

TAPE RECORDING FORTNIGHTLY

HOW I MADE A PRIZE-WINNING CONTEST TAPE

By Victor Blackman



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By a London Headmaster



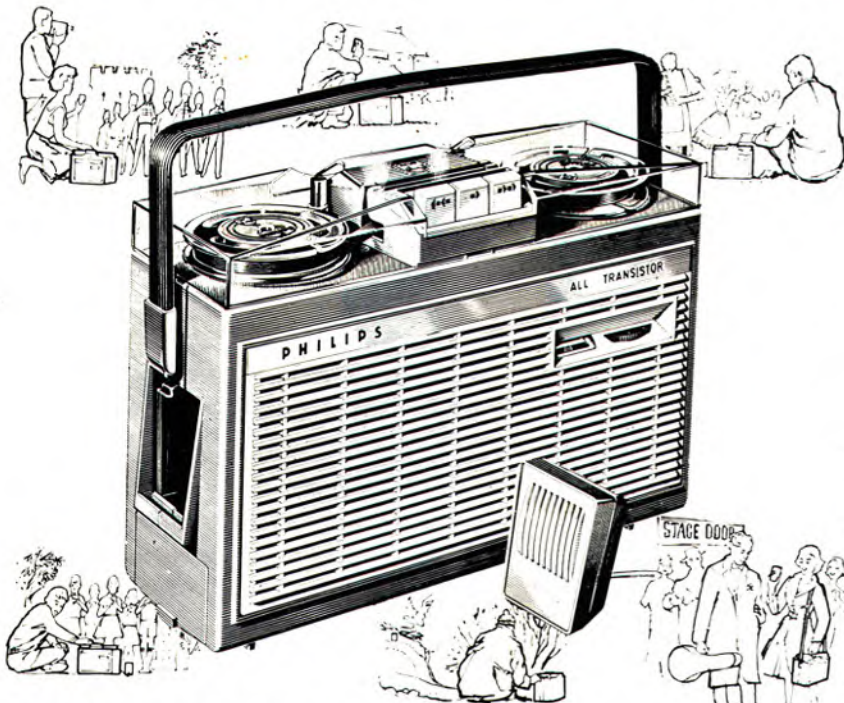
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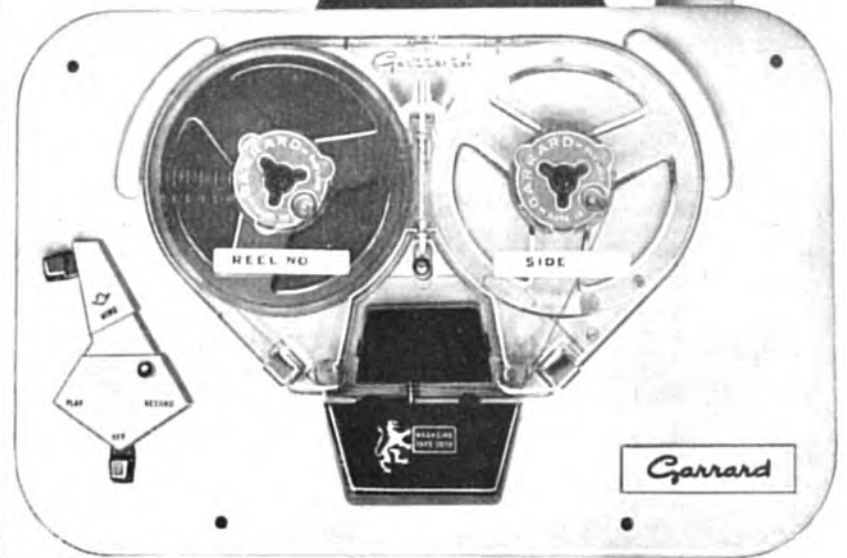
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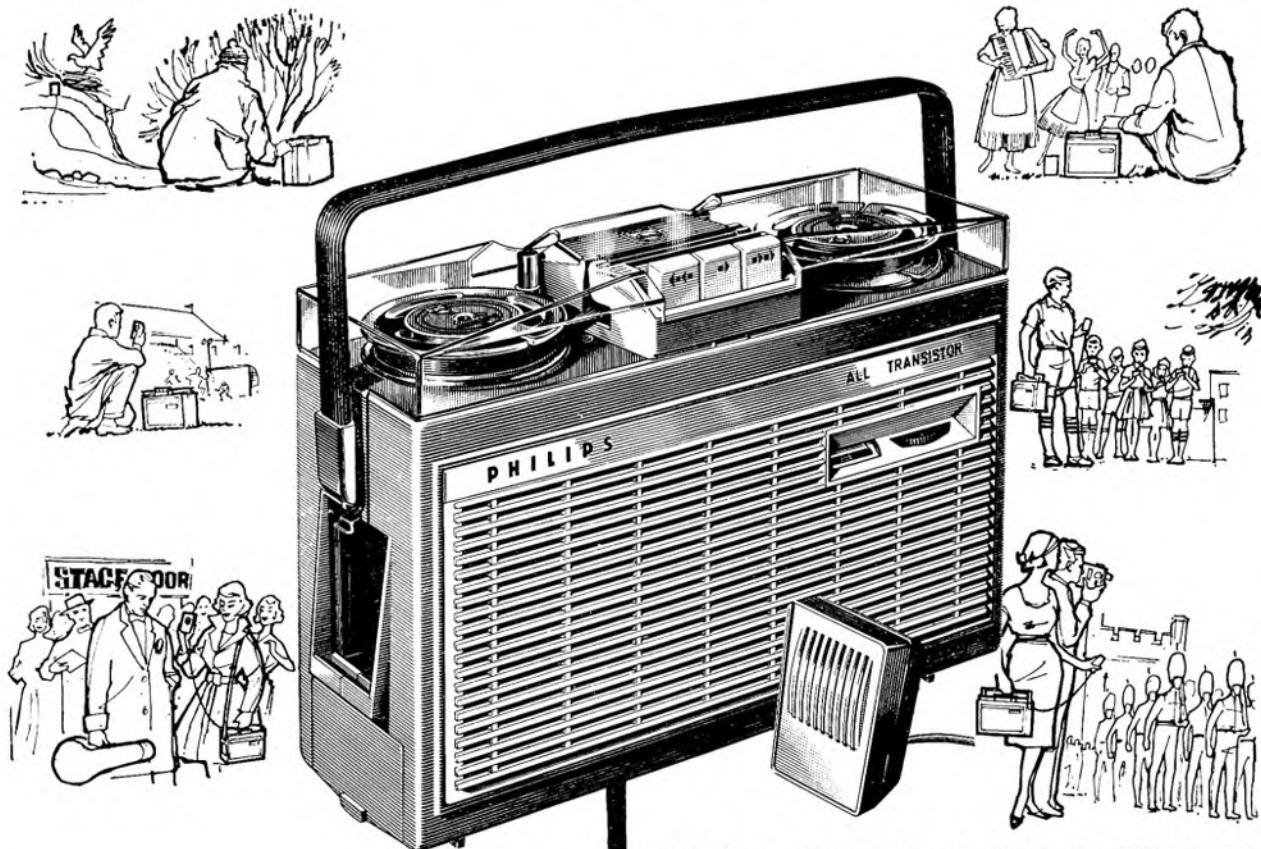
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TAPE
RECORDING
FORTNIGHTLY

Vol. 5 No. 16 9th August, 1961

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

THE *Financial Times* has recently reported on tape recorder sales in Britain. Philips and Grundig, the paper's correspondent states, now sell between them half the machines purchased in this country. Telefunken is reported to be moving up rapidly, having doubled its share of the market in the last year.

I hear independently that the new Philips battery portable recorder is an immense success, not only here but elsewhere in Europe. Incidentally, it is selling here at a lower price than on the Continent.

The *Financial Times* estimates current sales of recorders at 300,000 to 400,000 a year. It discusses last year's difficulties of the industry when, it declares, many companies found it difficult to make a profit.

The author of the article confirms our own impression that there are now signs of a definite recovery. Grundig, for example, sold 50 per cent more machines in June than in the same month last year.

Audio Fairs

THE Committee of the International Audio Festival have decided not to proceed with the proposed Autumn Audio Festival this year.

Announcing this last month, C. Rex Hassan, the Festival Director, said there had been some preliminary support for the proposal—as outlined in our July 12 issue—and Harrogate had been mentioned as the most likely venue. But for 1961, at any rate, it has been decided not to proceed with the idea.

In contrast, the 1962 spring Audio Festival, to be held at the Russell Hotel, London from April 26-29 inclusive, is already nearly over-subscribed so far as space is concerned. Great interest is being shown by overseas companies, and many new faces are expected.

Future prospects

WE are grateful to the readers who have written to us complimenting us on the quality of recent issues. Never before has our fan mail been so heavy. And never before has the supply of material offered to us for publication been so great or of such interest.

A number of new series of articles will be introduced to readers soon. Mr. James Moir, one of the best-known names in the world of audio,

has agreed to write for us regularly; and we have lined up an expert series of articles on maintenance and servicing problems, dealing with all the problems likely to be encountered by the amateur in a practical, down-to-earth fashion.

This series will also represent an extension of our advice bureau service, for the author will be glad to hear of specific problems that have been encountered, so that he can offer solutions.

Another notable series to appear shortly will describe the building of equipment with which to record and reproduce TV pictures on tape.

The other side of a man

NOW a word about an old and highly popular contributor, Alan Edward Beeby. Mr. Beeby's "Tape Talk" has established itself as one of the most widely-read columns in specialised journalism.

A little-known side of his activity is revealed in a letter I have received from Caroline Stuart, who used to be a nurse. Mr. Beeby, she tells me, is also an accomplished stage performer, and she goes on:—

"For more than 18 years now he has organised and taken part in amateur variety shows in Midlands' hospitals, institutions and convalescent homes, chiefly with his own Sky-rockets Variety Company.

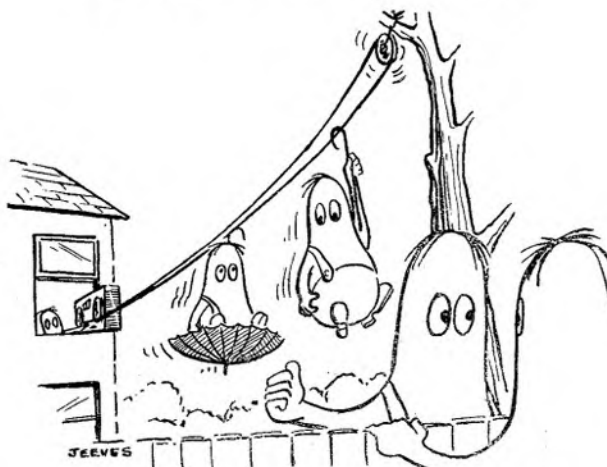
"I particularly remember one occasion when Alan and some of his colleagues from the show put on a tennis match in aid of charity at a local recreation ground, when they played against a team of hospital nurses.

"To this day, nobody is quite certain who won! This was probably due to the fact that the game overflowed into the main street across the road and into a nearby meadow, where the River Nene claimed four tennis balls, one racket and two nurses!

"More than £100 was raised that day.

"People who know Alan and have met him personally will recognise immediately that irrepressible sense of fun, which invariably comes through in his writings."

LAUGH WITH JEEVES



"This is the last time I take 'em on a ski-ing holiday in Switzerland"

Go out, and record here, there, and everywhere

I HAVE always felt that sound gives a much truer impression of a place and of people than pictures do—even moving pictures taken with a cine camera. Therefore, whenever my job of Press photographer takes me to an interesting place my faithful Fi-Cord always travels with me.

I was recently sent to Sierra Leone to cover the granting of independence and I knew this would provide some wonderful opportunities for sound pictures. My baggage being already overweight with photographic gear I was glad of the small weight of the Fi-Cord, which, even with three spare sets of batteries and half a dozen spools of tape, does not weigh as much as one Press camera. I use a Grampian DP/4 microphone and find it gives absolutely first-class results.

My recording started in Freetown within ten minutes of landing at the airport. I had no sooner got out of the aircraft than it took off again for Dakar with my luggage aboard! I was so furious that, although my recorder was in its usual ever-ready position over my shoulder with the microphone held in a Terry's clip attached to the strap I didn't even think to switch it on and record my colourful argument with the African officials.

However, all was not lost. I went back and started the row about my luggage all over again, this time with the recorder on. I even managed to

This is the advice VICTOR BLACKMAN, winner of the recent Stuzzi "Portable in Paris" Holiday Contest, offers to battery recorder owners.

In this article he describes the collection of material from which he compiled his prize-winning tape.

work myself up into a temper again, not difficult when you think of all your belongings being transported to a distant part of Africa while nobody seems at all concerned!

However, it did arrive two days later, and by that time I had been out and recorded the music and dancing of girls of the Su-Su tribe. These girls dance completely bare from the waist up and are accompanied by a small band using such home-made instruments as empty tin-cans with stones in them, rattles made out of bones and the ever-present tom-toms.

These latter caused me a lot of worry, both then and on future occasions, as I felt sure their strong thudding notes were recording far too strongly, but on playback in England I found they were quite satisfactory.

After the recording session with the Su-Su girls I played back their music to them and it was more than a little embarrassing as they crowded round

the tiny speaker (and me) to listen. They had never encountered recording before and the finest hi-fi concert in the world never had a more attentive and appreciative audience.

I also went out into the bush and secured some fine recordings of tribal music and was also lucky to get on tape an interview with a Devil Dancer. I did not think it wise to let him know that his voice was being recorded as even to many Europeans there is still something weird and wonderful about tape recording and, of course, in Africa there are very strong superstitions.

This particular recording was later edited into the tape entered in the Stuzzi Contest and is, I believe, fairly descriptive of the type of superstition still very much in evidence in this part of the world.

At a "Press call" I secured the voice of the Prime Minister, Dr. Milton Margai, describing a member of his opposition whom he had had sent to jail. Unfortunately, for lack of a long lead, the microphone had to remain about nine feet from the Premier. This fact was promptly stored in the back of my mind for future reference and I have now ordered a long lead—an essential in my opinion.

I was travelling in a car one evening with an American film man who was such a continual boaster it was impossible to be offended by him. His name was Al and he joined my ever-increasing collection with a number of anecdotes, including how he called the Prime Minister "Primy boy!" He probably did, too!

I naturally taped newly found friends and some wild life. By wild life I had better explain I mean a farewell party of all the members of the Press! My favourite recording of all, though, was made when one evening I heard a guitar being played a short distance from where I was



The author recording Archie Coker and fellow drivers at Freetown

(Continued on page 30)

ALAN EDWARD BEEBY'S TAPE TALK

WHAT makes a good commentator?" This question was put to me recently by a group of tape enthusiasts. Not being awfully bright on this particular subject myself, I took my worries along to that doyen of British television and radio-commentators, Richard Dimpleby. "What's the secret?" I wanted to know.

"The basic requirement for any successful commentator," said Mr. Dimpleby, "—given that he has sufficient natural fluency of speech to be able to do the job anyway—is a very thorough 'homework' on the subject in hand. It is essential that he should start the job equipped with all the background facts, and he needs to go to a surprising amount of detail in this. Only then, can he be sure of filling in the gaps, the pauses or the unexpected delays that always occur."

This was sound, commonsense advice, and a good case in point here was the departure for her honeymoon of Princess Margaret. Mr. Dimpleby was covering the scene at Tower Pier, and had to fill-in for a full hour before the Princess and her husband finally arrived. Only the fact that he knew, by preparation and by previous experience, the back history of the whole of the City of London around that particular area saved the day.

I asked him what the main difference was between a commentary which accompanies a picture and that where no visual aid is present. He told me: "In the case of a tape commentary—analagous to radio rather than television or film—the speaker has, of course, to provide the colour, and to paint enough of a picture to enable listeners to visualise the scene for themselves. In television or on film, he is an annotator rather than a commentator, and should think of himself as the reader of a book who is putting additional notes in the margin."

Here, he offered a word of caution. "It is a sin, however, to describe something baldly which the viewers can see for themselves—nothing is more infuriating. On the other hand," he added, "the television or film-commentator must always be ready to say why a certain thing is happening or to point out some detail which is not readily visible but which is important."

Lastly, I asked Mr. Dimpleby about the ever-looming ogre of unexpected hold-ups or emergencies. Should the commentator do his best to smooth things over as though nothing happened, or should he confide in his audience?

"This," he said, "should be left to the discretion of the commentator and the producer together. If there is a brief delay, they should be equipped with material planned beforehand to bridge the gap without the audience being aware of the fact. I frequently have to do this on Royal and other occasions to

the extent of five or seven minutes, and it comes back simply to the question of adequate preparation."

And if the delay is very prolonged? "If there has been a major breakdown, it is better to take the audience into one's confidence and become, as it were, "conspirators" together, planning how best to cope with the situation. This creates a bond of sympathy with the viewer or listener and makes him feel that he is very much on-the-spot."

Thank you, Mr. Dimpleby. I am sure that your remarks will prove both interesting and informative to those would-be commentators among our readers. All except me, of course. I should tie myself up in knots trying to describe an egg-and-spoon race!

■■■■■■■■■■

I have a letter from a reader asking me if I know anything about the business of hooking-up a walkie-talkie, transmitter/receiving unit to a tape recorder as a sort of "roving-microphone" technique. I'm afraid I don't, although it sounds interesting. Anyone got any ideas in this direction?

■■■■■■■■■■

ON the very rarest of occasions do I indulge in any form of sentimentality, written or otherwise. Since 1952, tape recorders have been my business, hobby, pleasure, spare-time interest and all manner of things. Only recently, I think, have I begun to realise their true worth.

Last October, after only a short illness, my mother died. Today, in the left-hand drawer of my writing desk is a small 3 in. spool of recording tape which I wouldn't swop for all the money in the world. Need I say more?

■■■■■■■■■■

WENT along to one of our local Working Men's Clubs recently to make a private recording of a skiffle group. Arriving at the Club, we were informed that the concert hall where we were to have made the recording had been taken over at the last moment by the Club Committee for an important meeting.

Inquiries revealed that every other room of comparable size in the building was booked for some function or other that evening, and if we were dead set on making the tape there and then, we had but one alternative: the cellar!

We trooped down to the basement, opened the door of our "studio" and my heart sank. Brick floor, bare, concrete walls, barrels stacked at one end, and a maze of steel pipes festooning the opposite wall and the ceiling. Acoustics? "You never had it so good!" (Vide. Macmillan.)

Well, we connected-up, grouped the

performers into what, I suppose, under the circumstances, could laughingly be termed, "balance," and prepared to record track one. Then I patted the Vortexion sympathetically on the (recording) head, switched on, signalled to the group to begin, and sat back waiting for my reputation to gurgle its way down the drain!

I offer no explanation whatever for the result of that recording session. Out of conditions which, by all the known laws of reasoning, spelt death to any recording . . . the tape turned up a winner!

True, there was a certain amount of echo, but this served merely to add a "live," vibrant quality to the music.

Personally, I gave up trying to sort out the "turn-and-turn-about" contrariness of tape recording procedure years ago. My motto from now on: "Set up, switch on, and the best of Anglo-Saxon luck, mate!"

■■■■■■■■■■

IN answer to those of you who have asked if it would be possible for my "Sound Effects" series of last year to be published in book form, I am pleased to be able to report that this is now in preparation and should be available some time in the autumn. Details will be announced later.

■■■■■■■■■■

MY final note on this occasion is not I'm afraid, a pleasant one.

On the evening of April 7, I went with my wife and some friends to a public house near my home. In the lounge, a crowd of people were grouped around a small portable tape recorder which was playing on the counter. A curious babble of unintelligible sound was coming from the speaker, drawing gales of laughter from the spectators.

Interested in what was happening, I asked the owner of the machine just what the noises were. His answer made me feel sick.

"Oh, that's old So-and-So. He often comes in for a drink and does a bit of recording for us—he don't know it, though. He's a bit cracked, you see, and he can't talk properly."

He turned to his companions. "A right nut-case, ain't he, when we get his hair off? Fair makes us die!"

I am not in the least ashamed to have to report that, as a result of the blazing row which followed, I have been formally barred from entering that particular public house again.

No further comment, I feel, is necessary, except, perhaps, to quote the late Lord Derringham: "Ladies and Gentlemen—there are those among us who abuse the pleasures which we hold in such high regard."

Im Wheatter's

NOTEBOOK



Parabolic reflectors

WITH the advent of the portable recording gear there has been a call for microphone reflectors, especially by nature lovers and bird watchers who have a real problem in getting near enough to their objective to record sound at adequate volume.

Sound if remote, must be weak; to try to follow it means noise on the recording, plus the fact that, if the quarry is timid, it will make off altogether.

Apart from noise, the scent of humans will frequently scare off the subject, even when approached from downwind, although this latter condition will tend to make clearer the sound required.

Allied to these restrictions will be the physical strain on the recordist, often in damp or really wet conditions, and the need for great patience in waiting for the sounds to materialise.

A "hide" may sometimes be constructed in advance but, often occupied for long hours by night or day, can be most uncomfortable in the shivery dawn. The equipment may also need cover to protect it from the weather and to prevent the sound of the running motors from being heard by the subject.

On pre-arranged sites, of course, the microphone can be set up dozens of feet away. It is usually a two-man job.

How then will a reflector help?

First let us consider the job the reflector has to do.

Reflectors are used in many forms—as in searchlights, car headlights, and in radar, where they are used to concentrate the energy towards a distant point or, alternatively, to receive energy from a distant source and to concentrate it so that, after amplification, it can be used.

If we now mount a suitable reflector to collect and follow the faint sounds of bird or beast, and arrange for a microphone to be placed in the best position to "hear" the sounds bouncing off the re-

flector, we shall have a good method of getting remote sounds.

As the telescopic lens has aided the photographer to capture distant or otherwise unobtainable scenes, so the reflector aids the sound engineer to get the complementary sound.

It can be seen from the accompanying photograph that the reflector is a shallow metal dish of parabolic shape and that the microphone is set in the centre at a distance that will give the best response from the sounds striking the reflector.

For our purpose it must be small and light; but it serves the same purpose as the Jodrell Bank Telescope or the great curtains of aerial wires seen at large wireless transmitting stations like Ongar and Dorchester. Their opposite numbers, the receiving stations, had aerial curtains just as large and high to make the most of the minute signals received from distant parts of the earth. However, such arrays have become outmoded and are disappearing gradually.

In order to cater for the frequency of the sounds required there is an ideal setting. For this reason the microphone must be made adjustable, so that it can be moved to and fro within a few inches. This movement will not be too critical for a wide range of frequencies are usually involved in Natural History subjects—sometimes at the lower end of the range, such as in the movements of little furry things in the grass or brushwood, or at the high end, where bird song is required.

In practice the maximum response on a good pair of headphones is the best way of telling what adjustment is necessary.

Once the adjustment is made, it should be locked, and the microphone cable led away so that it will not catch on the reflector. The back of the reflector

should be padded with felt, rubber or sponge rubber to prevent accidental noises which will arise during handling and movement. Incidentally, the drippings from twigs or leaves falling on the reflector will sound like a veritable tattoo if it is not protected.

The BBC uses two sizes, 18 and 24 inches diameter, which are made quite strongly, and protected with leather backing. They can be mounted on a stand, swung up or down and from side to side like a searchlight, or can be held in the hands for following flight.

I understand from my old "chief" Mr. F. H. Dart, that back in the early "Thirties" the Gramophone Company were using wooden reflectors to record the massed bands at the Aldershot Tattoo. They were some four feet in diameter, beautifully made, but not so easy to use at the top of the tall scaffolding provided. The wind took charge, and all but swept the engineers off the platform. With this device they picked up the distant bands in the arena, but nearly excluded all the atmosphere of the great crowds who were present, and this spoilt the reality of the occasion.

Recently I had a chance to use the new Grampian Reflector which was designed for use with their DP/4 microphone. This reflector can be screwed to the standard camera tripod when required, but it is easy to use without one. I would like to suggest to the manufacturers that they have a padded backing made for it.

I found it was necessary to have a fairly constant sound source to judge the results and having no tone tape by me I got up early one morning and recorded the cuckoo—as constant and irritating a sound as any. When reproduced on my mains equipment and fed into a loudspeaker at the bottom of my garden, this provided a useful test signal, although the repeated cuckoo calls set my neighbours talking about the peculiar behaviour of this year's visitors.

The sounds from the loudspeaker were

(Continued on page 23)



Right: Sighting the sound

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

MOST teachers of English have long realised that the basis of all expression, whether factual and instructive, or imaginative and creative, is spoken. The problem was that so far it has been ephemeral; a thing of the moment, over and finished as soon as uttered.

Now the tape recorder has altered all that, and this short account tells how the tape recorder made much oral English work possible recently during a fortnight's school journey in the Isle of Wight.

We took two recorders with us, a transistor battery Grundig TK1 and a portable mains Cossor CR1602. Back at the school there was a Clark and Smith CTR4 which has its place in the picture.

The Grundig was used for on-the-spot reports and descriptions, commentaries, talks by guides and sound effects. The Cossor made a finished report, partly by dubbing from the actualities of the descriptions and commentaries, partly by more considered interleaving of editorial matter and reports. These were sent back to the school three times during the period and played back to the whole of the school left at Downham in Kent; these tape reports giving a fair account of what was happening to the children on the Isle of Wight.

These three 300 ft. tapes were also played back at the time to people on the island who were interested in the children and their activities. One composite tape has since been made to be played *in toto* to parts of the school and to the parents when they come to see the film of the journey and the exhibition of work. Unfortunately our proximity to the television transmitter at Crystal Palace added a musical background to our next attempt and we merely succeeded in producing a second edition with a different accompaniment.

The work had to be the children's; otherwise there was little point in it. Their on-the-spot descriptions, therefore, consisted of their own observations with information collected by many and various means.

A girl at Godshill describing the rood beam, added much of her previous knowledge; and a boy standing

on Ashe Down remembered the number of times he had been told of the chalk backbone of the island and his description really contained little else.

All their own work

Commentaries, most successful from the railway train, and also made by a number of children from their bedroom windows on a very wet day, were their own imperfect efforts. All had life, some had excitement. As for example that of the boy from the train window who recognised the Sea Mark on Ashe Down and the fields over which he had made a land utilisation survey. The rise in his pitch vies with Raymond Glendenning's.

Some had an atmosphere of gloom, especially those of the rainy day. One noteworthy attempt on such a day sunk to great depths of despair, since in the foreground to be described were the Ryde gasworks—in process of demolition.

The report and addition of editorial matter called for powers of choice and precision. From the recordings of the day there must be selection, and accurate dubbing of the chosen pieces on to the master tape, with any necessary reporting or explanation. Again the children did the job.

It was most interesting to see how a sense of the occasion, of doing something worthwhile and permanent, improved speech and produced an almost perfect pace, slow enough to be intelligible, but with sufficient speed to keep the tape alive and in-

teresting. In listening to the complete tape, the improvement made during the fortnight is most noticeable.

Apart from the children's work in reporting and selection, they also did all the technical side possible. It has long been silly to correct a schoolboy on birds and motorcars. Now one can add the tape recorder. When the school recorder did little but buzz, one boy said after some thought, "I think you must have an open circuit, sir."

The children worked the midget recorder on their own and some of the intellectually poorest children would probably not have made any commentary if they had not been away by themselves or alone with the technician.

The recorders, even at the dubbing, in the evening sessions, were handled by the children. Both the recorders used proved easy to handle and, with a little experimenting, good quality was obtained.

Editing experience

We used a couple of "working" tapes, that is, tapes (300 ft. long play) for the recording of the actualities. When the editing from these had been done, they were used again. All unnecessary stuff was wiped out. Much had just a teaching purpose and like most creative work, had served its purpose as soon as done. It turned out that some 750 ft. of tape were needed for the master copy.

Everyone learnt by experience. Even at a height of 450 ft., on Ashe Down where there was sufficient wind to

By **HARRY GELL**

*Headmaster of a
London Junior Mixed School*

LET THE CHILDREN WORK ON THEIR OWN—OURS DID

beat on the microphone. The second boy, having heard it on the playback, shaded the microphone with his hand. This has been constant practice since on the tops of hills or towers.

Background noises need a rapid assessment. Sometimes they will obliterate, sometimes add to atmosphere; depending on the microphone position. The best results seem to come from allowing a child to hold it. If a guide is speaking, it will then be among the children and pick up atmosphere from them. The excellent sailor on board Nelson's famous battleship the *Victory* talked about the tassels at the end of the mess tables and how the sailors wiped their hands on them so that they became "all greasy and sticky and 'orrible." This delightful word was echoed immediately by one of the children and again several seconds later by another.

Again we learnt from experience to carry a spare set of batteries for the midget. The contributions on the Swiss Cottage and the bathing machine at Osborne have lost much in quality from batteries which were running down.

Much of what went on the tapes was ordinary, much not worth keeping, but there were some very definite highlights. A girl described the picture at Godshill, reputed to be a Rubens, and added her own simple account of the controversy over its authenticity. A boy recorded the surge of the sea at Bonchurch and then with the breakers still as background, he built up a picture of the storm beach with the pebbles (which he called stones) piled against the breakwaters.

Graphic descriptions

The Devil's Chimney in the Luccombe landslip is a dramatic experience to meet for the first time. The footpath disappears into the face of the rock some twenty feet high. A boy graphically drew the picture of the disappearing path and its narrowness (I am reputed to have made the ascent sideways) and he continues "The walls went up vertically. The walls were very damp and the steps were slippery and

The author, who operated his tape recorder in the classroom for the first time in January, describes a trip with a portable recorder and some of his pupils on a School Journey to the Isle of Wight

they were muddy as well and it made it very difficult to get up." He has almost added smell and sensation to his picture.

A much less able child recalls the teatime when the *Queen Mary* was passing at Ryde and when the children were called out of the dining room to watch it go by. "When we saw it going past the chimney tops," he says, "we saw the three funnels and the whole length. The colours are red and black."

TAPE IN THE SCHOOLS

For a London child a great experience on the island is to go on a Tuesday morning to the cattle market at Newport. Here is a whole orchestra of background sounds. The children soon decided that a cow mooing for her calf was a good introduction, and later, back in Ryde, that this sound alone was enough to say where they had been that day. The auction itself was also excellent actuality, with the voice of the auctioneer and the occasional comments from the farmers, but it needed the commentary, added that evening, to tell of the "nods and winks and things like that" with which the sale was effected.

Back at school there have been attempts at two other kinds of tape arising from the school journey. The children have put together a commentary on the transparencies taken during the fortnight. Selection and classification into groups was an important preliminary exercise—the recording was relatively easy. The children once

again collected their ideas together and had a run-through before actually recording. Some worked individually with a group of six or eight slides; some worked in groups of two or three; the latter producing a better result because of the variety of voices.

Commentary for film

The second effort was to make a commentary for cine film, made on an 8mm camera. This proved much more difficult. With children of this age—ten or eleven—it was obvious at once it was asking too much to make an extemporary commentary. However, their extemporary trials formed the basis for a script.

The timing could only be managed after a number of runs through, when the film and commentary were quite familiar. Even so, the application necessary to produce a 15-minute film proved too much at the first attempt at recording, and concentration went after ten minutes or so. It was necessary to have a second shot at the last part of the film. Synchronisation is a problem and I suspect that my projector does not run at an even speed. Sound picked up from the projector was not nearly the problem anticipated. Two blankets over a music stool and the projector beneath were enough to insulate the sound from the microphone.

These tapes seem to have an intrinsic value of their own, both for the information and the entertainment which they give. Their real purpose was, however, educational and their real value is also education. If anything else accrues, so well and good. It was fun to make them, and they may now, we hope, give fun to others.

Jean Jenkins concludes her series by describing her visit to Lagos to record the Nigerian Independence celebrations

NOTHING could have provided greater contrast to recording in Soviet Central Asia than my next field trip. This time my destination was Nigeria.

From dry cold, 30 degrees below zero, to humid heat, 100 degrees above—from the dangers of plague and pneumonia to those of malaria and smallpox and dysentery—from recording on superb custom-made equipment to using a standard BBC machine—from hotels and meals fixed in advance to sleeping and eating wherever a bed and food could be found, or doing without—from taping musicians who asked only your interest or a song in return to those who invariably demanded cash and required a perfected bargaining technique if I was to remain solvent. . . . All in all, Nigeria was another world from Turk-estan.

Preparations

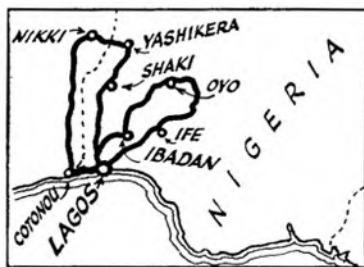
Once again the preparations were involved, although no visa was necessary to visit a Commonwealth country, and the only health precautions were smallpox and yellow fever vaccinations and a weekly dose of daraprim to guard against malaria.

But when I was preparing for the trip to Central Asia, I knew that I would be visiting Uzbeks and Kazakhs and hoped to see the Tadjiks and Kirghiz; there were only these four peoples to read about. Literature on these was scarce and difficult to get access to, written in half a dozen languages but almost never in English, and all obsolete.

On the other hand, I found so much material on Nigeria that I didn't know where to begin. Nor did I know the areas I would be visiting; the Ibo and Ibibio and Efik of the east are very different from the Yoruba of the west, or the Hausa or Nupe or Fulani of the north, and all these tribes, and scores of others, had entire volumes devoted to them.

Furthermore, the inclusive price of hotels, fares, food, and interpreters was fixed for the whole five week period regardless of my exact itinerary and paid before I left England, so that I needed only money to buy books and instruments.

This time the whole basis of the trip was different.



I went on a specially chartered plane which was taking Nigerian students home for the Independence celebrations; the fare was less than half the usual £187 tourist flight. But it meant that I would be there at a time when hotel accommodation was fantastically expensive if available at all (most hotels were booked up months in advance).

Seats on local planes were said to be unobtainable; the trains were half a week apart, and there were no cars to be hired. It became obvious before I left that I would have to jump at any and all opportunities which arose, discard any fixed schedule, and let the keynote of the entire trip be flexibility.

Equipment

This time my tape recorder was loaned by the BBC. It was the standard E.M.I. L/2, with a stick microphone. A box of spares and 35 long-play tapes completed the recording equipment—weight 40 lb. (the free baggage allowance was 44 lb.). It was unnecessary to carry batteries, for the L/2 uses standard torch batteries which are always available.

Nor was I obliged to carry quantities of film; tropical-packed film would be more easily obtainable in Lagos than in London. In place of heavy jodhpurs, sheep-skin lined boots, heavy coats and sweaters, this time I needed only the thinnest of cottons, and thus, in spite of the weight of the equipment, there was very little excess baggage to pay for.

I was to leave the plane at Kano; friends of friends had arranged a cheap hotel for me, and had promised a car

and driver to take me to villages with outstanding singers and instrumentalists and dancers.

Slowly, depending on lifts from helpful people, trains wherever possible, and an occasional local bus (called mammy-wagons, and not recognisable as buses in the British sense at all), I was to work my way down to Ibadan and Lagos, recording and collecting instruments as I went.

Crisis

The first major crisis occurred on the aeroplane, which, being a chartered aircraft, was not bound to stop at fixed points. "No stop at Kano," the Captain announced. "We're already several hours late and will go straight to Lagos."

This was a shock—where would I find a place to stay in a city bursting at the seams with visitors and journalists from all over the world and from every country in Africa who had come for the Independence celebrations? And, equally difficult, at what price?

A friend on the plane took over. Will had been to Nigeria several times before, doing medical research, and was here this time for a holiday. He dumped me onto a young couple for the night—first hurdle cleared!—and asked if I'd like to stay in a small village for a week; the local nurse had a bed to spare, and I could use the car and driver-interpreter for recording trips. I jumped at the offer, of course; to live in a village is the ideal way to learn about its music.

I was even more pleased when I found that he meant to stop all along the route, to see people and places, and that he would photograph in colour and cine film while I recorded and used black-and-white film.

My first day in West Africa began with a tour of the markets of Lagos—colourful, gay, smelly, busy and leisurely all at once. I made my first recordings there too: two drummers, beating out intricate rhythms on small pottery frame drums as they improvised words to a song about freedom. I asked why they were drumming. Surprised, the elder boy looked at me.

"I'm happy," he said simply.

Recording with the aid of a ju-ju

That was the keynote of my visit. Everyone, I discovered, was happy, on this, the eve of Nigerian Independence. Never had there been so much music, dancing, and celebrating as during these months of September and October, 1960. Never could there have been so ideal a time for field recording.

Long before we reached the village of Imesi-ile on the northern-most border of the Yoruba country, I had met, and discovered a way to deal with, many of the problems of field recording in Africa.

Procedure

I had learned, for example, that the proper way to pay the drummers was to plaster a row of shillings across the forehead of the chief drummer (the coins stick on because of the sweat).

I found that I could get all the good musicians of an area by making an appointment with a chief or an important man in the village, who would then send word to his drummers and musicians to assemble at a certain time. The remainder of the village tended to gather as well. This was an advantage inasmuch as they also pay the musicians, and demand their favourite songs, so that the feeling between the players and the crowd grows and develops, and the musicians are at their best after several hours.

The disadvantage, of course, lies in the enormous amount of extraneous noise: sheep and goats and dogs and chickens and ducks and babies and groups of young children, conversations and exclamations of the villagers, and, in the evening, the shrill high note of the cicadas.

A sensitive microphone will pick up all of this, but it proved impossible to explain, despite an excellent interpreter. Eventually we evolved a method: we drew a line, across which no one except those being recorded was allowed to step, for the line we made in the dust was enforced with ju-ju leaves (with magical properties!) This eliminated the

worst of the voices, coughs, and animals, and mothers were encouraged to nurse their children on the spot, which did away with crying babies. Nothing, of course, could stop the cicadas, but one could say that they were so much a part of the African night that they belonged in the musical scene.

Once the palm wine was flowing freely, and the dance was well-established, even the ju-ju line didn't work. But by that time, all the solos had been recorded, and the need for quiet was not so imperative.

One rule I had found essential in Turkestan, and I clung even more firmly to it now: *never* play back, or even admit that the machine is capable of playing back. Once anyone has been allowed to "hear himself," everyone must be permitted to do so. It uses up batteries more quickly than recording; it wastes time; most important of all, it stops the flow of a performance and prevents the natural spirit and vigour from developing. I'm convinced of the wisdom of this procedure and have only once broken it.

Prayer call

There, in Bokhara, a muezzin proved susceptible to the flattery of hearing his own call to prayer and allowed me, an unbeliever and a female, into a famous mosque of this most strict Islamic city. The drawback to the "never play back" rule is obvious: if something has gone wrong, you may have missed forever an opportunity to record a particular type of music. Much of this uncertainty, however, can be avoided by making testing an invariable part of one's recording practises.

In Imesi-ile and the nearby villages, recording could proceed on a more logical and selective basis. If the best flute player was away in the bush for a few days I could afford to wait for his return. There was time to have the village drummer-maker fashion me a woman's drum, and to watch all the steps in its manufacture.



A willing helper

The services of the Apostolic Church of West Africa and of the Cherubim and Seraphim, with their remarkable similarity to the American Negro church services, could be recorded.

I discovered that one large women's compound demanded not only eight shillings for three hours' singing, but that I must dance to their drumming for half an hour! And this in turn resulted in an obligation to dance at a funeral later in the week—which I was therefore able to record. Becoming a part of the scene, able to exchange "politeness words" of greeting with everyone, meant that I was invited into homes and could record a grandmother singing a lullaby, a child with his gourd flute, a man reciting his genealogy.

Each recording session, each new experience in the field, brings additional skills and insight and techniques. I know now that ideally—for me at least—a short field recording trip would consist of an exploratory month or so to get the feel of the country and the people and their customs as well as their music, with a prolonged stay in any one of the most musically interesting areas. I shall try to plan my next trips on this basis.

Double play

I HATE Mondays. All Mondays. But there is one Monday in particular which will stick in my memory for many a long year.

First of all, we slept late. Bill washed, shaved, dressed and breakfasted in under 15 minutes. As he flew out of the front door he called to me, "I won't have time to call in and settle the garage account. You'll have to do it." He threw a fistful of money on the table and was gone.

He had left eleven single £1 notes, and to make sure I wouldn't forget them I folded them over and pushed them under a corner of one of the brass candlesticks on the mantelpiece.

Before turning to my overdue house chores I switched on the tape recorder and tuned in our FM radio to the "Morning Story"—a neighbour away for the day had asked me to record it for her as she hated to miss it.

Intermediate chores were done, and the story completed, I switched the machine to playback. The result was appalling! Instead of a clear and precise narrative I heard a series of ear-splitting noises, not unlike a boiler factory in full blast.

It took me two or three minutes to realise that I was not only hearing the story, but also what had been already recorded on that same length of tape before.

My agile female mind finally managed to work out that the erase head was not functioning. I even had the sense to try it on a brand-new reel of tape.

I spoke into the microphone for a few seconds, ran the tape back and tried to erase what I had just recorded. A second time I ran the tape back and set the machine to "play". My voice still came out, loud and clear, but as I listened, the machine suddenly went dead!



I gaped at the machine in bewilderment and tried to coax it back to life, switching it off and then on again at the mains, and pressing the "rewind", "play" and "record" buttons in turn. The tape didn't budge.

I threw the microphone down on a chair in disgust, as there came a loud thumping at the door. On the doormat stood a cheery-looking man in blue dungarees. "I'm afraid the power will be off for a few minutes, lady," he said, and

explained as how his mates were doing "sommat" complicated to the fuse box up at the corner.

I thanked him and closed the door. I gave up all thoughts of running the vacuum cleaner over the carpets, and set some coffee going on the gas stove.

Leaving it to heat slowly I went to the telephone in the hall and dialled the number of Harry Smith's radio shop. "Hello, Harry," I greeted him. "Sorry to trouble you, but I wonder if you can come out and look at my tape-recorder. It's not working properly."

"Sure thing, Jean . . . what seems to be the trouble?"

"Well—oh, darn it! Just a minute, there's someone at the door." I leaned sideways and opened it to see a tall, well-dressed man beaming at me.

"Good morning, madam. Could you

for the modern home? That's our motto. What do you require? A needle? A greenhouse? A s-swimming-pool? We can supply everything. But everything."

"We already have everything, thank you. Good morning."

Undeterred, he flipped the catalogue open at random. "Refrigerator?" he asked.

"In the kitchen," I replied.

"Washing machine?"

"Also in the kitchen."

"S-sink unit?"

"In the kitchen, of course," and I added. "We have a very large kitchen, you know."

"S-spin dryer, TV, electric mixer . . .?"

"You're welcome to keep them. Now, will you kindly allow me to get on with my work?"

"Garden roller, lawn mower—ah, no

A SHORT STORY by JEAN ROGERS

please spare me a short moment of your time. I represent —"

"Just a minute," I broke in and spoke into the phone again. "Hello, Harry! Well, as I was about to say, there's something wrong with one of my heads." I looked up to see the stranger staring curiously at me for some reason or other.

"Right," Harry told me. "I'll get a van to collect it this morning."

I thanked him and hung up, to find that the stranger had stepped inside the house and was patiently waiting for me. "What were you saying, again?" I asked, with my hands on my hips, hoping that such a pose would show him that I was bored to tears even before he began.

"Well, madam, I represent Eezi-Paye Supplies Limited," he began.

"I don't need anything," I told him and made to close the door.

"But, madam, you don't know what I'm s-selling."

"Oh yes I do. Nothing."

From a pocket he deftly flicked a thick book and held it out to me. "It won't take you a moment to s-see what you'd like in this." His slight stutter irritated unreasonably and I felt ashamed, but I handed it straight back to him without looking at it. "Good morning!" I said, and waited.

He turned sideways into the living room. "Madam, you won't find a catalogue like this anywhere. 'Everything

offence, but our new power mower would be a credit to your fine garden out there."

I said nothing, but silently pointed to the door.

"It's so s-simple to operate," he ran on unheeding. "Why, even a child could work it."

Thinking of the "infant terrible" next door I stonewalled. "Then it would be of no use to us. We'd want one that a child *couldn't* operate."

For a moment he looked defeated and I thought he was actually going to leave. Then a horrible hissing noise from the kitchen reminded me of my coffee. "Heavens!" I cried out, and ran from the room. The perculator had boiled over and was dripping coffee over everything.

I mopped it up and managed to salvage enough for one nearly-full cup. When I returned to the living-room my uninvited visitor appeared to have admitted defeat. He stuffed the catalogue back in his pocket and sighed, watching me enter with the coffee.

"I'd offer you a cup, but I don't want you to stay," I told him coldly.

He was about to reply, when there was another knock at the front door, which was still ajar. I shouted, "Come in."

It was Harry Smith himself, and when he saw that I was not alone, he said, "I won't disturb you, I know where the recorder is."

PROBLEMS OF BALANCE — 2

By Alec Nisbett

WHEN the amateur gets to work on a tape the odds are that he is working as a one-man show. He is the producer, concerned with the content and shape of the programme; he is the recording engineer, concerned with the mechanics of getting an adequate signal on to the tape; he is everything else that comes in between. And somewhere in between comes balance.

When I have worked under amateur conditions I have always found myself strongly tempted (and often due to sheer shortage of time, under considerable pressure) to concentrate solely on just those two jobs at the beginning and end of the chain, and to skip the finer details.

It is at this point that the differences between the amateur and professional dissolve—and if you listen to broadcast actuality you will probably hear many tapes (recorded on “midgets”) which are no better, or worse, than good amateur recordings. The extra experience of the professional cancels out with the extra time available to the amateur.

What is Balance? What are the problems it poses for the amateur and for the professional? When you set up your microphone (or, as it may be in the professional case, several microphones) what are the things to listen out for? These are some of the questions which are considered in this and two further articles on this important subject.

In the studio, of course, the professionals have all the advantages. With one man to each job there will generally be a minimum of three working on a recording, with (in BBC practice) a studio manager attending to matters such as balance and control. The results, to the amateur, must seem to be achieved with incredible ease and despatch.

The man working on his own will only be able to do all the “extra” jobs by spreading them out in time. And finding—or making—time for adequate balance tests is a must if your tape is to pretend to any artistic quality and your recorder is not to be merely a substitute for a dictating machine.

These tests should take the form of trial recordings—a whole series of them—so that comparisons can be made on playback, with

snatches of different balances cut close together.

Since the recordist is to use these trial runs in order to judge how he may use the acoustics of the studio to the greatest advantage (or to least disadvantage if the reverberation is excessive, or highly coloured) it will be necessary to play back these recordings on equipment of reasonably high quality. If a recorder's own internal speaker is used, it will generally have colorations of its own, which will often be severe enough to mask those picked up by the microphone.

Remember that whatever speaker you use there may be quite a difference from what you will hear if you actually go and stand at the microphone position: the selectivity of your own two ears gives you an enormous advantage over a monophonic microphone of whatever type; so much so that direct auditory tests (without a recording, that is) will not be much of a guide to a good balance. Listening on an external speaker which is pretty well as good as any the

FOR a professional balance, the first choice to be made is: one microphone or many?

How is the sound source distributed? If the acoustics are suitable, can it be arranged that the sound source falls within the pick-up field of a single microphone?

In the photograph of the Galliards, a studio manager (Johnny Beerling) is doing this with four voices and two guitars round an omni-directional microphone. Careful placing ensures that the distance between the microphone and each source is exactly right.

But when I myself have recorded this group I have used an entirely different balance involving three bi-directional microphones—two side by side

ONE MICROPHONE . . .



Right: For recording a dance orchestra each section has its own microphone

for the voices, and the third lower down between the two guitars; and in this way I divided my balance problem up into three stages.

For a start, each microphone was used to balance two sources (taking due account of whether one or the other was a soloist); and then artificial echo was added to each microphone separately (only a little: I did not want to create the effect of an empty dance hall). Finally, at the mixing stage, the three microphone outputs are combined with the echo return circuit. (In many commercial recording studios, frequency correction—i.e., distortion—would also be added to each individual source).

The results of these two entirely different balances were (on the same song) remarkably similar. Of the two methods the multi-microphone approach to the problem is, I would say, the more scientific: the single microphone balance, on the other hand, is very much of an art.

A further balance which would do the job would be to arrange the singers around one side of a cardioid microphone: this would be suitable if an audience were present—and indeed this is the balance used when two members of this same group (Robin Hall and Jimmy MacGregor) appear on “Tonight” on BBC TV.

In television, the ideal balance is rarely convenient, and expediency may settle the question of whether one microphone or several will be used. But where there is no visual element to complicate matters the argument may proceed purely on the merits of the resulting sound, and as the protagonists of both techniques can produce top-line balances to back their choice it looks as if both will continue in use for a long time to come.

The balancers of “serious” music generally prefer to use as few microphones as possible; the idea being to create a “natural” sound. Fortunately, orchestras and chamber groups are usually well-balanced internally; this does make single-microphone work a lot easier. But the moment that there are soloists and choirs to contend with, the problems begin to pile up; in order to give the soloist sufficient clarity in

Left: Four voices and two guitars placed around an omni-directional microphone

PROBLEMS OF BALANCE — 2

By Alec Nisbett

finished product might ever be played over, is definitely to be advised—and don't forget, your competition tape may be judged under high quality listening conditions.

But there is no reason why an amateur with other than the most limited gear need fear such harsh tests: In BBC studios I have compared recordings made with professional equipment costing many hundreds of pounds and those made with a good "amateur" microphone and recorder used with the same balance. The results were remarkably close in quality.

Supposing, then, that we have adequate playback conditions, what should we be listening for when making balance tests?

As a starting point, let's consider the two main objects of balance. And the first of these is, of course, *to pick up the required sound at a level suitable to the microphone and recording set-up; and at the same time to discriminate against unwanted noises.*



... OR MANY

mono it will often be necessary to give him a separate microphone.

In light music, dance bands and so on, the group may not be internally balanced at all—but here the primary consideration may no longer be "naturalness"; instead the aim may be brilliance and presence.

If a number of microphones are used, and each has a close balance, artificial "echo" will be required in order to restore some sense of perspective. The final result may be very far from a natural sound, but nevertheless very effective.

In the Northern Dance Orchestra, for example, each section has its own microphone. As will be seen from the picture, ribbons are used a lot—but an AKG C12 with its smooth extended top response is used to pick up the rich harmonics of the trombones.

In professional practice, this means deciding whether one or several microphones are necessary to cover the sound source adequately; and choosing the appropriate type of each microphone, having regard to its frequency and polar characteristics.

Remember that no microphone is absolutely "flat"; and an even response with some loss of extreme bass and top will for most purposes be more satisfactory than one which wavers rather erratically about a straight line. A condenser microphone which really is substantially flat, right up to 20,000 cycles can cost several hundred pounds. So it is perhaps fortunate that there are few balances which cannot manage at least reasonably well without this degree of fidelity.

The second aim of a good balance is *to place each microphone at such a distance, and (with directional microphones) so angled, as to obtain an appropriate degree of sound reinforcement from the acoustics of the room which is being used as a studio.* (And from experience of listening to amateur tapes, I would say that it is this part of the job that, either because of inexperience or simply lack of time, most often gets skimped.)

The importance of making proper use of reverberation is fundamental to good balance, and in setting up any microphone (for which artificial "echo" is not contemplated) the aim may be boiled down to this: to achieve an appropriate ratio of direct to indirect sound.

To take two extremes: a distant balance with an omni-directional microphone will give a very full account of studio characteristics; whereas a very close balance with a directional microphone will give predominantly direct sound, and acoustics may have little part to play.

As an analogy to the close balance: if somebody whispers in your ear at a concert, their remark may appear louder to you than the music, but the hall will add to it no appreciable reverberation.



B.B.C. Photographs

In the spinetta, harmonic sound structures are created electronically and fed to a loudspeaker. Like the electric guitar and the theatre organ the sound is then "balanced"—and here an AKG C12 microphone is being used. But since the sound is generated electronically in the first place why use a microphone at all? Why not feed the signal direct to the mixer? The answer to this is that if we did, the component parts of the sound would preserve all too clearly their original independent identity, and the quality would be unpleasantly "hard." Balance, in fact, is the art of blending direct with reverberant sound

On the other hand, even a distant balance may not do enough in some circumstances: have you ever listened to a broadcast which has gone along quite happily enough from the point of view of perspectives, until the entry of the percussion section?—and then heard a sound as though that particular group is balanced using a microphone placed inside the big bass drum?

On the few occasions when this sort of thing happens, the reason for it is not that the balance adopted is inappropriate, but simply an inescapable quality of the acoustics of the hall, the natural reverberation of which may be masked by that of the instruments concerned. Some percussive instruments, such as tympani, continue to sound for some time, and have decay characteristics which are somewhat similar to that of reverberation. In the case of the Festival Hall, reverberation in the hall itself dies away rather quickly, and in quality it lacks a sufficiently colourful character to assert an existence independent of the resonant direct sound of the tymps., with which it blends far too well. (N.B. Any change in the balance which would result in an increase in the proportion of indirect sound will generally also favour audience noises.)

So much for the importance of studio reverberation: in my next article I shall go more deeply into the practical aspects of the subject by considering the special—but very important—case of piano balance.

A SIMPLE series circuit consisting of resistance, capacitance and inductance does not completely describe the loudspeaker in electrical terms, since any complex system composed of interdependent mechanical electrical and acoustical quantities can be subdivided and each part assigned to its separate analogy.

Taking the acoustical part, the mass of air acting upon the diaphragm is an addition to the mass of the system. The corresponding analogy is an inductance in series with that of the cone.

Power in an electrical circuit is dissipated in a pure resistance and it follows that in radiating sound energy there must be a resistive term in the load impedance. This is known as the *Radiation Resistance* and is given the symbol R_a . The presence of the cabinet has a profound effect upon the quality of the reproduction because it modifies the velocity of the cone and in doing so it can be represented by a complex impedance in series with the main circuit. **Figs. 1-3.**

It is when we try to incorporate the resistance and inductance of the voice coil into the electrical analogue of the mechanical system that difficulties are encountered. Imagine a coil moving

THE NATURE OF SOUND

in a magnetic field. A back e.m.f. will be generated, proportional to the cone velocity and in antiphase to the applied voltage. This means that the electrical impedance is increased when the mechanical impedance is decreased.

The curve of electrical impedance versus frequency gives a very good indication of the performance of a loudspeaker particularly in the bass register, before the impedance rise, due to the inductance of the voice coil, swamps out the other changes.

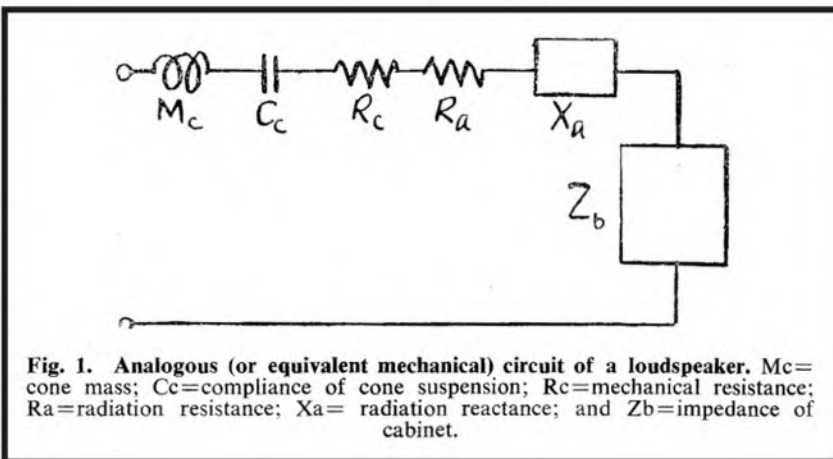


Fig. 1. Analogous (or equivalent mechanical) circuit of a loudspeaker. M_c =cone mass; C_c =compliance of cone suspension; R_c =mechanical resistance; R_a =radiation resistance; X_a = radiation reactance; and Z_b =impedance of cabinet.

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THE NATURE OF SOUND

PETER R. MILTON
CONTINUES HIS SPECIAL
SERIES WITH A CLOSER
LOOK AT LOUDSPEAKER
ANALOGIES

At resonance, when the velocity is at its maximum value, the input current is at a minimum. This is the opposite state of affairs to that assumed for the analogy. An electrical circuit can be devised which will have exactly the same characteristics as a loudspeaker, but it will be entirely different from the analogous circuit.

In order to convert from one to the other it is necessary to apply a "Transduction Constant" to each value, changing inductance to capacitance and vice versa, transposing from the parallel form of the *equivalent circuit* to the series analogy. In the analogous circuit the voice coil appears as a resistor and a capacitor across the input, and in order to avoid confusion these will be omitted.

The power dissipated in an electrical circuit is simply:—

$$P=i^2.R \quad i=\text{instantaneous current.}$$

Following the analogy, the acoustical power radiated is:—

$$P=v^2.R_a \quad v=\text{instantaneous velocity.}$$

When a loudspeaker is placed in an "infinite" baffle—mounted in a wall or a completely closed box—so that the radiation is from one side of the cone only, the radiation resistance at low frequencies is proportional to the square of the applied frequency. We may say, therefore, that:—

$$P=K.v^2.f^2 \quad \text{Where } K \text{ is a constant.}$$

This implies that in order to maintain an output which is independent of frequency, the velocity of the cone must be inversely proportional to the applied frequency. This condition is satisfied above the resonant frequency where the rise in mass reactance causes the velocity and hence the amplitude of vibration to fall. Under these conditions the motion of the diaphragm is *mass controlled*.

Fig. 4, on page 23, is a graph of radiation resistance plotted against frequency and with its help we can predict the performance of a loudspeaker mounted in an "infinite"

baffle. The main part of the curve will be level, as indicated in the preceding paragraph.

As the frequency of the applied voltage is lowered, the resonant frequency will be reached and the output will be limited only by the amount of resistance in the system. This could be in the form of radiation resistance, frictional losses existing in the unit itself and in the enclosure, or the damping effects due to the magnetic circuit and the amplifier, which in the analogous circuit appear across the input terminals.

Below resonance, the stiffness is the controlling factor and the power falls at the rate of 6dB per octave.

Above the point where the diameter of the cone is roughly equal to one wavelength the curve flattens out and the radiation resistance is approximately constant, given by $R_a=42$ acoustical ohms per square centimetre of the cone area. Theoretically, therefore, the output should start to fall off.

The fact that it does not do so is because at about this point the radiation tends to be concentrated along

the axis of the loudspeaker, counteracting to some extent the fall in treble response. Above this region the cone ceases to act as a perfectly rigid piston and its performance becomes very difficult to predict.

The first conclusion to be drawn is that for a good bass response the fundamental resonance should be placed at as low a frequency as possible. Under the condition of mass control, with the amplitude of oscillation increasing as the frequency is lowered, the coil may tend to move into the non-linear part of the magnetic field outside the air gap, causing severe distortion. Wide range is useless if it is accompanied by distortion and in order to obtain a reasonable power handling capacity it is necessary to make the coil longer than the air gap so that the number of lines of magnetic flux cutting the coil is constant down to the lowest frequency used. This is very sound in principle but the extra weight and resistance lowers the efficiency of the unit and the resonance has to be adjusted so that a balance is struck between power handling capacity and distortion. Thus it is usually unwise to lower the bass resonance arbitrarily unless it is also intended that the power input should be reduced.

(Continued on page 23)

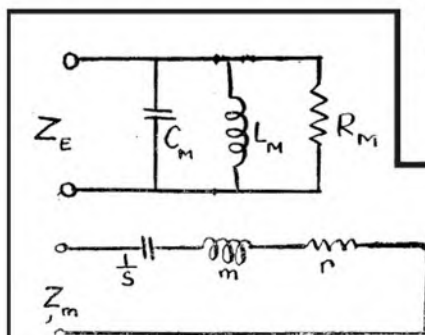


Fig. 3. The equivalent electrical and mechanical circuits of a loudspeaker, neglecting the effect of the voice coil

S = stiffness
 $\frac{1}{S}$: compliance
 m = mass
 r = mechanical resistance

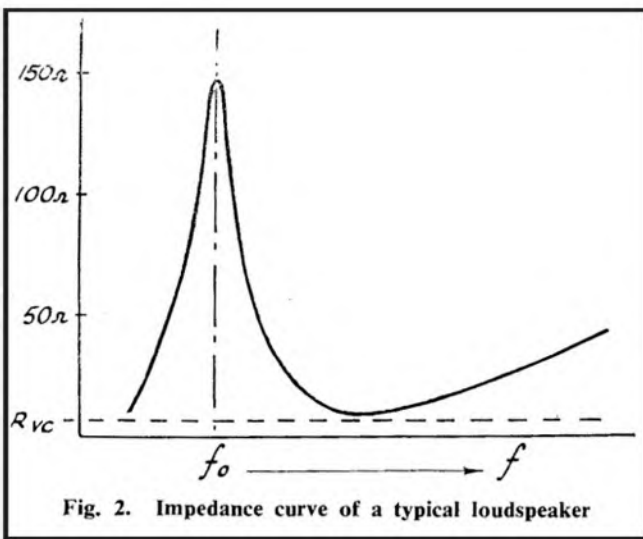


Fig. 2. Impedance curve of a typical loudspeaker



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RADIO SHOW 1961

“Milestones in recording”

AN extensive panoramic display tracing the history of sound recording from 1888 to 1961 will be a feature of the Audio Avenue at the Radio Show, Earls Court (August 23 to September 2).

Occupying some 500 sq. ft., this feature, *Milestones in Recording*, will be presented in conjunction with the E.M.I. group of companies.

Among the many vintage instruments featured in this display will be one of the earliest weight-driven acoustic recording machines, an Edison phonograph, and the microphones used exclusively by the Royal Family from 1924 to 1945. The modern era of recording will be represented by the latest type of studio tape recorders, stereo mixer consoles and other high-fidelity equipment.

Fourteen manufacturers of audio equipment will be exhibiting individually in the Audio Avenue. The wide range of products on show will include microphones, tape, tape recorders and tape decks, record reproducing equipment, audio amplifiers, speaker units, and tuners.

The Audio Avenue will be located in its usual position, in the balcony over

the Philbeach entrance, and among the exhibitors will be:—

A.E.I. Ltd. (Sound Division); Audix B.B. Ltd.; Clarke & Smith Manufacturing Co. Ltd.; Decca Record Co. Ltd.; Easco Electrical (Holdings) Ltd.; Gramophone Co. Ltd.; Jason Electronic Designs Ltd.; Lee Products (Great Britain) Ltd.; Lowther Manufacturing Co.; Philips Electrical Ltd.; Portogram Radio Electrical Industries Ltd.; Standard Telephones & Cables Ltd.; Tape Recorders (Electronics) Ltd.; and Zonal Films (Magnetic Coatings) Ltd.



S. M. Wheatley's Notebook *(Continued from page 11)*

recorded again with and without the reflector. This demonstrated the very useful “gain”, and, almost as valuable, showed how much extraneous sound from behind the reflector could be cut out or very much reduced.

The Sunday five-minute bell from the local church was another helpful source of sound. At about a quarter of a mile, and screened by high trees, the audible sound was just enough to hear on the tape but quite useless for a programme.

It was frequently carried away entirely by the wind, but when the reflector was used the signal became strong enough to use.

To assimilate the little furry things in the undergrowth I set up the reflector and started the recorder. I then retired into the woods where I made the grunts, scufflings and sneezes one would expect from timid animals. These all came through usefully but would have been quite inaudible without a reflector.

THE NATURE OF SOUND

(Continued from page 21)

The second conclusion is that the right amount of damping should be applied in the form of high field strength and correct amplifier design. Without wishing at this stage to become involved in the controversy over the subject of loudspeaker damping, it is perhaps worthwhile to note that with a heavier magnet a loudspeaker tends to sound slightly deficient in bass amplitude (but not in range). This is an easily corrected characteristic, and the general sound is smoother, with crisper transients. (Not a word about small magnets and carpet beater bass!)

The third and rather surprising conclusion is that for a given cone velocity, two loudspeakers are four times as good as one, in respect of the power produced. For the same sound level, the distortion is also reduced and this may be a contributory factor in the enjoyment of stereophonic sound.

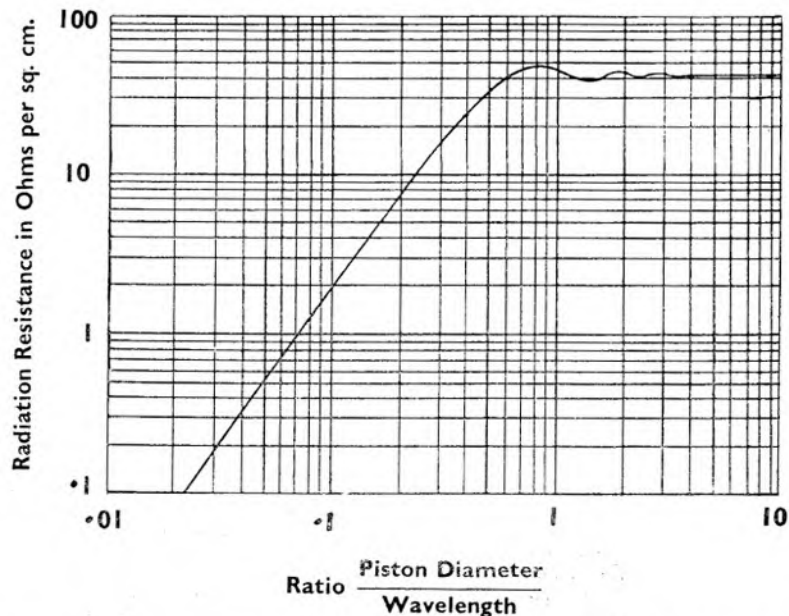


Fig. 4. Radiation resistance of a circular piston set in an infinite baffle, radiating sound into free space at normal temperature and pressure. To obtain R_a in acoustical ohms, divide the value given on the curve by the area of the piston. For R_a in mechanical ohms, multiply the value given on the curve by the area of the piston

Let us use commercial effects for the British Amateur Tape Recording Contest

THE aim of all amateur recording enthusiasts who submit an entry to the British Amateur Tape Recording Contest is to make a recording of good quality, which will also hold the interest.

One of the rules is that no extracts from "commercial recordings" may be used. I have taken this to mean that sound effects (crowd scenes, fire bells, explosions, etc.) have got to be made by the contestant. Surely it is the way that the whole tape is put together that really counts.

The advantage of using commercial effects discs to add realism to a dramatic production is obvious, but if the balancing, mixing, and editing is bad, the entry would not get into the finals.

Radio and television producers have at their disposal every conceivable type of effect and music for use in their programmes, but even so, how often have we switched off because we have been bored with a programme?

It is difficult for the lone enthusiast with a heavy mains machine and no form of transport—these people do exist—to obtain atmosphere effects such as street sounds, railway stations, motor cars, etc.

Commercial effects discs, free from copyright, are now available to the enthusiast. But what use is it for us to perfect on editing and mixing, and completing interesting tapes with the professional touch, if a completely new technique has to be used for the Contest entry.

I try to make realistic sounds at odd times throughout the year, but making just one effect that is realistic often takes

as long to perfect, if not longer, than it takes to complete the actual contest entry.

JOHN HONE

London, W.12.

P.S.—Listening to the radio and watching new telefilms, video tapes, etc., on television recently, I have been astounded at the bad editing, fading, contrast in volume levels and sound and picture quality. And they call themselves professional!

Editor's Note: We would like to hear other readers' views on these points.

AIRMAIL SPOOLS

S. M. WHEATLEY recently asked if anyone knew of a small spool—roughly one inch in diameter—to send a message in an airmail letter (July 12 issue.)

Although, as he said, 8mm. cine spools are too large, he may find it useful to trim away the flanges and ribs, leaving only the hub. I have done this very successfully, and have found the modification quite satisfactory, using the system to a large extent in my tape exchanges.

Alternatively, he can make a replica of such a hub out of balsa wood. Drill a hole through the centre and filing three slots. I hope he will find this advice useful.

Wishing your journal every success.

R. PRESTON

Maidstone, Kent.

School tape programmes—how long?

THERE is no answer to Mr. Hyndman's criticism of the length of my tapes (June 28 issue). Each teacher should record a programme of length best suitable to his children and what they want to put on it.

Most of my own tapes are done on a school basis. A single class committee arranges the programme, but they can call in all the facilities of the school—choirs, recorder groups, verse-speaking groups, instrumentalists, dialect speakers and other people of general interest. In making a tape of this kind it is more difficult to decide what shall be left out rather than what shall be included. On long tapes we give a "natural break" about every fifteen minutes, for the sake of the receiving school.

I do not think Mr. Hyndman ought to sigh for a class of "higher intelligence" children. The less able children can put up a good effort if they are given enough encouragement and patience.

I make a point of including as many retarded children as possible on all my tapes. Most of such children can sing or read on oft-rehearsed short passage. Backward children gain greatly in confi-

dence if they are allowed to do, even in a smaller way, the same things as their brighter colleagues. One of my audio-visual tapes was done entirely by children of a remedial class.

If we use only the brighter children on tapes this is rather like putting on a special show. I am always a little suspicious of any "perfect" tapes I receive. My own tapes have many shortcomings but they are at least representative of the children.

Some divergence of views among teachers on the subject of tapes is inevitable and, I think, helpful. What I am very pleased about is the rapid increase in the number of schools now exchanging tapes across the world. There is still a good deal of pioneering work to be done in this connection and the more views we have, the better the general progress will be.

I think a Schools Exchange Bureau is now required—especially for schools wishing to correspond overseas. I would certainly pay a shilling or two for a published list of this kind.

GORDON PEMBERTON

Pudsey, Yorkshire.

Letters to the Editor

IS THIS THE ANSWER?

WITH reference to Mr. D. C. Comper's mystery (*A mystifying and annoying phenomenon*, May 31 issue) in which he described the pick-up of car ignition signals on his tape recorder; I haven't seen any explanation by other readers, so I venture to offer the following possibilities, based on similar experiences of mine.

Basically, any form of spark-producing machines (ignition systems, switches, doorbells / buzzers, commutator-type motors, etc.) are small transmitters and the radiated field will induce a wide-band signal in any conductor within its range. This includes the outer braiding on Mr. Comper's microphone lead.

Although this would normally be assumed to be at earth potential, the degree of "earthing" will depend upon the contact resistance between the microphone plug and socket and, as a minute film of dirt or oxide invariably builds up on such connectors over a period of time, the resistance is never zero and can often be several ohms, across which a signal voltage can be developed between the microphone lead and recorder chassis.

In addition, the oxide film will appear to the high frequency signal as a rectifier, as also will the bad contact of any possible "dry" soldered joint in the circuit, both of which will operate on the same principle as the copper-oxide disc rectifier, resulting in demodulation of the noise signal and the superimposing of the LF content of the noise on any other signal in the circuit.

The trouble can usually be cured by carrying out one, or more, of the following operations, depending upon the degree of interference.

1. Thorough cleaning of all rubbing contacts on plugs, jack sockets, etc.

2. Hundred per cent screening of all leads and circuits carrying low-level signals.

3. Verifying that no "dry" soldered joints exist anywhere in the input circuits. (Noise pick-up is seldom experienced after the input circuit, as such signals are removed by decoupling components.)

4. Connect a good, external earth to the troublesome equipment—as short as possible.

Hoping that the foregoing may help Mr. Comper to lay his spectre.

A. BEAUTEMENT,

Ashford, Middlesex.

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

Letters to the Editor

Trade Association

AMPEX would certainly welcome a central standards setting body and with the great amount of experience which this company already has with similar organisations in the United States, would be in a position to help it a great deal. There has been in past years much confusion, not only in the sound recording business, but also in the instrumentation field, due to varying standards and in many cases lack of standards. Such a body as Magnetic Recording Industries Association proposed by Mr. Spark would indubitably help in alleviating this state of affairs.

T. D. DALZELL,
General Sales Manager,
Ampex Great Britain Limited

Bouquets

MANY thanks for publishing (*June 28 issue*) my request for advice as to what equipment to buy. I have been most gratified with the response and I should like to thank all who wrote me.

I'm sure readers will be interested in a summary of the replies. There is good, reliable equipment on the market and I take extreme pleasure in handing on to the makers bouquets offered to:—

Fidelity Argyll, Telefunken, Tandberg, Brenell, Harting, Reflectograph, Garrard and Ferrograph . . . all fanatically urged on me by satisfied owners. One gentleman, a hotel proprietor, has worked a Ferrograph under adverse conditions daily for several years. He states, "I am a busy man but cannot shout the praises of Ferrograph too loudly."

All of which is very satisfying. I wish I could buy all of them.

On the other side of the picture, although I did not invite adverse criticism, several correspondents volunteered information as to unsatisfactory equipment to be avoided. I am advising the editor in a list hereto. I hope that he may see fit to inaugurate some sort of advice bureau which will not hesitate to publish its black list.

JARED WILLIAMS
Shipley, Yorkshire.

WE regret that, owing to an error on our part, details of the Grundig TK 14 were published in our last issue in advance of the official date for release of this information.

We apologise for any inconvenience caused to Grundig (Great Britain) Limited, and to their dealers.

"Apply common sense to the matter of copyright fees"

THE letter from Messrs. P. Tucker, D. J. Garrett and R. A. S. Gouldsworthy (*July 12 issue*) indicates that, having run out of valid legal arguments, your correspondents are forced to fall back on abuse. We cannot expect your readers to be interested in a feud in which each side returns insult for insult, but there are in your correspondents' letter several inaccuracies which are so misleading that we feel it necessary to reply.

Your correspondents seem to imagine that the "research or private study" provision of the Copyright Act 1956 is contained in Section 2(6). In fact it is, of course, contained in Section 6(1), and we are fully aware that this provision applies to literary and dramatic works as well as to musical works. Our point is that the provision is so narrow in its application that it is of little use to the amateur tape recordist. Before judging our views on the expression "private study" to be "ridiculous" your correspondents should at least take the trouble to read the standard textbooks and look up the case law on the subject.

Your correspondents went on to state: ". . . BBC transmissions, except where they contain such copyright recordings as gramophone records, etc., may be recorded without copyright infringement, provided that they are replayed in private." This is quite incorrect, as they have overlooked the fact that a copyright musical work may not be recorded, even for private replay, from a BBC broadcast, unless permission is first obtained from the copyright owner.

It is essential to bear in mind the difference between a copyright *recording* and a copyright *work*; we ourselves are concerned with the recording of copyright musical *works*, and not of copyright *recordings*. Had Messrs. Tucker, Garrett and Gouldsworthy read the seventh paragraph of our previous letter with a little more care they would not have seen any reason to describe it as "monumentally ludicrous."

As they themselves acknowledge, your correspondents feel that the basis of the present controversy is the absolute prohibition on the reproduction of a *recording*. We merely went on to point out that a copyright musical *work* may not, without permission, be recorded from any source at all, even for private and domestic use. We would have thought that this statement was easy enough to follow, but in order to avoid any further misconception by your correspondents we would add that we have not forgotten Section 6(1), for what it is worth in this instance.

As we have already stated, the terms of your correspondents' proposed alteration (or, if they prefer another word, amendment) to the existing law would, we feel, be open to much abuse. As for their remarks on the nature of copyright fees, it is obviously impossible to convince them that it is necessary to apply elementary common sense to these matters; if

they feel that they must have a grievance, by all means let them nurse it.

They seem to have forgotten that the composer's works are his sole assets and, in fact, his private property. Your correspondents are spending a great deal of energy in protesting about the rights in property which simply is not theirs.

It is a pity that an interesting correspondence has become so acrimonious; we see little point in the righteous indignation of Messrs. Tucker, Garrett and Gouldsworthy so long as it is untainted by accurate knowledge of the subject at issue.

B. DINNING
Mechanical-Copyright Protection Society Limited.

I WILL PAY UP!

SURELY Mr. B. Dinning of the Mechanical - Copyright Protection Society Limited, realises that every tape recorder owner, not only in this country, but all over the world, has recorded so-called copyright music, and will continue to do so. I am at a complete loss to understand how Mr. Dinning can do anything about it.

Nobody denies that the music is copyright—this is well established by the Copyright Act. But if Mr. Dinning wants to try to enforce the law, it is up to him and his society to do something constructive and practicable to make the law workable. He points out the difficulties but doesn't offer a solution. Thousands who own tape recorders have never heard of the Copyright Act.

Personally, I do not record music—my tape interests lie in other fields. Nevertheless, I would gladly pay an annual fee of say 5s. for the legal right to record anything that I wished. I understand that there are about a million tape recorders in use in the country, and a fee of 5s. per year from them all would create great prosperity for the MCPS Ltd.

So, Mr. Dinning, don't just natter about it—make a sensible and workable suggestion for payment for copyright, and I for one will pay up at once.

TOM FIELDHOUSE,
Pudsey, Yorkshire.

Tape anchoring

IN reply to the criticism made by Mr. W. J. Tomlinson (*May 17 issue*) regarding "the fiddling business of feeding into the centre of the spool for anchorage".

I would point out that the GEVASONOR tape spool has been designed to meet the needs of all users and incorporates features which enable the tape to be fed to the centre of the spool where it can be easily held.

Furthermore, this spool complete with tape and packing weighs only 2½ ounces.

J. A. NOTLEY,
*Gevasonor Tape Division,
Brentford, Middlesex.*

Equipment Under Test

THE REFLECTOGRAPH MODEL A

IN a recent review in this journal, my colleague, Alan Beautement, had cause to enthuse over a particularly fine example of the British tape recording manufacturers' work at its best, and to bewail the fact that he was able to have it in his possession for so short a time. He might well have been talking about the Reflectograph Model A (he wasn't!), for precisely the same feelings are in the mind of this reviewer concerning this, probably the finest tape recording machine available in this country under £120—the actual price is £110 5s.

This machine has more professional features than any other domestic machine at this price; indeed, the manufacturers call it a professional machine. A statement of this sort invites comparison with the machines used by broadcasting and recording organisations costing £500 each and more, and in fairness, as one might expect, such a comparison would show a number of points in favour of the more expensive machines. This is not to say, however, that this machine has any serious faults at all, it has not, and to repeat, this reviewer who frequently works with professional machines, would be very glad to possess one.

The basis of this recorder is the Multi-music tape deck. This deck incorporates, to quote the excellent instruction manual, "many novel features which provide for extreme reliability, simple operation and particular ease of tape editing." Two tape speeds are provided, $7\frac{1}{2}$ and $3\frac{3}{4}$ ips, and the machine will accommodate $8\frac{1}{4}$ inch reels of tape.

The deck is powered by three motors: two Garrard spooling motors with the spool hubs mounted directly on the motor spindles, and the famous heavy duty Papst capstan motor, the capstan itself being an extension of the motor shaft. The use of this particular capstan motor can almost be said to guarantee that the flutter figure will be low.

Tape tension is provided by driving the feed spool in the reverse direction to the take-up spool during recording and reproduction. This method is assisted by a pressure pad on the record head only, combined with guide posts which keep the tape wrapped round the head. Fast forward and reverse spooling is provided and this particular model took under 40 seconds to wind 1,200 feet of tape. One of the professional

features of this machine is seen here in that the speed of fast wind is variable, one control giving an infinite range from maximum forward speed through zero to maximum rewind speed. By the use of this control, a particular passage from a recording can be found very rapidly and editing is made simpler.

The tape deck itself carries five controls, the first of these is the function lever, by the use of which the tape can be set in motion either for record, play or fast wind. The second control is the mains on/off switch for the complete equipment. Operating this switch turns on all the amplifiers and starts the capstan motor. The capstan motor is thus running continuously all the while the equipment is switched on and this enables the machine to accelerate the tape to full play speed in 1/10th second.

The third control is a large red push-button, which releases the solenoid holding the pinch wheel and tape guide post assembly in the record or play position and thus stops the tape moving. The machine should not be stopped by moving the function lever manually to the off position, except on fast wind when the red button is inoperative.

The fourth control on the tape deck is the tape speed selector knob and has three positions— $7\frac{1}{2}$, off and $3\frac{3}{4}$. The off position is necessary in order to prevent damage to the capstan motor, since the speed change is effected by switching of the motor windings. The fifth control is the speed control for fast wind. Also on the deck unit is a clock type tape position indicator.

From a description of the deck we move to the electronic part of the instrument, and here again many professional features are found. Two complete amplifiers are provided, the record amplifier

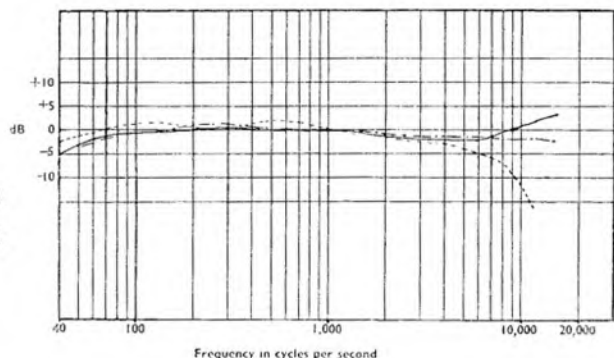
feeding the record head and designed specifically for this function, and the replay amplifier fed from the replay head and feeding into a large Goodmans 10 x 7 inch high quality loudspeaker.

The provision of two amplifiers, one for record and one for play, not only enables each to be designed for maximum performance but provides monitoring of the recording from the tape whilst it is being made. The amplifier controls are mounted on a sloping panel below the deck controls.

From left to right, the first control is the record/playback switch which cannot be moved to the record position without pressing down the safety button alongside it thus preventing accidental erasure of a valuable recording. A further safeguard in this respect is that an electrical interlock exists between this switch and the function lever so that the tape cannot be rewound whilst the record/play switch is in the "record" position, again avoiding accidental erasure. A further safeguard exists in that indicator lamps are provided to show whether the machine is switched to record or play.

The second and third controls on the amplifier panel are the bass and treble tone controls, part of the replay amplifier. Cut and boost are provided on both these controls and both are marked with a "flat" position which gives the standard CCIR characteristic. The fourth control is the volume control for playback which has a calibrated skirt. This knob, of course, also controls the monitor level whilst recording. The remainder of the amplifier panel carries the record/volume control, also with a calibrated skirt, and the input level meter. This is an edgewise mounted type and is exceptionally easy to read. It is provided with a screwdriver zero adjustment.

Frequency response graph of the Reflectograph Model A.
— $7\frac{1}{2}$ ips replay
- - - $7\frac{1}{2}$ ips record and replay.
... $3\frac{3}{4}$ ips record and replay.



By

H. BURRELL-HADDEN

Also on this section of the panel is the comparison switch which enables direct comparison between the incoming material and the output from the tape to be heard on the loudspeaker. Another screwdriver adjustment enables the level of these two feeds to be made equal for easy comparison.

Input sockets for a high impedance microphone at low level, and "radio" at high level are provided, no mixing facilities being available. Although it is not necessary to remove these plugs during playback, it is not possible to use the microphone socket if there is a plug in the radio input.

Two output sockets are available; the first of these is for connection of a high quality 15 ohm loudspeaker. Insertion of a jack plug in this socket mutes the internal loudspeaker. The second output socket provides a high impedance output to feed a high quality amplifier, and again inserting a plug in this socket removes the feed from the internal loudspeaker.

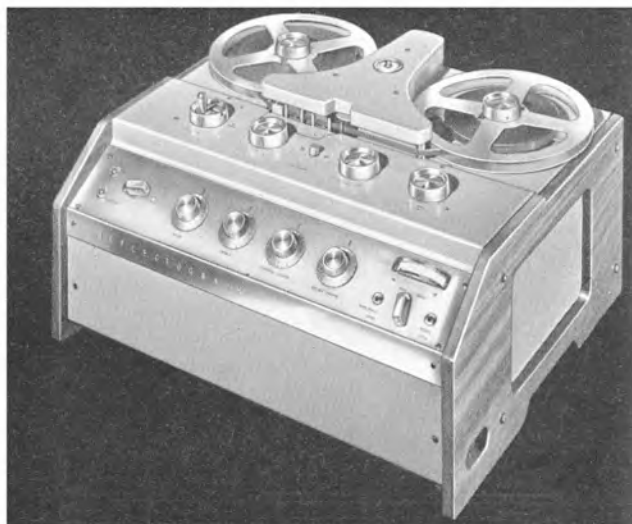
The whole equipment is elegantly styled and mounted in a frame with polished wood ends, one of which carries the loudspeaker. Easy access to the interior is available for servicing, by the removal of the front and bottom panels. The wooden side panels can be moved completely, if it is desired to install the equipment into existing furniture.

TECHNICAL TEST

The machine was subjected to the usual technical tests. Firstly, the replay response was checked, using the standard CCIR tape at $7\frac{1}{2}$ ips, and on the machine sent for review a marked dip of some 14 dB occurred at 10,000 cps. On checking the overall record/replay response this dip did not occur and the reviewer was led to the conclusion that the azimuth of the recording heads had been incorrectly adjusted, possibly due to a defective line-up tape used during the final setting up of the machine at the factory.

The procedure for this would be to use the line-up tape to set the replay head azimuth (to make sure that the head gap was at right angles to the tape), and after this had been adjusted, to set the record head azimuth by recording on another tape and listening on the previously adjusted head, thus setting the two heads at a similar angle.

It can be seen that the accuracy of this operation depends on the accuracy of the original test tape. If the azimuth is set at any angle other than 90 degrees to the tape, loss of high frequencies will occur when playing a tape such as the CCIR test tape which has been recorded with an azimuth set accurately at 90 degrees. However, if the record and replay heads are both set at the same angle, any angle, then the machine will replay perfectly satisfactorily recordings made by itself. This was evidently happening in the present case. The azimuth seals were therefore broken and the



heads set correctly in the manner described. A great improvement was now noted, and the frequency response curves are as shown in the accompanying graph.

The curves were taken with the tone control set at zero position, and the very slight discrepancies at the low frequency ends at $7\frac{1}{2}$ ips, and the high frequency end at $3\frac{1}{2}$ ips, could easily be compensated for by suitable adjustment of these controls.

The machine was well inside the manufacturer's specification, with wow and flutter fulfilling their quota of less than 0.2 per cent at $7\frac{1}{2}$ ips.

A few adverse comments must be made about this machine, good though it is.

The front panel carrying the amplifier control is made of very thin aluminium, so that when operating the safety button on the record/play switch, the whole panel bends in an alarming manner; surely a "professional" machine would have such a panel made of metal something like an $\frac{1}{8}$ inch thick.

Secondly, it is necessary to remove a large number of screws in order to remove the head cover which can only be taken away with the whole of the deck cover. Surely, it would be more satisfactory to have the head cover mounted for quick removal so that head azimuth can be easily checked, a routine maintenance operation with all professional equipment.

Thirdly, the fast spooling control, although an excellent feature, works in the opposite manner to the way one might expect, in other words, turning it clockwise (to the right) makes the tape move to the left, and vice versa.

Fourthly, I did not like the two different operations required for stopping the tape when in the play and fast wind conditions; this would lead to considerable confusion with possible damage to the machine.

Lastly, I would fault the machine from the professional point of view, in that it has not a 15 ips speed available, neither will it take professional size 10 inch spools with NAB centres.

The points mentioned above are all of them minor ones, mainly directed at the claim that this is a professional machine, and I would like to repeat that this machine is among the finest domestic tape recorders I have yet seen.

MANUFACTURER'S SPECIFICATION

Speeds: $7\frac{1}{2}$ and $3\frac{1}{2}$ ips.

Frequency response: 50-10,000 ± 2 dB; and ± 3 dB 30-50 cps and 10,000-15,000 cps. at $7\frac{1}{2}$ ips. 45-7,500 cps ± 2 dB at $3\frac{1}{2}$ ips.

Wow and flutter: Better than 0.2 per cent at $7\frac{1}{2}$ ips.

Signal-to-noise ratio: -50dB (unweighted including hum).

Maximum spool size: $8\frac{1}{2}$ inches.

Power supplies: 200-250 volts, AC, 50 cycles.

Power consumption: Approx. 100 watts.

Dimensions: 20 x 16 x $10\frac{1}{2}$ inches.

Weight: Approx. 50 lb.

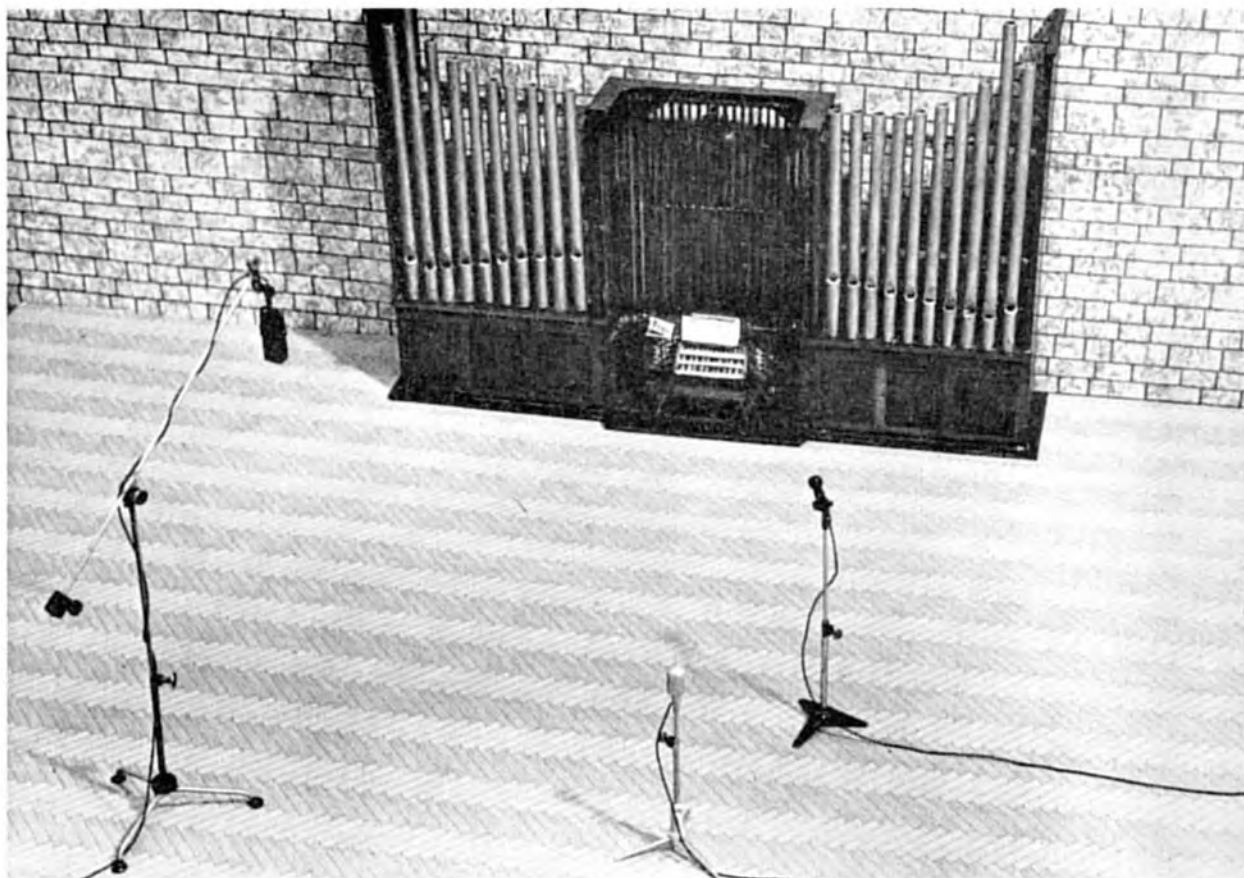
Valves: Two ECC83, EF86, ECC82, 6BR8, EL83, EF91, and EZ80.

Loudspeaker: For monitoring 10 x 7 inch elliptical.

Motors: Direct drive synchronous capstan, and two Garrard side motors.

Counter: Clock type tape position indicator.

Makers: **Pamphonic Reproducers Limited, 17 Stratton Street, London, W.1.**



HAVE zealous attempts been made to record a church organ only to experience disappointing loss of majesty on playback? An answer might be found in some of the brief pointers outlining difficulties when recording the king of instruments, which, it is generally agreed, often proves to be a searching test of the recordist and his equipment.

It is interesting to know that usually the pipe organ is carefully matched to its environment in the design and installation procedure; for one thing, it can be described as being "loudly or softly spoken" depending on the absorption properties of the walls, roof and floor of the particular building. A readily appreciated simile can be drawn in the way in which a cabinet can affect loudspeaker response, or further, the manner in which the environment can play all sorts of tricks on the correctly cabinetted loudspeaker!

Much of the character and strength of tone of the organ can only be experienced by being present in the church where, with the large banked type, the lower diapasons can be *felt* rather than heard. It is not surprising then that wide-range and powerful audio equipment is essential in order to reproduce the aural grandeur. In using such a playback system, only *then* can a verdict be passed on the fruitfulness or otherwise of the recording attempt.

Once more the question of microphone proximity is very important and the ratio

MICROPHONE PLACING—9

By Naomi Archer

of direct to indirect sound pick-up is no mere guess figure. We can expect there to be any number of standing waves between the various hard surfaces in the church. The reverberation period is often long delayed—a few seconds or more, it may be more sustained in one place than another and it may vary with different notes. These important details should be investigated while the organist rehearses his most contrasting item.

Adding to the difficulties of recording will be narrow channels of sound emanating from the lips of some of the pipes and being reflected from the roof and similarly curved surfaces. These particular sounds need not necessarily contribute to the music. A further detail and perhaps one which is more obvious, is to sight the microphones well clear of the blower motors and pedal and stop mechanisms, although sometimes the latter cannot always be avoided. Therefore, directional microphones will be an advantage. During the rehearsals the recordist, by covering up one ear, can as near as possible simulate the monaural

effect and will soon discover the extraneous noises.

In such reverberation conditions a single microphone pick-up may not be successful, for the simple reason that a balance cannot be created between the reverberant sound, the direct sound, and the breadth of field. Assuming that two or more microphones will be used then the object will be to place them in the previously selected positions arrived at during the earlier listening tests. Now with the best possible monitor set-up, each microphone's output is listened to in turn to ascertain that the range of sound is being adequately covered.

Where are these microphones likely to be placed? The commencing positions might be from ten feet and onwards in distance and the height might be a few feet from the floor or well up in the air, depending on whether the organ is a small free-standing type, or is large and incorporated into the building structure.

Because low frequencies are going to be encountered of large magnitude, the microphone stands should have adequate anti-vibration mounts, otherwise the lower signal outputs from the microphone will sound "guttural," or in more technical terminology, the diaphragm "breaks up." As well as employing microphones of wide frequency range and low distortion under high sound level conditions, extra long stands should be envisaged except where slung microphones can be used to advantage from the roof. An old dodge of placing several microphones and listening to each in turn can save a lot of time in such circumstances.

New Products

NEW DISTRIBUTORS FOR UHER RANGE

BOSCH LIMITED have announced they have taken over the distribution rights in this country for the Uher range of tape recorders.

The present range of this West German company includes the Universal, a half-track model with tape speeds of $3\frac{1}{2}$ and $1\frac{1}{2}$ ips, and including the ultra-slow speed of 15/16th ips, retailing at 83 guineas; and the four-track model 524, with facilities for adding a supplementary amplifier for conversion to stereo reproduction and synchronous parallel-track recording. This model is currently being reviewed, and a report will appear in the near future.

There is also the Uher 734, combining the advantages of four-track recording with three tape speeds, $7\frac{1}{2}$, $3\frac{1}{2}$, $1\frac{1}{2}$ ips, large 7 in. reels, and a maximum playing time of up to 16 hours. The price is 89 guineas.

Three stereo recorders are also available. First there is the 99-guinea Stereo One with four-tracks, three speeds and 7 in. reels; and the Stereo Two, a half-track model described as being built to the demands of the connoisseur. The price is 136 guineas and the features include four tracks, three speeds, 7 in. reels, a frequency response of 40-20,000 cps at $7\frac{1}{2}$ ips, facilities for superimposition, and tandem type two-channel stereo controls. There is an additional model, the Stereo Three which for ten guineas less provides four-track operation with the same specifications.

Bosch also announce a number of accessories for these recorders. For sound-operated start/stop control and tape operated synchronisation of slide projectors there is the Model 810 Synchro Akustomat at 14 guineas. This is suitable for use with the Universal, Stereo Two and Stereo Three recorders. For use with the Universal only, there is



the 680 Remote Control Unit, at 4 guineas, which provides hand operated remote start, stop and back-spacing facilities when the recorder is used for dictation purposes. A compact neatly-styled carrying case for the Universal is also available for 6 guineas.

Bosch Limited, 205, Great Portland Street, London, W.1.

Tape Mixing Ade

THE Tape Mixing Ade, has an extremely interesting application for amateur cinematography and considerably reduces the cost of providing a running commentary with background music on a tape recorder.

The makers claim that by plugging the Ade into any tape recorder one can record background noises, fading speech or music to a level best suited to the film, thus giving almost professional sound effects to the amateur cinematographer, and providing the benefits of a low priced cine camera with an inexpensive, but first class, sound system.

The retail price of this equipment is 5 guineas.

Electronic Ades (London) Limited, Alpha Road, Teddington, Middlesex.



Left: The 99-guinea Uher Stereo One, and above, the 83 guinea Uher Universal

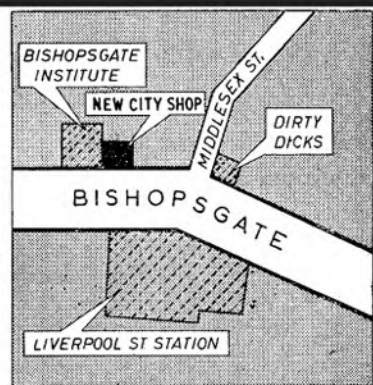
AUDIO TAPES

AUDIO Tapes, exact duplicates of the original stereo mastertapes, are now available in this country. For this announcement, Tape-Music Distributors described the tapes as of exceptionally high standard of recording, employing a frequency range of 16-25,000 cps.

The first six tapes to be released are "Louis and the Dukes of Dixieland," "Hamps Big Band," "Rome with Love," "Railroad Sounds," "Port Said," and "Per-cus-sive Cha Cha Cha." This final tape is said to be quite sensational from a technical point of view. The recording company, Audio Fidelity Inc., explains that this tape has been "doctored" for super stereo, and go to great length to explain the recording techniques.

They invite the listener to examine the frequency response on an oscilloscope. They state on the box: "While the total frequency range of 16-25,000 cps on this recording may not be within the range of ordinary human hearing, nevertheless, measurement with an oscilloscope and high-pass filters will show the upper dynamic frequencies. It is the opinion of the manufacturer that if these frequencies were omitted a certain warmth of tone that is felt and sensed rather than heard would be lost. For this reason and to achieve the ultimate in our 'Studies in high fidelity sound' we have gone to these extreme lengths."

Tape-Music Distributors, 33, Edgware Road, London, W.2.



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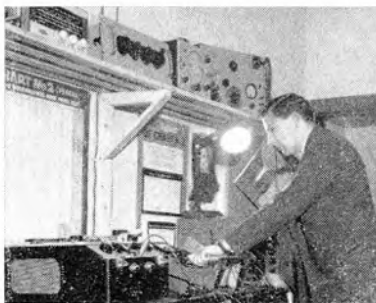
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AFRICAN TAPE

(Continued from page 9)

staying. I went along "armed," of course, to investigate and found my driver playing one of the most battered guitars I have ever seen; and playing it as beautifully as any professional I have heard.

He and the other drivers were singing Creole songs. I spent an hour recording that music and would have gone on longer, but I was afraid of running myself out of batteries (I had not brought the charger out from England). Although the driver had never had a lesson in his life his playing was beautiful. I feel that there ought to be something I could do with those recordings to help him and maybe I will think of something. Although pure African, his name is Archibald Coker. Perhaps you will hear that name again some day.

I returned to England to face the mammoth task of editing. In this I was greatly helped by having two recorders and a wife who does not object too strongly to being a tape widow.

As I sifted through the tapes I was constantly reproaching myself for the material I missed. This brings me to a point, one of a number of tips gained from my experiences—when you go to a strange place, record, record, RECORD!

You will never regret it and if afterwards you decide the excess material is not wanted, it has, of course, cost you virtually nothing.

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News from the Clubs

IN our last issue, we mentioned a letter recently distributed to the locally organised clubs, asking for details of meetings, and the secretary's address, etc. We also mentioned the initial response, which was most complimentary considering the short time that had elapsed since the despatch of these cards.

Since then, we have heard from an additional thirty clubs, but this still leaves almost forty replies still to be received.

As outlined, the returned cards will be used to compile a comprehensive list of tape clubs, their secretaries, the regularity of meetings and similar details, providing a dossier available on request from these offices. The list of clubs so produced will also appear in the 1961-62 Yearbook.

Has YOUR club returned its card, or has it not received one? A change of address may mean our letter went to a retired member. This has happened in some cases, according to replies already received, and we wish to avoid this in future. If you have not heard from us, let us know and we will forward you the list of details we require.

Nearly everyone takes for granted the gross exaggeration traditionally applied to Texans, but I wonder if any of our transatlantic cousins ever claimed to have seen a microphone diaphragm measuring 20 x 12 (feet, that is, not inches). This is a claim made by the treasurer of the **JOHANNESBURG** Tape Society.

It followed from his experience one morning when he gazed out of his office window. Opposite, and at an angle of 45 degrees, is a plate-glass window of said dimensions. He saw the reflection of a shunting goods engine through this window, and noticed that at each puff of the engine the window flexed and the reflection moved in and out.

Writing in their latest newsletter, he adds, "If the window had a transducer fitted, the puff would have been transformed into electricity capable of being amplified and fed to a speaker. The noise of the train was such, in fact, that an amplifier might not have been required, except as an impedance matching device. Somehow I do not think a microphone of this sort is very sensitive and no doubt the distortion introduced would be somewhat high. But nevertheless, it does give one an idea, and I am thinking in particular of the tape recording enthusiast who wears spectacles. Just fix a piezoelectric crystal to each glass and you

have a dual purpose stereo microphone, with the nose as a baffle."

Not all of the Johannesburg newsletter is given to such thinking, however, and within the space afforded by six foolscap pages of their latest production, one can see the society is well-established on what the tape enthusiast should achieve at his club meetings.

High up on their list are competitions. The latest is entitled "Why the chimes rang", and members have to compile a feature tape answering this question. The novice is not overlooked in such exercises—the members impose handicaps for the experts.

During one of their most recently reported meetings, the members heard a talk, delivered by Mr. Heywood. His subject was multiple speaker array, and for the demonstration he had no less than 22 bass speakers and six tweeters in operation. The enclosure had been built by Mr. Peach and the units were loaned by Messrs. Dessels, local dealers.

To follow, Derek Worman, past winner of the International Contest, presented a talk on the tape recorder and gave suggestions on what to buy for what purpose. Keeping it in the family. Mrs. Worman then addressed the members—her subject being "The trials of being a hi-fi/tape wife". She claimed to be well-qualified to speak on the matter, having "walked many miles collecting sounds with my husband".

That particular meeting ended with the playback of last year's "Tape of the Year", Norman Paul's *The Rest is Silence*, which had been recorded from a RBC broadcast.

The members of the **WARWICK AND LEAMINGTON** club have been devoting quite a large bit of their time recently to three new members. The three, Peter Greaves, Stan Mayes and Wilf Roberts, patients in the Midland Counties Home for Incurables, recently applied for membership, and having contacted them the members decided to do all they could to help them.

Being unable to attend the regular club meetings, the new members are kept in touch with activities by means of recorded extracts supplied by the club. One of the first such tapes was that compiled in answer to a tape received from the **Bath** club.

Although physically handicapped, the three new members are no novices at tape recording. During a recent League of Friends Fete, held at the Home, they organised a "Record your Voice" stand, and took charge of the public address system. Their technical know-how is said to leave many of the regular members way behind. Before they applied for membership, they had also arranged regular musical request programmes for their fellow patients, and recorded some of the Home's foreign staff singing their national songs.

Apart from supplying them with re-

corded extracts from club meetings, the Warwick members are also hoping to arrange extra club meetings at the Home, so that their new members may have a chance to take an active part in the proceedings.

Trevor Gilbert, their chairman, recently entertained members to an evening of stereo recordings. The tapes heard had been compiled on a machine built by Mr. Gilbert. This was their final meeting before the club disbanded for its annual holiday. They will resume with an active Winter Schedule all lined up, on September 6.

The June 26 meeting of the **COTS-WOLD** members took the form of a recording session, the first to be attempted at their new headquarters where they now have room to set up a larger array of equipment.

Maximum advantage had been taken of the excess space. On show and in action were no less than nine recorders and a multitude of microphones. Three Ferrographs and a Reflectograph were included in the impressive set-up, and a number of home-constructed microphone stands and mountings were also included. Eric Jones was in action with his home-made multi-channel mixer—"an object of great beauty".

Colin Woods was in charge of the operation, and he acted as "signal generator" giving the go-ahead to recordists and musicians. The object of the exercise was two-fold—to provide practical experience, and to provide material for their tape service *Hospital Roundabout*, now in its fifth edition.

This particular issue featured interviews with lady customers at a jumble sale, including some lively comment on this established custom, and sound pictures of the heat of the moment as a stall-holder tried to sell a set of false teeth.

A number of musical items are also included before the tape introduces Peter Scott who was interviewed by Peter Durdridge at the Wildfowl Trust, Slimbridge.

Secretary Peter Turner, has also been attempting bird recordings. Two recent attempts to record the dawn chorus failed, although he succeeded in "bagging" a dog which chose that time of morning to bark outside his home.

Other tapes destined for future editions of the hospital magazine include those compiled during an outside location session, organised at their June 15 meeting. On this occasion, and armed with four battery recorders, the members divided into four groups and proceeded to set forth to search for recordable material.

Later in the evening, having re-assembled in their "local" the members heard the evening's recording attempts played back on the secretary's Reqs R30. They were joined by a number of the interviewed personages and the gathering developed into quite a party.

Another gathering of tape enthusiasts was meanwhile taking place a bit further south, where twenty members of the **TAUNTON** club were visiting the neighbouring club at **BRIDGWATER**.

Welcomed by the chairman Mr. T. Sanders and secretary Miss J. Sharman, the Taunton members spent an enjoyable evening listening and watching recordings and films produced by their hosts.

(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.

MISCELLANEOUS

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

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

Recording Tape. Save up to 30 per cent. Send for list. Also 50 secondhand Recorders in stock. E. C. Kingsley & Co., 132, Tottenham Court Road, London, W.1. EUS 6500.

40 per cent below usual prices. Highest Grade Standard Recording Tape. Polythene, boxed and unconditionally guaranteed, brand new—7 in. reels 19s., 5 in. reels 12s. 6d. p. & p. on each tape 1s. or free on four or more tapes. W.S.L. (Tape Dept.), 106, Greyhound Lane, London, S.W.16.

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

ADVERTISERS and sponsors required for **BLIND BULLETIN** to promote its presentation and distribution to Blind Clubs. Admirable medium for TR manufacturers, agents, etc., willing to assist development of humanitarian project. Walter Gillings Sound Features, 115, Wanstead Park Road, Ilford, Essex. VALEntine 9744.

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

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

TAPE PROTECTORS—Top-quality shaped polythene bags with generous closure—protect your tapes from damp and atmospheric change and prevent "sticking." Per dozen, 3 in.—1s. 6d.; 4 in.—1s. 8d.; 5 in.—1s. 9d.; 5½ in.—2s.; 7 in.—2s. 4d.; 8½ in.—2s. 8d. From your dealer, or from SWAIN'S Papercraft Ltd., Dept. 6, Buckhurst Hill, Essex.

WAL PRODUCTS. The new D-Mag Head Demagnetiser, nylon bushed probes, £2 10s. The new Hi-Gain Pre-amp, with tape equalisation, ideal for Ferrograph, Philips, etc. For monitoring, dubbing, playback, etc., £7 16s.

WAL BULK ERASER (for tape and film), £7 18s. 6d. **MONO WAL GAIN** £5, **STEREO** £7 10s. Professionally designed, professionally built, for professionals. WELLINGTON ACOUSTIC LABORATORIES LTD., Farnham, Surrey (6461).

BARGAINS IN TAPE RECORDERS slightly used for demonstration only:—Ferrograph 4AN, 72 gns.; Telefunken 75K-15, 39½ gns.; Grundig TK1, 25 gns.; Stella ST454-Cossor 1602, 32 gns. Collaro latest Studio Decks, 10 gns. each. All fully guaranteed by us. Carriage paid England. N.R.S., 11 King's College Road, London, N.W.3. PRIMrose 3314.

PRE-RECORDED TAPES

Unique 40-page catalogue listing all makes, Mono, Stereo, 7½ and 3¼ ips. Send 2s. 6d., refundable on first tape record purchased. Dept. 6, Teletape Ltd., 33, Edgware Road, W.2. PAD 1942.

SERVICES

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

TAPE-TO-DISC

JOHN HASSELL RECORDINGS. Tape/Discs. All Speeds. CCR Studio, 21, Nassau Road, London, S.W.13. Rivrside 7150.

TAPE TO DISC RECORDING

Reduced prices. Finest professional quality. 10-in. L.P.—30s. (32 mins.), 12-in. LP—35s. (45 mins.). 7-in. EP 17s. 6d.

48-HOUR POSTAL SERVICE

S.a.e. for leaflet to Deroy Sound Service, 52, Hest Bank Lane, Hest Bank, Lancaster. Tel.: H.B. 2444.

FOR SALE

STEELMAN Transitate portable recorder, battery operated, almost new, £40. Box 424, *Tape Recording Fortnightly*, 1, Crane Court, Fleet Street, London, E.C.4.

TELEFUNKEN M24 KL. Studio tape recorder, new. Cost £212, accept £180. Smith, 89, High Street, Northfleet.

KORTING 4-track stereo, Boxed, Maker's Guarantee. £71 8s. 0d. New. £48 o.n.o. Clement Wain Ltd., Newcastle, Staffs., 64506.

SABAFON Automatic, Reversible, Maker's Guarantee. £82 19s. 0d. New. £59 o.n.o. Clement Wain Ltd., Newcastle, Staffs., 64506.

TAPE EXCHANGES

TAPE recorder owners who would like to make contact with others of similar interests to exchange news and views by tape are invited to send their name, address, sex, age and special hobby.

It will be assumed that all tape contacts will be made using a speed of 3¼ ips, on half-track tape. Maximum spool size only is given.

Clark, T. G. Cpl. (34) 23491263, H.Q. Company, 2nd Green Jackets, The King's Royal Rifle Corps, Wavell Barracks, B.F.P.O. 45. Interested in travel. 3¼ ips only. Message spools only. Contacts wanted in USA and Canada.

Daniels, Tony (17) 61 Darlington Road, Ferryhill, Co. Durham. Aviation, cars, and pop music. 7-inch spools. 7½, 3¼, 1½ ips. Contact anywhere.

Freeman, David "Seacroft," Chapel Porth, St. Agnes, Cornwall. Photography, motoring, melodious music. 7-inch spools. Contacts anywhere welcome.

Hadfield, D. A. (Male-27) 8 Barcombe Road, Heswall, Cheshire. French language. 7½ and 3¼ ips. 8½-inch spools. Contacts in France required.

Hourston, Stanley (19) "Roslin" High Street, Sanquhar, Dumfries-shire. Pop music, philately. 3¼ ips. 5½-inch spools, but message tapes preferred. Contacts anywhere, particularly female.

Howe, John W. P.O. Box 684, Detroit 31, Michigan, U.S.A. Tape exchanges in UK wanted. 3-inch reels.

Hunt, Alan R. (34) "Winton," Palmers Road, Wootton, Isle of Wight. Photography, colour transparencies and prints. 3-inch spools only. Would especially like to contact overseas enthusiasts, if possible Australia, but other countries most welcome.

Knight, Michael (16½) 220 Ringland Circle, Newport, Monmouthshire. Instrumental rock. 3¼ ips. 5-inch spools.

McCann, William (27) 7 Stebbing Street, London, W.11. Classical music (Russian composers). 3¼ ips. Prefers message spools.

Newton, Frederick R. (38) 74 Hill Road, Mitcham, Surrey. Classical music. Nature, country and sea. 7½ and 3¼ ips. 8½-inch spools. Male enthusiasts only please.

News from the Clubs

(Continued from page 31)

Between the various items, the members discussed the progress made by each club, and after hearing of the successful hospital tape service and message service in operation, the visitors, now almost six months in formation, decided to explore the possibilities in their own town and surrounding districts.

A year of consolidation rather than specific progress was reported by the president at the June 1 AGM of the RUGBY society.

Reviewing the past year, Mr. Banister spoke of the good relations being achieved with a great many of the city's other organisations and of the particular help being given to the sick and aged.

He described their success in joining the Rugby Twinning Committee (with Evereux in France), and outlined the hope that this would help them to become more actively concerned in the cultural life of the town.

Michael Brown, then reviewed the past twelve months as seen from his position as secretary. One of the great necessities of such a club he felt, was the need for an extensive practical programme. He also considered the club should have a technical group. In the following selection of officials, the present officers were re-elected.

The meeting had started with the presentation of a cake bearing three iced candles. This was presented by American member Nelson Woerner to mark the third birthday of the club.

Keeping up their role of "busy bees", members of the WALTHAMSTOW society once again recently channelled their activities to assisting at a charity event. Held at the beginning of June, the Midsummer Fayre, organised by the League of Friends, gave them ample opportunity to broadcast the existence of their club and gain some further practical experience.

They operated the public address system, and organised a "Spot the tune" competition—the latter activity being publicised by means of a Dormobile van which, festooned with loudspeakers, was driven around the area with a broadcast appeal being made for competitors. Having entered the contest, visitors were asked to name twelve tunes, and, to eliminate the possibility of a tie, to estimate the number of pips at the end of the competition. Business was very brisk, and the funds raised brought a happy response from the officials. Apparently the decorated Dormobile impressed a visiting Fete Organiser, and the club has since been invited to a similar event later this year.

Contact with other clubs is still a feature of the society, and at their July 7 meeting, the members heard two tapes received from other societies. The first came from the Keighley club, and was replied to later, and then members heard a documentary entitled *Waltham Abbey* received from the Ilford members.

Another competition has been arranged. This latest is to encourage the production of sound effects, and members are asked to compile a tape using any means available including superimposition, speeding up, or slowing down, in an attempt to simulate a certain effect.

Any sound effect may be chosen, and after they have been heard the productions will be described and a jury will decide the winner. Playback date was scheduled for August 4.

At one of their June meetings, the members decided to join the **Federation of British Tape Recording Clubs**.

Incidentally, we have received a request from Fred Gazeley, a committee

member of this national organisation who wrote on behalf of a German enthusiast. He is 23-year-old Gohannes Straubinger of Neutorstrasse 41, Schweinfurt, Main, Western Germany, who wishes to exchange tapes with an Englishman. Mr. Gazeley informs us that his contact wishes to hear about our way of life, and to improve his English. Any interested persons are invited to contact him direct.

CLUB MEETING DIARY

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

ABERDEEN: 1st Tuesday in every month at 8, Deer Road, Woodside.

ACTON: Alternate Fridays at the King's Head, Acton High Street, (Aug. 18.)

BARNSELY: Every Tuesday at YMCA, Eldon Street.

BATH: Alternate Wednesdays at St. Mary's Church Hall, Grove Street, (Aug. 9.)

BEDFORD: Final Tuesday in month at 131, London Road.

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

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

BIRMINGHAM (SOUTH): Alternate Mondays at Starchley Institute, Hazlewell Street, Starchley, (Aug. 14.)

BLACKBURN: 1st and 3rd Tuesdays at Blackburn YMCA.

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

BOURNEMOUTH: 2nd and 4th Tuesdays at the Civil Defence Centre, Holdenhurst Road, (No meetings until September)

BRIDGWATER: Every Tuesday at Evis' Radio Shop, West Street.

BRIGHTON: Every Wednesday at The Brunswick Arms, 38, Ditching Road.

BRISTOL: Alternate Wednesdays at Redcliffe Church Hall, Guinea Street, Redcliffe, (Aug. 9.)

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

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

CARDIFF: 1st and 3rd Tuesdays at 46, Caroline Street.

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

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate, (Aug. 14.)

COTSWOLD: Fortnightly, alternating Monday and Thursday at Bayhill Hall, Royal Well Lane, Cheltenham, (Aug. 10.)

COVENTRY: Alternate Wednesdays at Holyhead Hotel, Coventry, (Aug. 16.)

CRAWLEY: 1st and 3rd Mondays at Southgate Community Hut.

DARTFORD: Every Thursday at 41, Winsor Drive.

DONCASTER: Alternate Thursdays at Lancaster House, Westlaine Gate, (Aug. 17.)

DOVER: Alternate Mondays at The Priory Hotel, (Aug. 21.)

DUBLIN: 1st Monday at "Hardy House," 6, Capel Street.

DUNDEE: Alternate Mondays at The Salvation Army Hostel, 31, Ward Road, (Aug. 14.)

EASTBOURNE: Alternate Saturdays at Hartington Hall, Bolton Road, (Aug. 19.)

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

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

GRIMSBY: Alternate Tuesdays at the RAFA Club, Abbey Drive West, Abbey Road, (Aug. 15.)

HARROW: Alternate Thursdays at St. George's Hall, Pinner View, North Harrow, (Aug. 10.)

HINCKLEY: Alternate Wednesdays at The Wharf Inn, Coventry Road, (Aug. 16.)

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

HULL: Alternate Tuesdays at 281, Hessle Road, (Aug. 15.)

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

IPSWICH: Alternate Thursdays at the Art Gallery, High Street, (Aug. 17.)

JERSEY: 1st and 3rd Mondays at "Santa Barbaba" Maufant, St. Saviour.

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms, (Aug. 9.)

KETERING: 2nd and 4th Wednesdays at the Rising Sun, Silver Street.

LEEDS: Alternate Fridays at 21, Wade Lane, Leeds 1, (Aug. 18.)

LEICESTER: Alternate Fridays at the Newark Girls' School, Imperial Avenue, (Aug. 11.)

LONDON: 2nd and 4th Thursdays at the Abbey Community Centre, Marsham Street, S.W.1. (No meetings in August)

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

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

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

MIDDLESBROUGH: Every Wednesday and Friday at 130, Newport Road.

NORTHAMPTON: Tuesdays and Thursdays at 36, Spring Gardens.

NORTH LONDON: Alternate Wednesdays from 1st Wednesday in month, at Bush Hill Park School, Main Avenue, Enfield.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Heathcote Street, (Aug. 10.)

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

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

PLYMOUTH: Alternate Wednesdays at Virginia House, Plymouth, (Aug. 9.)

READING: Every Monday at Abbey Gateway.

REDDITCH: 4th Thursday at The White Hart Hotel, Headless Cross.

(Next meeting, September 28)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street, (Aug. 10.)

SHEERNESS: Alternate Fridays at 136, High Street, (Aug. 18.)

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

SOUTH DEVON: Alternate Wednesdays at the Y.M.C.A., Castle Circus, Torquay.

(Next meeting, September 13)

SOUTH-WEST LONDON: Every Wednesday at Mayfield School, West Hill, S.W.15.

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street, (Aug. 22.)

STEVENAGE: 1st and 3rd Tuesdays at the Tenants' Meeting Room, Marymead.

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

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

SWANSEA: Every Monday at 65, Wind Street.

URMSTON: Alternate Thursdays at Davyhulme Scout Hut, Barton Road, (Aug. 17.)

WAKEFIELD: Alternate Mondays at York Street Hotel, (Aug. 14.)

WALSALL: Every Wednesday at Bluecoats School, Springhill Road.

WALTHAMSTOW: Alternate Fridays at 22, Orford Road, E.17, (Aug. 18.)

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

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

(No meetings in August)

WEST HERTS: Fortnightly alternating at the Cookery Nook, High Street, Watford (Aug. 23) and Heath Park Hotel, Hemel Hempstead, (Aug. 9.)

WEST MIDDLESEX: 2nd Thursday at the Railway Hotel, Station Road, Hampton, and 4th Thursday at Southall Community Centre, Bridge Road, Southall.

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

WEYMOUTH: Alternate Wednesdays at The Waverley Hotel, Abbotbury Road, (Aug. 9.)

WINDSOR: Every Thursday at The Royal Adelaide Hotel.

WINCHESTER: Every Friday at 45a, St. Swithen's Street.

WOOLWICH: Alternate Mondays at the North Kent Tavern, Spray Street, Woolwich, (Aug. 14.)

YORK: Every Thursday at 2, Micklegate.

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

ATTENTION! ATTENTION!

Bargain Offer — While they last

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The latest patented compact design 89 gns. TAPE RECORDER at a fraction of its original cost—limited quantity only. Compare these ● special features with *any* machine on the market at *double* the price. COMPLETE WITH 1,200 ft. of Scotch Tape, crystal microphone, spare plugs, fuse, main lead, manual and circuit diagram—a high-class instrument in every respect.

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- Patented design for any size up to 7" spools—only one of its kind in Europe.
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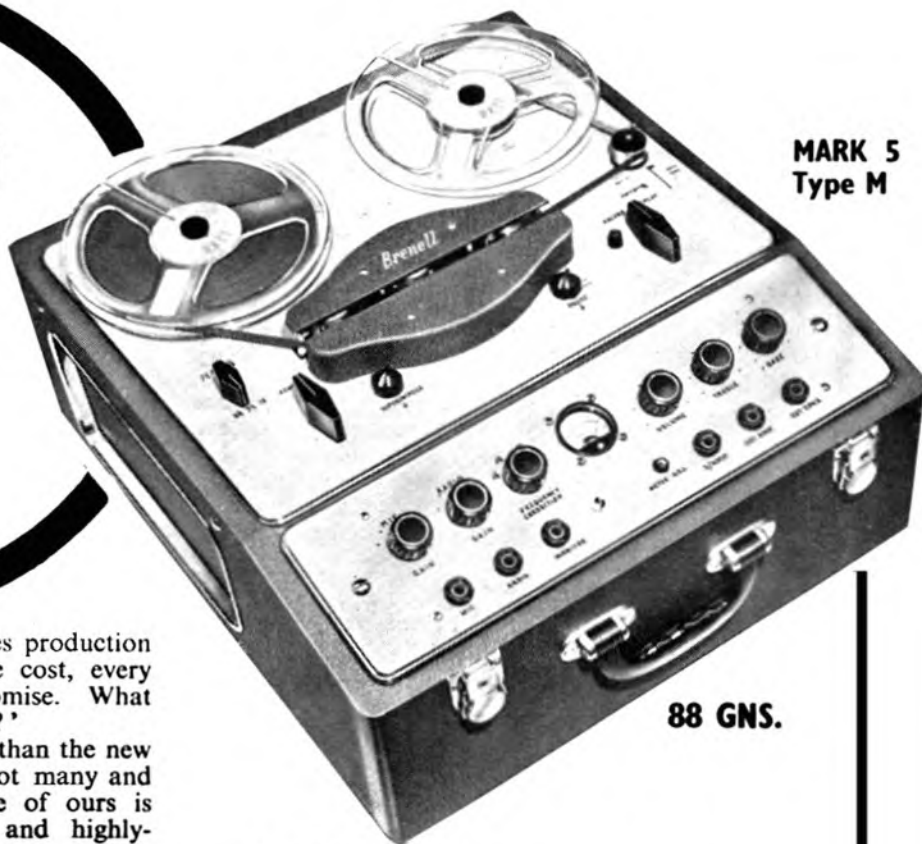
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MARK 5
Type M

88 GNS.

Facing the fact nothing in series production is made regardless of ultimate cost, every manufactured article is a compromise. What matters, is 'how much of one?'

There are better tape recorders than the new Brenell Mark 5 type M, but not many and not much. This new machine of ours is basically the well-established and highly-reputed Mark 5, but incorporates certain refinements and facilities which many an enthusiast will welcome. The fact that it is not a radical departure either in specification or functional styling, results from our policy of making a very good thing . . . and making it in such a way that by development even higher standards of performance and dependability may be offered.

88 gns. buys much more than the features listed. It buys integrity and craftsmanship in design, component manufacture and individual assembly. The kind of quality these represent is so very close to perfection, yet so comparatively inexpensive, that one would need more affluence than critical concern in order to fault it.

A demonstration will show 'the finest compromise in the world' to be a supportable and worthwhile claim. And if your demands or price inclination are more modest, the original Mark 5, at 64 gns, continues to be available.

Separate recording and replay heads and amplifiers. The replay amplifier may be used for tape monitoring during recording; the tape passes across the replay head a fraction of a second after recording.

Frequency response:

40—20,000c/s \pm 3dB at 15 ips
40—18,000c/s \pm 3dB at 7½ ips
40—13,000c/s \pm 3dB at 3¾ ips
40— 7,000c/s \pm 3dB at 1¾ ips

Amplifier reponse: 40—25,000c/s \pm 3dB

Superimposing and mixing facilities

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Adjustable rotary tape guide to ensure even tape winding and which reduces drag on rewind

3 INDEPENDENT MOTORS including the hysteresis synchronous main motor with a balanced outer rotor and heavy statically and dynamically balanced flywheel.

WOW AND FLUTTER: Below .05% at 15 ips
Below .1% at 7½ ips
Below .15% at 3¾ ips
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INTERNAL SPEAKER 9" x 5" elliptical

EXTRAS: Crystal microphone: £3 3s. 0d.

Ribbon microphone: £10 2s. 6d.

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MARK 5: 64Gns. MARK 5 STEREO: £99 12s. MARK 5 DECK: 28Gns. 3 STAR: 58Gns. (¼ track model available). 3 STAR STEREO: 89Gns. (additional ¼ track replay facilities available at £12 extra).

Send for leaflet T.R.G.1 to sole manufacturers: BRENELL ENGINEERING CO. LTD., 1a DOUGHTY STREET, LONDON, W.C.1. Chancery 5809. Holborn 7358.

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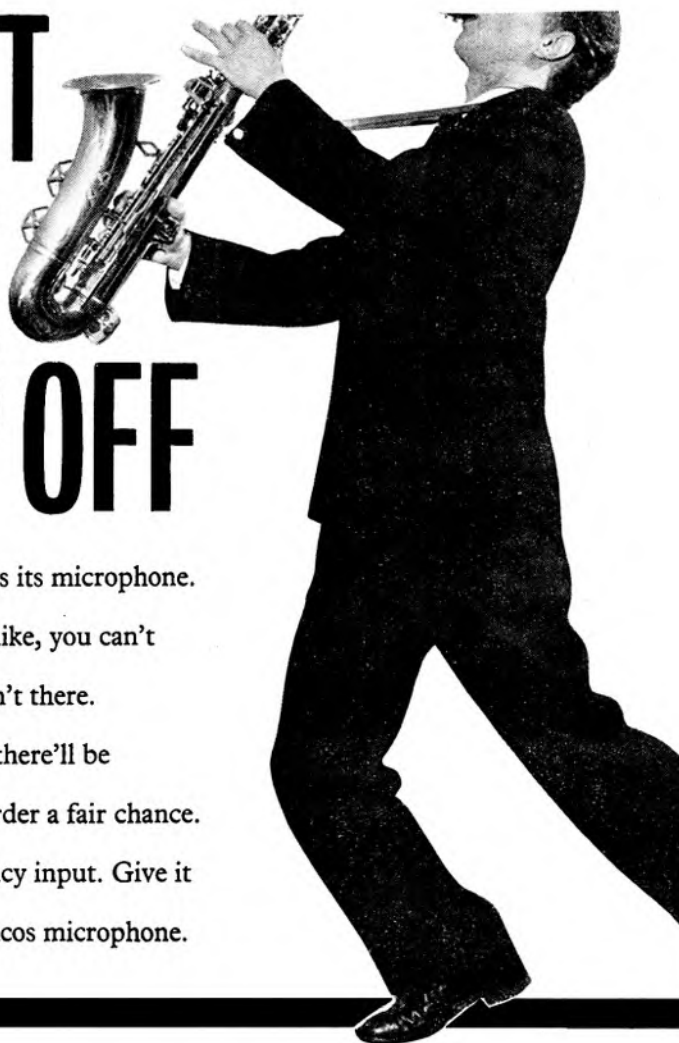
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WEDNESDAYS

1/6

DON'T CUT THE TOP OFF

A tape recorder is only as good as its microphone.
If you cut a top note off in the mike, you can't
blame the recorder if the note isn't there.
If there's distortion at the start, there'll be
a din in the end. Give your recorder a fair chance.
Give it a balanced, wide-frequency input. Give it
a good microphone. Give it an Acos microphone.



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MIC 39

A crystal hand microphone of exceptionally attractive appearance. Extended frequency response; noise-free cable and die-cast liner to minimise hum and ensure excellent signal-to-noise ratio. Available with table-stands and floor stand adaptor. U.K. Retail price 3 gns. Other Acos microphones include the famous fold-away MIC 40 (35/-) the MIC 28 Lapel Microphone (50/-) and a superb new stereo microphone (£6.0.0)

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★ Brilliant new microphone ★ Socket outlets for exciting range of accessories.

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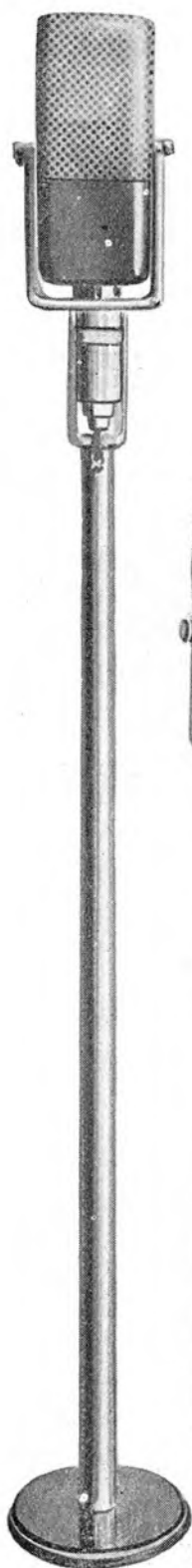
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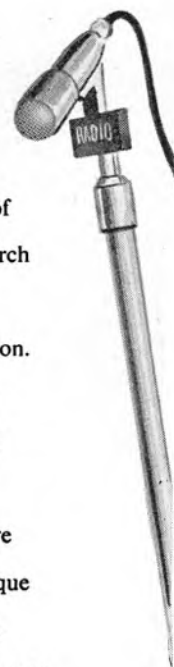
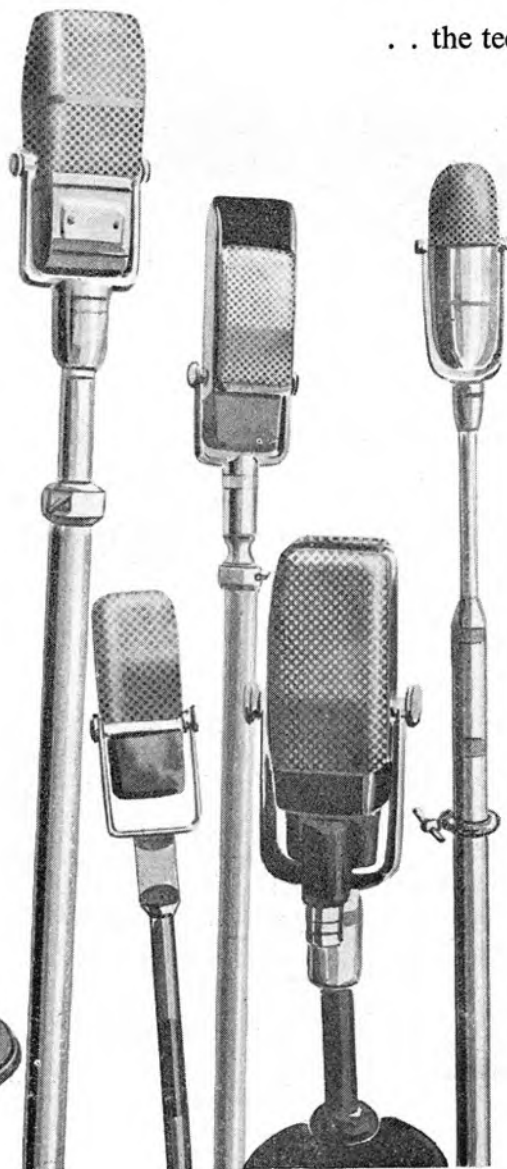
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TAPE

RECORDING
FORTNIGHTLY

Vol. 5 No. 17 23rd August, 1961

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

NO other fact about this year's British Amateur Tape Recording Contest was as important and significant as that the "Tape of the Year" was of 8 minutes 7 seconds duration—although entered in a section with a 15 minute limit.

A majority of the tapes the judges heard would have been vastly improved had they been much more severely edited.

The maximum durations given in the Contest rules are not intended to be a guide to the amount of time necessary to make an effective entry. They are simply what they are called—maxima. Too many entries sounded as if the competitors had "padded out" to reach the full time limit.

Terry Devereux's "Tape of the Year" was a well disciplined, terse piece of recording, using to the full the resources of his equipment, developing in a straightforward way a basically simple idea, never straining unduly for effect or seeking to be clever.

Its story was of a man knocked down in a street accident and taken to hospital; the natural process of the body fighting injury and infection are dramatised in military terms and the sound techniques employed are of a very high standard.

The Dundee Club, runners-up in the

Club Section, tackled something much more ambitious, did it well, yet did not produce so completely satisfactory a piece of recording.

It is to be hoped that the success of a Club in winning the Emitape Cup this year will play its part in stimulating a more intense and active club life throughout Britain.

Collective efforts

ANOTHER striking fact about the 1961 Contest was the considerable superiority of collective efforts over the one-man (or one-woman) productions. If the club section had not produced the overall winner, then certainly the school section would have done.

The entries from Pennington, Hants, and Thurmaston, Leicester, were both exceedingly good, and both dependent absolutely upon team-work.

Pennington scripted, acted and recorded a narrative account of Life in 1801, bringing in all 32 children in the class, capturing their enthusiasm and gusto, using sound effects intelligently, and achieving a very good overall recording quality.

But one of the greatest virtues of the

tape was that it told its story very interestingly and effectively, with illustrations of many aspects of life as it was lived: child labour and toll gates, stage coaches and duels, coffee houses and public hanging, press gangs and gin shops.

Thurmaston, the runners-up, were equally successful in using a large number of children to good effect. Their tape contained some beautiful singing and one item, "Children talking"—extracts from casual conversations between children—was some of the most effective recording, using all the unique potentialities of the medium, that one of the judges, at least, had ever heard.

The Compositions section—the most ambitious type of entry sought in the Contest—produced nothing of the quality of Mr. Norman Paul's last year's masterpiece, "The Rest is Silence."

The "PUM 31," declared the winner, is a very good tape, brilliantly scripted to convey humour of a peculiarly English character. Mr. Garrett and the three who assisted him with the production of the tape made the fullest possible use of their equipment.

First lady winner

IF the Compositions Section failed to show advance on last year, it can be said that the winning tape in the Music Section was probably the best that has ever been entered in this class. The music itself is an original composition and the composer's own band was responsible for the performance.

Mr. Pengelly did the recording. He had first-class equipment, and he produced a first-class job. This tape shows craftsmanship of a high order.

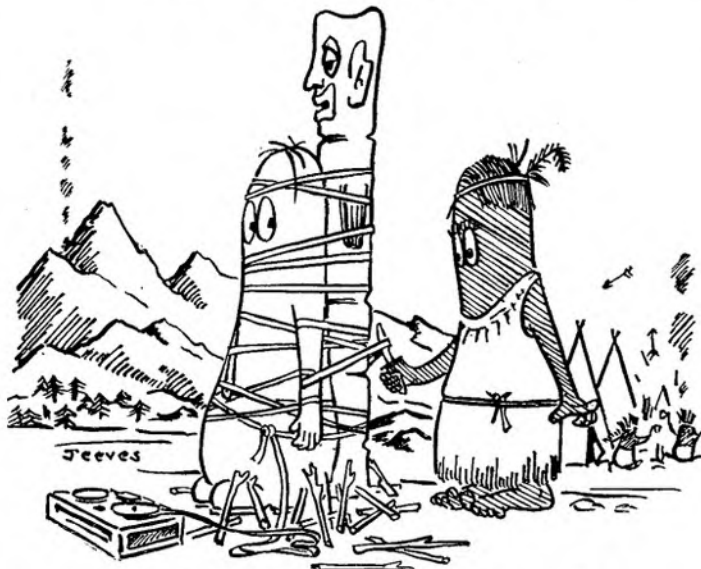
One of the most fascinating entries was Mr. D. Affleck's "Experiment in Reversed Speech." The title states exactly what it is: an exposition of the effects obtained by playing recorded words backwards. The conception was brilliant; Mr. Affleck did not, however, achieve the highest possible recording quality.

It is a delight to welcome the first woman winner to the Contest roll of honour. Miss Goodwin's "Blackbird with Chaffinch, in a Storm" is a charming cameo of recording, involving no great originality of idea, but recapturing an enchanting moment in the way that tape recording makes possible for the first time to individuals. This was one of the tapes, however, that would have been even better had it been shortened.

The 1961 British Contest was a good one in every way. It has not set sensationally high standards; that was not possible, for the Contest had already produced, in previous years, a few top-quality productions.

But it has consolidated the position, and today we have an impressive collection of tapes that demonstrate the full and exciting possibilities of what recording means to an enthusiastic amateur.

LAUGH WITH JEEVES



"For Pete's sake, don't cut it! They used my new pre-recorded stereophonic tape."

BRITISH AMATEUR TAPE RECORDING CONTEST 1961

Club entry wins "Tape of the Year" award

WINNERS AND PRIZES

FOR the first time since the British Amateur Tape Recording Contest was inaugurated in 1957, the "Tape of the Year" has been produced by a tape recording club.

An eight-minute composition called "Just by Accident," submitted by Mr. T. J. Devereux on behalf of the London Tape Recording Club, was placed first in the Clubs Section and then went on to win the supreme award.

It wins the Emitape Challenge Cup, the Amphlett Shield and the ten guineas cash prize awarded by this magazine.

Winners in other sections of the Contest are as follows:—

COMPOSITIONS—D. J. Garrett (with members of "The Mutleyphonic Workshop"), 186, Hunt Road, Tonbridge, Kent, with a 15-minute fantasy called "PUM 31."

DOCUMENTARIES AND REPORTAGE—R. A. Margoschis, of 14, Victoria Road, Manchester, near Atherstone, Warwickshire, who submitted a 10-minute recording, "The Battle of the Brook."

MUSIC OR SPEECH—Albert Pengelly, of 64, Union Street, Plymouth, with a recording entitled "Final Curtain."

ACTUALITY—Miss A. M. Goodwin, Tanlake Cottage, Buckland St. Mary, near Chard, Somerset, who entered a four-minute recording called "Blackbird with Chaffinch, in a Storm."

TECHNICAL EXPERIMENT—Denis B. Affleck, of 248, Park Road, Peterborough, Northants, whose tape contained "Experiments with Reversed Speech."

SCHOOLS—Pennington Junior Mixed School (Class 4a), Pennington, Lymington, Hants., for a tape describing "Life in 1801."

Pennington Junior School wins the Grundig Challenge Cup, but the runners-up in this section, Thurmaston

Junior School, Leicester, ran the winners so close that it has been decided to divide the cash prize; six guineas to Pennington and four guineas to Thurmaston.

The **Acos Cup** for the best entry in either Music/Speech or Compositions classes goes to D. J. Garrett.

The **Irish Trophy**, awarded for the first time this year, for the best entry in the documentary section, goes to Richard Margoschis.

The **Wyndors Gold Medal** for the best technical production is awarded to Albert Pengelly, for his winning tape in the music section.

Tape Recording Fortnightly ten guinea awards go to The Mutleyphonic Workshop, R. A. Margoschis, Albert Pengelly, Miss A. M. Goodwin, Denis B. Affleck and the London Tape Recording Club.

Apart from the very highly commended runner-up in the Schools section, three other tapes in the Contest were very highly commended by the judges and their entrants will receive special certificates.

They are:—

Robert H. Rendle, of 3, Sydall Crescent, Bramhall, Cheshire, for a documentary tape called "Jodrell Bank—Britain Leads the World";

Norman Paul, of 41, Woodland Rise, Muswell Hill, London, N.10 (last year's "Tape of the Year" winner), for a nine-minute dramatic piece, "Footsteps in the Dark" entered in the Composition section—one of the two stereo tapes entered this year.

Dundee Tape Recording Club, for a feature tape entitled "Sound Enquiry."

The entries were judged in a private session at the Hotel Russell, London, earlier this month by Jo Douglas, Timothy Eckersley, Assistant Head of Programme Planning (Recording) at the BBC, Stephen McCormack, Programme Controller of Anglia Television, Alan Stableford, Chairman of the Federation of British Tape Recording Clubs and Douglas Brown, Editor of *Tape Recording Fortnightly*.

Miss Mary Somerville, pioneer of BBC School Broadcasts in this country, was prevented by illness from being present.

Special winning entries' tape to be produced

The awards will be presented at a special party at the Cafe Royal, London, on Saturday, August 26, to which winners, judges and representatives of the industry will be invited.

Earlier the same day, Messrs. E.M.I. Sales and Service will be hosts to winners and judges at the annual Emitape Luncheon at the Savoy Hotel.

There will be no public playback of tapes this year. It is hoped that some extracts may be heard in the BBC Network Three programme "Sound" when it resumes in the autumn.

But plans are being made to issue a tape later this year containing the seven

winning tapes in their entirety, plus extracts from the judges' comments recorded at the time of the actual judging.

This tape will be in the form of a magazine programme about the British Amateur Tape Recording Contest, with linking narrative and many illustrations, and it will be invaluable to competitors in future contests, as well as of unique interest to those who have entered in this year's event.

Fuller details, including the price, will be published as soon as they are known.

From the seven winning tapes in the British Contest, the organisers will select

six for submission as the British entries in the tenth International Amateur Recording Contest (CIMES), which will be judged in Berlin in October.

Below we print detailed information about the winners and the equipment they used:

T. J. Devereux, of 26 Nevern Place, Earls Court, London, is aged 27 and has been recording for six years. He is an artist-illustrator, whose work has been published in *Tape Recording Fortnightly*, and whose hobbies are script writing and science fiction.

(Continued on page 34)

Using a tape recorder to add sound-track to film

THIS summer a record number of people will be using cine cameras—and tape recorders. If you have already linked the two activities I hope you may pick up a few tips from these articles; if you have *not* then I hope that my words will encourage you to “have a go.” It is not so very difficult, and the methods I propose to discuss are considered from the viewpoint of an amateur, for that is precisely what I am in respect of both filming and recording. The effort involved in this work—and don’t think that you can do it without some effort—is well repaid each time you see your film projected and, by means of your tape recorder, hear its sound track, whether it be simply background music, commentary or a combination of both.

METHODS OF SYNCHRONISATION

Neither filming nor recording can be called inexpensive hobbies, but the expense is what you make it. All enthusiasts put as much as they can into their hobby and, as a result, often find

difficulty in purchasing that extra bit of equipment which they require. You will have a cine camera, a projector and screen, and a tape recorder; now you may realise that you want that special little box of tricks which will link your projector and tape recorder to keep them in step, a process known as synchronisation (or just “sync.”).

An excellent review of the different units available for this purpose appeared in *Tape Recording Fortnightly*, on June 15, 1960. Of course, they all cost money. For a few shillings and a little ingenuity you can, if you desire, adopt the method I use.

This involves the use of a small disc, divided into a certain number of black and white segments. When it revolves at a certain constant speed and is illuminated by AC mains light (which has a 50 cycle-per-second flash) the segments, or spokes, become clearly visible, and apparently stand still. This is known as a stroboscope (or strobe); it need be no more than a small piece of card with the required number of spokes drawn on it. (See Fig. 1.)

In order to use the strobe successfully it is necessary to have one con-

stant. This can be provided either (a) on the projector, or (b) on the recorder.

(a) The strobe can be mounted on one of the drive sprockets of the projector and the constant can be provided by the illumination—the

50 cycle-per-second flash of the AC mains.

(b) This is the method I prefer and use. The strobe is mounted on the recorder and its speed is constant; it is illuminated by light from the beam of the projector reflected on to it by a small mirror. A small piece of thin glass is used as a mirror—I use a 2 x 2 in. cover glass—and can be mounted on an adjustable bracket fixed on the front of the projector blimp. It reflects ample light for the purpose and yet does not interfere perceptibly with the light falling on the screen. (See Fig. 2.)

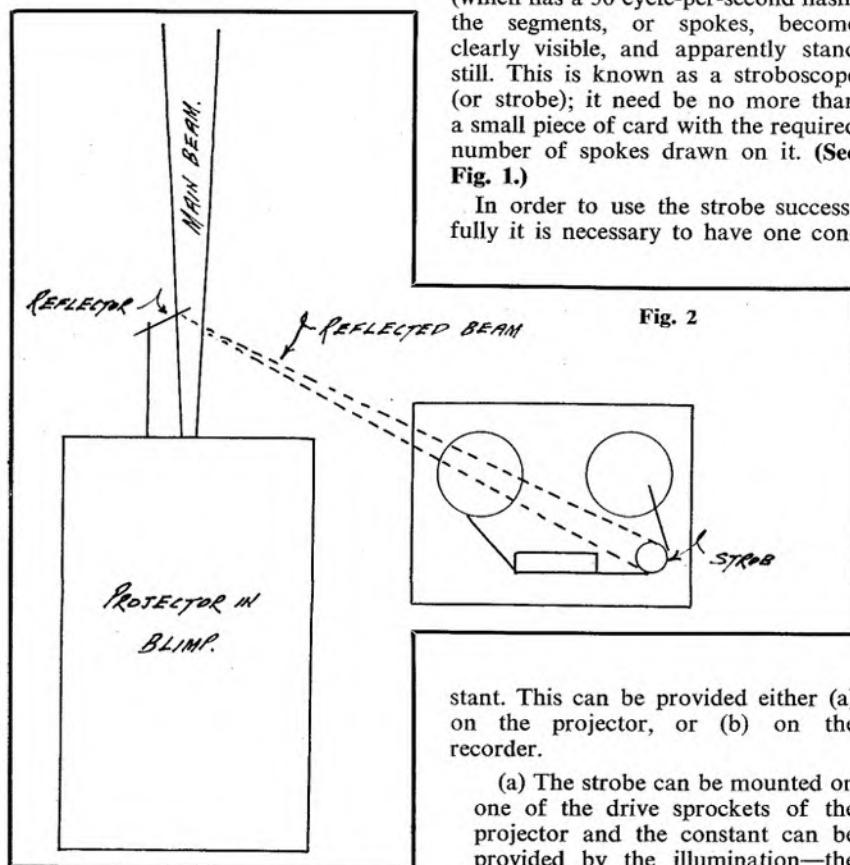
There are two ways of mounting the strobe on the deck of the recorder. In some cases (the Brenell Mark V is one) it is possible after removal of the head cover, to mount it directly on the capstan. It can be fixed to a short spindle made to be a push-fit into the hole in the centre of the capstan. It can then be removed when not required.

Where this is not practicable, a separate capstan can be mounted on a small bracket. This is then fitted on the deck, so that the tape can run around it at a point between the drive capstan and take-up spool. (See Fig. 3.) Such a capstan should be made of a material over which the tape will not slip—wood is very suitable. This latter method has the advantage that, by transferring the whole unit, the same strobe may be used on more than one deck. This is not the case where capstans of varying sizes are employed, as the different rpm will require a different number of segments on the strobe.

THE NUMBER OF SPOKES

The number of spokes on the strobe depends upon the frequency at which the light is flashing, and the number of revolutions per minute (rpm) at which the strobe is revolving. It is given by the formula:—

$$\text{Number of black spokes} = \frac{\text{Frequency per sec.} \times 120}{\text{r.p.m.}}$$



In the case of the projector-mounted strobe, the frequency per second will be 50 (that of the mains electricity), and the rpm is determined by the sprocket driving the film. It is possible to determine the speed of the sprocket simply by counting the number of revolutions it does in a given time, but to do this you must be certain that the projector is running at exactly 16 frames per second. This can be checked by using a measured loop of film, as described later, but a more certain way is to use the formula:—

$$\text{Sprocket r.p.m.} = \frac{960}{\text{Number of teeth on sprocket}}$$

Number of teeth on sprocket

If you decide, as I suggest you should, to mount the strobe on the deck, then the position is reversed, for the rpm is the constant and the frequency of the light is the variable.

After drawing out your strobe you should check it in practice. First make up a loop of black leader film of *exactly* eighty frames and scratch a cross on one frame only. Run this through the projector, which should be at normal running temperature, and adjust the speed until the cross on the film flashes on the screen exactly every five seconds; your machine will then be running at the required 16 frames per second. Now adjust the reflector on the front of your projector to throw a beam of light on to the strobe turning on the deck. Theoretically, and if your calculations are correct, as the light from the beam hits the strobe it should suddenly appear to stand still, with the spokes clearly defined.

If the strobe appears to be turning clockwise it contains too many spokes; if it appears to be turning anti-clock-

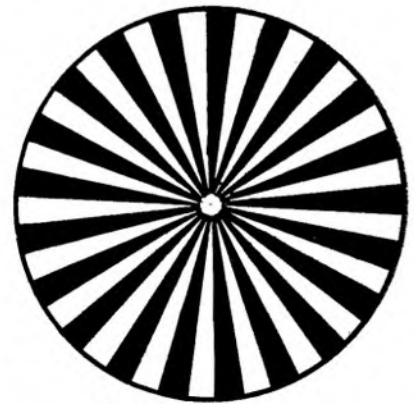


Fig. 1. A strobeoscope

The main advantage of this method of synchronisation is its cheapness, but it also has the advantage of providing adjustment between the film and track. This can cover any slight error in the original synchronisation and any tape stretch which may occur. In addition, the two machines may be placed at different levels and some distance apart, according to the circumstances under which you are projecting, for there is no mechanical link.

An objection often raised is that it is necessary to have one hand on the projector control continuously. I find this is not strictly true; when my machines are properly warmed up I have been able to leave a half-hour film to run its entire length with hardly a touch of the control.

A word of warning: do not expect to obtain "lip sync." I think this is virtually impossible with this method, and I suspect that it must be extremely difficult, even with a mechanical link.

In my next article, I shall turn my attention to the film.

A NEW TAPE AND CINE SERIES

By

RICHARD A. MARGOSCHIS

To take rpm first, whether the strobe is mounted on the ordinary tape capstan or on an individual one, it can be obtained simply by counting the revolutions per minute (probably preferable in this case), or by the formula:—

$$\text{r.p.m.} = \frac{t \times 60}{\pi \times d} \quad \text{where:}$$

t = tape speed in inches per second.
 d = diameter of capstan in inches.
 $\pi = 3.1416$

The frequency at which the light flashes depends upon the speed of the projector and the number of blades on the shutter of the projector. We know that the speed of the projector must be constant at 16 frames per second, and it is not difficult to count the blades on the shutter (it is situated just in front of the lamp) by turning the machines by hand. This shutter will revolve once for every frame projected; the frequency per second at which the projector beam flashes, therefore, is 16 times the number of blades on the shutter.

By using the above-mentioned formula you can now find the number of spokes required on your strobe. If it does not work out to an exact figure, take the nearest whole number.

wise, it has too few. If such is the case, use trial and error methods to determine the correct number of spokes. Having done this, it is a good idea, if you can, to draw out your strobe to large scale and photograph it. The resulting print, made to the required size (about 2 in. diameter) will be much clearer than a small-scale drawing.

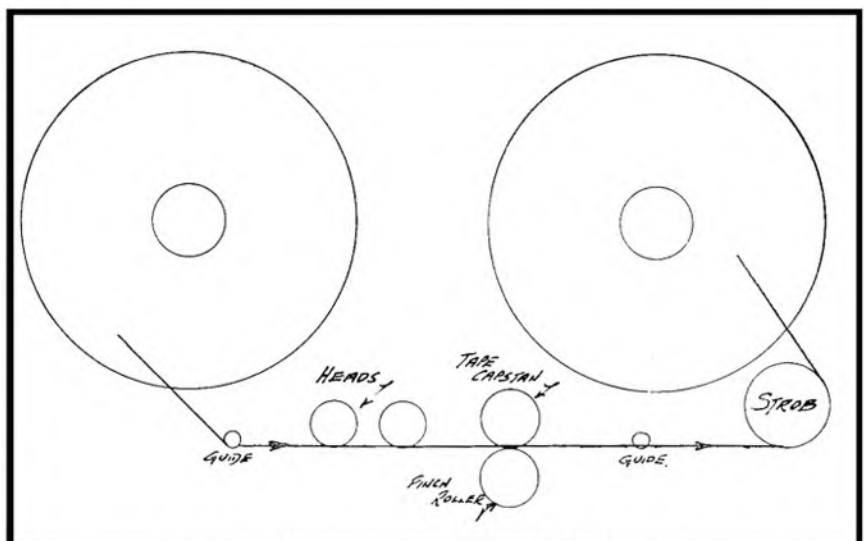


Fig. 3. Fitting a separate capstan to hold the strobe

SCHOOL TAPE CLUB

3. Lancastrian County Secondary (Chichester, Sussex)

The aim of this new series is to encourage schools interested in tape recording to form their own clubs through reading accounts of existing ones. Please let us know what you are doing.

"STAND by to record! Ten . . . nine . . . eight . . ." George Eld watches the second hand of his watch. Simon Frost stands ready to switch on the tape recorder. Raymond Oliver holds the gram arm poised over a phrase of music. Outside the studio booth the announcer sits at a table on which stands "mic. 2." Grouped around "mic. 1," the boom microphone, stand the actors, holding scripts which have now ceased to rustle.

All eyes watch the red cue light.

"Three . . . two . . . one . . ." Inside the booth George Eld fades in the music on the mixer, times it to the second, and fades it out again. Outside a second light . . . "The L.B.C. presents 'Magazine Programme' the third in the current series. In this programme you will hear . . ."

This is a typical scene in a local broadcasting station. However, it does not belong to the BBC. Indeed its members claim that it was putting out local broadcasts before the idea of local stations was proposed. For six years it has been serving the boys of the Lancastrian County Secondary School, Chichester, Sussex.

The Lancastrian Broadcasting Club was founded by Kenneth Methold, author of *Broadcasting with Children*, and is now a tradition at the school. On alternate Friday mornings, following the BBC's "Service for Schools," 700 boys expect to hear their own station broadcast, and are disappointed if examinations or other school business prevent them from doing so.

Since its inception some sixty boys have passed through the club, most of whom joined in the second year and stayed for three or four years. Two of the ex-members are training to become teachers and will eventually be running tape recording clubs of their own; others have joined the services as radio technicians; all have taken away with them a love of tape recording.

For the past four years the club has been run by Mr. Paul Groves, an ex-actor who trained at the Royal Academy of Dramatic Art. Having wide theatrical experience he has been able to help the boys put, what he calls, a "professional gloss" on their recordings. Under him they have learned such things as, expression, inflection, lengths of fades, and other technicalities which bridge the gap between the amateur, and the good amateur, broadcaster.

Broadcasts were originally recorded in a classroom, but it was found that by moving to the school stage a better quality recording could be obtained. A studio booth consisting of a timber framework with hardboard walls and a large glass panel was prefabricated and set up in the "wings" of the stage. This booth can be easily dismantled if required. It was found that by altering the position of the curtains, different backgrounds could be obtained for plays set indoors or outdoors.

At present the equipment, bought from the capitation allowance and profits from the school tuck-shop, consists of a Ferrograph tape recorder; a four-channel mixer; two Acos crystal mikes; gram; monitor speaker; four screened leads; a 12 ft. microphone extension lead; three sockets wired for microphones; cue lights; twenty assorted sound effects discs; and various manual sound effect devices, e.g., door knocker, bells.

The original design for the studio layout was by Mr. G. Wiggins and is described in *Broadcasting with Children*. Mr. D. Hammond has acted as technical adviser for the past two years. Before entering teaching he worked in the research laboratory of Mullard Ltd., and the Radar Section of the R.A.F. He holds the Amateur Radio Licence. Under him



"Waiting for the cue." A disc sound effect is being used, with George Eld, Mr. Paul Groves and Raymond Oliver in the cubicle

some of the boys have learned to do minor repairs to the equipment.

The club has a nucleus of sixteen boys who are divided as follows:—

Technicians: George Eld, Simon Frost and Raymond Oliver.

Actors: Paul Fraser, Keith Gompertz, Richard Hall, William Jutton, David Longlands, Christopher Morgan, Geoffrey Patterson, Trevor Roman, Michael Ross, Andrew Smith, Christopher Vidler, Peter Westgate, and Peter Woolgar.

Manual sound effects are shared by the actors—it's more fun that way—and other boys are called in for particular recordings. For instance, a skiffle group was co-opted to provide the background music for a play about John Brown, the American slave abolitionist, and to play a calypso in a magazine programme. Members of the school orchestra are sometimes called in for special effects, and volunteers are never lacking for crowd scenes. All recording is done out of school hours on Thursday evenings.

The most popular programmes are adventure plays, whether original, or adapted from books. Plays adapted from books in the school library are very popular. After this comes the magazine programme, which might consist of a good composition or story, selected letters written by classes on various given subjects, a musical item, and recorded sounds-to-be-guessed.

The least popular, but nevertheless listened-to, are the serious programmes such as biographies or religious plays. Sometimes Mr. Groves, in his English lessons, requests boys who are good writers to write a script on a particular theme. Script writing is encouraged among the members. Those who have two scripts accepted do not pay the 2s.6d. termly subscription.

The club looks back on its past six years internal broadcasting with pride. It has also gone beyond the bounds of its own school and exchanged tapes with Italy, America and Ghana.



Above, children of the Waterloo Junior School prepare a tape for a Commonwealth Exchange (see "Lazy boy" story opposite). Left to right are Andrew Tolson (producer), John Oxtoby (compere), Jill Brotton (commere), and John Robinson (recording engineer)

TAPE IN THE SCHOOLS

GEOFFREY HODSON

edits the latest news
— and comments

Audio-Visual conference described as "best ever"

BETWEEN 600 and 700 educationists attended this year's Annual Conference organised by the National Committee for Audio-Visual Aids in Education and the Education Foundation for Visual Aids. By general consent it was the best ever.

In his report on a satisfactory year's work Dr. J. A. Harrison, Director of the National Committee and Education Foundation, laid particular emphasis on the information work done by the national organisation through Conferences, Courses, and publications. This information work would be aided by the investigation into research on visual methods throughout Europe currently being carried out by the National Committee on behalf of the U.S. Department of Education.

NEW AIDS CENTRE

The results of this investigation would also help to guide activities at the new National Audio-Visual Aids Centre which is to be operated by the national organisation.

Considerable interest was aroused by the session on "New Approaches to Language Teaching." A description of the use of the Tavor Aids system of French teaching (a series of filmstrips linked very closely to tape recordings) was presented with great humour by S. R. Ingram, who wrote on the subject in the July 12 issue of *Tape Recording Fortnightly*.

His talk was followed by an account of the use of the first permanent Language Laboratory in this country recently installed at the Ealing Technical College. This laboratory was designed and installed by the E.F.V.A. and uses Ferrograph tape recorders

QUOTATION OF THE MONTH

"Twill be recorded for a precedent
*Portia, "Merchant of Venice," Act
IV.1.218, Shakespeare*

throughout. A fuller description will be given in the September 6 issue of this, and other similar installations.

The promised discussion on the use of the tape recorder in education did not materialise. After a lengthy session immediately before this item, delegates found the digestive resources of their minds and stomachs in inverse ratio to each other.

A number of tape recorder manufacturers were represented at the conference, among them such names as Brenell, Clarke & Smith, Ferrograph, and Specto.

Lazy boy starts tape exchange programme

A LAZY boy's suggestion gave a Yorkshire head teacher an idea which has led to the Waterloo Junior School at Pudsey winning connections with schools in many parts of the Commonwealth.

The head, Mr. Gordon Pemberton, had children at his previous school writing letters to schools in Canada, the West Indies, Australia and New Zealand as part of a geography lesson. Eventually, one boy, who didn't like writing, suggested it would be easier to record the questions on tape.

"This apparently lazy idea set me thinking," said Mr. Pemberton. "I developed the basic idea and saw that it was full of educational possibilities."

Mr. Pemberton took his scheme with him when he moved to his present school; the children leapt at the idea. The tapes include local descriptions written and read by the children, music by the

recorder group, poetry readings, samples of Yorkshire dialect, and singing by the school's four choirs.

Each year the school celebrates Commonwealth Day with an evening concert of singing, verse-speaking and country dancing in the local Town Hall. Part of the proceedings includes the rendering of their "Commonwealth Song", written and composed by Mr. Pemberton.

The Central Office of Information heard about this, and recorded the fourth year choir singing it. The C.O.I. also interviewed several children and the headmaster about their tape activities, and now copies are being distributed throughout the Commonwealth.

The Yorkshire children have also recently completed a tape which the Commonwealth Friendship Movement is offering to the Uganda Schools Broadcasting Service.

"The whole object of the exchange is for our children to gain knowledge of other Commonwealth countries while giving information on their own hometowns," explains Mr. Pemberton.

DID you remember to erase those BBC Schools broadcasts at the end of last term? If you didn't, I hope your conscience isn't too troubled as you laze on the beach, or strike off the umpteenth item from the wife's list of holiday jobs. No names, of course, but I have heard of a man who has stored two or three hundred of these programmes. Needless to say, he started some time before the relaxation of rules was introduced earlier this year.

What's the point anyway? Teachers are quite unanimous in their answers—the sheer convenience of being able to play back the programmes when they like, and the important second point of allowing the class to hear the programme (or parts of it) two or three times.

But while we are grateful to the BBC for fighting our case for us—and winning—we must remember that ultimately we would like permanent access to these programmes. Training Colleges have had this for some years in that they have been able to borrow gramophone recordings of selected programmes. In some cases too, they can borrow examples of children's follow-up work and tape recordings of their reactions.

THERE are many good copyright reasons why this cannot be extended to schools, but having established the principle that copy recordings may be made for use over one term only, perhaps the way has been cleared for future extensions.

Not that the present term's grace is apparently as straightforward as it seems, however. A solicitor was telling me the other day that the copyright in a commercial gramophone recording used in a BBC Schools broadcast may belong to the gramophone company and may not be included in the details printed in the "Radio Times." It seems we still have to keep our fingers crossed.

IN some of the larger schools the actual act of recording a radio programme is presenting problems—particularly when the radio receiver is locked in a room far away from the teaching rooms. Automatic time switches seem to be an answer, provided that they also disconnect the loudspeakers, too. We could do with some more information on this subject. A sharing of experiences would be most helpful.

A final point occurs to me. On the whole, I am not sold on the four-track machine in the classroom, except for storing archive material. School programmes obviously come under that heading, provided that your index system is reliable and accurate. How's your rev. counter these days?

I DON'T have to search through the pages of my diary to find the most outstanding event, for I've been thinking of little else for weeks. Holidays. I'm one of those lucky people—I've yet to have mine. For a long while it seemed to be in the far distant future, and our much-talked over plans had no need for any immediate action. Now I'm stunned by the thought that we shall be on our way in less than a week and the time has come to turn our day-dreams into reality.

We're going up into the wild remoteness of the Scottish Highlands, a journey which to my romantic mind conjures up all manner of exciting prospects. Who could hear the tale of Glen Coe and remain unmoved? What of Macbeth and the spine-chilling incantations of the witches. The very name of Skye breathes the stuff of romance.

Two problems worry me. Firstly, shall we ever get there, and secondly if we arrive shall we be capable of



My Diary

capturing at least something of the real spirit of the Highlands on tape? I want to record conversations with the local people, with farmers and crofters, with fishermen and weavers; I want to record the sound of the sea and the gulls, the wind screaming through the pines and the whisper of the burn as it bubbles towards the loch. Perhaps even the near-human cry of the young seal or the call of the deer. Shall we find anyone to sing folk songs for us in their native Gaelic? What prospects, what excitement!

A glance at the map left me wondering how there could be so few roads and so few habitations in such a vast expanse of country. Roads we must have because we're travelling by car; towns we shall shun like the very

devil as we're planning to camp at night in the wilderness. My doubts as to the probability of our arrival are almost certainly unfounded, but I'm afraid that Susie, our little Morris Mini-van is going to be strained to her well-oiled limits. The poor old gal has to transport five of us, and our eldest son is as big and as heavy as his father. But she also has to be loaded with a mountain of camping gear.

Luckily the recording equipment will be featherweight by comparison; a couple of Fi-cords with spare batteries, tapes and microphones. I think we'll take a single folding microphone stand and extension cable as well as a ribbon microphone just in case we are able to record any vocal or musical performances indoors. Two cameras with all their accompanying paraphernalia and a good pair of field glasses will complete the technical side of our expedition. I nearly forgot a most important item—my typewriter!

Seventeen times around the earth in twenty-five hours. That's the startling achievement of Major Gherman Stepanovitch Titov the Russian cosmonaut. With Jennifer on a five-month voyage to Australia it seems that journeys are in the fashion and our own fortnight in Scotland could appear by comparison to be no more than a sedate family holiday in the best suburban tradition. I can envy Jennifer and I can acknowledge the magnitude of the Russian success, but neither can turn my mind from the road to the isles and all that we hope to find at its end.

A NEW YEAR RESOLUTION?

NO, I haven't got my dates muddled. I know quite well that this is *not* the accepted time of the year to be making Resolutions with a capital "R." To do the job properly they should be made around January the first—and broken definitely not later than January the second!

Why not, then, be different and make your resolutions in September and see if you can hang on to them at least until January? If you should succeed they'll by then almost have become habit and you'll be in real danger of finding yourself stuck with them.

This isn't so silly as it sounds. Our recording year runs naturally from September on for twelve months, giving

three full seasons beginning with the autumn.

Think of all those things you were going to do during the summer—and didn't. Now is the time to resolve to do them during the autumn. The evenings will begin to draw in, so this is the time to plan your winter activities. How about the tape club that you were going to join but never quite got around to? September is the time to join when all the members will be back from their holidays and discussing future events.

If you want new equipment, now is the time to buy. You're more likely to get a bargain at this time of the year than later. Don't forget the Christmas shopping season starts as early as October! I can think of dozens of New Year Resolutions to make, and every one of them stands a much better chance of successful survival for being made on my own private New Year's Day, September 1st.

How about it?

CHILDREN'S CORNER

HELLO children! Are you on holiday from school? I expect you are. I wonder if you know what to do with yourselves during the long summer weeks, or do you worry your Mother with, "I've got nothing to do . . .!"

I met a boy the other day who'd just arrived back from a trip to the moon! Does that surprise you? Well, it nearly could be true, couldn't it? But this wasn't quite such a fib as it sounds because John, that's his name, had recorded all the sounds

that might have been heard if he really had travelled through the sky in a space-ship.

When he played his tape to me I heard the clang of the air-tight doors shutting and the burr-r-r of the electric motors inside the ship. As he gave commands to his crew I could hear the sounds of levers being pulled and the clicking of dials as they were turned. He even managed to get the effect of a voice from Earth speaking on the radio. I expect it all took him a very long time to do.

There was a knock on my front door a few moments ago and a very, very small boy asked if I could go

up on the common where the fairies are! Why not? And if there are earth fairies on the common why not moon fairies on the moon? Recording things like space-ships could be rather difficult to do, but I think if you tried you might find fairies much easier.

If you thought about it very hard you might decide that if you really were on the moon you might come across one or two creatures who are not quite so pleasant as the friendly moon fairies! Before you know it you'll be making an adventure tape of your very own, and I'm sure you'll have lots of fun doing it!

Make way for the

LADIES

Personality of
the month—7

A new regular
monthly feature

Edited by
Vivienne Gooding

JENNIFER

THERE'S something very fascinating about taking a peep into other people's lives; is it because the grass on the other side of the mountain is always the greenest? I first mentioned Jennifer to you a few weeks ago and since then I've been trying to persuade her to talk to me for a "Personality of the Month" feature because I felt sure she had an interesting story to tell.

Jennifer is a very quiet, finely-spoken young lady who up to now has spent a great deal of her life travelling. Born in this country she went to Canada when very young. Perhaps this very first journey at an impressionable age was responsible for awakening in her the divine discontent of the inveterate globe-trotter. At all events she turned up a few years later in Australia then slipped back to England for a while, fitting in a couple of transatlantic voyages on the quiet and finally stepping ashore at Southampton last December. I found the exact sequence of trips rather confusing, but not half as confusing as my reception at her home in Barnes.

The front door was open, a stream of people coming and going. From inside the house issued a babel of French, German and Italian voices. For a moment, bewildered by the activity around me, I wondered if I had arrived at the right address when to my relief Jennifer's quiet and unmistakably English voice filtered through the din.

"I'm so sorry about all these people, but they're actually just leaving. Do come in!"

As we made our way upstairs she explained.

"We have a friend here who's brought along a German boy; he seems to have found himself some Italians and the only common language amongst the whole crowd appears to be French which is a pity because I'm not very good at it. Anyway, don't worry because they're all of them leaving tonight for Spain. Do sit down and let me take your coat."

I found myself in a large, comfortably furnished lounge on the first floor. A pair of massive speakers were correctly positioned at the far end of the room and between them stood the most costly array of privately owned equipment I've seen for many a long day. The Telefunken M24 is a machine I've dreamed of, Jennifer actually owns one. I didn't recognise the next machine at first glance, but that was hardly surprising when closer examination showed it to be an Ampex. I've not even dared to dream of equipment on that exalted level!

Ingenuously the Ampex deck had been fitted into a dinner wagon together with a Leak stereo control unit. The main amplifier stood on the lower shelf of the wagon. Jennifer deftly whipped out a number of plugs and showed me how the whole outfit could be wheeled about to any position.

"This," I exclaimed, "is wonderful! But where does the gramophone fit in?"

Over in the corner of the room stood an ancient, clockwork portable, its winding handle in position all ready to go. Jennifer laughed.

"As a musician I'm terribly particular about every aspect of sound quality, which is why I buy the best equipment I can afford. But when I really want to relax I put on an old 78 on the gramophone and really enjoy the absolutely beastly noise that comes out. Even its speed is hopelessly wrong but it doesn't matter. I can recommend it as an antidote for the hi-fi blues!"



Perhaps my fi isn't quite as hi as Jennifer's that I need such drastic treatment, for I was impatient only to hear what results she could get from this glittering array of recorders. Sensing my curiosity she put a tape on the Ampex and we sat back to listen.

My own equipment is all monaural and I've tended to treat the stereo fans with more condescension than understanding. But now I was listening to full-blooded stereo of such soul-searing brilliance that it left me quite breathless. I'm converted and convinced!

When I could tear myself away from this superb reproduction Jennifer began to tell me about herself and of her travels. She told me how she had studied music in Australia and now composes in her spare time. At present she's working on a study for the flute.

Her interest in tape recording has been stimulated by an intense desire to explore the fields of electronic music and *musique concrete*. Already she has started painstakingly putting together the beginnings of her ideas, and she showed me one short length of tape with more than a hundred splices in it.

But other things were on Jennifer's mind that evening and it wasn't very long before another story came tumbling out.

She began almost apologetically.

"I'm so glad you could come along now because it might have been too late in a few week's time. You see we've just been offered a passage for Sydney as working passengers aboard a three-masted schooner and we've got to make up our minds now because she sails before the end of the month."

I gestured towards all the recording equipment.

"But what about all this? And what about your work?"

"Oh, that's easy. If we go I shall take the lot and one of my two pianos as well. This ship has a sixty-foot saloon and we're told we can take up to ten tons of luggage if we want to . . ."

Jennifer went on to explain how her husband had answered an advertisement in a newspaper and following an interview with the owner they had been offered the chance to join what I'm quite sure is going to be a simply wonderful trip. The journey is expected to take anything from three to five months and most of the time they hope to be under sail. Aboard will be eleven men and four women. They plan to make an easy start under "steam" (diesel) to give the novice sailors a chance to literally "learn the ropes." Jennifer's main concern at the moment is to check on the power supply on board because she has great hopes of using her equipment on the way.

"I shall compose in any case," she added. "I'm so excited and thrilled when I think of all the possibilities—in fact I dare not think too much in case any last-minute snags prevent us from going."

What a story that will be when she finally arrives in Sydney, and what an adventure she will have had.

WHY NOT?

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publication, return the form on page 32

TELEVISION PICTURES ON STANDARD TAPE PART 1

A REASONABLE PICTURE CAN ALSO BE CONVEYED VIA THE TELEPHONE OVER A CONSIDERABLE DISTANCE

THE equipment outlined in this series of articles will cover the more modest requirements of the amateur enthusiast who is anxious to record visual images on magnetic tape. There are, of course, further interesting experiments that can be carried out, the most obvious of these being transmission of these images over radio paths.

The common domestic telephone line should, however, not be overlooked and preliminary experiments have shown quite a reasonable picture can be conveyed via the telephone line over a considerable distance. No direct access is required to the wires, of course, as reasonable results can be obtained by placing the handset microphone near the loudspeaker of the recorder which is "playing" the picture back. Conversely, at the other end the ear piece is placed near the receiving tape recorder microphone.

At the present time no experiments have been conducted using the inductive pickoff which rests at the rear of the telephone and feeds directly into the tape recorder. The use of the latter system would, of course, provide far superior results as diaphragm resonance in the receiver handset is avoided.

Experimenters keen in pursuing the subject more fully are recommended to consult a little booklet published by the British Amateur Television Club entitled "Slow Scan Television" by the author. This is available from the Club Secretary, Mr. D. S. Reid, M.A., 21, Silverdale, Sydenham, London, S.E.23.

In addition to the information outlined in this series of articles, the booklet contains details which will enable the interested amateur or experimenter to construct a slow scan pattern generator and a de luxe monitor or reader which is able to receive either AM or FM picture information.

WHILST the prime object of this short series of articles is to provide keen tape recording amateurs with a means of building their own equipment for recording images on domestic tape it will be necessary, at the outset, to deal with the mechanism of producing images, and it is to this end that Part I is devoted.

Early experiments to be described in this article are considered the starting point to the programme of image recording. This approach will allow the experimenter to get the "feel" of slow scan and enable his first efforts to bear the maximum fruit with the minimum of outlay.

Such a closed circuit equipment was illustrated in the December 14, 1960 issue of this magazine.

It can be seen that the scanner and rack monitor employ identical cathode ray tubes. Identical circuitry is also employed. The use of a P7 double lay phosphor screen for scanning may be somewhat confusing; however, the photo electric multiplier tube 931A has a maximum spectral response at 4500a° which is very sharply discriminating in favour of the flash, and not the afterglow, of the 5FP7. For readout the tables are turned, and the flash is suppressed by means of an orange/yellow filter made of "Cinemoid," a pigmented sheet gelatin filter commonly used in theatrical lighting.

Two scanning optical schemes may be employed, the simple and most common being the scanning of photographic slides or negatives by transmission of the focused scanning raster through the variable density translucency. A simplified approach to this is, of course, the placing of a photographic negative or slide directly over the face of the scanning tube. Due to considerable colli-

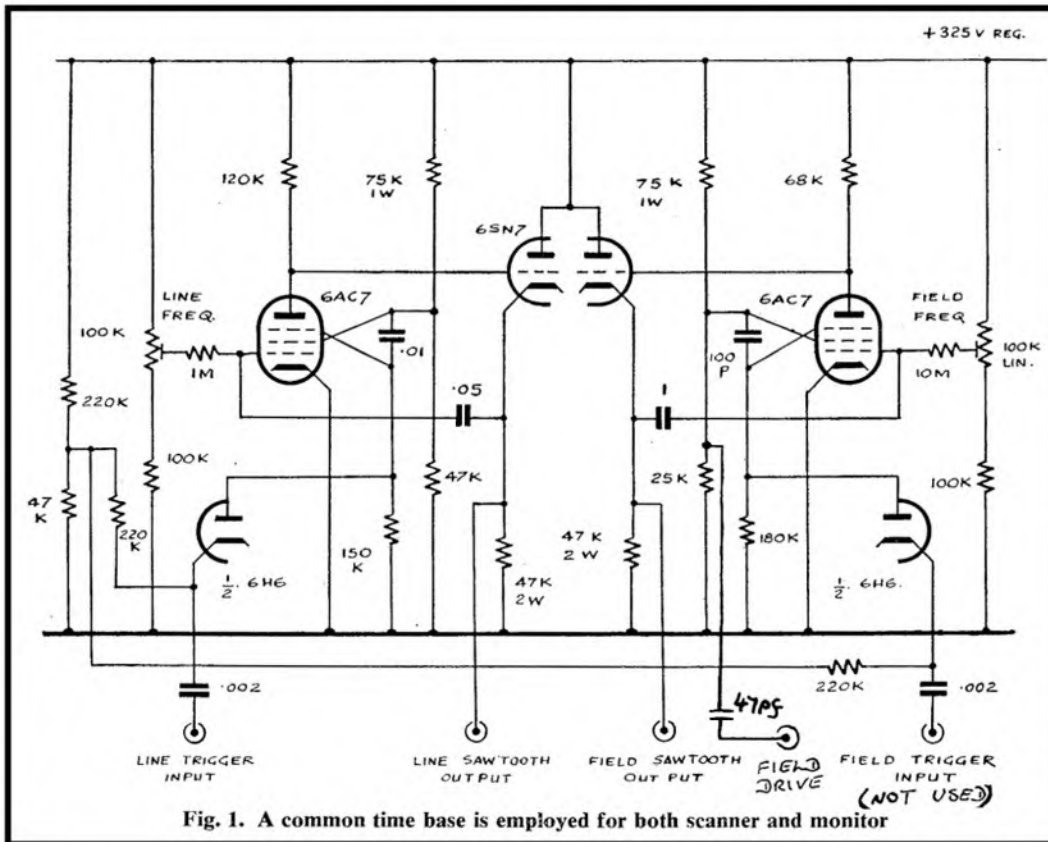


Fig. 1. A common time base is employed for both scanner and monitor

TELEVISION PICTURES ON STANDARD TAPE

PART 1

You can record a television signal on your domestic tape recorder and "playback" a very acceptable picture. In this series of articles J. A. PLOWMAN, the first man in this country to build the necessary equipment, describes its construction.

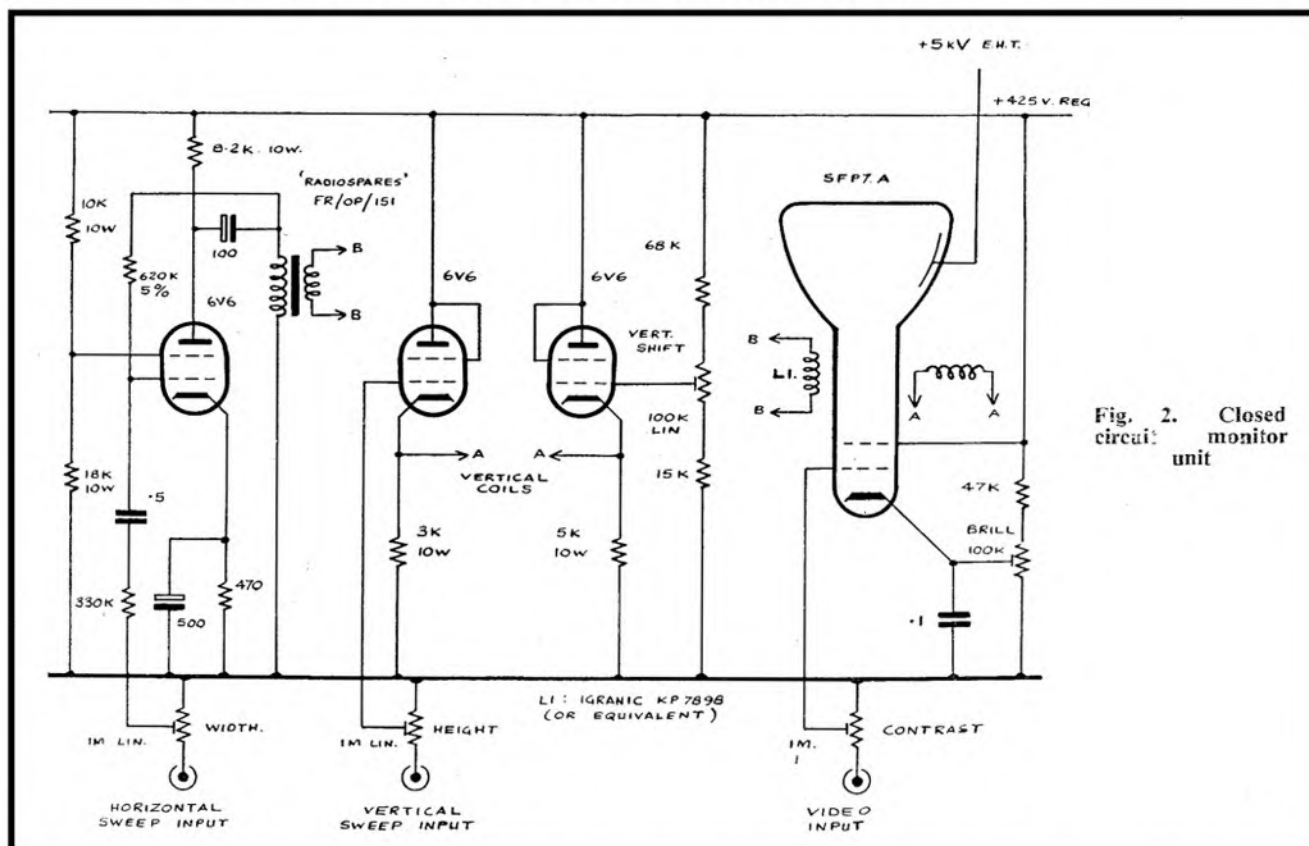


Fig. 2. Closed monitor unit

mation error, however, the latter system would not be recommended except for the crudest of experiments.

Although slightly more complex, the most versatile system is the use of scanning by reflection. In this respect, the biggest advantage is, of course, that slides do not require previous preparation, some matt white postcard stock and a 2 or 3B pencil being the only requirements for the production of captions limited only by the artistic capability of the experimenter.

Transparency scanning, unless folded optically, tends to produce a rather long device. In view of this fact, added to the desirability of mounting the optics vertically in the rack, scanning by reflection was employed. The system illustrated scans the maximum of a postcard allowed by the 4:3 format, and results in an extremely compact assembly.

A common time base is employed for

both scanner and monitor, see Fig. 1. A phantastron circuit is employed for both line and field saw-tooth generators although excellent results have been obtained by using thyatron in conjunction with devices linearising the sweep (see de luxe monitor circuit). The circuits utilise cathode follower outputs, and no difficulty was experienced from the loading of two identical amplifiers.

The only P7 double layer screen cathode ray tubes readily available are the magnetic 5FP7, 7BP7. These tubes are cheap and in plentiful supply from Government surplus stores, although the penalty of power consumption of the drive circuits is considerable. An alternative tube, rarely available, is the CV838-5CP7A, an electrostatic device, far easier to drive, but suffering, nevertheless, from considerable screen curvature and an embarrassing overall length. More recently, a number of 3FP7 electrostatic tubes have become available. These

would normally be considered too small for scanning use.

The line and field time bases are free running for closed circuit experiments; their long-term stability, however, is very good and drift over several hours is negligible. The use of regulated power supplies mitigates the likelihood of hum bars appearing on the scanning rasters, and in view of this, sweep locking to mains was found to be necessary.

Both scanning amplifiers, being identical, can be described together. Each chassis requires three valves.

The line amplifier is a single-ended stage employing a 6V6GT transformer coupled to the line coils of the scanning yoke by means of a standard domestic frame output transformer. Gross non-linearity would be introduced where the anode current of the valve is passed through the transformer primary, due to

(Continued on page 25)

Getting a good piano balance is not too difficult says ALEC NISBETT, provided you know what to listen for. You need a room of the right sort, a reasonably good piano, at least moderately good equipment—and (perhaps rather surprisingly) a good pianist. But the main requirement is a pair of ears . . . YOUR ears.

THE first necessity with any balance is to know what sounds you want, and what you wish to avoid. So let's define these various sources for the piano. (I shall be dealing primarily with the grand, but this section applies equally to uprights.)

1. **Wanted direct sound.** This is not, of course, the sound radiating from the strings—mechanical coupling between a string and the air is very small—but that radiating from the soundboard. So the required sound is the full range of tones (from bass to treble and including harmonics) that the soundboard is radiating, plus the transients that occur as the string is struck—but again, as modified by the soundboard.

2. **Unwanted direct sound:** hammer (action) noises; pedal operation noises; pianostool squeaks, floor thumps, etc.

3. **Wanted indirect sound:** reverberation.

4. **Unwanted indirect sound:** severe colorations.

5. **Unwanted extraneous noises.**

There are two basic types of piano balance. One is the "natural" balance, which uses the studio acoustics for reverberation; and the other uses a close balance

PROBLEMS OF BALANCE

- 3 PIANO

and artificial echo. For most purposes the first of these will be preferable; the second is used largely for the case where the piano is being mixed into a multi-microphone balance, or where the studio acoustic is totally unsatisfactory, or for cases where you wish to emphasise the percussive effect of piano action rather than blend the transients in.

The closer the balance is, the more difficult it will be to control the sound; transients will easily overload and distort. With a more distant balance reverberation modifies the quality considerably and either a wider dynamic range may be recorded, or the overall level can be raised without increasing the risk of peak distortion correspondingly.

Circumstances (and the listeners' taste) vary so much that it would be unwise to be too specific about the best distance for your microphone.

The balance to listen for is one where you get plenty of reverberation—but not so much that the sound becomes muddy or coloured.

But the most favourable distance will in any case depend on the type of microphone

you are using. If you are so lucky as to have a choice of microphones of reasonable quality, you should take one with a polar response suited to the acoustics of your studio. If the room is relatively dead (e.g., a normal domestic living room) an omnidirectional microphone may be used. But if the piano is in a music room or a public hall, or in fact any place where the acoustics are fairly lively, a bi-directional microphone such as a ribbon will be preferable.

When you are trying out your balance, listen also to check that bass, middle and top are all present in their correct proportions, and sound as though they are in the same perspective. With certain concert pianos the problem is to get rid of some of the bass. To do this a ribbon microphone may be placed at the tail of the piano (i.e., the end furthest from the keyboard) and angled to point towards the middle or upper strings. In most other cases the microphone can be moved round to the belly of the piano or to the top of the keyboard.

And it should of course be at such a height that it can "see" the strings (or rather, the soundboard). Though if this is inconvenient you may perhaps get a good balance by reflection from the lid, or even, if you have no carpet down, by the first reflection from the studio floor.

When a directional microphone is used, it is generally angled so that it picks up reverberation roughly equally from the three main dimensions of the room; and also a central position is avoided—which would seem to be justifiable on the grounds that in the middle of the room the even harmonics of the eigentones (the basic resonances of the room) will be missing. However, such simplifications tend to give an inadequate picture of the behaviour of sound in small rooms; much work remains to be done on this highly complex subject. In the meantime the only guide is trial and error. And if the sound is wrong wherever you put the microphone it will sometimes help if you move the piano!

From the amateur's point of view the question of position has a more practical aspect; having no professional extending stand or boom, how is he to mount his microphone?

Chairs and other movable furniture will generally be the wrong height for a direct balance, though by piling things up you may be able to get results. Perhaps the answer will be to use a few pieces of string and suspend the microphone, or to build a home-made boom with a broomstick. The result will probably sound a great deal more elegant than it looks.

But in any case, places like alcoves, bookshelves and so on should be avoided; so indeed should mantelpieces or any other positions close to the walls. (If a nearby reflecting surface cannot be avoided, the microphone should be placed dead-side-on to the reflected sound, otherwise there will be interference between the two signals.)



Semprini at the keyboard. A Neumann KM54 condenser microphone is being used here for speech. The polar diagram for this microphone is roughly cardioid—so it will also pick up a fair amount of sound from the piano; and the balance between the two may be satisfactory from the point of view of level. However, the quality of the piano sound will be tolerable only for short periods, and as soon as the "speech-over-music" is finished it will be better to crossfade to a more orthodox balance, if a transition can be made satisfactorily. Also, as it's so easy to pick up vibrations through a microphone stand of this sort, a suspended microphone would be preferred for a sound radio balance

PROBLEMS OF BALANCE

- 3 PIANO

In the studio a balance may be found by putting up two microphones in likely positions and making a direct comparison of the two by listening to each in turn. The better balance is retained and the second microphone moved to another likely position—and so on until no further improvement is found.

For the amateur some modification of this technique will be necessary. But even if you have only one microphone and no mixer you can still make comparison tests—by recording short snatches of various balances and playing them back (preferably identifying each position by speaking over the music). Retaining the best of these, try again with a few more positions. The attempts that sound the best should be cut—or re-recorded—close together; it is very difficult to choose between two fairly similar sounds separated by a long pause, or worse, a totally different balance.

So far I have been referring to the case where the piano is solo. But a second instrument or a singer can often be balanced on the same microphone without too much difficulty. In many cases it will be best to get a good piano balance first and then place the second source accordingly; more balance test recordings will be needed for this, of course. It may prove necessary to have the piano lid in its lower position; but apart from this, you should find that if the musicians themselves are doing their own job properly, your problems will be half solved before you take your microphone out of its box. Remember, by the way, that two musicians often need to be able to see each other's faces, as well as your microphone.



BBC photographs

The studio manager angles the microphone used for a concert balance of the piano. This position will give a satisfactory ratio of direct to reflected sound

A slightly more tricky balance is one where the pianist himself also speaks or sings. In many cases a singer will wish to take advantage of the opportunity to use less voice than would be possible without a microphone. A more "intimate" effect is achieved, but at the expense of losing the internal balance between sound sources. Here a suspended microphone becomes essential. If a ribbon microphone is used, it should be placed about twenty inches from the singer (as for a speech balance) with its dead side towards the soundboard of the piano. It may be in front of the singer (tilted down), or round to his right. And if you find you are picking up an unidentifiable clicking noise, it could be finger nails tapping on the keys (yes, this can happen, and did quite recently in a balance of my own!).

If you have a "uni-directional" ribbon microphone, use it in the same sort of way as a normal ribbon microphone. An omnidirectional microphone, on the other hand, will require a much closer balance of the voice, in order to discriminate against the piano.

The problems which arise with an upright are, essentially, just the same as those of the grand. Listen out for each of the wanted and unwanted sounds that I have listed, again watching particularly to see that the balance remains the same over the whole scale (although in some cases—for a lighter style of music—you may prefer to have "not too much left hand").

Lift the lid and try the microphone somewhere on a line diagonally up from the pianist's right ear—a good balance can generally be found in this position. But remembering that it's the soundboard that

Bringing the microphone down over the strings for the type of balance favoured in light entertainment productions. A "tight" sound is obtained with adequate separation from other instruments. Artificial echo can be added.

is radiating, an alternative is to move the piano well away from any walls and stand the microphone on a chair at the back.

Of course, it goes without saying that you need only one microphone for a piano balance . . . or does it? I have heard recordings using as many as three microphones for a really close sound (with "echo" added); and a two-microphone set-up in the Concert Hall of Broadcasting House was one of the most pleasant and natural-sounding balances I have ever come across. For that one, the main microphone was at the normal tail position, and the second microphone, rather closer, was in the curve of the piano, pointing across to the bass strings—adding a little more clarity to that end of the spectrum.

POSTSCRIPT: A problem which sometimes crops up: you've made your recording and it sounds as though the sustained notes are wowing. You know the recorder is O.K. . . . so what is the cause? And what can you do about it?

Well, this sort of thing happens because, during the decay of the reverberation, energy flows back and forth between various resonant modes. If you make a loop of tape you will find a marked change of tone colour at the joint; and it can easily happen that the volume before the joint is greater than that after—in fact, your loop will sound no less natural if you play it backwards!

Solution: try another balance. In extreme cases try another piano in another studio. In a room with inherently poor diffusion, movement of the microphone may produce a marked improvement of the sound. But in a larger studio the eigentones would be lower, and resonances more evenly distributed throughout the audio range.

Stereo Notes

By D. W. GARDNER

INSTALLATION and servicing are usually treated as separate problems, but now that stereo is with us the distinction seems less sharp. The whole matter of effective functioning is no longer covered by bringing the equipment home and letting it go ahead until something breaks down. Expert advice and help is invaluable at the start, and an expert opinion on the standard of functioning is necessary periodically if you are to get the quality of reproduction that you originally paid for, all the time.

For this reason, I like the sound of the movement now current in America to provide "high fidelity doctors", operating individually or in small groups. They seem to be primarily devoted to servicing, but in view of the importance of correct installation in the case of stereo the system should serve equally well in that field, too.

The tendency is to make a service charge of something like five dollars for each half-hour in the home (plus one dollar for the first half-hour) and four dollars per half-hour for work carried out at the service workshop.

Many retail organisations in this country provide excellent servicing facilities, but many others are unable to cope satisfactorily with every branch of tape and disc servicing as well as television repairs. What is more, the servicing standard may suddenly change for the worse, or better, for no other reason than a change of personnel.

The situation is entirely different when servicing is the entire preoccupation of an individual or a group and their livelihood depends entirely on their public reputation in a given technical field.

Servicing which might be carried out in the home includes the tracing and eliminating of hum and noise, demagnetising heads, checking stylus wear and pressure, and checking for any general falling off in response. At the installation stage the engineer could check speaker and amplifier matching, phasing, speaker positioning, connections, and so on.

A few technicians specialising in various departments could run a first-class laboratory given an initial capital sum for testing equipment. What is more, it would be in the interests of the manufacturers to help well-managed groups as a means of checking the flow of machines that are returned to makers for defects that could be dealt with locally.

In particular I should like to see groups of this kind in all large towns with a public relations man hard at work plugging the importance of keeping audio equipment at maximum efficiency—and working also on the task of educating the public on the advantages of stereophonic sound.

A PRACTICAL GUIDE TO LOUDSPEAKERS

PETER R. MILTON CONTINUES HIS SPECIAL SERIES ON THE NATURE OF SOUND AND LOOKS AT THE CONSTRUCTION OF A LOUDSPEAKER AND ITS EFFECT ON SOUND WAVES

IN the last article it was indicated that the frequency response of a loudspeaker could be divided into two well-defined parts. The performance in the region where the entire surface of the cone moves in the same phase is fairly easy to predict, but at high frequencies there are times when the movement of the cone bears no apparent relationship to that of the voice-coil.

A simple experiment which has been described previously will illustrate this. Take a piece of card such as a record sleeve, and hold it at one edge. Move it from side to side gently and note that the card moves at a complete unit. As the rate of movement is increased it will be seen that at first, the far edge will tend to remain stationary. After that the centre will remain still, the opposite edge moving in antiphase to the "driven" edge and any further increase in speed will result in an absolutely random motion of the paper, followed by complete exhaustion.

It is not reasonable to expect a thin and light material to be absolutely rigid and in fact if it were so, the fall in power due to the levelling of the radiation resistance curve would prove to be embarrassing.

A non-rigid diaphragm can be considered to be composed of distributed elements of mass and stiffness with a mechanical behaviour similar to that of an electrical transmission line. An

impulse imparted at the neck of the cone travels outwards and is reflected back from the edge towards the centre where it tends to cancel or assist the outgoing pulses to a greater or lesser extent, depending upon their relative phases and amplitudes. The amount of attenuation of the reflected pulses is dependent upon the resistive losses due to the friction between the fibres and the power radiated as sound.

The effects of reflections are most serious when they arrive exactly in phase or antiphase. Standing waves are then set up, causing the surface of the cone to vibrate in set patterns with definite stationary regions (nodes) and regions of maximum vibration.

These effects are most noticeable in the case of a simple straight-sided cone because the reflections all arrive at the same time, causing a large peak in the frequency response. An elliptical cone spreads this peak over a wide area giving a much smoother result. (Fig. 1.)

Transmission line theory suggests that in order to eliminate standing waves it is advisable to employ a correctly terminated line. Thus neither a completely free edge nor a fixed one is completely satisfactory, except in certain circumstances and it is the normal practice in high quality loudspeakers to fit a foam plastic surround or to treat the corrugations in some way with a resistive impregnation. This has the added advantage that the

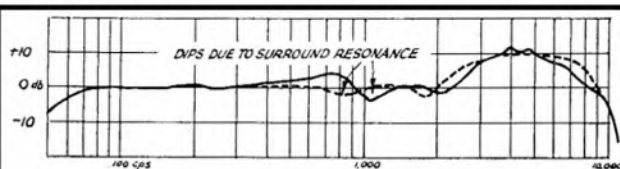


Fig. 1. Response curves of 8-inch straight-sided circular cone, and 9 x 5 inch elliptical cone

Note that surround resonance dips are usually less severe on elliptical cone

A PRACTICAL GUIDE TO LOUDSPEAKERS

resonance due to the cone surround itself and the consequent colouration of the output is considerably reduced.

It should be mentioned that the untreated straight cone can serve a useful purpose by providing an illusion of a good high frequency response and at the same time avoiding the reproduction of distortion which might be present in the signal.

The natural resonances in the cone structure can be observed by sprinkling the cone with a light dusting of french chalk or talcum powder and it will be seen that the powder will settle at the nodal points.

Radial or circular ribs can be moulded into the cone as required to help to control these resonances. A useful way of modifying the performance of a loudspeaker is to incorporate annular indentations into the body of the cone. These have the effect of dividing it into separate zones coupled together by predetermined values of compliance, depending upon the depth and formation of the indentation. The inner sections receive the drive direct from the voice coil as before, but the outer sections are effective at the end of a low pass filter. In this way the entire cone is driven at low frequencies, whilst in the upper register, the efficiency is increased because the mass acting on the voice coil is reduced, the outer parts being well decoupled. (Fig. 2.)

It is also possible to limit the frequency range of a loudspeaker by

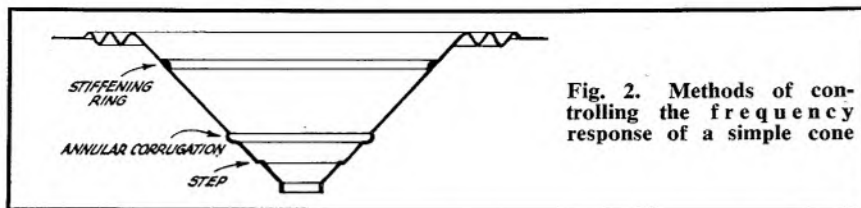


Fig. 2. Methods of controlling the frequency response of a simple cone

moulding indentations in the voice coil former just below the neck of the cone, providing, say, a sharp cut-off at 9,000 cps in order to avoid the line time-base whistle of a television set.

A smoother response is more easily obtained if the mechanical constants are graded instead of being "lumped" in the form of annular rings. It is possible, although rather difficult, to alter the thickness progressively but a better way is to alter the angle at

which the force is applied by using a curved "profile." The profile is the side view of the cone.

At high frequencies the steep angle at the centre ensures that the drive to the cone is maintained, whilst the shallower outer portion is only operative at lower frequencies. The important feature of this principle is that only the correct amount of cone is radiated at any time and an excellent example of this is Goodmans 8 in. diameter "Axiette." (Fig. 3.)

The treble response of high quality loudspeakers is often improved by the use of separate high frequency cones cemented directly to the voice coil former. The bass cone is much softer

produce a very wide range of hardnesses by altering the lengths of the fibres.

A paper consisting of relatively short fibres is hard because of the closer knitting of the fibres. "Hard" and "soft" are not intended to describe the acoustic properties of a paper but are merely description of its texture. A useful illustration of a soft paper is blotting paper.

In general it may be said that the softer papers are useful where a restricted frequency range is required, and the harder papers with their greater strength and rigidity enable thinner and hence lighter cones to be made, increasing the treble range and the efficiency of the unit. The price paid for efficiency is often a certain raggedness in response, but careful choice of paper, profile, shape and size can result in a loudspeaker having any desired characteristic.

The real point of this article is in the last sentence. It is not enough to require a loudspeaker and fit the first one that comes to hand. The best results are obtained by deciding what is required and choosing the loudspeaker to suit the particular situation.

For instance, a loudspeaker which has a level axial response will not necessarily sound its best because the narrowing treble beam is spread through 360 degrees. The result will be an apparent deficiency in the upper register. A straight-sided cone with its otherwise objectionable peak is ideal in this application.

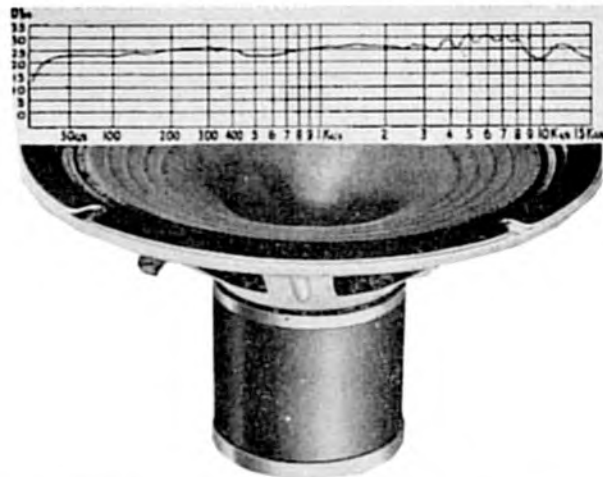


Fig. 3. Goodman's eight-inch Axiette with response curves

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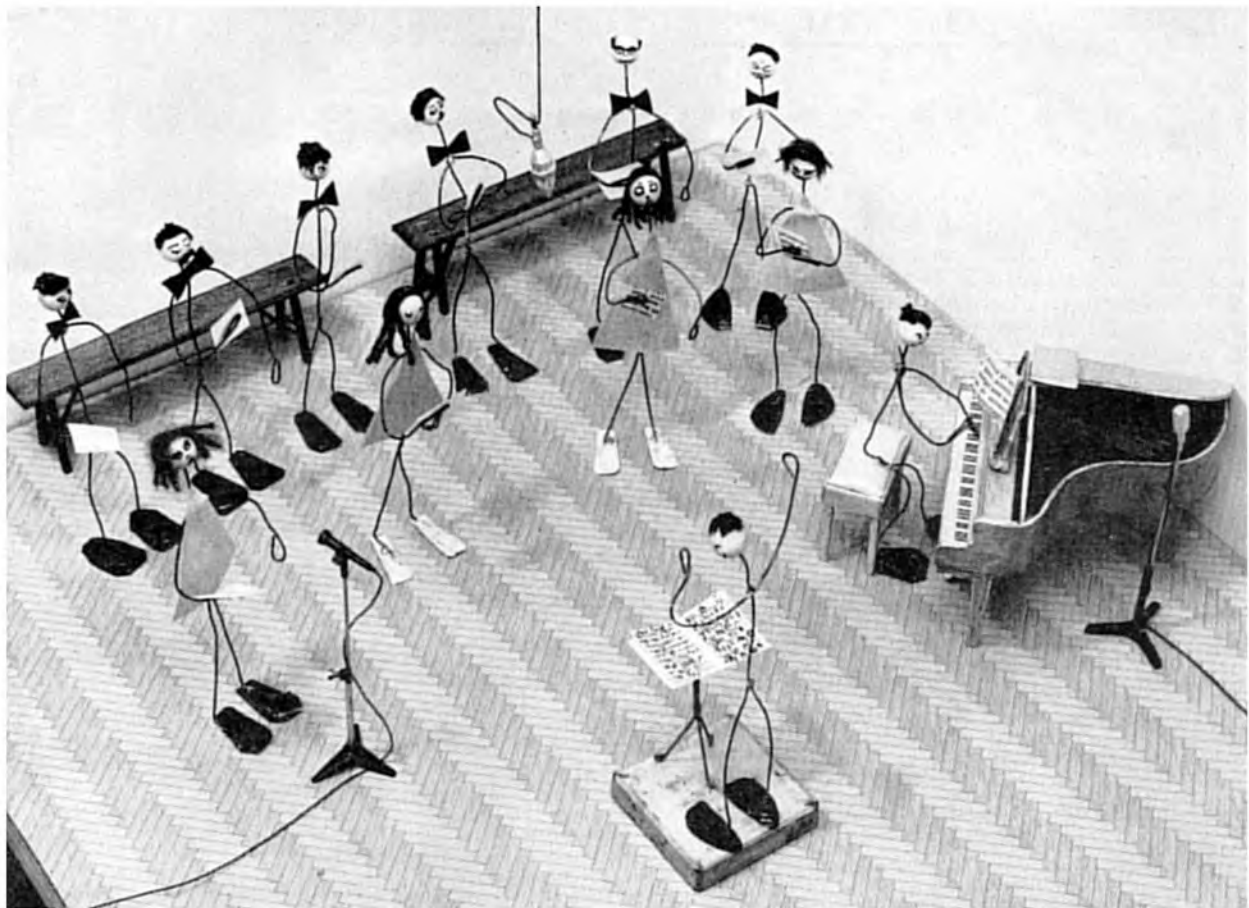
MAGNETIC TAPES

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A PROLIFIC source for recording purposes is perhaps the choir in any form of its possible diversities, and even more encouraging is the interest and co-operation generally shown by choir members in recordings of their performances. The reason may be that a well-balanced recording gives them a good chance to hear the overall sound and their individual contributions.

A large number of able voices can cover a wide dynamic range and presents quite a recording problem, since at times a solo voice might suddenly be followed by a full-throated chorus; there might be either orchestral or organ accompaniment or even both to cater for, or only the piano.

The picture represents that choir with piano accompaniment, which is probably one of the more readily available arrangements for novices in this subject. Nevertheless, there is still a large repertoire ranging from sea-shanties and lullabies to small scale operas and oratorios.

To single out some of the recording problems with a large choir, firstly, the microphones cannot be put too close for the same reasons of the field pattern conditions as outlined in the organ article (*August 9 issue*); secondly, proper blending of the voices could be lost if microphones were placed close to cer-

MICROPHONE PLACING-10

By Naomi Archer

tain sections only; thirdly, the soloists should have a separate microphone or be situated near the main microphones, provided they are of the omni-directional type and suitably positioned for this purpose.

If the building is reasonably "dead" then the microphones can be taken with advantage some distance from the main body of the performers, bearing in mind that the piano will still require close-microphones for introductions and interjections. Should the situation be reversed, considerable experiment will be required in using closer microphones in order to marry reverberation and blending of voices. This balance is obviously going to be more difficult to achieve, particularly in an attempt to record, for example, one of Mozart's canons in an empty church.

Sometimes though, a particular choral work requires the background and atmosphere of a church or cathedral to enhance the sound, and if a close-microphone technique is used then

almost certainly an "effects mic" (one placed further away to pick up echo, say half-way along or at the end of the nave) will be necessary and mixed in with the more personal effect of close voices.

One method is to pick-up all the direct choral sound in the hall and on returning home where there is more time to devote the whole attention to the question of balance, electronic echo—by means of a reverberation unit—may be mixed in to create cathedral magnitude! A moot point, but it is often difficult to detect where original and artificial sound performances part company, especially in commercial recordings today.

Now let us consider a fairly straightforward recording of a small mixed choir performing in a very ordinary sort of church hall, there is a good piano, soloists, and the reverberation time is about two seconds at the choir end.

In the first case, the Choirmaster will probably not take too kindly to an array of floor microphones obscuring his view of the vocalists, although one floor stand may be permissible for the soloists. A microphone fixed in the roof or slung from a boom above the heads of the main choir would give fairly even coverage. If there is too much indirect sound pick-up from the omni-directional type, a directional microphone may be used, but raised a little higher in order to cover all sections, and fortuitously,

(Continued on page 28)

Hall of Stereophonic Sound

MANY attempts have been made in the past to associate music and colour as a means of entertainment. The more successful of these have probably been those where the colour changes were produced by a human operator playing on some form of "Colour Instrument"; in fact, an elaborate electrical switchboard similar to that used in the theatre, with banks of dimmers controlling a number of sources of coloured light.

A good example of this type was seen at the *Daily Mail* Ideal Home Exhibition at Olympia earlier this year, where manual control of coloured light was used in a magnificent display of fountains, producing beautiful coloured patterns in sympathy with various recorded items of music.

A number of automatic devices have been produced in the past which would control coloured lighting equipment directly from recorded music without the aid of a human operator. The simplest of these consisted of three frequency selective amplifiers, one responding to low frequencies, one medium, one high, the outputs of which were used to control coloured light circuits of the three primary colours. An arbitrary decision determined which colour corresponded to which frequency band and some interesting colour patterns resulted.

One of the difficulties of this simple system was that ordinary filament lamps take some time to cool down as the current through them is reduced, and so the equipment could not follow rapid musical changes. Furthermore, it was evident that the simple analysis of the music by frequency bands was not capable of producing as much light variation as was desirable if all the intricate variations of mood and tone colour of a large musical work were to be displayed.

The system of "Music in Colour" demonstrated at the Soviet Industrial Exhibition at Earls Court recently was more comprehensive than anything previously shown in this country, at least to the author's knowledge. Shown in the "Hall of Stereophonic Sound", as an accompaniment to twin channel tape recordings, it was drawing large audiences during the period of the Exhibition.

The apparatus used was the outcome of over ten years' research and development. It consisted of an analyser, which produced a number of signals from the music output; and a computer, which processed the signals from the analyser, and produced further signals to control a specially designed group of coloured light projectors.

The audio signal, which can be either monophonic or stereophonic, is fed into the analyser section of the equipment, and this extracts two groups of signals. The first group is formed from informa-

H. BURRELL HADDEN reports on the Russian system of "Music in Colour"

"Music in Colour" was invented by Konstantin Leontievich Leontiev and developed by him under the direction of Professor Lerner in the Cybernetics department of the Institute of Automatics and Telemechanics of the Academy of Sciences of the USSR.

tion given by the instantaneous volume of the sound, and the rate at which this volume is changing with time. The second group consists of signals derived from information as to frequency content, frequency distribution over the audible spectrum, and the rate of change of frequency content.

The signals produced by the analysing equipment are then fed into the computer, which produces the control signals for the light projectors. The computer has been given the necessary information to enable it to decide which particular colour, or shade of colour, will correspond with the given musical tone colour. This information was obtained from a large number of psychological tests undertaken with the object of finding out what colours people associate with different sounds.

The colours used are not necessarily associated with particular instruments, but rather with the overall complex sound waveform.

The signals produced by the computer operate equipment controlling the intensity of illumination of a number of light projectors of different colours, and these different colours are mixed on the projection screen to produce the particular shade indicated by the music.

A special high pressure "solar" lamp is used, giving an intense light, and the colours are produced by glass filters. The lamp is capable of being controlled very rapidly: in fact it can be switched 500 times per second if necessary. In this particular application it is not required to change from off to full brightness or full to off in a shorter time than 1/30 second. This, however, is considerably faster than would be possible with a normal lamp of 1,000 watts giving a similar light output.

The particular apparatus shown in London, although of considerable complexity, was not as comprehensive as the equipment used at similar concerts in Moscow. The Moscow equipment would have been too large and too complex to install in London. Because of this there was a tendency to flicker at times, which was rather trying on the eyes. The full equipment does not suffer from this effect.

Leontiev started work on the invention in 1953 when he was 22, and in 1957 the device was registered with the Soviet equivalent of the Patent Office. Detailed accounts of the equipment have appeared in leading Russian journals, and a book on the subject will be published later this year.

The sound equipment used in the Music in Colour demonstration consisted of twin loudspeakers, driven by a pair of 50 watt amplifiers. The amplifiers were fed from a professional stereophonic sound mixing desk, having provision for mixing five microphones, gramophone, and tape inputs, with two overall gain controls, one for each channel. The tape machines were professional models, which could run at either 15 or 7½ ips. They were in fact used at 15 ips, and the frequency response of the whole system including loudspeakers was 40-15,000 cps flat.

In fairness one must say that the sound quality, in spite of the good equipment, was not as good as some demonstrations that have been heard in London, but the overall effect of Music in Colour was very interesting indeed.

Aurora Borealis

COLORSOUND, described as a revolutionary idea in home entertainment, will soon be introduced into this country by Bonochord Ltd., the electronic and acoustic engineers. Similar to the system described above, Colorsound is an interpretation of music or speech in the form of light patterns. It is the invention of an American electronics expert, Mr. Royal O'Reilly, who worked for a time in Alaska on the DEWLINE early warning system.

Up there, he and his friends used to while away off-duty hours watching the Aurora Borealis to a background of stereophonic gramophone records. They found it unusually soothing or stimulating, depending upon the music and the colour combinations, and this set the seed of an idea in Mr. O'Reilly's mind: to bring those strange waves of light seen in the Aurora Borealis into the home artificially.

(Continued on page 28)

A VISIT TO A JAPANESE HI-FI CONCERT

THE concert took place in a spacious loft studio. In Japanese fashion, most of the audience sat on the floor; others stood leaning against the walls, or sat on wooden planks. Until the programme got under way, it was difficult to tell the audience from the performers, since the latter were stationed in various parts of the room. The first piece, or rather the first two pieces (to be played simultaneously), "For Strings No. 2" and "Music for Piano No. 4", began almost unnoticed.

The violinist, La Monte Young, crouched forward on a stool and moved his bow slowly across an open string, first up, then down. The grating monotone seemed to soothe the audience and, after a while, the sounds of the light Sunday evening traffic, inaudible a few moments before, penetrated the quiet room.

Soft footsteps were heard approaching the piano. It was the composer. Thoughtfully, Mr. Ichihyanagi reached inside the piano, grasped a piece of wood, leaned forward, and plunged the stick into the middle-register strings. Pressing down firmly, he pulled the stick toward the keyboard. Suddenly the audience was in a subway car, straining its way around a sharp curve, tracks and wheels emitting high-frequency screeches.

Young moved to another open string and increased the pressure of his bow arm slightly. The composer attacked another section of the string bed and produced a metallic stutter as the wooden knife bounced over the strings . . . the piece ended quietly; the performers stopped playing, exchanged nods, and shook hands.

Reprinted from Johannesburg Tape Society Newsletter.

Equipment Under Test

THE KGM CINECORDER

THE K.G.M. Cinecorder has been expressly designed for adding a synchronised sound track to Cine films, with the facility of recording simultaneously from several sound sources. This also renders it a useful instrument for compiling "programme" type tapes. At the same time the introduction by Messrs. K.G.M. of perforated tape called "Cinetape" is instrumental in bringing lip-synchronised dialogue films within the reach of the amateur. The Cinecorder is not strictly speaking a hi-fi machine, and in fact it utilises the B.S.R. Monardeck. But it is capable of excellent recordings providing a good quality signal is fed into it.

Three interesting modifications have been made to the standard B.S.R. Monardeck Mk. 2 which are not found on any other tape recorder.

The first provides facilities of recording two separate tracks using a standard half track head by means of the patented "Shiftrack" control. This consists of a lever moving in a groove numbered 1 to 6 which raises or lowers the guide rollers at each end of the tape slot, thereby adjusting the width of tape passing over the recording head. By returning this lever to its normal position both tracks can be played back simultaneously.

Another lever called the "Tapelift" control lifts the tape clear of the erase and record heads. This permits additional sounds to be dropped into place on a programme type tape without any of the normal electrical clicks and bangs associated with starting and stop-

ping a recorder. The tapelift is used in conjunction with the very accurate tape timing device which will be described in a moment.

The third modification to the Monardeck is a remote control consisting of a relay which holds the rubber pinch roller just clear of the capstan and arrests the motion of the tape. Although at first sight this might seem to be a rather complicated pause control, it enables the Cinecorder to be operated at the flick of a switch perhaps from another room. This can be handy if you are making a movie film by yourself and using a camera at the same time. Power for the relay is obtained from a special winding on the mains transformer, fed to the relay winding via a bridge type rectifier.

The tape timing device is a completely separate unit and rather a unique one. Since it is tape driven by a special capstan it does not give false readings like the more usual belt driven numerical counter. The capstan is directly connected to a four-digit counter which indicates seconds with extreme accuracy. A rubber pinch roller holds ordinary tape in contact with this capstan, and also the special sprocket which is substituted when Cinetape is used. The counter can of course be quickly re-set to zero.

AMPLIFIER

The amplifier has been constructed without the aid of any printed circuits, and is exceedingly quiet and free from hum. The power unit, output stage, and bias oscillator are assembled on one chassis, and a two-valve pre-amplifier is mounted directly beneath the main control panel. This panel contains all the amplifier controls and input sockets, the sockets accepting standard tip and sleeve jack plugs.



Left: The special tape splicer and (right) the sprocket unit manufactured by K.G.M. for use with Cinetape.

By

JOHN ALDRED

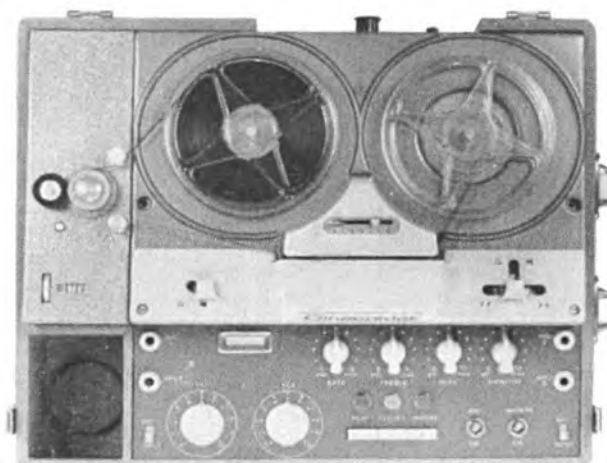
Two volume controls permit mixing from four separate high impedance sources. Two sockets are connected to each volume control and selected by switches. These switches are not wired for "click" suppression and therefore the volume controls should be returned to zero before operating them.

When playing back volume 1 controls the tape and volume 2 remains alive for adding in further sounds if required. The converging beam type volume indicator has been thoughtfully placed adjacent to the volume controls. Bass and treble are adjusted on playback individually, and remain in circuit until the record button is engaged on the tape deck. They are intended only for altering the playback response, and the quality of the various sounds being recorded should be adjusted before feeding them into the Cinecorder amplifier. The bass control gives a 4dB rise at 100 cycles or a 7dB drop, and the treble gives a rise between 2,000 and 7,000 cycles or a drop of 10dB.

A separate volume control is fitted to the monitor circuit which can be used with headphones or a 15 ohm speaker. The control is only operative when recording, the monitor outlet receiving full volume on playback. Variable superimposition is a refinement missing on the majority of recorders today, but a recording bias control is fitted to the Cinecorder.

Sound couplers are normally made for use with plain tape, and a special K.G.M. sprocket must be fitted in order to make use of Cinetape. Several makes of 8 mm. projectors can be adapted, including Eumig, Bolex, Noris, Zeiss 8A, and Nizo. A sprocket must also be fitted to the tape timer if it is intended to use this.

Before filming scenes with dialogue the camera drive must be calibrated



against the Cinecorder. A special five-second loop of double 8 film with a punch hole is checked against the tape timer. The camera speed is adjusted until the loop passes through the camera three times in 15 seconds, when direct synchronised sound can be recorded to the extent on one camera spring wind. By using the Cinecorder remote control, a small prick is made in the tape to identify each camera stop or change of shot.

MAINTENANCE

The tape deck and amplifier are built as a single unit fastened to the case by two coin operated screws. The complete works can be easily lifted out for valve replacement or adjustments without any trailing cables. (Other manufacturers please note!) No circuit diagram is printed in the instruction book, but in case of difficulties a speedy repair service is operated by the manufacturers.

Although the price is the highest for a recorder using the B.S.R. Monardeck, the comprehensive features of the Cinecorder must be taken into account when assessing its value. The layout of the control panel is quite practical, and one develops a sixth sense of the correct positions for the shiftrack, superimposition, and volume controls.

It is also a change to see pointer knobs and dials fitted as standard practice, en-

abling notes to be taken of all settings. If you are looking for a recorder to use with your Cine films, or for compiling programme tapes or plays, the Cinecorder should serve you well.

Three push buttons select the amplifier functions of playback, record, impose, each of which has a coloured signal lamp to indicate at a glance the condition of the amplifier. Two heavy duty toggle switches supply power to the amplifier and tape deck, and are wired to the mains socket on a rear panel. This also contains a voltage selector, remote switch socket, loudspeaker and monitor sockets, and provision for a pilot lamp or projector controlled by the tapedeck switch. The loudspeaker supplied is a 10 in. x 6 in. elliptical mounted in the completely detachable lid of the recorder.

OPERATION

An instruction book written in non-technical language explains the numerous uses of the Cinecorder, but one requires a little practice to become familiar with the effect of the various controls. One has to cultivate a habit of returning the levers on the tape deck to normal before playing back so that the full width of any composite track will be heard.

In practice the shiftrack control used with the tapelift lever is probably to be preferred to normal superimposition. The relative volumes of each recording can be adjusted without the loss of high frequencies which superimposition normally entails.

The overall frequency response from input socket on to Cinetape and playing back through the speaker is 60 to 8,000 cycles \pm 3dB. An improved high frequency response can be obtained by substituting certain brands of plain tape.

CINETAPE

This tape contains 16 perforations every $3\frac{1}{2}$ inches, can be used on two- or four-track recorders, and is designed to synchronise with a Cine projector running at 16 frames per second. The perforations are not in any way used to transport the tape, merely to accurately control a projector by means of a special sound coupler.

MANUFACTURER'S SPECIFICATION

Voltage: 200 to 240 A.C.
Deck: B.S.R. Monardeck Mk. 2.
Tape speed: $3\frac{1}{2}$ ips.
Maximum spool: $5\frac{1}{2}$ inches.
Amplifier response: 30 to 14,000 cycles \pm 3dB.
Recorded response: 60 to 8,000 cycles (using Cinetape).
Amplifier inputs (for 100 per cent modulation): Microphone 1—1.5mV at 1 megohm; Input 1—75mV at 1 megohm; Microphone 2—50mV at 1 megohm; Input 2—100mV at 1 megohm.
Amplifier output: Four watts into 15 ohms.

Signal-to-noise: Better than 40dB.
Valve lineup: EF86, EF86, ECL82, EL84, EZ81, EM84.
Dimensions: $16\frac{1}{4}$ x $14\frac{1}{4}$ x $9\frac{1}{2}$ inches.
Weight: 45 lb.
Price: 57 gns. (less tape and microphone).
Accessories: Crystal microphone, 2 gns., moving coil microphone £3 15s., 150 ft. Cinetape, 18s. 6d., 600 ft. Cinetape, £3 7s., Special sprockets, from 2 gns., camera timing loop, 2s. 6d., Cinetape splicer, 17s. 6d., jointing tape 5s.
Manufacturers: **K.G.M. Limited,**
Bardolph Road, Richmond.

Aurora Borealis

(Continued from page 24)

For some years now equipment has been available to produce visual images of music through colour patterns. But, like that recently demonstrated at the Russian Exhibition in Earls Court, it has consisted of complex consoles and computers. This has restricted performances to large-scale public exhibition.

This problem of size has now been overcome in the Colorsound Translator—a box of electronic equipment only a few inches in diameter. It can be adapted for use in radios, televisions, gramophones, juke-boxes or tape-recorders.

Mr. James Traill-Hill, marketing director of Bonochord, recently summed up the achievement of the Translator by saying: "It makes possible, at last, the immediate mood-interpretation of music and speech in gradations of coloured light."

The American patentees of the Translator—Colorsound Manufacturing Co. Inc. of Altadena, California—have modified the equipment for use in the fields of mental therapy and drugless tranquillisation. These applications will also be available in this country now.

A permanent display of Colorsound applications is being set up at Bonochord's showrooms at 48, Welbeck Street, London, W.1.

MICROPHONE PLACING

(Continued from page 23)

this will increase the amount of reverberation that will have been reduced by virtue of it's narrower field.

Follow the usual procedure for piano recording except that for the upright type, the microphone output may sound better from slightly behind the pianist's right shoulder. Thus with three microphones and a small mixer there should result a first-class piece of work.

Caution. If artificial sound delay is required, it is sometimes more effective if first introduced into the microphone circuit serving the choir. The edited tape may then have further reverberation or tape delay added to bring the soloists and piano into proper perspective. We can gather from this that when artificial reverberation is used indiscriminately, the result may sound ugly.

RADIO SHOW 1961

Where are the new models?

ONE of the biggest surprises at the forthcoming Radio Show, as far as the tape enthusiast it concerned, is bound to be the noticeable lack of new models. In previous years this annual exhibition has been noted for the number of new machines, and we have usually had advance information on this point. But, with one or two exceptions, this has not been the case this year. Of course it has been known for manufacturers to withhold information until the last moment, but we shall have to wait until the opening day to find out.

The first of the two exceptions will, we feel, create a great amount of attention at the Simon Equipment stand. Their "famous SP/4" will be joined there by the SP/5, which is a complete departure from normal design by this company. Outstanding features of this monaural recorder include the facility for conversion to stereophonic use—with the Simon Add-on unit—and the ability to handle 33½ and 45 rpm disc records, although this latter feature is on export only models at this stage.

The second exception to the "no new models" rule is provided by Tape Recorders (Electronics) Ltd. In addition to their well-known current range, this company will be introducing and exhibiting four new recorders. The first of these is a single speed (3½ ips) two-track model, the "Slimline One-Two," at 32 guineas. There is a three-speed, two-track model, the "Slimline Three-Two" at 40 guineas. Both models will have four-track versions for an additional five guineas.

EXHIBITORS

In our last issue we published a list of those firms exhibiting in the Audio Avenue. There are a number of other firms which will have stands in the main hall, and their names, with stand numbers, are provided below.

Aerialite Ltd. (6); Alba (Radio and Television) Ltd. (9); Cossor Radio and Television Ltd. (52); Daystrom Ltd. (111); Dynatron Radio Ltd. (27); E.M.I. Records Ltd. (62); Electric Audio Reproducers Ltd. (56); Elizabethan Tape Recorders Ltd. (3); Fidelity Radio Ltd. (8); Garrard Engineering and Manufacturing Co. Ltd. (36); Kolster-Brandes Ltd. (50); Multicore Solders Ltd. (65); Murphy Radio Ltd. (16); Pamphonic Reproducers Ltd. (58); Peto Scott Electrical Instruments Ltd. (26); Philips Electrical Ltd. (10 and 15); Radio Gramophone Development Co. Ltd. (44); Regentone Radio and Television Ltd. (45); Saga Records Ltd. (118); Simon Equipment Ltd. (117) and Stella Radio and Television Ltd. (40).



MAGNAVOX SHOW

MAGNAVOX ELECTRONICS LIMITED, manufacturers of the Magnavox TM800 tape recorder, have moved their head office to Magnavox House, Alfred's Way, Barking, Essex. Their new telephone number is Rippleway 5533.

Announcing this, they also state that they have booked the Tower Suite on the top floor of London's Carlton Tower Hotel, for a special exhibition during the Earls Court Radio Show, from August 22 to September 2. Admission will be by invitation only.

A number of new stereo instruments will be on show, in addition to tape recorders, and the venue for the show will afford one of the finest bird's-eye views of the capital.

BRITAIN'S LARGEST TAPE RECORDER REPAIR SPECIALISTS

Our Service Departments offer you the finest and most economical repair service available

CITY & ESSEX TAPE RECORDER CENTRES

228 Bishopsgate, E.C.2 BIS 2609 | 2 Maryland Station, Stratford, E.15 MAR 5879 | 205 High Street North, E.6 GRA 6543

New Products

MULTI-PURPOSE MODEL ANNOUNCED BY FERROGRAPH

"A LANDMARK in the company's history." This is the way the British Ferrograph Company describe the announcement of their Series 420—a combined monophonic and stereophonic tape recorder.

In a preliminary announcement of the machine's capabilities, the company reiterates its considered policy of avoiding frequent model changes. Instead, it has been their regular practice by continuous development to incorporate modifications and refinements into current models as and when practical experience has proved them to be necessary and worthwhile.

The new model, illustrated above, incorporates many facilities which have been developed as the direct result of a comprehensive field survey in which Ferrograph users co-operated.

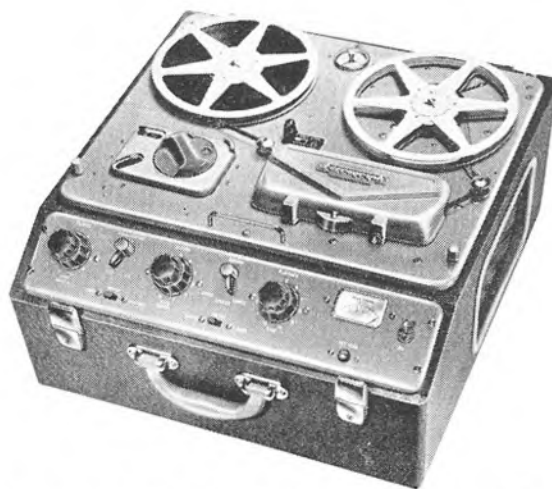
Each instrument has four separate amplifiers—one for each recording channel and one for each playback channel—described as providing a maximum degree of flexibility to enable the recorder to perform the most varied tasks.

These facilities include mono recording and playback on either track independently and with continuous monitoring; stereophonic recording and playback with continuous monitoring on both channels; and playback of four-track tape records.

It also facilitates playback on one track whilst recording on the other, and re-recording from one track to the other.

Whilst re-recording, additional signals may be superimposed through the simple mixing facilities provided, with instan-

Right: the new
Ferrograph Series
420



taneous comparison of recorded and input signals being possible.

The Series 420 has N.A.B. recording characteristics, and selection, at will, of NAB and CCIR characteristics in playback.

Delivery is scheduled for September, and the price will be 110 guineas.

The British Ferrograph Company Ltd., 84, Blackfriars Road, London, S.E.1.

TEACH-U-TAPES

MORE pre-recorded tapes in the Teach-U-Tapes series are announced by K.L.P. Film Services. They comprise a *Speed in Shorthand* course, TUT numbers 5, 6, 7, and 8, price 35s., or the complete course in advance £6; and TUT 9, *Speaking in Public*, price 35s. Each tape plays back at 3½ ips.

K.L.P. Film Services, 3, Queens Crescent, Richmond, Surrey.

NEW DOKORDER

AN improved version of the recently introduced Japanese manufactured Dokorder battery recorder is announced.

The new model, designated the PT-4K Kari-Korder, has an extended frequency response of 200-7,000 cps at the top speed of 3½ ips., and 200-3,500 cps at 1½ ips. There is also an increase in size and weight, it now measures 7½ x 3½ x 2½ inches, and weighs 3.3 lb.

An additional feature of the new model is the rewind motor, which rewinds 300 ft. of tape within 3½ minutes.

Complete with microphone, tape, earphones, black leather carrying case with shoulder strap, telephone pick-up, extension lead, splicing tape, and polishing cloth, the PT-4K Kari-Korder retails at 49 guineas.

Samuel Lewis (City) Limited, 200a, Upper Thames Street, London, E.C.4.

Another 12½-guinea recorder

THE Hampden Company (Sales) Limited, a new name to appear in the tape recorder field, have recently announced their acquisition of the distribution rights of a new Japanese transistorised tape recorder.

Left: The new SP/5, to be shown by Simon Equipment Limited for the first time at the Radio Show. This is a two-speed (3½, 7½ ips) monaural recorder which can be converted for stereo use, or to play 33½ and 45 rpm disc records. Further details will be published in our next issue



The new machine, the Technicord, weighs 2½ lb., measures 9 x 6 x 2½ inches, and sells at only 12½ guineas.

No frequency response is quoted, the suppliers describing the machine as purely for dictation and normal speech work.

The speed is given as approx. 3½ ips, the tape being driven by a reel turntable rim drive, and not capstan controlled. Three-inch spools are accommodated providing a playing time of 30 minutes using double-play tape, and a three-inch loudspeaker is fitted.

Controls are for record/replay/forward/stop/rewind, and volume.

The price includes spool of tape, spare spool, a high impedance microphone, and a battery for the motor as well as for the amplifier. An optional extra is a suction type telephone pick-up at 17s. 6d. A similar version of the Technicord, fitted with a foot control, is available for an extra 2½ guineas.

The machine is guaranteed for one year, and the makers claim there are ample supplies of spare parts.

The Hampden Company (Sales) Limited, 42, Glasshouse Street, Regent Street, London, W.1.



A commentator records her impressions after an underwater exploration. Even when submerged she could describe the scene into a special microphone let into her face-mask.

BBC PHOTOGRAPH

Emitape goes down with BBC diver

Interviews in unusual or noisy situations often contain superfluous material. The BBC find Emitape perfect for editing and cutting. 'Dead' material can be eliminated, interviews kept lively and to the point.

Emitape, consistent and dependable: the obvious choice for a broadcasting organisation famed for its technical excellence. Year in, year out, the BBC send thousands of 'packaged programmes' to radio stations everywhere, spanning the world—on Emitape.

Emitape

used by the BBC 9 times out of 10



When Emitape returns from the studios to the BBC Central Maintenance Unit, it is re-serviced, passing through this 'washing machine'. A giant electro-magnet finally wipes off any signals remaining on the tape.

News from the Clubs

WITH their first actual entry in the club section of the British Amateur Tape Recording Contest the **LONDON** club have come out tops. Although in past years they have attempted to produce a tape for this section, not until now had they been satisfied with the result and entered.

And what a significant thing it is that they have won with a tape barely past the halfway mark of the allotted time limit. Of the tapes entered, and it is a record number this year, only two had used the splicer with great effect.

One particular club, before entering their tape had even asked if it mattered that their tape overran by three minutes. Learning that the judges could disqualify on this fact alone, they eventually cut back to just over 14 minutes. During the preliminary judging of the tapes it was found and agreed that at least a further three minutes of pure extended sound effect could have been omitted.

One or two clubs had submitted tapes that had obviously not been played back before despatch. Sudden jumps in volume, clicks and similar extraneous noises could quite simply have been cut out, or modified, to make much more pleasant listening.

I liked particularly the **DUNDEE** tape, *A Sound Enquiry*, the description of a wonderful machine which could create sound effects at the touch of a switch. They have obviously mastered the sound effect problem, it was delight to hear their interpretation of a Pipe Band leading a flock of sheep through a plate-glass window into a hail of machine-gun fire. Humour seems to be the keynote of the Scottish clubs.

The **GLASGOW** members were also in a happy mood with their playlet *It's Murder*, the story of a rather dishonest pair of detectives who were called to discover the murderer of a body found stuck to a ceiling.

Although the **BOURNEMOUTH** club members were unsuccessful with their entry in the club section of the **BATRC**, the members seemed to have had a great deal of fun gathering material. On one occasion, using a Grundig TK1 borrowed from Tape Recorders Limited of Westbourne, they were set upon from all sides during a visit to a fair-ground as the "barkers" vied with one another to shout the longest and loudest. "Frantic efforts" were made to complete their tape, and the final effect was achieved at 1.30 a.m.

They are still holding their fortnightly quizzes, and have been achieving great personal satisfaction from this, not to mention the three-inch reel of tape which are the prizes.

A number of members have also been assisting the local aged. Their recent visit was to the Loxley Grange Home for the Aged, where they provided an entertaining evening including songs sung by a member's grandson.

A change of chairman is announced. The role previously filled by Mr. W. Meads has been taken over by Miss Doreen Slack.

The **SHEERNESS** club members are the latest to acknowledge the services to be provided by tape clubs. They are to visit the St. Laurence Club for the Disabled this month to record the members' greetings for eventual dispersion throughout the country. They will send the tapes off to various contacts, who will in turn play them back to the members' relatives.

This club is also currently engaged on producing a magazine which they plan to make available to residents in the Blackburn Home for the Aged.

The **BRIXTON** club had a hectic time at the Lambeth Festival in June. They had promised to record some of the side-shows and interesting personalities at this annual event, and eventually came



MR. F. C. JUDD, A.Inst.E., displays the equipment used during his recent Electronic Music demonstration at the British Recording Club headquarters. During his lecture Mr. Judd made clear the distinction between this newest form of creative composition and "musique concrete," with examples of both. The effects obtainable by sound filtering, extended echo, delay distortion, speed manipulation, reversed recording, and the use of tape loops were all effectively demonstrated, as were stereophonic effects and the movement of sound. The second half of his lecture was devoted to a recital of Electronic Music.

away with over fifteen hours recorded material. A baby show, dog show, firework display, beauty queen contest, plays, jazz shows, band and talent contest all came before their microphones to provide what the secretary has described as their most ambitious programme to date.

When the material collected has been edited into programme shape a copy will be presented to the Mayor of Lambeth. This dubbing is then scheduled for playback to the local hospitals, schools and clubs.

Another of the recent activities, their tape on the 1961 Audio Festival, has received a fair reception from other organisations. It was incorporated in *Tape Magazine for the Blind*, edited by Charles Standen, who reports worldwide distribution.

Local fame came to the **ABERYSTWYTH** members recently following the success secretary Gareth Jenkins had when one of his tapes entered in the Curry's Make-a-Tape contest was broadcast on Radio Luxembourg. His recording was of the Aberystwyth University Male Voice Choir singing *Laudamus*.

He followed his successful recording with a visit to the small Nantymocho Chapel where, with Roy James, he taped the last communion service before the valley was flooded in accordance with a large electricity scheme. Faced with the problem of no electricity at that time, they used a Rotary converter. The successful recording is the only record of this service, and should most likely prove valuable in later years.

This club, now completing its second year, has made a speciality of this type of recording, and have successfully taped many historical and musical events in the town. They have also provided many musical programmes for the General Hospital nearby.

Perhaps not in either category, but equally as cherished is the recording owned by Percy Moore. This features his talking budgerigar reciting nursery rhymes in a most amusing fashion.

Another club keen to preserve the impressions of the modern day on tape is that in **ULSTER**.

At the beginning of June the members rallied with a vengeance to record the Bangor Walk, a five-mile hike from Dundonald to the coastal town. Secretary Charles Monaghan made arrangements to cover the route right from the start, and a team of reporters were stationed at points along the road. In addition, a member with a roving commission was assigned to talk to competitors as they walked.

Another recently recorded event was the Lord Mayor's Show. Members are currently collating tapes and editing these for the finished recording.

Although only in the preliminary stages, their latest exercise might prove interesting if successful. They plan to make recordings from beneath the sea, although there is no information at present as to the method they propose using.

A change of venue is announced for the **YORK** club, thanks to the kindness of Mr. H. Bridge, a professional photographer who has loaned the use of his studio.

Describing the new headquarters as 100 per cent, the chairman of the club

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.

MISCELLANEOUS

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

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

40 per cent below usual prices. Highest Grade Standard Recording Tape. Polythene, boxed and unconditionally guaranteed, brand new—7 in. reels 19s., 5 in. reels 12s. 6d. p. & p. on each tape 1s. or free on four or more tapes. W.S.L. (Tape Dept.), 106, Greyhound Lane, London, S.W.16.

REWARD £10 leading to recovery of one Philips Stereo tape recorder, type number EL3536. Serial number 31740. Complete with stereo microphone on chrome stand with black crackle base. Six reels of tape. One automatic repeating tape magazine model number U-310CC. Above stolen Wealdstone area Saturday, August 5. Box 425, *Tape Recording Fortnightly*, 1, Crane Court, Fleet Street, E.C.4.

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

"BRAND FIVE" American Tape. Standard Play 5 inch (600 feet) 16s.; 7 inch (1,200 feet) 25s.; Long Play 5 inch (900 feet) 18s. 6d.; 5½ inch (1,200 feet) 23s. 6d.; 7 inch (1,800 feet) 35s. Sent by return. Post Free! Watts Radio, 54, Church Street, Weybridge, Surrey.

A BINDER is the ideal way of keeping your copies of *Tape Recording Fortnightly* clean and ready for easy reference. Available, price 14s. 6d. (post free), from 7, Tudor Street, London, E.C.4.

PRE-RECORDED TAPES

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

SERVICES

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

TAPE-TO-DISC

J & B RECORDINGS. Prompt Tape to Disc and Sound Effects Service. 14, Willows Avenue, Morden, Surrey.

TAPE TO DISC RECORDING. Reduced prices. Finest professional quality. 10-in. L.P.—30s. (32 mins.), 12-in. L.P.—35s. (45 mins.). 7-in. EP 17s. 6d.

48-HOUR POSTAL SERVICE

S.a.e. for leaflet to Deroys Sound Service, 52, Hest Bank Lane, Hest Bank, Lancaster. Tel.: H.B. 2444.

FOR SALE

A Brand New 3 inch spool Emitape given free, if you purchase my Grundig Cub, complete with accessories and new batteries, bargain at £14 10s. J. B. Rogers, East View, Hope Village, nr. Wrexham, Denbighshire.

Philips EL-3536 4-track Stereo Recorder, with microphone, £75 or swap for Tandberg. Towell, 107, Spilsby Road, Boston, Lincolnshire.

Grundig TK55 Tape Recorder for sale, immaculate condition, hardly used, will accept £65 o.n.o. Write, M. J. Parker, 69, Bruce Avenue, Hornchurch, Essex.

Enthusiasts complete recording equipment. Simon S.P.4 recorder, 10 watts output on wheeled trolley. Two Simon microphones, Cadenza Ribbon and Crystal. Unused Collaro Studio Deck with unassembled Heathkit TA/IM tape pre-amplifier with power supplies kit. Components, including speaker, for monitoring output. Over 30 7-inch tapes, mostly long play, in wooden carrying case. Bulk eraser, splicer, etc. All in mint condition. Cost over £220. Bargain £120. Cannot separate. Cobb, 6, Kenilworth Gardens, Westcliff, Essex.

TAPE EXCHANGES

Tape recorder owners who would like to make contact with others of similar interests to exchange news and views by tape are invited to send their name, address, sex, age and special hobby.

It will be assumed that all tape contacts will be made using a speed of 3½ ips, on half-track tape. Maximum spool size only is given.

Clark, T. G. Cpl. (34) 23491263, H.Q. Company, 2nd Green Jackets, The King's Royal Rifle Corps, Wavell Barracks, B.F.P.O. 45. Interested in travel. 3½ ips only. Message spools only. Contacts wanted in USA and Canada.

Daniels, Tony (17) 61 Darlington Road, Ferryhill, Co. Durham. Aviation, cars, and pop music. 7-inch spools. 7½, 3½, 1½ ips. Contact anywhere.

Freeman, David "Seacroft," Chapel Porth, St. Agnes, Cornwall. Photography, motoring, melodious music. 7-inch spools. Contacts anywhere welcome.

Hadfield, D. A. (Male-27) 8 Barcombe Road, Heswall, Cheshire. French language. 7½ and 3½ ips. 8¼-inch spools. Contacts in France required.

Hourston, Stanley (19) "Roslin" High Street, Sanquhar, Dumfriesshire. Pop music, philately. 3½ ips. 5¼-inch spools, but message tapes preferred. Contacts anywhere, particularly female.

Howe, John W. P.O. Box 684, Detroit 31, Michigan, U.S.A. Tape exchanges in UK wanted. 3-inch reels.

Subscription Order Form

TAPE RECORDING FORTNIGHTLY,
7, TUDOR STREET, LONDON, E.C.4

I enclose my subscription of 45 shillings for one year, post free (Subscription to USA and Canada \$7) beginning with the issue dated.....

(BLOCK CAPITALS)

Mr., Mrs., Miss.....

Address

"Tape Recording Fortnightly" is published on alternate Wednesdays, and is obtainable at newsagents, bookstalls, and music and radio dealers.

News from the Clubs

(Continued from page

adds that VHF reception is very good, and, most important, the room has nine 13 amp power points.

In his latest letter he also makes an appeal for more members. At present the local enthusiasts are reticent probably on the grounds of technical inability, but Mr. Machen points out that all are welcome, that they would particularly welcome girl-friends and wives along. At one of their latest meetings members welcomed local dealer Mr. D. Parker of Messrs. Cussins and Lights Ltd. for a demonstration of his range of recorders. They are currently writing to other manufacturers for further demonstrations.

Via the cards that are still being returned to our office, we learn that two clubs have ceased to exist, and that another is closed temporarily while a search for new premises goes on.

Mr. R. V. Huddlestone, who is currently engaged with the organisation of the UK section of Stereo International, writes to say that since he left Grantham the club seems to have disbanded altogether, and that the members have now formed as a radio club.

The second disappearance concerns the **Portslade** club where Roy Mitchell once held the reins. Although not in a position to console any Grantham enthusiasts, those in the Portslade area may find it worthwhile to contact Mr. Ralph Vivian of 37, Ditchling Road, Brighton, who is the secretary of the **BRIGHTON** club.

The club without headquarters is in **Southampton**. The secretary, Mr. Leonard C. Wallbridge, can however still be contacted at 110, St. Catherine's Road, Bitterne Park, Southampton.

A recent letter from the George Cross island gave news of an intended club formation.

The writer was A. Degorgia, 33, High Street, Hamrurn, Malta G.C., who had asked for information of the UK clubs. Any interested secretary is sure to achieve an interesting tape contact if they write to Mr. Degorgia.

News of another club having been formed, this time in **Southall**. Their first newsletter to be received contained news of an exhibition organised for the Southall Summer Fair during August.

This was a three-day Arts and Crafts festival held under canvas, and the club members arranged to erect a stand displaying their equipment and describing the techniques of recording.

The secretary is N. Robinson of 14, Hayes End Close, Hayes End, Middlesex.

Other recent letters received, include one from Mr. J. J. H. Stennings of 36 Shakespeare Crescent, Manor Park, London, E.1, who has been pondering on the idea of starting a tape club for those interested in languages and travel. He would be interested to hear from any persons who would consider this idea.

Secondly, a reminder for those sound effect experts. Mr. Eric Yardley of the Teddington Theatre Club wrote recently describing the activities of two of his societies' members who are responsible for the sound effects for their productions.

A recent script, Thornton Wilder's *Our Tom*, was full of all manner of effects,

ranging from distant trains, clucking chickens, lawn mowers, and tolling bells. In addition background music was introduced to heighten the illusion, and so it became necessary to prepare a complete tape. Obviously, all these had to synchronise with the lines and action on stage, and the two technicians must have been well satisfied with the tremendous contribution they made to the final effort.

Other enthusiasts may well feel that such work would be an excellent outlet for their talents. Drama societies would certainly endorse these sentiments, and the Teddington Club would welcome such members.

Once again, any interested persons are invited to contact direct. Mr. Yardley's address is 7, Luther Road, Teddington, Middlesex.

CLUB MEETING DIARY

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

ABERDEEN: 1st Tuesday in every month at 8, Deer Road, Woodside.

ACTON: Alternate Fridays at the King's Head, Acton High Street. (Sept. 1.)

BARNSELEY: Every Tuesday at YMCA, Eldon Street.

BATH: Alternate Wednesdays at St. Mary's Church Hall, Grove Street. (Aug. 23.)

BEDFORD: Final Tuesday in month at 131, London Road.

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

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

BIRMINGHAM (SOUTH): Alternate Mondays at Strichley Institute, Hazlewell Street, Strichley. (Aug. 28.)

BLACKBURN: 1st and 3rd Tuesdays at Blackburn YMCA.

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

BOURNEMOUTH: Alternate Tuesdays at the Queen's Hotel, Queen's Road, Bournemouth West (Sept. 19.)

BRIDGEWATER: Every Tuesday at Evis' Radio Shop, West Street.

BRIGHTON: Every Wednesday at The Brunswick Arms, 38, Ditchling Road.

BRISTOL: Alternate Wednesdays at Redcliffe Church Hall, Guinea Street, Redcliffe. (Aug. 23.)

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

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

CARDIFF: 1st and 3rd Tuesdays at 46, Caroline Street.

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

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate. (Sept. 4.)

COTSWOLD: Fortnightly, alternating Monday and Thursday at Bayshill Hall, Royal Well Lane, Cheltenham. (Sept. 7.)

COVENTRY: Alternate Wednesdays at Holyhead Hotel, Coventry. (Aug. 30.)

CRAWLEY: 1st and 3rd Mondays at Southgate Community Hut.

DARTFORD: Every Thursday at 41, Winsor Drive.

DONCASTER: Alternate Thursdays at Lancaster House, Westlithie Gate. (Aug. 31.)

DUBLIN: 1st Monday at "Hardy House," 6, Capel Street.

DUNDEE: Alternate Mondays at The Salvation Army Hostel, 31, Ward Road. (Aug. 28.)

EASTBOURNE: Alternate Saturdays at Hartington Hall, Bolton Road. (Sept. 2.)

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

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

GRIMSBY: 1st Monday at 21, Langton Drive, Nunthorpe, Grimsby.

GLASGOW: Fortnightly, alternating Tuesday and Thursday at the Christian Institute (Aug. 29.)

HARROGATE: Every Wednesday at 4, Bedford Road.

HARROW: Alternate Thursdays at St. George's Hall, Pinner View, North Harrow. (Aug. 24.)

HINCKLEY: Alternate Wednesdays at The Wharf Inn, Coventry Road. (Aug. 30.)

HOVE: Every Thursday at 44, Hogarth Road, Hove.

HUDDERSFIELD: 1st and 3rd Wednesday and 1st Monday at the Public Library, Ramsden Street.

HULL: Alternate Tuesdays at 281, Hesse Road. (Aug. 29.)

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

IPSWICH: Alternate Thursdays at the Art Gallery, High Street. (Aug. 31.)

JERSEY: 1st and 3rd Mondays at "Santa Barbara," Maufant, St. Saviour.

KEIGHLEY: Alternate Wednesdays at the South Street Sunday School Rooms. (Aug. 23.)

KETERING: 2nd and 4th Wednesdays at the Rising Sun, Silver Street.

LEEDS: Alternate Fridays at 21, Wade Lane, Leeds 1. (Sept. 1.)

LEICESTER: Alternate Fridays at the Newark Girls' School, Imperial Avenue. (Aug. 25.)

LONDON: 2nd and 4th Thursdays at the Abbey Community Centre, Marsham Street, S.W.1. (No meetings in August)

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

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

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

MIDDLESBROUGH: Every Wednesday and Friday at 130, Newport Road.

NORTHAMPTON: Tuesdays and Thursdays at 36, Spring Gardens.

NORTH LONDON: Alternate Wednesdays from 1st Wednesday in month, at Bush Hill Park School, Main Avenue, Enfield.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Heathcote Street, (Aug. 24.)

NORWICH: 4th Tuesday at "Lady Chamberlin Hall," 38a, St. Giles' Street.

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

PLYMOUTH: Alternate Wednesdays at Virginia House, Plymouth. (Aug. 23.)

READING: Every Monday at Abbey Gateway.

REDDITCH: 4th Thursday at The White Hart Hotel, Headless Cross.

(Next meeting, September 28)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (Aug. 24.)

SHERNESS: Alternate Fridays at 136, High Street. (Sept. 1.)

SOUTH DEVON: Alternate Wednesdays at the Y.M.C.A., Castle Circus, Torquay.

(Next meeting, September 13)

SOUTH-WEST LONDON: Every Wednesday at Mayfield School, West Hill, S.W.15.

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (Sept. 5.)

STEVENAGE: 1st and 3rd Tuesdays at the Tenants' Meeting Room, Marymead.

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

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

SWANSEA: Every Monday at 65, Wind Street.

URMSTON: Alternate Thursdays at Davyhulme Scout Hut, Barton Road. (Aug. 31.)

WAKEFIELD: Alternate Mondays at York Street Hotel. (Aug. 28.)

WALSALL: Every Wednesday at Bluecoats School, Springhill Road.

WALTHAMSTOW: Alternate Fridays at 22, Orford Road, E.17. (Sept. 1.)

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

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

(No meetings in August)

WEST HERTS: Fortnightly alternating at the Cookery Nook, High Street, Watford (Aug. 23) and Heath Park Hotel, Hemel Hempstead. (Sept. 6.)

WEST MIDDLESEX: 2nd Thursday at the Railway Hotel, Station Road, Hampton, and 4th Thursday at Southall Community Centre, Bridge Road, Southall.

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

WEYMOUTH: Alternate Wednesdays at The Waverley Hotel, Abbotsbury Road. (Aug. 23.)

WINDSOR: Every Thursday at The Royal Adelaide Hotel.

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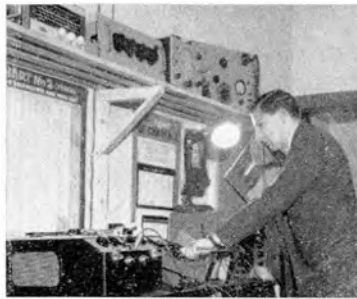
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BRITISH AMATEUR RECORDING CONTEST 1961

Results and report

(Continued from page 9)

His entry was recorded on a Baird machine, at 7½ ips, using Scotch tape, a Reslo ribbon microphone and an Emitape Edi-tall block, with a Vortexion and a Ferrograph as additional recorders for sound effects and dubbing.

The tape was put together in two months last spring, with one assistant to help with the dubbing and various others taking parts in the play or lending equipment.

D. J. Garrett is one of the small group of enthusiasts who last year won the club section of the contest. As with that earlier success, the winning tape was made entirely with Gramdeck equipment—this time with three decks and two pre-amplifiers. Emitape was used, at 7½ ips, with two Lustraphone LD61 and one Chitnis M62T microphones and a wide range of home-built equipment. Mr. Garrett is 20 and has been recording for two years.

Richard A. Margoschis is a 41-year-old Public Health Inspector, who was a prize-winner in the 1959 Contest. He has been recording for about seven years, and he has contributed articles to these columns, his latest appears on page 10.

Most of his entry had to be recorded out of doors and he used a Fi-Cord, with Reslo and Grampian microphones, Emitape and a Bib splicer. A good deal of home built equipment was used for the final mixing and dubbing, as well as Bradmatic and Brenell decks.

Mr. Garrett and Mr. Margoschis are the only two winners who have appeared in earlier Contest prize-lists.

Another of the newcomers this year is Albert Pengelly, a 36-year-old Plymouth company secretary. He has been recording for ten years and his winning tape was made in a lecture theatre at Plymouth City Library, using a Ferrograph 4 S/H, BASF standard tape at 7½ ips, one STC 4038, one Reslo and two Simon Cadenza microphones, all fed into a home-built four-channel mixer. Home-made acoustic screens were amongst the other equipment used.

Miss A. M. Goodwin is a former Civil Servant and is the first woman ever to appear in the Contest prize-lists. Her recording of bird-song was made in a barn in Somerset last May, using a Ferrograph recorder, Irish tape at 7½ ips, an STC microphone and Bib splicer.

Denis B. Affleck, is a 55-year-old telephone engineer who has been recording for only ten months. He used a Truvox recorder and Emitape, at 7½ ips, with a Bib splicer.

Pennington Junior School submitted their entry through Mr. R. B. Cruse. The children are aged 10 to 11 and have had one year's recording experience. Their entry was made on a Repts R40, using Triton tape at 7½ ips, and an Acos 39-1 crystal microphone. The script was written in groups by the whole class of 32 children.

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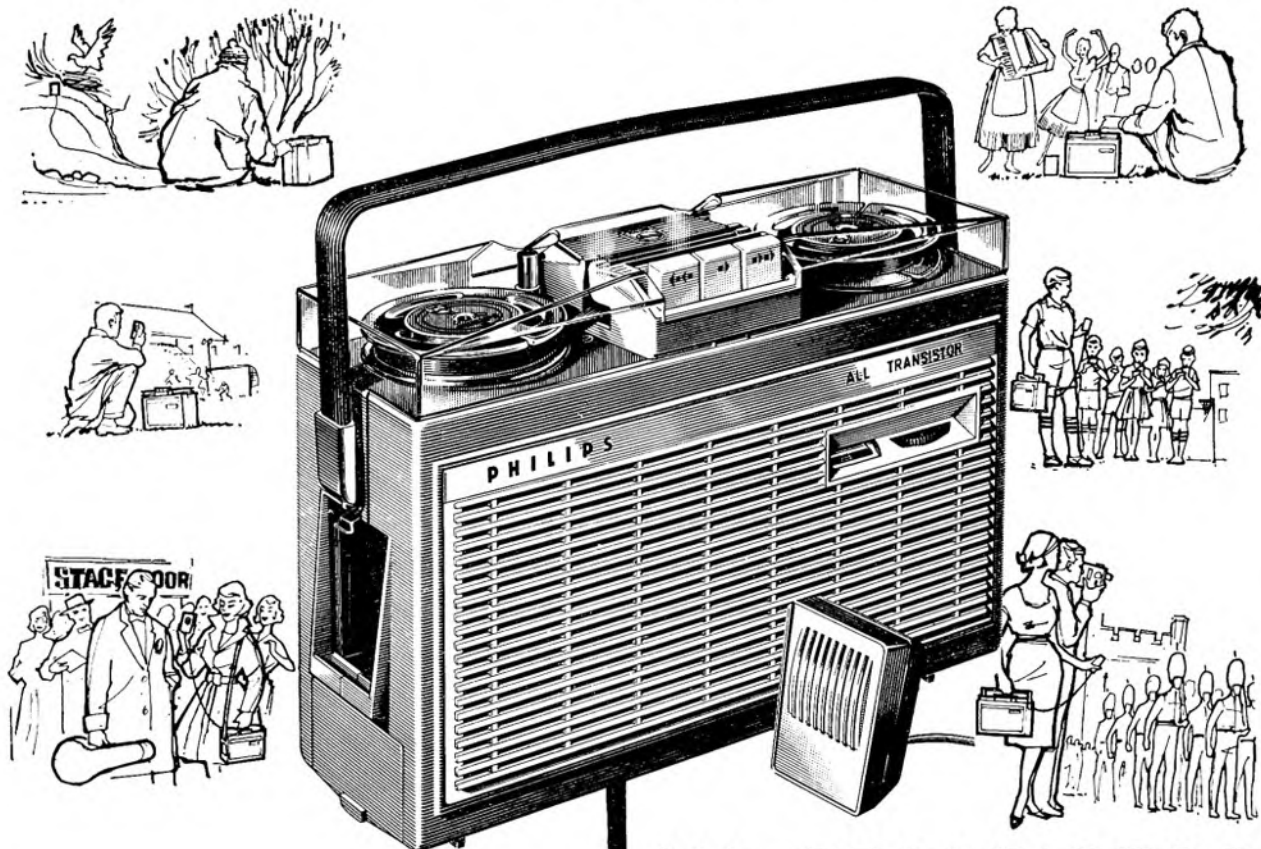
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