesian wells which the oil men were taking with them? Were the workers in the desert being able to

compete with the machine age—both the proud nomads with their red tents and the workers in the palm groves? And how had the French solved the problems of living and doing heavy manual work in temperatures of over 110 degrees?

The bag, I explained, contained my valuables. A Grundig "Cub" portable tape recorder, two cameras and a pot of English marmalade. He would understand that it was necessary for me to guard it carefully?

He understood, I learned, but it was all the more reason why I should take a cabin. I had seen that there were Arabs also travelling steerage and they would steal everything from me as I slept?

"You will have seen that the decks have been cleared and the hatches fastened down for a storm. It will be a bad storm and there is another twenty three hours before we reach Alger. Only 3,000 francs, M'sieur."

I was tempted by his offer. With the recent events in Algeria all travel was rigidly controlled and there were many empty cabins. The price he asked was low, since it would all go into his pocket. But I had decided to travel fourth class because I thought that I would be likely

to meet some interesting people and of course, I would also be economising.

It was going to be decidedly unpleasant, since I was, I calculated, just above the ship's forefoot, where the effect of the pitching motion would be worse than anywhere else. Indeed, the Arabs who were alleged by the steward to have designs on my gear, were already out of the battle, lying inert in a corner of the deck, groaning with sea-sickness. I began to feel hot myself, and my head was spinning. It was clear that soon all I would be doing on the fourth class deck was economising.

Nevertheless, I stood up to make my refusal clear to the steward. "Thank you, but I shall stay here . . ."

I leave France . . .

The ship's bows fell with a roar into the deep trough of a wave. I pitched forward as the deck seemed to vanish beneath my feet. I felt the steward grab my arm to steady me. He held me, but not the bag, which flew out on a soaring arc and crashed hard against the steel rim of a baggage bin.

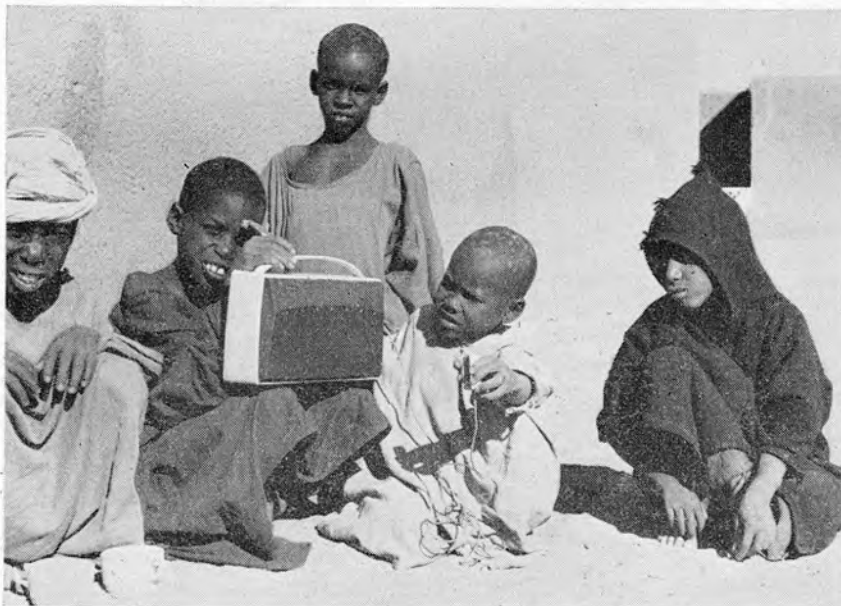
A swift check revealed that the marmalade was still intact, so there was no fear of further damage to the bag's contents. But one corner of the tape recorder moved where it had not moved before. I felt as if I had discovered a broken limb.

However, there was no time to see exactly what the damage was. A minute later the steward was holding me as I was being ill. Horribly, uncontrollably ill, like a sick beast.

I lay down, feeling as if I were poised on the end of a madly swinging pendulum. With it swung my thoughts. Was the little machine shattered, before my desert journey had even begun? Would I ever get to the Sahara at all, after a start like this?

I had filled all my tapes with my favourite records before I had left home. I had Chopin nocturnes, Wagner, "Mack the Knife" and Nina and Frederick, not to mention some traditional jazz.

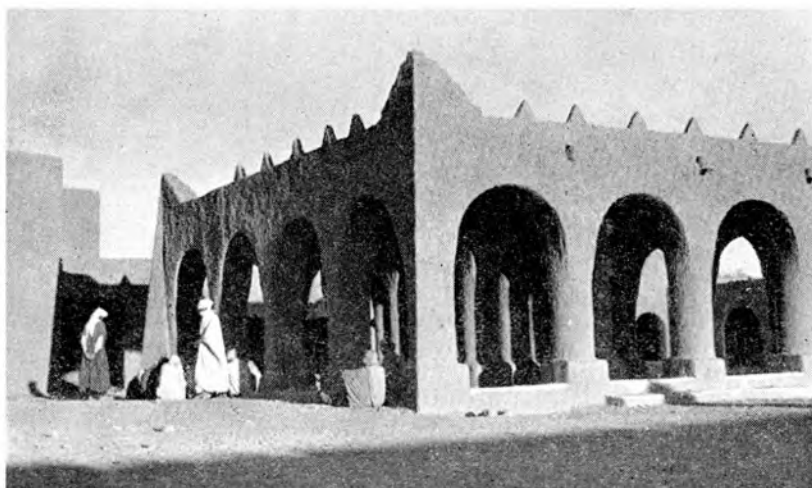
At the time I had thought I had made rather a mess of the job, because all the sounds of my home had intruded. But, playing them back at Marseille, I changed my mind. Those irritating noises off had become comforting reminders of home—a girl friend chatting about a new disc she had bought, my



INTO THE SAHARA WITH A RECORDER



By
R. W. CUNDY



mother calling the family to breakfast, my father telling her the events of his day over dinner.

I had planned to do lots with my little "Cub", apart from recording interviews, "local colour" background effects and storing dictated material. I had dreamed of listening to Chopin against the breathless silence of a moonlit desert and of starting impromptu jazz sessions on the lonely oil drilling sites that I would be visiting. Now, it seemed, the machine was just going to be a dead weight.

... and arrive in Africa

But at Algiers the following day, I made two discoveries. First, I had been so ill that I was quite hoarse and, second, miraculously the "Cub" still worked. I found that the case had been badly cracked at one end, but, with a little first aid with sticky tape, this was put right and then, to my delight, the innards worked perfectly.

There was still the Customs to get through. With the country at war, I feared the worst. They were most polite, however, and handed me a printed leaflet. It stated that I was not allowed to import explosives, firearms, binoculars, telescopes, radio transmitters or portable receivers. If I had not been feeling dizzy from the motion of the ship, I might have been frightened. Somehow the list seemed so comprehensive, that surely someone had meant to include tape recorders. During my travels across France I had been warned several times by friends that foreigners were much suspected in Algeria and that I must not use the machine too openly. To my relief, no one checked my luggage.

Hotel prices had hit a fantastic height in the city, and yet, with the exception of the luxury class, all were full. Algiers was bursting at the seams with soldiers drafted over from France to fight the war against the rebels and on top of them scurried the business men and contractors getting in on the boom in the Sahara. Somehow the oil crews on leave from

the desert had to find accommodation as well, and I found there was none left for me. So that night I slept at the Youth Hostel.

The top two storeys had been requisitioned by the Army, but down in the basement a group of young French-speaking Arabs used to gather for discussions. After a few evenings, when I had made friends with them, I produced the "Cub" to record the songs with which they invariably ended their meetings. It stopped the show completely and they all crowded round to see.

"Something new"

They knew about transistors, since portable radios are carried everywhere by Arabs who can afford them, to maintain a constant supply of their strange syncopated, wailing music, but a battery-powered tape recorder was really something new.

After I had demonstrated how it worked their leader asked if I would record a song they were rehearsing for an International Rally. Away they went, a banjo strumming out the rhythm of a tune which, I was told, was typical of the Algerian area. The playback sent them into shrieks of laughter, but then they sat back and worked out how they could improve on their performance, using my recording to test the effect.

A new reel of tape and we were off again, this time on a song and dance number. The men and girls formed up in two lines, facing one another and shuffled to and fro, rather like a cha-cha line in an English dance hall. I found myself watching one of the girls,

slim and sinuous with great lustrous brown eyes, like a gazelle.

"She is from the south, from the mountains of the Ouled Nail, where they are famous for their dancing," the club leader explained. "She is coaching the others. They are quite good, are they not? But when they have practised more and are wearing their traditional Arab costumes, the dance will be more effective."

"They will be a sensation at the Rally," I said, my eyes still on the waving, willowy, dark-eyed girl.

"Perhaps so," he replied, smiling, "but you must watch your machine, my friend." He pointed to where the orange end of the tape was waving round and round. In my excitement at the dance and the girl from the Ouled Nail, I had not seen that I had come to the end of the spool.

A week later I was in Algiers airport, waiting for the plane which was to fly me south into the desert, to my first port of call in that vast ocean of sand and rock which is the Sahara. To Hassi Messaoud, the great new oil town, over five hundred miles by road south of Algiers.

The reels of my tape recorder turned silently as I held the microphone out to the bustling excitement of the airport lounge.

"Air Algeria announce the departure of their flight number . . . to Hassi Messaoud. Messieurs les voyageurs sont priés de . . ."

These were the magic words I had been waiting for. I closed the lid of the machine and joined the press of brightly-shirted oil men at the barrier.

My desert journey had begun.

IT happened only because Llewellyn, the Clerk to the Parish Council, was a progressively minded man. Or, at least, that is what he told us. The Chairman of the Council, Dai Popshop, always sucked peppermint lozenges very noisily during the business of the meetings, but Llewellyn had a very penetrating voice. So, whilst Dai Popshop deliberated on the next item on the agenda, rolling peppermint lozenges affectionately around his tongue, Llewellyn often advised us to be progressively minded.

"We are living in the twentieth century, gentlemen!" he announced whenever he thought that the lowly councillors should be reminded.

I was a very junior parish councillor in those days, and I always thought it right and proper that Llewellyn reminded us of the modern age. After all, the Parish Hall had the atmosphere of a museum.

But Dai Popshop, struggling to crunch the peppermint lozenge into a thousand tiny pieces, would pronounce that the Clerk's place was to take the minutes. And the councillors, nine men and two ladies, would sigh in agreement. All this occurred, every month, for some years.

But one wet Tuesday evening we dripped our way into the Parish Hall to find Llewellyn, our worthy Clerk, struggling with a mass of wires connected to a peculiar piece of machinery on the table.

"Well, Llewellyn," said Councillor Mrs. Jenkins Quarry, "are you going to blow us all up?"

"No, Mrs. Jenkins," Llewellyn replied. "This is a tape recorder. For the meeting tonight."

"Oh, dear," said Councillor Worrying Cyril. "Have you asked Dai Popshop?" Cyril was a man burdened by the procedure of meetings.

"My shorthand isn't as good as it was," Llewellyn explained. "So I thought it would be a wonderful idea if we recorded the meeting. Then I can play it back when I get home, and make out the report of the meeting. I believe in being progressive!"

Llewellyn went away to complete the preparations for the evening's meeting.

"I don't know what Dai Popshop will say," Cyril worried, shaking his head so that tiny drops of rainwater leaped from the rim of his drenched trilby hat.

We removed our raincoats, and sat in the back row of wobbly wooden chairs, as far away from the tape recorder as possible.

"Would you like to say something, Councillor Mrs. Jenkins?" Llewellyn asked, suddenly. "I want to see if I have the proper balance."

.....
They had a

RECORDER ON THE AGENDA

The lady blushed, and dropped her handbag to the floor.

"I'm sure I don't know what to say," she stammered. This surprised me, since Mrs. Jenkins Quarry was elected to the Parish Council by people sympathetic to her husband. For at least one evening a month, Mr. Jenkins Quarry was left in peace with his pigeons.

"Be careful, Mrs. Jenkins," piped Worrying Cyril. "It will all be recorded."



THE rest of the councillors arrived. Dai Popshop, Owen Coachtour, Ben Fourpence, Mrs. Willie Williams and the rest tumbled through the door, all dripping raincoats and umbrellas.

"Hullo, then," said Dai Popshop. "What's all this, Llewellyn?" "It's a tape recorder," Llewellyn beamed. "Very progressive piece of equipment!"

"What's it for?" wheezed Ben Fourpence, peering over his bent spectacles. His real name was Griffiths, but, years ago, he had tried to place a fourpenny bet with the local bookmaker.

"I thought I'd record tonight's meeting of the Parish Council," Llewellyn explained. "Better than shorthand."

"What's a tape recorder, then?" asked Mrs. Willie Williams, who did not know very much, but who was very good at making tea, with the old boiler in the Parish Hall.

"It's a kind of gramophone, but backwards," said Owen Coachtour. "It records whatever you say."

"Oh, there's wonderful," gasped Mrs. Willie Williams, and then she clapped her hand over her mouth, as if she had been caught, gossiping about a neighbour.

"Is it switched on?" she whispered.

Dai Popshop pushed a peppermint lozenge in his mouth, and assumed the status of Chairman of the Parish Council.

"Fellow Councillors!" he cried. "Please take your seats."

The front two rows of old, wooden

chairs remained vacant; the worthy councillors sat well away from the bright, golden microphone perched upon the table.

"I will now ask the Clerk to read the minutes of our last meeting," declared Dai Popshop.

But Llewellyn did not open his mighty book. Instead, he moved a switch on his wonderful tape recorder and, immediately, his voice boomed from the loud-speaker.

"Here are the minutes of the Parish Council meeting held on February the fourteenth. . . ."

"There's wonderful," said Mrs. Willie Williams. Dai Popshop looked startled and thrust another peppermint lozenge into his mouth.



WHEN the minutes of the last meeting were concluded, Llewellyn stopped the machine.

"Are there any questions on the minutes of the last meeting?" asked the Chairman.

"Is he going to play us any more of that recitation?" sniffed Ben Fourpence, who had not been paying much attention.

"That wasn't a recitation, Ben Fourpence," Owen Coachtour corrected. "They were the minutes of the last meeting, but Llewellyn had tape-recorded us for them."

"You mean that Llewellyn had tape-recorded *them* for *us*," said Councillor Mrs. Jenkins Quarry in a firm voice.

"Oh, fancy that," wheezed Ben Fourpence. "But why did he do that?"

"Progress," Llewellyn replied. "We're living in the twentieth century."

"Did we agree that the Clerk should record the minutes of the last meeting, instead of reading them to us, as usual?" asked Worrying Cyril. "We must have our procedure conducted in order, Mister Chairman."

Dai Popshop thought for a moment or

RECORDER ON THE AGENDA

an article

by
David Lazell



two, chewing his peppermint lozenge loudly and energetically. Then he spoke, slowly, and with great care.

"In answer to the question put by Councillor Cyril Watkins, I would indicate that we did not agree to the Clerk recording the minutes of the last meeting, instead of reading them to us as usual. But, on the other hand, we did not decide to the contrary. In fact, the matter was not even discussed."

"But is it in order?" Worrying Cyril persisted. "I think that we should ask the Clerk to read us the minutes of the last Parish Council meeting, just to make sure that everything is in order."

"There's boxing on the television at nine o'clock," Owen Coachtour remarked hopefully.

"I don't see any point in asking the Clerk to read the minutes," said Dai Popshop. "We've heard them once."

"But was that official?" asked Worrying Cyril.

"Next business," interrupted Owen Coachtour.

"Correspondence," announced Dai Popshop, pushing a peppermint lozenge into his mouth. The Clerk to the Parish Council made some adjustments to the gleaming tape recorder, and then produced a sheaf of papers from his brown leather satchel.

"Excuse me, Mister Chairman," said Worrying Cyril. "But am I to understand that our meeting is being recorded on that machine?"

Dai Popshop looked at Llewellyn who nodded.

"Only for the purposes of making a report of this meeting, Councillor Watkins," said the Chairman.

"But is it in order?" inquired Worrying Cyril. "I rather think that the presence of the tape recorder will make members less likely to participate in our discussions."

"Good," sighed Owen Coachtour, counting the minutes to nine o'clock.

"Are any of us nervous about the tape recorder?" Dai Popshop looked at the other members of the Parish Council, like a benevolent uncle, telling a ghost story at the Christmas fireside.

"I'm not nervous, Mister Chairman," said Councillor Mrs. Jenkins Quarry emphatically.

"I think it's all very wonderful," smiled Mrs. Willie Williams, her face full of wonder.

Ben Fourpence chuckled, making a noise like a rusty farm tractor.

"It was exactly the same when my father brought the first motor car to the

village," he wheezed. "You'd never believe how frightened people were. Mind you," he added thoughtfully, "he was a pretty bad driver."

Dai Popshop tapped the table with his pencil. "Then we are all agreed to having our meeting recorded," he said.

"As long as it is in order, Mister Chairman," Cyril countered.



THE meeting continued uneventfully. Owen Coachtour kept looking at his wrist-watch, shaking it now and then, to make sure that it was doing sixty minutes to the hour. Mrs. Willie Williams said nothing, except an occasional "There's wonderful!" Mrs. Jenkins Quarry remembered her days with the amateur dramatic company, and spoke to the microphone, rather than to the Chairman.

Dai Popshop chewed twenty-two peppermint lozenges. Ben Fourpence chuckled every few minutes, but no-one knew why. The other councillors nervously contributed to the discussions, acting as if the tape recorder would blow them all up if they said anything out of place. I sat, listened and watched.

The business was completed by ten minutes to nine.

"Any other business?" asked Dai Popshop.

"I have to go now," apologised Owen Coachtour. "I promised I would be home by nine o'clock!" He scampered

out of the Parish Hall, like a boy on his way to the circus.

"Then I declare the meeting closed," said Dai Popshop.

"Could we hear the tape recording of the meeting?" asked Mrs. Willie Williams in a tiny voice.

"Well, it would take us until nearly eleven o'clock, Mrs. Williams," explained Llewellyn. "But we could hear a part of it." He sent the spools spinning for a minute or two, and then set the machine to the "play-back" position. One or two of the councillors edged towards the exit. The recently-conducted affairs of that regal and august body, the Parish Council, were recited by the voices that came out of the loudspeaker.

"I don't sound a bit like that," said Councillor Mrs. Jenkins Quarry angrily. Ben Fourpence chuckled.

"There must be something wrong with the machine," suggested Dai Popshop. "It's making a strange crunchy sound all the time."

"That's you, Dai Popshop," said Worrying Cyril. "Chewing your old peppermint lozenges."

The recording continued, and the councillors listened in silence. After ten minutes or so, Llewellyn stopped the machine.

"It's going to be a job for you, Llewellyn, making sense out of that," wheezed Ben Fourpence.

Llewellyn began to pack his equipment.

"An interesting experiment," said Dai Popshop finally. "An interesting experiment. But I think we'll have the shorthand in future, Llewellyn."

"You've got to be progressive," Llewellyn replied. "This is the twentieth century, you know."

"I suppose it is, Llewellyn," said Dai Popshop, looking at the other councillors. "But I don't think we're quite ready for it yet."

FIRE! . . FIRE! . . .

IT could happen to you . . . today . . . tomorrow . . . any time.

I was in the Tottenham Court Road, engaged in my favourite occupation of gazing with soulful longing at the wonders displayed behind the plate glass of the radio dealers' windows. Fifty watt amplifiers, being given away for a song. Marvellous. Matched stereo pairs, half list price. How on earth do they do it?

Through my day-dreaming contemplation came the sound of a fire engine. Absent mindedly I watched as it clanged past. It's a funny thing how fascinating fire engines are. There's another, coming up in the distance; false alarm, probably. No, there's two more, ringing their bells like fury. Wrong side of the traffic lights, too. By Jove, staff car, salvage van and what's that? Control. Must be a big fire somewhere; might be near at hand for all I know.

Suddenly the significance struck my dull wits like a hammer blow. A fire. A FIRE! And there was I, tape recorder on one shoulder and camera on the other, standing open-mouthed like any village buffoon watching the engines go by.

With a vivid image in my mind of my American counterpart grabbing a cab with a laconic, "Follow that appliance, bud!", I nipped smartly on a number 73 bus and asked politely for a threepenny fare in the hope that the fire was really near at hand.

That bus had no sense of urgency. Starting and stopping it crawled intermittently in the general direction the fire engines had taken. As it ground to a halt behind a long line of stationary vehicles I gave up all hope of ever finding them again.

Getting off aimlessly at Warren Street I strolled along by the parked cars and idle motor traders, listening for the sound of a bell to give me a clue. I heard nothing but the mutter of the traffic. Then I noticed a flash of red in the distance, a knot of people standing and staring, and my pace quickened.

By a stroke of luck I had walked directly to the scene of the action. I could spot the white plumes of smoke now. Then, at the end of a narrow, tall-sided passageway I could see over the heads of a tightly packed bunch of spectators what was undoubtedly my fire engine, and there twisting over the wet cobblestones snaked the bloated, white hose-pipes.

"Suddenly the significance struck my dull wits like a hammer blow.

A FIRE! And there was I, tape recorder on one shoulder and camera on the other, standing open-mouthed like any village buffoon watching the engines go by."

So DENYS G. KILLICK begins the second of his special assignments.

Pushing my way to the front of the crowd I hastily connected the microphone and was soon recording the hoarse shouts of the firemen, the sound of the pumps and a background of crackles and cascading water. Speaking to a bystander I recorded the name of the building and the fact that the fire had only just started.

He was quite a knowledgeable chap and held forth at some length on the histories of the surrounding buildings, all of them well over 100 years old, the dangers of ancient wooden floors and stairways and the fact that the brigade had wasted no time in answering the call.

As we talked I noticed that things were warming up in a most uncomfortable

way. Boards warning of "Dangerous Walls" were hurriedly being placed in position and the police, on instructions from a senior officer, began asking the crowd to, "Move back there! Move right back please! Come along now, if you please!", all of which went down on my tape.

Moving slowly back with the others I saw an open doorway leading to a cobbled courtyard on my right. I should certainly not be allowed to remain where I was, and so, dodging across the cobbles, I soon found the entrance to the building and the staircase leading to the upper storeys. That fellow had been right: it was very old and very wooden. To my apprehensive eye it looked as if it would burn very nicely.

I wasn't stopped until I reached the fourth floor, and then a gentleman in blue dungarees confronted me with an inquiring look.

"It's all right. I'm just going up to get a look at the fire," I stuttered apologetically as I brushed past him.

Another flight of wooden stairs and I found myself in a kind of cul-de-sac. The stairs went no higher. As I stood and wondered what to do next the man in blue followed up behind me. Pushing



FIRE!

aside a rough, canvas curtain he indicated an iron cat ladder ascending vertically to an open square of blue sky.

"Oh thanks, many thanks!"

Gingerly I began to climb upwards, hand over hand, praying that the recorder wouldn't knock itself to pieces as I went. Scrambling out into the open air I found myself on an asphalt flat roof, a low protecting balustrade in the front and a sheer drop down at the side. On the other side of the passageway roared the fire, and far below stood the toy fire engines with their wriggling threads of hose.

Awaited events

Nervously bracing myself against a great bulk of half-rotten timber I began to take pictures and to wait for something to happen.

"Hello!" said a voice, and a cheery looking face appeared at roof level in the trap doorway. "Is it O.K. up there?"

"Sure!" I answered. "Come and join me."

The face gave an audible groan as the body levered itself on to the flat. In one hand he was clutching a leather gladstone bag.

"Been up here long?"

The Author combines the roles of explorer, experimenter, artist, teacher and roving reporter in this exciting series.

"... the bloated white hosepipes."

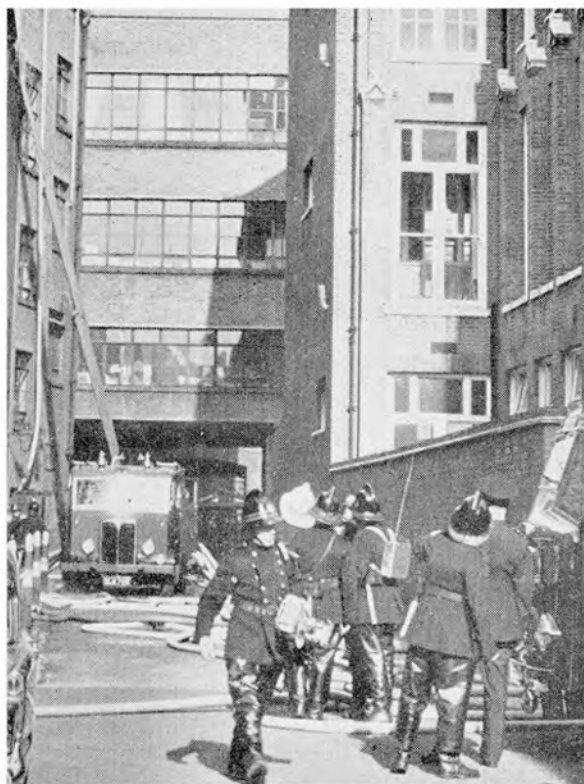
"About twenty minutes," I replied. "Nothing much has happened, though."

"You must be the first. How the devil d'you get here so soon?" Then, without waiting for an answer, "You'd have been all right if that wall had come down, wouldn't you? Can't expect all the luck, y'know."

With slow deliberation he took his Leica from the gladstone bag, sat nonchalantly on the extreme edge of the stone coping topping the balustrade at the front of the roof and muttered to himself rather than to me as he focused his camera. Clinging to my timber I dared not look as he leaned out into space. My hand was sticky with sweat as I turned the recorder off.

During the next ten minutes several new arrivals popped up through the open hatchway. Newsreel men with their cine cameras, Fleet Street men with their Leicas and plate cameras; until my roof top looked like a photographer's annual convention. A jolly good crowd they were, too, and I was soon recording their comments about fires in general and this fire in particular, much to their amusement at having the tables turned on them.

Fortunately the fire was brought under control before it spread to the adjoining buildings, and when it became obvious that it was only a matter of time before the last spark was extinguished my photographer friends vanished one by one



down the hatch. I had been first on the roof, and I made sure I was the last to leave.

Coming out of the building into the courtyard I found myself once again in the passageway. The public were cordoned off by the police at the far end and I hesitated before joining them.

Tired, grimed faces

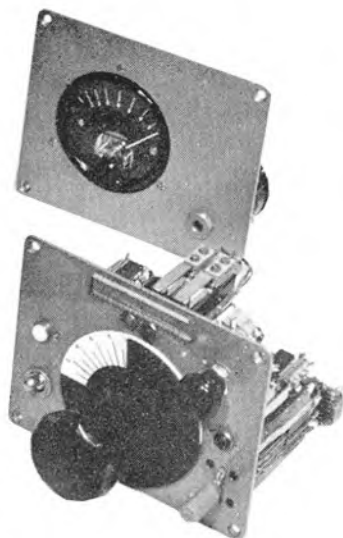
Looking at the tired, grimed faces of the firemen I decided, rather sadly, that the fire was over for me. I should have dearly liked to go and talk to some of those men, but there comes a time when one must admit that other things are more important than tape recording and it would have been most unfair to attempt to distract them from the very vital job they were doing.

I had succeeded in taking some very excellent recordings, but I had also succeeded in keeping out of everyone's way. At the scene of any disaster the only thing that matters is the preservation of life and property and its only common-sense for the amateur—and the professional—to obey police instructions implicitly and to do nothing to hinder the work of the moment.

Regretfully I unplugged the microphone, nodded my thanks to a police officer as I passed and made my way back to the Tottenham Court Road.

THE DYNAMIC RANGE

ALEC NISBETT continues his series comparing amateur and professional methods of recording with the problem of recording music or drama.



Fader and peak programme meter

THE ear can take an enormous range of volumes of sound. At 1,000 cps the threshold of pain may be 110 dB or more above the threshold of hearing—a sound which is just bearable may be over a hundred thousand million times as powerful as one which is just audible.

For the professional, as for the amateur, the problem is compression.

In the amateur's case there may be only 40 or 50 dB between the noise and distortion levels of his equipment. Professional equipment will generally have a better signal-to-noise ratio, but in broadcasting there are many more links in the chain. In general a signal-to-noise ratio of at least 50 dB is regarded as desirable, but this is not always possible. Also, much depends on listening conditions. For example, if an orchestral concert is being heard on a good F.M. receiver, a fairly wide dynamic range is desirable—but nothing like the 60 or 70 dB which may separate the loudest and quietest passages in the concert hall. In any case, for listening under domestic condi-

tions a narrower range is more suitable. It should be noted that for the average member of the public only 45 dB separate his preferred maximum listening level and the noise level of a quiet living room. This ties in well with the range broadcast in radio concerts, as registered on a BBC peak programme meter, levels are generally kept within a range of 22 dB, with quieter passages not exceeding half a minute at a time—thus ensuring that at the receiving end detail of that quieter music will still be clearly apparent. For many orchestral works and much chamber music this range is adequate without control once a suitable overall gain setting has been found—but for others, 5, 10, or perhaps even 15 dB of compression will prove necessary.

Gramophone records, it is true, have a wider dynamic range than broadcast concerts, but this is partly because the disc is better able to handle occasional very loud peaks. Average volume must, in both cases, be kept fairly high in order to maintain a good signal-to-noise ratio and an efficient use of the medium. But on a record an isolated peak can be accommodated by opening out the pitch of the grooves for a few revs. A radio transmitter does not have the same facility: an A.M. transmitter has to be protected by limiters against sudden overmodulation. (Excessive signals which managed to get through the limiters would, in any case, suffer from peak chopping.) F.M. transmitters will also run into distortion at these same high

levels; the maximum frequency deviation normally being limited to 75,000 cps.

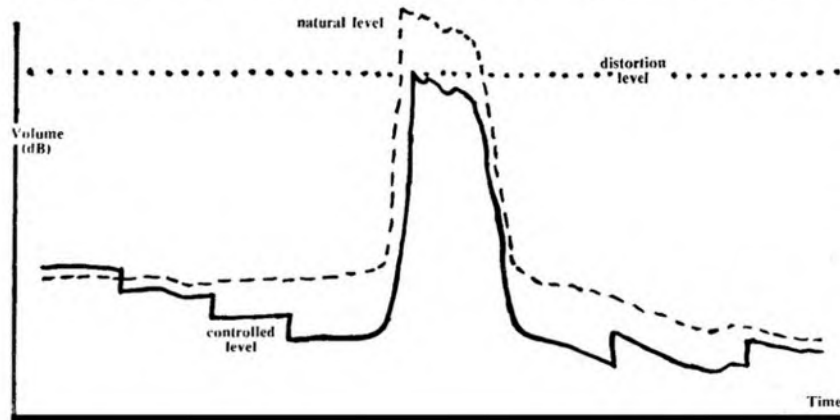
At the lower end of the scale, long quiet passages are also often permitted on gramophone records but at a risk of poor signal-to-noise ratio due to dust, wear, or damage. I recently sorted through half a dozen different versions of Mahler's first symphony, in order to find a good illustration of the very quiet start of the third movement, without finding one which was not marred in one or several of these ways.

I myself have many records with a very wide dynamic range—I like loud music—but have to admit that this is generally unsuitable for domestic listening, and in order to avoid complaints from the neighbours, and still hear the detail of quieter passages, I have to do a fair amount of knob-twiddling.

At the time of the recording or broadcast there are two possible techniques for control: and the first of these is to leave it in the hands of the conductor. It has even been known for a conductor to have a meter on his desk as he rehearses and records; although this technique has not been adopted by the BBC. It is generally thought best that the conductor should concentrate on the performance, bearing the limitations of the medium in mind, of course, if he can, but leaving the control to the studio manager, who (in addition to checking on a PPM) monitors by listening on a good loudspeaker in a room about the size of an ordinary living room. He will also have a full score to guide him, and on which he can note his settings.

In general, the studio manager's judgment will be by ear. He will be avoiding overmodulation not by "riding the gain" but by careful preparation—gradually decreasing for half a minute or so before the peak is due. Then after the peak there follows a slow return to a suitable average level. Each operation will consist of one or more steps of about 2 dB, taken at intervals of perhaps 10 in.-15 in. A similar technique is used to lift the longer periods of low level.

The amateur doesn't often find himself in the position of recording an orchestral concert—at any rate, not where it is given by professional musicians. But (and this depends on the nature of the music and the quality of the recorder) control may still be necessary with smaller combinations or groups, or even a solo instrument such as a piano.



Left: The correct way to control a heavy peak: fading down and then up again by 2 dB steps

THE DYNAMIC RANGE

For the amateur the best way of handling this compression process is as follows:—

First find the setting which is appropriate for recording the loudest peaks, as indicated in the last article. (This will be a setting a little below that at which appreciable distortion is observed on playback.)

If, when recorded at this setting, the signal-to-noise ratio of the quietest passage is still (at least) acceptable, then no compression will be necessary.

If, however, it does prove to be necessary, the next step is to find and set a new "average level." If the heavy peaks are frequent, this cannot be raised very much; if not, the gain can be set much higher, and the peaks treated individually. Long patches of low level may also be lifted as necessary.

Often it will be found best to vary the "average level" continuously throughout a programme, so that all the elements of light and shade fall within the acceptable dynamic range. For amateur purposes, a trace of distortion at infrequent intervals is far better than the heavy tape hiss that goes with undermodulation.

I have, so far, been talking about compression in terms of an orchestral work. But many other types of programme also need some form of controlling of the overall level. For example: drama.

In real life speech and noises might occupy the full range from the threshold of hearing to the threshold of pain. This would be quite intolerable on tape, even if it could be recorded.

The BBC regards something like 16 dB as being an adequate range for peak values of speech in radio plays—the average being about 8 dB below the maximum permissible. The main effect that this has on speech is that scenes



Above: Creating a "16-ton, 1½ horsepower, 6-litre, brassbound electric racing organ fitted with a cardboard warhead" as required for a Goon Show. From left to right: gearchange and backfire; engine noise and squeak; hooters, whistle, and tearing canvas. Two AKG C28 microphones mixed with recordings of organ at various varying speeds. A tricky montage from the point of view of balance and control. Below: Control equipment at Covent Garden showing one of the banks of quadrant faders (a panel of rotary faders would have obstructed the view of the stage). The left-hand meter shows "clean feed" (just the music, to which foreign language announcements may be added at a later stage).

involving shouting have to be held back, possibly making them sound rather distant—which is fine if this fits in with the picture that is wanted. For cases where close shouting must be mixed in with more normal levels of speech it is up to the actors to hold back on volume, and project.

This upper limit makes even more difference when it comes to loud sound effects—a gunshot for example, or a car crash. Even a sharply closed door is too loud, let alone a slam.

It is therefore rather fortunate that radio drama has established a convention about sound effects. The effect which is anything like recorded actuality is the exception rather than the rule.

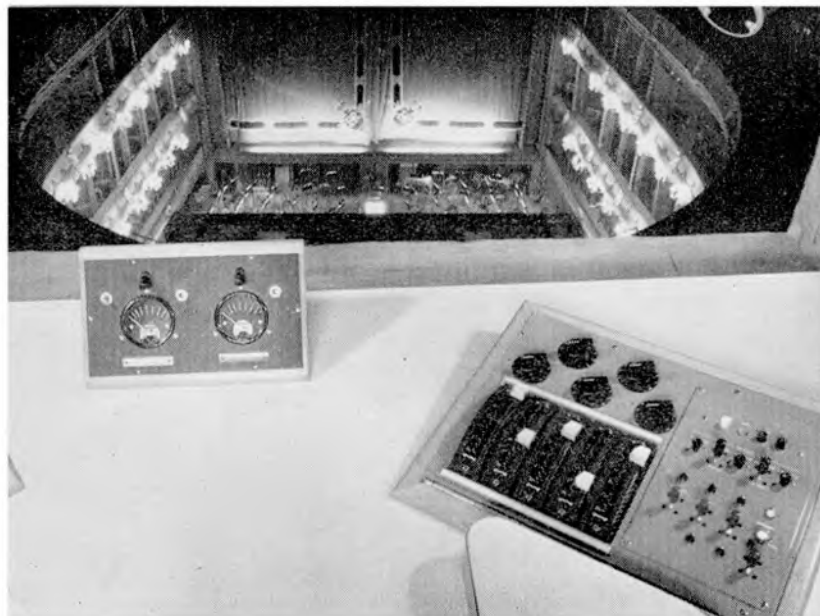
The result is that effects must be suggested largely by character rather than volume. Volumes have to be controlled; evened out and held back—which explains why what seem like staggeringly unlikely methods often produce the best results.

Of course, for the amateur the upper limit isn't so firm. For a loud noise he can allow himself to run a fair way into the distortion if he wishes. But on the whole it is surely better to concentrate on character rather than volume—and here the amateur has a tremendous advantage over the professional who in the heat of rehearsal may not always have time to experiment as fully as he would wish. This is one of the cases where the amateur really can achieve results comparable to those of the professional.

And a vital part of this is careful control of levels. Applied heavy-handedly, compression can easily ruin a programme. But used with discretion it may considerably improve the recording—whether of speech or music.

Another way of looking at this is in terms of listening conditions. If a programme has to be replayed rather quietly (and it is generally true that other people will not wish to listen to your work as loud as you would yourself!) careful compression will ensure that it is still all audible.

This question of loudness and listening levels is one which I shall return to in the next issue.



"LONG LIFE" TAPE QUALITIES: AN EXPLANATION

Letters to the Editor

I REFER to the item "Long-Life Tape" on page 26 of your issue of September 21, which I think may be a little bit misleading.

Long-life or "Sandwich" tape is special purpose tape for use with data processing machines as pointed out in your news quote. However, although this type of material may be quite useful for highly repetitive use in audio applications at 15 or 30 ips, it is likely to be unpopular with users of domestic recorders who are concerned with a good upper frequency response.

Although the claim that the protective layer prolongs life ten times is substantially correct, this applies mainly on computers where high speeds and rapid reversals are known to damage the tape more so than a normal audio recording machine, and the slight advantages under such conditions would not justify the disadvantages that would result.

The figures given in the table show the predicted loss at high frequencies which is due to the enforced minimum separation of the oxide surface from the replay-head gap. The protective layer causing this may be 0.1 mm. or 0.05 mm. thick.

In addition to the reproducing losses, the recording head field shape and density and its rate of extinction will now be altered in relation to the tape coating during the recording process. This will introduce further high frequency losses, particularly in the case of the 0.1 mm. protective coating.

An attempt to compensate for these losses, using top boost in the programme source amplifiers, would probably increase the harmonic distortion accompanying any high frequency improvement. To reduce the bias current appreciably would have similar effects. In any case, most domestic recorders have limited facilities for controlling bias; also the user might find difficulty in erasing recorded "Sandwich" tapes.

There might be some reduction of modulation noise effects but, apart from this, we see no advantages in the use of "Sandwich" tape on domestic machines, whatever their quality.

Finally, for any of your readers requiring further information, we refer to "The Reproduction of Signals Recorded on Magnetic Tape" by E. D. Daniel and P. E. Axon, published in the Proceedings of the Institution of Electrical Engineers, Part III, May 1953.

P. H. WETHERILL.

Sales Manager, Emitape Division.
E.M.I. Sales and Service, Ltd.

Protective coating (mm.)	Tape speed (ips)	High frequency spacing loss (dB) in reproduction at	
		10,000 cps	15,000 cps
0.1	7½	7.2	10.8
0.1	3½	14.4	21.6
0.05	7½	3.6	5.4
0.05	3½	7.2	10.8

Praise for the tuner circuit

I HAVE . . . made up and cased the receiver (A TRF Transistor Tuner, June 29 issue) and find it most excellent as a feeder using a few feet of aerial. The locals (Home and Light) are splendidly separated, and after dark, Radio Luxembourg and one or two others come in, but of course, the medium waveband on these distant stations is riddled with heterodyne whistles (not the fault of the receiver!)

Volume on the locals is astonishing for one transistor and if fed into the auxiliary jack of my high quality pre-amp and both amplifiers of the two channels (a Williamson and a 5/10) the quality is only just distinguishable from a direct switch-over to the VHF feeder I use large brick (and sand-filled walls) reflex chambers for bass speakers and separate tweeters.

For some reason the third programme is not obtainable on the TRF.

One point which may interest Mr.

Dobbs is as follows: When setting up the receiver I found it difficult to get whistles when adjusting the reaction condenser—it was not "lively" so I reversed the leads to the plug-in coil. Mr. Dobbs advised reversing the leads if *too much* whistling took place, so I had the opposite trouble.

Messrs. Mullard tell me that the OC 44 transistor in this circuit would consume about 1 mA at 9 v. I did not know this at the time and built in a rather larger battery than required. I wonder, has Mr. Dobbs measured the consumption.

J. DOUGLAS A. BOYD.

Welwyn Garden City, Herts.

Mr. Dobbs comments: It is difficult for even quite powerful superhet receivers to pick up a clear transmission of the Third Programme. The TRF Transistor Tuner will not work miracles. The figures for power consumption seem right and a suitable power source for the circuit would be a 9 volt grid bias battery.

IS THE FEDERATION POWERLESS?

ACCORDING to Mr. J. R. Sime of Edinburgh Tape Recording Club (October 5 issue) "The Federation of T.R.C. appears to be powerless—only one manufacturer attended the recent Congress—and that was a continental one."

There are two points here on which I should like to comment. It is true that only one manufacturer attended the First Annual Congress of British Tape Recording Clubs. This is hardly surprising, since only one manufacturer was invited! This is a Congress of Clubs; not of manufacturers. We invited representatives of the Press, the B.B.C. and the manufacturers. In the latter case we chose, not unnaturally, our first Trade Associate—Grundig (Great Britain) Ltd.

I am astonished to read that Mr. Sime

feels that the Federation is powerless. The Edinburgh Tape Recording Club has decided that it can get along very well without joining the Federation—this is their privilege. However, having arrived at this decision, it ill-becomes the members of the Club to complain that the Federation is powerless. It is, perhaps, significant that Mr. Sime recommends purchasers of tape recorders to join a Consumer Association—but only when they get into difficulties! If the members of the Edinburgh Tape Recording Club would like to see a powerful Federation, the very least they can do is to join it.

ALAN STABLEFORD.

Secretary, Federation of British
Tape Recording Clubs.

Please retain the B.A.T.R.C.'s Club Section format

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

A BOUQUET FOR REPS

NOT all British recorder makers are like the firm castigated by your correspondents; my own experiences are very different from theirs.

A generous education authority allowed my junior school a seventy-guinea recorder, and I had the job of trying it out. After a few minutes' use a breakdown occurred; playback was unaffected, but no recording was possible.

A telephone call to the makers resulted in many suggestions, and permission was given to take the machine to a local radio dealer if the fault still remained. This course had to be taken, but the dealer was unable to spot the trouble. So I wrote to the makers, giving as full details as I could.

They immediately sent direct to the radio dealer a box of spare parts, circuit diagram and suggestions. These enabled him to find the trouble and replace the faulty component. The machine was out of action for less than a week, and has worked perfectly since.

The recorder is a Repts R-40. I have no connection with the makers except as a highly satisfied user and, I hope, future owner of their products.

R. B. CRUSE.

New Milton, Hants.

High costs in Australia

I READ with especial interest the recent article by John Wallen on tape recording in Australia (June 27 issue). One has to appreciate that £1 sterling is worth 25s. in Australia but even this does not answer why equipment should be so dear in this part of the world.

As a result of John's article, I made some enquiries from local agents. I found that British makes of tape recorder and also some German ones, such as Grundig which are handled by the GB part of the firm, are exported to New Zealand at the British RETAIL price. This also applies to gramophone decks.

No one seems to be able to give the reason for this and I thought it might be of interest to you.

May I also say that as a member of the NZ Tape Recording Club and also Australia's ATRA I was glad to see our Clubs mentioned in your magazine which proves a link with new ideas and equipment in our field of interest.

R. D. FENTON.

Hastings, New Zealand.

WE saw your article "News from the Clubs" (September 7) asking for opinions on whether the Club Section should remain open as it was this year.

In our estimation, it should. From a purely personal standpoint, this is because we hope to enter again, and have already had several ideas for the subject. But looking at it in a wider perspective, to limit the choice of subject is surely going to curb the individuality of the entries, and channel them into a mediocre selection with little to choose between each.

The essence of good composition on tape is that it should be dramatic, and use the medium to heighten the dramatic effect, by fading, editing, and other technical means. (Consider the flashbacks in Norman Paul's "The Rest is Silence" or the narrations interspersed with short scenes in "Ban the Phon.")

In other words, the competition is not just to find the technically most perfect tape, but to find the one in which creative ability has used the medium to the best dramatic advantage.

The temperaments of the people pro-

ducing the tape thus have a modifying influence on the subjects they will choose to demonstrate that creative ability; we would not have chosen to portray a man in the death cell; Mr. Paul would hardly have satirised the Nuclear Disarmament Campaigners. It is a question of style. Just as authors evolve a style of writing that enables them to express themselves most easily, and with most force, so with those who tape compositions. In the subjugation of the technical means to the dramatic effect, a style evolves, which may or may not be suited to a particular subject. Thus a group making a recording on a given subject may be under a handicap from the start purely because it is not suited to their style.

In order that no-one shall be penalised by such a handicap, let us be free to choose our own subjects suited to our own style. In this way, the individuality, the creativity and hence the general standards of the tapes should be heightened. Is not this one of the reasons for the contest?

D. J. GARRETT.

Tonbridge, Kent.

Mixer completed; working well

I HAVE just completed the three-channel mixer unit, so plainly described in *Tape Recording Fortnightly* earlier this year. It is working beautifully, although this is my first attempt at constructing any piece of electronic equipment.

I believe it was only made possible by your plain pictorial diagrams. I normally cannot follow circuit diagrams, and am sure there are many more enthusiasts in a similar position.

A second unit is now being constructed, and I hope to combine the two for stereo use. I am pleased to see you have a stereophonic mixer lined up for

future publication. Details are anxiously awaited, with similar diagrams, I hope.

I still look forward to receiving each new edition, as much as I did for the very first number. Thank you for a fine magazine.

N. SPENCER.

Forest Gate, E. 7.

Editor's note: *The new series by H. Burrell-Hadden on building a stereo mixer began in the October 19 issue. This issue can be obtained from our back numbers department, price 2s. The second in the new series will appear in the November 16 number.*

THE LOGICAL WAY FOR FOUR-TRACK

THE letter "Which Numbering For Four-Track" by Donald Jeater (October 5 issue), as far as I could see, was all rhubarb and custard, as they say.

On normal twin-track machines recording in the first direction would be track one. At the end of the tape reel you automatically reverse the spools to record the second track.

On a four-track machine, when the end of the tape reel is reached for the second time, you are able to reverse the spools again, at the same time changing the track switch and recording as above—making recordings on tracks three and

four respectively. The order in which the tracks would appear on the tape from top to bottom would be 1, 4, 3, 2 which is the only logical way of doing it, and no confusion would arise when recording from a four- to a twin-track machine.

If British manufacturers wish to confuse the issue by making track switches numbered 1 and 4 and 2 and 3 let them bear in mind that it is not logical when playing twin-track recording.

D. E. SILLITOE.

Shepherd's Bush, W.12.

Sound Effects

ALAN EDWARD BEEBY, who has had long experience in devising and recording sound effects, begins a new series entitled "Sound Effects from Scratch."

HE CALLS PART ONE:

Learning to analyse sound

*"Some are part of many things,
All are some of many,
And the many parts of something give—
The total sum . . . if any!"*

AMERICAN humorist Sal Waite's nonsense-rhyme is probably the nearest anyone ever came to describing the business of sound-effect composition. It is simply another way of saying that if you mix all the correct ingredients together in the right way, you'll get the perfect result . . . if you're lucky!

In the first article of this series, I said that, in devising sound effects, there was no sure-fire guarantee of success. So far, the instructions I have given have consisted merely of set plans for working various effects without any reference to the problem of composing the items from the bare conception of an original idea.

In the following three issues, I want to try to explain the method of devising "Sound Effects from Scratch." This is something which *can* be learnt, although practice and patience is necessary at first. Make no mistake: things *will* go haywire when you begin experimenting, and your foot will itch to kick the cat lying on the hearthrug, completely indifferent to sound effects and your feelings alike!

Let's take, first of all, the subject of sound itself. In effects-composition we are concerned with two distinct types: "closed" sound and "open" sound. The former refers to a striking noise, such as a hammer hitting a piece of wood; the latter, to the noise of, say, a train-whistle. Any sound you can think of is either one of these, or a combination of both.

Every sound has its own vowel-equivalent. For example: a TRAIN WHISTLE: "O-o-o-o!"; HORSES' HOOVES: "Clip-Clop," and BLACKSMITH'S ANVIL: "Ding!" In most cases, a "closed" (or "strike") sound is always followed by an "open" (or "vowel") sound.

Therefore, the basic problem we have to face in sound-effect composition is to pair up the correct "closed" sound with the appropriate "open" sound. It isn't, of course, as simple as that by any means, but we'll explore the various off-shoots of the idea in a later article.

One of the most important items in the sound-effects studio is a good selection of "surfaces." These are all used to produce "strike" sounds, and might consist of the following: An empty packing-case, a glass jam-jar, a thick block of wood, a sheet of hardboard, a piece of brick-tile, a pane of glass, and a large, empty biscuit-tin. Each of these "surfaces" will have its own distinctive "closed" sound (when struck), and "open" sound which follows immediately afterwards.

It is possible to change the character of these sounds, both in pitch and length, by simply playing a recording of the sound at a different speed. Here's an example: A pencil tapped sharply on the side of a glass jam-jar recorded at 7½ ips and played back at that speed will sound exactly

like a glass jam-jar being tapped with a pencil. Now switch to 3¼ ips and play it back again. The striking sound is much deeper and heavier, and the reverberative "open" sound lasts twice as long. It sounds something like a blacksmith's anvil being beaten—but not quite. The "strike" part of the sound, although deep and powerful enough, has deteriorated into a mere thud. This is obviously wrong; the sound should have a ringing quality to it.

We can compensate for this loss of "ring" by tapping the jar *not* with a comparatively soft wooden pencil, but with something harder, say, the edge of a knife or steel ruler. Done in this way, the sharpness of the original "ring" will be so acute, that any slight loss at half-speed playback will be practically unnoticeable.

It is fortunate that each of the seven surfaces mentioned will give a relatively true vowel-sound, even when the speed is increased or decreased on playback. In the rare instances where the "open" and "closed" sounds need to be recorded at different speeds, it is a simple matter to cut and splice the two together by careful editing.

To be able to compose sound effects successfully, one must be able to analyse sound itself. To a professional, this means keeping a sharp ear open 24 hours a day and being constantly on the alert for any "new" sounds which one may well be asked to reproduce in the form of a sound effect.

This analysing process is quite simple to accomplish and, if persevered with, can, in time, become almost an involuntary action. It works in this way: When you hear a sound—any sound—decide, first of all, whether it is of the "open" or "closed" variety, or a combination of both. If the noise is "closed," note the "strike" sound which may be metallic, wooden, glassy, tinny, ringing, booming or thudding, etc. Note also the vowel, or "open" sound which follows. There are fourteen of these; in word-form, namely: *Flay, flee, fly, floe, flue, cow, car, cut, core, cur, care, cot, kit* and *toy*.

Now, given these two pieces of information, you should be able to make a snap decision as to which piece of equipment in your studio will give the *closest imitation* of that particular sound. This gives another pointer, and one that is most important. **KNOW YOUR EQUIPMENT.** Experiment again and again until you are absolutely and unhesitatingly familiar with your recorder's reaction to any given sound at any gain-level or playback speed. Form the habit of using the same tools for producing your sound effects whenever possible and you will find, after a time, that a pattern of "sound-associations" will begin to form in your mind. This, in itself, will enable you to approach new and more complicated effects with greater confidence.

In part two of "Sound Effects from Scratch" a fortnight from today, we shall be examining "Sound Ingredients and their Treatments." So keep on practising, and—leave the cat alone, it's not doing *you* any harm!

Equipment Under Test

THE MURPHY TR/1



By H. Burrell-Hadden

THE Murphy TR/1 is a small easily portable unit, one of the relatively few so far designed around the Garrard tape deck.

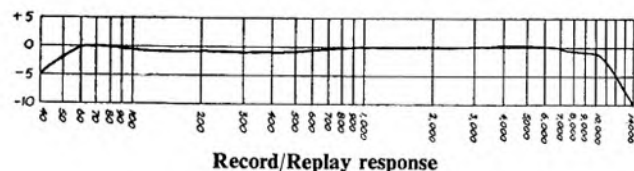
This excellent tape deck, which operates at the single speed of $3\frac{1}{2}$ ips, is the first in this country to incorporate a "tape cassette" or magazine. The magazine holds a four-inch reel of tape and a similar size take-up reel, and the tape is permanently threaded from one reel to the other. All that is required when loading the machine is literally, to place the cassette in position and move the starting lever.

Brakes are provided inside the cassette to hold both reels steady so that the cassette can be removed when the tape is half played and will start in the same place when required. This in conjunction with the very quick start of the tape on this machine enables accurate and rapid cueing to be achieved.

Fast spooling is provided, but only in the forward direction, it being a simple matter to wind back, merely by removing the cassette and turning it over. Rewind time is exceedingly fast and recording time on double play tape, using both tracks, is 70 minutes.

Wow and flutter for the unit are very low indeed, well within the .2 per cent claimed by the makers. It was possible to record a piano without any undesirable effects.

Returning to the Murphy, use of this well engineered tape deck, the TR/1 carries on, both electronically and mechanically, the good design of the tape unit. The record/replay amplifier is a very neat unit containing only three valves: two twin triodes type ECC 83 and one output pentode type EL 95, which also serves as bias oscillator in the record position. High tension supplies are provided by a metal rectifier. The whole amplifier section is mounted in one with the tape unit and this whole assembly can be removed from the case by the removal of the base plate and the loosening of four screws. The loudspeaker which is mounted on the wooden cabinet does not come away with the unit, and its connections need to be unsoldered



Record/Replay response

before the unit can be removed. I feel it is a pity that these two leads could not have been fitted with a plug and socket.

Frequency response tests showed an excellent performance in this respect, as can be seen from the accompanying diagram. The machine is virtually flat from 60 cps to 10,000 cps and 3 dB down at 50 cps and 11,000 cps.

Below and above these frequencies there was a smooth roll off, frequencies above 12,000 cps still giving useful response. This machine therefore, with this excellent frequency characteristic and low wow and flutter can give a very good account of itself when recording music.

Two inputs are provided, one for the accompanying high impedance crystal microphone and one for a higher level, also at high impedance, from radio or gramophone. In addition to the internal loudspeaker, an extension loudspeaker socket is provided, and also an output to feed a high quality amplifier. There appeared to be no means of switching off the internal loudspeaker when this latter output was in use, a feature which could well be provided.

The equipment is styled in an attractive leatherette-covered case in green and ivory, complete with carrying handle, but it is a pity that there is no compartment for stowing away the mains lead. Neither is this lead removable. The microphone, incidentally, is carried in the lid of the machine.

In spite of these minor comments, I have every confidence in recommending this very good recorder as excellent value for money at 28½ gns.

Manufacturer's Specification

Deck: Garrard, magazine loading, dual track.
Speed: $3\frac{1}{2}$ ips.
Playing time: 70 minutes on double play tape.
Rewind time: 45 seconds.
Frequency response: 60-10,000 cps at low-level output socket.
Inputs: 2M ohms for microphone, 100K ohms for radio connection.
Outputs: $1\frac{1}{2}$ watts undistorted. Internal speaker or external speaker, and low level equalised output.
Loudspeaker: 7 x 4 inch elliptical.
Microphone: Cosmocord Mic 40.
Consumption: Approx. 45 watts.
Dimensions: Width, $12\frac{1}{2}$ inches; Depth, $10\frac{1}{2}$ inches; Height, $7\frac{1}{2}$ inch.
Weight: Approx. 21 lbs.
For AC mains, 200-250v, 50 cycles.
Valves and circuit: ECC83 Cascode-connected input amplifier; ECC83 Equalisation amplifier; EL95 Output, or erase and bias oscillator; EM85 Modulation depth indicator; 16RD, 2.2.10.1 Metal rectifier for h.t.; 39MA1 Copper-oxide rectifier, for magic eye.

WHY NOT SPEAKERS FOR HIRE?

HAS anyone ever thought of running a loudspeaker hire service? Such a scheme could solve a lot of the difficulties that arise during the to-be-or-not-to-be phase of stereo.

For many people it is just too much to have to cope with the problem of which speakers would suit their room and their pocket on top of the problem of choosing the rest of the equipment.

If one could hire a pair of speakers of the kind that would be most likely to give optimum results without too much consideration of their purchase price it would be possible to forget this part of the business and concentrate on acquiring stereo amplifier, deck, pick-up and so forth knowing that the mystery of what performance is possible with the equipment bought would be speedily established.

You might usefully decide, at first, to hire speakers somewhat larger (and more expensive) than you would care to settle for permanently so that you would acquire a good standard of judgment against which to assess subsequent attempts to scale down the

size and price to meet furnishing and financial limitations.

Of course, the most expensive speakers are not automatically the best choice, but in most cases they would provide the right information. Ideally, perhaps, the hiring organisation would offer a programme of speakers designed to enable customers to try various possibilities—including column speakers and other special designs. An overlap period of a few days in each case would give the customer a chance to compare the two types closely. It would be a simple matter for the hirers to provide an instantaneous switch for this type of comparison.



I believe that many people would happily buy a pair of fairly inexpensive and compact speakers once they had been able to determine pretty closely just how much musical enjoyment they would get from them and just how much they would be losing by not having the superior instruments.

There is often a tendency to imagine that the speaker you cannot afford is bound to be "out of this world" compared with the speaker you can. A substantial period of comparative listening at home would allow the truth to be absorbed, and probably end by reconciliation with a speaker in your price and furnishing range. For the enjoyment of sound is by no means an exact and measurable thing, and in practice there is often very little detectable difference between one speaker and a more expensive one in the conditions under which they have to work.

I should be glad to hear from any organisations who feel that they might be able to provide a speaker-hiring service of this kind—especially a comprehensive one that would give us a chance to hear a wide variety of speakers. I should also like to have opinions from anyone interested in this idea—including readers who feel that they would like to make use of such a scheme, and manufacturers who feel that they (and stereo) would profit from it.

Creating a stereo image

ONE of the problems posed by several readers is that of changing to stereo while still using a corner speaker "left over" from the mono system.

A second, identical corner speaker is not necessarily a good answer, unless the room has a narrow end which would result in a reasonable distance between the two when placed in opposite corners.

The main technical requirement is the achievement of similar treble dispersion, together with the ability to move at least one of the speakers so that the stereo image can be created by trial and error.

Many corner speakers provide wide treble dispersion and it may well be that a column speaker constitutes the most suitable companion. If a compact speaker is tried out then it is possible to duplicate the effect of the first to some extent by tilting it so that it becomes less directional.



Remember, however, that although speakers with wide dispersion (such as columns) simplify the process of achieving *good* stereo over a fairly wide area, only directional speakers can give you *pin-point* stereo (pro-

viding you are willing to work hard on positioning). Many people do, nevertheless, prefer easily obtained stereo to that which is better but more difficult to achieve.

A useful final point on this subject. Even if you have perfectly matched speakers it is possible to have lack of balance due to differences between the side walls of the room. And so, if you have speakers that are not identical try switching them from one side to the other (remembering to keep the left and right channels on their proper sides). The discrepancies may then help to cancel out the room fault—instead of aggravating it.

NEW FIRM ENTERS TAPE MARKET

Another BSR Monardeck



The Top Twenty open and closed

BRENNELL IMPROVE CAPSTAN MOTOR

IMPROVED wow and flutter performance is claimed by Brennell following their introduction of a high quality capstan motor as a standard feature in their range of recorders.

The new feature is a Hysteresis Synchronous Motor, a type widely regarded as the most efficient that can be employed. It has a balanced outer rotor, and is used with a heavy statically and dynamically balanced flywheel.

Improved wow and flutter figures using this double flywheel operation are claimed as follows: Below .05 per cent at 15 ips; below .1 per cent at 7½ ips; below .15 per cent at 3½ ips; and below .25 per cent at 1½ ips.

The improved motor will be incorporated in all their recorders, with no change in prices.

Brennell Engineering Co. Ltd., 1a, Doughty Street, London, W.C.1.

CQ AUDIO

BECAUSE the name "Conquest" is a registered trade mark of Colla:o Ltd., the new four-track tape recorder manufactured by CQ Audio, and previously known by this title, has been changed to "Sceptre".

New Products

Nylon moulded co-axial plug

OF interest to anyone who dabbles in electronic construction is W. H. Boddington and Co.'s new co-axial plug which costs 11d.

The plug body is a nylon moulding with a melting temperature above that of electrician's solder, and is plated with copper and silver, or copper and nickel. The company says this eliminates the need for machined inserts and complicated assemblies, resulting in a considerable saving in cost.

The plug is suitable for most forms of co-axial cable and it is claimed that it is sold at little more than half the price of comparable plugs on the market.

A universal type plug suitable for a wider range of sizes of co-axial cable and employing the same technique is being developed.

W. H. Boddington and Co. Ltd., 178/180, Homerton High Street, London, E.9.

THEIR first excursion into the tape recorder market is announced by Triumph Electronics Ltd. Their new machine is the "Top Twenty", a single-speed, 3½ ips, recorder incorporating the BSR Monardeck, with a quoted frequency response of 60-10,000 cps.

Included in the list of facilities are superimposition, expanding light strip recording-level indicator, input sockets for high impedance microphone/diode radio; loudspeaker, radio/gram/pick-up—all controlled by the volume control. Two output sockets are also provided. High impedance for amplifier or monitoring headphones; low impedance for external loudspeaker (3-15 ohms).

A safety erase facility is provided by the use of a red light during recording, and a green light for playback. Both cease to function when the tape is switched out.

The loudspeaker is a 7 x 4 inch high flux elliptical, and the amplifier output is rated at 2½ watts.

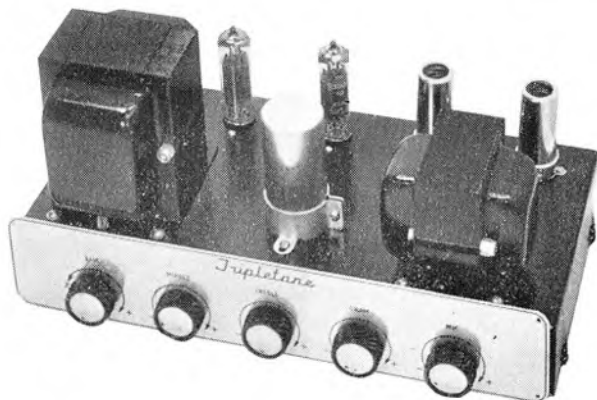
Valves used are EF 86, ECL 82, EM 84, EZ 80.

All controls, input and output sockets are conveniently placed in a heavy perspex panel immediately below the tape deck.

Ample carrying space is provided for six 5½ inch spools, microphone, mains lead (will take 13 amp. plug), spare leads and instruction card. Housed in an elegant plywood case, covered in two-tone water and knock-proof plastic, the "Top Twenty" retails at 26 guineas.

Maximum spool size is 5½ inches, providing a total playing time of three hours using double play tape.

Triumph Electronics Ltd., 118, Brighton Road, Purley, Surrey.



Left is the modified version of the Hi-Fi Major Amplifier recently introduced by Tripletone. Among the features of the new model is an improved frequency response so that with tones in the mid position it is within ± 1 dB from 15-20,000 cps; and an increase in the range of the tone controls by approx. 15 per cent.

Another change concerns the valves. Those now used are two 12AX7s, two EL84s and EZ81. A separate cartridge fuse replaces the fuse originally housed in the voltage selector panel, and a changeover switch has been incorporated to change from a 2-3 ohm output to a 15 ohm output. The input sockets are now flush mounted co-axial sockets, and all plugs and sockets are now at the back. These changes have not affected the price which remains at £15 18s. 9d. The size has been reduced to 12 x 6 x 5½ ins.

The Tripletone Manufacturing Co. Ltd., 241a, The Broadway, Wimbledon, London, S.W.19.

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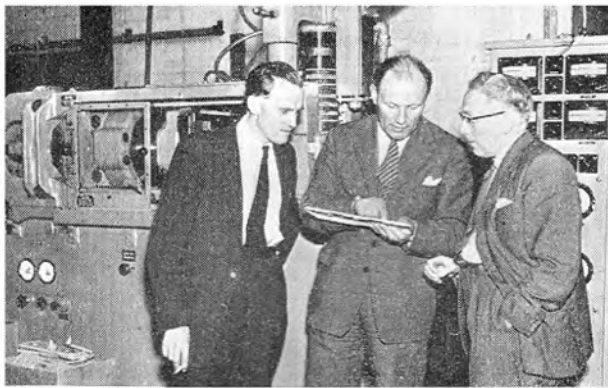
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V.I.Ps

PEOPLE IN THE NEWS

R. E. V. BIRD (left) and Mr. H. A. Anderson (centre) of Cosmocord Limited, examining a facia moulding for a tape recorder, during a demonstration at Wolverhampton, of the first British-made Lester 4 oz. Injection Moulding Machine which has been purchased by the Cosmocord Company. With them is Mr. P. J. Shipton, General Manager, Machine Tool Division, of J. Brockhouse and Co. Limited. The machine, one of a batch of twenty now in production will produce these facia mouldings at the rate of one every 28 seconds.

TAPE AND CINE SYNCH. Special exhibition

AN exhibition devoted exclusively to the art of synchronising tape and cine is to be held at Maidenhead Town Hall on November 3. Believed to be the first of its kind to be organised, the exhibition will bring together firms who manufacture any form of device for synchronising tape and 8 mm cine or still projectors which can be coupled to tape recorders.

Among the well-known names in this category who will exhibit are Dominus,

D.W. Cine Equipment, Johnsons Ltd., Leitz Ltd., Neville Brown (Bauer), Peeling & Komlosy, Pullin Optical Ltd., and Specto Ltd.

Admission is by ticket obtainable free from Norman Greville Ltd., High Street, Maidenhead, or Peter Grueone Studios, Yield Hall Lane, Reading, or 1s. at the Exhibition.

THE WORLD OF TAPE • A NEWS ROUND-UP

LONG-PLAYING records of signals transmitted by the 14 satellites launched by Russia have been reproduced by the ionospheric research office of the Japanese Ministry of Posts and telecommunications.

Copies of these thirty-minute records are being sent to Britain and West Germany—where international conferences on earth satellites will be held.

Compiled from extracts taken from nearly 1,000,000 yards of tape recordings, the records are already on sale in Japan.

* * *

THE ancient London Borough of Paddington is the latest to recognise the advantages of a tape recorder. Some of its residents, members of the Paddington Society's photographic section, are currently touring the district tape recording the memories of old-age pensioners,

and photographing the crumbling Victorian homes that are now giving way to huge blocks of flats and skyscraping offices.

They plan to make a complete story in sound and pictures of present-day life in the borough. One of their supporters is the borough librarian, Mr. F. N. MacDonald. Mr. Basil Green, chairman of the section, said they hope soon to tape record an interview with one of Paddington's most distinguished citizens—89-year-old Lord Samuel, who has lived in the borough for more than 60 years.

* * *

AN experimental tape recording scheme for business men and women who travel in their ships has been started by the P. & O. Line.

On board the 29,614-ton liner *Iberia*,



which sails on the Tilbury to Australia run, is a record and playback machine for the dictation of business letters and messages.

After use, the tapes are flown back to the users' home office from the ship's next port of call.

A P. & O. spokesman stated that there was a tendency for big executives to combine business trips with holidays at sea, and that if the facilities at sea met with success, the scheme would be extended to other liners.

Tape Recording Handbooks

Advice on Buying a Tape Recorder

By J. F. Ling

2s. (2s. 6d. incl. postage)

A booklet specially designed to interest the novice. Provides the information needed to select a tape recorder when buying for the first time, and pays particular attention to a common problem: "What to look for during a recorder demonstration?"

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News from the Clubs

Edited by

FRED CHANDLER

IT would seem that a free hand is what is desired most by the clubs who are thinking of preparing a tape for next year's British Amateur Tape Recording Contest. In our September 7 issue I asked for suggestions on whether the Club Section should consist of a set piece or not. Of the replies received, the by far the most popular suggestion was to leave the subject for each club to decide. This point is well made in a letter received from Mr. D. J. Garrett, who with his colleagues R. A. S. Gouldsworthy and P. Tucker, won this year's contest with their tape *Ban the Phon*. The letter is published on page 23.

Curbing the individuality, and channeling club members into a mediocre selection of subjects, is the way they see the outcome of a pre-set subject; and I believe most clubs will agree with them. There are the exceptions of course, notably Peter Holloway of the West Herts club. His members, when broached on the point were "100 per cent for it being a set piece", but they "did not offer any particular subject".

The general opinion, however, was with Mr. Garrett.

I was disappointed again to find many clubs had not found it worth discussing, or was it that they did not come to a suitable agreement? At least, they never passed on any motion of the matter being raised at their meetings.

I can understand the reluctance of clubs to devote a large part of their precious time to discussing this point, but the club section was initiated with the idea of providing clubs with an incentive to use the facilities at their command to a common creative purpose. To "leave it to the others" is not in the general interest. Apathy is a stumbling-block to creation.

So come on all you shy secretaries, let the new clubs see what progress has been made in the last 20-odd months.

After "quite a busy but worthwhile month" it was decided to throw open the meetings of the Acton club on two special evenings, and give several demonstrations to the general public. A tape was prepared by secretary Dave Wiseman and chairman Johnny Mewitt and the meetings were publicised.

The response was quite a shock. At the first show—September 5—a count of the guests was discontinued after it

reached 100; the final estimate being somewhere in the region of 120-140, and it was impossible to get any more people in after 9 p.m.

The two main machines operating were the club's new Telefunken KL-85T, and John Mewitt's Ferrograph 4S/N. All types of recordings were handled—mains, battery, mono and stereo—and Rusty Chapman's Beam Echo amplifier and Wharfedale speakers gave an immaculate performance and created much interest for the audience.

But the surprises had not finished. The second demonstration two days later brought reporters and photographers from the local newspapers as well as some of the people who had come to the first showing. A local Women's Guild arrived *en masse* and once again the Telefunken and Ferrograph went into action. Also on show were the Wyndor Viscount belonging to Bernie Cload and treasurer Gerry White's Fidelity Argyll. Tape pal recordings were well boosted and seemed to create by far the most general interest.

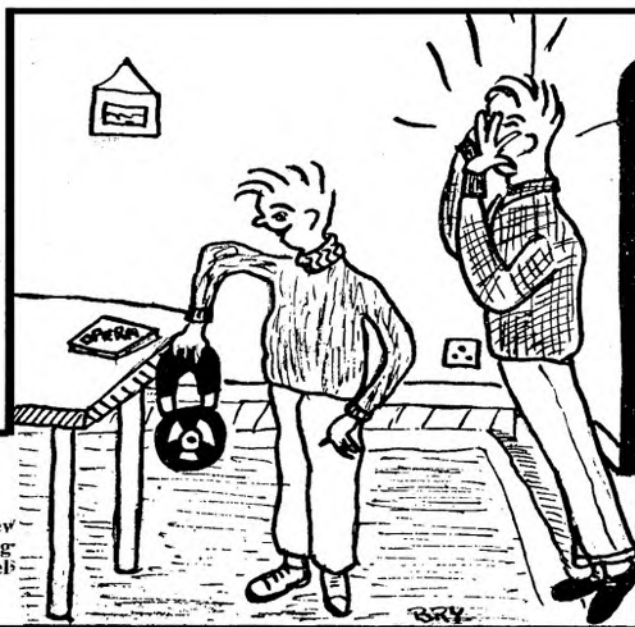
As a result of these two shows the club has gained many inquiries, a couple of new members and a half-page report, complete with photographs, in the local press.

The last meeting of the month, September 23, was devoted to a demonstration of the REPS range given by a Mr. Gale of Gaiham Electrical Co. Ltd. The demonstration was the outcome of a mention of the club, made by one of the members when buying his REPS R.10 from this company. For interested secretaries who would like a similar demonstration, the address to write to is: Mr. Gale, c/o Gaiham Electrical Co. Ltd., 34/36 High Street, Southall, Middlesex.

"Could you tell me more about it, and what are these things at the back?" was the question put to members of the West Herts club by Heather MacRae when she brought her HMV DSR1 to the September 21 meeting of the club. This information was readily

Willy

Look Dad, this new super power magnet picks up reels of tape.



passed on and she is now able to get more use from her machine.

Members then tried to "Goon up" the club's recent detective play but the results were not what were hoped for. However a few of the Watford members met some days afterward for editing experience and this tape provided the material for some satisfactory results.

Jack Hill exhibited his P.A.R. Allegro at the October 5 meeting at Hemel Hempstead. Ingeniously, he had recorded the description of the machine and was thus able to sit back and listen with his audience. Afterwards, questions were dealt with live and he told of the modifications he plans to do as well as showing a clever piece of superimposition which must have taken considerable skill and patience.

The evening was devoted to experimenting with two machines, extra heads and mixer units to get electronic and mechanical effects.

Just recently members have been recording some of the events in the annual Festival of the Arts in Hemel Hempstead and these will be made available to hospital patients through the club's hospital service. Items included the opera *Cinderella* (in English), a lecture by Mr. Raymond Glendenning on "The Art of Commentary" and a talk by his Highness Prince Chula of Thailand on "Thailand as seen by a Thai".

His Highness afterwards spoke to the members present for the recording and after hearing a little of the playback asked whether they were professionals!

Film shows were the order of the day at the September 29 meeting of the Coventry club. They have proved popular in the past and on this occasion drew an attendance of some 37 people.

Secretary Roy Reynolds took the chair and introduced a couple of films presented by Bill Tisdale and Henry Hopfinger. Bill's film was both a family film and a tour of Coventry in 8 mm, colour. Henry's 16 mm, colour film depicted scenes around Bournemouth where he

(Continued on page 33)

Classified advertisements

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

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B.B.C. "Sound" Programme

6:40 p.m. Monday,
November 7

(A repeat of the programme broadcast on October 30)

SLIDES WITH SOUND

John Borwick describes how he has just completed a soundtrack to accompany the projection of colour transparencies of his holiday.

TEACHING TAPE

The teacher I. W. Jarman talks to pupil Angela Jeffreys about superimposition—another way of adding one sound to another.

"Sound" is broadcast on alternate Sundays at 2:40 p.m. on Network Three.

The next new programme is on November 13.

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

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GRUNDIG TK60/U Stereo with two GDM/15 mics. Four months old £105. Box 397, Tape Recording Fortnightly, 1, Crane Court, Fleet Street, E.C.4.

BRENELL MK IV and TELEFUNKEN Tape Recorders. Best offer over £30 for each. Telephone IMPerial 5111.

Wanted BRENELL MK 5 £30-£40, age six months to one year. Brian Allsopp, 6 Dairy Lane, Walberton, Nr. Arundel, Sussex.

Wanted, good GRUNDIG recorder. F. Riddle, 113 Church Road, Northolt, Middlesex. VIKING 4734.

EMI 2300 Portable disc cutting unit; complete with 3 sapphire cutters and 20 mixed blanks £70 (ONO). SPECTONE 120; comprises Reflectograph deck—variable speed, 8½ in. spools—Mullard 10 watt Amplifier, £25 (ONO). Terry, 17 Glanville Road, Bromley, Kent.



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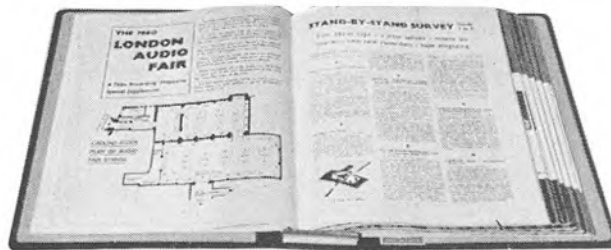
Wanted FICORD 1A. Details please to: 41, Stamford Avenue, Coventry. Phone: 67824.

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

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News from the Clubs

(Continued from page 31)

spent his summer holiday this year. Bill Tisdale had recorded some sound effects and these were played while Henry's film was running—with amusing results.

There has been a promise from Mr. Innes-Chaytor for a showing of the films he took on his summer holiday in Austria.

A recording of the BBC Sound programme in which part of the winning tape in this year's British Amateur Tape Recording Contest was heard, was played back by Carl Briggs. A recording of the Bedworth Silver Band was also heard.

Treasurer Bill Palmer applied for and obtained club membership for a relative in New Zealand bringing membership up to 59—the highest in the club's history.

Peter Warden was unable to attend the last meeting because he was in Birmingham. His principal reason for going there was to gain some tape recordings of train whistles but unfortunately his unfamiliarity with the workings of Roy Reynolds' Boosey and Hawkes recorder proved his undoing. A number of recordings obtained were spoilt by speed inconsistency.

The Reading club were allowed space in the 12th annual Electrical and Electronic Exhibition by Messrs Herbert and Lascelles of Reading. The exhibition was held in the two Town Halls at Reading with the smaller Town Hall devoted to tape recording. The club had an impressive stand designed by one of the members and it was manned throughout the week by a rota of members.

The tape and cine aspects of the club were shown and a new section on colour

slides with tape commentary was also launched. A "sales story" produced by T. H. Pettit on 35 mm. slides was accompanied by music and commentary on tape, with a Telefunken recorder and synchr. unit used to control a Paximat automatic projector. This unit allows pulses to be applied to the sound track of the tape which carried the background music and commentary, and when replayed will control most automatic projectors.

Demonstrations were also given of members' films with synchronised tape, on a Bolex projector with loop synchr. from a Philips recorder.

Home-made articles, such as a parabolic reflector and a bulk eraser made by secretary D. M. Noyes, were among the static exhibits shown and the club's new leaflet was distributed to local photographic and tape recorder dealers.

Normal meetings have also been well-supported and the first of the season consisted of a review of tape recorders. A number of new four-track and portable machines were shown. At the second meeting there was a display of photographic equipment for the cine members.

Work has been going on steadily in the Windsor Drama and Tape Recording Society.

In August the play "A Certain Man" was read through in its entirety by the cast. Part of the play was recorded on the Vortexion at the request of the stage producer. On play-back the tape producer was convinced that, after the stage performance, the play would make an excellent subject for tape after suitable adaptation.

Two attempts were made to record L. Du Garde Peach's "Cross Calling". On the first occasion the shocking acous-

tics, in the telephone booth used, were overcome but the replies coming back over the wire were too weak. The second attempt on a normal subscriber's instrument was much more realistic.

Two interview evenings were held before the next general tape evening on September 8. Extracts from the interviews were heard and Mr. Smith advised members on this aspect of recording, giving them numerous hints.

A résumé of what work will be required on the Windsor tape followed, and members were allotted their working areas. The tape producer pointed out that the task was gargantuan but if one single item of interest is obtained from 1,000 houses, it should be reward enough.

The script for the public address campaign was then started and this was followed by a play-back of "The Scarlet Pest" recorded during the performance given by the extinct Windsor Youth Theatre Company.

Three plays for production in January were rehearsed on September 15, and sections were recorded and played back for criticism. The public address campaign was held on September 17 and the areas covered included Old Windsor, Clewer, Dedworth and a small part of Windsor. A further rehearsal of the three January plays was held on September 17.

Terry Devereux, the versatile cartoonist, of the London club has recently accepted the post of secretary/treasurer. All correspondence on club matters should now be addressed to him at 28, Nevern Place, Earls Court, London, S.W.5.

The change came during the club's AGM, and apart from the new post, all the serving officials were re-elected. Fred McManus, the retiring secretary/treasurer was unable to continue in office due to ill health.

At the first meeting of the Maidstone club ten members were enrolled. Initial discussion centred on the policy they intend to follow, and it was decided to hold meetings fortnightly at the Corn Exchange. The first of these was held on October 13. John Periam is the member to contact regarding details of the club, and his address is "Treetops", Boxley Road, Penenden Heath, Maidstone, Kent.

A number of new clubs are in the process of formation.

In Cambridge, Mike Renshaw and a few friends are trying to organise an inaugural meeting for early December. Persons interested are invited to contact him at 6, St. Vincent's Close, Girton, Cambridge.

In the same general direction, Mr. D. E. G. Spinks of 82, Rider Haggard Road, Heatease, Norwich, Norfolk, is keen to hear from tape enthusiasts. He asks for a stamped addressed envelope with all enquiries.

Another club is to be formed in Mitcham. The instigator is Mr. S. Bailey, 41, Manship Road, Mitcham, Surrey.

And finally, in the Lake District town of Penrith a club already formed seeks contact with other clubs. The founder secretary is Malcolm Legget of 38 Milner Mount, Scaws Estate, Penrith, Cumberland. He writes to say the members are keen to exchange tapes with clubs or individuals, especially new clubs to compare successes.

CLUB MEETING DIARY

ACTON: Alternate Fridays at the King's Head, Acton High Street. (Nov. 4.)

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

BLACKPOOL: Every Wednesday at 173, Church Street.

BOURNEMOUTH: Alternate Tuesdays at the Civil Defence Centre, Holdenhurst Road. (Next: Nov. 15.)

BRIDGWATER: Alternate Tuesdays at Erio's Road, West Street. (Nov. 15.)

BRIGHTON: Every Wednesday at Fairlight School, Penvensey Road.

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

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate. (Nov. 14.)

COVENTRY: Alternate Thursdays at Rotherham's Social Club. (Nov. 10.)

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

DOVER: Alternate Mondays at The Priory Hotel. (Nov. 14.)

DUNDEE: Alternate Mondays at 59, Strathmartine Road. (Nov. 7.)

EDINBURGH: 1st Tuesday and 3rd Sunday at 23, Fettes Row, Edinburgh 3.

GRIMSBY: Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road. (Nov. 8.)

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

HARROW: Alternate Thursdays at St. George's Hall, Pinner View, North Harrow. (Nov. 4.)

HUDDERSFIELD: Fortnightly, alternate Thursdays and Fridays at the Congregational Church Schoolroom, Great Northern Street. (Nov. 10.)

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

IPSWICH: Fortnightly, alternating Fridays and Saturdays at the Art Gallery Committee Rooms (Nov. 5) and the King's Arms Hotel, Cornhill. (Nov. 18.)

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms. (Nov. 16.)

KETTERING: Alternate Wednesdays at the Rising Sun, Silver Street. (Nov. 9.)

LEEDS: Every Thursday at the British Legion Club, Albion Street, Leeds 1.

LEICESTER: 2nd and 4th Friday at Bishop Street Reference Library.

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

LUTON: 2nd and 4th Tuesdays at 17, Dunstable Road.

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

MIDDLESBROUGH: Every Tuesday at 130, Newport Road.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Broad Street. (Nov. 10.)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (Nov. 3.)

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (Nov. 8.)

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

WALTHAMSTOW: Alternate Fridays at 26, Church Hill, E.17. (Nov. 4.)

WARWICK: Alternate Wednesdays in Room 18 of the Royal Leamington Spa Town Hall. (Nov. 16.)

WEST HERTS: Fortnightly, alternating at the Cookery Nook, Watford (Nov. 16) and Heath Park Hotel, Hemel Hempstead. (Nov. 2.)

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

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

WEYMOUTH: Alternate Wednesdays at the Waverley Hotel, Abbotsbury Road. (Nov. 2.)

WINDSOR: Every Thursday at the Royal Adelaide Hotel.

WINCHESTER: Every Friday at The Ship Inn, Clifford Street.

YORK: Every Thursday at the Rechabite Hall, Clifford Street.

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

Is your club included in this list? If not, send details on a postcard, including date of next meeting. The list will appear in future as space permits.



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Index to Advertisers

	page
Brenell Engineering Co. Ltd.	5
Deroy Sound Service	34
Electro-Techno-Dynamics	9
E.M.I. Sales and Service Ltd.	2
F. A. Hughes & Co. Ltd.	36
Fi-Cord Ltd.	7
Gramdeck	10
Grampian Reproducers Ltd.	10
Grundig (Great Britain) Ltd.	8
Howard Tape Recorders	6
Lee Electronics	34
Magnagraph	34
M.S.S. Recording Co. Ltd.	4
Norwich Union	28
Nusound Recording	29
Radiostuctor	28
Rapid Recording Service	34
Recording Machines Ltd.	34
Reps (Tape Recorders) Ltd.	9
R. E. W. Earlsfield Ltd.	4
Shinns Ltd.	34
Sunderland Sound Services	34
The Gramophone Co.	Front cover
The Tape Recorder Centre Ltd.	3
The Teletron Co. Ltd.	10
Truvox Ltd.	35

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When writing to manufacturers for information about new products, please mention that you "saw it in *Tape Recording Fortnightly*"

TAPE RECORDER HIRE TAPE TO DISC 78-LP RECORDING STUDIO SALES—EXCHANGES

MAGNEGRAPH

1, Hanway Place, London, W.1.

s.a.e. for leaflet or
telephone: LAN 2156

TAPE TO DISC RECORDING

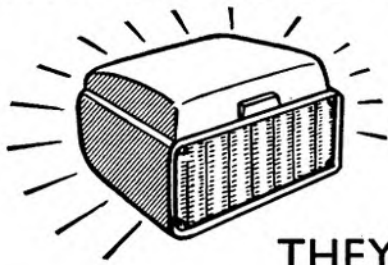
Microgroove LP from 27/6d.
45 rpm EP—20/-
78 rpm—11/-

48 Hour Return Service FINEST QUALITY

S.A.E. for comprehensive leaflet to:—

A. D. Marsh ("Deroy Sound Service"),
52 Hest Bank Lane, Hest Bank, Lancaster,
Tel: HB 2444

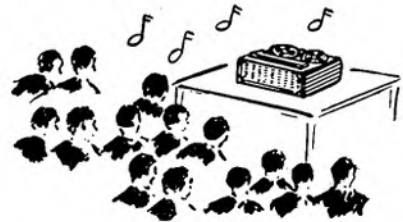
THEY **LOOK** SO GOOD



The moment you see the styling of a Truvox Tape Recorder, you know it is the machine for you. Foolproof and simple in operation with professional facilities, a Truvox Recorder will be the centre of your home enjoyment of speech and music. See them at your dealers.

THEY **SOUND** SO GOOD

You'll enjoy "listening" more than ever before. All the technical know-how of a decade of specialisation, to give perfect sound enjoyment, is embodied in the Truvox R6 and R7 . . . the original sound *truly* recorded and *truly* re-played through *large* loudspeakers. Hear them at your dealers.



THEY **ARE** SO GOOD

That you'll never be satisfied with any other Recorder . . . once you've seen and heard them, you'll decide for yourself . . .



THEY **MUST** BE

TRUVOX

R.7

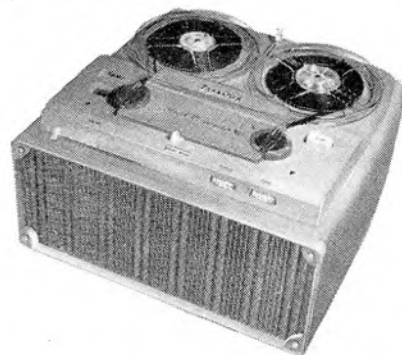
H.P. Facilities available.

**SERVICE
IN YOUR
OWN HOME**

R.6

7" spools. 10 watts output.
Records/Replays both directions.
Twin speakers.
Response 30-17,000 c/s.

Retail Price 75 gns.



7" spools. 4 watts output.
2 speeds. 8" x 6" speaker.
Response 30-15,000 c/s

Retail Price 55 gns.



Ask your local dealer for a demonstration or full details from:

TRUVOX LTD. NEASDEN LANE, LONDON, N.W. 10 (Gladstone 6455)

How can you measure the authenticity of a tape recording? The simple answer is—you can't with any guarantee of accuracy. The sound thing to do is rely on proven quality and choose for all recordings the tape that's made to give Authentic Sound.

the 'rod, pole and perch' of **Authentic Sound**



BASF tape has a base of Luvitherm, the special plastic which permanently holds magnetic oxide in the tightest bond; and the oxide itself is made by a special BASF process to ensure magnetic stability no matter how long the tape is stored. These outstanding features are the reason experts use BASF tape for original research—recording the eating sounds of fish is one unusual field—as well as for true-to-life records of more mundane events. BASF is the original recording tape. A vast reserve of more than 25 years experience and continued development keeps it ahead for authenticity. On BASF tape you can always be sure of registering your recorder's complete range of frequencies . . . always reproducing them . . . always obtaining Authentic Sound whatever and wherever you record.

insist on the tape with the Luvitherm base

Magnetic Recording Tape

**Standard • Long Play
Double Play • Editing Sound**

F. A. HUGHES & CO LTD 4 STANHOPE GATE LONDON W1