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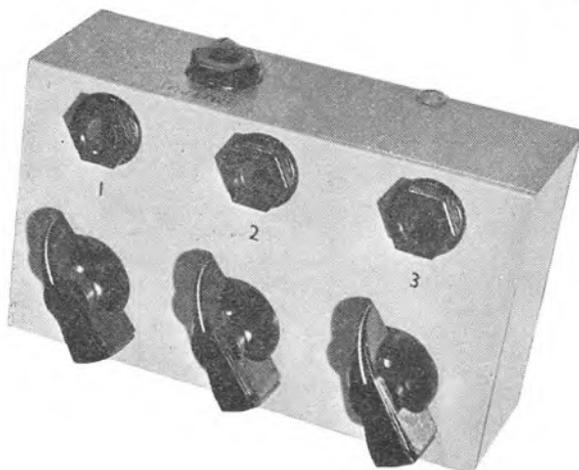
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It is not generally known that the Tape Deck mechanism is virtually re-built in the REPS machines. It is standard procedure to remove all rubber wheels—i.e., re-wind, idle and pinch—and re-grind them to a closer tolerance. Also the Capstan is skimmed to less than ± 0.0001". This has resulted in a very low "wow" factor, especially at 3 3/4 ips which has lead to the logical introduction of 1 7/8 ips in place of the 15 ips. The principal cause of "flutter" is due to the eccentricity of the three-step pulleys which control the tape speed. This eccentricity occurs when the pulley is locked to the motor shaft and is due to the off-setting action of the fixing screws. This difficulty has been overcome by manufacturing pulleys over-size and machining to the correct diameter when fitted to the motor shaft. By this method a total variation of less than 0.0001" has been achieved at 1 7/8 ips. Initial measurement indicate total "flutter" content at 1 7/8 ips to be of a lower order than previously associated with 3 3/4 ips.

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

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

QUITE a lot of discussion seems to be taking place quietly behind the scenes about the future of audio exhibitions in this country.

The organisation of the Audio Hall at the Radio Show and of Northern Audio Fair is under way. And exhibitors have analysed carefully the results of their participation in the last London Audio Fair, which was generally regarded as the most successful so far. There were 34,000 visitors in four days.

But the need now seems to be for something pitched about mid-way between the Audio Fair and the Radio Show.

Space in hotels is severely limited. The rule has been that all firms, big and small, shall have similar facilities. But if some of the leading firms were given scope to put on the displays of which they are capable, the event would attain a new stature.

As a part of the same exercise, more of the public would be attracted. It is a strong point that the Audio Fair now draws the well-informed and the enthusiast. But it is desirable to have a leavening of newcomers; the Audio Fair should play a vital role in extending the circle of knowledgeable people by drawing in those whose interest may yet be casual.

This, of course, involves more space. Yet the big exhibition hall does not provide a ready answer. There have got to be effective private demonstration rooms and it would be uneconomic to have to build them specially each time.

If the organisers planned well ahead, however, say for five years, might it not be possible to arrange for sound-proofed sectional rooms which could be dismantled and stored between exhibitions?

We do not underestimate the difficulties, and we admire the business-like way in which problems have been tackled in the past, but the evidence is mounting that bold new thinking is now called for.

Talking books

THE "talking book" is clearly going to fill an important role in the future. It began, of course, with the blind. It was extended for the teaching of languages. Now it is being applied to juvenile literature.

But the frontiers have nowhere been touched and we may anticipate big developments in this field before long.

I have before me as I write the latest five titles produced by the Talking Book

Company Ltd., in association with the publishing house of Methuen. Each is a well-produced booklet of twelve or sixteen pages, illustrated in colour, bound into a stout card cover with an attractive glossy finish. Inside the cover is a seven-inch 33½ rpm long-play disc.

The value of these talking books is superbly illustrated by that entitled "Bird Song," by Ludwig Koch. On the record are Koch's recordings of sparrows, the carrion crow, the rook, the raven, the starling, the blackbird and the thrush.

He introduces each song himself, while in the book he has written about them under accurate colour illustrations provided by Richard Taylor. It is undoubtedly true that there has never before been such an effective introduction to ornithology for young people.

The other new titles are: "The Story of Jesus," read by John Betjeman; "Instruments of the Orchestra," by Percy M. Young; "Windy Old Weather," sea shanties by Bob Roberts; and

"Kissin's nae sin," Scottish love ballads by Isabel Sutherland and Jimmie MacGregor. These talking books cost 8s. 6d. each.

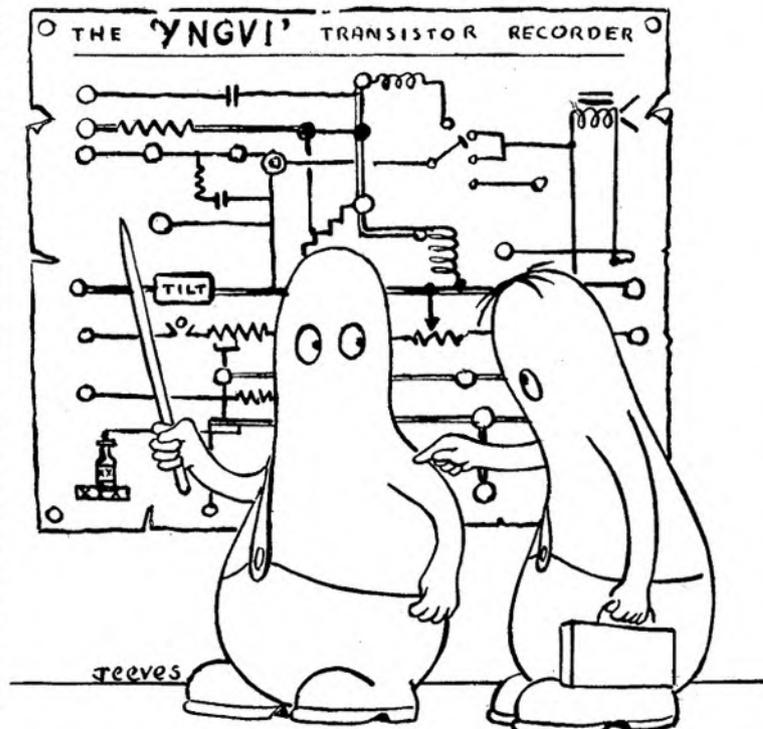
Sumptuous

SPEAKING of fine books, I must refer to "Hi-Fi Journey with Lasky's." This is, in fact, a catalogue of tape and hi-fi equipment—but you would never guess it when you see the glossy colour cover and delight in the sumptuous production.

It is one of the most comprehensive illustrated guides to what is available on the market that has ever been produced. It includes a great deal of technical information and will prove of considerable value as a reference book.

It costs 3s. 6d. if you buy it at one of Lasky's shops, or 4s. by post. I do not propose to draw attention to trade catalogues as a regular thing, but this one is quite exceptional.

LAUGH WITH JEEVES



"Can you tell me where I change for the Inner Circle line?"

SCHOOL DOES GOOD TURN WITH TAPE

A "GREETINGS on tape" service has been inaugurated by a group of boys and girls at St. Christopher's School, Letchworth, Herts, for patients in local hospitals, making it possible for the patients to record messages and send them to relatives who live too far away to visit. The hospital management committee has accepted the scheme and patients may now send messages of up to ten minutes in length for just the cost of posting the tapes.

The same recorder, bought by selling scrap metal and woollens, also provides a book-reading service for blind people. Provided they possess a tape recorder, they can ask the recording unit to read a book passage on to a tape which may then be played back at the blind person's leisure. It is hoped later on to extend this service to the production of a periodic magazine in which interesting events will be recorded.

and tape helps deaf children

SOUNDS crazy! . . . but tape recorders are definitely being used in schools for deaf children in Scotland today.

Heads of education authorities and other organisations, always on the lookout for new methods which can be used for aiding handicapped children, have been giving this medium a great deal of thought for some time and results up to date are encouraging.

In Gateside School, Paisley, the staff have adapted themselves to this new technique and have produced some excellent results.

Samples of the pupil's speech are recorded. About half of the children can, with amplified sound, hear the play-back of their own voices and defects of articulation, accent, rhythm, pitch and other faults are pointed out. Then, with skill and great patience, the staff give the pupils practice in improving their performance.

The teacher, by listening to a recording, gets a better over-all impression of the intelligibility and naturalness of a child's speech.

Deviations from the normal stand out, and so help the staff to concentrate their efforts on removing these.

The recorder is also used as an amplifier and will be used more when a loop system is installed.

Still very much in the experimental stage, the authorities hope to build up a collection of recorded tunes to illustrate rhythms for walking, skipping, running and other practises for rhythmic exercises. And with all the skill and ingenuity of their staffs at their disposal, the authorities feel confident of finding other uses for the recorder in the near future

THE WORLD OF TAPE • A NEWS ROUND-UP



TELEVISION personality. Al Koran, used his Grundig Cub tape recorder in a novel manner recently. On the Monday before Derby Day he recorded his forecast of the winner, and the tape was carefully locked away. It was brought out again on Derby night in Al's own show and thousands of viewers heard the playback. Al had not only successfully predicted the winner but the second and third as well.



Mrs. Clara Coles of Smethwick, Staffs., receiving from Mr. Michael Miles a Wyndor Victor recorder, won on the final programme of the Associated Rediffusion television quiz "Take Your Pick"

Contest entry may help solve traffic problem

ONE of the entries in the 1960 British Amateur Tape Recording Contest may well be turned to another use and perhaps finally assist in solving a traffic problem in Mitcham, Surrey. To gain authentic material for an entry in the reportage section, two Mitcham 17-year-olds, John Burnett of Tamworth Lane, and John Morgan of Brenley Close took their "mobile recording studio"—a car battery, generator, tape recorder and microphone, mounted on a bicycle trailer—to the nearby Eastfields level crossing.

The crossing is the scene of long queues of traffic during busy periods and motorists interviewed by the two youths expressed strong views that something should be done about the hindrance which had kept some of them waiting up to twenty minutes.

For a number of years the crossing has been the subject of controversy and a local residents' association has repeatedly asked for it to be widened. To provide some first-hand evidence of what the motorists who actually use it feel, John Burnett says that he and his friend have been thinking of sending a copy of their recording to the Town Hall.

Stuzzi display

A PUBLIC demonstration of Recording Devices Ltd. Stuzzi recorders at the Welbeck Hotel, Nottingham, drew over 200 people. Mr. K. Short demonstrated the Magnette and the Tricorder, using the latter to give part of the lecture unaided, in conjunction with slides and a projector. He also answered 45 minutes of questions. The display was organised by Nottingham Tape Recorders Ltd.

Auditioned on tape

A JAZZ band in Leicester recently signed up by a band agency in Manchester may have started a new fashion in auditioning technique.

The Clayton Jones Jazz Band was anxious to get engagements in the North of England, but neither they nor the principals of the Dixon Orr Agency in Manchester could find a mutually convenient time or place for an audition. The difficulty was overcome when a tape recording enthusiast in Leicester agreed to "sit in" on a session at the Jazz Club where they play and record the proceedings.

The tape was then sent to Manchester and after playing it through the Dixon Orr Agency agreed to represent the band.

USE YOUR IMAGINATION

urges Bertram Russell

YOU will not get maximum value for your recorder unless you use it imaginatively. Let me give an example. Most people use their machine to correspond with a friend. Experience has shown me that such correspondence is frequently stilted and too much an imitation of a normal letter, rather than a full use of the facilities of self-expression and communication offered by the recorder.

I have turned my own taped correspondence into something more alive and interesting. On the first letter, I got my wife to chat with me, bearing in mind that the microphone was eaves-dropping on behalf of the friends to whom the "letter" was being dispatched. Then we drew our two girls into the conversation, so that what we actually recorded was a family conversation-piece designed to cover the appropriate news and views for the friends to whom the "letter" was being sent.

As a 300 ft. reel of tape allowed us, at 3½ ips, some fifteen minutes per side, our conversation-piece was completed on one side. Then, applying a little more imagination, I got my family to hunt out a group of their favourite poems which we proceeded to record, with appropriate comments, on the other side of the tape.

We were delighted, when we received the tape back, to find that our friends had adopted the same technique. We were able to judge how effective the idea had been, and it was a great improvement on the direct letter style.

One cannot use the recording of poems continually, without exhausting interest, but I recollected that our friends were particularly fond of the small copse in which my home is situated. So I decided, with the second letter, to give them a sound picture of our garden and the copse—we had a nightingale and cuckoo performing at the time.

Most parents owning a tape recorder put it into use when their child has a birthday party, for the young guests are usually anxious to hear their own voices. But they usually restrict this use to the trying out of voices; by applying a little imagination in advance, I recently made fuller use of my machine on my daughter's birthday.

I got from her a list of the children who were to be her guests—some four-

teen of them. Then I recorded a twenty-minute short story on my machine, introducing the names of all the guests into the narrative. During the party I switched on the machine and told them that every time their name was mentioned in the story they were to put up their hand or else score a point for a forfeit. This proved to be the most popular event at the party.

Turning to a different field, I was discussing with a headmaster the uses to which a recorder can be put in school. We listed speech training, poetry reading, puppetry, geographical and historical "documentaries," dramatics, training in singing, and so on. Thinking later of this discussion, I decided that many of the school activities could be modified for home recording. As an example, the history "documentary" became a "Family History"; it was soon obvious that this could be a recording in which the various branches of the family could be invited to record, particularly grandparents, who invariably have a fund of family anecdotes. Blended into the narrative would be sound recordings of the hobbies and activities of various members of the family, even such oddities as the peculiar whistle of guinea-pigs owned by nephews or nieces!

A further use of the recorder was found by my elder girl, who took advantage of it to revise her language studies. That set me an example. I wished to revise my study of a textbook on psychology, and I did so by reviewing a chapter and making notes on it. These notes I then dictated on to tape and, during the remaining days of the week, I played them back at least twice a day. The following week I dealt with the next chapter, and so on until I had revised the entire book. I found that this method helped considerably in fixing essential data in the mind.

There have been articles in *Tape Recording Magazine* on the use of recorders with puppets, but some fellow recording enthusiasts, Aileen and Bill Hall, who present the "Petroma Puppets" in Sussex, are developing this use to a high degree. I recently had the pleasure of hearing one of their recorded scripts; announcements, complete dialogue, incidental music, sound effects, and final announcements were all recorded, so that attention could be almost exclusively concentrated on manipulation of the puppets.

These few brief pointers will, I hope, have been sufficient to show how a new world of interest and enthusiasm may be opened up—by applying a little imagination to one's routine recording activities.

The Editor recently made a 4,500 miles round tour of Europe—with a tape recorder. Here he relates some of his experiences during the time he spent in the U.S.S.R.

SOVIET RUSSIA is this year beginning a new drive to attract tourists from the West, and there is consequently greater interest today than ever before in the recording possibilities of the country. As a part of that drive for visitors, a new through train from the Hook of Holland to Moscow was recently inaugurated and, as a journalist with a personal enthusiasm for railway matters, I was invited to travel on the opening run.

I took a Fi-Cord recorder, Gram-pian microphone, and seven reels of long-play tape. I returned with about one-and-a-half hours of first-class recorded material with which it should be possible, when I have the time, to construct a feature programme on tape of up to two hours' duration, allowing for the linking narrative.

All the recordings were made at 7½ ips and, with few exceptions, on one track only, to facilitate editing.

I started from London with some slight apprehensions. Cameras and tape recorders figured recently in a big spy row centred on Moscow. Over the last three years I have been trying consistently to obtain basic information about tape recording progress in the Soviet Union—without success; I concluded that domestic tape recording was probably unknown there. Hence, the sight of an ordinary individual operating a recorder in public places might cause a stir.

Let me say immediately, therefore, that I encountered no difficulties of any kind. My tape recorder attracted no undue attention, either in Russia or at the various customs posts which I passed. I wandered freely about Moscow and Leningrad taking recordings wherever I chose. Very little interest was shown; certainly no one tried to stop me.

I recorded on railway stations, in



To Russia with a recorder

Red Square, in the Kremlin Museum, in the streets, and in shops.

When I was directly recording individuals I always made a point of informing them in advance that I would like to do so, and obtaining their permission. In this way, as I toured the two big cities, I was able to record all the interesting passages from the Intourist guide's descriptions, with the result that I have brought back much information which I would otherwise have forgotten.

On the way to Moscow, I was able to obtain some superb railway sounds. From Brest, on the Polish-Russian frontier, to Moscow is a 700-mile journey across vast open farmlands. The steam locomotive that hauled the train was twice the size of anything ever seen in Britain. And its whistle was a long, low, husky moan, full of the lonely, echoing sadness of the wide open spaces. No sound will ever recapture for me more quickly or surely the rare quality of my journey than that locomotive whistle, of which I have a number of first-class recordings.

Naturally I recorded a number of station announcements—that with which the journey began at the Hook of Holland and that with which the return trip began in Moscow. On the way there, I left the train at Minsk and strolled among thronging crowds along the platform in the afternoon sunshine. I secured a fine "atmosphere" recording of the chatter of those crowds, with the station announcer in the background.

During the train journey, Russian

music was broadcast through the train, each compartment of which was fitted with its own midget loudspeaker. Incidentally, this music was provided from a tape recorder operated by one of the train conductors, and this appeared to be a standard feature on Soviet trains.

I made several recordings of this broadcast music and it should serve well, alternating with the rattle of train wheels, to provide continuity in my final, edited programme.

In Moscow and Leningrad, apart from the guides' commentaries and some individual interviews, I endeavoured to get a number of representative sounds of the two cities. An obvious one in the capital was the sound of the clock in the Kremlin tower.

In Leningrad, at noon each day, a cannon gives a tremendous boom from the walls of the Peter and Paul fortress.

While I was in Russia, I was naturally anxious to investigate how far tape recording has caught the public interest there. Soviet science and technology can be taken to be well up to Western standards in its use of tape, but my impression is that its domestic use is only just beginning, and on a small scale.

Shop display and marketing techniques in Russia bear no comparison with Western practice and it is difficult, during a short visit, to discover how widely recorders are on sale. In a big store in Leningrad, however, I found three machines displayed in the radio and music department.

One was an orthodox two-speed tape recorder priced at 1,600 roubles. One was a combined radio receiver and tape recorder, at 1,800 roubles. The third was a combined tape recorder and disc player, at 1,850 roubles. All appeared to be orthodox in design and robust in construction, but the styling was not up to the best Western standards.

It is not easy to try to express these prices in our own terms. The official rate of exchange is only 11 roubles to the £ sterling, but tourists are offered a special rate of 28 to the £. Even that figure, however, may be artificial when we try to compare Soviet and British prices. A better guide could well be the black market rate. In Red Square late one night I was approached by a tout offering me 60 roubles to the £.

I have no doubt, on the evidence I saw on a short visit, that living standards and consumer demands in Russia are now rising very rapidly indeed. It is fair to anticipate, therefore, that the domestic tape revolution, now that it has begun there, will gather momentum quickly.

The general climate there, too, seems to favour increased contact with the West. It seems to me possible, therefore, that those few enthusiasts who have tried unsuccessfully in the past to establish tape contact with Russians may soon find it possible.

When that happens, you will be able to collect the sounds of the Kremlin clock and the Leningrad cannon without the 4,500-mile train journey which I made last month.

The 1960 British Amateur Tape Recording Contest

The judges are ready

The closing date for entries in the 1960 British Amateur Tape Recording Contest is next Friday, July 1. If you have not already sent off your tapes, do so immediately. The address is 7, Tudor Street, London, E.C.4.

The most distinguished panel of judges ever assembled for the Contest has now been formed.

As announced in our last issue, it includes Sir Ian Jacob, K.B.E., C.B., former Director-General of the B.B.C., and Eric Robinson, the popular music and TV star.

We are delighted to announce this week that Miss Josephine Douglas, another TV star and a popular judge in each of the previous British Contests, has agreed to join the panel again.

The fourth judge will be Robert Milne-Tite, Education Correspondent of the *News Chronicle*, whose specialist knowledge will be of particular value in considering the entries in the Schools Section of the Contest.



This year the Federation of British Tape Recording Clubs is officially associated with the organisation of the Contest, and four leading members will assist the Editor of *Tape Recording Fortnightly* in the preliminary hearing of all the tapes submitted.

A record number of entries is certain this year and judging will go on throughout July. Early in August the distinguished judges will hold a final session in London, at which the awards will be decided.

Prize-winners will be informed at least a fortnight before the official gathering in London on Saturday, August 27, when the awards will be presented.

They will also be invited to the Emitape Luncheon at the Savoy Hotel on that day.



Details of the allocation of prizes between the various categories of the Contest will be published later.

The prize list to date includes the following:—

The Emitape Cup, for The Tape of the Year.

The Grundig Cup, for the best entry in the Schools Section.

The Acos Cup, for the best entry in the "Compositions" or "Music or Speech" sections.

The Federation of British Tape Recording Clubs Plaque for the best entry in the "Clubs" section, presented by John Amphlett.

Seventy guineas in cash, plus many certificates, awarded by *Tape Recording Fortnightly*.

A tape recorder awarded by Chitnis Recorders.

Details of other prizes will be given later.

TAPE RECORDING AS AN AID TO STAFF TRAINING

IN the training of personnel, such as telephonists, sales representatives, lecturers and demonstrators, whose everyday work involves talking to members of the public, the tape recorder can play an invaluable part in making the trainee aware of the importance of the spoken word.

I believe it is true to say that nobody ever hears oneself as others hear them. When your voice is heard by other people, the sound emerges from your mouth and is transmitted by sound waves through the air to their ears. Your own voice is audible to you mainly through bone conduction, so that you do not hear your true voice.

In my opinion, it is desirable for all people who have dealings with the public to know what their own voice sounds like to others and, furthermore, to hear for themselves their powers of expression, tone of voice, and whether or not they are grammatically correct. To that end, I use a high-quality tape recorder.

The Recorder

With regard to the recorder itself, I must confess I have little technical knowledge, but I have, with a certain amount of experience and help from other people, developed a technique of dealing satisfactorily with the trainee.

It takes a lot of courage to hear yourself as others hear you! My experience of getting people to record their utterances for the first time is that they don't want to hear themselves as they really are. The average person tends to put on an act. He feels that his voice will not be as good as he would like it to be, and he would sooner try to imitate somebody else than speak naturally. For that reason, I always give the group a recording session unexpectedly.

At a few moments' notice I tell them that they are going to have a recording session, and that the object of the exercise is for them to hear them-

TAPE RECORDING AS AN AID TO STAFF TRAINING

The training and education officer of a large industrial undertaking describes in this article how he uses recording techniques in his work.

BY H. CHARLES

selves as they really are. I usually begin the session by recording my own voice and playing it back to them, and asking them if it really sounds like me.

They always agree that it does, and I am able to make the very necessary point that the recorder gives accurate reproduction.

Then I tell them that in a few minutes time I shall expect them to come up to the microphone one at a time and talk for a minute or so about anything they like, right "off the cuff." This sounds a little bit hard on them, and I suppose it is. But, on the other hand, I have found from experience that if I tell them in advance, they will probably "mug up" some prose or poetry that they can repeat at the recording session in their best party voices. That is not what I want, because they would not be hearing themselves as they really are. I won't allow them to read, either; it must be spontaneous talking.

Non-Recognition

When the recordings are played back, very seldom do the trainees recognise their own voices, and very seldom do they like what they hear. It is quite a salutary business: hearing oneself for the first time.

I find that most people are aghast at the sound of their own voices. If they have an accent that they don't like, they generally pull faces, and then I have to comfort them by pointing out that the world is full of all sorts of

odd-looking people, and it would be a dull place if everybody was tall, handsome and a fine specimen of humanity.

Similarly with voices. If everyone had a voice like a professional announcer, how uninteresting life would become. Let us have all the different accents and a variety of voices. After all the voice is just as much part of one as is the physical make-up: the colour of the eyes, colour of the hair, the way one walks, and so on. There is frequently a strong family resemblance in the voice, just as there are physical likenesses.

Embarrassing

I regard it as essential that the trainee should know when recording equipment is being used. In my opinion it is entirely unfair to record people without their knowledge. It can be very embarrassing to hear what one has been saying in an unguarded moment.

After the initial recording session, when the trainees have got used to recording their voices, I then ask them to listen again with the object of criticising what they have said and how they said it. The trainees can easily detect for themselves such things as grammatical errors, misuse of words, repetition of such phrases as "you know" and "I mean," and over-frequent use of the conjunctions "um" and "er."

They begin to enjoy this self-

analysis, and after a time they look forward to hearing themselves again, although they never quite get used to the sound of their own voices. They are told that later in the course recording equipment will be used quite a lot, and the sooner they become reconciled to the sound of their own utterances the better. Generally, the trainees make a conscious effort to correct their mistakes, and it is surprising how quickly they improve.

For trainees who are to become lecturers or demonstrators, advice has to be given on how to produce the voice for an audience, with or without the aid of various types of microphone. With such jobs, a certain amount of histrionic ability has to be developed, for I doubt whether any successful public speaker is always entirely natural, it usually being necessary for him to "put on an act" in order to project his personality to the audience. For such trainees, I use a slightly different follow-up, after the initial surprise recording.

Preparation

They are told to prepare a speech, but are warned that they will not be allowed to read it. The speeches are recorded and played back, and the trainee is encouraged to be his own critic. It is surprising how ruthlessly they criticise themselves. Additional constructive criticism and guidance is given by the group's instructor and for this purpose, extracts from the recordings are selected to emphasise the points.

The method I have outlined above of making trainees aware of the importance of the spoken word, by encouraging them to become interested in their own voices, has proved to be effective, especially in cases where people are rather nervous and tend to resent outside criticism. The result of all this is that trainees and instructor work together in harmony, and usually everybody thoroughly enjoys what could easily be an irksome part of the training course.

BRITAIN'S FIRST TAPE RECORDING CONGRESS

The first annual Congress of British Tape Recording Clubs was held in London this month, proved to be an immediate success, and laid a pattern for what is certain to become a new and very important regular event in the British tape recording calendar.

About two dozen clubs associated themselves with this initial venture. They were represented by over 50 members, who gathered at the Russell Hotel, London, for a full Saturday's programme.

The main activity of the day was a series of discussion groups, which examined problems of recording activity, and then reported back to the full Congress.

A panel of experts attended to answer questions and to hear proposals submitted from the discussion groups.

The four groups were as follows:—

"Future developments in tape recording equipment," led by Mr. Roger Aslin;

"The Tape Recording Press," led by Mr. F. Westcott;

A wide-ranging debate

Questions raised in the discussion ranged over a very wide field: *What is a good tape recording? Should clubs concentrate on humanitarian and social service work? What is the attitude of the BBC to amateur recordings? Should manufacturers provide more facilities and less "trim"?* And the experts did their best to reply, with members of the Congress joining in freely with their own views.



THE discussion group on equipment evidently felt that too big a proportion of manufacturers' efforts go into "trim" and decoration. It asked why recorders could not be marketed with "rather more attention to the works," and mentioned specifically the value of a variable bias control for use with different makes of magnetic tape and a variable speed control.

Alan Stableford, in a forthright contribution, thought the tape recorder was now going through a "juke-box phase."

Mr. Spring gave a reasoned reply, pointing out that manufacturers must strike a balance between many conflicting claims. For example, overseas sales must be taken into account, and customers abroad do not always share British tastes. He felt, too, that many laymen demanded simplicity in operation; even a level meter might frighten off some of them.

He suggested, also, that the "trim" that brightens up many recorders on the

market does not represent any significant element in the total cost of a machine.

The equipment group later "came back" with a suggestion that machines were often sold with cheap microphones that could not match the potentialities of the recorder. Why not skip the microphone and devote its cost to fitting a transformer, so that a high quality ribbon microphone could be used?

Discussion of this point produced some interesting information. One manufacturer, it seems, has reported that many of his customers only use their microphones for a few weeks after buying a recorder. After that they only record from the radio, or use their recorders for replay purposes. Yet at the same time they insist on buying a machine "complete with mic."

Mr. Spring explained the possibilities of extension leads. Another speaker warned that some ribbon microphones do not give better quality than crystal microphones and that the fitting of a transformer in place of supply of a crystal microphone would not, therefore, necessarily produce better recordings—unless the enthusiast was prepared to spend more money.



DISCUSSION also took place on the absence of CCIR standard characteristic for 3½ ips speed. Mr. Spring explained that there is now a British standard for this speed and he thought we could look forward to one for 1½ ips before long.

He pointed out that the German stan-



Mr. F. Westcott, the new Chairman of the Federation of British Tape Recording Clubs (left), chatting with Mrs. Marguerite Cutforth, producer of the BBC "Sound" programme, and Mr. L. G. Dive, of BBC Engineering Information



The group which discussed "Future developments in tape recording equipment." Mr. Ken Blake, at the far end of the table (left) presided

NATION-WIDE SUPPORT

THE first Congress of British Clubs was supported by organisations in London, Glasgow, Birmingham, Coventry, Plymouth, Reading, Doncaster, Rugby, Grantham, Ipswich, Luton, Keighley, Warwick and Leamington, Weymouth, Stevenage, Crawley, Catford, Ilford, Walthamstow, West Middlesex, West Essex, West Herts, and the Caledonia and E.T.E.S.S.A. tape recording societies.

There was thus a good turnout of delegates representing the whole area of Britain.

Mr. Alan Stableford, presiding, was at pains to remove any misapprehension that may still exist in clubs about the nature of the Federation. Any club, he explained, may affiliate to the Federation, whatever other affiliations it may have.

The purpose of a Congress, open to member and non-member clubs of the Federation, was to emphasise this fact and to give those not yet affiliated an opportunity to learn something of the Federation's activities.

"One thing we hope to do by this Congress is to increase the membership of the Federation," he said. "Although we have done a great deal of work on behalf of amateur tape recording clubs during the two years of our existence, less than a quarter of the clubs in Great Britain are members of the Federation.

"One of the objects of the Congress, then, is to give delegates from non-member clubs an insight into the work of the Federation.

BRITAIN'S FIRST TAPE RECORDING CONGRESS

"Amateur tape recording and the B.B.C.," led by Mr. R. Topham; and

"The function of tape recording clubs," led by Mr. Ken Blake.

Mr. Alan Stableford, Secretary of the Federation of British Tape Recording Clubs, who had been mainly responsible for organising the Congress, presided.

The panel of experts included Mrs. Marguerite Cutforth, producer of the B.B.C. Network Three "Sound" programme; Mr. L. G. Dive, of the B.B.C. Engineering Information; Mr. H. Spring, Chief Engineer, Grundig (Great Britain) Ltd.; Miss Brenda Marriott, Publicity Department, Grundig (Great Britain) Ltd.; and representatives of the tape recording press, including the Editor of *Tape Recording Fortnightly*.

After a reception in the morning, the Congress assembled early after lunch to get down to business. The discussions continued longer than had been anticipated, so great was the interest shown.

In the evening, the annual general meeting of the Federation of British Tape Recording Clubs was held.



Alan Stableford, Federation Secretary (right), puts a point to Mr. H. Spring and Miss Brenda Marriott, of Grundig (Great Britain) Ltd.



The group which discussed the tape recording press. Behind them can be seen those discussing "Amateur tape recording and the BBC"

standard for 3½ ips only goes up to 8,000 cycles and the CCIR standard for 7½ ips only goes to 10,000 cycles, and he suggested that revisions would be desirable.



THE group which discussed the function of clubs raised a stimulating subject—should their be concentration on providing hospital and blind services and on other similar "social service" work?

Mr. Stableford offered his own personal view that there was now too much emphasis in this direction in some quarters. "Very admirable in its way and an excellent way for owners of recorders to use their machines—but the energies of a club can easily be dissipated," he summed up.

"Tape recording clubs are clubs for the purpose of encouraging high quality recording—for producing works of art. Anything else should be secondary to that."

Mr. Peter Rigg strongly challenged this view. Humanitarian efforts should be encouraged, he said, adding the

thought that it also meant good publicity for clubs.

Mr. Dive offered a personal suggestion that clubs might organise such activities using the Council for Social Service that exists in each county as a focal point.



THE BBC representatives gave reassuring replies when they were questioned about the attitude of the Corporation to amateur recording enthusiasts. Mrs. Cutforth said a great deal of material included in programmes was contributed by amateurs, in the sense that they were not recording engineers.

Amateurs had shown that they did not need official encouragement to submit recordings. But she made clear that their offerings will be welcomed.

Mr. Dive was able to offer some en-

couragement to clubs who would like to see professionals at work at the BBC.



THERE was—not surprisingly—not agreement on what constitutes a good tape recording. Mrs. Cutforth said that, in general, the BBC pays the greatest attention to technical quality, and that the "Sound" programme concentrates on advice on how to achieve it. But Mr. Dive added the thought that the quality of a recording had to be judged against the function which it was intended to fulfil. There are certain circumstances, he insisted, in which quality will be of lesser importance.

Perhaps John Borwick best summed up the problem when he commented: "A good recording is any one which I wish I had made myself. A very good recording is one of which I would like to have a copy for myself."



Facsimile of the new identity card issued by the Federation of British Tape Recording Clubs for the use of club members and individual enthusiasts



FEDERATION OF BRITISH TAPE RECORDING CLUBS

The holder of this card is a fully accredited member of an affiliated Tape Recording Club. The Committee of the Federation would appreciate any assistance which you might be able to give.

Date.....

Secretary

The Federation maintains a central Register of all persons to whom an Introduction Card is issued. All enquiries concerning this card should be addressed to:

The Secretary,
Federation of British
Tape Recording Clubs,

Serial No.....

This card is issued for the use of the person named below and is not transferable.

Name of holder.....

Address.....

Name of Affiliated Organisation.....

Sig. of Sec. of Affil. Organisation

Signature of holder

SPECIMEN

"DO IT YOURSELF" electronics kit

ELECTRONICS is traditionally a rather difficult branch of science to master, as anybody who recalls his schooldays will remember. In an attempt to make things easier for the future student of electronics, two companies have combined to produce a "do it yourself" constructional kit enabling pupils to assemble for themselves a large number of experiments and demonstrations illustrating many of the fundamental principles associated with this study.

The two companies are Clarke and Smith Manufacturing Company Ltd., known for their tape recorders, and Griffin and George Ltd., who have a century-and-a-third experience in educational scientific requirements.

The Mechtronics apparatus, as it is called, has one feature which deprives it of much of the hard work associated with the assembly of electrical components and avoids the need for manual and technical skill in the user. Soldered joints are eliminated and circuits are screwed or clipped together on a peg-board layout.

The complete set, type 97-100, contains valves, transistors, a photo-electric device, transformer, relay loudspeaker, circuit board, neon tube, crystal diode, potentiometers, bulbs, holders, switch parts, special connectors, wires, valve holders, resistors, capacitors and other standard components.

The revised syllabus for the General Certificate of Education at ordinary and advanced levels is covered by the set which can be used for both qualitative and quantitative work by individual pupils or groups. It also gives wide scope for experimentation by the enthusiast on his own.

Mains supply is not required and power is supplied from 4½ volt and 120 volt batteries.

A variety of qualitative experiments can be carried out, ranging from the simple rigging up of a bulb, battery and single pole on/off switch to the construction of a transistor morse oscillator.

Beauty Prize

ONE of the events in the famous London Soho Fair is an Anglo-French Beauty Contest for which one of the prizes is a Wyndson Victor Tape Recorder. The contest is open to beautiful girls between 18 and 20 and will take place between July 9 and 15.



Students at one of the tape recording courses organised by Mr. Geoffrey Hodson at the Rose Bruford College

EDITED BY GEOFFREY HODSON

EVERY month we hear of Education Authorities sanctioning the purchase of more tape recorders for use in schools, and one major Authority recently asked some of its senior officers to listen to about twenty machines, one after the other, to decide their suitability for educational purposes. But the Authorities themselves are still wanting more and more information about how their teachers can use the machines once they have got them.

In my previous article I told of Kenneth Methold's book, *Broadcasting with Children*, published by the University of London Press. This time I am going to write about a smaller booklet which has been published by the National Committee for Visual Aids in Education, consisting of articles which appeared in the Committee's journal *Visual Education*. It is called *The Tape Recorder in the Classroom*, and the author is no stranger to this magazine because John Weston has produced the best Schools tape in the British Amateur Tape Recording Contest for the last two years. Indeed, his second tape, a most lively and imaginative piece of work, went on to cover itself with glory in the European Contest.

At first reading I enjoyed this booklet enormously. Mr. Weston is very knowledgeable and has a sense of humour which bubbles its way to the surface at the most unlikely times. His technical section is one of the best I have seen. As a Primary school teacher, Mr. Weston is at home with charts and diagrams, and he uses them to great advantage to explain the various technical details of tape, the recorder, the microphone, and the operation of equipment. This is excellent and fills a definite need.

The second section of the booklet describes various teaching techniques, which the author lists as passive and active. The passive ideas involve the production of pre-recorded tapes for use in the classroom as aural aids. The active ideas consist of brief suggestions for the use of the tape recorder in different types of lessons.

It is to this part of the booklet that most teachers will turn for guidance, and it is a pity that John Weston has chosen to be brief. Indeed, only about eleven of the 38 pages of actual text strictly speaking justify the title *The Tape Recorder in the Classroom*. One couldn't agree more that knowledge of the machinery involved and technical operations is important, but the title leads one to expect more about classroom procedures than actually materialises.

Still, for only half a crown this is a very useful companion to Kenneth Methold's book, and you should certainly buy both if this subject interests you.

But a final point about John Weston's book, and a controversial one. In a chapter called "Creative Tape Recording," he outlines his method of taping extempore drama. As he implies, the technique is more analogous with filmmaking, as opposed to copying established broadcasting methods. It is obviously the method he used to such good effect when he produced his prize-winning mock-travel documentary.

I played this tape to a group of teachers and training college tutors. All expressed enjoyment but some were concerned because the teacher was so very obviously in the foreground, both as leading actor, producer and, particularly, editor. They posed the bald questions, "How much should the teacher appear on the tape?" and "Even if the finished result is less satisfying as a piece of entertainment, is it not more important that the children should participate more actively?"

In this chapter Mr. Weston says: "It will be seen that there is going to be a fair amount of pattern work with the director's voice, at least in the early stages, rather prominent. No matter; record the lot. It may be very useful later."

An Illustration Tape can be bought for 37s. 6d. with the booklet and the first track consists of 43 short items showing uses of the tape recorder in various educational situations. Most of the excerpts illustrate passive uses of tape in school, but one showed Mr. Weston's method of taking a reading lesson with



TAPE IN THE SCHOOLS

backward children. The quote at the beginning of this paragraph came to life, and struck rather chill to the hearts of the drama teachers present because the method seemed to be concerned with the externals of interpretation.

One sees dangers in using these methods, particularly with a teacher who has a strong personality and some dramatic ability. And the use of the tape recorder in these conditions could mean that a teacher, in fact, was working off some latent acting and production talent rather than putting the interests of the children first.

These were some of the thoughts that occurred to my audience, and it was a pity that John Weston couldn't have been with us to join in the discussion.

* * *

AN INTERESTING CONTRAST of accents can be heard in the tape exchanges between **Our Lady's Primary School, Leeds**, and **Whiteleigh Junior School, Plymouth, Devon**. Besides giving a sound picture of everyday life in each school, the tapes are also used for exchanging local recipes. The Yorkshire children have been introduced to the intricacies of making a *pasty*, and they have told the Devon children how to make Yorkshire pudding and *parkin*.

The school's equipment consists of an Elizabethan Essex, with Cadenza ribbon microphone. This has now been supplemented by a new 4 A/N Ferrograph, belonging to the Deputy Head, Mr. H. R. Rundell.

Recent activities have included a play-writing competition, and the recording of a short religious playlet. A "slide-tape," consisting of coloured transparencies, each with its own recorded commentary, is now being prepared for a school in Capetown, South Africa.

* * *

WISHING TO EXTEND its Schools' Tape Recording Network, another Yorkshire school sent a letter to the Editor of the *Kingston Daily Gleaner*, Jamaica, inviting local schools in Kingston and district to reply.

Imagine the delight at **Waterloo School, Pudsey**, when the first reply that reached them from the West Indies was from *Waterloo School, Harry Watch, Jamaica*.

Letters have already been exchanged and a tape from Pudsey is nearing completion. Later it is planned to send an audio-visual tape showing all that goes on in Waterloo School and around Pudsey.

A TEXTBOOK FOR TEACHERS—EXCHANGING LOCAL RECIPES—A NAMESAKE IN JAMAICA—A MAORI TAPE—NEW ZEALAND-U.S. LINK

THE HEAD TEACHER of **Gloucester Infants School, Peckham, London**, recently received a very interesting tape from an all-age Maori school at Rotorua, near the Bay of Plenty, in the Northern Island of New Zealand. The tape was written and produced by the older boys and girls, and consists of unaccompanied native songs of various types, followed by some rock 'n' roll—Maori style—with guitar accompaniment.

The Maori is a music lover and the children are no exception; their emotions are expressed through their music. They are an independent race of people also, full of confidence, and resent interference. Once they have a working knowledge of say, a tape recorder, they insist on producing and recording entirely on their own. Any interference, and they will have nothing further to do with the recording.

The Peckham school has made a tape to send back to Rotorua, mainly featuring the Infant School Assembly. "This has been quite deliberate," writes Paddy Randle, "because New Zealand schools do not hold a daily school religious service. We followed on with various infant classes, including the Nursery class singing various school songs they had learned. We finished with two rock 'n' roll numbers by five-year-olds. The tape concludes with personal messages to

the Head Teacher, his wife, and the Maori children."

* * *

FINALLY, THERE IS NEWS from New Zealand itself, from a teacher, Murray J. Spiers, now on his way to Canada. At the **Ellerolie District School, Auckland** they have a Vortexion recorder with Lustraphone ribbon microphone. There is also an intercommunication sound system by Philips. Much of the work recorded by classes is fed into this system and other classrooms tune in to the programmes which prove very popular. Such things as local news bulletins, original stories, poems and playlets are recorded without help from the class teacher.

Mr. Spiers' own class of eleven and twelve year olds have made many contacts overseas in England and the U.S.A. Their tapes have given word pictures of the school and local area, the city of Auckland, and much information about New Zealand. A short while ago a set of colour slides and matching commentary on tape was sent to Sibley Junior High School, in West St. Paul, Minnesota. It was enjoyed not only by one particular class but by several of the social studies groups. The replies to the New Zealand tapes have all been most interesting, and the children are keen to follow information and put items of interest from these tapes on to a bulletin board map.

PROJECT FOR EDUCATIONAL TAPE RECORDING LIBRARY

PLANS have just been announced for the formation of the British Educational Tape Recording Library, the purpose of which will be to encourage widespread use of tape recording as an educational medium in schools throughout Great Britain.

The Minister of Education, Sir David Eccles, has been notified, and the organisers plan to badger at top level to give publicity to the possibilities of tape in education.

A non-profit making organisation, the Library will use "master" copies of specialised tape record-

ings of an educational nature, from which any member school in the country will be able to borrow a copy for a specified period. If the Minister can be persuaded to lend a financial start to the project, the pupils themselves will be invited to contribute to the upkeep of it at the rate of either 6d. or 1s. per child per year.

Anybody interested should contact A. E. Beeby, 88, Clare Street, Northampton, and he will forward details as soon as bulk letters and forms are received from the printers.

WE MUST MAKE A STAND FOR QUALITY

PROGRESS in stereo depends a great deal on the efforts of people on both sides of the fence (the manufacturing side and the consuming side) who are dedicated to true stereo as distinct from sound spreading.

True stereo is at present quite hard to achieve, although in due course it will all be relatively simple; but if too many makers and buyers trim their ambitions to match the blurred semi-stereo effects that we are inclined to get in less than ideal conditions, instead of remaining faithful to the first-class stereo that can be obtained

full positional fidelity as a vital ingredient of stereo. Settling permanently for anything else makes a mockery of the two-channel technique.

We still hear discussions on stereo based on the assumption that the objective is a large, solid block of sound, just as if music consisted simply of one continuous note or chord. It ought to be unnecessary to remind people that music actually comprises a constant succession of different notes, coming as a rule from different points. Our objective is to reproduce this pattern, not to broaden each note so that each one seems to come from everywhere.

It is useful to bear this in mind when we are studying systems that take a two-

Stereo Notes By D. W. GARDNER

when all is well, then the whole business could easily go into reverse.

For, once we allow our standards to go down, the opportunists will step in and say: "Come and listen to this. Here is a lovely spread of sound which you must agree is pretty well indistinguishable from the reproduction they are getting down the road from their stereo system. And the amazing thing about this equipment is that it is all done on one channel! Why pay for two channels when..."

And we shall be back where we started.

It will help if everyone who has the highest standards at heart will join in the work of driving home to the muddled majority the fact that, today, *high-fidelity means tonal fidelity coupled with positional fidelity.*

You cannot buy positional fidelity in the simple, positive way that you can buy tonal fidelity, but what you can do is refuse to buy equipment that offers you no hope of ever achieving positional fidelity.

The stereo buyer today—especially those without a great deal of money to spend—must acquire equipment partly for the present and partly for the future. He must accept the fact that, to begin with, he is likely to get results that fluctuate between true stereo and simple sound-spreading, but he must still keep his sights high in the certainty that true stereo all the time is possible.

One reason for the variable results is the need for working out correct speaker placing and other room conditions. Other reasons include discrepancies and occasional failures in the recording studios.

What is important, however, is that music lovers, and all who seek good reproduction should continue to regard

channel source and invoke the aid of wall reflections and similar devices to achieve breadth.

We have two ears, and their use in comprehending the spatial pattern of a performance is a proper part of our musical enjoyment. Pre-digestion of the separate, distinct sounds (either in a narrow or a broad beam), is a confusing and retrograde process.

Spreading is useful if we know that a mixture of sounds is inevitable—as it is in monophonic reproduction—but it is against the interests of stereophonic fidelity.

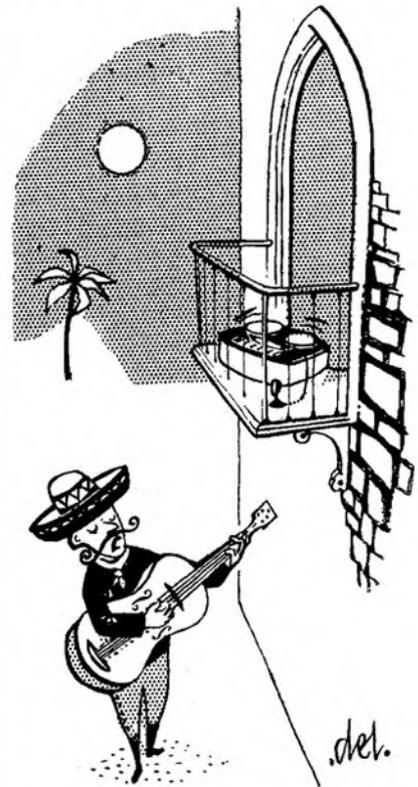
These basic facts of music and musical reproduction may be well known to some readers, but they are so essential to progress at the present time—and so frequently forgotten—that they need to be stressed unremittingly.

* * *

It is perfectly in accord with the above, of course, to permit a distribution of the bass notes below the point where directional information is imparted, because these notes spread themselves in the concert hall or wherever else you hear them. Home reproduction can benefit from this peculiarity if it is well exploited, and we should be on the watch for the right ideas in this field. The main potential advantage is that one large speaker cabinet and two very small ones can do the work of two large cabinets; and the main difficulty is that of separating the bass from the treble satisfactorily.

Sound Sales have recently introduced an interesting variation of their Tri-channel system, whereby the separation is performed at the control unit stage, three main amplifiers being used, one for the bass and one each for the treble units. Reports suggest that this system does hold the stereo together. And in case you should wince at the idea of three amplifiers, remember that each one contributes to the total power output.

TAPE TITTER



Playing times

THE lists of playing times of popular classical works are already more than contradicting each other. It is accepted that times will vary according to the performance and conductor, and one reader has found his time is double that of a figure published earlier.

It concerns Mozart's Symphony No. 33. One reader estimated it as running for 17 minutes, and now we hear of a performance being drawn out to 30 minutes.

Here for the record are some more. Further times will be published as received.

Tchaikovsky

Symphonies: No. 1, 30 minutes; No. 6, 45 minutes.

Schubert

Symphonies: No. 6, 30 minutes; No. 8, 25 minutes (an extension of 3 minutes).

Haydn

Symphony No. 88, 25 minutes.

Rachmaninov

Piano Concerto No. 2, 32 minutes.

Strauss, Johann

Overture, Die Fledermaus, 10 minutes.
Perpetuum Mobile, 4 minutes. *Thunder and Lightning Polka,* 3 minutes.

Strauss, Richard

Der Rosenkavalier Waltz, 4½ minutes.
Waltz from Intermezzo, 4½ minutes.
Oboe Concerto, 23 minutes.

Sound Effects

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

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

SOME years ago, when I used to help out back-stage at our local theatre, I struck up an acquaintance with an old fellow known to everyone as Joss. Joss was a sound-effect man of the Old School, and a complete master of his craft. The things he could do with a table full of the most unlikely-looking rubbish was nobody's business!

For instance: one of his inventions was a flat steel disc (which he made himself) covered with scratched-in "doodles." By playing this on an ordinary gramophone, in front of a microphone he was able to reproduce an amazingly accurate imitation of different types of "crowd" noises.

I picked up quite a number of hints and wrinkles while working with Joss, and some of these have been adapted for use with a tape recorder and featured in these articles of mine over the past few months.

Joss was at his best with "sustained" effects: an avalanche, carriage-wheels, machinery, train effects, and so on. I want to describe one or two of his methods and then compare them with the more technical and up-to-date use of the continuous tape loop.

The mainstay of Joss's equipment was the "cascade" machine shown in the diagram. Made from thin plywood, it was simply a six-sided box mounted on two side supports and turned by a handle. One of the six panels around the edge was hinged in the form of a lid to enable various items to be placed inside the machine to produce the required noise when the handle was turned.

The machine itself is quite easy to construct, although you'll find that hardboard will give a better result than plywood for the casing. It's also best not to run the axle straight through the centre as this obstructs the free tumbling of the contents during operation. Fit a separate short axle on either side, one to the back support and the other to act as a shaft for the handle at the front.

The microphone needs to be quite close to the machine to obtain the best effect, so fit a piece of foam-rubber to the baseboard and rest it on that. The following chart will give some idea of the types of "fillings" to use:—

Carriage-wheels: fine pebbles or handful of "flint" grit.

Avalanches, earthquakes: as above with two tennis balls.

Houses collapsing, etc.: thin scraps of metal, glass and tennis balls.

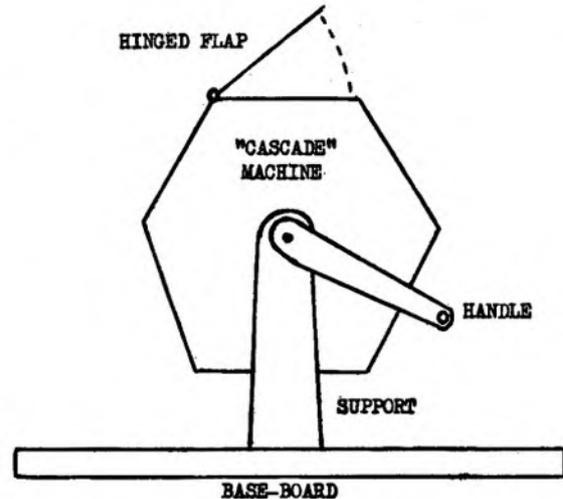
Machinery (various): one tennis or billiard ball, marble or similar.

Another machine on the same principle of operation is the "wind" machine. This time, the box is circular in shape, having a succession of spars made of wood-dowelling around the edge, projecting slightly above rim-level. A long piece of canvas, the same width as the spars, is fixed to the baseboard on one side, brought over the machine, and attached to the baseboard again on the other. A spring on either end of the canvas ensures an even tension.

When the handle is turned, the wooden spars brush continuously against the canvas strip, producing a howling noise. The pitch of the sound is determined by the speed with which the handle is rotated. A slow motion gives a soft, whining note, and a fast action will take the sound up to screaming pitch.

This apparatus is, of course, mainly intended for stage use, but I have heard it applied quite successfully to the recording medium.

The third version of the machine is the "Train" item, and



is used to imitate the sound heard from within a train when travelling. Again, the box is circular in shape but this time with a flat edge surface. At two points on this surface it has a strip of one inch half-round wood beading running from edge to edge. An ordinary roller-skate (metal-wheeled) is held against the side and the handle is turned. As the wheels pass over the beading in double-two time, the familiar "clickety-clack" of train wheels is reproduced.

So much for Joss and his equipment. Now let's examine the use of the continuous tape loop for these same effects, together with some easier ways of achieving them. The secret of success in the employment of the tape loop lies in careful editing. Note also that the longer you are able to make your loop, the easier the job becomes, as any noticeable "repeats" do not occur so frequently as with a shorter version. I usually run the loop through the sound channel, round the left-hand feed spool, across the bench to a glass jam jar about four feet away (the tape passing round the neck), and back to the sound channel.

"Crowd" effects are fairly simple, provided you are careful not to include any isolated shouts that might interrupt the flow of the effect and cause a "sound pattern." Carriage wheels can be imitated by combined hand-pressing and rolling a billiard ball round the lid of a box containing a thin layer of sugar. Horses hooves, if desired, may be added in the normal way with coconut shells, the rhythm of the hoof-beats being preserved at the loop join.

The same thing applies to the "travelling train" effect, whether the sound is mocked-up or recorded "live" (see February 24 issue). Here again, the rhythm of the sound must be carefully maintained in the editing stage.

In tape loop versions of "machinery" sounds, the need for exact editing is reduced where a number of machines are supposed to be operating at once. Try recording the ticking together of, say, four clocks and playing back at half speed. A small glass jar tapped with a pencil at the same time will add that distinctive "metallic" quality to the effect, while a slight echo will improve things still further by blurring the repeated sound. This is known as "feathering."

The "wind" effect can be made vocally (see November 4, 1959, issue). In this case, the loop join must carry an exact matching of the pitch of the sound on each side.

In the next issue, we shall be taking a look at ghost noises and other weird effects.

Read any good spooks lately. . . ?



"Oh, Harry, speaking of hum suppression . . ."

MAGAZINE DIGEST

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

Hi-Fi News: Stereophonic Broadcasting: Part one in a discussion of various multiplex systems. The basic principles of sound reproduction.

Amateur Tape Recording: The latest article in the *What is . . . ?* series which deals with H.T. supplies to electronic circuits.

High Fidelity (American): Towards Stereo Compatibility: What are the prospects for a record which would play normally through an ordinary hi-fi system and stereophonically through a stereo arrangement?

The Tape Recorder: Teaching Tape: The first in a series written for the newcomer to the tape recorder.

Journal of the B.S.R.A. (May)—Loudspeakers, by Stanley Kelly; **Multichannel Sound Systems,** by Dr. D. M. Leakey.

Revue du Son—Impressions of the International Festival of Sound.

All issues are dated June unless otherwise stated.

Baby Taping

SECRETARY of the Ilford and District Tape Recording Society, Jeff Langley, began creating a tape album on his son almost at birth, for soon after the six pound twelve ounces baby was born his father recorded some of his first cries, by taking a battery recorder down to the maternity home. Jeff plans a complete record of his son's growth, as a supplement to the more normal photograph album, and he has already included recordings from some members of the hospital nursing staff and the doctor responsible for his son's delivery.

A T.R.F. TRANSISTOR RADIO TUNER

VERY few T.R.F. transistor circuits have been developed, despite the fact that fairly efficient R.F. transistors are at present available and not too expensive. Such types as the Mullard OC44, OC45 and the Ediswan XA102 will operate as oscillators up to 2 or 3 Mc/s and, with a suitable neutralising arrangement, become quite efficient R.F. amplifiers.

Most of the diode-type radio tuners, for which many alternative circuits have been published, are unselective unless exceptionally high Q inductors are used and they have low voltage output, which necessitates using the microphone socket on the tape recorder, with resultant high noise level and the possibility of receiving two stations at once—particularly in the London area.

A T.R.F. (tuned radio frequency) tuner has the advantage of higher gain and, with careful design considerable selectivity. The tuner described in this article was able to receive Luxembourg 208 in the London area from an aerial only three feet long. While such a performance cannot be guaranteed for everyone

who decides to build one (mainly because of local conditions) the tuner will give sufficient output to load the radio or pick-up input on most tape recorders and is selective enough to separate high-powered broadcast stations such as that at Brookmans Park. At greater distances from BBC transmitters, quite a number of the stronger Continental stations should be receivable on a very short aerial.

Those who own a recorder with a "through" amplifier system (loudspeaker monitoring while recording) will find the tuner useful, as the system could be used as a standby radio receiver. The tuner was also tested with a Mullard 510 amplifier and provided enough output fully to load the amplifier.

THE CIRCUIT

Transistors for high frequency operation cannot, like triode valves, be used without neutralising as they will oscillate, due to both internal and external feedback, which must be cancelled out if the transistor is to function efficiently as an r.f. amplifier. The components R3 and C3 are provided for this purpose, but, by careful adjustment of C3, a small amount

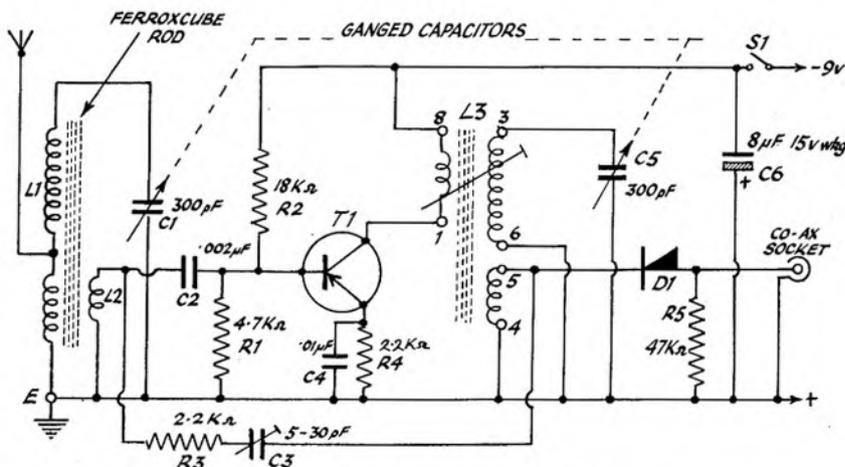


Fig. 1.—T.R.F. Transistor Tuner

T1 is either an Ediswan XA102 or Mullard OC44, D1 a Mullard OA79, L3 a Denco Maxi Q coil (Range 1 (green) plug in) and the battery an Ever Ready 9V bias type

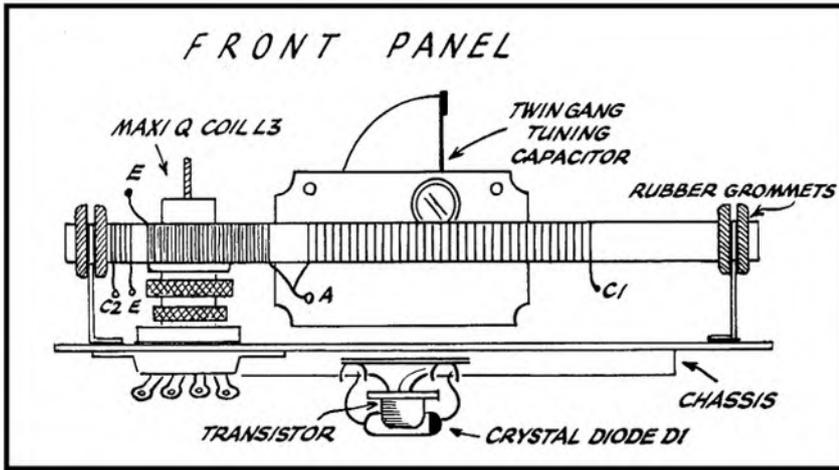


Fig. 2.—Suggested layout for the tuner

of positive feedback can be allowed in order to increase the gain through the transistor. If the value of C3 is set too high, however, the transistor will oscillate and loud whistles will occur on stations.

The circuit diagram of Fig. 1 is the complete tuner, while Fig. 4 shows an alternative output arrangement for those who have only a microphone input socket on the recorder. The attenuation network (R5 and the 27K.ohm resistor) will drop the output to a few milli-volts, at least sufficient to prevent overloading.

The aerial tuning coil L1 and the coupling L2 are both wound on a Mullard Ferroxcube rod No. FX.1162. Do not use cheap-grade ferrite rod, such as that offered by many radio component dealers. The main coil L1 is wound with small spaces between turns, so that the coil occupies about 2½ inches of the rod, as shown in Fig. 4. The end of this winding is brought out to form a tapping point for the aerial and then continues as a close-wound coil of 36 turns. The coupling winding consists of six turns only and is wound in the same direction on the others. This low impedance winding is necessary to match the low input impedance of the transistor.

The rod should be mounted at the back of the chassis, at least one inch above it, and is held by rubber grommets on each end of the rod. The grommets can be fitted into small brackets secured to the chassis (see Fig. 4).

The tuning coil L3 is a Denco Maxi Q coil plug-in type which fits into a standard octal valve base. The numbers against the coil shown in the circuit diagram Fig. 1 correspond with the pin numbers of the octal base. The coil may be obtained from Denco Limited, 357/9, Old Road, Clacton-on-Sea, Essex, and is range 1 (green) medium-wave coil with h.f. coupling and reaction winding. The recommended diode detector is a Mullard OA79 crystal type, although such types as the G.E.C. GEX34 or Ediswan CG12E can be used. The alternative output circuit has already been mentioned (see Fig. 3).

While no hard and fast rules need be given for layout (see Fig. 2), it is important to arrange the components so as to keep the leads from the aerial coil, the tuning coil, and the transistor,

reasonably short and to mount the tuning coil well back on the chassis, away from the ferrite rod. A midget type 0.0003uF (300 pfd) twin gang tuning capacitor can be obtained from most radio component dealers, or Denco Limited, and a transfer type tuning scale from Data Publications Limited, 69, Maida Vale, London, W.9.

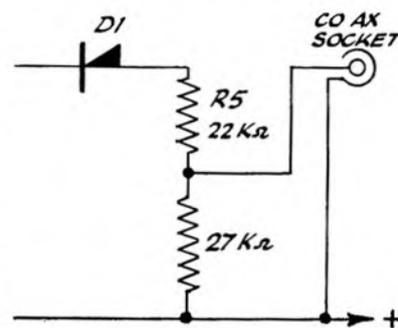


Fig. 3.—Alternative output circuit for lower signal level

These dials are supplied with various other smaller types and lettering and are called "Panel Signs." When the set is finally assembled, carefully check the wiring; wrong connections or polarity of voltage to the transistor can destroy it.

The tuner requires only a very short aerial of three or four feet and a local BBC station should be receivable without any other adjustment. A strong whistle on the signal, however, indicates

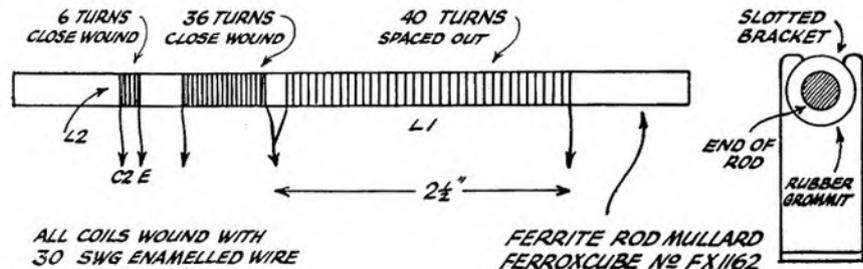


Fig. 4.—Details of aerial coil

An inexpensive circuit which can be used as a standby radio receiver for those who own a recorder with a "through" amplifier system

by

WILLIAM DOBBS

that the transistor is self-oscillating; if this occurs, the pre-set neutralising capacitor C3 must be unscrewed (reduced in capacity) until no whistle is audible. The tuning slug of L3 should now be adjusted in conjunction with the main tuning capacitor until a station (preferably a nearby one) is received at maximum strength. If, during this process, oscillation starts again, unscrew the neutralising capacitor a little more until it stops. Now try for a fairly weak station, and repeat the process of adjusting the L3 tuning slug in conjunction with the tuning capacitor until maximum signal strength is obtained. If adjustment of C3 will not stop self oscillation it may be necessary to reverse L3 coil connections Nos. 4 and 5.

The output co-axial socket may be connected, via a screened lead, directly to the radio input of the recorder and a local BBC station should produce sufficient signal for full recording level, e.g. closing of magic eye or other recording level indicator.

While every endeavour has been made to ensure a worthwhile performance from this tuner, it should be remembered that local conditions may prevent good reception. For example, in the North London area where the tuner was tested, the Brookmans Park transmitters were receivable at good strength on the ferrite rod coil only, no aerial attached; in areas more remote from transmitters, careful adjustment of C3 to produce as much feedback as possible without oscillation may help bring in an otherwise weak signal.

One final word: be extremely careful not to short-circuit the base potential divider, junction of R1 4.7K.ohm to earth. Even if done accidentally and for only a fraction of a second, the transistor will be destroyed. Price for experience—one new transistor.

Equipment Under Test

AKG Moving Coil Headphones

THE Viennese firm of Akustische-Kino-Geräte GmbH has long been famous for its production of high-grade professional microphones, and more recently for less expensive, but still high-quality, microphones for the domestic user.

In the early days of radio, the most common means of converting electrical energy into sound was the old-fashioned moving iron headphones, which, because of their large size, gained the affectionate name of "cans." Looking at these modern counterparts to those early headphones, one could not possibly apply such a heavy-sounding name to them. The A.K.G. phones are very light in weight (only 80 gms, or just under 3 ozs.), and they are extremely graceful in appearance.

The two capsules, which are very small, are mounted on a headband consisting of two chromium-plated wire springs, and they can slide along these to suit all sizes of head. The capsules themselves are small moving-coil units with a plastic diaphragm specially designed for the highest possible fidelity of reproduction. Each capsule is less than an inch in diameter and is fitted with a transparent plastic shell designed for a good acoustic matching to the ear. The shell is removable for cleaning.

Connection to the capsules is by an ingenious contact disc, and various sets of leads complete with these discs can be obtained from the manufacturers. The standard equipment is connected for monophonic reproduction and provided with a single lead 1.5 metres long, with bare ends. Alternative leads can be provided with either banana plugs or a miniature jack plug. Stereophonic leads are also available, and it is a matter of a few minutes to change from one set of leads to another. No soldering is necessary.

The maker's specification, in part, is reproduced for those interested:

Frequency range: 30 to 20,000 Hz.

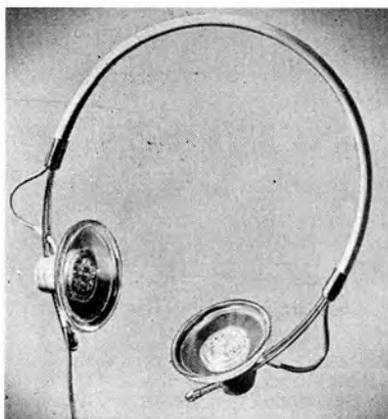
Impedance: monaural, 800 ohms; stereo, 2 of 400 ohms.

Maximum load: monaural, 20 milliwatts (equals 4 volts on 800 ohms); stereo, 2 of 10 milliwatts (equals 2 volts on 400 ohms on each system).

Level requirements for normal monitoring purposes: monaural, 0.5 volts; stereo, 2 of 0.25 volts.

Weight: K50, 80g net.

Special types and a stereo cord pair, AS50, will be delivered at extra cost if specified.



The use of "monaural" in the maker's specification is surely unfortunate, since both earpieces are in use. Surely "monophonic" would have been more appropriate?

No indication is given as to the relative levels to be expected throughout the frequency range. On a listening test at constant input, frequencies from 30 cps to over 18,000 cps were clearly audible. The top limit was the limit of the author's hearing, and it seemed highly probable that the maker's specification was conservative.

Accurate measurements on earphones are extremely difficult, and require the use of the "standard ear," a device producing an "average" cavity to stimulate the human ear cavity. Even then, the measurements are apt to be misleading.

In this case, a listening test to a constant level tone was employed. Some slight resonances were observed, but they may well have been as much due to the reviewer's ears as to the phones themselves. Slight coloration was audible when listening to music, but this was not nearly so serious as that normally associated with the older types of headphones.

Some loss of level at low frequencies was evident, although the bass was undoubtedly present. I understand from the manufacturers that this is a fault which has been remedied in the production model, the phones actually reviewed being a prototype pair.

The power requirement of the headphones is very modest, less than one milliwatt being perfectly adequate. The impedance of the phones, a nominal 800 ohms for the monophonic pair, or 400 ohms each side for the stereo pair, make them suitable for listening across a low impedance loudspeaker circuit without upsetting the matching to the loudspeaker.

These headphones are extremely comfortable to wear, and their performance is first-class. As one might expect, such features are not bought cheaply, but at £8 4s. 6d. these headphones are among the best one can buy in the world.

H. BURRELL-HADDEN

FEATURES OF THE NEW UHER RANGE

APART from a variety of applications as a dictating machine the Uher Universal has three speeds, including the ultra low 15/16 ips and a quoted frequency response of 40-16,000 cps at 3½ ips. Signal-to-noise ratio is given at 45 dB and wow and flutter—0.3 per cent. Mentioned briefly among the new Uher range in our March 9 issue, the Universal costs £82 19s. and features fully automatic repetition of playback including stopping, rewind, stopping and re-starting.

A remote control dictating microphone enables the user to reverse the tape at will with a single control and both starting and stopping of the tape are delay-free. Printed circuits are used and there are inputs for microphone, radio/record player, extra loudspeaker and earphones. The model operates at between 110-240 volts AC, 50 cps, and there is provision for converting to 60 cps power input.

The intermediate tape speed is 1½ ips, and the maximum reel diameter is 5 in. The unit weighs 17 lb.



The Universal

Moving to the other extreme of the Uher range the Stereo 111 occupies the high-spot and costs £108 3s. A four-track system is offered, and trick effects are possible by playing back No. 1 track and simultaneously recording on No. 2. Tape speeds are 1½, 3½, and 7½ ips, and a frequency response of 40 to 20,000 cps is claimed for the latter speed.

The signal-to-noise ratio is given as over 45 dB and wow and flutter as 0.1 per cent at 7½ ips, when measured in view of aural perception. With an output of 5 watts used monaurally, the Stereo Record 111 will operate on voltages between 110 and 240 volts and has a power consumption of approximately 70 watts. The unit weighs 31 lb. and measures 16½ x 15½ x 7½ in.

Valves used are: 2 x EF 86, 3 x ECC 83, 2 x EL 95, ECC 82, EMM 801, 2 x B30C2, B30C600, B250C100.

Other Uher models are: the 500, £51 9s.; the 502, £61 19s.; the 720, £78 15s.; the 730, £99 15s.; and the 750 stereo, £99 15s.

Tedex (London) Ltd., 2/4, Great Eastern Street, London, E.C.2.



The Grundig TK 24

New Products

GRUNDIG ANNOUNCE FIRST FOUR-TRACK *Six hours' playing time*

THE FIRST 4-track tape recorder to be introduced by Grundig (Great Britain) Limited is just announced. Known as the TK 24, it is a single speed machine operating at $3\frac{1}{2}$ ips, with a quoted frequency response of 60—12,000 cps.

Six hours playing time is available on the 1,800 ft. of extra-long-play tape supplied.

The tape is supplied in a special tape magazine which protects it and acts as a tape stand for easy storage.

A track selector, placed at the back of the deck between the two spools, gives a selection of Tracks 1 and 2 or 3 and 4 and is fitted with a third position (marked "D") which allows simultaneous reproduction of Tracks 1 and 3 or 2 and 4 and the monophonic reproduction of stereophonic tape recorded at $3\frac{1}{2}$ ips.

The moving coil microphone of entirely new design supplied with the machine, is a sensitive omni-directional instrument.

A Monitor Amplifier available for use with the TK 24, enables the user to listen through headphones to the playback on Track 3 or 4, thus ensuring perfect synchronisation.

The TK 24 is contained in a pale grey case and has nickel-plated fittings.

The price, including the GDM 12 microphone, tape and the TCD 2 tape magazine, spare spool, diode lead, and a tape cleaning felt, is 62 guineas.

If bought separately the microphone is £7 7s., the tape and tape magazine, £3 2s. 6d. and the Monitor Amplifier, Type M.A.1., $4\frac{1}{2}$ guineas.

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

Philips restyle the Family four-track for mass market

The new Philips Family recorder, Model EL 3541, has been restyled and sells at £35 14s. The four tracks give up to eight hours recording if double play tape is used and features include magic eye recording level indicator, programme indicator with zero reset, superimposing facilities, headphone monitoring and mixing of microphone

with a 4-in. speaker and there are inputs for microphone and radiogram. There are outputs to a radio, hi-fi amplifier, headphones and external speaker. A stereo socket is also provided, although replaying is only available with additional equipment.

Valves used are: EF 86, ECC 83, ECL 82, EM 84, and EZ 80.

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



The completely restyled Philips Family tape recorder (Model EL.3541) costing £35 14s.

with gramophone or radio inputs. The unit is supplied with a 5-inch reel of long-play tape, crystal microphone and spare take-up spool.

Weighing 18 lb., it measures $6\frac{1}{2}$ x $13\frac{1}{2}$ x $11\frac{1}{2}$ in. Rewind time for 1,200 ft. of tape is 2 minutes, and a 7-in. spool can be accommodated when the lid is removed. The output is given as $2\frac{1}{2}$ watts, and a frequency response of 40-14,000 cps at the single $3\frac{1}{2}$ ips speed is claimed. A signal-to-noise ratio of better than 40 dB is quoted with less than 0.3 per cent wow and flutter. The recorder is equipped

PRICE REDUCED

PENCO PRODUCTS have reduced the price of their transistorised pre-amplifier mixer unit, MIX/3, from 19 gns. to 15 gns.

Penco Products, 36 Coniston Road, Kings Langley, Herts.

More news of new products is printed on page 24



Grundig's Monitor Amplifier M.A. 1

Letters to the Editor

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

RECORDING PROFESSIONALS

"Let us learn to live together"

WHAT a suspicious pair your two correspondents, Mr. Norman Paul and Mr. J. H. Spiby, are. Why are they so obsessed with "the evil that men do." One writes of "charlatans" and the other of "unscrupulous editing." Let us get back to the normal, honest, amateur tape recordist. Let me deal with Mr. Paul first.

Of course "a professional singer sings for his bread and butter" and should be paid for what he undertakes; but the fact that a recording might be taken simultaneously with his performance does not cause him any extra work or time. If he should be asked to sing for a special recording session, that is a different matter and he should then expect to be paid for it.

If an amateur society pays an artist anything from 30 to 100 guineas for a performance he (or she) is not "doing too badly," and I repeat that he is very shortsighted indeed if he will not allow an amateur tape-recordist—*approved by the conductor or society concerned*—to record the performance.

I said "an amateur recordist *approved by the conductor or society concerned*," and here I turn to Mr. Spiby. How many tape recordists would have the audacity to walk into a society's concert and place a microphone in position without having obtained "prior permission"? If such people exist, I hold no brief for

them. I speak for the amateur, who, having had permission of the conductor or society members concerned, is *then* refused permission by an artist. An artist engaged for a performance should remember, having accepted an engagement by a Society, that he is then a paid servant of the Society for the duration of the performance and is under "conductor's orders."

What gives Mr. Paul the idea that professional artists are so indispensable to a first-class performance of a musical work? I would remind him (and any professionals who may have this belief) that many amateur societies could, and often do, find first-class artists within their ranks who, in many cases, equal a visiting professional both in musical ability and artistic integrity.

Mr. Spiby believes that "there is no genuine need to make . . . recordings" of formal speeches, as they are available "by other means." Of course there isn't.

There is no need for an amateur photographer to take photographs of famous places and people, as there are plenty of picture postcards and press photographs available; but who would deny the amateur the thrill and joy of doing the job himself?

The world is full of useful discoveries and inventions, from atomic energy to a pocket-knife, which may be turned to evil means. It is no use Mr. Spiby talk-

ing of the necessity of "onerous controls" and "Licensing of ownership and use of private apparatus" because of the possible misuse they might be put to. The amateur tape recorder is here to stay; it is one of the most useful and valuable inventions of the last decade and the sooner professional artists (and Mr. Spiby) learn to live with it the better for everyone.

Finally, let me show that not all professional singers are of the same mind regarding amateur recording. Since writing my original letter I can report an incident at a performance of a well-known oratorio which I was asked to record. At the afternoon rehearsal, I took several test recordings to decide microphone positions. After the rehearsal, I was trying these out and, having made my decision, I stopped the recorder in the middle of a bass aria.

A voice behind me said: "Oh! I would have liked to have heard that through." It was the soloist himself—a well-known bass—and, having pointed out to me the passage he wanted to hear, I ran the tape back and let him hear it as he wished, to check-up on a vocal technical point for his own satisfaction. At the end of the evening's performance he made a point of thanking me again and said he would like to hear the final recording sometime.

He was, evidently, one of the professionals who are willing to allow amateur recordists to help them. Would that all professionals were like that.

REGINALD WILLIAMS.

Chester.

NEW PRODUCTS (continued from page 23)

PETO SCOTT ENTER THE FIELD

ANOTHER addition to the ranks of inexpensive recorders is the Peto Scott Fanfare 60 which costs £24 3s. Housed in a wooden cabinet covered in vynair and vynide in red and grey, measuring 14½ x 12½ x 6½ in., the Fanfare 60 is supplied with tape, a spare spool and an Acos stand microphone.

A BSR twin-track tape deck is fitted and there is a four-stage amplifier with magic eye recording indicator. The output is rated 2½ watts through a 7-in. elliptical speaker. A covered storage compartment conceals microphone and mains lead when not in use and there are input sockets for microphone and radio and also an extension speaker socket. A tone control is fitted.

Peto Scott, Electrical Instruments Ltd., Weybridge Trading Estate, Surrey



TESTING SPEEDS

I READ with interest the articles on tape speeds in your May 18 issue and I would like to suggest some additional ideas, using two recorders with speeds of 1½ ips and 15 ips.

A recording can be made at 1½ ips and replayed at 15 ips. If it is then dubbed on to a tape running at 1½ ips, it can be multiplied by eight again—and so on, until we should be able to produce such a rise in pitch as to make the recording inaudible.

Perhaps recordings of bats could be made and the reverse procedure applied to them: i.e., record at 15 ips and replay at 1½ ips, so lowering the pitch to make the bats' signals audible. Notes might also be extended to last minutes, thus allowing analysis of the various harmonies.

I must point out that I have not personally tried these experiments. It is pure theory on my part. I would be interested to hear from anybody who has.

A. SULMAN.

Slough, Bucks.

News from the Clubs

MIDSUMMER, the time of year when a large number of clubs are holding their Annual General Meetings; the time when mistakes, problems and activities of the past twelve months are learned from and improved upon.

A number of clubs are pursuing the publicity aspect and I start the club reports for this issue with news of strangers to this column, while following the general trend, are making themselves known and welcome in the surrounding district.

Members of the **Ulster** club responded eagerly to an invitation from the Belfast Chamber of Commerce to record a commentary of the Lord Mayor's Show held on May 21.

Their first task was to cover "strategic" points along the route and they established a mobile recording unit using a car and a rotary converter supplying power to a Vortexion recorder.

Other teams of commentators with a variety of recorders were stationed along the 1½-mile processional route.

Altogether over 7,000 feet of tape was used on the commentaries and V.I.P. interviews, which presented the second great problem, the editing.

This was carried out by Cecil Jordan and William Scott who condensed the whole on to one track of a 7 in. reel of DP tape at 7½ ips, providing approximately one hour's playing time.

Other recent activities include the final rehearsal of a short play for tape, produced by Gerry McLean, and the continuation of the hospital request service. In this, six programmes a month are broadcast to local hospitals and old people's welfare homes.

Outside recording teams have also been formed. A keen rivalry exists between teams for the most original recording—one team is seeking a haunted house in which to spend the night and record any "unusual" sounds.

London members have also been experimenting with a play. At their May 12 meeting Terry Devereaux produced a script he had written, and, after the members had studied it for ten minutes, the half-hour recording session started. Roger Aslin produced and directed, Alan Pierce was recording engineer, operating Frank McManus' Brenell Mk. V recorder. At the meeting a fortnight later, Norman Simpson used his Veritone to play back a tape of guitar music produced by blind member Bob Trotman.

During the same evening Mike Rowden presented a tape showing the advantages of using a Grampian microphone with a Fi-Cord recorder.

The **Plymouth Sound Association** have received three bookings to present their

Edited by

FRED CHANDLER

Meet Yourself show at the Plymouth Hoe marquee as an added attraction for summer visitors to the city. Following an earlier request, the Plymouth Entertainments' Manager confirmed the show for June 21 and 22, and August 10.

A highlight of one of their recent meetings, June 1, was the hearing of William Cardews' humorous documentary tape entitled "Anatomical Observations." Similar in production to Kenneth Miller's contest winning tape, the programme consisted of sounds to be heard within the human body and a comedy dialogue on the working of the brain.

Afterwards, John Baker used his Elizabethan Escort to record hand-bell ringing as performed by the Plymouth Chimsters. The bell-ringers were so impressed by the reproduction they asked for an EP disc to be cut.

At the next meeting of the club, July 13, John Baker will present the evening's entertainment with a talk on programme construction. A fortnight later Reg Roper will play back recordings he has made using the Gramdeck turntable recorder.

Only half-an-hour before the start of the **Rugby** club's A.G.M. on June 2, two new members were enrolled and the target of 52, set last year, was reached. In his opening speech, the President, John Bannister, praised the work of the committee and members in reaching their goal, and straightaway set a new target of 75 for 1961.

Secretary Mike Brown, then reported on the success of the tape course held earlier this year, and announced a similar course for the coming autumn.

Before the reports from the various specialised groups were heard, members discussed the club's affiliation to the National Federation. The meeting reached no decision on this point and the question was postponed until after a delegation had attended the Federation's AGM.

Nine members visited the Warwick and Leamington club on May 25, for the special demonstration of portable recorders.

The May 12 meeting of the **West Middlesex** club revolved around a demonstration of the Butoba portable recorder presented by Secretary H. E. Saunders. Those present expressed great interest in this instrument and were impressed by its performance.

A tape from Pat Copinger was heard at the following meeting on May 26, their second AGM. Views aired during the evening provided a stimulating discussion on the year's activities. The retiring

officials were re-elected and a separate programme committee composed of three ordinary members was elected. This, it was felt, will encourage a livelier interest by all members and would speed up their programmes.

Financially the club is in very good shape, having some £33 in hand. This amount is to be used to buy equipment. The difficulty of finding satisfactory club rooms has not yet been solved, and the suggestion that weekly meetings should be held has been shelved pending the easing of this situation. A suggestion that Sunday morning meetings are started was discussed and the programme committee is to discuss ways and means.

Their next meeting will be held at St. George's Hall, Lancaster Road, on June 23.

The main item on the agenda for the May 4 meeting of the **Stevenage Tape and Radio** club was a demonstration of the Minirose portable recorder. The demonstration was preceded by a discussion on the club's publicity display for Stevenage day organised by the local Rotary club on June 11. The club is sharing a stand with the Cine Society.

The evening of May 4 produced another three members and swelled the total membership, since their formation four months ago, to 23.

Members have formed a link with the **Crawley & Sussex** club and exchange regular tapes. A recent tape sent to the Crawley members contained a documentary of Stevenage New Town's growth and history. This was produced by a local school-master, Mr. Neville-Wood.

The Secretary of the club is Mr. L. V. McGregor, 42, Marymead Drive, Stevenage, Herts, and meetings are held on the first Wednesday in each month at The Tenants' Meeting Rooms, Willows Link, Marymead.

An average of twelve to fourteen members has been obtained at the meetings of the newly-formed **Harrow** club. During the initial meetings of the club, members provided demonstrations of their individual recorders and this proved to be a fairly widespread selection.

Temporary officials elected are: Chairman, Dick Burrill, Secretary, Mrs. Toni Fisher, of 5, Gloucester Road, North Harrow, Middlesex. Meetings are held at the Labour Hall, Wealdstone, Middlesex, every Thursday.

A new club is to be formed in **Dartford**, Kent. Mr. E. H. Foreman has the audition and would like local enthusiasts to contact him at 117, Westgate Road, Dartford, Kent.

Len Hart is in the process of organising a club in the **Rickmansworth** area. He can be contacted at 2, The Greenery, Rickmansworth, Herts.

Eastbourne enthusiasts will be pleased to hear of the recent formation of a club in their area. The organiser is Miss Dorothy C. Harris, 12, Victoria Mansions, Terminus Road, Eastbourne, Sussex.

July 1 is the date when the **Wyncho** Youth Theatre Company propose to alter its name and constitution. On that date, the **Phoenix Drama and Tape Recording Society** will come into being. The Secretary, Mr. A. C. C. Smith, 73, King's Road, Windsor, Berks, welcomes anyone interested to write to him for details.

(More Club News on page 27)

SPECIAL OFFER—

If you have surplus equipment you wish to sell, or if you want to buy items second-hand, you will get results by using our classified columns. To prove the point, we are offering readers a special rate until September 1st next—2s. 6d. for up to twenty words if you use the form below.

Classified advertisements

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

Swop. Lettera 22 typewriter, as new, offered in exchange for Clarion Portable. Urgently required. Dukes, Prospect Farm, Folly Lane, Hereford.

Philips EL 3527 Recorder, Mic. Extra smoothing, just over one year old, mint condition, £30. Crome, 13, Peartree Hill, Salfords, Redhill. Horley 966.

For sale. Teletron Tapejak, nearly new, £4 5s. o.n.o. Three radio stations on tape recorder. D. Hewson, 24, Elmete Avenue, Leeds 8.

Grundig Stereophonic Radiogram with built-in TM 60/U tapedeck in walnut cabinet. Cost £265 late 1959, as new 200 guineas o.n.o. Box 368.

Clarion Transistor Portable Recorder, five months old, immaculate, £19. Tel. Daventry 405. Meek, 26, Park Leys, Daventry, Northants.

For sale. Philips 3-speed recorder. New 62 gns. Just over year old, excellent condition, £44. Edinburgh area. Box 367.

Clarion Transistape, under guarantee, £16. 10 watt Hi-Fi Amplifier and Pre-amp, £10. Roe, 55, Abbey View Road, Sheffield 8.

TAPE TO DISC—ALL SPEEDS; s.a.e. for leaflet. OMEGA RECORDING COMPANY, 112, Sunnybank Road, Potters Bar, Middx. Tel.: 6428 evenings.

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

TAPE RECORDERS. Large selection of used models, most as new with Three Month Guarantee. Part exchanges with Cameras, Binoculars, Radios, etc. Good quality Recording Tape at competitive prices. Cooks Store, 159 & 187, Praed Street, W.2 (both opposite Paddington Station). PAD 6464.

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

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

Tape Amplifier Mullard Design, 3 watt output 3 speed equalisation, complete with power pack and mike, £10 o.n.o. New condition. Box 369.

Stuzzi Magnette Battery Portable. Two speed, mike, spare tape, ever-ready case, 12 months old, perfect condition, £50 o.n.o., evenings. M. P. Nash, "Langthorne", Grange Road, Billericay, Essex.

Ferrograph 4A/M—Reslosound mic. RBL/TM—both 14 months old—also tapes. £85. C. Kirk, 30, Midcroft, Ruislip, Middlesex.

Grundig TK 20, complete, mike, tape, condition as new. Cost £54 12s., accept £35. Burt, 6, Brockley Cross, London, S.E.4. Tideway 6718.

Ferrograph 2/AN with Reslo mike and transformer. Little used. What offers? 6, Chalcot Crescent, PRI 4911. Seen by appointment.

W.A.L. Booster pre-amplifiers, the transistorised WAL GAINS, for tape heads (Gramdeck, Fi-Cord, Ferrograph, etc.), Mics (Reslo, etc.), p.u.s (Garrard, Ortofon, etc., Decca ffs, etc.). Many applications including Mixing. Mono Wal Gain £5, Stereo £7 10s. The new WALTRAK, pocket audio oscillator with 1,000 cps signal, transistorised. Ideal for circuit checking £6 10s. The WAL BULK TAPE ERASER "cleans" reels of tape in 30 secs. £7 18s. 6d. Ask your dealer or send to us for full Technical literature. Wellington Acoustic Laboratories Ltd., TRCDG Dept, Farnham, Surrey.

For Sale—Elizabethan Escort Recorder, bought 1959, Huddersfield area. Offers to Box No. 370.

Mullard Pre-amp and 3-3 Main. Six switched inputs, record facilities, power supply for tuner, £10 10s. 58, Bennerley Road, London, S.W.11.

Spectone Hi-Fi Amplifier 10W. preamp, has tape facilities, new condition, £14. Gramdeck, complete with mic, £9. W. J. Tomlinson, 62, Beacontree Avenue, E.17.

For sale—Grundig Mixer and condenser mic, £15. Write 6, Uxbridge Road, Hampton, Middlesex.

Ferrograph 88 (stereo, record and playback), perfect condition, £65 o.n.o. Harting H.M.8 four-track, still under guarantee, £75 o.n.o. Box 371.

Sound 777 15/7½/3¼ Collaro Deck Mic. R/lead, new valves, overall. Complete with £15 worth of tape. Cash only £20. E. Horne, 53, Londesborough Road, London, N.16.

Ferrograph 3/AN £55. Simon SP/2 £35. TSL FM Tuner £10. Complete aerial and cable. Buyer collects, Durham area. Box No. 373.

Balmoral TH9, factory new, unused, guarantee. Motek K10 Deck, list price 45 gns., will accept 35 gns. Box 372.

Bargain—Perfect condition Telefunken K.L.65 Tape Recorder, complete with dynamic mic and tapes. Cost over £70, selling for £35. F. Lewis, 3, Willow Road, Blaby, Leicestershire.

Wanted on tape—sounds of the Manx Electric Railway. Top prices paid. L. H. Goddard, 30, Stone Lane, Worthing, Sussex.

TAPE RECORDER need repairing? Let Britain's leading Tape Recorder Repair Specialists do this for you at an economical price. Essex Tape Recorder Centres, 2, Maryland Point Station, Stratford, London, E.15. Maryland 5879.

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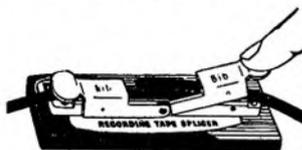
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(Continued from page 25)

The National Federation has received a request for an English tape contact from Herr Horst Pommer, Essen-Kupferdreh, Hinsbecker Loeh 34, Germany. He suggests this would be a good opportunity to learn German, but the initial tapes would be in English.

Another request from that part of the world is passed via the Coventry club. Eighteen-year-old Karl Heinz Scherer, Kaiserstrasse 43, Pirmasens, Germany, would like to have a German-speaking tape contact in this country. His hobbies are reading, collecting stamps and radio.

A few enthusiasts have formed a tape group in Bedford. Although having no formal organisation, committee or subscription, the group will perform the normal functions of a club and has already exchanged tapes with the Manchester and Brighton clubs.

The Secretary is W. Summerfield-Turner, 131, London Road, Bedford.

Details of a club already formed comes from Yorkshire, where Mr. G. F. Clegg is the Secretary of the three-month-old Northallerton club. Meetings are held on the first and third Wednesday of each month. Secretary's address is 5, Friarage Mount, Northallerton.

A club has been formed in Gloucestershire under the name **The Cotswold Tape Recording Society**. About thirty members hold meetings fortnightly on alternate Mondays and Fridays in the club-room of the Cheltenham Science Fiction Circle, 130, London Road, Cheltenham.

The Secretary is Kenneth G. Jones, 41, Bamwood Road, Gloucester.

Another recently formed group is **The Authentic Circle**, concerned mainly with tape exchanges. Nine members keep in regular contact by tape and meet at roughly ten-week intervals. Their next meeting is on July 17 at the Bata shoe Store, High Street, Sheerness, when a demonstration of tape slicing and editing will be given. The Secretary is Mr. C. D. Bushnell, 19, Harps Avenue, Minster-in-Sheppey, Kent.

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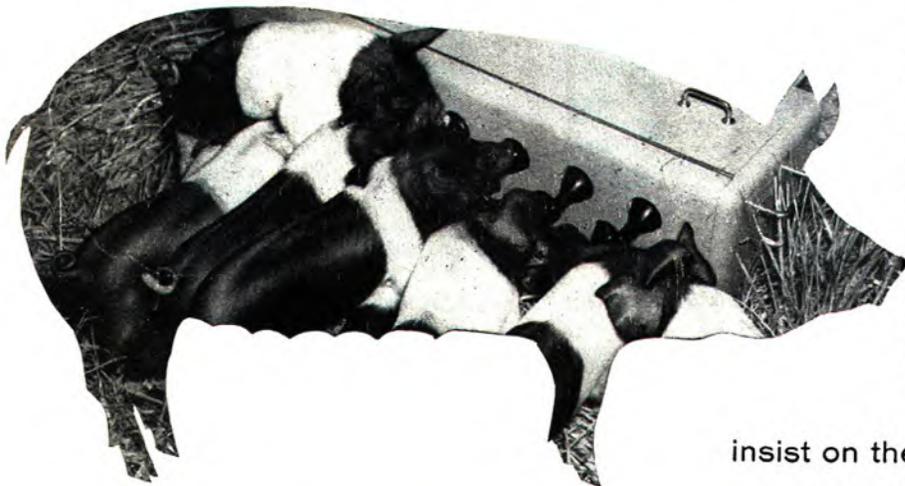
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4"	300	16 "	10 0	450	25 "	14 6
5"	600	32 "	1 0 0	850	45½"	1 8 0
5½"	850	45½"	1 7 6	1200	1HR 4MINS	1 15 0
7"	1200	1HR 4MINS	1 15 0	1800	1.36 "	2 10 0
8½"	1750	1.33 "	2 10 0	2400	2.8 "	3 10 0
	DOUBLE PLAY			SUPERGRADE		
3"	300	16MINS	10 6			
5"	1200	1HR 4 "	2 5 0			
5½"	1800	1.36 "	3 10 0			
7"	2400	2.8 "	4 0 0	1200	1HR 4MINS	2 18 6

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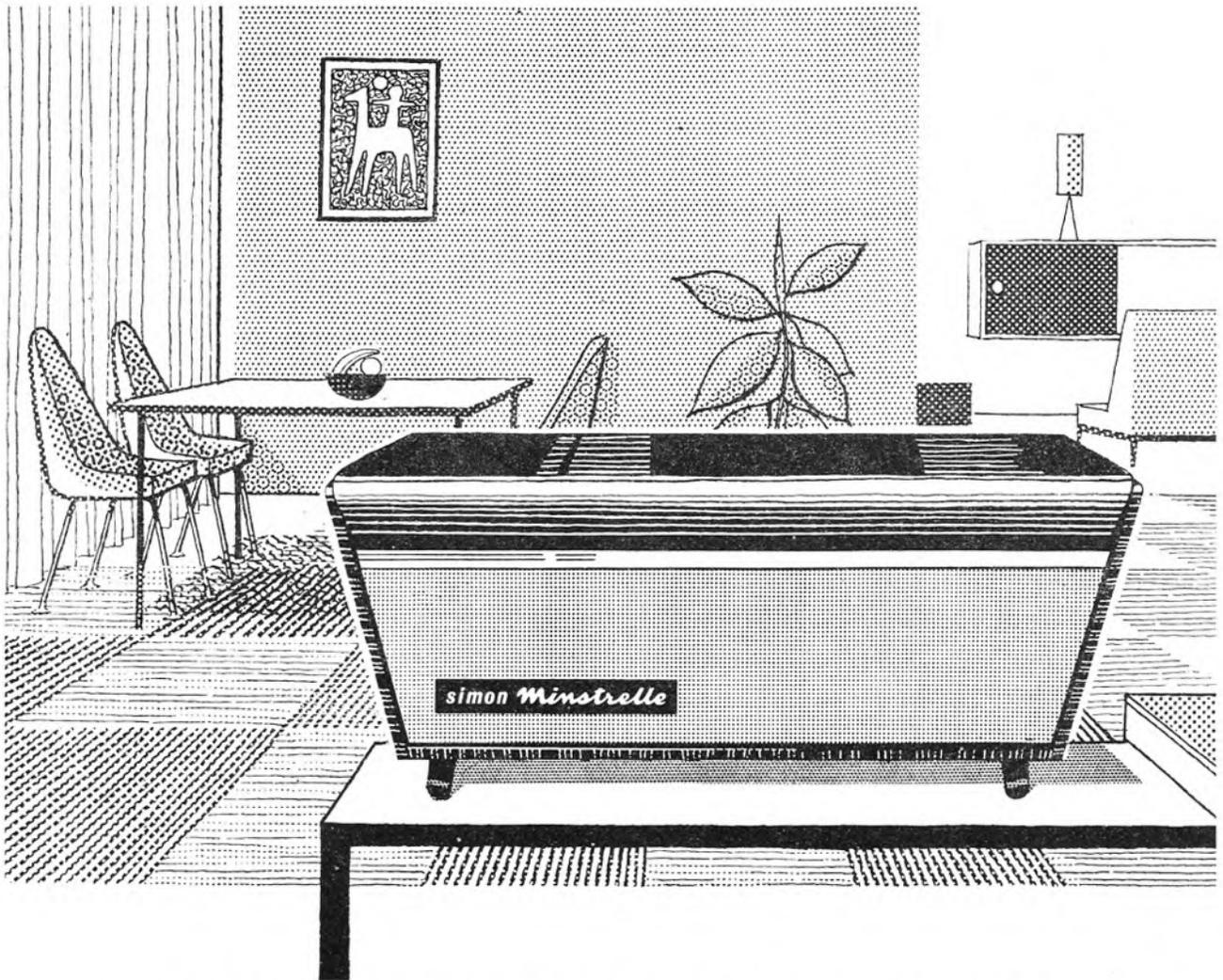
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Korting Stereo*	68
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D. W. Aldous of 'GRAMOPHONE RECORD REVIEW' writes in March issue:—

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AND HI-FI MAGAZINE

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We take the view . . .

A DIGEST OF NEWS, COMMENT AND EDITORIAL OPINION

DURING the last few weeks—just as one of the popular daily newspapers was discovering, and reporting in giant headlines, that “home-made noise is booming”—quite a lot of people in the tape recording world have been meeting me with mournful faces.

They tell me that things are not what they were. The phenomenal demand for recorders and associated equipment that began at the end of last year and continued over into this has now slackened a little.

Surely this is not surprising? There is likely always to be a seasonal cycle in tape recorder sales; that it is not yet a firmly established pattern is due to the rapid expansion of these formative years in the trade. The government's credit restrictions have also had some effect.

Let us not be pessimistic about it, however. The market is still expanding. Established firms with reputable products can take an optimistic forward view. There may be keener competition ahead. Quality will count more, because the buying public is becoming better-informed and more discriminating. More aggressive sales policies may be called for.

But the tape revolution has barely begun. The prospects are rosy. Any temporary lull in business now should be behind us before the autumn. Those whose interests are involved should be planning now the biggest drive in the history of tape recording. Some of them, we know, are doing just that.

It is now a reasonable supposition that over a million people are using recorders in their homes. If we try, we can increase that number by at least a third within the next year.

Aid for an art form

AN admission that British enthusiasts are ahead of the Americans in the creative use of tape recorders is made by our U.S. contemporary, *Tape Recording*, in its latest issue. An envious eye is cast upon the healthy state of the club movement here and upon the contests to encourage good recording.

But the magazine makes a good point when it says that no art form can flourish unless it has, not only devotees but a wider audience as well. “Paintings may be seen on the walls of art museums,

photographs in photographic salons and at camera clubs, drama in the theatre, but the tape recorder has a potential audience far beyond any of these if some way can be found to reach it,” it declares.

In America, the magazine suggests, the answer is to be found in the network of local radio stations. That has proved to be a very effective answer in some other countries, notably Switzerland.

We should apply the same reasoning to the situation here in Britain; we are in no position to be smug. What are we doing to bring this new art form to the attention of the public?

We think the clubs are doing a very good job. We think the British Amateur Tape Recording Contest serves a useful educational function. But could we not do more?

In the absence of large numbers of local radio stations, what alternatives are available?

One of the most promising ideas is the magazine-on-tape. It is, of course, not

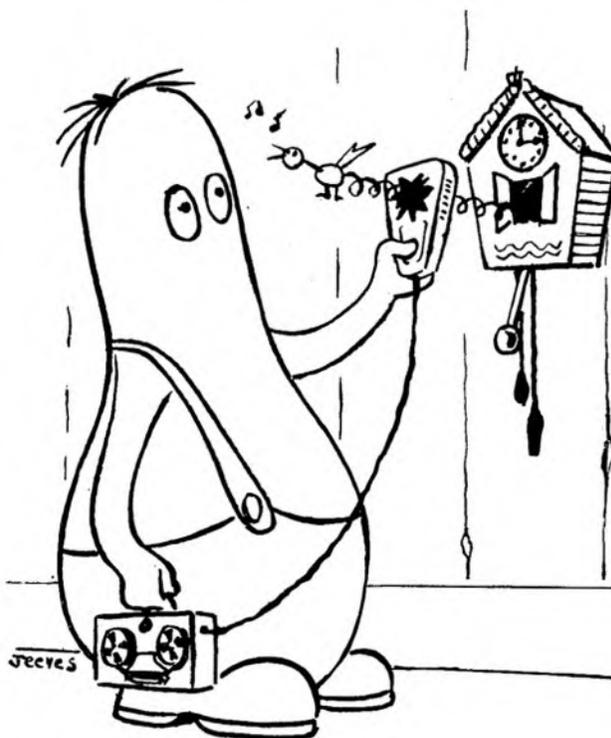
new. Many clubs have tried to produce such a feature tape regularly and some excellent results have been achieved; but it is a tremendous task to circulate such a production at sufficiently frequent intervals to maintain continuity of interest.

We believe the most promising idea is for a national tape magazine of some kind. It might be a private enterprise job depending largely on paid advertising spots, as does commercial TV; Mr. M. E. Renshaw, of Cambridge, has made a brave start in this field with his “Tapeorama,” which I have heard with interest.

Or it might be a product of, for example, the Federation of British Tape Recording Clubs—or, at any rate, issued under their imprimature.

In this issue we report a move to institute a national tape magazine for the blind. It is a move in the right direction. There are other exciting possibilities ahead.

LAUGH WITH JEEVES





THE WAY TO THE STARS

IF you want to find glamour, take to tape recording. You'll find show business stars and beautiful girls behind almost every microphone!

Or so it seems as the publicity photographs flood in from enterprising and obviously artistically-minded manufacturers.

We present three of the latest offerings.

Blonde teenager Romaine Shipton (top photo) turned up at the Teenage Fair at Park Lane House with her Clarion Twinset and collected from disc-jockey David Jacobs the first "tape autograph" he'd ever been asked for.

It's obvious enough what a girl like 18-year-old London Palladium dancer Rosanne Jennings (centre) can do for tape. But what can tape do for her? Answer—it keeps her in touch with her boy friend, who is in Germany. She records show business gossip on her Elizabethan Avon in her dressing-room—and the other girls give a hand. When it's personal, she whispers into the mic. in private. Lucky microphone!

Grundig don't rest content with one star—their latest window display in New Oxford Street (bottom photo) looks like a theatre announcement of a "super-colossal" West End theatre hit. Giant enlargements of stars using Grundig recorders hammer home the sales slogan "Top Stars use the top tape recorder."

P.S. The tape recorders are pretty good, too!



STEREO FOR "VICTORY"

A TRIPLE amplifier and loudspeaker system receiving a sound input from a three-track stereophonic tape was installed recently aboard H.M.S. "Victory" in Portsmouth Dockyard by Standard Telephones and Cables Limited.

The installation was carried out in collaboration with Allen E. Stagg, of the International Broadcasting Corporation, who is responsible for the tape recording for the *Son et Lumiere* display now in progress nightly aboard Nelson's famous battleship.

Each of the three amplifiers in the system is capable of delivering 150 watts into the loudspeakers which are carefully designed to harmonise with the ship. The loudspeaker system is made up of a pair of the recently developed curved front column loudspeakers to handle the middle and low frequencies, and a small high frequency horn to give additional treble response.

The first performance of the story in light and sound of H.M.S. "Victory" was held on July 1, and performances will be given each evening throughout the summer until October 1. The cast includes Sir Laurence Olivier and Robert Morley. Presented by the Portsmouth Evening News, the profits for the show are to go to Naval Charities.

New tape service for the blind

BLIND BULLETIN, a tape recording lasting an hour and available every month on subscription to blind groups and individuals throughout the country, is the scheme Walter Gillings of 115, Wanstead Park Road, Ilford, wants to see come to life.

For nine weeks now, Mr. Gillings has been producing *What Goes on Here*, a thirty-minute tape recording as a voluntary service to the Ilford Blind Welfare Association. This tape, which gives a commentary of local news and actuality reports of various events, has been so well appreciated and was attracting so much attention in blind welfare circles that he plans to extend the idea.

He hopes to enlist the aid of recording enthusiasts in different parts of the country to collect material for the tape which will present news of activities by blind people over a much wider field and include actuality recordings from many sources.





THE possibilities for recording at a fair are as exciting as they are numerous: the side-shows, the roundabouts, the old hurdy-gurdy organ churning out its nostalgic, mechanical melody.

The opportunities for the enthusiast are endless. A feature tape for the recording society? An entry for the tape contest, perhaps. With such thoughts I grabbed the Fi-Cord, rammed a couple of spare tapes in my pocket and set off at a great pace in the direction of the fair.

My heart missed a beat at the sight of the cluster of lights in the distance, but I was returned to earth with a shock by a large painted notice at the entrance: "Men Wanted for Dismantling Tomorrow." So this was the last night. I had not bothered to check the dates quoted in the advertisement.

It had been raining heavily during the day and the path from the gate was ploughed into a rutted bog. The puddles in the shadow of the caravans squelched underfoot as a wheezy generator coughed and spluttered in the darkness. I began to wonder if this was such a good idea.

The biggest crowd stood sombre and silent in an orderly queue outside a booth selling hot fish and chips. The stench was appalling. The only music to be heard was canned and very, very badly reproduced. The traditional barkers stood dejectedly on.

A great blob of candy floss leered at me from the centre of an otherwise empty counter and from the far side of the ground came the sound of a girl's shrill, forced laugh. As the rain began to fall, I was already wading through the mud to the gate, leaving behind the saddest fair in all the world. To dismantle it would be the kindest thing to do.

Attention to detail

I was annoyed with myself for being so stupid. The first essential in any live recording is to consider carefully all the circumstances and conditions under which one will have to work. Sit down and imagine every event that will take place, and decide exactly how you intend to deal with each situation as it arises. The unexpected always happens, but at least one is more able to cope with it if the routine has been carefully thought out beforehand.

The visit to the fair ground was so depressing that I felt the only cure would be to make another attempt, but this time the project would be dealt with thoughtfully and sensibly.

The best of fairs can become depressing to an isolated individual wandering around on his own and, if for no other reason, a team of two is desirable; but it is worth remembering that an assistant can usually be of great help when taking any outside recording. A pair of workers suggests that one will look after the machine while the other handles the microphone, and so the length of cable required must be sufficient to permit a reasonable degree of separation between the two, but not so much that it would

be liable to trail in muddy ground or get itself tangled in any moving mechanism. At a fair this last point is most important. The compromise decided upon here was a cable length of just seven feet, running to a dynamic microphone.

Wind is the arch enemy of the outdoor recording engineer and, if at all possible, a wind shield should be included in the equipment as a matter of course.

The choice of location was the next consideration and, in an attempt to ensure that the "atmosphere" would be right, it was decided to take the recording at Battersea Pleasure Gardens during the Whitsun holiday weekend. If the final recording is to give a care-free air of people enjoying themselves, then the task is much simplified by working with plenty of people around dispensing a spirit of "We're all having such a good time."

Luckily the night chosen was warm and dry, without a breath of wind to move the leaves: just the weather to pray for when planning such an expedition. I decided to use the Grampian moving coil microphone. A wind shield is not yet available for this fine little instrument, but a useful tip offered by the manufacturers is that if the small eyelet port in the rear of the stem is covered, either by the hand or with a rubber band, wind noises will be considerably reduced. They do warn that this effect may be accompanied by a very slight cut in the lower frequencies, but for this purpose this would not be important.

When my assistant and I arrived at the Pleasure Gardens we found, to my great delight, a roundabout with a real hurdy-gurdy organ blaring out. Its sounds immediately brought back memories of the fairs of my childhood and we started recording in the certain knowledge that this was what we wanted.

ALL THE FUN OF THE FAIR

YOU MUST PLAN IN ADVANCE IF YOU WANT GOOD RESULTS

One of the unfortunate disadvantages of transistors is that they are inherently noisy; therefore, when using a transistorised machine of any make the recording should be taken modulated down to the lowest level capable of adequately loading the tape. By adopting this technique it will be found that one has a very acceptable signal-to-noise ratio on playback. The Fi-Cord has a numbered scale from one to eight on the panel at the base of the level control, and I was surprised to see that we were recording well at level number two. It was also surprising to discover how much wind was set up by the motion of the roundabout. Although the night was still and calm, I found I had to screen the microphone from quite a strong breeze as the horses swished by.

Elated by our success so far, we strolled over to one of the "rides" as a new set of passengers were being loaded aboard. It was somewhat similar to a roundabout, but had wooden scooters instead of horses. As it looked so harmless we recorded the voice of the barker and then took up positions on adjacent scooters. My assistant with the recorder and I with the microphone.

Difficult conditions

Sitting bolt upright and feeling not a little self-conscious, I started my commentary as we moved off, but was rather disturbed to find that this contraption travelled over a series of undulations as it went round, with a revolving switch-back motion. It was not unpleasant, and as I spoke up bravely I could see my assistant carefully watching the level indicator on the machine. The dull roar in the background began slowly to increase, a loudspeaker somewhere above our heads erupted into rock-and-roll and, in a moment, we were lurching round at a terrifying speed.

Every undulation tried to pitch one out of one's saddle, as centrifugal force clutched and dragged in the direction of the guard rails. The din was terrific. Thrown over on to my side at the first lurch, I was hanging for dear life on to the scooter next to me. Shouting into the microphone, I could scarcely hear the sound of my own voice. I caught a fleeting glimpse of my assistant; a brawny attendant was trying to hold her in place as, with hair streaming and frantic expression, she clung to her scooter and my Fi-Cord.

From my own near-horizontal position

says

**DENYS G.
KILLICK**



I continued to yell the first things that came into my head. Wind noises and recording levels were completely forgotten.

When it finally stopped we staggered to the ground. On playback, we found we had one of the most dramatic actuality recordings we have ever taken. There was much less over-modulation than I would have believed possible; but, if anything, a little distortion in such a context helps to heighten the colour.

It was interesting to hear how my voice, in spite of the devastating ambient noise level, came out well in the foreground. I had never shouted like that into a microphone before. I had made myself quite hoarse, in fact, but the secret of our success was in keeping the modulation control well down. Before my partner had lost interest in such things she had fortunately set the machine at its lowest possible level, and as I had contrived to hold the microphone fairly close to my mouth we had accidentally achieved a remarkably good balance, with the spoken words dominating the other sounds.

This particular recording is so good because it is so obviously sincere. When I, as the commentator, speak of this ride as being one of the most terrifying experiences I have ever had, the inflections in the voice indicate that this really and truly is what is happening. There is no technical formula for achieving a result like that. I could only convey that impression of excitement for the simple reason that I was scared to death!

Having recovered our composure with a cup of tea in the refreshment pavilion, we continued our recording. We took the Fi-Cord on the Big Dipper and recorded our impressions as we were rushing through the air high above the crowded booths and stalls. Space ships, ghost train, distorting mirrors: we went from attraction to attraction. The last thing we did was to take a ride on that dear old hurdy-gurdy roundabout, yet even here the unexpected happened.

With my colleague on one horse and I on another next to her, I started commenting as soon as we began to go round. By that time I was feeling rather tired and, after a very short while, I "dried up." Most people who have to speak extemporaneously have experienced it at some time or another.

The attendant, seeing we were recording, decided to co-operate by giving us an extra long ride, so there I was, going sedately up and down on my gilded horse, gliding comfortably along with the machine under perfect control next to me, the organ with its drums and cymbals delivering really authentic background noises, and all I could do was to speak in platitudes.

I wished it would stop, so we could get off. I even said so on the tape. The resulting recording, taken under ideal conditions, is absolutely useless. When giving a commentary, if there is nothing sensible you can add to the sounds already being recorded, the golden rule is "Shut Up!" There may be the opportunity to dub in some spoken words in the studio later, but if your remarks become banal they only spoil what might otherwise have been an excellent recording.

The production of a feature tape such as this one involves not only the exciting or frustrating business of outdoor recording. The tapes obtained from the site are nothing more than a series of disjointed episodes and impressions, some good, some bad and some indifferent.

The real work begins with editing, splicing, perhaps mixing or superimposing, adding introductions or studio commentaries until the picture that is to be conveyed takes shape, having a logical sequence to hold its parts together in a coherent whole. On this process depends the success or failure of the whole venture.

An imposing array of expensive equipment can be of great service to the skilled tape editor, but his two most important tools are a good imagination coupled with an inexhaustible store of patience.



Trade Marks		
"MASTER"	"RIBBONETTE"	"STEREOMIC"
"VELODYNE"	"VELODYNAMIC"	"LUSTRETTE"
"TRANSAMP"	"TRANSISTAMP"	"TRANSPHONE"
"LUSTRAND"	"TRANSISPHONE"	"FULL VISION"

the foremost name in Microphones and Microphone Accessories
famous and used by the famous

For many years the name of LUSTRAPHONE has been intimately associated with the design and manufacture of microphones of widely varied types. Progressive development has resulted in a range of instruments incorporating the best features in modern microphone techniques. Each has been produced to satisfy particular requirements in the ever-widening field of sound reproduction

"Make the most of your Tape Recorder with a Lustraphone Microphone."

"Add quality to your Recorder with a Lustraphone Microphone."

were among the headings used in many previous LUSTRAPHONE advertisements and such advice was accepted by countless Recorder users for Studios, specialised and domestic application.

British in design, materials and manufacture, consistent in quality and reliability, backed with a British factory guarantee, LUSTRAPHONE provides the fullest range for all requirements. Buy British always for you keep your fellow Britishers at work and then they buy the products of your manufacture.

Here is an abbreviated list of models and accessories:—

Model No.	Type	Price £ s. d.	Model No.	Type	Price £ s. d.
VR/53	Studio ribbon velocity.....	9 19 6	PPA/570	Portable P/A system	63 0 0
VR/64	Pencil ribbon velocity.....	7 17 6	TS/50	Mumetal Screened Matching Transformer	2 12 6
VR/65	Ribbon stereo velocity.....	31 10 0	TS/100	Mumetal Screened Matching Transformer	2 12 6
LFV/59	Dynamic full vision.....	8 18 6	SI/A	Plunger Floor Stand.....	6 16 6
LFV/H59	Dynamic pencil hand.....	8 8 0	SI/B	Hand adjustable Floor Stand.....	5 5 0
LV/59	Dynamic Lavalier	8 18 6	S5	Folding Floor Stand	5 5 0
LD/61	Dynamic Lustrette	3 7 6	S2XB	Single stem Table Stand.....	1 15 0
LD/66	Dynamic Lustrand	4 2 6	S2	Extensible Table Stand	2 12 6
LD/66Z	Dynamic Lustrand	4 12 6	S2B	Heavy Table Base	1 1 0
LX/55	Crystal	2 10 0	S2/M	Lightweight Table Base	0 12 6
MU/577	Transistor 4-channel mixer unit...	22 0 0			
TPA/556	Transistor 10 watt Amplifier.....	30 0 0			

THERE IS A LUSTRAPHONE MICROPHONE FOR EVERY REQUIREMENT

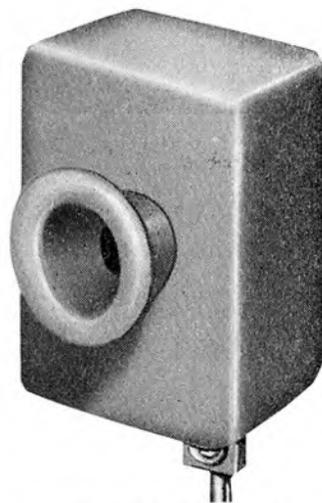
Enquiries invited for the latest Lustraphone Catalogue which details the complete range of microphone and ancillary equipment

LUSTRAPHONE LIMITED — ST. GEORGE'S WORKS — REGENTS PARK ROAD — LONDON, N.W.1



The Acos 40 with folding stand

Good tape recording is impossible without a good microphone. There are many types—designed for different purposes. You will find useful advice and guidance in this special supplement on



Lustraphone Lapel model LP/62

MICROPHONES

The general purpose Grampian DP 4



This introduction to microphones is published by courtesy of Standard Telephones and Cables Limited, whose products are described elsewhere in this issue.

ALTHOUGH it is possible to engineer one part of an audio system to compensate to some extent for the failings of another, it is obviously better to begin with the best input possible and to make all subsequent reproducing elements such that they pass on a faithful version of what is received. In short, the output of a system cannot be better than the input and to obtain the best results a high quality microphone is essential.

The desirable qualities of a microphone are: small size, robustness, high sensitivity to desired signals with rejection of unwanted sounds (such as background noise, hum, pick-up, etc.), uniform response to all frequencies and suitable directional properties. No single instrument can meet all these requirements and the best results depend on the choice of microphone to suit a particular application.

Certain classifications will occur to the user at once; for example, indoor and outdoor microphones, directional and omnidirectional microphones, and microphones for close or distant talking. Detailed consideration of these categories will help to make clear the

functional and constructional differences between various types of high quality microphones.

The distinction between high quality and low quality microphones must be considered. Where cost must be taken into account, it should be remembered that a good microphone does not usually add much to the overall cost of an installation; a cheap one is a false economy.

(Continued on page 18)



Standard Telephones 4032 with windshield



The Simon Cadenza ribbon

MICROPHONE

supplement

For many purposes a microphone needs to be sensitive to sound sources irrespective of the angle of sound incidence, as, for example, when the instrument is located centrally with respect to a group of performers. Such a microphone has been called non-directional since it has no favoured direction of acceptance, but "omnidirectional" is a better and more positive description to indicate that the microphone accepts sounds equally from all directions.

It is well known that in air, as in water, the static pressure is the same in all directions, i.e., air pressure is naturally omnidirectional. In general, therefore, omnidirectional microphones are pressure operated, since they respond to changes in air pressure produced by sound waves.

Most early microphones were of the pressure-operated type, but later microphones were made which responded to changes in pressure gradient rather than changes in pressure. In simple terms, if pressure is likened to the height of a hill, pressure gradient corresponds to the steepness of the sides of the hill and is thus a vector (i.e., directed) quantity. As air pressure varies with signal rhythm, so does pressure gradient, so that an electrical device sensitive to gradient changes can act as a microphone. Such a microphone is directional since, in its basic form, it is most sensitive to sounds arriving from the front and back and least sensitive to sounds from the sides, top and bottom.

Figure of Eight

The "figure-of-eight" directional pattern just described has certain advantages, as it is sometimes possible to arrange for unwanted sound sources to be on the insensitive axis of the microphone. Furthermore, in a reverberant room this type of microphone is less sensitive by a factor of 3:1 to the reverberant sound (which arrives from all directions) than to the wanted signal coming from the front. This helps considerably with feedback problems in public address work and permits natural reproduction in buildings which have not had adequate acoustic treatment. Also, it allows an artist to stand further from the microphone for a given degree of reverberation, which may be important for the artist's method of presentation, and in television production it assists in keeping the microphone out of sight.

Conversely, an omnidirectional microphone sometimes helps in a room which is acoustically overtreated. Such a room would sound "dead" if a directional microphone were used.

An even more useful sensitivity pattern is the cardioid (heart-shaped). Cardioid microphones have the same 3:1 discrimination between direct and random indirect sound as the bi-directional (figure-of-eight) types, but they have the additional advantage of being insensitive to sound arriving from the back. This property is particularly advantageous for use on a stage, since the cardioid microphone helps to suppress unwanted noises coming from the orchestra pit or the



Standard Telephone's 4104 lip microphone

audience and reduces echo effects from the back of the auditorium.

The growing popularity of stereo reproduction enhances the importance of directional qualities, since most systems depend on the use of matched and accurately orientated directional microphones.

In a studio, particularly when music is being reproduced, the sound source is some distance from the microphone, whereas in public address systems, often used in a noisy environment, the talker is much nearer to the instrument. Some vocalists sing within a few inches of the microphone and obtain special effects by so doing. Finally, the commentator who has to provide a commentary during a live programme must put his lips close to the instrument. These different requirements lead to the need for microphones with special characteristics.

Response Legend

Microphones are sometimes said to respond to talkers from a great distance. This is often legend or exaggeration, but it has a basis in fact and usually implies a microphone with very pronounced directional quality. Such an instrument will reject signals from other directions and so permit the amplifier gain to be increased until the distant talker is audible without a corresponding increase in other noise or in over-reverberant sound.

This fact emphasises one of the important uses of a microphone with directional properties, that of noise exclusion. Microphones, or more usually, an array of microphones, in which this effect is pronounced can to some degree be "focused" on the talker. The single cardioid or bi-directional microphone often gives a useful degree of exclusion of unwanted sound without the disadvantages of considerable size or complication.

VARIOUS TYPES AND THEIR SPECIAL USES

(Continued from page 17)

Microphones which operate on the pressure gradient principle have a special property not found with pressure-operated types. With the former, the response to low frequency sounds rises more rapidly as one approaches the instrument than do the middle or high frequency sounds. Ribbon microphones, which generally work on the gradient principle, are therefore well suited to studio use, but would give frequency distortion if used by a commentator. This property can, however, be put to good use by introducing elements into the construction of the instrument which attenuate the lower frequencies so as to give an overall flat response when used for close talking at a prescribed distance.

Mouth Guard

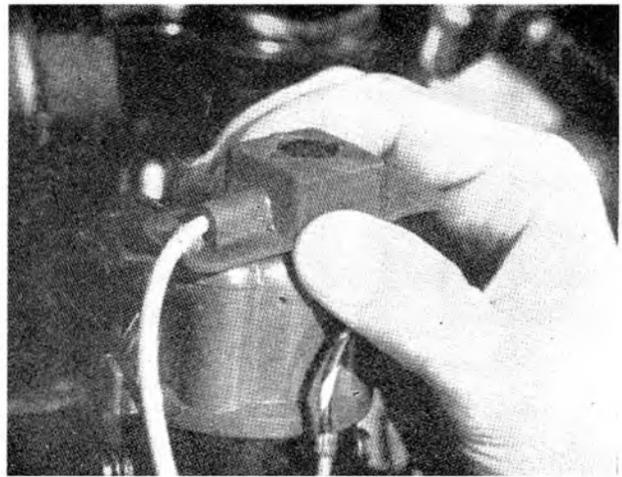
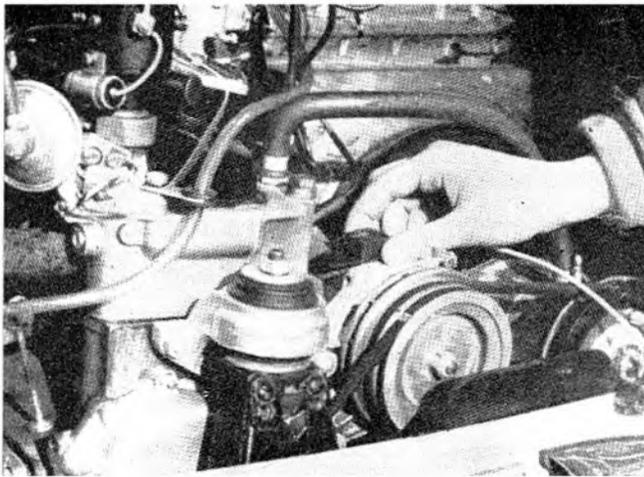
Microphones with these characteristics can be designed so as to be eminently suitable for a commentator's use. Room noises, or the programme through which the commentator has to talk, besides being relatively distant are robbed of most of their low frequency content. The result is an effective suppression of everything but the commentator's voice. A microphone of this type is fitted with a mouth guard so that the distance from the speaker's mouth is accurately fixed.

Microphones operate on the alternating components of air pressure which comprise the sound waves; thus puffs of air from mouth or nose, and bursts of pressure which accompany certain labial consonants (such as p or b), can produce disastrous results when amplified from a microphone. One of the difficult problems of close-talking microphone design is to neutralise this "blasting" without causing deterioration of the response.

It is more difficult to secure high quality in the open air than in the calm atmosphere of the studio. From the known properties of air streams it is obvious that a high wind, which can produce edge tones and various other forms of audible turbulence, can make speech unintelligible. Furthermore, protection against rain is essential.

A solution to these problems must be in the nature of a compromise, since, to be 100 per cent effective, a windshield would have to be too large to be practical. Nevertheless, great improvements can be effected by fairly simple means, particularly if, in the most severe cases, the lower frequencies are attenuated electrically. Simple windshields are available which have little effect on response but which give an appreciable protection against wind and rain.

One can only choose a microphone, or judge its performance, in close relation to the job it is required to do. If this is not clearly realised it is misleading to speak of one microphone as "better" than another of a different type.



One of the uses the contact microphone can be put to is in checking engine parts on a sports car. On the left it is being held against the generator and on the right the distributor is checked

Contact microphones

THOSE readers who have, for the moment, exhausted the possibilities of conventional recording might like the following suggestion, which opens up a whole new range of sounds within the capabilities of the home recordist.

Does the term "vibration pick-up" convey anything to you? Or perhaps "contact microphone"? Both are terms for a special type of microphone, designed not to pick up vibrations from the air—as are conventional microphones—but to receive vibrations in solid materials. As such, they do not really look like microphones at all, but usually have a flat sensitive surface, which in use is fixed as closely as possible in contact with the structure the vibration of which is to be investigated.

One of the more common uses of the vibration pick-up is in acoustic measurement, when it is required to investigate the transmission of sounds through walls, floors and ceilings; for example, in the design of a broadcasting or recording studio.

It is obviously necessary to reduce the transmission of sounds outside the studio via the walls to as low a value as possible, or the studio will have an undesirable background of noise. Most home recordists will have had unfortunate experiences of unwanted background sounds intruding on an important recording, due to interference from such sources. We all know of the bugbear of the next-door radio.

These investigations are not really

Most people are familiar with the more normal applications of the microphone. This article deals with an unusual type of microphone and the intriguing experiments in which it can be used.

within the capabilities of the amateur recordist, but they are possible with the use of a vibration pick-up. Of course, it would be difficult for the average person to be able to act on the information he gained, so as to improve the sound insulation of a given room. That is a job for an expert, and usually rather expensive, but such an investigation can show where the worst parts of the room are from the point of view of transmitting interference, and these places can be avoided when making recordings.

The method of operation is simple. The floor, walls and ceiling are divided up into areas and each is investigated in turn, the pick-up being fixed to the surface in question by means of adhesive transparent tape.

Each recording must be made with the same setting of record gain control on the tape machine, or the comparisons will not be valid.

Investigating rooms, however, is not the only use of the contact devices. There are many others.

Are you a motor enthusiast? Do you really know what goes on inside the engine of your car when it is running? The vibration pick-up can

give you a great deal of information here, too. By holding the pick-up in close contact with various parts of the engine—say cylinder head, dynamo, distributor—such things as sticking valves can be heard.

It is a good idea to make these recordings at as fast a speed as you can, and then play them back at the slowest speed available. In this way the various sounds can be more easily identified. It is worth remembering that playing back at slow speed will reduce the available sound volume, so be sure that the maximum possible level is recorded.

The contact microphone can be used to produce unusual sounds from musical instruments. Most interesting results can be obtained by fixing the device to, say, a piano soundboard, or near the bridge of a stringed instrument. Sellotape is quite suitable for this.

Try the microphone against the outside of your throat—quite interesting speech sounds can be picked up this way, as can all sorts of unbelievable noises if the microphone is held in contact with various other parts of the body.

Unfortunately, these devices are not readily available to amateurs in this country. They can be obtained, however, from at least two firms—Cosmocord and Lustraphone—to special order.

An ex-government "throat microphone", a type of contact microphone, can sometimes be obtained from surplus stores.

MICROPHONE supplement

Angus McKenzie contributes the first in a special series of test reviews of microphones prepared for this supplement

LUSTRAPHONE

—increased sensitivity

FOR many years Lustraphone have been well-known for producing microphones and public address equipment of very high quality, and it is a pleasure to be given an opportunity of reviewing again some of their excellent products.

The types of microphone considered here are the type VR semi-professional ribbon, the VR 64 ribbon, the LD 66, and the VR 65 stereo ribbon.

I consider the most important change, that will interest all users of semi-professional microphones, is the increase in sensitivity in general of all the Lustraphone microphones. There are a number of ribbon microphones manufactured to-day which have very low sensitivities, although all are of good quality.

It is very difficult with a low sensitivity microphone to record speech satisfactorily because of the high amplification necessary to obtain a satisfactory output level fully to load the tape. Because of this, such a microphone will make a speech recording with a high degree of background hiss, due to the extra amplification.

There are also microphones available with a high output whose polar diagram is not that of a perfect figure of eight pattern. Comparing Lustraphone microphones produced about three or four years ago with those in current production an increase in sensitivity of approximately 6 dB has actually been measured.

It was noted that the Lustraphone

VR 53 gave an output not lower than any proprietary brand of semi-professional microphone known to the reviewer and, in fact, many dB higher than a number of such microphones being sold today.

This greater output is due to the employment of improved magnetic materials and small changes in the design of silk screens in the front of the ribbon. Another important factor in the excellent performance of this microphone is the very good figure of eight polar diagram. It was found that when speaking about 18 inches away from the microphone in a dead room, the output of 90 degrees from the front of the microphone was considerably less than one-twentieth of the output speaking into the front of the ribbon, and in fact seemed to be very nearly completely dead. As far as I can tell the only output of the microphone was from the reflections from the tiled walls and ceiling of the relatively dead room used for testing the microphone.

The microphone is available in three impedances, 30 ohms, standard, 600 ohms, or high impedance, and can be mounted directly on to a table or floor microphone stand. It is suggested that it is preferable to have the standard 30 ohm microphone and to use an external step up transformer as near the tape recorder or mixer as possible so that there will not be a loss of top on a long high impedance cable. Care should, of course, be taken to ensure that the microphone input transformer is not placed near a mains transformer of the equipment because a



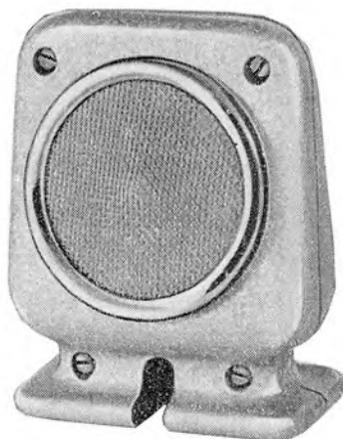
The Lustraphone LD 66 reviewed on this page

hum can be induced into the microphone input transformer. The price of the Lustraphone VR 53 complete with 20 feet of cable is £9 19s. 6d. This price does not include a microphone stand.

THE VR 64 is a junior version of the VR 53. It is in fact half of the stereo microphone type VR 65. The quality is little inferior to that of its senior brother and the output is only very slightly less. It is extremely compact and, for a ribbon microphone, surprisingly robust. The top response, although extremely good, is not quite as good as the VR 53, which is to be expected, but the base response seems to be more or less the same. It is supplied with a small base for use on a table which allow it to be tilted back from the vertical if required. As usual with the Lustraphone microphones, VR 64 is supplied with a 20 foot lead of microphone cable, and can be supplied in three impedances for the same price; 25 ohms, 600 ohms, 50k ohms (Hi-Z). The price, including the stand and cable, is £7 17s. 6d. I consider this is very reasonably priced indeed and should be within the budget of most owners of good tape recorders.

THE LD 66 is definitely a cut above the average for its price, and is especially useful for high quality recording in the home when a more expensive model cannot be afforded. It should in no way be regarded as inferior as I have personally used it for high class recordings on battery portable recorders "in the field." It is especially useful for recording out of doors when there is a certain amount of wind blowing, and has a very clean response throughout its range. The base response is a little limited, but this is certainly not a bad thing if it is to be used for outdoor recording and the average recording in the home. It is available with a metal U-shaped attachment to allow it to be kept in position on a table, and this can incidentally be turned so that it wraps round the end of the microphone closely and is effectively out of use. For an extra charge, a special attachment enables the LD 66 to be used as a microphone stand. The cost is £4 2s. 6d. for the standard low impedance version and £4 12s. 6d. for

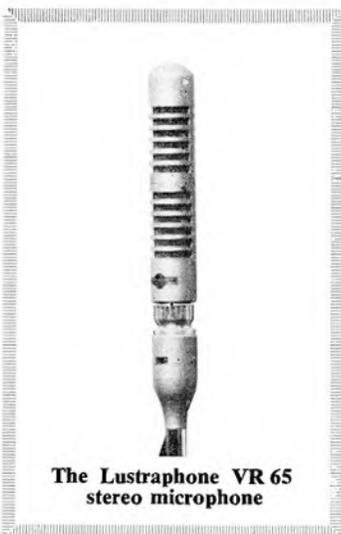
(Continued on opposite page)



The Lustraphone LX 55

FAVOURITES IN THE ACOS RANGE

TWO POPULAR MODELS PRODUCED BY THE COSMOCORD FACTORY AND REVIEWED HERE BY A. BEAUTEMENT



The Lustraphone VR 65 stereo microphone

the 600 ohms or high impedance version. The high impedance model has an extremely high output for recorders having a low sensitivity and has an impedance of approximately 140 k ohms. The 600 ohms version is especially useful for matching to transistor battery portable recorders for a normal input impedance of approximately 1,000 ohms.

THE VR.65 stereo microphone consists of two identical ribbon elements situated on top of each other—each in a similar housing to the VR.64 ribbon mic.

The two ribbon elements are so arranged that the top element can be rotated through an angle of approximately 100 degrees from the inline position, when both the elements are pointing in the same direction, thus enabling the microphone to be used in any possible combination of angles and phasing.

The VR.65 has many facilities, in that it is not only a stereophonic microphone but can become a ribbon velocity microphone of very high sensitivity for monaural use. As there is also a phase reversal switch at the rear of the switch unit, not only can one of the stereo channels be altered in phase, but when the two elements are put in series for monaural, the microphone can become a noise cancelling one.

The impedance of each unit is 20 ohms, giving an impedance of 40 ohms when the two elements are connected in series.

The accuracy of directionality of the Lustraphone microphone is astounding, and a beautifully clean stereo effect is produced. This applied not only to the music itself, but to the reverberation presence which makes recordings made with this microphone sound so realistic.

The VR.65 was found adequately sensitive for all recordings of music, but as with any ribbon microphone, because of the far higher gain required, a certain amount of hiss was heard when it was used for speech recording. The microphone was, in fact, tested with balanced input microphone amplifiers and no hum at all was present in the output from the microphone, confirming the obvious use by the makers of good ribbon transformers.

The makers' claim that the frequency response extends to 13,000 cps is, if anything, too modest. It also needs to be said that the bass response is excellent.

IT is pleasant to realise that the days have passed when it was necessary to pay a large sum of money to obtain a microphone of good, even if not quite-studio, performance, and this realisation is amply confirmed by the specifications of the Acos "stick" type 39-1 (£3 3s.) and hand/desk type 40 (£1 15s.) microphones. Together they offer a choice from which a wide range of requirements can be satisfied.

Both of them are light and comfortable in use, and older readers, who will remember the "hi-fi" mikes, in marble cases, or containing magnets heavy enough to break a wrist, will agree that "we've never had it so good" from the weight standpoint.

These two microphones require as small a space for storage as the portable equipment user could wish, but performance has been in no way sacrificed to achieve their convenient physical design.

The Mic 39-1 is cylindrical in shape, 4½ inches long and 1½ inches in diameter at the operative end; the bottom end, from which the cable emerges co-axially, is ¾ inches in diameter, and the whole forms a tapering shell which is easy to grip.

The outer case is in off-white plastic material which contains a one-piece die-cast liner, giving complete screening and freedom from hum pick-up under all normal conditions. An attractive finish is provided by a gilded grille over the insert and a gilded boss at the base. The weight, with lead, is 4½ ounces.

The hand or desk model, type Mic 40, is roughly rectangular in shape, being 2½ inches high, 2¼ inches wide at the base, 1½ inches wide at the top, and 1 inch deep. The case is of plastic material, obtainable in various colours, with a grille consisting of vertical slots in the moulding, and there is a narrow frame of identical or contrasting coloured plastic round the front of the case. This is pivoted at the bottom so that it can be pulled outwards at the top and rotated through 270 degrees,

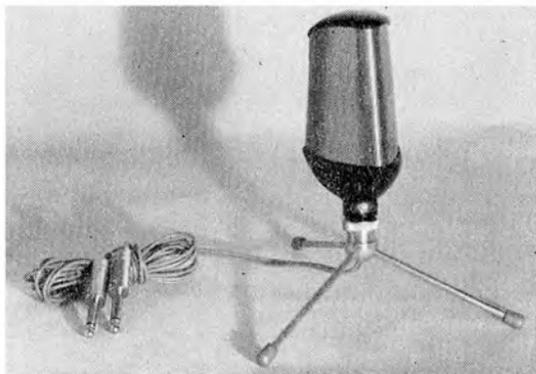


The Acos Mic 45

where it locks into position to form a desk stand. The weight of the unit plus lead is 3½ ounces.

A word of warning is in order here. The unit by itself is so light by comparison with the lead that if it is placed on a polished surface, with part of the lead and, presumably, a metal jack plug, or something similar, hanging over the edge, their combined weight will pull the microphone down. So, to prevent any crystal breakage, it would be advisable to fix the cable firmly with something weighty, and avoid trouble.

Each unit is supplied with an 8-foot length of single-core screened lead, the



Tripod mounted, the Acos stereo Mic 44, a new model shortly to be released

MICROPHONE supplement

ACOS MODELS

(Continued from previous page)

screening braid being of strong, closely-woven copper which will keep hum pick-up to a minimum and give good mechanical strength, a "must" for a lead which is being continuously flexed. The plastic insulation round the core is tougher than most, and, to the writer, seems to be more heat-resistant than is usual for plastic coverings.

So much for the mechanical side; now on to the electrical, beginning with:—

Frequency Response

Here the "stick" mic shows its superiority. The response is virtually flat from 50 to 6,000 cps, the output then rising smoothly to a higher level (+5dB), at about 8,500 cps, and falling gradually back to level at over 10,000 cps, cutting off fairly sharply beyond this point. This response gives absolutely lifelike voice reproduction and reasonably good musical fidelity, but still lacks the treble response necessary for real hi-fi.

The rising characteristic above 6,000 cps is not a bad thing. Some amplifiers and recorders have a response which tends to fall off in this region, and so for them, automatic compensation is achieved, resulting in an almost level output. Users with wide-range tone controls on "higher-fi" equipment can easily compensate for the treble rise.

The last paragraph applies also to the Mic. 40, this response being from below level (-5dB), at 30 cps level from about 100 cps to 1,500 cps, rising above normal (+8dB), at 4,000 cps, and falling again to below normal level (-5dB), at 8,000 cps. All these variations are gradual and there are no sudden peaks, so that an average tone control network could easily provide any necessary compensation to about 5,000 cps, making this model quite suitable for voice reproduction.



The Acos Mic 39-1

Incidentally, increasing the length of mic lead by any substantial amount will result in a loss of treble, and output, with any crystal device—the longer the lead, the greater the effect.

Output Level

The mean output voltage of the "stick" mic. is -62dB on a reference level of 1 volt/dyne/cm², which, to the non-technical, means that enough sensitivity will be available to drive better-class amplifiers, recorders, etc., but users of less expensive equipment might have to turn up their volume controls to the point where hum problems could arise. A pre-amp. would then be required to do the unit justice.

Extra care would have to be taken to see that the mic input plug and socket were as fully screened as possible.

The Mic 40 has a mean output voltage of -50dB on the same reference level as the "stick," which means that its output is four times as great, making it an obvious choice for use with simpler and less expensive equipment, such as public address and portable transmitters (for those with G.P.O. licences!) and other portable varieties. Note that the higher output is invariably accompanied by the lower quality. Regrettable but unavoidable.

Directivity

As one would expect, the pick-up of the "stick" mic. is omni-directional when held vertically, but some directional effect is noticed when it is tilted towards the sound source. Don't forget, by the way, that, although it may look unusual, a mic of this type hung downwards over a group of people is just as effective as when it is held upright amongst them—probably a little more so.

The Mic 40, when standing upright, has maximum pick-up on the front, but, due no doubt to the lightness of the case, its pick-up is almost as great at the rear and sides. It can, of course, be laid on its back for true omnidirectional pick-up with a slight loss in sensitivity.

Matching

All crystal devices have a high impedance output, which means that a matching transformer, between them and the amplifier input, becomes unnecessary, freeing the user from the hum pick-up troubles which often accompany, for example, ribbon and moving-coil pick-ups and microphones.

The recommended load impedance (virtually, the resistance between earth and grid of the first stage in the amplifier) for both of these units is 4.7 megohms, minimum, and any reduction in this value will cause a corresponding loss in bass response, which falls more sharply as the resistance value decreases. The correct performance of these microphones can only be obtained, therefore, when the proper load resistance is used.

MICROPHONE CHARACTERISTICS

FOR many years the professional recording or broadcasting engineer has had the choice of a number of types of microphone, each having excellent frequency response but having different types of polar characteristics. These characteristics are mainly of three kinds: figure of eight, cardioid, and omnidirectional (spherical). Some very elaborate and expensive microphones have a switch enabling these three and several other intermediate polar responses to be selected at will.

The operation of these microphones may be of interest. In the case of the omnidirectional microphone Fig. 1, this is operated by the pressure of the sound wave upon the front of the diaphragm, no sound being allowed to reach the rear.

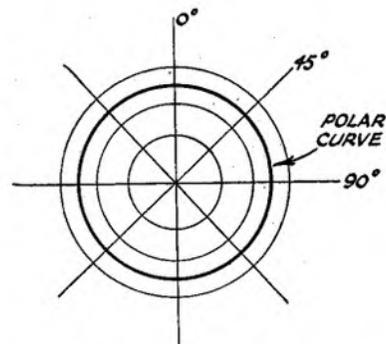


Fig. 1. Omnidirectional microphone characteristics

If the diaphragm itself is of sufficiently small dimensions, the spherical response can be extended to quite high frequencies, but the older types of pressure operated moving-coil microphones with large diaphragms tended to become more one-sided as the frequency increased.

Pressure operation is by no means confined to microphones of the moving coil type; most of the available crystal microphones operate in this manner, while the highest-quality pressure microphones work on the electrostatic principle.

Microphones having figure-of-eight polar responses, Fig. 2, operate somewhat differently, in that the sound is allowed free passage to both sides of the diaphragm, and the diaphragm movement

H. Burrell-Hadden discusses MICROPHONE CHARACTERISTICS and tests some domestic models

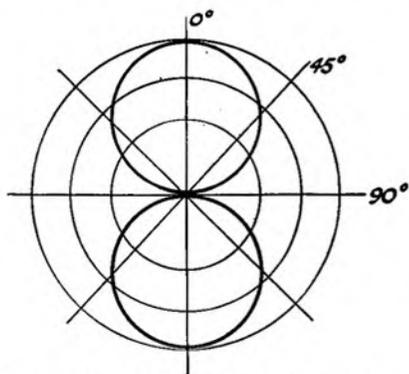


Fig. 2. A figure-of-eight response

is caused by the pressure gradient existing between the two sides. Such microphones are frequently of the ribbon type. Cardioid microphones, Fig. 3, the third

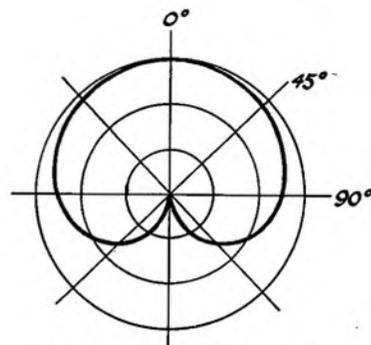


Fig. 3. A cardioid response

main group, operate with a combination of pressure and pressure gradient action. It is possible to produce a cardioid polar diagram by adding the outputs from an omnidirectional and a figure-of-eight microphone, and indeed the professional Standard Telephones and Cables microphone type 4033 operates on this principle.

One must add that the difficulty of doing this with any two microphones at random is that the two frequency responses must be identical and the individual polar responses must be maintained over the whole frequency range of each microphone, otherwise the cardioid pattern of the combined pair will not hold over the whole frequency spectrum.

This is not the only way, however, of

achieving a cardioid response. By ingenious design, it is possible to make a moving coil or electrostatic (condenser) microphone capsule which will behave as though it is partly pressure-operated and partly pressure gradient. This is achieved by carefully controlling the sound admitted to the rear of the diaphragm.

Until recently the microphones available at prices the domestic user could afford fell either into the omnidirectional (pressure) category or the figure-of-eight (pressure gradient). Quite recently, however, the AKG. Company, of Vienna, and the Philips Company have produced moving coil-cardioid types at prices within the reach of the domestic user. Some of these microphones are reviewed elsewhere in this issue.

The A.K.G. Type D.9

THE D 9 microphone is manufactured by Akustische-u Kino-geräte, the world-famous Viennese firm which supplies microphones used by many broadcasting and recording institutions. It is to be expected that even a domestic microphone from this stable will be well worth having.

This particular microphone has an omnidirectional moving coil capsule, and the frequency response (Fig. 4) is arranged to rise slightly at high frequencies, in order to compensate to some degree for the high frequency loss in domestic recorders working at 3½ ips.

The microphone is attractively styled in ivory and brown plastic, with a hinged support enabling the microphone to be stood upright. If preferred, the support can be folded away and the microphone is of a convenient size to hold in the palm of the hand. A threaded hole is provided for floor stand mounting.

Some very good recordings were made with this microphone and I can recommend it to tape recording enthusiasts. It is available as a dual impedance version. The maker's specification is reproduced below. The price is £4 14s. 6d.

SPECIFICATION

Frequency range, 80-10,000 cycles.
Frequency response, ± 4 dB with reference to standard curve.
Internal resistance, 200 ohms/50 Kohm.
Dimensions, 3½ x 2¼ x 1½ in.

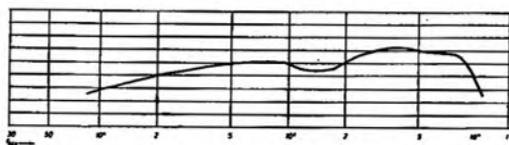


Fig. 4. The frequency response of the AKG D 9

The Philips Type EL.3750

THE Philips moving coil microphone type EL 3750 is supplied with their tape recorder type EL 3542 and can also be obtained separately. It is attractively styled in ivory plastic, with a gold-coloured grille and a stand attached to the microphone in such manner that it can be used either to support the microphone on the table or to hang it. The stand folds neatly, for the microphone to be used in the hand.

This microphone is of the cardioid type of polar diagram discussed above, and this cardioid response is exceptionally well maintained over the whole of the musical spectrum. There is some widening of the pattern at low frequen-

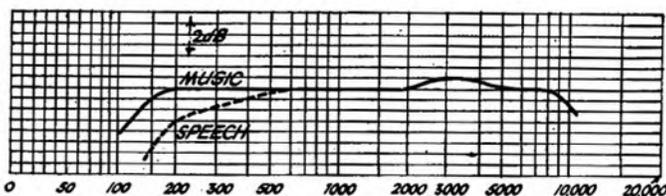
cies, but even at 150 cycles an excellent front to back ratio is achieved (Fig. 6).

The frequency response was found to fall off rather more at the high frequency end above 7,000 cycles than was expected from the maker's published frequency response curve (Fig. 5), but recordings made with this microphone had a clear quality and the lack of top was not very noticeable.

A switch on the back of the microphone labelled speech/music introduces a cut at low frequencies if required.

I can thoroughly recommend this microphone as good value for money at £5 5s.

Fig. 5. The frequency response of the Philips EL 3750



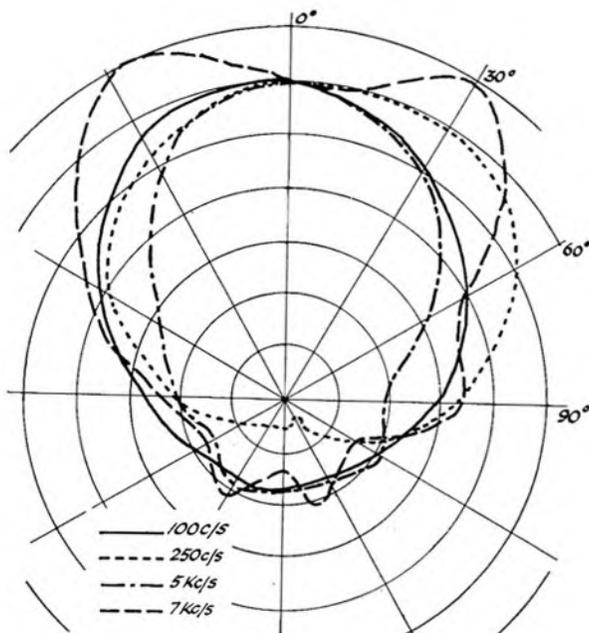


Fig. 6.—The Philips EL 3750 polar response

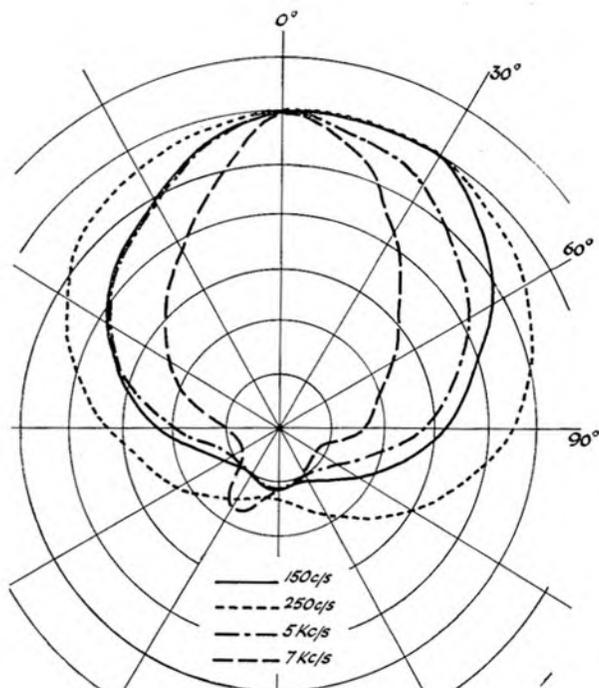


Fig. 7.—The AKG D.19B polar response

A.K.G. moving-coil Type D.19

THE A.K.G. D 19 B high-grade moving coil cardioid microphone, is rather more expensive than most used by amateur recordists, but for those people requiring a well maintained cardioid response over the whole frequency range, combined with an excellent frequency response, it is well worth having.

This microphone comes packed in an attractive velvet lined case and is unlike most domestic microphones in that its cable is not permanently attached. The microphone itself is finished in hammered bronze and gold and is of the "stick" variety, the vent for the rear side of the microphone being provided by a grille down the length of the stick. It is extremely important, if the microphone is held in the hand, that this grille should not be covered, or considerable deterioration of the cardioid response will result.

A switch is provided on the microphone for reducing the bass response if required. This switch is operated by turning a knurled ring either to the position "S" (speech), the bass cut position, or to the position "M" (music)—the normal position.

The frequency response of the microphone is excellent, although a speech test showed a slight tendency to emphasise sibilants. This, however, was not serious and the slightly rising top which it would indicate could be an advantage with many domestic tape recorders.

The polar response was measured at various frequencies and is reproduced in Fig. 7. As can be seen, a good front to back ratio is maintained over the whole spectrum. At high frequencies the microphone becomes rather more direc-

tional than at low and medium frequencies, but this is not too serious.

I can confidently recommend this as a microphone for those requiring a good cardioid characteristic.

Since the microphone is not provided with its own stand, some form of mounting for table or floor stand use is necessary. Two such were provided for review by the manufacturers. There were the A.K.G. ST 19 stand, with the stand adaptor "Sa 1" which together form a complete stand, and the "Sa 2" metal clamp stand adaptor, which will fit on

any microphone stand having the international standard thread.

The first of these stands is made of cast metal, and is of a most elegant design. The stand adaptor associated with it has a clever clamp made of soft plastic material, incorporating a steel spring; the microphone is just pushed into this and is held in a firm but shock-proof mounting. The Sa 2 metal clamp adaptor has a swivel joint and a rigid locking clamp to take the microphone.

The price of the **D.19B** which is available with either 60 or 200 output impedance, is 19 10s., and the prices of stand ST 19, adaptors Sa 1 and Sa 2 are £1 12s. 3d. and £2 10s. respectively.

T.S.L. Stereo microphone

UNTIL quite recently, the only twin microphones specially designed for stereo use available in this country were the professional models manufactured on the Continent, and these were only available in limited quantities to special order. In any case, they cost in the region of £300 each and so are probably out of the reach of most amateur tape recordists.

In the past few months, stereo microphones of rather more modest specification, and consequently more modest price, have been appearing in this country, and the T.S.L. S.2 is one of these. It sells at 19 guineas which, when one considers that it contains two separate microphone capsules with their axes mounted at 90° to each other in one case, is a reasonable figure.

The microphone is, in fact, produced to a T.S.L. specification by a famous firm of microphone manufacturers in Vienna.

It is intended to be used for the "coincident microphone" type of stereophony

and in this case the polar diagrams of the two capsules are cardioid in nature. Hence the expected combined polar response of the unit should be as shown in the diagram (Fig. 8). As can be seen this gives wide pick-up angle, rather more than is obtained with a crossed figure-of-eight pattern, whose acceptance angle is limited to 90°. This is because of the wider acceptance angle of the single cardioid, as compared to the pressure gradient (figure of eight) type.

The method of operation is briefly as follows. If a sound originates at a point S within the acceptance angle of the microphone, an output is produced from each capsule. Depending on the position of the sound the two outputs will vary in amplitude, and when these are amplified and fed to two loudspeakers, provided both systems are in phase, the speakers will reproduce sounds of similar relative amplitude to the outputs of the microphones.

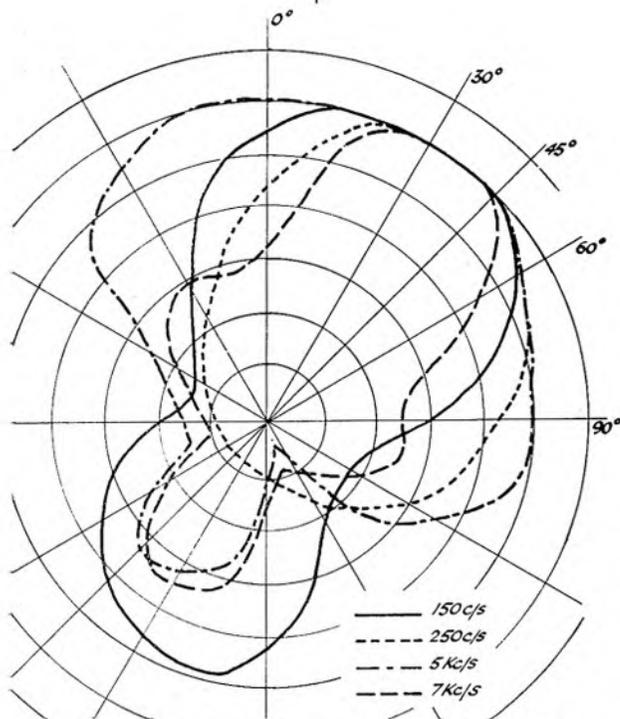
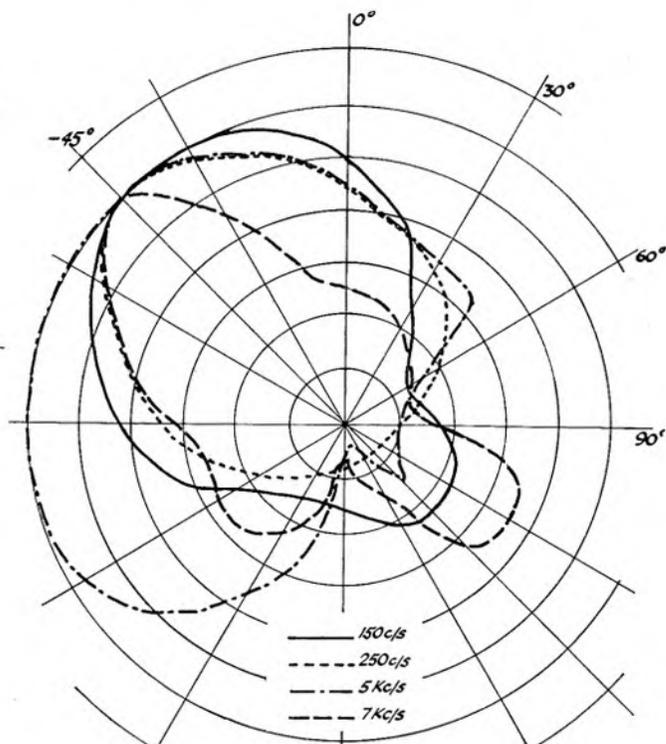
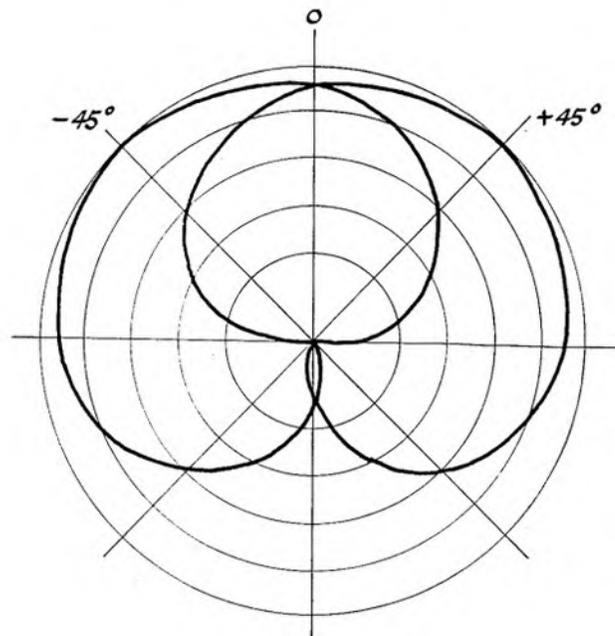


Fig. 8 (top left) shows the theoretical polar response of a twin cardioid stereo microphone. Fig. 9 (top right) is the polar response of one channel of the TSL S.2 stereo. Fig. 10 is the polar response of the second channel of the same microphone



OTHER MODELS FOR THE TAPE ENTHUSIAST

It is not possible, in the space available, to deal in detail with all available microphones. We are, therefore, only able to make brief mention now of a number of other excellent products that have proved popular with tape recordists.

The two Grundig microphones are specially manufactured for their own machines. Costing £6 6s. the condenser version, the G.C.M. 3, is omnidirectional and is claimed to be particularly suitable for musical recordings. A sensitivity of 2.5mV/dyne/cm² at 1,000 cps is quoted and the G.C.M. 3 has a circular frontal section mounted on a base.

Possessing a cardioid characteristic the high impedance moving coil G.D.M. 111 costs £8 8s. Also base mounted and possessing a rectangular frontal section, this model is said to have a sensitivity of 1.75 mV/dyne/cm² at 1,000 cps.

Both microphones are supplied with leads and plugs.

The two microphones of Simon Sound Service Ltd., are the Cadenza Ribbon and the Cadenza Crystal which cost £10 10s. and £3 13s. 6d. respectively.

The output on the former is claimed as flat within close limits between 50 and 12,000 cps, and the acoustic shell is said to give freedom from resonant peaks and troughs. Provision is made for both high (80 K ohms) and low (30 ohms) impedance output. The transformer is mounted in a metal shield and the microphone is fitted with an anti-

(Continued on page 34)

It can be shown that a listener sitting on the centre line of the speakers will receive similar relative phase and amplitude signals at his ears as he would have heard, listening to the original sound.

It is obviously necessary that two polar responses should be as alike as possible in order that accurate translation of the position of the source to its corresponding position in the reproduced image should be possible. In the case of the T.S.L. microphone, the two capsules were well matched in the forward position, and some very good stereo recordings were made. The front to back response, however, was better in the case of one capsule than in the other, especially in the region of 150 cycles. The practical effect of this would be to provide somewhat

more low frequency reverberation from one capsule than from the other.

In general, the cardioid responses of the two microphones were good at middle frequencies, but there was a noticeable rear lobe above 5,000 cycles, and some tendency, as might be expected, towards omni-directional operation at low frequencies (Figs. 9 and 10).

The frequency response of the two capsules was very good and should give excellent results.

The only criticism I have of this microphone is its external appearance. I feel that an instrument costing nearly £20 deserves a rather better outer casing than the present one made of ivory plastic and gold anodised aluminium mesh.

Sound Effects

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

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

ONE of the most popular items in recorded drama is the ghost story, and it is something which really puts "sound effects" to the test. The successful employment of effects in this field is balanced on a precarious tight-rope of technical sleight-of-hand, coupled with imaginative use of everyday sounds.

They must not be overplayed nor underplayed, but must be just right. Like the story itself, they must be absolutely incredible . . . yet completely acceptable.

Let us look at a selection of general "ghost" effects.

SCREAMS. Did you know that for every 500 women, *only one* possesses the ability to scream *properly*? Most women either screech or yell their heads off, which isn't the same thing at all. A good dramatic scream should consist of a rich, high-pitched, bubbling crescendo of ear-shattering sound. It is an art in itself. So much so that one film studio in Hollywood pays a young girl named Shirley Jacobson 50 dollars a month to stand by to record any screams they might require for a horror production.

Notice I'm speaking of *women*. I've never yet heard a *man* who was able to scream realistically; and that includes professional actors.

GHOSTLY VOICES must, of course, sound *unnatural* yet, at the same time, the speech has to remain intelligible. Here's one way of doing it: record the speech at, say, 7½ ips, switch the machine to play it back at 3½ ips and try to imitate *exactly* the sound of the slowed-up speech. When perfect, record the imitation at 3½ ips and change to 7½ ips for final replay.

The speech will be quite understandable, but the voice itself will sound somehow odd and disjointed, in a rather subtle way. This effect is best tackled by someone having a fairly deep voice. A medium or high-pitched voice will tend to produce a "gabble" on playback, which will not only give the game away but also spoil the effect.

FALLING OBJECTS are usually associated with "poltergeist" stories where things apparently move about by themselves. Take the case of a large china bowl crashing to the floor. It is *not* enough just to record a solitary "Smash!" from an old piece of crockery; this will simply leave the listener wondering what the sound was supposed to represent. Instead, the working-script for such an incident might run as follows:—

CHARACTER: I won't stay in this dreadful house a minute longer! (Slithering sound is heard). What was that! (The sound comes again). Look, that . . . that bowl! (A fast, loud slithering noise, then . . . CRASH!).

In this way, the tension is built up from the prelude of uncertainty to a positive finish by running parallel, as it were, with the dialogue.

WEIRD SOUNDS bring us practically within the field of *musique concrete*, since these effects depend, largely, upon natural sounds being taken out of context and applied in various ways. Here are some suggestions:—

Record a single screech from a budgerigar (getting in with the mike as close as possible) and switch to half-speed for playback. Now add an echo to this by re-recording (see article in June 1 issue). I can assure you that this particular item takes quite a bit of beating for sheer unearthliness!

The sound of a wet cork drawn across a sheet of glass or the shrill whine of air escaping from the stretched neck of a balloon both good results if "treated" afterwards in this way.

'We want the sort of sound that Count Dracula (the bat-man) might make before attacking a victim' was a request that reached me recently (never a dull moment in this game!). After some head-scratching, I decided upon a very fast, tearing "Snap!" with a hint of reverberation.

This I achieved by ripping apart a length of rough emery cloth, *doubling* the speed for playback and adding a slight echo. It sounded quite effective. At any rate, that's one sound effect where the accuracy of my interpretation can't be called into question!

GHOSTLY FOOTSTEPS are best imitated by a shuffling sound, rather than the normal "walking" effect. Footsteps which are supposed to be coming from a room above should be well muffled; more like a thud. Banging the fist on to a rough towel folded into four does the job quite well.

THE TAP ON THE WINDOW depends for its effectiveness to a large degree upon good timing. Just before the incident occurs, the dialogue should be speeded up slightly, stopping abruptly at the sound, followed by a marked pause. Don't make the sound too loud. It must be insinuating, rather than penetrating. The fact that it has served to halt the dialogue itself will help to convey the importance of it as a break-in.

SILENCE. (Whatever next!) It is possible to reproduce silence, and most effectively, too! *Not*, I might add, by "recording" half-a-dozen yards of blank tape! Remember that there is no such thing as complete silence, even in an empty house there is always something to be heard: the creak of warped woodwork, the soft moan of the wind in the chimney or the subdued background noise of life outside the house, be it in town or country.

The real point of including a "silent" passage in a mystery play is to prime the listener's imagination to the degree of expectancy where he *knows* that something must follow; not to set him wondering if you've forgotten to change the spools over!

Now, one or two brief tips:—

Firstly, don't overdo the "echo" factor in your ghost effects. Unless this acoustic peculiarity is relevant to the location of the story it can sound very corny.

Secondly, to indicate the passing of time for that middle-of-the-night scene, fade in the ticking of a clock, mix to the heavy breathing of the sleeping person, then mix again to the clock. Where no person is supposed to be present, the faint hooting of an owl may be substituted in place of the breathing.

Finally, bear in mind that in this type of production it is vitally important that the dialogue should both support and give added weight to the sound effects used; not the other way round as in straight drama.

Having concluded, I shall now exorcize me flippin' self till next time!

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British hi-fi scores at New York exhibition

AN EXCLUSIVE REPORT BY
OUR AMERICAN CORRESPONDENT

PETER M. BARDACH

WHO ALSO TOOK THE PHOTOGRAPHS

HI-FI was featured in the British Exhibition held here last month, coincident with the start of New York's "Summer Festival". The Exhibition, with its accompanying Military Tournament and Tattoo, opened on June 10 at the New York Coliseum and ran for two-and-a-half weeks. Co-patrons of the Exhibition were the Queen and President Eisenhower.

Although the high fidelity section occupied only a small portion of one of four floors, it was nevertheless well attended by the Exhibition visitors.

For those hi-fi addicts who had complained about the confusion and sameness of recent equipment shows in New York, the dignity and spaciousness of the British exhibits was a welcome change. As if by pre-arrangement (and no doubt that was the case), only one exhibitor played his apparatus at any given moment. As a result,



Mr. P. Glaser of Brenell with his 3 star stereo recorder at the BREMA stand

it was possible to listen with ease and to judge the tonal qualities without distraction.

The most ambitious exhibit was actually "a display within a display" and was staged by the British Industries Corporation, which serves as American importer and distributor for Garrard record-changers, Super K headphones, Wharfedale speakers and Leak amplifiers. BIC was, in fact, the only American exhibitor at the Coliseum. In addition to an impressive display of components, frequent stereo demonstrations were presented. A specially-designed stereo living room was on view, decorated by Lord and Taylor, New York's leading speciality store.

Another group exhibit was that of the Audio Manufacturers Group of BREMA, featuring a full line of tape, audio and television equipment on behalf of Beam-Echo, Brenell, Bush, Clarke and Smith, Ferguson, Gramophone Co., Lowther and Truvox.

High fidelity was only one of many items presented in a special exhibit of equipment manufactured by Pye.

Many of the tape recorders and accessories seen are not yet on sale in America, while others were shown here for



Entrance to the New York Coliseum

the first time, prior to completion of distribution agreements.

Those visitors' comments overheard were generally quite favourable, it being frequently mentioned that the British equipment seemed more "functional", with an absence of superfluous knobs and adjustment controls that tend to characterise many recent American models. On the other hand, cabinet stylings, for the most part, remain rather "old fashioned" by current U.S. standards.

AEI Sound Equipment Ltd announced that long before the successful exhibition closed its doors, "Sold" notices had to be placed on the BTH Type 451 16mm. Magnetic/Optical Sound Projectors, and much of the wide range of domestic stereo and hi-fi equipment displayed on their stand found enthusiastic purchasers.

Enquiries for both 16mm. and hi-fi exceeded all expectations. Trade and private individuals have shown great interest in high-quality British-made equipment and the company has high hopes of making a useful contribution to the country's dollar reserves.



Tuners and amplifiers on the BREMA stand

Letters to the Editor

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

"Proof of the pudding"

I DEPRECATE the comment in Mr. Douglas Gardner's article to the effect that technicians should be excluded from his survey of changing taste in loudspeakers. Generalisations of this nature can be very misleading and unfair to say the least. Let us recall that it was the technician, or more correctly, the engineer, who has made audio what it is today. That they have been maligned, can only be due to the inability of laymen to differentiate between the true engineer and the inexperienced amateur "trying out his wings."

My experience to date indicates that the majority of non-technical people who are discriminating enough to purchase a quality speaker, fall down when it comes to obtaining the best results. A typical example of this is where the loudspeaker is mounted in a vented cabinet without acoustic damping or adjustment to the vent area or volume. Figures from the manufacturers might show that the individual public demand for separate loudspeakers is far greater than it is for the speaker and tuned cabinet as a unit.

For years the standard method of appraising loudspeakers has been by checking for listener fatigue. The design of good quality audio reproducing equipment requires the application of science, but an artistic taste is also very necessary particularly in the approach to loudspeaker problems. Competent audio engineers by and large can sit and listen to a musical programme and enjoy it without constantly adjusting tone and volume controls. It is the layman who, given a surfeit of controls, never knows quite when or where to use compensation.

To a large extent the public tend to buy equipment by frequency response curves alone without considering (from the connoisseur's point of view) more important factors.

At the Audio Fair this year were displayed two very good examples of a reasoned and experienced attitude to good reproduction. The first was shown in the BBC studio monitoring gear, and the second in the flat but limited frequency response of the E.M.I. TR.52 recorder—the playback quality left many of the "up to 20 Kc/s and nothing less" fans wondering! This outstanding effect of realism can no doubt be attributed to the low distortion and flat response qualities—the result of advanced design studies, which you will agree stems from the combined design development and engineering processes, in other words, the work of the "technicians."

Mr. Gardner may not feel disposed to accept a qualified reply to his inquiry about "statistics of changing tastes," but in any case the figures weigh heavily in the affirmative.

Many enthusiasts with whom I come into contact have, during their early attempts at high fidelity, barked up the

wrong tree entirely. Some time has elapsed before the poor results have played on their nerves and they have seen fit to seek qualified advice.

A most noticeable point among our better judges, namely, the professional musician, is the rapid appraisal given by them to the playback quality such as that mentioned above, which to this end heartily endorses the engineer's approach.

It would prove no small task to bear out on paper the remarks of a professional design engineer, but as with the proverbial "proof of the pudding," my avid interest in putting over the value of good quality reproduction leads me to offer to interested bodies and tape recording clubs, demonstrations in the uses of tape recording gear, amplifiers, mixers, microphones, loudspeakers, etc., and professionally recorded tapes rank among the most interesting subjects for discussion.

Should further information be required, I can usually be contacted through the Crawley & Sussex Tape Recording Club.

DANIEL ARCHER.
Crawley, Sussex.

A word

First let me thank you for an all-round magazine. I have tried the others, but *Tape Recording Fortnightly* still holds its own and leads the field. . . .

F. HEEDS
Doncaster.

. . . . or two

. . . I found your issue featuring battery recorders extremely interesting, particularly the article by S. M. Wheatley, which I thought was packed with very useful practical information. His tips on microphone and interviewing techniques are most valuable.

EILEEN R. M. JONES (MISS)
Leamington Spa.

. of thanks

. . . I am happy to see you have a magazine strictly for tape, as good as and, in some cases, better than our own here in the States. . . .

G. TOTH
New Jersey, U.S.A.

TAPE SPEEDS—MORE COMMENT

IN reply to a letter in your June 15 issue, I really must correct what appears to be a glaring error in the assumptions of one of your correspondents about transferring tapes at double and-half speeds.

If a recording is made at a specific speed to a given recording characteristic for that speed and is then played back at an alternative speed with a different playback characteristic and re-recorded at another completely different speed with a still more different playback characteristic and then an attempt is made to yet again change the speed of the recording for playback purposes the ultimate copy of the original tape is bound to be very, very far out from the original in respect of frequency response and distortion levels, etc.

It should also be noted that optimum level settings at different speeds vary enormously. I feel this is a very important consideration in dubbing of the type mentioned in your correspondent's letter.

ANGUS A. MCKENZIE
London, W.1.

* * *

Donald Jeater, in the June 15 issue of *Tape Recording Fortnightly*, put over a very much simplified version of the method of trick recording at speeds not on one's own recorder. I thought he was unnecessarily scathing about the more detailed articles by Pat Copinger and Stanley Jepson, and think he might remember that learner-recordists like my-

self need much more detailed information than he would vouchsafe.

But I DO agree with him that 15 ips is OUT. It has long been a mystery to me why manufacturers provide this speed. Nobody uses it, not even the B.B.C. or the producers of commercial pre-recorded tapes, (I use it only for slowing down or speeding up a recording to produce weird effects.)

Although it is fun to try out this trick method of recording, I can see only three practical uses for it:—

(a) To test whether or not the heads on all one's recorders (I have three) are properly aligned (I find mine are).

(b) To prepare a recording to be sent to a tape correspondent whose machine has a speed not catered for on one's own machine.

(c) In some cases, as a tape saver (e.g., 3½ to 1½ ips).

One final point. What is the point of wasting time going to extreme lengths to CHECK speeds? Can one do anything about it if they don't match up to the reputed speeds? I KNOW that one of my recorders runs slightly slower than one of the others—simply by hearing the drop in pitch—but there's nothing I can do about it except by changing the machine for one which DOES match up with one of the others. Makers can't and don't guarantee that speeds are EXACT. Or am I quite wrong about this?

KEN RICHMAN
Shrewsbury.



Japanese Recorder for 23gns.

PRELIMINARY details of a new tape recorder are provided by Nortons of Manchester, who are distribution agents in this country for a twin-track recorder manufactured in Japan.

The machine is named the Fujiya, has a single speed of $3\frac{1}{2}$ ips, and a quoted frequency response of 200-6,000 cps. It is designed to operate on AC mains at 200-250v, 50 cycles. It will take spools of up to 5-inch diameter within the compactly-styled case which measures only $10\frac{1}{4} \times 5\frac{1}{2} \times 4\frac{1}{2}$ inches, and weighs 8 lb.

The circuit incorporates two valves and a three-inch speaker gives 1-2 watts output.

A pause control is provided, and the instrument is supplied complete with monitoring lead and headphone, microphone, tape and spools for 23 guineas.

A two-speed model ($1\frac{1}{8}$ and $3\frac{1}{2}$ ips) is available at 24 guineas.

Nortons, 14, Shudehill, Manchester 4.

AMPEX REDUCE THEIR PRICES

RANK Cintel Limited announce that the Ampex 351 range of professional tape recorders are now being manufactured by Ampex in this country, resulting in a decrease in price.

The new machines, built to the same specifications as the American models, are designed to operate from 240v AC, 50 cycles without the need of an auto-transformer. C.C.I.R. equalisation is supplied as standard, but N.A.B. equalisation is available if required.

Rank Cintel Ltd., Worsley Bridge Road, London, S.E.26.

New Products

NEW PORTOGRAM MODEL *Four-and-a-half hours play*

A SECOND version of their Portotape recorder has been recently introduced by Portogram. Incorporating the Collaro Studio deck, the Mk II Portotape is a twin-track recorder operating at $1\frac{1}{8}$, $3\frac{1}{2}$ and $7\frac{1}{2}$ ips.

Frequency response is given as 50-12,000 cps at the higher speed, and the output as 4 watts through the 8- x 5-inch elliptical loudspeaker.

Facilities are provided for superimposition and monitoring, and a host of other features include pause control, safety erase lock, magic eye level indicator and digital rev. counter. Inputs for microphone, radio/gram, and outputs for extension loudspeaker (3 ohm impedance) or a separate amplifier are also supplied.

The Portotape is designed for AC mains of 200-250 volts at 50 cycles. Valves used are: 8D8, 12AX7, two 6L84, EZ80, EM84.

It weighs 36 lb. and measures approximately $17\frac{1}{2} \times 16 \times 10$ inches. It will accommodate 7-inch reels, thus allowing $4\frac{1}{2}$ hours play on standard tape at the slowest speed.

The price of the recorder, which is housed in a two-tone rexine-covered case,



complete with Acos Mic 40 crystal microphone, 850 ft. of tape and empty spool, is 39 guineas.

Portogram Radio & Electrical Industries Ltd., Audio Works, Paxton Road, Tottenham, London, N.17.

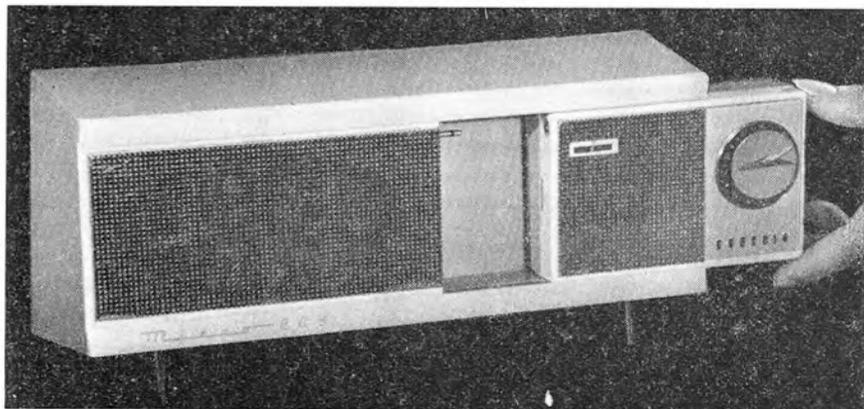
Sonocolor introduce new tape

TAPE RECORDERS (ELECTRONICS) LTD. announce the availability of new specially-developed Sonocolor tape for use in four-track and stereo recorders. They claim that because of its great suppleness, no deviation from the tracks during recording is possible.

The initial release of the tape com-

prises three different types. A 5-inch spool holding 900 ft. of tape will retail at 32s. 6d., $5\frac{1}{2}$ -inch spools with 1,200 ft. at 42s., and a 7-inch with 1,800 ft. at 57s. 6d.

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



The new Grundig Transistor Boy radio receiver, $4\frac{1}{2} \times 3 \times 1\frac{1}{2}$ inches, weighs only $11\frac{1}{2}$ ounces, has full medium wave coverage, a battery life of about 80 hours, and is controlled by two thumb wheels—on/off switch and volume control and a station tuning control. Our photo shows the receiver being slid into a larger high quality speaker to form a compact table or bedside radio. The price of the two units complete is 25 guineas

THE WORLD OF TAPE

Grundig expand

PLANS have now been completed for the opening this year of a brand new factory to manufacture Grundig tape recorders in the United Kingdom. Production is expected to commence in September.

The company is being formed in Belfast and registered in Northern Ireland and will be known as Grundig Works Limited.

The Chairman is Herr Max Grundig, and other directors are Herr W. Zaune, Herr E. Hegerl, Herr C. Bussman and Mr. G. S. Taylor, who is the Chairman and Managing Director of Grundig (Great Britain) Limited.

At first production will be concentrated on one tape recorder model, but as the enterprise grows there is room at the side of the present building to build an extension of the same size as the parent factory. Eventually an increasingly large range of tape recorders will be made at Dunmurry, and future interests will also include the manufacture of all types of electronic apparatus.

Plant and materials will wherever possible be of British origin, and the factory will be staffed almost entirely by a locally recruited labour force. At the

start a certain number of production experts from the Grundig main factory at Nuremberg will be temporarily engaged and a reasonable proportion of skilled staff will already be available in Northern Ireland. For full-scale production new operatives will be enrolled and given thorough and extensive training.

THE state-controlled Rumanian Record Industry has placed an order worth over £30,000 with the Recording and Relay Equipment Division of The Gramophone Company, Hayes. The equipment will comprise the complete set-up for two stereo recording systems, including tape recorders, mixers, large monitoring speakers and provision for tape and disc play-back.

Northern Audio Fair

The Autumn Audio Fair, 1960, will be held at the Palace Hotel, Southport, on Friday, Saturday and Sunday, October 7, 8 and 9.

This choice was made after the consideration that the excellent road and rail communications make Southport a particularly suitable venue for the large populations of Liverpool, Manchester and Lancashire generally.

The organisers are Audio Fairs Limited, 22, Orchard Street, London, W.1. Tel.: WELbeck 9111.

Hi-Fi
HARRY
by rich



"I can't think why you're doing the housework in those silly earmuffs"

A move revives an old problem

MOVING into new accommodation has given me a fresh look at the old problem of integrating a stereo system into the home. With a good deal of thought and experiment one arrives at a solution, but I am sure that the whole thing would be easier if architects and builders would, from now on, take into account the fact that tape recorders and sound reproduction generally are a part of everyday life—not to mention television.

Some help from a room is a great thing—even if it is no more than a single recess that is deep enough to house an equipment cabinet.

It may be productive to give full rein to the imagination for a while on this subject, and then check back to see if any of the ideas that emerge have practical possibilities in the present or the not too distant future.

We might start by assuming that the largest room in a house would probably be the one used for music and viewing. In this room—which should be long rather than square—a certain amount of sound absorbing material should be incorporated, especially in the ceiling.

To aid the installation of speakers, turntables, tape recorders, television receivers and other equipment this room should be so constructed that uniform rectangular sections could be removed or

Stereo Notes

By D. W. GARDNER

replaced from the wall without difficulty (and without endangering the structure) up to, say, a height of 4 ft. 6 in. from the floor.

This would enable one to create recesses at convenient places and thereby avoid the major problem of having a number of large objects standing against the walls and projecting so far into the living space that the place is crowded before anything else goes in.

In a 9 in. wall, recesses of 8 in. deep could be provided without disturbing the adjoining room, and this would mean that a large tape recorder, television turntable, amplifier and so on could be comfortably housed in bookshelves projecting no more than the customary 9 in. from the true face of the wall.

Loudspeakers could be similarly accommodated, large cabinets with plenty of bass fitting in as neatly as any "book-case" speaker could do.

I do not believe that there could be any difficult with modern resources, in replacing sections and providing a perfect surface again.

Another thing I would ask architects and builders to do in order to cater for the modern world of sound and vision, would be to fit a form of skirting board

which would take a lot of wiring easily. What with mains leads, aerial leads and flex to two loudspeakers one soon despairs of making a neat job of the connections.

Perhaps the skirtings could be made detachable so that wiring could be run behind them. Special provision should also be made for running wires round fireplaces and doors.

Have you any ideas for architects? If so, I shall be glad to hear about them.

Did you take part in one of the tests conducted by Record Housing at the Audio Fair? Listeners were asked to distinguish between different pairs of speakers, with their back to the sound.

The results were very varied, showing that, even after a run through, a large percentage of people could not tell a very high quality speaker from a much cheaper one—at least when short excerpts were being played.

Tests of this kind can do an inestimable amount of good, because they teach people how to listen critically, noting omissions from the frequency range, smoothness of response and so forth—instead of merely giving equal approval to any "pleasant" sound.

Critical appreciation is essential if standards are to be maintained. Pavlova used to complain about the fact that audiences applauded with equal enthusiasm no matter how her performances varied. When this happens, artists and technicians find it very hard to do their job properly.

News from the Clubs

Edited by

FRED CHANDLER

THE West Middlesex club has been honoured by having its Chairman, Freddie Westcott, elected Chairman of the Federation of British Tape Recording Clubs.

I would like to endorse the club's congratulations to Mr. Westcott, and with them hope that he will be instrumental in furthering the interests of tape recording in this country, thereby carrying on the good work so ably initiated by Charles Gardner, Alan Stableford, Roy Penfold and other stalwarts who have played such a large part in putting the Federation on the map.

The West Middlesex Club was represented at the Congress and Federation A.G.M. by vice-president Fred Gazeley, who was re-elected to the committee, Ron Topham, elected to the special sub-committee to revise the constitution, and Sandy Saunders. Among the representatives of many other clubs at the Congress, their other vice-president, Pat Copinger and his wife Phyl, removed to Kilmarnock in 1958, were also present representing the Glasgow club.

At the meeting on June 9 members were given a highly entertaining demonstration of the new Walter mains/battery portable and the 404 by Mr. F. Parrington of Walter Instruments. The mains/battery machine gave a very good account of itself playing pre-recorded tapes and also when taken into the street to record traffic noises, or surreptitiously switched on during subsequent discussions.

Their June 23 meeting saw a return visit by Mr. Wilson of F. A. Hughes Ltd., who showed members *The Magic Tape*, the film which has won many awards at film festivals as an outstanding industrial film explaining the uses to which tape can be put, and based on the theme *Tape is a tool, and tools mean progress*.

A number of suggestions received by the Programme Committee as a result of a circular sent to members have resulted in plans for "practical meetings" in soldering technique, accessory construction, editing, splicing, etc. Demonstrations from the trade, more outside visits and collaboration with local organisations are also envisaged.

The latter is now well in hand following news that an offer to make available the club's machines to help patients in

the Hillingdon Hospital has been put to the Hospital Management Committee.

Four members attended a final rehearsal of *The Tinkling Bell* on July 12, to record the play being produced by the Old Hamptonians Dramatic Society. Other members attended as an audience and Tom Pasmore made plans to record the show in stereo.

Stereo predominated at the May 6 meeting of the Coventry club. Two stereo recorders—the Grundig TK 60 and the Philips EL 2536—were demonstrated by Mr. Hopkins and Mr. Spink.

Both machines were used first with pre-recorded musical tapes and then with tapes recorded by the owners. It was hoped to attempt some stereo recording during the evening, but time did not allow.

After the demonstration Tom Bagley played a recording made earlier that evening of the club barmaid opening bottles of beer! He used a Fi-Cord and the microphone supplied with his Philips AG 8108G for the effect. This was the first tape to be heard in the competition for recording household noises. Others heard included a hilarious recording of the progress made in cistern designs made you-know-where, and an enterprising tape by secretary Roy Reynolds of adulterated television commercials. Roy also presented another of his quiz tapes—the winner being Tom Bagley.

The June 9 meeting commenced with a recording Roy had received from a Canadian contact. This was the famous Orson Welles 1938 broadcast *War of the Worlds*. Unfortunately the tape did not reproduce too well on Henry Hopfinger's Telefunken and after ten minutes the project was abandoned. Peter Warden and Graham West were the instigators of the next item—a demonstration of the Steelman Transitate. They had been on location with this battery portable on a railway line, a farmyard, in heavy traffic, in Peter's home, and at his works.

After a lengthy interval for refreshments, a raffle and the customary sales, Henry Hopfinger played a number of his most recently produced tapes. A recording in Coventry's new cathedral had set him a number of problems with regard to microphone positioning, but he produced his usual first-class tape with the church atmosphere realistically obtained. Recording conditions in St. Mary's Hall for the recent Mayor-making ceremony were, if anything, even worse and Henry found himself compelled to record from the public address system. With speeches being made in all parts of the hall, it would have been impossible to record everyone without a battery of microphones and a mixer. The quality of recording naturally suffered, but this was partly overlooked in view of the fact that history was made in this first-ever recording of the ceremony.

Jack Hill gained most points in the "old and new" contest arranged by members of the West Herts society. His

tape heard at the May 18 meeting compared old and new domestic equipment. Highly commended for the competition was Dennis Millard's contribution which included an old-fashioned alarm clock and an electric clock.

The sound hunt at Watford on June 1 followed the usual pattern with two teams "out" and one "at home." On this occasion Vera Jackson, Sid Attwood and Dennis Millard the "home" crew, produced the winning tape.

The June 15 meeting at Hemel Hempstead was devoted to the playback of tapes. To begin with members had a final hearing of their National Contest entry before its dispatch, followed by recordings of the Watford Whit Monday Carnival, and of country dancing at Chipperfield made by John Grainger and Dennis Millard.

An endless loop tape produced from a two-minute recording of church bells provided an experimental interlude before the secretary Peter Holloway reported on the recent Federation Congress.

Two members have been active in the special tape services provided by the society. A descriptive commentary of a flower show, and recordings of the finals in a ballroom dancing contest and of locally recorded wild birds were included in a tape presented to the local blind club by John Grainger, while in conjunction with the Rotary Club, Sid Attwood presented a musical request programme for the patients at St. Paul's hospital.

Experience in the art of editing, superimposing and dubbing has been gained by members of the Bournemouth club who, for the six weeks prior to the closing date, were extremely busy producing their tape for this year's National Contest.

Although quite a large amount of time had been spent on this activity the members have not ignored the regular round of events. Among the highlights have been a visit to the B.B.C. studios at Southampton where they saw how the experts compile a programme. Mr. Peter Maggs, the studio manager, invited members to make a recording on the E.M.I. L2/TA transistorised recorder. The results, played back on the studio equipment, set the members green with envy. As an added experience members were also given an opportunity to see themselves on the closed circuit monitor sets.

Demonstrations of the Philips four-track recorder, and of the new transistorised portable recorder the Casian Trav-ler by Tape Recorders of Westbourne, completed a fairly hectic June.

Arrangements to visit the Southampton ITV studios to see a programme in preparation, are being made.

Three of the seven members present at the June 20 meeting of the Ware club presented recordings for the "five minute tape" competition.

First to be heard was by Mr. Barks who had recorded a model railway engine complete with whistle, commentary and an interview with the driver. The tape concluded with an excellent recording of a real train leaving a station.

Trains had also been chosen as the subject by Mrs. J. Wakely. The recordings were made from the front window

(Continued on page 34)

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

FOR SALE. E.M.I. Professional tape recorder type TR90. £475. Complete MSS recording channel—Tape recorder—disc cutter—amplifier £150. Ferrograph Model 3A/N £52 10s. Vortexion Model 3A £55. The Magnagraph Recording Co. Ltd. 1, Hanway Place, London, W.1.

For Sale. Two Lustraphone LFV 59 pencil microphones, 25-30 ohms. £6 each. Holmes Tolley, 14, Hathaway Hamlet, Shottery, Stratford-upon-Avon. Tel.: 4144.

Widow wishes dispose Ferrograph 44AH, 15 ips, 7½ ips. Superb condition. Inspection most evenings. Kingston 0160. Also three unit speaker enclosure separate. Mrs. Williams, 26, Crescent Road, Kingston-on-Thames.

1959 Philips AG 8108 G Hi-Fi tape recorder. Complete mike, leads, new condition. Best offer over £45. Taylor, 24, Queensberry Place, S.W.7. Tel.: Ken. 2146.

Tape—Tape—Tape. BASF—Irish—Scotch. All types in stock. Send for price lists. C.W.O. Post free. Tape Recorder Centre (Halifax), 17, Rawson St., Halifax.

Clarion, mains unit, radio recording, playback, extension leads, telephone adaptor, two extra tapes, cost £36 16s. 9d. December, 1959, accept £28 o.n.o. Murrill, 48, Balmes Road, London, N.1.

Garrard R.C. 75A with symphony 5-watt amplifier. Both £8. S. Entin, 12, Geldeston Road, Clapton, London, E.5. Amh. 5817.

Acos G.P.54 p.u. arm for sale (adaptable for stereo). Perfect condition in maker's carton. List 39s. 6d. Offers? T. Gomes, 1, Abbey Street, Edinburgh 7.

Grundig TK 24. Latest 4-track direct from Germany. Cost £70. New and unused, £55. F. Riddle, 113, Church Road, Northolt, Middx. Viking 4734.

Tape Recorder repairs, all makes; also trade servicing—Telefunken service agents. Tape Recorder Centre (Halifax), 17, Rawson Street, Halifax. 66832.

Want to hire Fi-Cord recorder complete with Grampian mic. for first two weeks in August. Reasonable rates. J. Chinchin, 4, Meadow Road, Hailsham, Sussex.

WANTED. Telefunken 85, good condition. Up to £60 for 85 K or £65 for 85 KL. Would consider 85 T plus amp., etc. Box 374.

TAPE TO DISC—ALL SPEEDS; s.a.e. for leaflet. OMEGA RECORDING COMPANY, 112, Sunnybank Road, Potters Bar, Middx. Tel.: 6428 evenings.

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

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

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

Premier "Petite" Portable Radio, red and grey case, perfect condition. £5. Cheap, worn out, battery operated tape recorder wanted. J. Penfold, 2, Harrowden Road, Luton, Beds.

New Clarion Tape Recorder. £19 10s. Used once, owner gone photographic. 157, Lyndhurst Drive, Hornchurch, Essex.

FOR SALE.—Philips EL 3515. 3½ ips. 7-inch spools. Four months old. Complete with microphone. £25. F. Westcott, 40, Fontwell Park, Ashford, Middlesex. Ashford 4277.

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News from the Clubs

(Continued from page 31)

of her house and included steam, diesel and electric trains.

The third tape showed the differences between the extreme noise of a Saturday evening and the silence of a Sunday morning—broken only by singing birds, and was recorded from the bedroom window of Mrs. A. Campbell.

Comparisons between Telefunken and Grundig condenser microphones followed and the evening was rounded off with discussions of general recording technique and some technical hints, with technical types Messrs. Barks and Saul coming to the fore.

The next meeting will be on July 18 at 3, Chadwell, Ware and as usual newcomers are most welcome. Members are keen to exchange visits and tapes with other clubs. Secretaries are invited to contact Mrs. J. Wakely at the above address.

The Reading tape and cine club members propose to hold an annual competition on the same lines and with a trophy similar to the cine section who compete for a silver cup. They are beginning to compile a library of tape literature.

Recent demonstrations have included a Grundig recorder and a Minivox portable machine, and the new Dominus, a combined 8 mm. sound and projection model.

Demonstrations of the Garrard transcription motors and pick-ups, Clarion portable recorder, Ferrograph recorder and Grundig stereo model, have been enjoyed by members of the newly-formed

Rotherham club recently. They have also held practical sessions on dubbing and editing, and microphone technique.

Meetings are held fortnightly and the club has fifteen members. To encourage membership, the club issues each member with a card for general distribution inviting persons interested to contact Mr. G. J. Grover, 66, Broom Road, Rotherham.

An attempt is being made to form a club in West Suffolk. A number of enthusiasts have made a preliminary survey of the prospect and anyone interested is invited to contact the secretary, Mr. P. J. Blades, 68, St. John's Street, Bury St. Edmunds, Suffolk.

News of a new society recently formed in Johannesburg. The secretary is Mr. A. E. Peach, P.O. Box 11326, Johannesburg, South Africa.

The Brixton club is now under way, and secretary L. J. Walker, 124, Brankesome Road, Brixton, London, S.W.2., would like to hear from persons interested in becoming members.

The Brighton club members have advised me that they are no longer connected with the Tape Message Service operated by the now retired chairman and treasurer. The club points out that it does not wish to commercialise its social activities.

An opportunity to hear the BASF film *The Magic Tape* is made available by the invitation extended by members of the Leicester club. On July 22, the club welcomes Mr. B. Wilson, of F. A. Hughes and Co. to the Reference Library in Bishop Street, Leicester, and during his lecture on the BASF products, the film will be presented.

Other models for the tape enthusiast

(Continued from page 25)

vibration mounting contained in a double wind shield. Open circuit sensitivity is given as 58 dB (high impedance) and 93dB (low impedance; both with reference to 1 volt/dyne/cm²).

The Cadenza Crystal has a frequency range of 30-8,000 cps, and is similar in construction to the Ribbon model, being fitted with a hinged base. Open circuit sensitivity is quoted as 47 dB referring to 1 volt/dyne/cm².

One of the products of Grampian Reproducers is a hand microphone, the DP 4, which can be adapted to other uses. Quoted as having a frequency response between 50 and 15,000 cps the DP 4 weighs a little under ½ lb. and is available in low, medium and high impedance models. It can be supplied with a swivel holder for fitting to adjustable floor or table stands, a small circular base for desk or table use, an on/off switch assembly and a combined heavy desk stand and on/off switch.

The Standard Telephones and Cables Ltd. selection is applicable really only to the out-and-out fanatic who also has the money to buy absolutely top-rate equipment. The 4032-G at £18 is the cheapest but there are others round the £20 mark. This company also manufactures the 4104-B and C lip microphone which cost £75.

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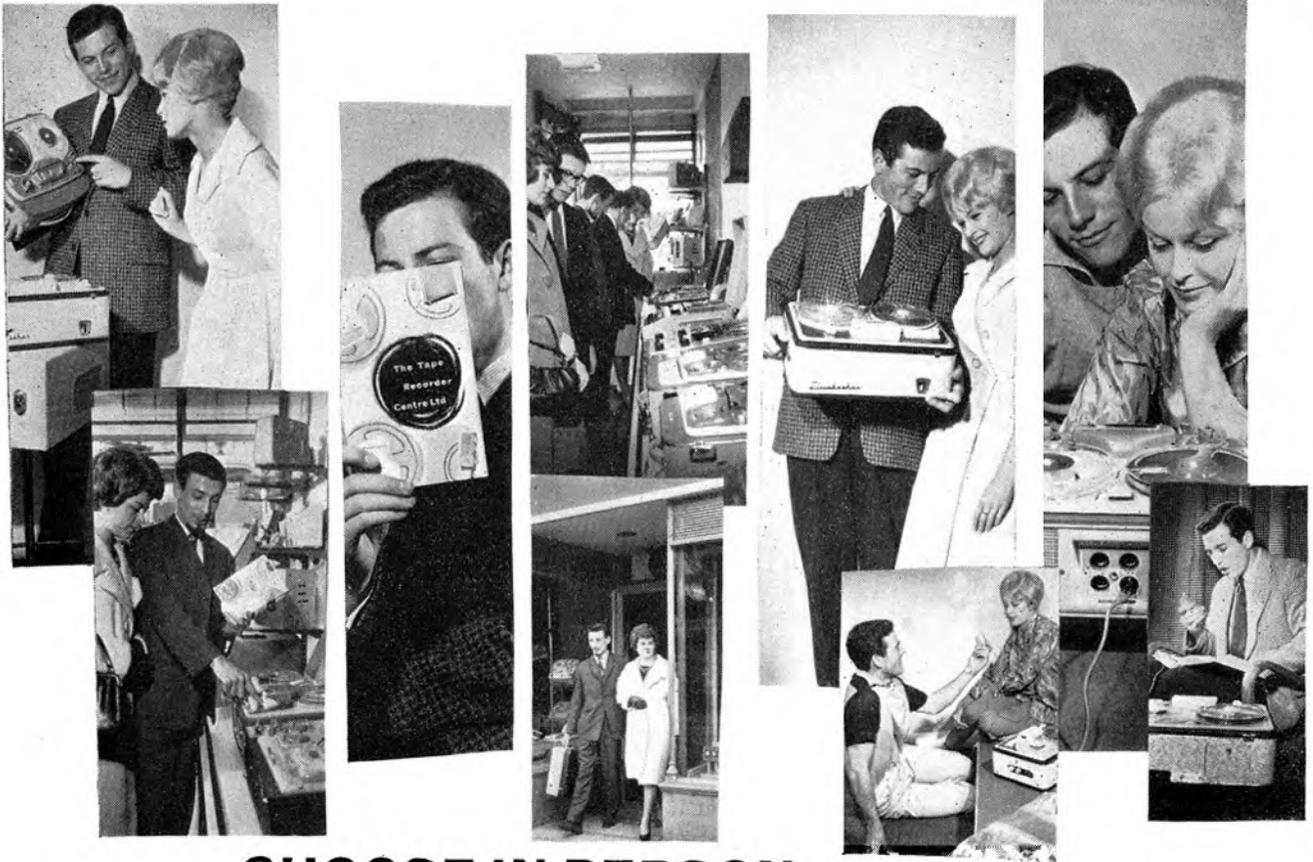
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