

the TAPE RECORDER

PRICE 1/6

JULY 1960

Vol. 2 No. 6

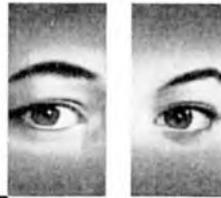
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- Tape Recorder Accessories — A Special Survey
- Field Trial of a Brand New Battery Portable
- Using the Parabolic Reflector in Spain
- Teaching Tape — Part 2 of a Special Series for Beginners
- You can start a Club
- The Collaro "Studio" Deck Reviewed
- Readers' Problems
- News and Pictures from Here, There and Everywhere

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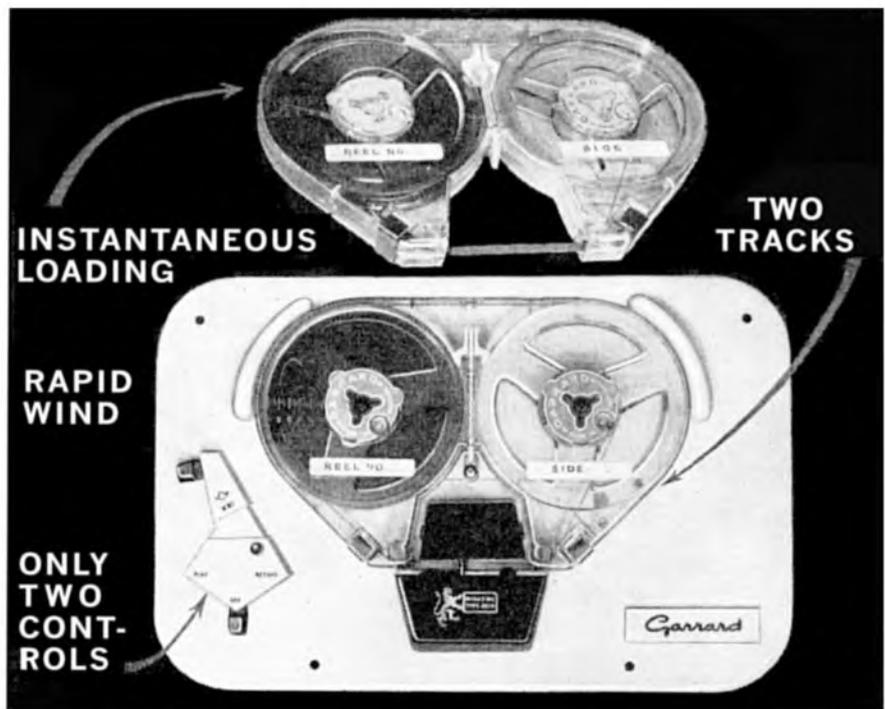
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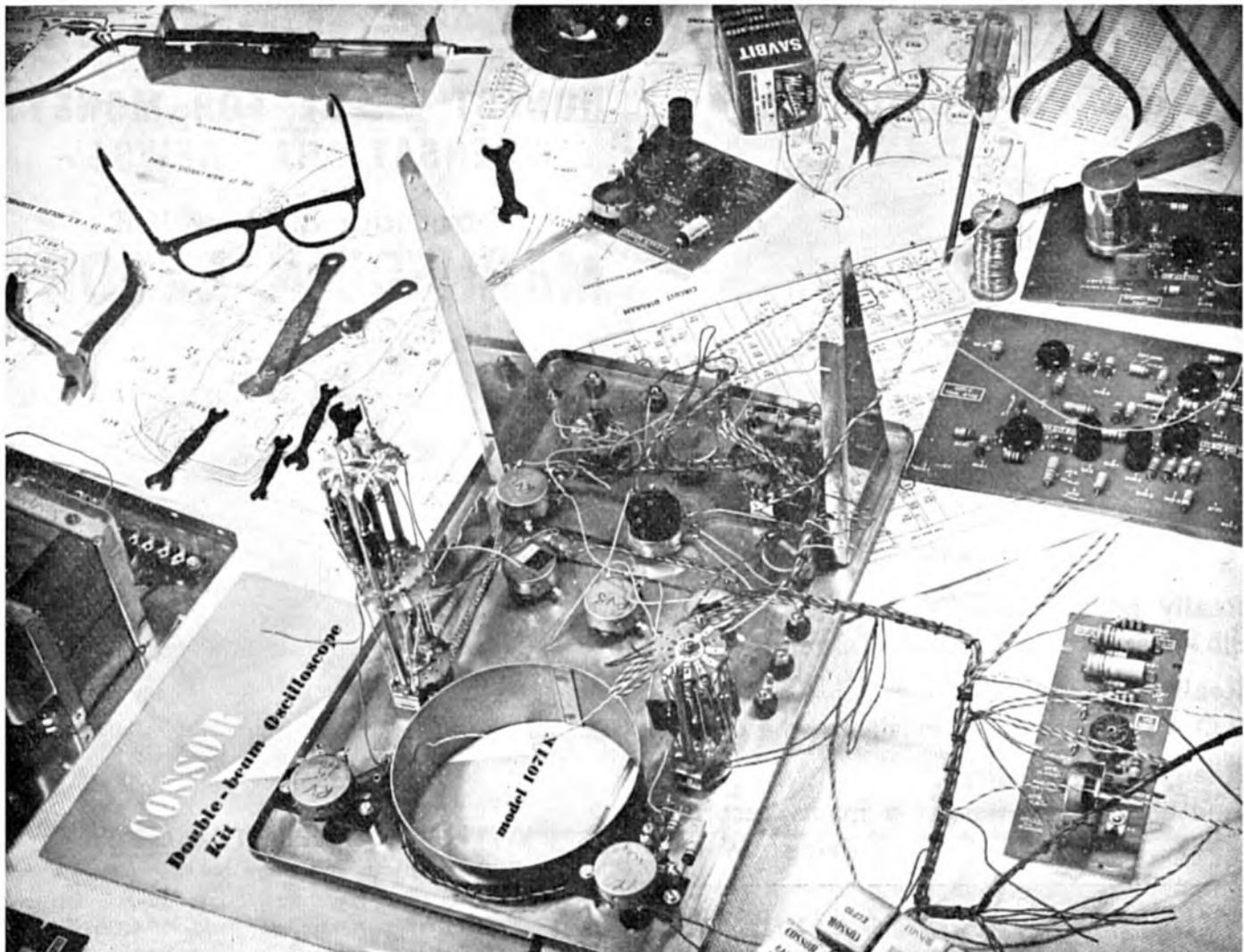
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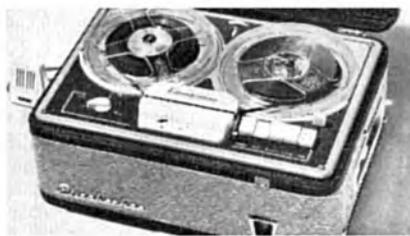
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EDITORIAL

LAST year saw its beginning: this year the tide is beginning to run at the flood. The small, battery-operated portable tape recorder is finding its way into the holiday luggage side-by-side with the camera, the portable radio and the cine camera. The forthcoming Autumn months promise to be enlivened with sound recordings of the annual event on a scale that was quite unthought of eighteen months ago. And, month by month, new versions of these small portables are appearing on the market. Last year there were about five: today there are about a dozen, and news comes of more on the way. In many ways the pattern seems to be following that of radio.

The only difference between the two is that radio has been with us for about 35 years, whereas tape has had barely ten years in which to establish and popularise itself. It is this difference, however, which really points to the tremendous potentialities of tape—this and the fact that tape offers itself as a creative medium, whereas radio must be classed as “entertainment on tap”.

It is interesting to see how tape is already being used in its portable form, and with particular emphasis on holiday use. First comes its most obvious use, the holiday “sound snaps” that are now being collected, in much the same way as “photo snaps” are collected, of growing children, parties, picnics and animals. Next, the business use to which portables are put. Authors and journalists are using recorders in increasing numbers, for odd-moment chapters, articles and notes. Business men use them for dictating spools of letters and memoranda which they send back to their offices for action—a nice, lazy way of permitting urgent business to interfere with holiday pleasure! Then come the growing army of cine enthusiasts who are using portables for recording on-the-spot sound effects and commentary for linking up with their films—either for dubbing on to Zonal stripes, or for building up into edited lengths for recorder/projector synchronisation. Next come the Colour Transparency enthusiasts who prepare tapes to accompany their home slide projection. Finally, there are those who carry around with them their own prepared spools of musical entertainment, e.g. for use in the car.

So far, the battery-operated portable recorder seems to be falling into two fairly distinct classes. On the one hand we have the really small, note-book type: on the other hand we see the medium-sized instrument, which is just big enough to do service as a domestic recorder, but which is also small enough to be carried around as a means of entertainment. There is no doubt that the coming twelve months will see big developments in the field of portables, and there is still less doubt that the portable will find its way into many more homes, doubling up for the less portable mainstay. But, as a concluding note for those who intend to make tape a feature of this year's holiday, let us add the warning that many are thinking that way, so do not leave it too late!

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COVER PICTURE

GOOD equipment is always good to look at, particularly for the eyes of the real enthusiast. We do not know the accurate details of all that is shown here, so we will risk no mistakes and subsequent apologies! Suffice it to say that what is shown is at once the hobby and the work of one of America's most sincere disc producers—Mr. E. D. Nunn. He is the president of Audiophile Records Inc. In the June number of *Hi-Fi News* we showed a corner of Mr. Nunn's living room, as an example of living spaciouly with hi-fi. Here is his laboratory, where he is at work cutting a disc from a tape master.

NEXT MONTH

A PARTICULARLY full schedule of features is lined up for our August issue. Firstly, there is a *Survey of Microphones*, which will make an excellent guide to prospective shoppers, and will clear up some of the doubts about impedances, etc. Then we have the complete wiring and setting up instructions for the *Time Switch*, an introduction to which appears on page 286-287 this month. *Field Trials of Battery Portables* is devoted to a most interesting new recorder from Germany—the Butoba, and there will be the usual full coverage of *News*, *New Products*, and *Equipment Reviews*, plus a further article by James Moir on *Reviewing Tape Recorders*.

The Tape Recorder for August—On Sale July 22.

SUBSCRIPTION RATES

The subscription rate to *The Tape Recorder* is 21/- per annum (U.S.A. \$3.00) from The Tape Recorder, 99 Mortimer Street, London, W.1. Subscription+Index, 24/- (U.S.A. \$3.25).

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HERE AND THERE ANDEVERYWHERE

Congratulations, Stan Futter!

WE learn with pleasure that Mr. H. S. (Stan) Futter, Publicity Manager of The Gramophone Company, has been elected Mayor of Twickenham. His many friends will echo our congratulations. Mr Futter has been a councillor for Hampton Hill Ward since May 1949. He was elected to this new office at the annual meeting of the Corporation on 26th May last.

* * *

Romford is on Tape-Toes

A BRIGHT idea on the part of the Surveyor's department of Romford Borough Council resulted in a novel and successful traffic census last month. On 25 and 27 May, at nine census points surrounding the town, the numbers of all motor vehicles entering and leaving Romford were recorded; and at four of the busiest points the numbers were spoken into tape recorders. Elizabethan, the local manufacturers, loaned the recorders, and these were set up on tables beside the checkers. All but buses and motorcycles were noted. The object was to determine points of entry and exit of vehicles using the town in peak hours. The census was very successful, and it provided statistics that will greatly assist the Borough Council in planning a ring road to intercept and direct all "through" traffic from the town centre.

* * *



Nine Elizabethan tape recorders, at selected checkpoints, helped Romford Borough Council with a traffic census. (See story elsewhere on this page.)



Australian TV reporter Panda Lisner uses a Fi-Cora miniature battery-operated recorder to interview Maureen O'Hara in Hollywood for her programme on GTV Channel 9, Melbourne. (Photograph by courtesy of GTV Channel 9, Melbourne, and the Australian "TV Week").

Parabolic Reflectors

OUR current series of articles on dish or parabolic reflectors for microphones has created a very great interest, and many readers have written to us to ask whether we know any sources of supply. We now learn from Grampian Reproducers Limited, The Hanworth Trading Estate, Feltham, Middlesex, that they have been carrying out a number of practical experiments in this field and that they intend shortly to market a Parabolic Reflector for use with their type DP4 and DP5 microphones. No details of this proposed product are yet available from Messrs. Grampian, but we suggest that readers who are interested should write direct to the above address. We know from our own postbag, and from conversations with manufacturers of tape recorders during the past eighteen months, that there is a very real need for such an accessory, and particularly among the bird-watching enthusiasts. We therefore look forward to more news and suggestions on this subject.

* * *

New Tape Recorder Centre Catalogue

THE Tape Recorder Centre, 75 Grand Parade, Green Lanes, Harringay, London N.4., have just completed their new 1960 catalogue, which is available to readers from that address. This well-illustrated booklet lists some 28 of the better known makes of recorders and decks, plus tapes, mixer units, microphones. It also includes a selection of amplifiers, control units, speakers and cabinets, etc.



A silver microphone is presented by the South Manchester Tape Recording Club to the member producing the best 5 minute "Tape of the Month".

Tape and tape recorders are cropping up everywhere these days, and yet this special issue postage stamp took even us by surprise (details below).



And now a "Tape" Postage Stamp

AN interesting news item has reached us from Tom Morgan, editor of *The Philatelic Magazine*, 27 Maiden Lane, Strand, London W.C.2. It is about the first postage stamp to feature "tape" (illustrated on this page).

Collectively, the postage stamps of the countries of the world picture almost everything, and the tape recorder is not one of the exceptions. A tape recorder and a spool of tape is to be shown on a new stamp to be issued by the Republic of China, or in other words Formosa. Purpose of the issue is to publicise the Chinese Phonopost Service. This service was inaugurated on an experimental basis on 20 March, 1959 for the purpose of promoting the morale of the Armed Forces and meeting the requirements of the public. Instead of writing letters, men and women on active service could make recordings, send the tape home, and the family could reply in similar fashion.

So far, the Phonopost Service has been limited to the post offices at Kinmen, Taipei, Taichung, Tainan, Koahsiung and Hwalien but it will be extended to other places when it is considered necessary. The design of the new stamp shows a soldier speaking into a microphone, a spool of tape winging its way across the centre, and a woman apparently knitting while listening to a recording. The face value of the stamp is NTS2.00 and it is due to be issued towards the end of June.

Some 20 years ago, Argentina issued three Recorded Message Stamps, the designs showing gramophone records. They were payment of special fees for postage on messages recorded on discs for transmission by post. But tape is coming very much into its sister hobby of philately. The American First Day Cover Society of New Jersey offers five tape recorded programmes to societies. Among them is an interview on the Steinway collection of music on stamps; a talk by an official

HOW OTHERS USE TAPE

of the British Crown Agents; and James Roosevelt on the famous FDR collection.

A Twinset for the Clarion

A REALLY novel and practical idea for extending the use and efficiency of a small portable is Clarion's new "Twinset," the first pre-production model of which has just reached this office. It is a neat shoulder-strap type carrier, divided into two compartments. The lower half contains a transistorised amplifier and speaker. The upper half is tailored to take the Clarion recorder. Merely by slipping the Clarion into this compartment and by plugging in one lead, the additional electronics and speaker are brought into use, thus increasing its effectiveness to the extent of an approximate $\frac{1}{2}$ -watt output, and bringing it into line with the smaller domestic recorders. Production of this "Twinset" device is now under way, and it is probably that supplies will be available by the time this number of *The Tape Recorder* is on sale. The price is 8 gns. Price, complete with Clarion, 33 gns.

Ferrograph change of address

WE have received the following note on address changes: "Pending the completion of new offices at Cromwell Road, Kensington in 1961, The British Ferrograph Co., Ltd., are moving on 24th June to temporary offices at 88 Horseferry Road, Victoria, S.W.1. Telephone SULLivan 5426/7/8."



Eric Robinson, photographed in his home complete with Grundig, is a keen tape recorder user. BBC viewers have come to know him through "Music For You", but he conducts a great deal of "off vision" music besides.

HOW OTHERS USE TAPE cont.

A prize worth winning; David Nixon holds up one of 15 Grundig Cub recorders presented in a recent Mondart Ltd. "Ton of Silver" competition.



WyndSOR aid screen publicity

Rank Screen Services Limited have recently produced a fifteen seconds filmlet which is specially designed for dealers in tape recorders to use for advertising in their local cinema. WyndSOR Recording Company were asked to co-operate in the making of this film at a time when the WyndSOR "Victor" recorder was in final development in the laboratory.

Presentation is in model animation form, and shows three British made tape recorders in beautiful colours. A local dealer may have a print of this film carrying his own name and address and with a suitable sound commentary. The initial outlay is exceedingly small, only a few pounds, and representatives of Rank Screen Services of 11 Hill Street, Mayfair, London, W.1, are available to visit dealers to explain the details and to quote terms to dealers who may be interested.

We hope the response was good

A READER sends us a cutting from the *Cambridge Daily News*, in which a Classified "For Sale" advertisement offers: "1916 Army Dress Sword and amplifier with speaker." He remarks that he cannot quite see the connection, but that it might apply to top or base cut.

M.M.M. Most Sincere apologies

OUR reporter announced (June number, page 236) that M.M.M.'s new *One-Five Special* is a 3-inch spool of No. 200 Tensilized Polyester Double Play. This is incorrect. Minnesota ask us to confirm that it is in fact a 3-inch spool of standard grade Magnetic Tape. We apologise for this mistake, and for any inconvenience it may have caused our readers and its manufacturers.

A New Recorder from Philips

The new Philips "Family" tape recorder (Model EL 3541) has been completely restyled and sells at 34 gns. Its four tracks give up to eight hours recording with double play tape and a new tape deck layout simplifies operation. It is supplied complete with a 5 in. reel of long play tape, crystal microphone, and spare take up spool. Speed is $3\frac{1}{2}$ i/s.

Take Your Pick—and Recorder

THE immense popularity of tape recorders is constantly being reflected in the "prize lists" of contests and television games and programmes where, it seems, scarcely a week passes without some lucky winner walking away with one model or

another. We have already noted several of these events in recent numbers of *The Tape Recorder*. Two more have just been announced. A major prize in the Associated-Rediffusion quiz game "Take Your Pick" was a WyndSOR "Victor," and was won by Mrs. Coles of Smethwick, Staffs. Again, at a recent contest sponsored by Mondart Ltd., at a reception in London's Dorchester Hotel, fifteen Grundig "Cubs" were presented to runners-up. This contest, "Ton of Silver," attracted over 28,000 entries. Our photo shows David Nixon presenting one of the fifteen!

Free—Seven Old-fashioned Villains!

FOR readers who would like an amusing booklet, which at the same time gives 7 useful pointers towards avoiding tape troubles, we recommend a letter to **Wilmex Limited, 70 St. Stephens House, Bridge Street, Westminster, London S.W.1.** The booklet is illustrated below.



Autumn Audio Fair for Southport

THE 1960 Autumn Audio Fair, already announced for Southport, has now been definitely arranged for Friday, Saturday and Sunday, 7, 8, and 9th October, at the Palace Hotel. Further details will be announced shortly.

Tape healing

Mr. P. Ager N.D., D.O. has had over thirty years experience in dealing with psychological ailments in his clinic. For several years he investigated the use of recorded tapes in connection with the treatment of various psychological disorders including nervous fears, stammering, blushing. Further details may be obtained from Educational Recordings Psycho Tapes Institute, 27 York Road, Ilford, Essex.

NEWS AND PICTURES FROM THE CLUBS

Tape Clubs Congress

The first ever Congress of British Tape Recording Clubs was organised by the **Federation of British Tape Recording Clubs**, and took place on Saturday, June 11th in the Russell Hotel, London. The Chairman, Alan Stableford, had drawn up a most interesting programme.

Sandwiched between the morning introductions and the evening A.G.M. there was a highly instructive and entertaining type of open discussion. For approximately one hour, the delegates—some 40 representatives of about 20 clubs—divided into four discussion groups and then “came together” to shoot questions at a panel representing various facets of the tape recording world.

The four headings were as follows:—“Future developments in tape recording equipment”, “Amateur tape recording and the BBC”, “The tape recording press”, “The function of tape recording clubs”.

The panel consisted of Mrs. Marguerite Cutforth and Mr. L. G. Dive (BBC); Miss Brenda Marriott and Mr. H. Spring (Grundig); John Borwick (*The Tape Recorder*), and the editors of “Amateur Tape Recording” and “Tape Recording”, with Alan Stableford in the chair.

Amongst the questions asked (and for the most part satisfactorily answered!) were, “What constitutes a good tape recording?”, “Could manufacturers fit less gold trim and more facilities?”, “Does the BBC encourage or accept recordings from amateurs?”, “What useful work can clubs do through the Council for Social Service, etc.?”; “Why no CCIR standard for 3½ i/s?”, “How can experts be invited to talk to clubs?”

The Federation are to be congratulated on a highly successful experiment, which, like their sponsorship of the National Contest, we hope to see repeated each year.

As a spur to wayward members, the **Nottingham Co-operative Amateur Tape Recording Club** committee are sending “tapespondence” requesting ideas and views for future meetings



Les Wake is a recording engineer with R.S.C.A. Recordings, Thanet, and something of a genius at producing gadgets and special effects. The electronic mixer, seen here in use with a Ferrograph is all his own work.

to those members who attend infrequently. Members who do not wish to pay the full subscription will be admitted on payment of one shilling as Guest Members. Meetings are held on alternative Thursdays. At a recent meeting a ten minute feature programme entitled “Saturday roundabout visits the London Planatorium”—which was produced at the Third National Tape Recording Course held at Sidcup—was played and discussed. Their Social Evening is planned for the 7th July.

A colour film entitled “Shakespeare’s Avon”, which spotlights the beauty of the local countryside, entertained the **Rugby Amateur Tape Recording Society** members at a recent meeting.

A demonstration tape highlighting the differences between four popular makes of microphone concluded a recent gathering by the **South-West London Tape Recording Society**. The Society recorded a reply to a letter received from an American correspondent—their response, which covered all subjects from Caryl Chesman to Russian leadership in space exploration, sounds highly controversial. Prospective members should write to the Secretary, 6 Disraeli Gardens, Fawe Park Road, Putney, S.W.15.

The Grapes, Bridge Street, Stafford, is the new meeting place for the **Staffordshire Tape Recorder Society**. They hope to buy some communal equipment shortly, and have already organised a dance in aid of funds. The Stafford Amateur Cine Society teamed up with them at one meeting, to present several films, with taped commentary and dialogue: a great success.

Several enthusiastic members of the **Warwick and Leamington Amateur Tape Recording Society** visited the London Audio Fair, to catch up on all the latest models, domestic and foreign. A party also visited the Coventry Tape Recording Club to hear a representative of E.M.I. talk on magnetic tape.

“Youth” was the accent at one recent meeting, and experts from the recent “Marathon Jive” session held at Royal Leamington Spa, together with recordings of the Blackdown High School Choir, held the members enthralled. A tape entitled “Ghosts”—made at Squire Wills’s home, which is believed to be “haunted”—certainly achieved some frightening and strange man-made sounds. Five of the latest portable tape recorders were given a “side-by-side” test recently, and a special demonstration of portables was conducted by Mr. W. Tyson.

We have received a request from Mr. B. J. Race, 30 Ashford Road, Whitnash, Royal Leamington Spa, that any lonely or crippled person who lives in the area should contact him for details of a special tape service. Please do not ignore his offer if this applies to anyone who needs, or would like, this service.

The **Urmston Tape Recording Club**, 30, Kirkstall Road, Urmston, Lancs. is a young club. They meet twice a month, and would like to hear from any prospective members.

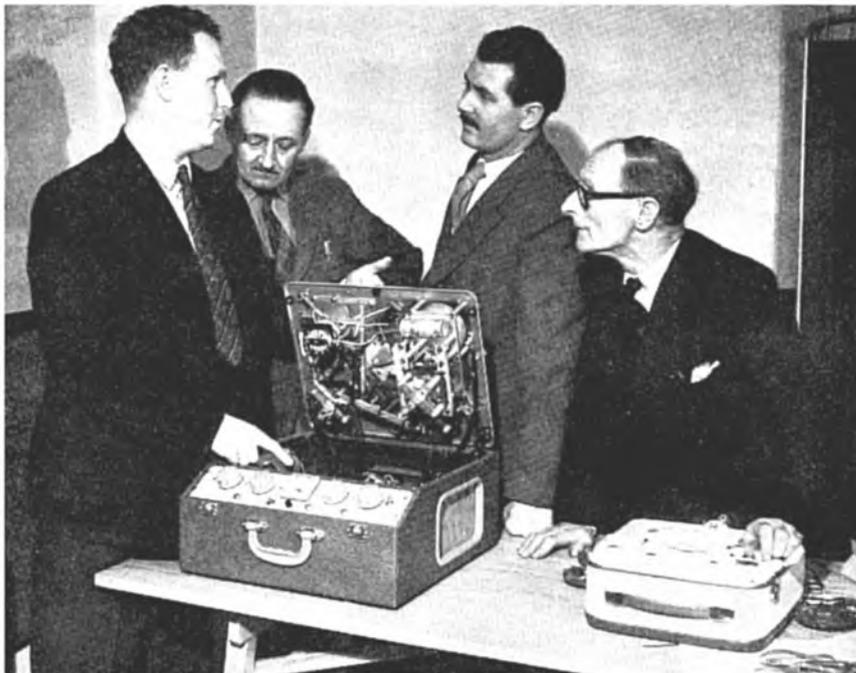
Members of the **London Tape Recording Club** were given the opportunity of acting in a play written by Mr. Terry Devereux. The scripts were given to the members ten minutes before the recording. Mr. Roger Aslin produced and Mr. Alan Pierce recorded the play which lasted for 30 minutes. The tape was then given to the Club Library.

NEWS AND PICTURES

FROM THE CLUBS

continued...

Surely one of the best things about joining a tape club is the opportunities a newcomer has to benefit from the experience of others. In nearly every club there will be at least one member, or a nucleus of members, who have dabbled in tape recording for quite a few years, and who like nothing better than ironing out wrinkles for others. Even if your club arranges a full lecture season of visiting experts, there is no substitute for these informal "nattering" sessions such as that illustrated (right), in which four members of the Nottingham Co-operative Amateur Tape Recording Club gather round an opened-up Ferrograph and Telefunken



The Butoba was demonstrated at the **West Middlesex Tape Recording Club** and members were impressed when the tapes recorded on the portable were reproduced on the mains recorders. New members wishing to join this Club should note the address of future meetings:—The Red Lion Hotel, Hampton.

The Windsor Youth Theatre Company is changing its name and constitution on July 1st. It will then become the **Phoenix Drama and Tape Recording Society** with the existing members of the old company forming the nucleus of the new Society. There will be no age limit. Any person wishing to join should contact Mr. A. C. C. Smith, 73, Kings Road, Windsor, Berks. who will supply them with further details.

A tape recording of the Renegades rehearsing their recent production of Arthur Miller's play "A view from the Bridge" was featured in the fifth edition of What Goes On Here presented by **Mr. Walter Gillings Sound Features** to the Blind Club at Fellowship House, Ilford.

Two representatives of the **Ipswich Tape Recording Club**, Messrs. John F. Cooper and Malcolm Wilding, attended the Annual Congress of British Tape Recording Clubs held on Saturday 11th June. At their last meeting Mr. John Glover spoke on the recent course given at the Rose Bruford Training College.

Thanks to the generosity of a famous local dealer, who kindly placed a stand at the disposal of the **Leicester Tape & Hi-Fi Club**, the latter presented an ambitious display on amateur tape recording at the Leicester Audio Fair. A special commentary was recorded for the occasion, showing the endless possibilities of tape. Many new members have been attracted by this display.

Mr. R. V. Huddleston, Chairman of **Grantham and District Tape Recording Club** would like to hear from any readers interested in forming a Stereo Recordists Club. Letters to be sent to R. V. Huddleston, 33 London Road, Grantham.

The **South Manchester Tape Recording Club** has been in existence for three months and now have twelve members.

Club meetings are held at the British Legion, Wilbraham Road, Chorlton-Cum-Hardy.

More than 70 district ministers of the Methodist Church are now using taped material, recorded on a Philips tape recorder, in their work. The tapes are supplied by a unique library service started last December by the Rev. John Davies B.A of Maple Avenue, Horwich, Bolton, Lancs.

Mr. P. Holloway, 29 Fishery Road, Hemel Hempstead would like to hear from any person in that area interested in tape recording. A Club has already been formed and new members can be assured of an interesting evening.

Mr. M. H. Eatly, Area Manager of Grundig (Great Britain) Ltd. gave a demonstration of their latest equipment to a well attended meeting of the **West Wales Tape Recording Club**. Stereo and Monaural tapes were played and questions were dealt with after the demonstrations had finished.

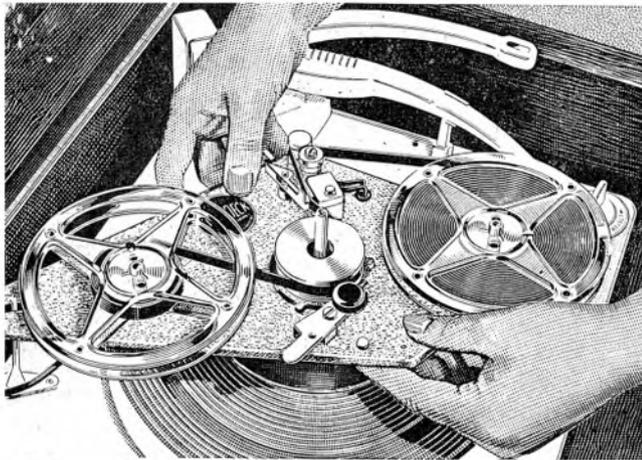
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Tape recorder work bench

There is no instalment in the Workbench series this month, due to the author, A. Bartlett Still, being on holiday. He will return next month with a discussion on the use of the Magic Eye to avoid overload distortion.

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PART FIVE—ALL TYPES OF RECORDING IN SPAIN

Flamenco singing and a local Forestry workers' dance was recorded by hanging the microphone from a car-bide lamp. (photo Eric Hosking).



AT the beginning of last year I was invited by Eric Hosking, the internationally famous bird photographer, to join him in an expedition which he was leading to the Sierra de Cazorla, a mountainous and remote region in southern Spain. The object of the expedition was to study the birds, reptiles and some of the mammals of the district, which is a national forestry and game reserve, difficult of access and extremely rugged and precipitous. My principal role in the ten-man expedition was to be that of cinematographer, one of a team of three, but in addition I had the task of recording as much of the bird voice as possible, for use in conjunction with the film of the expedition as well as for scientific study and broadcasting.

The rolling plains of northern Andalucia stretch as far as the eye can see, the red soil dotted with regularly spaced olive trees or hatched by the lines of vineyards. A sixty-mile drive through such country was over some of the worst roads in Europe, where every rock and pot-hole threatened to shake the filaments out of the valves in the recorder, but at the end of the journey we were rewarded by the sight of the Sierra, rising sheer out of the plain to a height of over seven thousand feet, like a gigantic fortress. The road to the only pass through which we could enter clung to the jagged limestone cliff-face like a goat-track and whips of cloud capped the highest peaks.

Our preliminary exploration during the next few days showed a tremendous variety of scenery and landscape. Vertical limestone cliffs towering two thousand feet high were weathered into fantastic shapes, with Choughs, Ravens and Alpine Swifts wheeling about the peaks, Griffon Vultures nesting on the ledges and an occasional Lammergeier, the rare bearded vulture, with its eyrie in a cave in the cliff-face. Deep gorges with swift-flowing mountain streams alternated with high plateaux where the vegetation was strangely park-like. The few inhabitants tilled the shallow, black, stony soil in the more gently-sloping upland valleys, or *navas*, using ploughs which have remained unchanged since biblical times.

The melodious warbler

The lower slopes of the *navas*, were covered with berberis and oak scrub and in the alpine meadows above was the most wonderful profusion of wild flowers, of which the peonies and asphodels will always remain with us as a lasting memory. It was here that we found the majority of the song-birds which were to provide most of my recorded material. Spectacular though the many species of eagles and vultures were, they provided little for the microphone to record, although they made magnificent material for the ciné cameras.

One of the commonest birds in the berberis scrub on the

slopes of the valleys was the Melodious Warbler, a most vociferous songster whose prolonged babbles continued for minutes at a stretch with no apparent pause for breath. There is tremendous variation in the song, which includes phrases from the songs of neighbouring species. Truly the Melodious Warbler lives up to its scientific name of *Hippolais polyglotta*, which suggests that it speaks "with the gift of many tongues". It often shared a habitat with the Nightingale whose phrases could be detected in its song, perhaps as an example of mimicry as a means of keeping birds of other species out of its territory. It was not a difficult bird to record. I had simply to stop the car near a convenient patch of scrub, set up the tripod and reflector, put down the earth pin and train the parabola on to the bush in which the bird was singing. The greatest difficulty was to know when to stop, since it took a long time to record a representative selection from his repertoire. One of my recordings contains an interesting passage with a Melodious Warbler and Nightingale singing together.

Nightingale and tape recorder duet

The Nightingale has been recorded so many times that I feel I need hardly mention it, but something which occurred early one morning is perhaps of interest. I had just finished taping a fairly long passage of Nightingale song and was playing it back as a test for quality, when the bird I had recorded began repeating it, phrase for phrase with the recorder. Each group of notes from the loud-speaker was exactly imitated by the bird, to the end of the passage, which was of about a minute's duration. It did not wait for the ends of the phrases, but followed note for note, a second or so behind the recorder.

One of the most important facilities a tape recorder can possess, from the point of view of the bird-recorder, is the ability to play back at a substantial level in the field. This is invaluable for inducing a bird to sing at a time when it may be disinclined to do so. Song is fundamentally a means of proclaiming ownership and occupation of a territory and an intruder of the same species is normally greeted during the breeding season with a loud burst of song. A good example of the use to which playback can be put occurred when I was trying to record Bonelli's Warbler, in the pines at the edge of the same scrub area in which I had already recorded his cousin the Melodious Warbler. He presented an entirely different problem, with intervals of several seconds between each short song-phrase and a habit of changing his perch at short intervals to sing around the perimeter of his territory. It was necessary to obtain as long a recording as possible, to show the interval and the timing, and he did not help matters when he stopped singing almost as soon



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T.R.

as I had set up the reflector. I kept it trained on to his favourite bush, however, but in the course of the next half-hour I only managed to record one song-phrase. It was only a rather half-hearted phrase, at that, but it was enough for my purpose.

I played it back to him at full volume at intervals of about five seconds and at once he began to take an interest, assuming a perch much closer to me and singing for all he was worth at the recorder, ordering it out of his territory. I was able to record a long series of song phrases during which he did not once change his perch, and when I played this back to him he gave me a series of anxiety calls as an encore.

The plateaux and slopes of the high sierras are grazed by numerous flocks of lean, wiry sheep which find food in the most improbable places. They are tended by shepherds who control their movements from place to place, and chase the stragglers, with a constant bombardment of stones from slings of the kind which slew Goliath. These they plait from esparto grass, as they wander behind their charges. I was recording a Chaffinch one morning, at the edge of a belt of pine forest (as a contribution to the study of variation in Chaffinch song), when a shepherd led his flock past the microphone. The result was an extremely attractive recording of a chaffinch singing against a background of deep-toned sheep-bells, with the sharp crack of the shepherd's sling and the partridge-like sound with which he called his dog.

Passo dobles and fandangos

During the expedition we were housed in one of the Spanish forestry commission rest houses which was maintained by a caretaker and his wife for the convenience of visiting officials. It was solidly constructed, with a shady court-yard and outbuildings and we learned towards the end of our stay that it was going to be the scene of one of the periodical dances which are the only form of amusement of these mountain people. At about ten o'clock at night little groups of shepherds and crofters, on foot or riding mules and donkeys, straight from their flocks and fields, began to converge on the house. Two of the forestry workers began to strum lazily on a guitar and mandoline, seated on the window-sill of a large garage, immediately below

a single carbide lamp which was the only illumination. Soon the garage was crowded to capacity with a heaving mass of men, women and children of all ages, dancing solemnly through a long succession of waltzes, passa dobles and fandangos, drinking from a large wine-flask which was passed from hand to hand or just talking and joking with friends they had not seen since the last similar occasion.

I had been careful to hang the microphone from the only possible place, the hook holding the carbide lamp. Fortunately the acoustics were quite reasonable and I was able to obtain nearly two hours of folk music, with some flamenco singing and a delightful "cabaret" act which told of a farmer who bought a mule from a gypsy against the advice of his wife. It went on long into the night. The recordings contain some wonderful tunes, against an atmosphere which still conjures up a vision of sheep-skin-clad shepherds and peasant girls in aprons, stamping through the routine of a fandango in semi-darkness.

Searching with the parabola

A few days later the Quails arrived in the young corn at the head of the valley in which we were then working. Their calls of "Wet my lips! Wet my lips" echoed and re-echoed between the high limestone crags and were so ventriloquial in character that it was impossible by unaided ear to align the parabola. It was equally impossible to find them by sight, as the calling birds never for a moment showed themselves. The only method was to swing the reflector gently to and fro until the signal, when monitoring through the loudspeaker, was at its maximum, and this was no easy task since the bursts of calling were of short duration. The resulting tape represented the first time that the Quail has been recorded in Europe.

In the very highest part of the Sierra de Cazorla, amidst a landscape which can only be described as lunar in its desolation, there is a race of the Skylark which is restricted to these altitudes in the Iberian Peninsular. I particularly wanted to obtain a recording of the song of this Skylark of the sierras in order to compare it with typical songs of the same species elsewhere in Europe. It was only on the last day of the expedition that we caught up with it, however, and then, in the heat of the afternoon there was a steady force-four wind blowing across the plain and not an inch of cover in sight. Eventually, I did manage to find a shallow depression on the stony ground and this was in the lee of a slight hummock of rock.

After experimenting for a while, I discovered that I could just keep the reflector out of the wind if I lay on my back with it on my chest. There was always the prospect of Lataste's Viper slithering across my neck as I did so, but by then I was desperate. Another difficulty was the fact that, due to a long recording programme the day before, my battery was not in very good shape and, in addition, the terrain was so jagged that I could not take the car off the track. I was faced with the problem of using as little current as possible to cope with a bird which rose to sing at long intervals when I was in no position to switch on the recorder in the car over a hundred yards away.

The parabola again

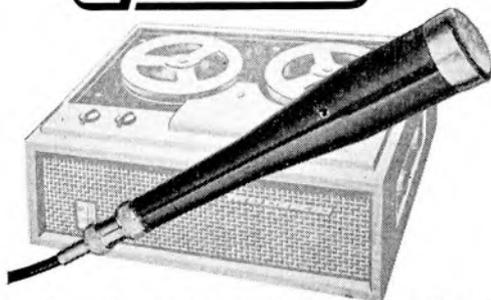
It was solved by my blowing a whistle when a likely-looking bird rose from the ground, so that my wife, who was assisting me, could switch on the recorder. The first bird rose nearby. I sighted the parabola on to it and blew hard as I followed it upwards. A few seconds later it began singing and I held on to it until I thought my neck would break in my cramped position. Then it began to descend and finally it stopped as it neared the ground again. The wind rose to gale force and all possibility of repeating the recording was gone. Fortunately the whole song-flight had been perfectly recorded in the nick of time.

Such are the situations which face the bird recordist and which are different with each new species. The equipment and methods I have described in this series should have provided you with a good working background from which to tackle your own problems and I wish every success to those of you who have followed me so far.



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YOU CAN START A TAPE CLUB

TODAY there are some 86 tape recording clubs in this country, which makes us, in proportion to the size of our islands, just about the most tape-club-conscious nation of any! And yet it is still true that many big towns, and scores of smaller ones are without clubs. If you live in one of these clubless towns, and you are a keen tape recordist, how would you like to form a club yourself? Read on, and you will learn how.

To start a club you need the following:— enough tape recording enthusiasts, a meeting place.

Luckily finding prospective members isn't all that difficult. For a start you can write to *The Tape Recorder*, who will be pleased to inform readers through the "News from the Clubs" feature, of your proposed club. From this editorial publicity you should receive a number of enquiries, but you will probably want to try a few other ideas as well.

You will almost certainly know a hi-fi dealer or a radio dealer handling tape equipment in your area. Go along to his shop when he's not busy, and explain that you hope to form a club. Ask his permission to display a notice in his window or on the door inviting people interested to contact you. Also get him to spread the news by word of mouth.

Another idea is to write a "Letter to the Editor" of your local newspaper, for inclusion in the correspondence column. Make your letter interesting or it will not get published.

Naturally you will tell any of your friends or acquaintances who are interested in tape about the proposed club. When you have found about ten people who are definitely willing to turn up regularly at meetings, you can start your hunt for accommodation.

This is rather a more difficult task at present. So many clubs, with interests ranging from stamp collecting to "preserving beautiful canals" need a meeting place, that your search may prove a long one. If the worst comes to the worst, you can, as some clubs have done, temporarily hold your meetings in members' homes. But the disadvantages of this are obvious.

The club of which I was for a time Secretary, "B" TRAC, uses a public house as a meeting place. "Pubs" do generally offer quite good facilities. Tables and chairs are provided, and "liquid refreshments" are (of course) always available. One other great advantage of a "pub" for a meeting place is that there may be rooms available free of charge.

Other places you might use are cafés, hotels, another club's room (i.e. the local cine or photographic societies' H.Q.), school rooms, a dealers "back-room", a church hall.

When you are fully satisfied that the room you have chosen is the one for you, have arranged the charges, and dates for meetings, inform all your prospective members of these developments, and in so doing fix the date of your first meeting.

The first meeting

As founder of the club you should get to the club first, and greet each person as he arrives. Talk for a little while together before leaving him to the mercy of the other "strangers".

Promptly at the time arranged (now is as good a time as any to let members know meetings will not wait for stragglers), open the meeting. Make a few introductory remarks and try to break the tension which often occurs on these occasions. Then call for an official proposal that the club be formed, and get it seconded. (In case you are not as yet aware of club procedure, I should explain that every suggestion made at an official meeting



Demonstrations of members' equipment form an essential part of any club's activities. The photo (by F. W. D. Hodgson) shows the Northallerton Club.

is in the form of a *proposal*. Someone usually agrees with this, and they *second* or voice their agreement with it. The matter is then discussed by all and a vote is taken. If the majority vote is in favour of the proposal, or as it is sometimes termed: the *motion*, it is then *adopted* and becomes a *resolution* of the club, which may then be put into force.)

Next propose a name for the club. The current trend is to a simple "(District) Tape Recording Club", rather than a more elaborate title. Big names for little clubs is a maxim which holds good.

Now comes the adoption of a constitution. This is a written list of rules as to how the club shall be governed. Those interested can obtain a specimen of a constitution from my office 161, Stuarts Road, Birmingham 33. One of the clauses in the constitution of every democratic club, is that a committee be elected to administrate the workings of the club. To help you select a Committee here are a few notes on the subject:—

Chairman. He needs to be an authoritative type, whom other members will respect. He must keep the meeting in order, and his "beady eye" must at a sideward glance freeze the blood of those who go on talking when he bangs his little hammer on the table. But he must not be a "hot and cold" type, who rushes in to a pro or con decision and then lets all hell loose on anyone who challenges his views. On the contrary, he must always be able to see the other person's point of view, and be a person who can assess an argument without entering into it.

President. He is the honorary head of the club, chosen because of his notability in public life. If possible a "Sir", "Lord", or "Almightily by the will of Allah", should precede his name, and at least ten initials must follow it! He is not expected to attend committee meetings but may himself preside at the AGM or on special occasions.

Secretary. He is the backbone of the club. He can be termed the key man, for if something goes amiss, he gets the blame. He must never shirk his responsibilities, nor the enormous amount of work which is placed upon him. He must have plenty of time for clubwork, get on well with people, and preferably own a typewriter. But that doesn't mean he has to sit on the Chairman's lap. That's a different kind of Secretary altogether!

Treasurer. He should preferably be engaged in financial activity as his full-time profession. He must be a man of integrity. Retired keepers of the crown jewels are highly desirable. He must be over 21. His job is to look after the financial affairs of the club. If subscriptions are not going to run to double figures he must be rather tight-pursed. Look out for someone wearing a sporran!

When the Committee have been elected your job as *founder* is pretty well over. Probably you will have been elected as an official yourself, in which case your job as such is just beginning. If not don't be disappointed. The committee have a hard task before them to keep things lively . . . but that's another story.

A DELAYED ACTION TIME SWITCH

BUILD THIS SIMPLE UNIT AND YOUR RECORDER WILL SWITCH ON AND OFF AUTOMATICALLY

THERE are without doubt countless numbers of tape recording enthusiasts who upon reading through the day's sound broadcasts often say to themselves: "Now that's a good programme, what a pity that I shall be at work", or "but it's far too late to sit up and wait for the programme to end".

The writer having been faced with this problem on numerous occasions decided that it was about time something should be done to overcome this. A practical way, of course, would be to leave someone with instructions to press the necessary buttons, etc. This is quite all right until someone happens to forget to turn the volume up or press the wrong button, or even forget completely! It was decided that the whole apparatus would have to be pre-set but without any power supply. i.e. in the case of recording with a microphone, the tape recorder would have to be turned on, the record button depressed, and the volume set to the necessary level. The power would first be switched ON and then OFF and the apparatus would become alive and then go dead at the end of the predetermined period of time.

At first, a normal "street lamp" type of time switch was thought the ideal thing, but on further investigation it was found that these could only be selected to switch ON and OFF (two operations at different times). Further to this they are only accurate to within plus or minus five minutes. This was considered impractical since one would wish to use the full length

of a tape, and not to have, for instance, five minutes of the previous programme and then possibly have five minutes clipped off the end.

A point to be considered, as far as the average enthusiast is concerned, is the outlay. The "street lamp" type of switch referred to above—apart from the uncertainty in the time that it goes off—is quite an expensive piece of apparatus. The total cost of the unit built by the writer was about £3 10s. If all new parts were used this would be a little more, but most keen "do it themselves" types will have a small stock of electrical equipment at hand that will fulfil some of the requirements of the parts listed below.

A further point to be considered was that "the thing would have to be lived with" and a mass of wires and switches would not be accepted readily by the female member of the household, so, it was decided to house the apparatus in a polished wood case

To use a single clock that would perform two operations at different times would mean a very cumbersome looking affair with a fair amount of light engineering to the works. So two standard alarm clocks were chosen as the basis of the unit. The alarm winding keys were found to be the best place to take off mechanical movement, and these are used to operate two micro-switches.

Further facilities were made available by installing within the unit, two 3-pin output sockets, and a system of switches that would allow various functions to be performed. There are six combinations of switching to give the following operations:

- (1) Switch both outputs ON at a pre-determined time, and switch them both OFF at a later pre-determined time.
- (2) Switch both outputs ON and allow them to remain ON indefinitely, or until attended to manually.
- (3) Switch both outputs OFF and allow them to remain OFF.
- (4) Switch one output ON at a pre-determined time, and switch the second output OFF at a pre-determined time (or vice versa).
- (5) Switch one output ON at a pre-determined time, and switch the second output ON at another pre-determined time.
- (6) Switch one output OFF at a pre-determined time, and switch the second output OFF at another pre-determined time.

Suggested applications

The writer has used this apparatus to perform the above functions and gives here a list of probable applications:

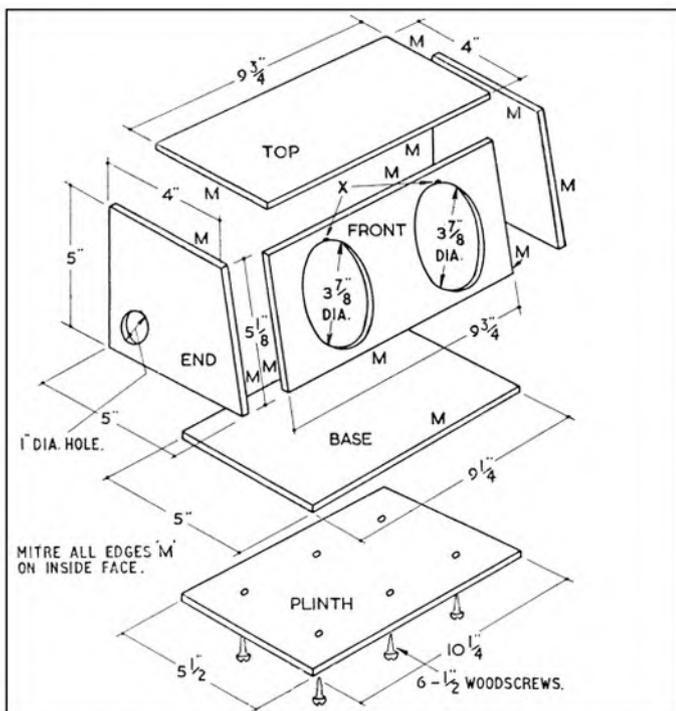
- (1) With the tape recorder set to record, the radio set to the desired station, and both plugged into the output sockets I and II. i.e. recording a programme of a certain duration of time. The writer has also used this setting when recording the birds' dawn chorus. With a microphone hidden outside and a long lead to the inside of the house, one can listen to this at one's leisure and at a more sociable hour.

- (2) This would be used to switch ON a radio perhaps to be awakened by morning music.

- (3) Could be used to switch OFF the radio at night after listening to late night music.

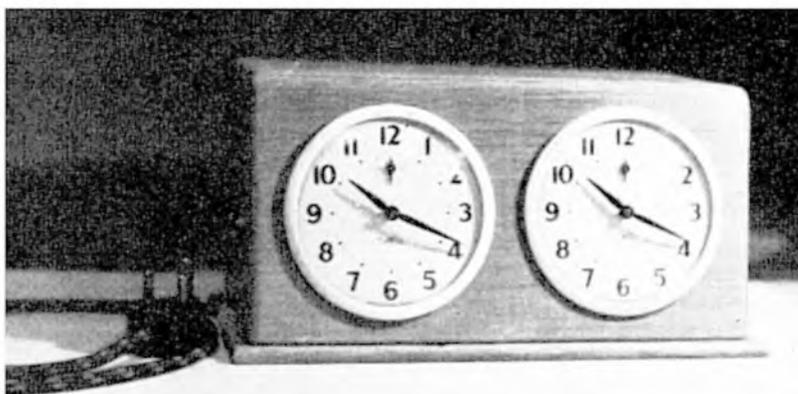
- (4) This setting has been used to switch ON the television (to avoid missing a programme through not noticing the time), and after recording a radio programme during the same time, to switch it OFF at the end.

- (5) With this setting the television could be switched ON as in (4), and the tape recorder switched ON to record a



This exploded diagram of the case indicates the pieces required and the basic outline of assembly. Future photographs and diagrams will show the detailed construction. 1/4 in. oak was used throughout.

A DELAYED ACTION TIME SWITCH *cont.*



Have you ever wished for a robot to record programmes while you are out, or "viewing", or asleep? These two alarm clocks wired according to next month's instructions will do just that.

programme. This would avoid having to break away from viewing to attend the recorder.

(6) This could be used to switch OFF sound effects at different times.

These are only a few suggestions. Readers will no doubt find other uses to which the unit could be applied.

The time switch described utilises two alarm clocks of 4 in. diameter (on the face), and the overall dimensions are 10½ in. × 5½ in. × 5¼ in. high. Smaller clocks are obtainable at a little extra cost. This would make for a more compact unit, but the one described looked quite attractive after its final polish.

Construction of Case

First cut boards to dimensions shown, and mitre all edges shown with an 'M'. Cut the remaining edges square. Cut all holes as shown (for equipment suggested), but if different equipment is used, these will be altered accordingly. The main case should then be fixed together using a good hot glue. To make this job easier, small diameter panel pins can be used (about 3-4 in the long edges). These can be partly driven home, and then removed after the glue has set. To avoid splitting the wood with the panel pins, first drill a hole the same diameter as the shank of the pin in the top piece of wood being fixed.

To give the case stiffness, triangular fillets of wood are glued along all the inside corners. The fillets running from front to back should be cut so that they finish ¼ in. from the rear opening, as the door fits in the inside of the case. Two stops for the door are then glued and pinned as shown. These are pushed in until the recess formed is just the thickness of the wood used for the door. The case is then set aside to allow the glue to set—preferably overnight.

The remainder of the woodwork comprises a plinth and a door. The plinth is made from a piece of board the shape of the base, but with a quarter of an inch added all round the edge. A radius is cut on all four sides of the top and sanded smooth. The plinth is attached to the main case by six countersunk woodscrews. These screws should be sunk deep enough to avoid the heads projecting below the base, and scratching any polished surface they come in contact with.

Next month: full constructional details, and operating notes.

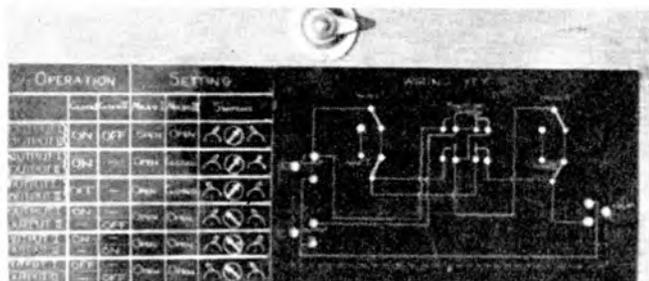
List of Parts Required

Where some of the parts are given a suggested name, these are only as a guide. This is not important as long as the parts meet the requirements in the remarks column.

Description	Qty.	Suggested makers name	Remarks
Alarm clock	2	"Timecall"	The alarm winding key must rotate when the alarm goes off to give the necessary movement to operate the micro-switch.
Micro-switch (5 Amp)	2	"Burgess" or "Bulgin"	Must be of the—normally closed and normally open-type in order that they can be used as two way switches. The ones used by the writer were obtained from ex-govt. instruments.
Two-way switch (5 Amp)	2		Any standard 2-way tumbler switch will suffice. (A panel mounting type could be used with a little modification to the mounting blocks).
3-pin outlet socket (5 Amp)	2		These are ordinary mains wall plugs. The ones used by the writer were of the round pin type. The reader will of course use the type common to the household in which the unit will be used.
3-pin input socket and plug	2	"Radio-spares"	This is a shielded male and female plug to facilitate the removal of the mains cable and place the unit on a shelf.
4-pole rotary switch	1		This was also obtained from ex-govt. equipment, but commercial equivalents can be obtained. A reversing switch could be modified to perform the functions shown on the wiring key.
3-pin plug (5 Amp)	1		For connection to the mains.
3-core flex	1 yd.		For connection to the mains.
Single-core rubber-covered wire	2 yds.		It is preferable to use a stiff wire so that it can be bent out of the way of the apparatus.

Small quantity of light-gauge aluminium sheet or similar, for mounting micro-switches.

6 ft. of 5½ in. × ¼ in. seasoned and planed oak board. Hot glue, panel pins, ½ in. countersunk screws.

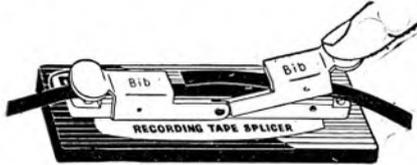


Inside view of rear door showing wiring and operating guide.



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FIELD TRIALS OF BATTERY PORTABLES

(7) THE CASIAN "TRAV-LER"

● Continuing this series in which operational "handiness" and portability are reckoned to be of first importance. As our photograph shows, a recorder is something for the whole family to use.



COMPARED with previous recorders reviewed in this series, the subject of the present Field Trial has the heightened interest of being absolutely brand new. In fact, very few of our readers can have ever seen one. Because of this, it will be best to begin with a brief description.

As may be gathered from the photographs, the Casian Trav-ler is physically larger than is usual for battery-operated portables. The writer found the recessed control knobs difficult to grip, particularly with the perspex cover in position, and disliked the black and gold styling. He was in a minority, however, being out-voted by distaff and off-spring alike. The 10×8 in. top area accommodates the 7×4 in. elliptical, upward-facing loudspeaker, the tape channel and the 3-in. spools, and all the controls. The latter comprise (a) volume control; (b) a five-position selector

switch for Rewind, Record, Off, Replay and Wind On; (c) a Run/Wind lever, the two extreme positions of which are self-explanatory. This control also gives a Pause facility, a slight movement from the Run position withdrawing the pressure roller and bringing the tape to rest.

Neon level indicator

There is a slide switch near the loudspeaker, which operates on recording only and gives the option of listening during recording—say from the radio or the telephone. A neon lamp gives an indication of the recording level, and—unlike most level indicators—it shows the level on the playback too. There is not much point to this in the present case, since the only method of playing back is through the built-in loudspeaker. There is no outlet for feeding an external amplifier or loudspeaker, though this may be added at a small extra cost.

Two different Lustraphone microphones were tried out—the LD/66 moving coil which is the included accessory, and the VR/64 ribbon. The latter was found to be slightly less sensitive, necessitating a small increase in the volume setting, but gave smoother recordings. It must be said that the reproduction of recordings made from all sources tended to be "toppy". The reason is two-fold; firstly, there is the absence of bass inevitable with any small loudspeaker, and secondly—as the manufacturers confirmed—the overall frequency response has been held flat up to at least 5 kc/s since a bright quality is preferred by "Pop" music fans, who are expected to be major purchasers of this new machine.

On a picnic

To test the "Trav-ler's" usefulness in this capacity, we recorded a series of "Pop" tunes from a certain Saturday evening programme—the Pause control came in handy for cutting out the announcements, and was simplicity itself to operate—and used this to supply music on a family picnic. The venue was a deserted stretch in Ashdown Forest, so we were not creating a nuisance, and the young fry voted the music a "hit". In fact, they are threatening to bring the complete Top Twenty Pops on the next picnic.

A more ambitious outing was arranged on the evening before the Derby. Knowing that the Fun Fair and gypsies would be in full swing, it was decided to have a pre-view of the famous Epsom course, and make a few "on-the-spot" recordings at the same time. Excellent static recordings were obtained, but it was



Rear view, with back removed, showing the printed board, batteries, and microphone storage compartment.

AKG

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C12

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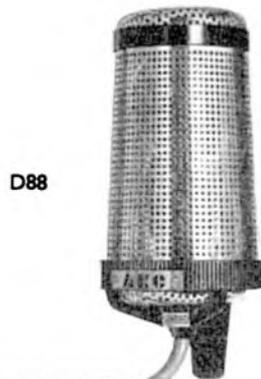
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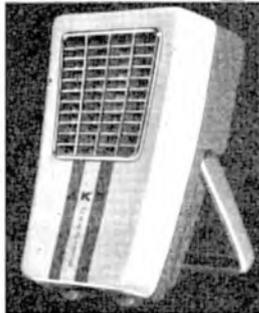
D9
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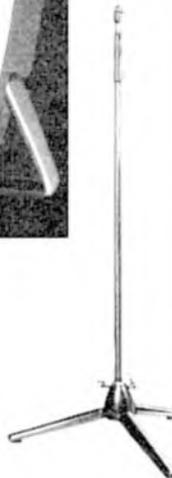
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D11/N



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FIELD TRIAL—(Continued)

found that the "Trav-ler" cannot conveniently be used at much of an angle to the horizontal. For one thing, there is no system of locking the spools on to the spindles, and although a recessed panel on the Perspex cover prevents the reels from actually falling off, the tape ceases to track correctly past the heads—perhaps recording on the Big Dipper, and the Moon Rocket was expecting a bit too much!

Clearly the designer has seen this machine as more in the nature of a static recorder or playback unit, to be taken anywhere, and there is no provision for shoulder-strap operation as on some smaller recorders. The zip carrying case is quoted as an extra, but most people would consider it essential. In the model tested, there are two neat little holes to allow access to the input and external 9 volt supply sockets, but the main controls cannot be got at without unzipping the case.

The technical performance of this recorder is well up to the fairly modest figures claimed. A signal to noise ratio of 30 dB for example, is not calculated to "set the world on fire", and makes it more than ever desirable to record at as high a level as possible while avoiding overload distortion. The overall gain is more than ample and the volume control never required



The Casian Trav-ler has fast wind and rewind, and D.C. erase. Its performance compares favourably with that of mains machines in the domestic category.

to be advanced more than half way. Speed fluctuations were commendably absent on all kinds of programme material and even on recordings of steady tone. A full reel of standard tape took 75 seconds to rewind in either direction.

The normal power supply consists of 3 Vidormax T6009 9-volt batteries, but connection can be made to a car battery, and a mains converter is available so that the recorder can be used as a dual purpose unit, operated on the mains supply indoors and on batteries out of doors. Other accessories which may be obtained include a radio connecting lead, car battery lead, telephone adaptor, and the waterproof carrying case.

Final impressions

Summing up, this new recorder must be strongly commended for specifying—and sticking to—an honest, and highly acceptable technical specification. At the price, which includes a superior microphone to that offered with many mains recorders, and considering the high engineering standard and such features as the D.C. erase circuitry (not permanent magnet) the Casian Trav-ler represents good value for money.

Technical Specification

Battery complement: 3×9 volt Vidormax T6009 or equivalent. **Battery life:** 40-50 hours. One motor. **Transistors:** 3×0C78, 2×0C71, 0A81. Neon level indicator. **Tape speed:** 3½ i/s. **Frequency response:** 150-5,000 c/s±3 dB. **Recording sense:** Top track, left to right. **Inputs:** moving coil microphone or radio. **Maximum spool size:** 3 in. **Fast forward and rewind:** 2½ minutes for double play tape. **Power:** 400 mW. **Dimensions:** 10×8×5 in. **Weight:** 9 lb. **Price:** with Lustraphone LD/66 moving coil microphone and 450 ft. reel of double play tape £30 9s.

Manufactured by: Casian Limited, 37 Grayton House, Golden Square, London, W.1.

Readers' Problems

Windshields

Dear Sir: Is there any simple method of reducing the rumbling background noise on so many of my outdoor recordings? It is presumably wind noise, and I have occasionally improved matters by sheltering the microphone or shielding it by holding out my jacket. If these is a fair breeze blowing, however, none of these dodges are successful.

There must be many people who are in the same boat as myself, and the professionals seem to have found a solution, so any suggestions you have would be most welcome. My microphone is an Acos Mic. 39. Yours truly, **F. T. M., Hastings.**

As an emergency measure, you will find that three or four folds of a handkerchief over the end of the microphone, fixed with an elastic band or held in the hand, will reduce the worst effects of wind noise. This is a partial cure only, however, and has the serious drawback of filtering out high frequencies and, in fact, cuts down the level overall.

Microphones in the professional class may often be fitted with specially designed windshields. The Standard Telephones and Cables moving coil types 4032 and 4035, for example, have, as an accessory, a dome-shaped shield which fits over the diaphragm face of the microphone. The outer surfaces are of wire gauze, and they enclose a fibrous material which is designed to be transparent to sound waves while attenuating wind movements.

The photograph shows the type of windshield favoured by A.K.G., Vienna, (Akustische u. Kino Geräte Ges.) whose domestic and professional microphones are well-known in this country. This is made in the form of two hemispheres which completely enclose the microphone. The model in the photograph is used on the D20B moving coil microphone. It is a feature of efficient windshields that they take up a lot of space, and the version fitted to the C12, condenser microphone, for example, is about the size of a melon.

Amateur windshields have been constructed from a sandwich as a last resort many excellent recordings have been made by of chicken wire, with silk screens and wool as the "filling", and simply holding one's coat out to shelter the microphone, as you mention.

Record/Playback Heads

Dear Sir:—I was disappointed, on removing the plastic cover over the sound channel on my recorder, to find only two heads. I expected to find the three which are usually drawn out in text books and articles, namely recording, replay, and erase. Is it usual to omit one of these, and if so, why? Also, a friend of mine has a tape recorder with a Collaro Transcription Deck which has four heads. Does nobody have the official number, three? Yours faithfully, **W. R., Carlisle.**

Virtually all professional tape recorders, and a limited number of less expensive domestic recorders "stick to the book," and employ three heads. The order is then invariably, Erase, then

Record, then Replay. This allows the programme which has just been recorded to be monitored continuously through the playback circuitry. There is a fraction of a second's delay, of course, equal to the tape speed divided by the distance between the Record and Replay heads, e.g., a distance of 2½-inches would give ½ second delay or echo at 7½ i/s.

In the majority of domestic tape recorders, the recording and playback functions are combined in a single head, it being the job of a more or less complicated system of switches to change-over the function. To keep cost and weight down even further, it is very often the practice to combine the amplifiers too, the switchery then swaps over a microphone/amplifier/head chain on Record to a head/amplifier/loudspeaker chain on Playback.

On the famous Collaro Transcription Deck, and a number of other machines which will "scan" either the upper or lower track without the need of turning over the tape, e.g., the Simon SP4, two pairs of Erase and Record/Replay heads are fitted. The left hand pair is aligned to scan the upper track, and the right hand pair (reversed in order) the lower track. Additional "track change" switches are then necessary.

Artificial recording

Dear Sir: I would like to know whether there is any way of producing Artificial Sounds on tape—that is by using a permanent magnet to produce varying strengths of magnetism like the record head on the machine. It is possible to do this on the sound track of films, by drawing on them.

I would very much like to know if any of your readers have ever tried this, and if so, with how much success. Yours truly, **D. Kay, 314, Lordship Lane, E. Dulwich, London, S.E.22.**

In the drawing of artificial sound tracks on films, the actual envelopes of the shaded areas can be arranged to give varying tonal qualities just as the waveforms of a clarinet differ from those of a violin, etc., but there are difficulties in trying to adapt the technique to magnetic tape. Take first of all the question of speeds. If the artificial track is to be anything other than a series of clicks and boings, it is necessary to magnetise it in such a way that, playing back at a standard speed, A.C. fluctuations are produced at an audible frequency.

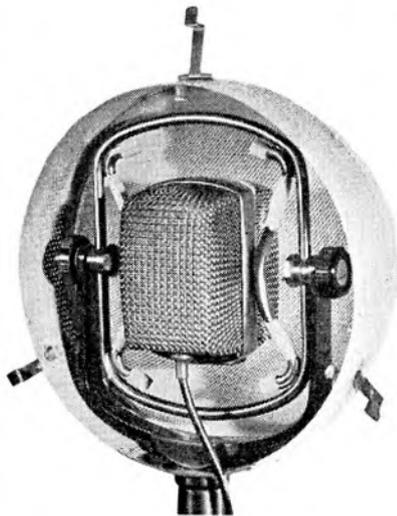
Of course this corresponds to extremely small recorded wavelengths, which make the dimensions of any fixed magnet impractically large, unless the tape is run fast as the magnet is moved during recording, or else the magnet itself is rotated or vibrated at high speed. The level of the recorded signal is likely to be a hit or miss too, and we can think of a few other snags. But none of these is likely to deter the true enthusiast seeking for new ways of creating sounds, and we invite readers who have experimented with these artificial recordings to get in touch with Mr. Kay either direct, or through these columns.

Using a bulk eraser for head demagnetisation

Dear Sir: I have just discovered your excellent magazine, and have placed a regular order at my newsagent. I have constructed the bulk-eraser described in your March issue, and I find it works very well indeed. Is it possible to use such a device as this for demagnetising tape-heads? I don't see why this shouldn't do the job providing there is no obstruction between the heads and the effective area of the bulk-eraser. Or is there a risk of degaussing the loudspeaker magnet in the recorder, and what would you consider is a safe distance for magnetised materials from a bulk-eraser of this type,

Yours sincerely, **E. Watson, Blackpool.**

We do not think that the bulk-eraser described recently would be suitable or adaptable for depolarising tape heads. In commercial depolarisers the AC magnetic field is relatively weak, and is concentrated on a pole-piece shaped to facilitate head demagnetising. At distances of 12-18 inches there is unlikely to be any ill effect on the loudspeaker magnet.

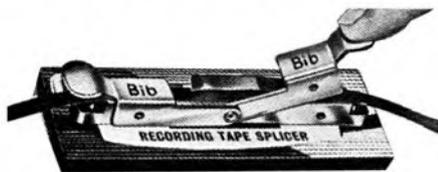


Tape Splicing

IT is a very useful feature of the tape recording medium that different recordings or excerpts can be easily spliced together, and it isn't very long before one finds that sticking the ends together with sellotape or stamp edging (!) is far from ideal. To make really firm joints, which will not foul the tape heads and guides or "bleed" on to adjacent turns making the whole tape sticky, two methods are available—jointing tapes and jointing fluids.

Full instructions on tape editing by both methods are given, with step-by-step photographs, in a handy booklet entitled "How to Splice Tape." This is based on articles by I. W. Jarman which appeared in *The Tape Recorder* during 1959, and may be obtained, price 2s. 6d. postage paid, from 99 Mortimer Street, London, W.1.

The special jointing tapes may be had $\frac{1}{2}$ in. or $\frac{1}{4}$ in. wide or just under. Examples are Agfa 80 ft. \times $\frac{1}{4}$ in., price 5s. 6d.; M.S.S. Mastertape, price 5s.; BASF, 30 ft. \times $\frac{1}{4}$ in., price 3s. or 5s.

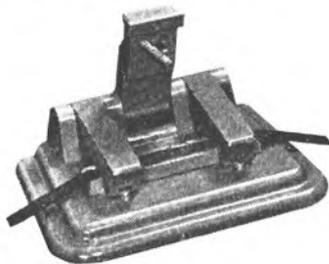


★
**THE "BIB"
TAPE SPLICER**

in plastic box; Emitape AP103 $\frac{1}{2}$ in. price 7s. 6d.; Sonocolor, price 7s.; "Scotch" Brand type 41, 66 ft. \times $\frac{1}{2}$ in. price 6s. 6d. and 66 ft. \times $\frac{1}{4}$ in., price 3s. 6d. Philips EL 3916/0, 80 ft., price 10s.

Jointing fluids produce a truly permanent welded joint and may normally be used only on Acetate or P.V.C. tapes. An exception is on M.S.S. Mastertape compound which is specially designed for polyester tapes. Jointing fluids include Emitape Jointing Compound AP35 for C.A., AP 37 for P.V.C., 7s. 6d. per bottle; BASF LG 7s. 6d. per bottle; M.S.S. 4s. 6d. per bottle; Sonocolor Type C2 6s. per bottle.

★
**SONOCOLOR
TAPE SPLICER
TYPE CM6**



Tape Splicers and Editing Blocks

There are a number of efficient tape splicers and editing blocks on the market, all designed to simplify the business of cutting and jointing tapes. There will usually be some provision for holding the loose ends of tape—spring-loaded flaps in the splicers and overhanging flanges on the editing blocks—and slots to allow accurate cutting at 90° or 45° across the tape.

Splicers include the Multimusic "Bib" splicer, price 18s. 6d.; Emitape AP46, price 17s. 6d.; Irish Brand SP-3, price £3 7s. 6d.;



★
**IRISH
TAPE SPLICER
TYPE SP-3**

TAPE RECORDER ACCESSORIES

A SURVEY OF USEFUL AIDS TO RECORDING



★
**ROMAGNA
EDITING
BLOCK**

Sonocolor CM6, price £1 12s. 6d.; Romagna Editing Block, price 7s. 6d.; Easysplice Editing Block, price 5s.

Editing Kits

It is possible to acquire a complete kit of editing accessories, and examples of these are as follows: Sonocolor Splicing and Editing Kit, comprising CM6 splicer, 3 reels coloured Leader Tape, 1 reel Adhesive Tape, 1 bottle C2 special glue, 1 box

★
**E.M.I. KIT OF
EDITING
ACCESSORIES
TYPE AP110**



Filmptic Clips, 1 spare Grooved Guide, price £3 12s. 6d.; E.M.I. Accessory kit, type AP110, includes jointing block and cutter, jointing compounds and tape, and 6 reels of P.V.C. leader tape, price £1 17s. 6d.; "Scotch" Brand, including "Bib" splicer, jointing tape, and leader tape price £1 9s. 6d.; M.S.S. Mastertape including "Bib" splicer jointing fluid and tape, and leader tape, price £1 17s. 6d.

★
**A.K.G.
HEADPHONES
TYPE K50**



Headphones

A wide range of headphones or stethoscope-type sets are to be had, and are invaluable for monitoring purposes—when the recorder incorporates this facility—or listening without disturbing other people in the room. An example of the latter application is the transcribing of recorded dictation on to a typewriter. Here extreme lightness will be more important than quality, but, for monitoring, high fidelity headphones will be preferred.

It is important to select the appropriate impedance. For plugging into an External Loudspeaker socket, for example, low

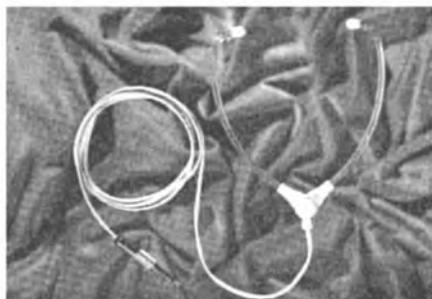
TAPE RECORDER ACCESSORIES

A SURVEY OF USEFUL AIDS TO RECORDING
continued....

impedance headphones are best; and high impedance headphones will suit most other purposes.

A complete range of headphones is manufactured by S.G. Brown Ltd., including the Type "F," 4,000 ohms, price £1 17s 6d. and the type "K," 52 and 1,500 ohms, price £5 10s. and £7 3s. respectively. Other headphones sets include: A.K.G. type K50, impedance 800 ohms, price £8 4s. 6d.; Sound Stethoset,

★
**SOUND
STETHOSET
HEADPHONES**



impedance 50 ohms, weight 1½ oz., price £2 1s.; Elizabethan Stethoset, lightweight, high impedance, price £3 13s. 6d.; Simon Stethoscope headset, operates from extension L/S socket, price £2 12s. 6d.; Telefunken (Welmecc) Crystal earphones, price £2 6s.; Truvox, low impedance, price £3 3s.; Philips Stethoset headphones, price £3 10s; Walter featherweight, price £2 12s. 6d. Grundig Stethoscope, type STET 3 price £3 3s.



Head Defluxers

The record/replay and erase heads are basically electro-magnets, consisting of fine wire coiled round an iron core. Ideally, in the absence of any current through the coil, the core should

★
**CINESMITH
DEPOLARISER**



★
**S. G. BROWN
HIGH QUALITY
HEADPHONES
TYPE "K"**

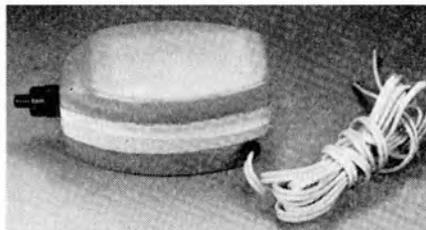
★

★
**WEARITE
DEFLUXER**

★



be in a completely de-magnetised state, but can become accidentally magnetised due to a number of causes. These include switching surges from the motor, unbalanced bias oscillator, and bringing magnetised tools close to the heads, and produce



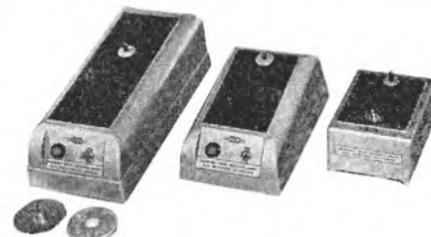
★
**OSMABET
"INSTANT"
BULK
ERASER**

★

noisy or distorted recordings. Worse than this, magnetised heads may put noise on to pre-recorded tapes. The cure is a periodic dose of "demagnetisation" using an AC magnetic field. This is most conveniently carried out using one of the proprietary defluxers, such as:—Cinesmith Depolariser, price £1 14s.; Wearite defluxer, price £2 10s.

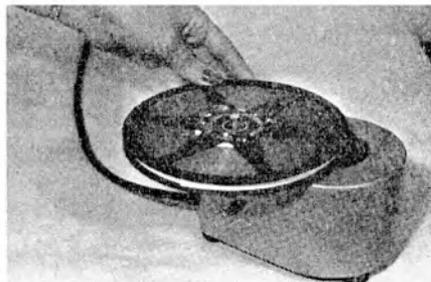
★
**THE RANGE
OF
LEEVERS-RICH
BULK
ERASERS**

★



Bulk Erasers

The simple process of erasing whilst recording is all right in its way, but there are times when a quicker and more complete method of erasure is desirable. This is the job of a bulk eraser, and is applicable to users who frequently exchange tapes with others whose machines may not track at the same precise horizontal line, or where complete erasure is essential, as in Library work, etc. The principle of all bulk erasers is the same, namely that the tape should rest on a spindle and be rotated slowly by hand through a concentrated AC magnetic field. The whole operation need take no longer than about one minute.



★
**WELLINGTON
ACOUSTIC
LABORATORIES
WAL
BULK ERASER**

★

A range of bulk erasers is manufactured by Harvey Electronics Ltd., to take all sizes of spools, and costing from £6 5s. to £15 10s. Other models include the LeeRaser in 3 sizes, price £6 5s., £9 10s. and £15; Osmabet Instant Bulk eraser, price £1 7s. 6d.; WAL Eraser, price £7 18s. 6d.

Telephone Attachments

When it is required to record the two ends of a telephone conversation, or perhaps "broadcast" them via an amplifier to a group of people, a telephone attachment is necessary. This consists of an electromagnetic transducer, which may be laid

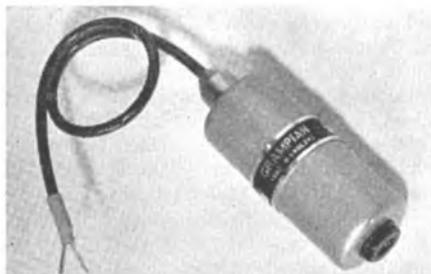
ACCESSORIES SURVEY—(continued)

near the telephone or fastened to it by a suctioned cap. Suitable units are manufactured by a number of firms, including:—Cosmocord, Dektron Telecon, Telefunken (Welmec) Elizabethan, Walter, Grundig, Philips, and WyndSOR.

Microphone Matching Units

The majority of inexpensive recorders have a high impedance input socket, only. This matches satisfactorily the crystal microphone, which is the most popular type supplied as an "included accessory". It is a limitation of crystal microphones, however,

★
**GRAMPIAN
MICROPHONE
MATCHING
UNIT**



that they cannot conveniently be used on long leads, and for this reason—and perhaps to obtain improved quality—many people decide to change over to a low impedance microphone. To make this possible there are a number of Microphone Matching Units on the market, but it is a good idea to check that the given recorder has sufficient gain for the microphone in question before purchase. Examples are:—Grampian Microphone Matching Unit G.7, 15-30 ohms to high impedance, price £3 5s.; Wearite Matching Unit TU/30G, incorporating transformer, 30 ohms to high impedance, price £2 6s.



★
**TRUVOX
RADIO
RECORDING
JACK**

Miscellaneous

Some of the useful tape recording accessories not mentioned above are:—Truvox Radio Jack, price £3 8s. 4d.; Teletron Tapejack, price £5 9s., high gain version, £6 13s. 9d.; T.S.L. Radio Jack, price £3 5s.; Metrosound Klensatape, a complete kit for keeping tape heads free from oxide deposits, etc., price 12s. 6d.; Metro-tabs, 20 pairs of coloured identification labels, price 3s. 11d.; Swains polythene tape covers, price per dozen, 3½ in., 1s. 6d.; 4 in., 1s. 8d.; 5½ in., 2s.; 7 in., 2s. 4d.; 8½ in., 2s. 8d.; Valradio DC/AC Converters, prices from £6 10s.

★
**"SCOTCH"
BRAND TAPE
CALCULATOR**

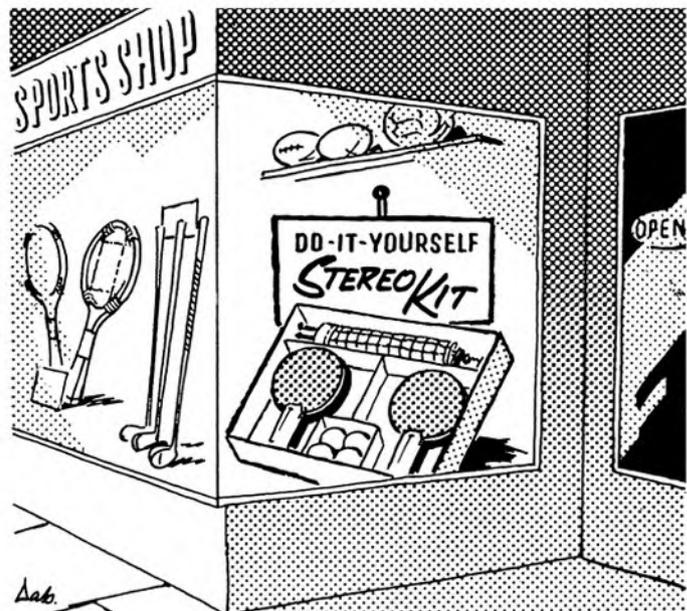
—Available free to readers of "The Tape Recorder".



ADDRESSES OF MANUFACTURERS

FOR the convenience of readers we give below the addresses of the manufacturers or agents for all the accessories mentioned in this survey. Most of the accessories are available through your retailers, but enquiries for further information should go to the addresses below:—

Agfa Ltd., 27 Regent Street, London, W.1; AKG, U.K. Agents: Politechna (London) Ltd., 357 Euston Road, N.W.1; BASF, U.K. Agents: F. A. Hughes & Co. Ltd., 4 Stanhope Gate, London W.1; S. G. Brown Ltd., Shakespeare Street, Watford, Herts.; Cinesmith Products, Britannic Works, Regent Street, Barnsley, Yorks.; Cosmocord Ltd., Eleanor Cross Road, Waltham Cross, Herts.; Dektron, 2 Westbourne Road, Waltham Cross, Herts.; Elizabethan EAP (Tape Recorders) Ltd., Bridge Close, Oldchurch Road, Romford, Essex; Easysplice Co., 30 Lawrence Road, Ealing, W.5; EMI Sales & Service Ltd., Blyth Road, Hayes, Middx.; Grampian Reproducers Ltd., Hanworth Trading Estate, Feltham, Middx.; Grundig (G.B.) Ltd., 39/41 New Oxford Street, London, W.C.1; Harvey Electronics Ltd., 273 Farnborough Road, Farnborough, Hants.; Irish Brand—see Wilmex Ltd.; Leavers-Rich Equipment Ltd., 78b Hampstead Road, London, N.W.1; Metro-Sound Manufacturing Co. Ltd., 19a Buckingham Road, London, N.1; Minnesota Mining and Manufacturing Co., 3M House, Wigmore Street, London, W.1; M.S.S. Recording Co. Ltd., Colnbrook, Bucks.; Multicore Solders Ltd., Multicore Works, Hemel Hempstead, Herts.; Osmabet Ltd., 2 Median Road, Lower Clapton Road, London, E.5; Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2; Romagna Reproducers, U.K. distributors: K. H. Williman & Co. Ltd., 29 The Highway, Sutton, Surrey; Scotch Brand—see Minnesota Mining and Manufacturing Co.; Simon Equipment Ltd., 48 George Street, London, W.1; Sonosolor, U.K. Agents: Tape Recorders (Electronics) Ltd., 784/788 High Road, Tottenham, London, N.17; Swain Papercraft Ltd., Queens Road, Buckhurst Hill, Essex; Technical Suppliers Ltd., Hudson House, 63 Goldhawk Road, London, W.12; Telefunken—see Welmec Corporation; Teletron Co. Ltd., 112b Station Road, Chingford, London, E.4; Truvox Ltd., Neasden Lane, London, N.W.10; Valradio Ltd., Browells Lane, Feltham, Middx.; Walter Instruments Ltd., Garth Road, Morden, Surrey; Wellington Acoustic Laboratories Ltd., Farnham, Surrey; Welmec Corporation Ltd., 147/148 Strand, London, W.C.2; Wilmex Ltd., 131 Sloane Street, London, S.W.1; Wright & Weaire Ltd., 131 Sloane Street, London, S.W.1; WyndSOR Recording Co. Ltd., 2 Bellevue Road, Friern Barnet, London, N.11.



Splicing made easy...

**EVEN IF
YOU'VE NEVER
SPICED
TAPE BEFORE**



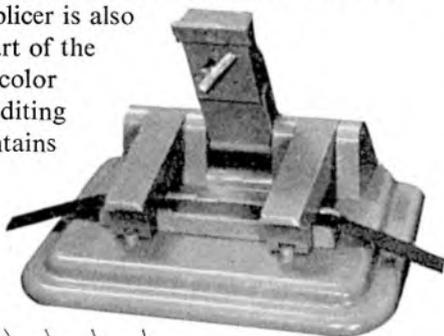
**UNIQUE DESIGN · RENEWABLE BLADE
PRECISE, SPEEDY OPERATION
ONLY 32s. 6d. COMPLETE**

You can achieve professional results **immediately** with the SOUND/Sonocolor CM6 Splicer—the only splicer that has a renewable cutting blade.

The CM6 splicer holds the tape ends **firmly**, cuts them **accurately**, and has a special flat surface which can be brought to bear on the finished joint, thus ensuring perfect adhesion. It can achieve any type of splice on any type of tape.

You will like the look, the feel and the efficiency of the CM6 Splicer. This fine instrument costs only 32s. 6d., and will virtually last a lifetime.

The CM6 Splicer is also available as part of the SOUND/Sonocolor Jointing and Editing Kit, which contains all you need for perfect results and costs 72s. 6d.



Photographic Distributors to the trade:—

THE PULLIN OPTICAL CO. LTD.
93/97, New Cavendish Street, London, W.1.

LETTER FROM NEW YORK

IN England you have your Components Exhibition: in America we have our Parts Show. A three-day run at the Conrad Hilton in Chicago was estimated in advance to bring in at least 12,000 visitors from the electronic and radio industries. It is too early for me to tell you exactly how many turned up, but the attendance was good, and the many conferences, educational seminars and lectures for distributor management, Trade Association meetings and all the rest that were held concurrently, gave a fine impression of a healthy trade that is still busting to expand. This, remember, was a get-together for the Trade only. On the consumer side we, too, have our Audio Show, just as you have your Audio Fair; and if you are wondering why this month's letter column is being devoted to shows, it is because the events of this year indicate a very marked trend of inter-country interest. For example, let me quote from our Trade publication *Audio Times*: Under the headline "U.S. Lines a Hit at London Audio Fair" a 14-inch column was devoted mainly to British products, as follows:

"The fifth Annual London Audio Fair, which closed its doors at the end of April, saw a welter of new products, and some new names among manufacturers since last year's show. Ampex, for example, accounted for two exhibits—the first time the company's products have appeared in the London Show. Irish Tape has followed Audio Devices onto the British market, and displays of both companies' merchandise attracted the attention of tape fans. One of the sensations of the show was the Shure stereo pickup, which was shown publicly here for the first time.

"The news was in the new products, and here are some of the more interesting ones: Acos displayed its new 'Hi-Light' pickup, which tracks at two grams. Quad's AM and FM tuners, stereo amplifier and electrostatic loudspeakers drew long queues. The Ampex professional equipment exhibit included the professional models 301 and 601, and some amplifiers and preamps. The domestic equipment exhibit included an assortment of United Stereo Tapes, Ampex home tape recorders, and consoles. Armstrong Wireless introduced a new tuner and stereo control unit, and the British Broadcasting Corporation demonstrated studio recording and stereo monitoring apparatus. The Brenell tape deck has been updated with a new Mark 5 stereo recorder. A. R. Sugden showed a new two-speed turntable, designed for stereo use, and Decca has two new heads for its pickup.

"Electrical & Musical Industries had one exhibit for its equipment, another for its records and tapes. In the former, the highlights were two new studio recorders, the TR 90 and BTR 2, and a new portable recorder, the TR 52. Ferrograph took the occasion to introduce its newest stereo recorder, the Model 808. Highlight of the Garrard exhibit was the magazine-loading tape deck, which eliminates threading problems from what looks like a standard tape deck. Not all the news was tape, however: Goldring showed its new 700 stereo cartridge; and Goodmans displayed a new version of the Triaxiette and a new bookshelf speaker system. Harold Leak displayed his complete line of amplifiers, loudspeakers, pickups and tuners.

"Rogers Development had one of the few really new stereo amplifiers, a 'Junior' model. Shure Brothers, in addition to displaying the M7D and M3D cartridges, showed the Shure microphone and pickup arm line, plus a line of styli. The Steelman battery-operated tape recorder made its debut, as did a home portable from Stuzzi. A new addition to the Tannoy line is the Mark 2 pickup. The French-made Teppaz line drew some attention.

Again, at what is claimed to be the largest "outside British Isles" exhibition of "Buy British" goods, being held in New York from June 10th through 26th, your BREMA group have a large showing of electronic products, and others, such as Pye, are also showing independently.

This to my mind is all good news. You, on your side, are beginning to see a number of our hi-fi and tape products; but make no mistake, we over here are beginning to see a lot more of your products, and they are well thought of in many quarters.

our readers write

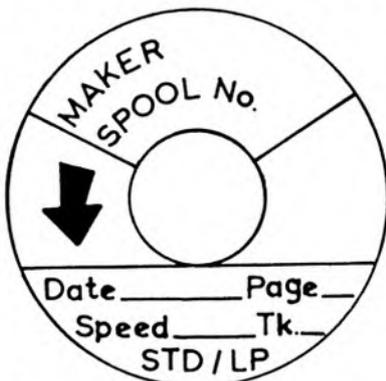
. . . about labels for tape spools

From: R. Strudwick, 891-3, Uxbridge Road, Hillingdon Heath, Middx.

Dear Sir:—Here is an idea aimed at keeping recordings in some sort of order, I have had this system in use for some years now, but have recently redesigned the labels.

It occurred to me that the identification of tapes could be done in the same way as discs, i.e. to have a centre label on

Used in conjunction with an Index, these handy labels (one of which is reproduced here actual size) make the identification of one's tape recordings as easy as that of a gramophone record.



the reel, carrying information about it. The printing of these labels was achieved by making six indian ink drawings with stencils on tracing paper, and getting prints from this via a standard drawing-office print reproducer Incorporated with the circles, were lists with ruled columns, and other useful lettering. The blank section was left for odd bits of information, or to cut away, thus providing a clearance around the tape slot (which I never use!). After printing, the edges, and centres are cut away, and the labels stuck on with Durofix. Printing a dozen copies gives me 72 labels, more than enough! *Yours sincerely*

. . . about recording station signals

From:—C. de Silva, Laboratory, Radio Ceylon, Torrington Square, Colombo 7, Ceylon.

Dear Sir:—I am writing this letter with the hope that you will be able to send me a copy of your very first issue. We in Ceylon can buy almost all the recorders advertised in your magazine. Your reviews are very helpful. Also your magazine is within reach of almost every tape enthusiast.

Unfortunately there are no tape clubs as such in Ceylon. Quite a number of people have tape recorders and most of them are used for entertainment purposes. I don't think anyone here has used one for any serious work.

I wonder whether any of your readers have recordings of the theme music of foreign stations. I started recording some whenever I could and, so far, have the themes of the following stations:—France (Paris), Sweden, Switzerland, Germany, Praha, Rome and Radio Brazil. I would like to get some recordings of the medium wave stations of Europe if anyone can help. More strength to your pen, Sir, *Yours faithfully*

Sorry, but our first issue is out of print. (Editor).

. . . about tape and carpentry

From:—G. R. Ogram, 12 Victoria Road, Harborne, Birmingham, 17.

Dear Sir:—Tape recording is now well established in my blood and the pressure has built up sufficiently for me to venture forth with one or two tips which may interest your readers.

Eighteen months ago I bought a Brenell Mark V deck and R/P amplifier and fixed them into my own box. Thus, I had no qualms about any modifications to the woodwork, and this

enabled me to carry through with the following: (1). The mains lead was made removable by connecting a Bulgin 3-pin socket adaptor (the pins are flush) to the recorder case, and the other half (with inset sockets—no risk of a shock) to the lead. This is a useful feature, I have found, for it allows one to attach different leads of varying lengths. (2). On the inside I tapped two wires from the “live” and “neutral” pins of the Bulgin adaptor to a two-pin wall socket mounted outside the recorder (not flush—my carpentry is poor!). This means that I have a separate power point in use when the machine is switched on. I use this for plugging in a Jason FM tuner, which is now very conveniently close to the recorder for recording and listening purposes.

I use my recorder mainly for musical purposes. I am building a library of music by Gordon Jacob, the contemporary English composer. In this connection I would be very pleased to hear of anyone with any recordings of music by this very fine composer. Maybe I could add to my collection. *Yours sincerely*

. . . about the TR52 review

From:—C. Rae, 32 Whiteclosegate, Carlisle.

Dear Sir:—Mr. J. Moir's review of the E.M.I. Recorder TR52 makes it apparent that the higher the price of a recorder the more limited is the frequency bandwidth. There is something not quite right when a price of £285 can give a response up to 10 Kc/s at 7½ i/s whereas a fraction of this price gives up to 16 Kc/s at 3¼ i/s. This amazing discrepancy surely cannot be dismissed as professional reserve on the one hand and pure sales exuberance on the other. It cannot be agreed too strongly that a completely smooth response within 40 c/s—10 Kc/s is more important than an extended response up to 15 Kc/s, but can one only be attained by the sacrifice of the other? If so, there we have an explanation, if not it can only be concluded that E.M.I. are using heads having moderately wide gaps or that the advertised claims of lower priced domestic recorders are untrue.

There are some interesting details about the E.M.I. TR.52 deck that deserve mention, namely that no pressure pads are used, tape-head contact being maintained by the tape tension. As a result, presumably, head wear is very much reduced with a consequent stability in recording characteristics. Another professional feature is that the capstan is driven directly from the motor shaft which, running at 1,425 rpm, necessitates a very small capstan diameter, and any eccentricity in this would cause wow at a frequency of 25 c/s and would not give such a noticeable effect as eccentricity of a lower rotating large diameter capstan. *Yours sincerely*

. . . Converting the Collaro Deck to 1/8

From:—John A. Bell, Radio Officer, s/s “Serbistan”, c/o F.C. Strick and Co., Ltd., London, E.C.3.

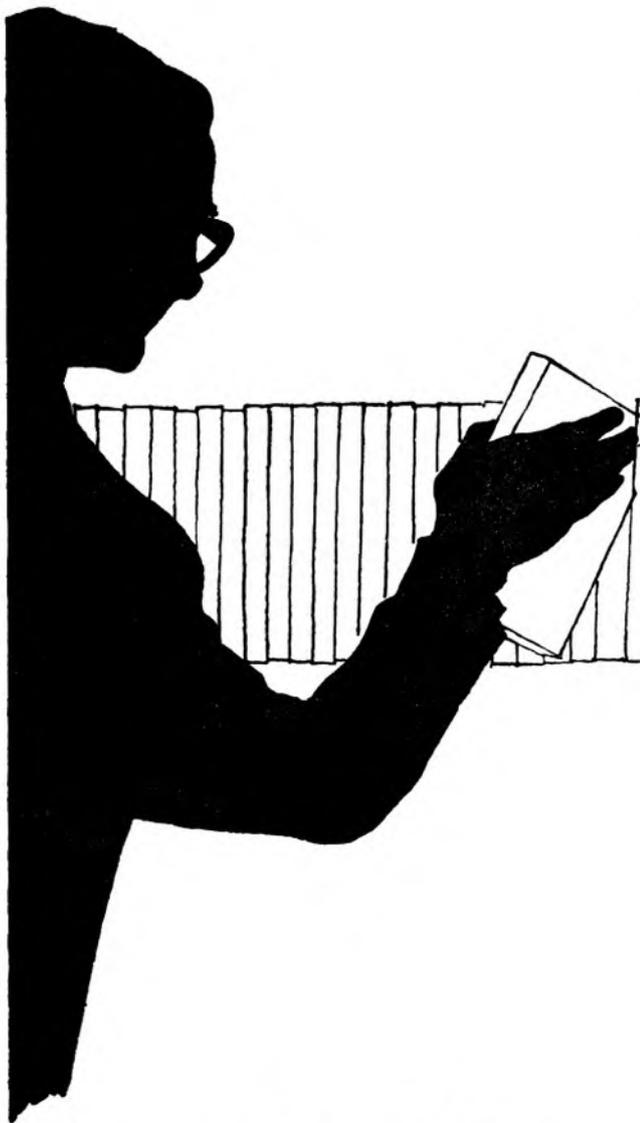
Dear Sir:—I have recently been introduced to the delights and fascinations of tape recording as a pastime, by the 3rd Officer of the ship in which I am now serving. He owns a Grundig TK30 machine and we are using it for, amongst other things, supplying the drive for a series of loudspeakers in radio receivers

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READERS' LETTERS—(continued)

in other cabinets. This is very popular, and with each parallel line fitted with a volume control pot, it provides an alternative programme when medium and short wave reception is not very entertaining.

I do not yet have any recording gear of my own, but fully intend to build a tape recorder myself in the very near future. In the meantime I am studying as many books on the subject as I can get hold of, and at this point I would like to say what an excellent magazine *The Tape Recorder* is. You achieve a perfect balance of material in the way you combine the semi-technical data with the more straight forward non-technical articles and reviews, etc. I am still reading back numbers of the magazine belonging to the 3rd Mate, but am devouring every word and gaining a good overall appreciation of tape recording from all angles. Thank you for such an informative and interesting magazine.

Next voyage, I intend to build a Mullard type "A" (Model HF/TR3) tape amplifier for use (I hope!) with a Collaro Mark IV transcription deck which I will buy separately. These I will fit into a rexine-covered wooden case incorporating a Rola/Celestion 10 in. x 6 in. speaker, and hope the result will be an average, fairly good quality tape recorder.

Now for a few queries, more on the technical side which I hope the Technical Editor will answer for me. Firstly, I would like to know if the Collaro Mark IV deck can be modified (by me or an expert) to work at the slower speed of $1\frac{7}{8}$ i/s, either instead of, or in addition to 15 i/s. I would also like to know if it is possible to modify (at a later date) the deck for stereo, by using two of the four heads provided (making stacked heads for stereo) and using them for the second channel signal on the bottom tape track (with tape transport running left to right only).

There is just one other point I would like advice on. What precautions (if any) should I take to protect a tape recorder against the intense heat of the Persian Gulf? Eventually I hope to own a battery portable tape recorder in addition to the one mentioned above, and with it obtain an interesting sound record of my travels round the world, a practice which ought to offer me very wide scope indeed.

Yours faithfully

Your first question on converting the Collaro Mark IV deck to $1\frac{7}{8}$ i/s is neatly answered in the next letter. Using the existing heads for stereo sounds attractive, but we have not heard of it being done. The manufacturers of tape and audio equipment will always advise on the use of their gear in the tropics, and often supply special tropicalised versions.

* * *

... a pulley for 1 7/8

From:—Frank Ely, 6 Cranmore Drive, Belle Isle, Leeds, 10.

Dear Sir:—First of all I must congratulate you, for real honest to goodness value in your magazine, which I have taken since it first came out and which I have recommended to a few of my friends. Anyway to get to the point of why I am writing, I have had a Wyndson Viscount recorder, with the Mark IV deck, and I have often wondered if it was possible to convert the three speeds from $3\frac{3}{4}$ — $7\frac{1}{2}$ —15 i/s to $1\frac{7}{8}$ — $3\frac{3}{4}$ — $7\frac{1}{2}$ i/s. Well, I enquired at a shop and was advised to get a new pulley, so I ordered a stepped pulley for $1\frac{7}{8}$, $3\frac{3}{4}$, $7\frac{1}{2}$ i/s, and to my surprise when I called at the shop to collect, I received two pulleys and an adaptor to change the engraving on the speed selector also, for the nominal sum of 4s. Well I have fitted one of these pulleys on the right hand motor, and so if I leave it at this, I have four speeds, $1\frac{7}{8}$, $3\frac{3}{4}$, $7\frac{1}{2}$ i/s on one track and $3\frac{3}{4}$, $7\frac{1}{2}$, 15 i/s on the other.

The procedure is simple. First remove speed selector knob, then the plastic top which covers the whole deck, next remove the tape tensioning arm assembly which is made possible by removing three screws, in the triangular plate, at the rear of assembly. Two of the screws locate two compression springs, used for lining up spool carrier. Attached to the triangular plate is a fine coil spring which has to be unhooked from the chassis, then the spool carrier, together with tensioning arm is removed.

All that remains is to loosen two grub screws in the 3 step motor pulley and pull upward, replace new pulley, and adjust for proper height, the whole operation only took about half an hour.

Yours truly

* * * **about Tape Recorders and Slide Projectors**

From:—J. Pritchard Jones, Tanycoed, Talysarn, Penygroes, Caernarvonshire.

Dear Sir:—I am using a Grundig TK.830 Tape Recorder, and an Aldis Automatic 35 mm Slide Projector. I wish to change the slides automatically from the tape and would be glad to know if details are available for the home construction of a unit for this purpose.

Yours faithfully

We don't know of a suitable home construction unit, but will be glad to publish details, if someone can oblige. (Editor).

* * * **about breaking the language barrier**

From:—Victor Sheppard, P.O. Box 1073, Cape Town, South Africa.

Dear Sir:—Some while ago I took along my Telefunken and power unit when I went on a tour of duty into the bush. At first I thought to record Native songs and dancing, and this was successful. The accompaniment being especially effective, the rhythm of hundreds of feet stamping the earth, the leg rattles, the shrill whistles of control, the nose flute, and the "Mbila" a "piano" of filed down hacksaw blades vibrating over a gourd; but in all this I was greatly handicapped by knowing only a few words of the native language. Having passed from the territory of the "Xhosa" (pronounced Kloser, the first syllable is a click and glottal stop combined!) even these few words were useless amongst the Zulu. There are five native tongues and perhaps 200 dialects! So, through the medium of men who had worked in the cities, and some cigarettes, I was able (sometimes) to get a recording done to my requirements of positioning of singers and instrumentalists, not forgetting a fair translation of the lyric.

Before going on my next trip, I took the trouble to seek out native people here who really spoke good English (Schoolteachers, Clergy, etc.), and got them to record a message in their own tongue. In this they introduced me, said a little about the family (children's names and ages went down very well); simply explained the recording process, and requested co-operation; and silence at a pre-arranged signal, from the onlookers.

The results were highly gratifying; where before I was barely understood, and suspect, the help now received was intelligent, and the kindnesses touching. It strikes me that this would be applicable to anyone contemplating a continental holiday, a bit of thought in writing a script to introduce your family (occupation and hobbies) briefly, and with the help of e.g. the local schoolmaster for French and German, or the Restaurateur (Italian or Greek) and you will break through the language barrier straight to the hearts of your hosts.

Yours sincerely

* * * **about changing standards**

From:—N. C. Robinson, Arlynden, 2 Brookwood Avenue, Sale, Ches.

Dear Sir:—You have in your editorials commented in some detail as to along what lines tape recorder design of the future is likely to move. For example, will $3\frac{1}{2}$ i/s be accepted as a speed perfectly satisfactory for musical recordings of high quality? Can twin track recorders on a $\frac{1}{2}$ in. wide tape compete much longer with those of 4 track? Or possibly twin tracks on a tape of only $\frac{1}{4}$ in. wide? Those who have used a 4 track machine (I have one) will, I feel, never wish to go back to one of twin track design; new converts to tape will, I feel, be encouraged to purchase 4-track machines if only on the score of tape economy.

No doubt the price of tape is held at a level the manufacturers estimate the public will pay; the present level can hardly withstand pressure to reduce the price. An example of one such challenge is, I think, the recent price reductions in L.P.

(continued overleaf)



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READERS' LETTERS—continued

records which, with their new stereo appeal, must surely be regarded as likely to make a potential buyer ask, "Record Player or Tape Recorder?"

A wise choice is difficult to make if quality reproduction is required and, on balance, a player unit plus amplifier plus loudspeaker system would appear to cost less than a tape recorder plus amplifier plus loudspeaker system. My problem is whether or not to consider stereo reproduction. For two years I have steadily recorded radio programmes on tape via an F.M. tuner fed into a high quality pre-amplifier/amplifier system instead of buying discs. If, however, I wish to reproduce stereophonically it would seem that this can be only by disc.

The serious amateur interested in music does not record on to tape via a microphone even for monaural reproduction; he is less likely to contemplate stereophonic recording on to tape by microphones. Is it likely that B.B.C. future radio broadcasting will be twin channel thus enabling stereophonic listening? If so, this means stereophonic tape recording in the home—however much it may be argued that this is an infringement.

The ideal for the serious amateur music lover would seem to be a 4-track recorder capable of recording two channels on two tracks simultaneously in the same direction on $\frac{1}{4}$ in. wide tape if and when radio programmes are broadcast at V.H.F. stereophonically. But until the B.B.C. provide the latter I see no means of using the former to full advantage.

Yours truly

... about a distant relation

From:—Clive Hastie, 246 Wickham Chase, West Wickham, Kent.

Dear Sir:—While on a recent visit to Miami, Florida, I came across a most interesting portable tape recorder, the details of which I thought might interest you. It was the name which first caught my eye, and made me wonder if E.M.I. knew that they had a branch in Japan.

The instruction leaflet spells out the name Emi-Corder, and judging by the demonstration I was given in the shop, its claim regarding wow and flutter and frequency response are perfectly justified. The price asked for this machine was \$56.00 retail, approximately £20—but with U.K. import duty (which I believe is 16s. 6d. in the pound?) it rather took the "gilt off the gingerbread", and being the proud owner of a Stuzzi Magnette, which I took with me, I resisted the temptation. Many thanks for a fine magazine.

Yours faithfully

... about taking up Cine

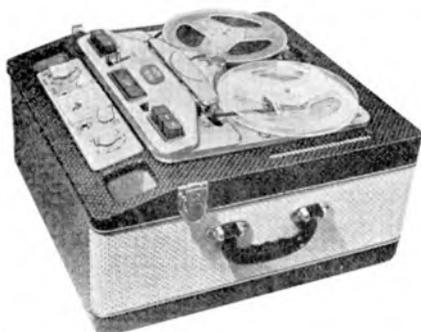
From:—R. Allen, The Eagle Film Unit, 7a Grand Avenue, West Worthing.

Dear Sir: While normally full of praises for your magazine, I feel I really must protest about the article on pp. 254-5 of the June issue "About Taking up Cine" in that it completely omitted mention of the 9.5 mm. film gauge. I use this gauge myself and quite honestly consider its omission unjustifiable as without doubt excellent results can—and are—obtained with it. The actual definitional quality is virtually as good as 16 mm., the frame size being about 15 per cent. smaller than that of 16 mm. Much high quality precision equipment is available from the precision Pathe-Webo "M" Special at £180 less lenses down to the humble but efficient Pathe "Prince" at £17 17s. including f/2.5 Colotar lens. On the same basis as your comparisons, 9.5 mm. cameras, with single lens, cost about £12-15 s/h and about £50 new with high quality lens and refinements; 9.5 mm. projectors can be had for as little as £6 19s. 6d. new (Pathe "Ace" handturned) but an average new price is about £40 (Specto), with a high quality silent projector (Europ) at £60. The Peterson mag. sound attachment costs nearly £70 new and magnetic sound attachments can be had for about £40. No optical sound projectors are at present available new, but a good s/h one can be had for £40-45 ("Son"). Film: 50' (2 min.) b and w 19s. 11d. per roll, 50' Pathe Color 35s. 8d.

Yours faithfully

EQUIPMENT REVIEWED

★
**REPS
 PORTABLE
 TAPE RECORDER
 TYPE R.40**
 ★



Manufacturer's Specification

Mains Voltage: 200-250 volts A.C., 50 c/s. Export model 100-120 volts, 60 c/s. **Level Indicator:** meter. Collaro Mk IV deck. **Position Indicator:** 3-digit counter. **Tape speeds:** 15, 7½, 3½ i/s. **Frequency Response:** 15 i/s, 35-20,000 c/s; 7½ i/s, 40-15,000 c/s, 3½ i/s, 50-8,000 c/s, all ± 3dB. **Recording Sense:** Standard half track. **Signal to Noise Ratio:** 47dB unweighted @ 7½ i/s. **Outputs:** 12 watts peak @ 15 ohms, and 0.5 volts Cathode Follower. **Inputs:** microphone 0.4 mV to 60mV @ 2.2 ohms; radio 60mV to 2 volts @ 0.5 megohms. Bass and treble tone controls. **Size:** 16½ × 16 × 9½ ins. **Weight:** 44 lbs. **Price:** £73 10s., including tape, Acos 39/1 microphone and stand, and radio lead.

Manufactured by **Reps (Tape Recorders) Ltd.**, 118 Park Road North, South Acton, London, W.3.

THE REPS R40 recorder is not a mass-produced machine, indeed each one is virtually hand made and individually adjusted for optimum mechanical and electrical performance. For instance, all rotating parts in the Collaro deck are reground to very tight tolerances to reduce wow and flutter to the lowest possible level, special greasing and lubrication are used which give a sweet touch to the controls, and great care has obviously been taken in the playback equalisation, which together with the wow and flutter performance, and signal/noise ratio, reach professional standards.

Introducing the "fluttergram"

Wow and flutter come first on our list of performance criteria, and I am going to expand this section slightly to introduce the "fluttergram" which is a pen recording of the instantaneous short term speed variations and gives much more information than a simple flutter bridge reading. Also it allows analysis of the causes of the wow and flutter in any given machine. The usual total RMS reading is also given with each graph.

The pen recordings of fig. 1 cover time intervals of one second, and were taken at different times during the replay of a 15 i/s 3 Kc/s recording. The difference is due to the fact that small cyclical variations of speed may be out of phase on playback, so that they cancel as in A, or in phase, so that they add together as in B. The actual speed variation is half that shown in B. It is unusual to get such a clear recording of this effect, as it is generally obscured by other sources of wow and flutter in the drive mechanism, and by tape flutter due to the elastic nature of the tape base. The culprit in this case is probably the rubber-tyred idler pulley which couples the stepped motor shaft to the capstan flywheel, and the very clearness of the demonstration is a tribute to the work done in

eliminating wow from the capstan and flywheel, and flutter from the motor pulley. The frequency of the cyclical variation is approximately 20 c/s at 15 i/s, and, as will be seen from figs. 2 and 3, falls to 10 c/s at 7½ i/s, and 5 c/s at 3½ i/s.

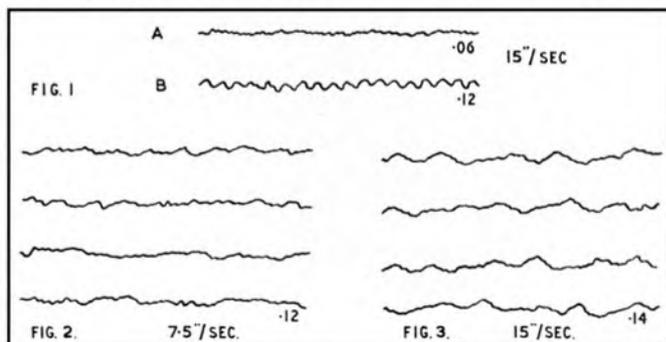
Excellent wow and flutter figures

At the lower speeds the wavelength of the recorded disturbance on the tape becomes only a fraction of an inch, and the cancellation takes place from cycle to cycle so that the RMS readings are steadier, and do not show the almost complete sustained cancellation which is so easily obtained at the higher speed. In case this should be thought to be a criticism let me underline the fact that the mean RMS wow and flutter readings for the three speeds are 0.1 %, 0.12 %, and 0.14 % which are excellent by any standards, and are quite undetectable musically.

C.C.I.R. test tapes having surface induction characteristics of 35 microseconds, 100 microseconds, and 200 microseconds, were used to measure the playback only responses of fig. 4. The solid line curves are with the bass tone control full on, and the treble control at 0, and the dotted curves show the effect of the tone controls at the 7½ i/s speed. It will be seen that the most level response from the C.C.I.R. tape at this speed is obtained with the treble tone control at +1. I should also explain that all these responses were taken from the external L/S jack rather than the low level line output jack.

The line output jack

This was because I soon found that the response and level from the line jack varied with the loading of the power amplifier, the reason being that the line jack is connected to a point within the feedback loop, and the amount of feedback depends on the L/S load. This trouble could be cured by arranging for a 15 ohm load resistor to bridge the secondary of the output transformer whenever the L/S is switched off, or the external load unplugged. At present, a bass rise of 5dB occurs at 60 c/s if the line jack is used with the L/S off. The result of this bass peak is to give a pessimistic signal to noise— or rather signal to hum—ratio of -35dB on test tape level,



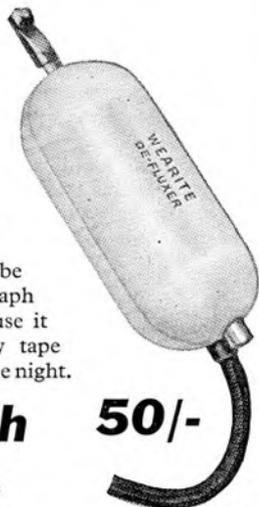
High speed pen recordings of a one second 15 i/s tape of 3 Kc/s tone give useful indications of speed fluctuations.

or 47dB below theoretical peak recording level. When tested from the L/S jack the figures were -41dB, and -53dB respectively. As the playback response is level at 50 c/s under these conditions, the 53dB below peak is the true signal to noise ratio, providing of course that a level +12dB on test tape level can be recorded with negligible distortion.

Recording tests were next carried out at 7½ i/s, and it was found that the test tape level of 10 lines per sq. cm. at 1 Kc/s, was recorded at 8 on the recording level meter, i.e. on the lower edge of the red segment. Full scale, or 10 on the meter,

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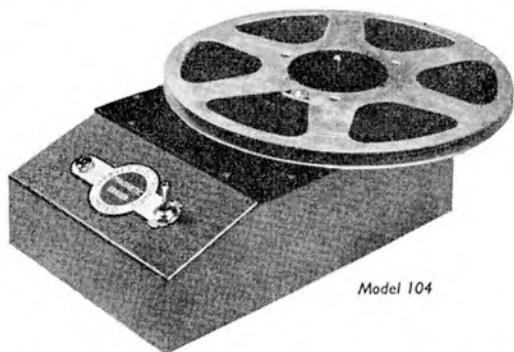
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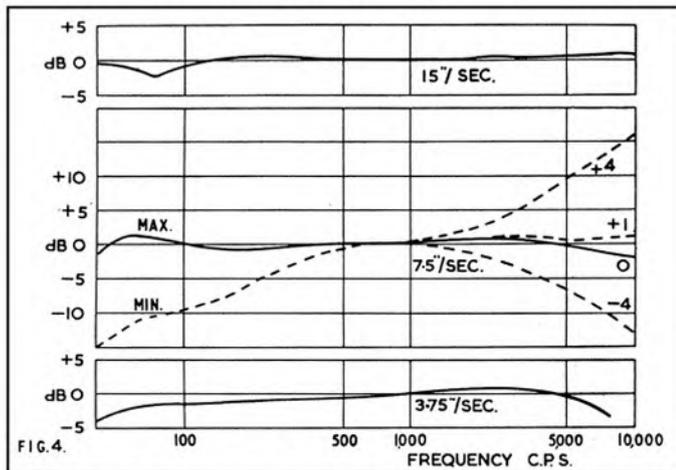


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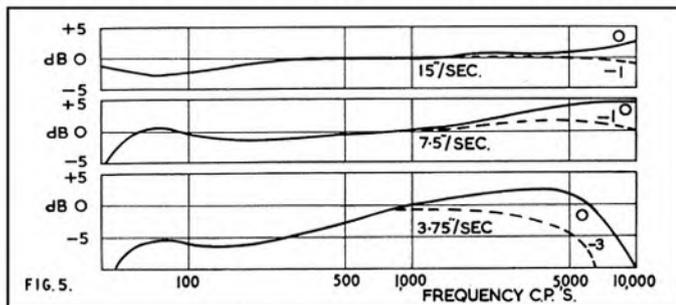
recorded a level only 6dB above test tape level, and the input had to be increased by a further 6dB to record true peak recording level. This recording was completely clean, showing no visible distortion on a C.R.T., and confirms the peak signal to noise ratio as 53dB. Programme tests with the meter kicking only occasionally into the red were slightly under-recorded, which shows that the electrical and mechanical



● Frequency response curves—playback only

dynamics of the meter allow it to indicate peaks to an accuracy of 2 or 3dB, and that the internal pre-set should be readjusted so that test tape level is recorded at a meter reading of 5, or mid-scale. Under these conditions, full-scale would truly indicate peak recording level, and occasional kicks into the red segment would give a fully recorded tape.

Record Play frequency runs were next made at the three speeds, and the responses with the tone controls out of action are shown by the solid line curves of fig. 5. This indicates that



● Record/Replay frequency response

pre-emphasis at 15 i/s is almost exactly to the C.C.I.R. 35 microsecond characteristic, and that, with the tape sample provided, a slight over-correction of the high frequency pre-emphasis occurs at the two lower tape speeds. At this point we have to abandon professional review standards, as it is not practicable in a machine in this price range to provide separate recording equalisers for each speed, which are adjustable for different samples of tape. A compromise pre-emphasis must be adopted, and in the interest of signal to noise ratio it is better to err on the side of slight over pre-emphasis than the other way round. The dotted curves show that the overall Record/Play responses can be made sensibly level by judicious use of the treble tone control.

Using a White Noise tape

The acoustic response of the loudspeaker and cabinet was next tested by loading the machine with a White Noise test tape, and measuring the acoustic output on each of the 25 noise bands on a calibrated microphone. The tone controls were set to

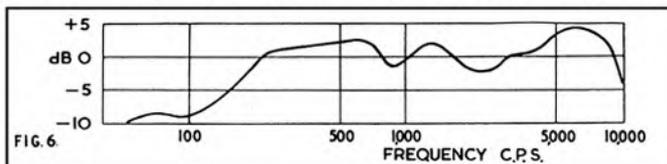
give a level electrical response. Fig. 6 shows the response to be level within ± 4 dB from 150 c/s to 10,000 c/s with the usual fall in bass response due to the small cabinet. The response sounds smooth and well balanced, and as the cone resonance is about 60 c/s one gets the impression of a much greater bass response than that revealed by the measurements. The lack of cabinet colouration, and the forward facing speaker, allows critical appraisal of recorded quality on location, although only a full range external speaker shows the full capabilities of the recorded.

Steady tone maximum undistorted power output was a little above 4 watts, but a pulsed tone test showed that peaks of a few milliseconds duration reached 8 watts without distortion. This is presumably due to the regulation characteristics of the power supply, and to the fact that the output stage is working in class AB.

The 1 Kc/s noise band gave reference sound level of 10 dynes per sq. cm. at one foot from the L/S fret with a noise voltage across the internal speaker of 0.7 volts RMS, so that the calculated maximum undistorted steady tone level is 105 phons and the output on short duration peaks can be about 108 phons.

Two refinements not mentioned so far are the head demagnetising switch, which operates when the volume control is turned fully anticlockwise, and the superimposing switch which is in the same position on the tone control. Details of these and all the other controls are given in the very comprehensive instruction book supplied with the recorder, which also gives full servicing data and maintenance instructions for the deck.

I found it very refreshing to test a British-made recorder which not only met its specification, but exceeded the claimed



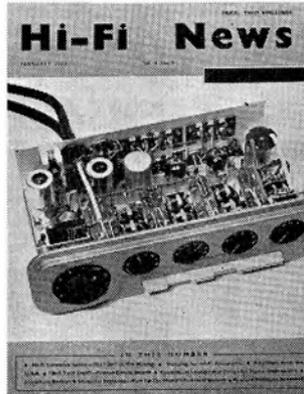
● Acoustic response, using White Noise test tape

performance at almost every point. The design and workmanship is such that the high performance is likely to be maintained for a very long working life, and I feel confident in recommending it to anyone who is looking for a machine with a semi-professional performance at a domestic recorder price.

Manufacturer's Comment

This review was submitted to the manufacturer, who commented as follows:—"The output stage is operated under low load conditions and Bias is higher than class AB. Sine wave test will not give an indication of maximum power output. But under speech or music conditions peak power output is 10-12 watts, before distortion occurs.

This mode of operation was adopted to reduce the size of power supply with consequential reduction in weight and internal heat generated."



Hi-Fi News

JULY NUMBER

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TAPE DECKS ANALYSED

(7) THE COLLARO "STUDIO"

THERE can be few people, interested to any degree in tape recording, who have not seen the Collaro Transcriptor tape deck, used on so many machines. It will be readily understood, then, that the opportunity of reviewing its younger brother, the "Studio" deck, was quickly seized upon. Let it be made plain from the start that although I have criticism, and indeed found faults, in the sample submitted for review, I am convinced that it will prove to be even more popular than its predecessor, and justly so.

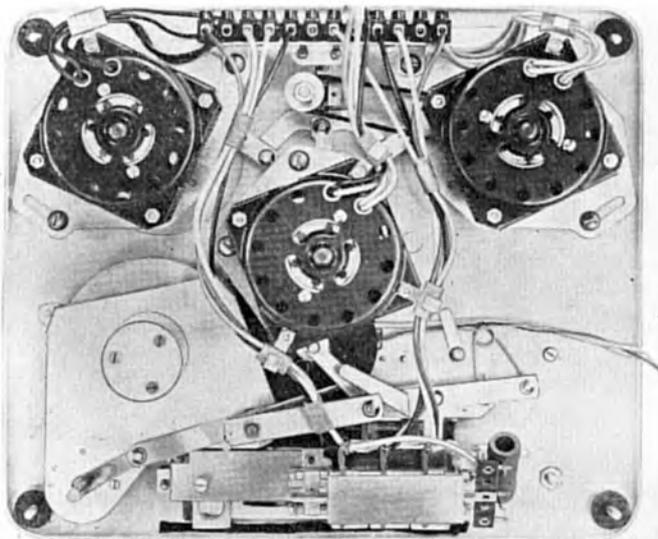
Much I believe, has been learnt by the manufacturers in the hard school of experience, resulting in a unit that is altogether simpler in mechanical design. There is every reason to believe that reliability has thereby been increased. There must be many also, who will commend the use of three motors, asserting that 'One motor—One job' is the only satisfactory way of working.

In fact, this deck is so unlike its predecessor that comparison should be taken no further.

Mention must be made of the very favourable impression created by the clean and attractive appearance. One has only to look in a few dealers' windows, or glance at one or two advertisements elsewhere in this and other issues, to see how suitable this deck is for various cabinet stylings.

5-inch or 7-inch spools

The simplicity of mechanical design has already been noted, closer inspection brings favourable comment on a number of features. The Push-Button interlocking, for example, is simple in the extreme, but so far I have been unable to make it misbehave, and, believe me, I've tried! Ingenious also is the arrangement for moving the tape spool hubs. Briefly, this offers the alternative of a deck using 5½ in. spools all inside the



Showing the disposition of the three motors, the flywheel, and the tag-strip for making all electrical connections to the deck. The top view (in the next column) shows 7-inch spools in use.



dimension of the deck, 12½ in. × 10½ in., or, if more room is available, the assembly can be built up to accommodate 7 in. spools which will, of course, overlap the deck itself by several inches. I was pleased to note that facilities for making such a change are complete, even to a second pulley to alter the ratio of the three-digit counter.

Fitting a third head

Full marks must also be given for the provision of facilities for the fitting of a third head, a point that will appeal particularly to more serious enthusiasts. A slightly different form of pressure pad would be required, but it is understood that these will be readily available, either with a third head as a kit, or separately for those who would prefer to use a head of different manufacture.

Mention of pressure pads, however, brings me to what is, in my estimation, the only black mark in the design. I belong to the school who consider that the natural path of the tape through the sound channel should be snugly against the heads, pressure pads being used, if at all, only to "iron out" the wrinkles, so to speak. With such a design, the tape is lifted clear of the heads for fast winding etc. Collaro's have adopted the opposite course, the straight line of the tape is about 1/16 in. clear of the heads, and the pressure pads are used to take the tape up to the heads for record or playback. In my submission, this places too much reliance on correct adjustment of the pressure pads. A small point perhaps, but worthy of mention against the background of what I consider to be a fine design.

Practical tests

So much for the theory, but how does this unit perform in practice? It is obviously impossible to test a tape deck entirely without building it into a complete recorder, and then amplifier performance becomes a major consideration. Sufficient is already known about the Collaro type of head to warrant it necessary only to connect temporarily to existing apparatus.

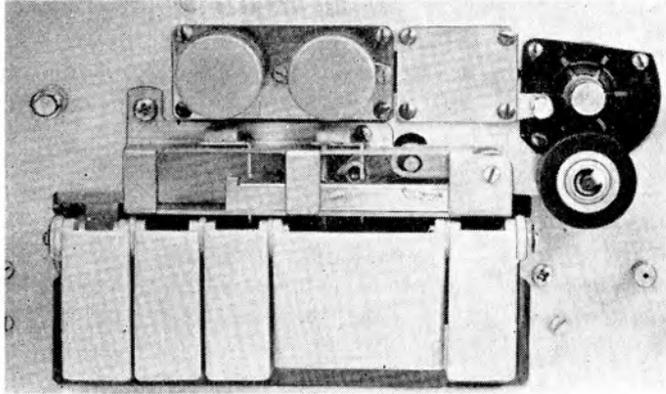
The operation of the push-button controls certainly requires favourable comment, they are light to the touch yet allowing one to "feel" that something is happening. Fast winding is carried out at quite a good speed, braking is efficient but without snatch. It should be noted that "Double Play" tape was handled extremely well. Spooling of tape on "Rewind" tended to be rather untidy, it is felt that modification of the Left hand tape guide to restrain the tape more closely would be an improvement.

Selecting the playing speed is simplicity itself, but the writer was a little dubious over a warning in the Instructions against changing speed whilst running—only to find that an interlock again defeated all my efforts! It would be very pleasant if I were able to end my remarks here, but, alas, that cannot be.

COLLARO STUDIO DECK—(Continued)

Although the three tape speeds on the deck reviewed were extremely close to nominal, the level of wow and flutter was of a higher order than claimed.

It is believed that the main offender was one of the brake mechanisms on the spooling motors. Slight flutter, though not of a very high order, was traced to the idler pulley, and also, more important, the pressure roller could be seen to be running eccentric. If it is remembered that the sole function of a tape



The space for a third head is seen top right.

deck is to transport tape past the heads, these charges must be considered to be serious. It may well be that only slight attention would make all well, indeed some recorder manufacturers give such attention, in varying degrees, to the decks they buy before fitting, but should the onus be on them?

Should this be an isolated example of such a fault, then my remarks will be considered rather harsh. Of one thing I am confident, the production of a deck having the performance of which this design should be capable, will ensure that at least one Tape Deck Manufacturer has a contented Sales Manager.

A. Bartlett Still

Technical Specification:

Medium: $\frac{1}{4}$ in. Plastic or paper base coated tape. **Track Width:** 0.087-0.091 in. **Number of Tracks:** Two. **Record Playback Sense:** Upper Track, Left to Right only. **Number of Motors and Type:** Three. Four pole, Induction, fully screened. **Voltage:** 200-250v, 50 c/s, 110v. 50 c/s and 110v. 60 c/s by change of motors. **Consumption:** Max. 40 watts at 230v. **Operating Speeds:** $1\frac{1}{2}$, $3\frac{1}{2}$ and $7\frac{1}{2}$ i/s. **Number of Heads:** Two. Space provided for the fitting of a monitor head or a stereo playback head. **Record Head Gap:** 0.00025 in. **Record Head Impedance:** 30 K ohms at 10 Kc/s. **Attainable Frequency Response:** 12 Kc/s at $7\frac{1}{2}$ i/s \pm 3dB with Record/Playback equalisation. **Recommended Erase and Bias Frequencies:** 45-60 Kc/s. **Erase Head Impedance:** 200/300 ohms at 45-60 Kc/s. **Erase Voltage:** Approximately 25 volts at 120 mA. **Playing Time:** 120, 60, or 30 minutes per standard 1,200 ft. reed. **Rewind Times:** 65 seconds per 7 in. spool of 1,200 ft. 45 seconds per $5\frac{1}{2}$ in. spool of 850 ft. **Wow and Flutter:** Not greater than 0.15 per cent. at $7\frac{1}{2}$ i/s. **Long Term Speed Stability:** Better than 0.5 per cent. **Dimensions:** $12\frac{1}{2}$ in. \times $10\frac{1}{2}$ in. With $5\frac{1}{2}$ in. spools within the confines of the Plate. With 7 in. spools overlapping Unit Plate. **Depth:** 4 in. below Unit Plate Beaded Edge. **Weight:** 14 lbs. **Price:** £17 10s.

Manufactured by Collaro Ltd., Ripple Works, By-Pass Road, Barking, Essex.

Manufacturer's Comment

Before publication, this report was submitted to the manufacturers, who commented as follows: "The sample deck reviewed is an early model, and subsequent machines incorporate a number of modifications which bring the wow and flutter well within our published limits."

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If history is anything to go by, widely publicising the "Victor" would overwhelm the WyndSOR factory. WyndSOR policy is never to sacrifice quality for quantity and the fact is that there were never enough of the "Victor's" predecessor, the "Viscount", to satisfy the demand. So now is the time for all good enthusiasts to inquire at WyndSOR dealers or to send postcards (clean variety still preferred) to the modestly proud makers for the names of nearest stockists. There is nothing more annoying than hearing a WyndSOR just after buying an ordinary tape recorder.



The WyndSOR "VICTOR" complete with crystal microphone, 1,200 feet of tape, and a spare jackplug, is only 45 guineas

WYNDSOR RECORDING CO. LTD.

(Contractors to H.M. Government)

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