

the TAPE

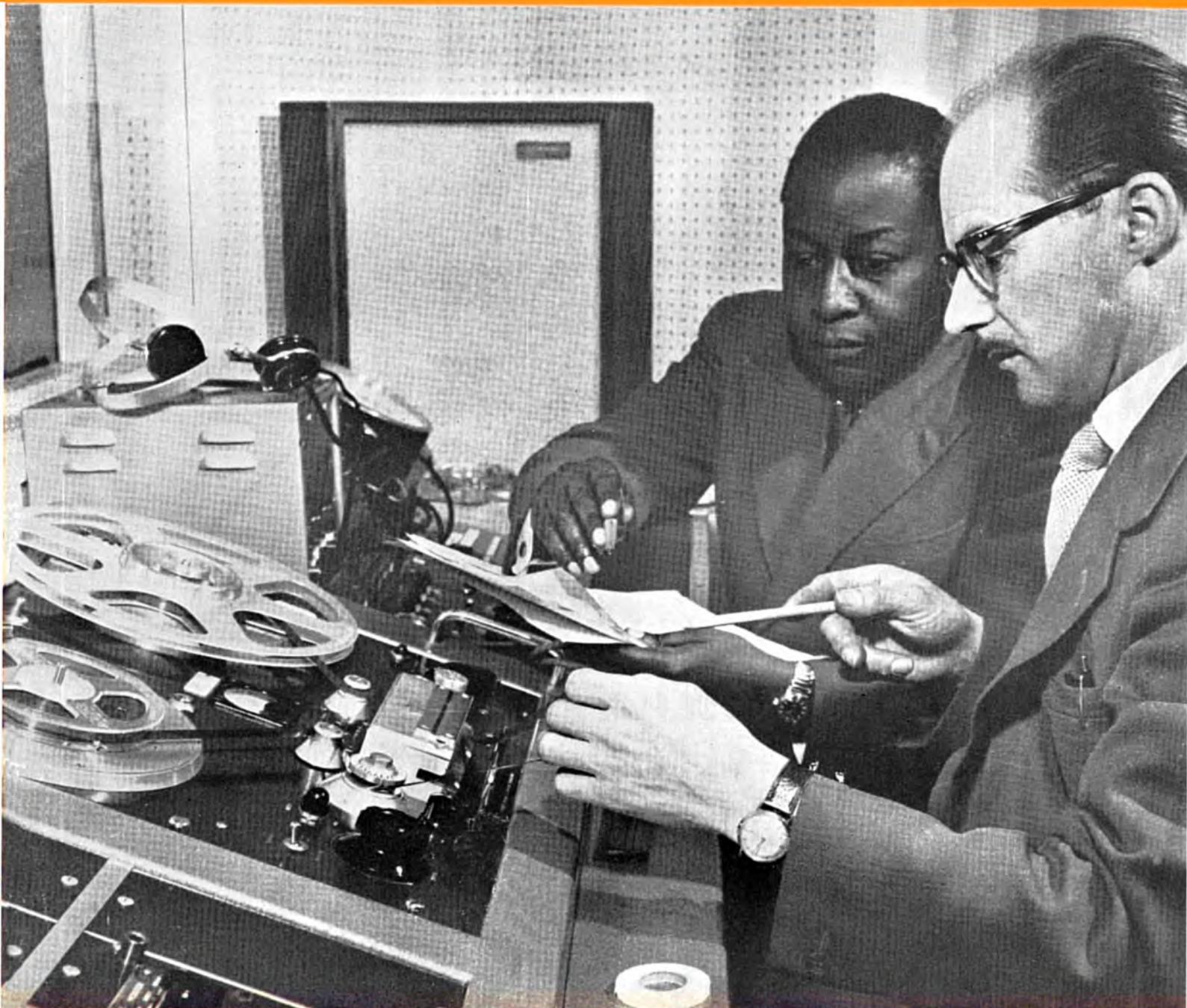
PRICE 1/6

AUGUST 1961

Vol. 3 No. 7

RECORDER

Incorporating Sound & Cine



IN THIS NUMBER

First Survey of Stereo Recorders ● Five Pages of News and Pictures ● Sound & Cine ● Readers' Problems Answered ● Tape Recorder Workbench ● Details of New Products ● Home Recording-Tape Tricks and Endless Loops ● Readers' Letters ● Equipment Reviewed ● Reviews of Tape Records

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"The controls are quickly mastered"

"The appearance of the TK 1 produced universal admiration"

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

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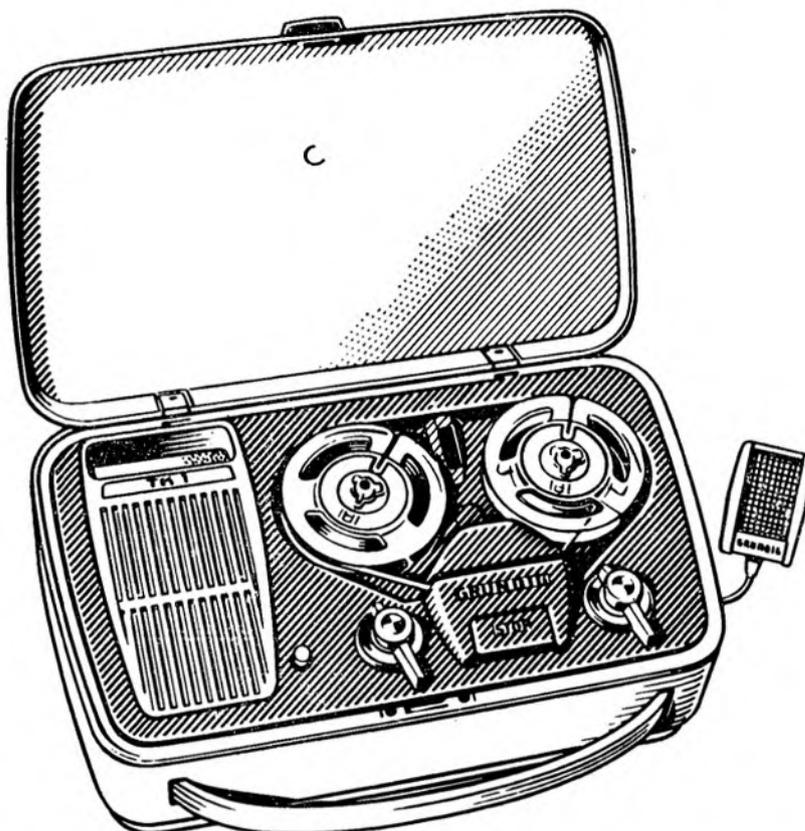
"Summing up therefore, we can say that the Grundig TK 1 makes a first rate collector of sounds for the enthusiast who also possesses a heavy mains machine, and it may also be recommended to anyone who has neither the financial or space resources for a mains job."

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

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

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What the press says about the Grundig TK1.....



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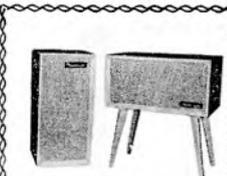


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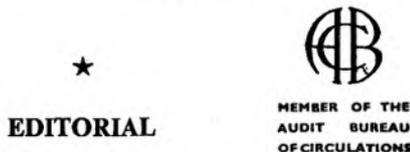
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the TAPE RECORDER

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EDITORIAL

At last, it seems, the tape record is beginning to come into its own. At least two new labels have appeared on the market during the past few weeks, and those dealers who specialise in the sale of tape records report a definite increase in both sales and general interest—and this, it should be noted, is in the middle of what is popularly known as the "Silly Season", when no one is supposed to be interested in anything. As our readers know well, after repeated hammerings at this subject, we hold the very definite view that a domestic tape recorder is basically a musical instrument, apart from its more obvious and self-styled recording facilities. Indeed, as emphasised by current investigations, and by proposals to teach people to find more uses for their instruments, it seems fairly obvious to us that this everyday potentiality has still been too often overlooked.

Perhaps this is largely because the tape record catalogues have been inadequate, or perhaps it is even a result of initial salesmanship having laid too much stress upon the dozen-and-one things that can be done with a recorder—often quite unusual things which must inevitably pall, in ninety-nine cases out of a hundred, when the novelty has worn thin—which it quickly does. For example, though it may be fun to record a two-way telephone conversation (and even very useful at times, particularly when complicated messages are involved), a seven-inch spool of out-of-date snippets—of 'phone calls, cat's meowing, or even of waves breaking on the beach, must have its limitations, in terms of amusement value. But, as many of our readers could testify, a well built-up library of tape records, and even a modestly priced but well-maintained tape recorder, soon take their place as part and parcel of the domestic scene.

The beauty of the tape library is that it is completely flexible and all-embracing. It can be built up from home recordings of almost anything, and it can be topped up with plums from the various tape libraries, according to individual or family tastes. And there is not one inch of the recording medium that cannot be wiped and used again, should it date or pall.

On another page of this number we note a few of the products of the various companies who now market tape records. The catalogues are growing steadily, and they now cover almost every type of music, from the classics to pops, through mood music, background music, opera, ballet and jazz. They take in "effects", courses in salesmanship, and language tuition. It is our earnest recommendation that readers who may not have thought of their recorders as music-players should sample at least one of these tapes, and our examples noted in the short survey have been specially mixed with this recommendation in mind, so as to cover the widest range of choices.

It is now some six years since tape records first appeared on general sale. Originally they were nearly all on seven-inch spools, recorded at 7½ i/s. Today they can be obtained on all spool sizes—even down to 3 inch—and they are recorded at both 7½ and 3¾ i/s. They are also

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available in mono, and stereo, both in half track and quarter track. The two new labels referred to above are both of American origin, but there are well-founded rumours in circulation that even more labels are on the way—this time of British origin; and readers of a more adventurous nature may well find it interesting to study lists of some of the American tapes not yet available over here.

There is no doubt that—as forecast more than five years ago—the biggest obstacle in the way of tape records winning their way to popularity was not their price, but their unusual format. People have slapped discs on to turntables for half a century: it has taken time for them to accept tapes. Now, however, it seems that the tide is turning; and once the demand grows we may be sure that the products will appear to meet it.

COVER PICTURE

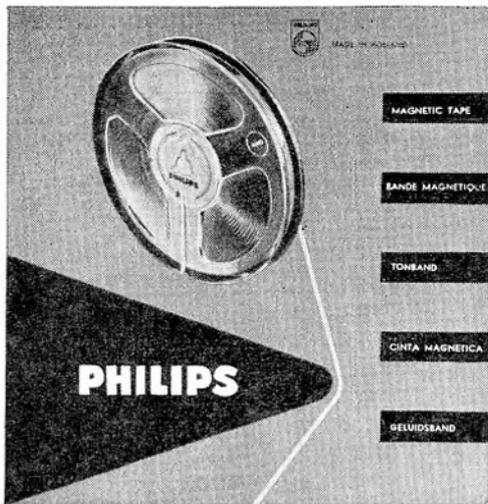
WE are indebted to the Radio Division of the Central Office of Information for our cover picture this month, which shows two members of the staff editing tape for radio transmission in the service for Uganda. The assortment of equipment is particularly interesting—Leevers-Rich recorder, S.G. Brown headphones, Tannoy Chatsworth speaker, Agfa jointing tape and what looks to us very much like an EMI editing block under the operator's hand.

NEXT MONTH

TO say at this stage what is to appear in our September number would be rash; for at the time of writing, there are a number of people on holiday who have still to deliver their copy! However, be sure of some interesting pages of news and pictures—of a Ferrograph modification and a further article in the "Home Recording" series—of reviews which will include the Körting stereo recorder—of "Workbench" and other regular features. And, in the meantime, wherever you may be reading this current number, we wish you a good holiday too!

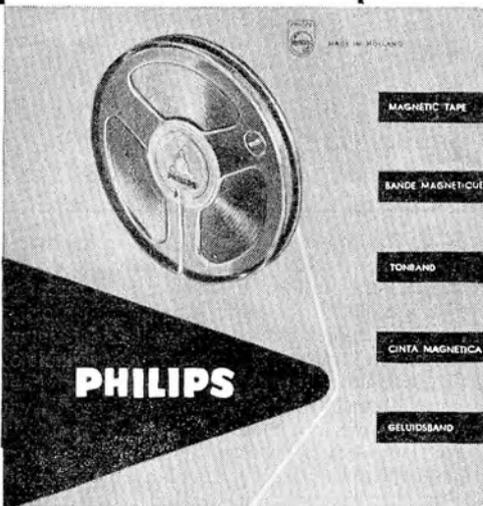
SUBSCRIPTION RATES

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).



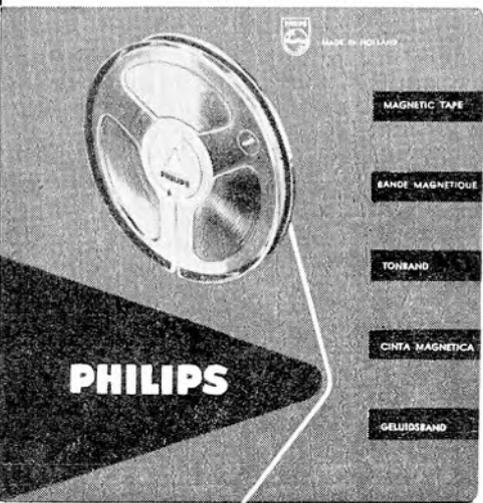
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For standard tapes



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For longplay tapes



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For doubleplay tapes

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HOW OTHERS USE TAPE



Fire eating is only one of the many acts performed on the stage by Robert Atkinson. The story of how he uses a recorder is published below.

RECENTLY a gentleman came into the Editorial office of *The Tape Recorder* saying that he had a story that may be of interest to our readers. He went on to say that he was a magician, fire-eater and escapologist and worked under the stage name of "Roberto". We were just about to tell him that he was in the wrong office, when he said that he used a tape recorder to perfect his act. This of course interested us and soon we found that the story was worth printing in "How others use Tape".

Robert Atkinson first became interested in magic at the early age of six, but due to no other person in his family being interested in his hobby, he had to wait until he found an uncle who knew some tricks and could assist him with his act. However, in the meantime he had been working on the stage as a singer and dancer, but with the ambition to become a magician still uppermost in his mind, he decided that he would change his act. Other interesting arts were taken up including Yogi and thought reading.

He is quite capable of piercing his skin with needles and feeling no pain, and he claims to sleep only 4½ hours a night. His ambition is to perform the Indian rope trick in the middle of a football field, this we were told is the hardest trick to do as the audience is all round the performer.

Since last Christmas he has been using a tape recorder to study audience reaction, as when he is on the stage, concentration is vital, and he never takes any notice of the audience. He has found that his recorder played back in his home after the show, enabled him to make alterations in his act to make it more slick. He has also found that he can hypnotise people by his recorded voice without being present in the room.

Robert Atkinson has certainly found a good use for a tape recorder, if any other reader has any interesting stories, why not let others know about it?

THE British Ophthalmic Tape-Reports organisation, with its exclusively medical Editorial Committee comprising six of the country's leading ophthalmic surgeons, has been established in order that ophthalmic surgeons, and other interested medical personnel, may have immediate advice on tape, recorded at ophthalmic meetings. In addition to this very early abstract of proceedings of outstanding lectures and other transactions, selected surgeons give expert opinions on new instruments which may be demonstrated at the trade exhibitions which usually run concurrently with the congresses.

In effect this service brings to the ophthalmic specialist, who for one reason or another may have been absent from a specific congress in this or any other European country, an informed and detailed account of items of interest at both congress and exhibition.

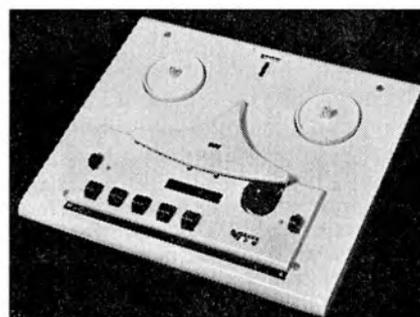
This is a unique service specifically for the ophthalmic surgeon, but, subscription is open to medical personnel and there may well be quite a number of general practitioners, hospitals and other establishments interested in being kept up-to-date on ophthalmic subjects and new instruments, who will avail themselves of this outstanding development.

* * *

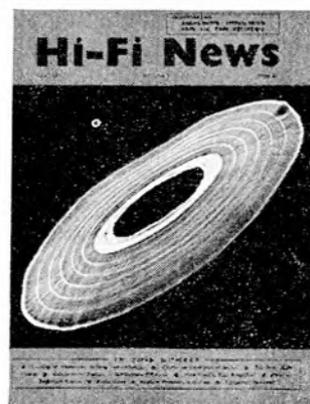
★

PLANET UI
TAPE DECK

★



WE promised in the July edition of the magazine, to supply further details of the Planet U.I tape deck which will be available shortly. A photograph of one of the prototype decks is printed above, but minor alterations may be made before the first models are available. The latest news we have on the deck is that no pressure pads are used to hold the tape against the heads and that a pause control is fitted that can be permanently locked if required. The manufacturers are Planet Projects Ltd., 9a Shrewsbury Road, London, W.2., who will supply readers with further information if required.



AUGUST
NUMBER

★

Contents include:

The Geography of
L.P. Disc Surfaces

Fifty Years of Recording

Readers' Letters

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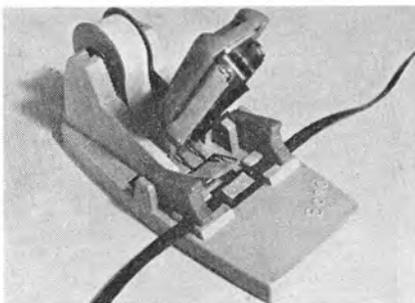
NOW ON SALE

HERE AND THERE AND EVERYWHERE



SINCE January, Curry's Ltd. have been sponsoring a radio show on Radio Luxembourg. Aimed at encouraging non-professional talent and tape recording, the show—"Make a Tape" is a nation-wide competition for the best two-and-a-half minute tape recording of any type. Over five thousand tapes have been sent in and nearly two million listeners hear the programme each week.

The winners of the second series were two Birmingham Grammar School boys, Ken Hardwick and Colin Buckley, who call themselves "The Corvettes", with an instrumental recording of "Mr. Sandman". Both interested in a career in sound engineering, they have both given many performances in social clubs and for charities in the Midlands. Mr. Harold Hardwick, an uncle of one of the boys, recorded their winning tape and also built them a special ten-speaker amplifier for their club and charity concerts. The recording itself was made using a Bradmatic Tape Recorder and the electric guitars were plugged direct into the recorder.



**Bond
Splicer**

IF you have read the Hi-Fi Year Book editorial on magnetic tape and taken the advice it offered of "Buy it—Cut it and Use it", then you will be interested in the Bond Splicer which was first shown at this year's Audio Festival and Fair. Moulded in red and grey polystyrene, its smart appearance will enhance any enthusiast's workshop and will end the occasional search for razor blades or non-magnetic scissors under piles of tape.

The splicer consists of a base plate with a splicing tape dispenser mounted on the rear. Spring loaded retaining arms fitted with sponge rubber pads firmly hold the tape in position whilst a cut of 45° is made.

The cutting head is made up of two sets of blade, one for cutting the tape diagonally, and the other for trimming. Indicators clearly show which operation the head is set for, and a positive action ensures that the blades are properly in position.

To repair a broken tape is simplicity itself, both ends of the tape should overlap and the retaining arms brought down to grip the tape. The cutting head should then be set to CUT, pressed down until a "click" is heard, and then released. The excess tape should then be removed and the splicing tape (fed from underneath the splicer) placed across the joint. Reset the cutting head to TRIM, depress and the splice is complete. The trimming blades remove a small bow wave from the top and bottom of the tape to ensure that the joint does not foul the guides and heads.

After making 40 or 50 joints with this splicer it was found that joints could be made three times faster than with the normal splicers available in this country. The splices are perfect, noiseless, and strong, and even with double play tape the arms firmly held the tape in position. The only difficulty encountered was the occasional loss of the splicing tape through the aperture in the base. This, however, could be easily remedied.

The Bond splicer is supplied complete with 150 feet of splicing tape for £1 12s. 6d. from the manufacturers Ciné Accessories (Brighton) Ltd., 15 Bond Street, Brighton. A.J.L.

Multimusic Sell Reflectograph to Pamphonic

Multimusic Limited, a wholly owned subsidiary of Multicore Solders Limited, have announced that it has disposed of all its interests in Reflectograph Tape Recorders to Pamphonic Reproducers Limited, a Pye Group Company. After 30th June Pamphonic will be responsible for all service of Reflectograph recorders and service enquiries should be addressed to Pamphonic Reproducers Limited, Westmoreland Road, Queensbury, London, N.W.9. Telephone COLindale 7131.

Other enquiries from the trade and public concerning Reflectograph recorders should now be directed to Pamphonic Reproducers Limited at 17 Stratton Street, London, W.1. Telephone GROsvenor 1926.

Simon SP4 used for Public Address

AN official of the Pfizer Group Mobile Vaccination Unit has reported that a Simon SP4 recorder is used for broadcasting appeals to people throughout the country to be vaccinated against poliomyelitis.

This mobile unit—the largest in Europe—was built by the Folkestone Motor Company Ltd. to the order of the Pfizer Group, who placed it freely at the disposal of Medical Officers of Health in Great Britain. The unit has been used exclusively for poliomyelitis vaccination and 100,000 people have been vaccinated in the unit during the first twelve months of its working life. At Ipswich, for example 13,000 passed through the unit in six days, during the March outbreak of polio in that town.

The unit has done remarkable work, as the figures quoted above will show, and the group has announced that some of the credit belongs to the reliability and clarity of the Simon SP4 used as a public address system for publicising local campaigns.

Can any reader help?

Mr. W. F. Madden, of 170 Daiglen Drive, South Ockendon, Romford, Essex, would like to hear from an American with a tape recorder who is also a keen Perry Como fan.

HERE AND THERE AND EVERYWHERE

Esoteric Productions Ltd., announce that they have completed arrangements with Recotape, Protone, Livingston Audio Products and Vox Productions, for the release of those companies' pre-recorded tapes in both mono and stereo. These well-known catalogues include classical, semi-classical and pops.

Artists to be featured in these issues include The Vienna State Opera Orchestra, Bamberg Symphony Orchestra, Suid West German Studio Orchestra, The Florence May Festival Orchestra, The Zimble Sinfonietta, The Oberlin College Choir, The Mannerheim National Symphony Orchestra, The Nieuw Deutschermeister Band, The Vienna Konzertschrammeln. On the Popular side issues will include the Lenny Herman Orchestra. The Fred Martin Orchestra, Bill Thompson, Wurlitzer Organist Paul Barbarin and his New Orleans Jazz, Wilbur de Paris and his New Orleans Jazz, Josh White, Bob Meilke and his Bear Cats and the New York Jazz Quartet. All titles will be made available in Mono and 2-track stereo at 3½ and 7½ i/s.

* * *

Tape/Slide Production

MR. H. FAIRBROTHER has advised us that he is working on a tape/slide production to be called "Prince of Hereward". It was written by the Warwickshire poet Mr. R. Gaveston Knight and is based on the four golden deeds of a prince to win his father's favour. Background music will be used together with sound effects and the commentary will be provided by the author and his son.

Colour transparencies will illustrate the story which will be projected by a new system called Duorama. This entails two projectors mounted side by side throwing the picture on to a double screen. Further details will be announced at a later date.

* * *



"Have you any curves . . . I mean any response-er,-when-is-your-technical-man-coming-back?"



Regular readers of "The Tape Recorder" will no doubt, recognise the gentleman in the dentist's chair. He appears to have either very bad teeth or enjoys listening to the music supplied via the Butoba portable recorder. Although after looking at last month's cover picture we think the latter is probably the reason.

* * *

Wright and Weaire change of address

WE have been advised that as from June 26th last, the London offices, showrooms and service department of the Ferrograph Company Ltd. (incorporating The British Ferrograph Recorder Company Ltd., Rendar Instruments Ltd., and Wright and Weaire) will be moved from 88 Horseferry Road, London, S.W.1, where they have been temporarily located, to their permanent address at 84 Blackfriars Road, London, S.E.1. Telephone WATERloo 1981.

* * *

Saga and Concertapes

SAGA Records Ltd., producers of Saga Tape Records, announce that they have gained exclusive rights to the U.S. label Concertapes Inc.; the only recording company run by a group of virtuoso musicians, (the Fine Arts Quartet), combining Hi-Fi and music.

Famous names range from Dick Schory and Red Nicholls, to Leonard Sorkin and Reginald Kell. Showtunes, jazz and dance albums, folk songs, percussion orgies and sound effects are in the catalogue as well as both orchestral selections and chamber music. The Fine Arts Quartet is the famous group who have fooled American audiences by miming their playing halfway through a performance while the unsuspecting public continued to listen to a completely realistic pre-recording!

Saga will issue Tape Records from 32s. 6d. Mono to 84s. Stereo, and Disc Records from 29s. 6d. to 39s. 6d.

NEWS AND PICTURES FROM THE CLUBS

SEVEN members of the **South-west London Tape Recording Society** hired a Mini-bus and went on a Sunday outing early in June. The first stop was at London Airport where they recorded and filmed air traffic. The use of a cine camera is new to the Society, but it is hoped to produce a short film of the trip. Leaving London Airport, the party continued to Henley where



some dined at a local hotel whilst others picnicked by the river. A trip up the river followed and although very few "sounds" were heard, there was plenty to film. On the homeward journey crowds lined the streets cheering and waving flags, for one moment the club thought they were famous, but it was due to President Kennedy driving down the same road on the journey from London Airport to Belgravia.

A LETTER has been sent by the **Coventry Tape Recording Club** to Councillor Lakin, Head of the International Friendship Committee of the Coventry City Council, offering assistance in furthering the links with overseas towns. It is hoped to record civic events and distribute the tapes to towns and cities joining the link and also receive similar tapes from them. Several members agreed to take part in such a scheme if it is arranged. Many interesting meetings have been arranged during the summer months and details can be obtained from *Mr. L. S. Day, 41 Moseley Avenue, Coventry.*

MANCETTER Darby and Joan Club have contacted the **Hinckley Tape Recording Club** requesting that they have a stall at the Garden Fete to be held during July. Members quickly volunteered and it was decided to have a "6d. to record your voice" stand. Proceeds will be given to the old folks of Mancetter.

Mr. Webb of Morayshire, Scotland has contacted the club stating that he had recorded a local group last Easter and that he would like to donate the tape to the club for their Library. The secretary replied that it would be very acceptable and members are anxiously waiting to hear the tape. Details of Club activities can be obtained from *K. Smith, 117 Wykin Lane, Hinkley.*

THE main item on the programme of the **West Middlesex Tape Recording Club** was a discussion on the type of equipment that should be purchased with club funds. The consensus of

opinion was that they should purchase a battery portable tape recorder and if money was still available, a kit of parts for an electronic mixer. There appeared to be no lack of volunteers to assemble the parts. Later in the meeting Mr. Saunders played over his version of "Apache Silver" in which he had used every trick in the book, dubbing, splicing, editing, mixing and even adding echo after recording.

The club sent two representatives to the Annual Congress and General Meeting of the Federation of British Tape Recording Club recently held at the Russell Hotel. In the ensuing election of officers, Mr. F. Gazeley, one of the founders of the club, and Mr. K. Phipps were elected to serve on the committee. This gives the club the maximum number of members allowed by the constitution on the committee of the Federation. Details of future meetings can be obtained from *Mr. H. E. Saunders, 20 Nightingale Road, Hampton, Middlesex.*

WALTHAMSTOW and District Tape Recording Society again supported a big charity event in Walthamstow on Saturday June 10th. The League of Friends of the Connaught Hospital held a "Midsummer Fayre" in the Comeley Gardens and the Walthamstow enthusiasts, continuing their connection with the League, operated the P.A. equipment and a competition. Using a member's Dormobile van, two recorders and a pair of loudspeakers made the touting for competitors easy. Business was brisk and the funds raised brought a happy response from the officials of the League. Apparently the decorated van so impressed another fête organiser, that the club have already been approached to run a similar event later this year. Correspondence should be sent to the Secretary, *K. Perks, 9 Third Avenue, Walthamstow, London, E.17.*

MR. RALPH WEST visited the **Friern Barnet and District Tape Recording Club** to give his second talk on "Loudspeakers". However, the equipment he took with him to feed the loudspeakers caused much attention and the evening was spent demonstrating stereo recordings made on the E.M.I., TR 52. Members have now been able to see the film made by Mrs. Betty Strom of Hawaii and are now awaiting some slides with a tape commentary. Mrs. Strom is visiting this country later this year and will visit the club giving more details of recording in America. Further details of meetings arranged for the future can be obtained from the secretary *Mr. A. Andrews, 13 Hartland Road, Friern Barnet, London, N.11.*

RUGBY Amateur Tape Recording Society celebrated their third birthday on June 2nd and an iced cake was provided by Mr. N. Woerner. The Annual General Meeting followed and the President gave his report. He stated that during the past year fewer members had enrolled but the club had strengthened its position in the area and was now recognised as a group of enthusiasts willing to help other groups and charitable organisations. The five committee members were all elected for another year of office. Mrs. W. Bannister then cut the cake and the remainder was given to the Matron of the Hospital of St. Cross for the children's ward. Further details can be obtained from *Mrs. V. Tilcock, 53 Fleet Crescent, Rugby.*

THE meeting on June 15 of the **Cotswold Tape Recording Society** consisted of an outside location session, using battery recorders: two Fi-Cords, a Stuzzi and a Phonotrix. After meeting in Cheltenham, members proceeded by cars to Oakridge Lynch, and assembled at the hon. secretary's "local"—the Butcher's Arms. Here they divided into four groups: one remained in Oakridge, one went on to Water Lane, and two to

NEWS AND PICTURES FROM THE CLUBS

Bisley. The Oakridge party went off to interview a local farmer and his family, before chatting with the company assembled at the Butcher's Arms; the Bisley parties penetrated the historic Bear Inn—formerly the Court House when Bisley was the principal centre in this part of the world: it is now a village of great beauty and remoteness—and the New Inn, where the landlord introduced his guests, with the result that some excellent recordings were made of the splendid Cotswold voices still to be found in these parts. The fourth party visited the Crown Inn at Water Lane where, in search of local material, they found themselves talking to—a Welshman!

Later the members returned to the Butcher's Arms, where the hon. secretary Peter Turner, had set up a mains recorder for the replay of the tapes. They were joined by several of those who had been interviewed elsewhere, and the company at the Butcher's joined in the fun with gusto. It is hoped that parts of the hilarious recordings made during the evening may be included in a future edition of the Hospitals' Tape Service.

Further details from: *Peter D. Turner, Cave Cottage, Oakridge Lynch, Stroud, Glos.*

IN the "Curry's Make a Tape Competition," open to the whole country, the Secretary of the Aberystwyth Tape Recording Club was successful in having one of the tapes he had recorded played on Radio Luxemburg. The recording was of the Aberystwyth University Male Choir singing *Laudamus* (Bryn Calfarria).

The Club was formed in 1959 and since then have made recordings of many historical and musical and other events in the town which will in time be valuable documentary records. Many musical programmes have been given at the General Hospital on request from the patients.

Recently Gareth Jenkins and Roy James decided to record the last communion service to be held at the small Nantymoch Chapel which lies in the valley which is shortly to be flooded by the Central Electricity Board in connection with the Rheidol Electricity scheme. In remote areas such as this the problem was to overcome the absence of electricity. However members overcame the difficulty by using a rotary convertor with the recorder. An excellent tape recording was made and will no doubt be the only record of this service.

The Club has a number of enthusiastic members and would welcome new members who have tape recorders.

THE York Tape Recording Society has again moved its meeting place to the studio of Mr. H. Bridge, a professional photographer. The facilities available enable the club to produce better quality tape programmes than previously, due to the sound-proofing material fitted in the studio. A tape has been received from a person in Swansea whose son is a patient in Kirbymoorside, it is hoped to keep taped messages flowing from Swansea to York. New members are welcome to attend any club evening. Further information can be obtained by contacting the secretary. *Mr. H. C. Edwards, 45 Thoresby Road, Acomb, York.*

NOTTINGHAM Co-operative Amateur Recording Club have announced the dates of meeting for the current season. They are August 10th and 24th, September 7th and 21st and October 5th and 19th. The present Secretary is *Mr. B. L. Harris, 40 Chetwin Road, Bilborough Estate, Nottingham.*

RECENTLY the Leamington and Warwick Amateur Tape Recording Society received a tape from the Bath Sound Recording Society and after listening to the tape a return tape was made. Members gave a brief outline of their interests in recording and the type of machine they use, and a copy of this tape



The photograph above shows the Phoenix Drama and Tape Recording Society's stand at the Royal Windsor Horse Show. As a result two new members enrolled and many more people signed the visitors' book and showed much interest. Two members equipped with Grundig "Cubs" conducted off-the-cuff interviews with personalities who hadn't the time to visit the stand. Some of these will be used in the documentary "The Windsor Story." So good were all the recordings, complete with the Musical Ride of the Household Cavalry and the Musical Drive of the King's Troop, Royal Horse Artillery, that the Society has decided to make another documentary of the show itself, with linking narrative superimposed.

will be sent to three new members of the Leamington Club who are unable to attend the meeting. They are Mr. P. Greaves, Mr. S. Mayes and Mr. W. Roberts, three patients in the Royal Midland Counties Home, Tachbrook Road, Leamington, who are doing so much for the other patients in the ward. The club will close for the month of August, but will re-open on the 6th September. Details may be obtained from the secretary. *Miss E. Jones, 26 Hampton Street, Leamington Spa.*

THE Luton Tape Recording Society held its Annual General Meeting on the 23rd May, every member attending. The agenda took two and a half hours to get through and Mr. B. Cooper recorded the whole of the proceedings. In the near future the club hope to present a fortnightly programme on tape for the blind of Luton. Items will be read from local newspapers by various members and other interesting material will be included. Any reader interested in joining this club should contact the Secretary. *Mr. J. Conway, 12 Whipperley Ring, Luton, Bedfordshire.*

New Clubs

MR. E. G. BATES, 4 East Drive, Carshalton Beeches, Surrey, would like to hear from any person interested in forming a club in that area.

MR. F. RIMMER, 21 Mount Pleasant, Sutton-in-Ashfield, Nottingham has been appointed representative of the Association of South African Tape Recording Clubs. Full details of all club activities may be obtained from him at the above address.

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FIELD TRIAL OF THE PHILIPS EL3585

PORTABLE recorders, since they were first introduced in this country, have steadily grown in popularity, until today there are over 11 manufacturers producing models, and new machines are appearing in the shops every week. These range from clockwork-driven machines to mains battery machines with spool sizes of 3 to 7 inches and outputs from a few milliwatts to 2 watts. If the subject is studied closely, it would appear that the man in the street requires a portable recorder either for taking music into the country or for bringing sound effects home. With this thought in mind, manufacturers have produced machines of varying speeds and large and small speakers. You pay your money and take your choice from the growing numbers available today.

A Good and Compact Portable

Following this thought, many readers must have wondered, with so many of the large manufacturers joining the portable rush, why Philips have never produced a portable machine. Well, now they have their question answered: it is here—the EL3585, a compact, efficient machine, which was offered to *The Tape Recorder* for a *Field Trial* on the same day as it was announced.

It arrived at the office a week before the magazine was due to go to press and was then taken out for a few days; and this is the report of the test.

After a quick glance through the instruction book to find out the *do's* and *don'ts*, it was taken on to an underground train during the rush hour. To many of the regulars on the train it must have looked like an office worker returning home after listening to the Test Match on his portable radio, and after the first quick glance no one took any further notice of it. With the microphone concealed in a newspaper and a quick movement of the hands on the record and safety interlock button, recordings were made of the "rat-a-tat-tat" of the wheels and the occasional sneeze of a hay-fever victim. Of course, no

attempt was made to play back the tape in the train, for the object of the exercise was to remain inconspicuous, but when played back in the peace and quiet of a lounge during the evening it was immediately realised what a faithful reproduction had been obtained.

The comprehensive instruction booklet, which deals with every detail fully, was then read from cover to cover, and the machine tested before further attempts were made at recording. The EL3585 has a recording speed of $1\frac{3}{4}$ i/s with a claimed frequency response of 150 to 5,500 c/s. Three-inch spools are fitted *on top of the recorder*, but 4-inch spools can be fitted by the removal of the plastic cover. A recording and battery level meter is fitted on the front of the recorder, adjacent to the volume control and this enables the operator to check the state of the batteries at a quick glance, and, when recording, to ascertain the correct level.

The cardioid microphone is fitted into the case and can quickly be removed by lifting a spring-loaded clip. The machine is supplied in a grey and cream bakelite case with the microphone in the same colour. One very useful feature of the machine is a safety interlock button, which prevents the machine being switched to record by mistake. Two hands must be used to put the recorder into the record position.

With the machine slung over the shoulder and an invitation to visit the Dagenham Town Show, it was decided to give the EL3585 a full trial. It was first tried on what is possibly the most severe test it will ever encounter—the "caterpillar"—for, as most readers will know, this contraption hurtles around in a circle at a stomach-turning pace, rising and falling with regular rapidity. As it happened the machine finished up in a better state than the operator, and the screams and groans will live on for many months to come. If anything was a test

(continued overleaf)



The photograph on the right shows the equipment required to operate one television camera. All this equipment was home-made by J. Tanner of Bristol.



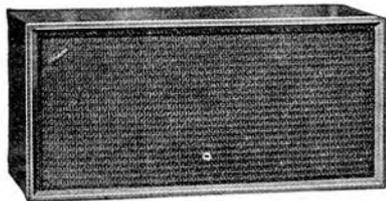
GET THE BEST

from your **TAPE RECORDER**

with the Wharfedale PST/8 External Speaker. A speaker that brings out the true-to-recording sound so hard to get with the limited space allocated to the speaker of a Tape Recorder. Much depends on the speaker; and the Wharfedale PST/8—due to its unique design using expanded polystyrene panels—widens response and reduces resonance, often to a remarkable degree.

The cabinet measures 24 in. × 12 in. × 12 in., and 8 in. foam surround units to match the enclosure acoustically are available in a range of impedance to suit all machines.

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Cabinet only
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PHILIPS EL3585 FIELD TRIAL — (continued)

for wow, this was it, and it was noticeable. But perhaps it was an unfair test for any recorder. The machine, when used for recording and replaying in a car, performed admirably with no apparent wow. On touring the fair, with the barkers and with incessant music at every few yards, every note was faithfully recorded, including a few well-chosen words from the inevitable parrot.

Finally, a visit to the British Amateur Television Club's stand in a large marquee proved the most interesting. One of the organisers saw this machine working and invited the operator to give a demonstration on closed-circuit television. This was the test! How would it measure up? With two home-built cameras focussed on the machine, and over 10 monitoring sets spread throughout the tent, interviews were recorded and played back.

When these were replayed to the audience, it was found unnecessary to use the sound amplification on hand, because the output from the 4-inch loudspeaker filled the tent! Apart from impressing the audience, it also impressed some of the club members—and they certainly know their electronics. On a test they were most impressed with the recorded music on tape, stating that in their opinion the frequency response exceeded the claim by the manufacturers.

When the visit was over, the machine was taken home and played back through a large speaker and high-fidelity amplifier. The results were excellent and as the sounds were worth keeping, they were then dubbed on to another tape and put into the library.

Summing up, this machine was used for over ten hours during the three days it was tested, and the batteries (6 1.5 torch batteries) were still well up on the level indicator. Twenty hours is claimed as the battery life, but this, of course, is continuous running. The only fault that could be found was that when the machine was used in its carrying case, the cover had to be left open to reach the controls. This could be overcome by fitting a flap over the top of the case. Apart from this, the machine carried out the tasks given to it with efficiency and reliability.

The price of the Philips EL3585 is £25 4s., with the carrying case £2 5s. extra. Further details can be obtained from the manufacturers, Philips Electrical Ltd., Century House, Shaftesbury Avenue, London.

PSYCHO-DISCS & TAPES

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HOME RECORDING

PART 4 — Tricks, Artifices & Endless Loops

THIS series began with the assumption that you were a newcomer to tape recording, and were much more interested in getting maximum usefulness and creative enjoyment from your machine than in learning all about it technically. Therefore we first went through the basic microphone techniques for indoor and outdoor recording, and then tackled the recording of radio, gramophone, television and telephone material.

Now, although modern tape recorders include a variety of extra facilities, this month's instalment shows how you can extend your recording potential by simple dodges, whether your machine is specially equipped or not.

There are many recording situations in which you will want to add a second recording to one already on the tape. You may have a sequence of family, hobby or business sounds over which you want to superimpose identifying announcements like "This is Jennifer reciting at John's fifth birthday party . . .", "Here is the engine without the new silencer . . .", "Five people were asked to comment on the styling . . .", etc. Music recordings too are sometimes made more suitable for a given audience or situation by the addition of announcements, programme notes, plot narration in opera, etc.

To achieve this recording of one sound on top of another, we need to be able to run the machine in the "Record" condition, so that the new material is properly impressed on the tape, but somehow cut out the erase head. Then both recorded sounds will

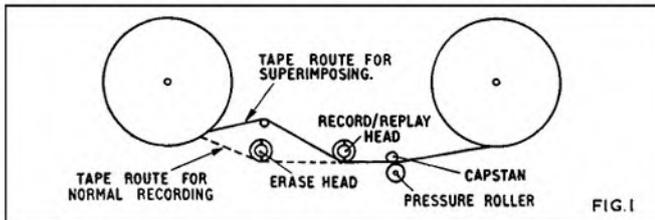


Fig. 1. Erase cut out by taking the tape behind the erase head.

exist together and merge on playback. The relative loudness of the two recordings is something that you can predict only after a number of experimental runs—perhaps on a spare reel of tape. In rough terms, the effect of the second recording is to push the level of the first programme down by about half—partial erasure takes place. But you can manoeuvre this a little by juggling with the two recording levels until the right balance is obtained. Then make a note of the volume settings for future reference.

How you cut out the erase head during the superimposed recording has no effect on the final result, but like most tricks, the simpler your approach the better. If your tape recorder has a "superimpose" switch or button—sometimes called "trick" button—then the instruction book will tell you what to do. Otherwise, you can do one of the following: (a) if the deck permits, re-route the tape so that it comes from the supply spool, round *behind* the erase head and back in front of the record/replay head. (Fig. 1), (b) if there is a clear space at the front, take the tape round a smooth object—pencil, guide, etc.—so that it does not make contact with the erase head, but still passes the record/replay head normally, or (c) if there is a fixed cover over the tape channel, and/or a pressure pad on the erase head, insert a smooth piece of card or plastic between the tape and the front of the erase head. (Fig. 2) Although these methods may seem a bit rough and ready, they work very well. And they are preferable to any unskilled attempts at rigging a switch in the erase head supply lead.

However, there is a right and a wrong way of doing everything; so if you plan to do a lot of superimposing, find the above

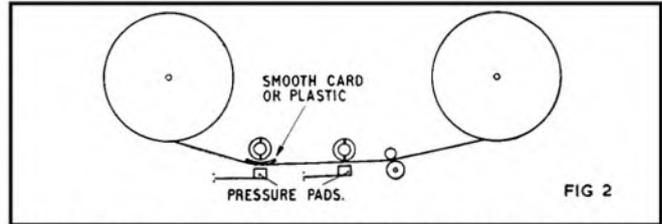


Fig. 2. Erase cut out by inserting a piece of smooth card or plastic between tape and erase head.

methods of physically bypassing the erase head too elementary, and have some experience in electric wiring, here they are. (Fig. 3) The wrong way is to put a simple on/off switch in the erase lead. Throwing this to "off" upsets the loading of the bias/erase oscillator with the result that the bias is wrong and gives you distorted recordings. The right way is to find out the impedance of your erase head—your instruction booklet or dealer will tell you—and buy a 1-watt resistor of approximately the same ohmage. Then wire this to a double-pole switch so that switching off the erase head brings the resistor into circuit. Then the load "seen" by the oscillator will be unchanged in the on and off positions.

But much trickier than cutting out the erasure is the operational difficulty of knowing when exactly to start the second recording so that it will fit in the right place on recording number one. Only on the more versatile or expensive machines can you listen to the tape and record on to it at the same time. (This needs separate record and playback heads, each with its own amplifier.) Failing these luxuries, you must replay the tape and stop it just at the point where you wish to superimpose. Then change to "Record" and go ahead.

Removing Odd Sounds

Frequently it happens that recordings are marred by one or more momentary blemishes—clicks, coughs, stammers, etc.—and you feel that removing these would just make all the difference. Again, the beginning and end of musical items may be missing, or mixed with an unwanted radio announcement, so that you want to tidy the thing up by changing it to a gradual fade in or fade out. What is required to solve both these problems is some

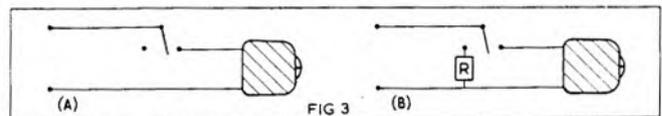


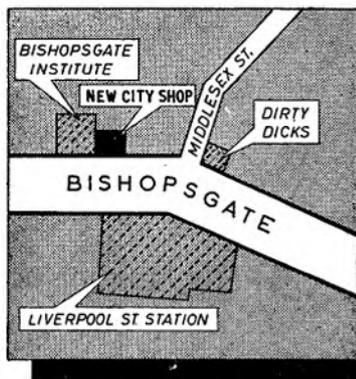
Fig. 3. The wrong and right way to fit an erase cut-out switch (a) Simple on/off switch—wrong. (b) switching in resistor R to replace the head impedance—right.

method of controlled erasing, and you can use either the erase head of your recorder, or any ordinary bar magnet.

Taking first the rubbing out of short sounds, using the erase head, you proceed as follows. Replay up to the point to be erased, and stop. If necessary, place one hand on top of each reel and see-saw the tape backwards and forwards (in the replay condition) so that you can identify by ear the exact piece to be erased. Make a clear mark on the tape with a Chinagraph pencil as it lies against the replay head, switch off, and pull the tape back until the mark now appears opposite the erase head. Finally, switch to record (with the recording volume control(s) turned down) and again hold the reels firmly while you rock the tape once or twice past the erase head.

Continued on page 329

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This will leave the tape completely silent, over the short distance in question and on the required track only. A difficulty arises unfortunately on recordings where there is a continuous background noise or atmosphere, since this too will be erased leaving a break in sound. In such cases, you have to decide whether a brief hiatus is preferable to the unwanted noise and act accordingly. However, two further possibilities exist—you can cut out the offending sound and join the tape up again, to leave the background continuity unbroken (see next month's instalment), or you can try *partial* erasing to soft pedal the noise (see below).

Using a Permanent Magnet

When the erase head is difficult to get at, or you find your machine is not suitable for hand rocking of the spools, you should employ a small magnet for "spot erasing," as follows. Proceed as in the above method, up to the point where you have marked the tape to show the part to be erased. Then pull out a few feet of tape so that you can lay the marked piece on a flat surface far away from the heads and spools, bring the magnet down vertically on to the mark, and lift it straight up again. For very short duration clicks, etc., this will be sufficient. But for longer sounds you must move the magnet along the tape the required distance before lifting it. (Fig. 4.)

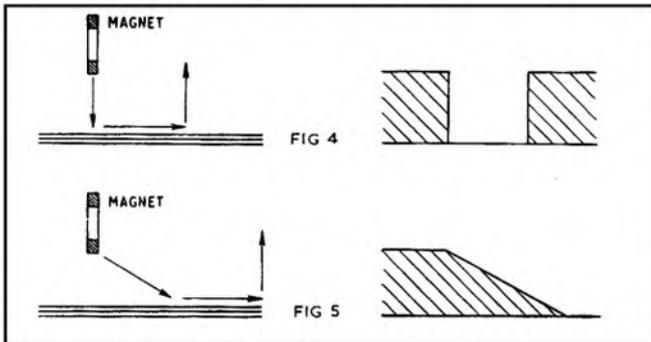


Fig 4. Spot erasing by using vertical movement of magnet.
Fig 5. Fade erasing by using stroking movement of magnet.

The same problem arises with continuous background noises as we mentioned above, and there is the additional factor that the magnet will, of course, erase all tracks of the tape simultaneously. You cannot use this method, therefore, if this portion of the tape carries recordings which you want to retain on the other track.

Fading by Erasing

In spot erasing, you will see that it is important to lower and raise the magnet vertically so that it approaches only the vital part of the tape. But we can come in at an angle—like an aeroplane landing and taking off—if we want to produce a gradual fading out or fading in.

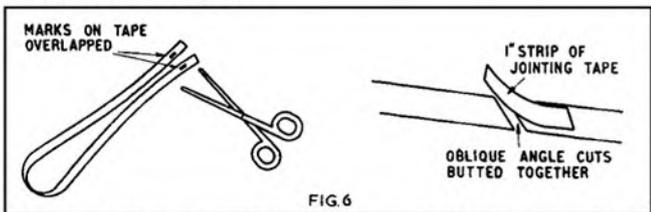


Fig 6. Making an endless loop by cutting beginning and end together (left) and backing with jointing tape.

Say, for example, that a piece of music you have recorded has been cut off abruptly, and you wish to change to a smooth fade. Locate and mark a suitable place to begin the fade, and lay the tape out flat as before. Then hold the magnet a few inches above the tape and bring it down in a caressing motion, stroking the tape several times in the required direction. (Fig. 5) A reversal of this procedure gives a fading up from silence to full volume.

A trick like this adds greatly to the professional touches that the single machine owner can add to his recordings.

Yet another way in which you can manhandle tape, and so widen its usefulness, is to assemble endless loops. And there is no need to wait until the need for such a loop arises—continuous rainfall or "diddle-dop diddley-dee" train for the local drama society, repeated message at the village fête, timing signal for photographic developing, keep fit classes, etc., etc. Why not make a few loops right away, just for the fun of it? Then when this technique is required you will already be sufficiently adept to deliver the goods without delay.

In bare essentials, making an endless tape loop means cutting off a yard or so of tape and joining the ends together so that it runs never-endingly through the machine, replaying a short sequence of sounds over and over again.

Ordinary scissors or a razor blade will do for cutting. But take care that they haven't become magnetised through exposure to electric wiring, or loudspeaker magnets, or else they will record a faint click on the tape as you cut through. Don't use household sticky-tape for joining the ends, except in emergency. This is perfect for sealing parcels or mending Johnny's arithmetic book, but it's adhesive gets pressed out at the sides when the tape is spooled up, with the result that the next door layers of tape become tacky and stick together. Also you may mess up the tape heads and the precious capstan/pressure roller combination with disastrous effects on the tape speed.

No, it is much better to invest a few shillings in a roll of special jointing tape. You cut this with the scissors or blade too, and once it is pressed down firmly on to the tape, and trimmed off along the edges, it makes as strong a joint as you could wish. Another useful feature is that, providing you don't leave it too long, you can peel this jointing tape off again and re-apply it.

The real art in making tape loops is in cutting accurately so that the repetitions are exactly what you want. You begin by making the recording in the ordinary way—though using a piece near the beginning or end of a reel to avoid cutting in the middle. Then you locate the start and finish of the loop sequence and

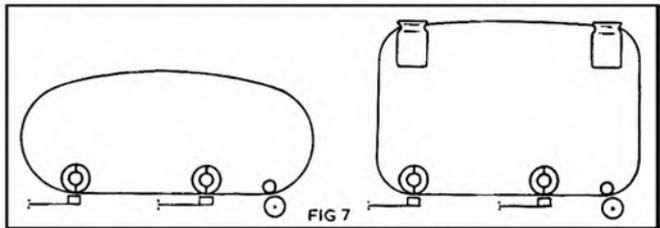


Fig 7. Short loops are easy to manage (left) but larger loops should be lightly tensioned (right) using guides made from weighted jam jars etc.

mark them with a Chinagraph pencil as before. Now pull the tape out towards you, overlap the two marks, both facing the same way, and cut both together. (Fig. 6) An oblique cut is better than a vertical one as this gives smoother running past the heads when the two ends are mated. Finally, you make sure there are no kinks or twists in the tape line up the two ends, glossy (uncoated) side up, and join with about a 1 inch length of jointing tape.

To play the loop, simply drop the tape down in the head channel, remembering to insert it right way round for the required track, and press the replay button. On most machines, the unloaded take-up spool will race round by itself, and sometimes you will find that the supply spool seems to have developed a mind of its own and starts revolving in the reverse direction. This is simply the turning motion normally applied to keep the tape in proper tension, and you can ignore it. If the turning spools are a nuisance, you can take them off during loop replay.

To prevent the loop becoming ensnared on lid catches, control knobs, etc., you should arrange to keep it under light tension more or less on a level with the deck. This is usually easy enough with fairly short loops, but from 5 to 20 feet (about the longest that you can operate satisfactorily with this set up) one or two guide posts should be erected. These may consist of jam jars weighted with sand, or, as once suggested by a *Tape Recorder* reader, a pencil set firmly into a building brick.

Next Month: Filing and Indexing Tapes.

A SURVEY OF STEREO RECORDERS



AMPEX
970
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£236 5s.

AMPEX 960. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. $\frac{1}{2}$ recording and playback— $\frac{1}{2}$ track replay. External amplifiers and speakers required. Frequency Response: 30 to 20,000 at $7\frac{1}{2}$ i/s, 30 to 15,000 c/s at $3\frac{3}{4}$ i/s both ± 2 dB. Wow and Flutter: 0.2%. Recording level meter. Dimensions: $9 \times 15 \times 17\frac{1}{2}$ in. Weight: 36 lbs. Price: £189.



GRUNDIG
TK 60
PRICE
£134 8s.

AMPEX 970. As 960, but fitted with two five-watt amplifiers and two 7 in. speakers. Dimensions: $25\frac{1}{2} \times 15 \times 9$ in. Weight: 46 lbs. Price: £236 5s.

● Manufactured by Ampex (Great Britain) Ltd., Arkwright Road, Reading, Berkshire.

TANDBERG SERIES 6. Tape Speed: $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{1}{8}$ i/s. Maximum size of spool: 7 in. $\frac{1}{2}$ track recording and replay. No speakers fitted. Frequency Response: 30 to 20,000 c/s. Hum and Noise: -55 dB. Wow and Flutter: 0.1%. Dimensions: $16 \times 12 \times 6$ in. Price: £115 10s.

● Distributed by Elstone Electronics Ltd., Edward Street, Templar Street, Leeds.



E.M.I.
TR 52/D
£245

E.M.I. TR 52/D. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. $\frac{1}{2}$ track recording and replay. Frequency Response: 50 to 10,000 c/s at $7\frac{1}{2}$ i/s, 50 to 6,000 c/s at $3\frac{3}{4}$ i/s both ± 2 dB. Wow and Flutter: 0.25 at $7\frac{1}{2}$ i/s. Crosstalk: -45 dB. Recording level meter. Dimensions: $20 \times 17\frac{1}{2} \times 13\frac{1}{2}$ in. Weight: 80 lbs. Price: £245.

● Manufactured by The Gramophone Co. Ltd., Hayes, Middlesex.

LEEVERS RICH MODEL E, NO. ED 142P. Tape Speed: 15 and $7\frac{1}{2}$ i/s. Maximum size of spool: $11\frac{1}{2}$ in. $\frac{1}{2}$ track recording and replay. Frequency Response: 50 to 15,000 c/s at 15 i/s ± 2 dB. Dimensions of 2 cases: $16 \times 20 \times 11$ in. Total weight: 80 lbs. Price: £655.

● Manufactured by Leavers Rich Equipment Ltd., 78b Hampstead Road, London, N.W.1.



TANDBERG
MODEL 6
PRICE
£115 10s.

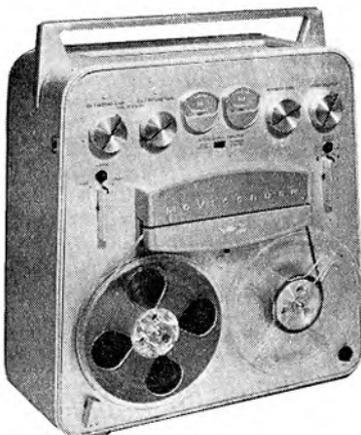
BRENELL THREE STAR STEREO. Tape Speed: $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{1}{8}$ i/s. Maximum size of spool: 7 in. Frequency Response: 60 to 10,000 c/s at $7\frac{1}{2}$ i/s, 60 to 6,000 c/s at $3\frac{3}{4}$ i/s, 60 to 3,000 at $1\frac{1}{8}$ i/s all ± 3 dB. Signal to noise ratio: < -40 dB. Wow and Flutter $< 0.2\%$ at $7\frac{1}{2}$ i/s. Level indicators on each channel. Twin built-in speakers. Weight: 40 lbs. Price: £93 9s. (quarter track available at same price).

BRENELL MARK 5 STEREO. Tape Speed: 15, $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{1}{8}$ i/s. Maximum size of spool: $8\frac{1}{4}$ in. $\frac{1}{2}$ track recording and replay. Frequency Response: 50 to 16,000 c/s at 15 i/s, 60 to 12,000 c/s at $7\frac{1}{2}$ i/s, 60 to 7,000 c/s at $3\frac{3}{4}$ i/s, 60 to 4,000 at $1\frac{1}{8}$ i/s, all ± 3 dB. Magic eye or meter available. Hum and Noise: -45 dB. Wow and Flutter: 0.05% at 15 i/s. Price: £99 12s.

● Manufactured by Brenell Engineering Co. Ltd., 1a Doughty Street, London, W.C.1.

FERROGRAPH 808. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: $8\frac{1}{4}$ in. $\frac{1}{2}$ track recording and replay. Frequency Response: 40 to 12,000 c/s at $7\frac{1}{2}$ i/s, 50 to 6,000 c/s at $3\frac{3}{4}$ i/s both ± 3 dB. Recording level meter. External Amplifiers and Loudspeakers required for replay. Dimensions: $18\frac{1}{2} \times 17\frac{1}{2} \times 9\frac{1}{2}$ in. Weight: 51 lbs. Price: £110 5s.

● Manufactured by British Ferrograph Recorder Co. Ltd., 84 Blackfriars Road, London, S.E.1.



MOVI-CORDER
PRICE
£235

GRUNDIG TK 60. Tape Speeds: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. Frequency Response: 50 to 15,000 c/s at $7\frac{1}{2}$ i/s, 50 to 10,000 c/s at $3\frac{3}{4}$ i/s both ± 3 dB. Magic Eye level indicator. Hum and Noise: < -40 dB. Wow and Flutter: $< 0.2\%$ at $7\frac{1}{2}$ i/s. Dimensions: $27 \times 14\frac{1}{2} \times 12$ in. Weight 54 lbs. Price: £134 8s.

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

A SURVEY OF STEREO RECORDERS

PHILIPS EL3536. Tape Speed: $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{7}{8}$ i/s. Maximum size of spool: 7 in. Frequency Response: 50 to 20,000 c/s at $7\frac{1}{2}$ i/s, 50 to 15,000 at $3\frac{3}{4}$ i/s, 50 to 7,000 at $1\frac{7}{8}$ i/s. Magic eye level indicator. Dimensions: $20 \times 16\frac{1}{2} \times 11\frac{1}{2}$ in. Weight: 43 lbs. Price: £96 12s.
● Manufactured by Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

SIMON MINSTRELLE STEREO. Tape Speed: $3\frac{3}{4}$ i/s. Maximum size of spool: 4 in. Garrard magazine loading deck. Magic eye level indicator. Built-in microphones. Supplied in two units. Dimensions: $18\frac{1}{2} \times 11\frac{1}{2} \times 8$ in. Price: £66 3s.
● Manufactured by Simon Equipment Ltd., 48 George Street, London, W.1.

MOVICORDER. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. Frequency Response: 45 to 14,000 ± 2 dB at $7\frac{1}{2}$ i/s, 40 to 7,500 ± 3 dB at $3\frac{3}{4}$ i/s. Two level meters fitted. Wow and Flutter: 0.15%. Signal to noise: -50 dB. Echo facilities. Dimensions: $6\frac{1}{2} \times 16 \times 16$ in. Weight: 48 lbs. Price: £235.
● Distributed by Allied International Co. Ltd., 59 Union Street, London, S.E.1.

KORTING MK. 128. Tape Speed: $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. Frequency Response: 30 to 16,000 c/s ± 2 dB. Magic eye level indicator. Hum and Noise: -55 dB. Wow and Flutter: 0.08%. Two speakers. Dimensions: $12\frac{1}{2} \times 17\frac{1}{2} \times 7\frac{1}{2}$ in. Weight: 32 $\frac{1}{2}$ lbs. Price: £71 8s.
● Distributors: Technical Suppliers Ltd., Hudson House, 63 Goldhawk Road, London, W.12.

Machines with stereo playback only.

FERROGRAPH 4S/N. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 8 $\frac{1}{2}$ in. Frequency Response: 40 to 12,000 c/s at $7\frac{1}{2}$ i/s, 50 to 6,000 c/s at $3\frac{3}{4}$ i/s both ± 3 dB. Recording level meter. For replaying two-track tapes through Ferrograph Stereo-Ad Unit. Price: £92 8s.
● Manufactured by British Ferrograph Co. Ltd., 84 Blackfriars Road, London, S.E.1.

REFLECTOGRAPH MODEL B. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 8 $\frac{1}{2}$ in. Frequency Response: 50 to 10,000 c/s at $7\frac{1}{2}$ i/s, 40 to 7,500 c/s at $3\frac{3}{4}$ i/s both ± 2 dB. Level Meter. Hum and Noise: -50 dB. Wow and Flutter: 0.2%. Fitted with $\frac{1}{2}$ track heads for playing back pre-recorded tapes through external amplifiers. Price: £120 15s.
● Manufactured by Pamphonic Reproducers Ltd., 17 Stratton Street, London, W.1.

VORTEXION WVA/S. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 8 $\frac{1}{2}$ in. Frequency Response: 30 to 15,000 c/s at $7\frac{1}{2}$ i/s ± 3 dB. Signal to Noise: -50 dB. Wow and Flutter: 0.2%. Meter level indicator. For playing stereo tapes through external amplifiers Price £112 10s.
● Manufactured by Vortexion Ltd., 257/263 The Broadway, Wimbledon, London, S.W.19.

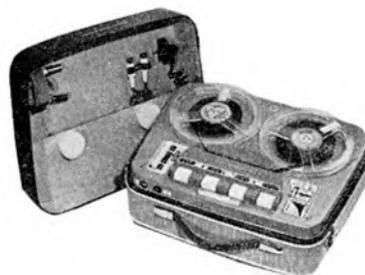
SIMON SP4. Tape Speed: $7\frac{1}{2}$ and $3\frac{3}{4}$ i/s. Maximum size of spool: 7 in. Frequency Response: 30 to 15,000 c/s at $7\frac{1}{2}$ i/s, 30 to 7,000 c/s at $3\frac{3}{4}$ i/s both ± 3 dB. Magic eye level indicator. Signal to Noise: -52 dB. Wow and Flutter: 0.2%. For playing back stereo pre-recorded tapes through stereo adaptor. Price: £99 15s. Adaptor: £51 9s.
● Manufactured by Simon Equipment Ltd., 48 George Street, London, W.1.

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these tape records are good value

ON this page we introduce a new feature. It will not necessarily be regular, because it will depend for its usefulness on the quality of the material available. It is more than a review: it is a recommendation. The tape records selected this month cover mono at 3½ and 7½; stereo at 7½ on 2 track and 4 track. Stereo tape records are noted by a ★.

★ **Saga: STE 3005.** *West Side Story.* 7½ i/s: ½ track: 7-in. spool. Playing time 39 minutes. Price 63s.

This tape features the "West Side Story Orchestra", plus Bruce Trent, Lucille Graham, Mary Thomas, Joyce Berry and Maureen Fulham, conducted by Lawrence Leonard. I presume it to be from a master made of the original show, but as I have not yet seen the play, I am only guessing. Now, however, having enjoyed this very fine tape, I only hope that the numbers in the live show come up to what I have just heard. They are 12 in all—*Overture; Something's coming; Maria; Tonight; Cool; One Hand, one heart; The Rumble; I feel pretty; Ballet sequence—Somewhere; A boy like that; I have a love; Finale.*

★ **Music on Tape FMSH 475** (Teletape Catalogue Number) *Salute to Benny Goodman and Salute to Artie Shaw.* 7½ i/s. ½ track. 7-in. spool. Playing times 31½ and 28½ mins. (total 60 mins.). Price 82s. (Also available at 3½ i/s on 5-in. spool, Teletape catalogue number FMSL 475, price 62s.)

There are six tape records in the Music on Tape "Salute" series, and if they are all as good as this one, I am looking forward to hearing the other five. I have also yet to hear the 3½ i/s version, but I imagine that the quality will be fairly comparable, because good attention to detail is very apparent in this 7½ i/s copy, and other 3½ i/s tape records from this Company have been good. The numbers recorded are—(Benny Goodman): *Let's Dance; Jersey Bounce; Wang-Wang blues; I found a new baby; Benny rides again; and the Angels sing; Air Mail special; Brussels blues six flats.* (Artie Shaw): *Begin the Beguine; Dancing in the Dark; Cross your heart; When the quail come; Back to San Quentin Temptation; 'S wonderful; Stardust; Frenesi; Summit Ridge Drive; Moonglow; Nightmare.* Both "Salutes" are played by the Brussels International Big Band. The recordings are lively, the music good, and the performance of all numbers is excellent.

Music on Tape: MML 183 (Teletape Catalogue Number) *Leo Chauliac from Maxim's of Paris* 3½ i/s. ½ track. 5-in. spool. Playing time 52 mins. Price 49s. (Also available at 7½ i/s on 7-in. spool. Teletape Cat. No. Price 69s.).

As with the "Salute" series above, this tape record is also one of a series (11 in all). The music style is piano with soft percussion—and as such is equally pleasant for general listening or party background music. Leo Chauliac is an artist of great keyboard talent, and the numbers he plays on this tape are well chosen and balanced—*Mes Caresses; Moulin Rouge; Pluie d'étoiles; Ma vie s'éveille; Parlez moi d'amour; Hold my hand; Ay ay ay; Blues in the night; September in the rain; Without a song; Ruby; O mein Papa; He's funny that way; Ponez mon ami.*

Bi-Tapes: BML 540 (library of Sound effects). Tape No. 4—*A day at the Zoo.* 3½ i/s. ½ track. 3-in. spool. Price 15s.

This tape is picked for recommendation from a series of four that are announced together at a package price of 48s. 6d. Many people may feel like ordering the lot, for the outlay is very reasonable. The reviewer picked this one because it appealed to him! Others may favour the remaining three titles, which are: (1) *Journey by train;*

(2) *General effects;* (3) *Journey into Space.* All have their points. But *A day at the Zoo* (4) is surely bound to please. As a testimony to its content, suffice it to say, that a normally quiet dog sat up and studied the speaker the moment the tape began. When the sea-lions gave tongue, she lifted her head to the ceiling, and howled back! You should definitely spend 15s. on this one—even if only to try it on the dog.

★ **Tutor Tapes: TUMH 490** (Teletape Cat. No.) *Spoken German.* 3½ i/s. 5-in. spool with 229-page hard bound book. Playing time 120 mins. Price £6 6s. 0d.

There has been a spate of "language" tapes and discs during the past two or three years. Some of them good; others not so good. This is definitely good. The accent is excellent (if it *does* betray American domicile in one or two places!) and the phrasing is clear, with sensible pauses. If one seeks cause for criticism, it can be found in the German section (i.e. the left hand pages) of the book, for they are printed in the old German Gothic. This merely introduces an unnecessary complication, for no potential holiday-maker in his right senses will want to go that far; and 90% of current German reading matter is now printed in Roman characters—certainly all booklets and menu cards! (One notes that the book was published in Boston, U.S.A. Maybe they are old-fashioned in that quarter?) However, do not let this criticism blur the issue. It is a thoroughly good and basically sound course in German.

★ **Audio Fidelity: AFST 1822.** *Rome with love.* 7½ i/s. ½ track. 7-in. spool. Playing time 34 mins. Price £4 10s. 0d.

This tape can only be described as a "must" for anyone with an ear for pleasant music and with a machine for ½ track stereo. Contents: *Luna Rosa; Tango Chitarra Romana; Non dimenticare; Marechiaro—Funiculi Funicula; Anima e core; Taranletta; La Piccinina; Torna a Sorrento; Reginella Campagnola; Santa Lucia; Fiore d'Italia; Arrivederci Roma.* The players—Jo Basile, his accordion and orchestra. The recommendation is on grounds of highest fi!

Footnote: All the above tapes were played on a "Tandberg" Series Six, with Quad stereo pre-amp and amplifiers, and 12-in. Tannoy dual concentric speakers. The Teletape catalogue at 2s. 6d. covers all tapes currently available in England, and the 2s. 6d. is refunded when tapes are bought. For readers who wish to write for details, the following addresses may be useful: **Saga Sound**, 123 Kensal Road, London, W.10; **Bi-Tapes Ltd.**, 78 Upper Berkeley Street, London, W.1; **Teletape Ltd.**, 33 Edgware Road, Marble Arch, W.2; **Music on Tape**, 6 Laurence Poulteney Hill, E.C.4.

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Practical suggestions for the tape handyman

by A. Bartlett Still

No. 25 — BATTERY ELIMINATORS FOR PORTABLES

PORTABLE, self-contained, battery operated tape recorders are certainly becoming extremely popular these days, although it is doubtful if they will ever sell in the numbers reached by their bigger brothers. It will be interesting to know how many portables are, in fact, bought as a second string to an existing, mains operated machine. It is reasonable to suppose that in such cases the larger machine will be doing the brunt of the work, reserving the portable for use on locations where no supplies exist, in this way conserving the batteries as much as possible. Nevertheless, there will still be occasions, such as re-recording sessions, when the battery machine will be used in the presence of mains, and this is of course, even more likely when only the one machine is owned.

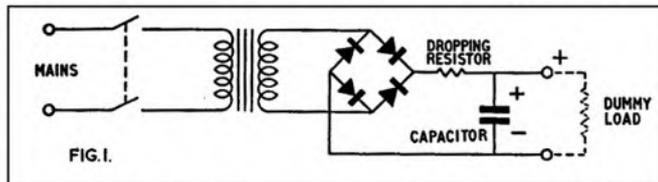
Since the battery life is measured in terms of hours only as a general rule, and since replacements, though not, perhaps, expensive, are, nonetheless, not exactly cheap, it is worth while investigating whether some form of battery eliminator would be worth while. Various models of portable recorder have different battery arrangements, in some one battery pack supplies the motor(s) and the amplifier transistors, while in others there are two battery packs, one for the transport mechanism and one for the amplifier. In the latter case it would almost certainly prove to be uneconomical to attempt to make an eliminator to cut out all the batteries, but quite probably it would be worth while to supply the motors, the biggest drain, from the mains.

Operating Voltages

The first thing it is necessary to know is the operating voltage and normal load current of the part of the system that is to be operated from a mains power unit. This information may be available with the instructions or other written information supplied, or it may be obtained by measurement, with a good set of batteries, if a suitable multi-range meter is to hand or can be borrowed. The third possibility is to ask the manufacturers. The motors will probably operate on 6 volts with a current drain of about 200 milliamps, the latter current figure being higher if the amplifier transistors also take their current from the same source. These figures are typical, but for illustration only, and you would be unwise to consider them as appropriate to your machine.

Suggested Power Unit

The type of power unit I would recommend is shown in the circuit diagram (Fig. 1), utilising a full wave bridge rectifier and reservoir condenser. With this circuit the D.C. output voltage, at



anything up to full load current, is higher than the RMS input, and I propose to use this fact in two ways. First a standard 6.3 volt heater transformer can be used, bearing in mind that the current rating of the winding will have to be about 1½ times the desired output current. Secondly the output voltage can then be reduced to the desired level by a suitable resistor, which will also improve the smoothing considerably. The latter will be an important point if the amplifier is also to be fed from the power unit, since we do not want to introduce "mains hum."

There are various makes and types of rectifier that are suitable, and your local supplier will doubtless be able to make suggestions.

To start you off on the right foot I will quote two Westinghouse types: 4A1019 and 4A1049. These are both rated at 15 VDC maximum, the former suitable for up to 250 milliamps and the latter for up to 500 milliamps. For the capacitor I would suggest an electrolytic of the type normally used for valve cathode by-pass purposes, 50 mfd rated at 25 VDC. In case you should need a higher voltage than the 6 V. of my example, the D.C. voltage will be roughly 1.2 times the applied A.C. voltage.

Now what about the resistor value. Quite frankly, I feel that this is best determined by trial and error, its value will be measured

Fig. 1. Transformer rectifier using a full wave bridge and reservoir condenser.

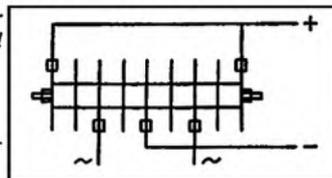


Fig. 2. Typical rectifier connections.

in tens of ohms. We must be careful not to apply too high a voltage to the recorder as it may do damage, so I suggest that we first simulate the recorder with a load resistance. To do this we must work out the value required by Ohm's Law. If the recorder operates off 6 volts (E) at 200 mA (I) then the load resistance (R)

$$\text{will be } \frac{E \text{ volts}}{I \text{ amps}} = R \text{ ohms or } \frac{E \text{ volts} \times 1000}{I \text{ mA}} = R \text{ ohms}$$

$$\text{that is } \frac{6 \times 1000}{200} = R = 30 \text{ ohms}$$

$$\text{the wattage should be } 1.2, \left(\frac{6 \times 200}{1000} \right)$$

the nearest practical being 2 watts.

If this load is connected across the power unit we can switch on and, quite safely, measure the output volts. A value for the dropping resistor should then be determined that gives us the desired output.

Dummy Load

There might be one small snag. If the loading of the recorder varies under different conditions (recording, re-winding, etc.) then the value of the resistor will have to be, to some extent, a compromise. The dummy load should be chosen for the lowest current condition, and the voltage adjusted to be perhaps 8 or 10% high. It will then be lower for the other conditions, but this should be acceptable, bearing in mind the fluctuations of battery voltage it must normally be expected to encounter. If there is any doubt a check with a second value of load resistor would give the new working voltage.

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Members of the Bury Amateur Cine Society at an editing session of their latest production which took twelve months to film.

SOUND AND CINE

ADDING AND EDITING SOUND

I HAD a call from Kevin Brownlow the other day enquiring about the Synchronpulse unit described in last month's *Sound and Cine*. Kevin, as you may remember, is the director of the mammoth amateur feature film *It Happened Here*, which is the story of what might have happened to us if Germany had won the war. The film is already in its fourth year of production and will run for nearly two hours when finished. His problem at the moment is how to shoot his next sequence in lip sync without spending too much money doing it.

The sequence is the meeting of German Chiefs of Staff in a huge house in Kensington, and Kevin would like to use the television technique of using recorders synched to blimped cameras from different angles, and cutting the sound takes into each other for the final rough cut. I said that I could probably get two *Cinecorders* coupled to *Eumig* 8 mm cameras for the sessions, but he insisted that he must have 16 mm for its better picture quality, and asked if any *Sound and Cine* readers would be interested in helping out with equipment and assistance during the coming month. He added that he would like "an artist in sound"! His address: Kevin Brownlow, 49 Queens Gate Gardens, W.9.

The Visacoustic

It is well within the realms for 8 mm workers to be "artists in sound" now as the latest trends show. The trade has turned practically all its attention to 8 mm sound during these past months and there is a tremendous choice in equipment to be had. The most advanced projector I have seen to date is the *Nizo Visacoustic* 8 mm "4 in 1". The revolutionary factor is that the projector lies flat on its side on top of a separate and streamlined amplifier and is equipped to deal with (1) mag stripe recording and projection with a 54 frame separation (2) sound editing on the machine (3) still pictures with a safe hold of 1-2 minutes (4) the showing of 35 mm transparencies.

The slow/fast rewind control together with the still/editing control provides perfect registration for sound editing. A non magnetic splicer is built in, the editing screen is placed inside the carrying case lid, and there is a special filter for use with transparencies. It should be available quite soon and I hazard a guess at it being something over £200.

Another composite item of great sound interest is the *Eumig* C5 zoom-reflex 8 mm camera which works in conjunction with the *Eumig* transistorised tape recorder. The recorder, weighing only 11 lb. 14 oz., with dimensions of 6 in. x 4 in. x 2 in. approx., can be carried over the shoulder while being connected to the camera by a synchronising cable. When the camera button is pressed, both camera and recorder start at the same time. The camera is powered by an electric drive with five 1.5v penlight batteries good for 12 double-run films. The recorder works on

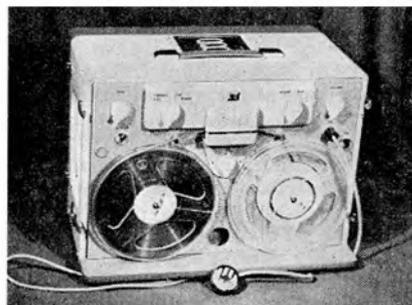
six 1.5v penlight batteries which give three hours' operation. An extra battery container can be supplied for longer periods.

This combination will give a true synched start for live sound and action and the following sync throughout the sound take should be fairly good.

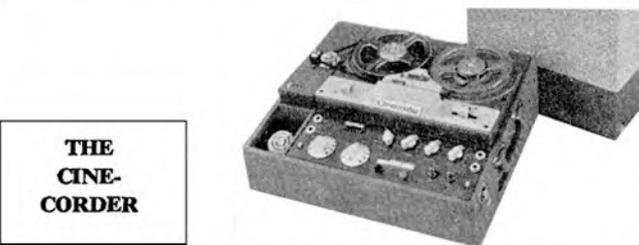
Sound Editing

In any case the final sound track should either be on the separate tape system or stripe and the next small items should greatly assist this editing function by transforming the projector into a miniature *Editola*. These are small back projection units with daylight viewing screens, and are either attached to the projector (*Keystone*) or placed in front of the projection lens (*Noris* and *David Williams*). A projector with forward, reverse and pause controls, plus a notching device for marking the exact frame to be cut, could make sound editing more of a joy than it has been with 8 mm in the past.

Another sound editing accessory of interest is the *Cinecorder* analyser for use with viewer and rewinder. The unit, which



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CORDER

consists of an arm and sprocket, fits above the take-up spool of the rewinder and is driven from the Cinecorder by a flexible cable. This does not turn the viewer into an *Editola* completely, as you have to take up manually after the film passes through the constant speed driven sprocket. The point is that the film will pass through the viewer at a sound speed at the same time that the Cinecorder is reproducing the track. It should be possible to keep short sequences under complete control with this system. This is something that has been needed for a long time, as *Editolas* are expensive to buy, and sound editing on a projector is difficult, to say the least.

It is possible to make up a cheap track-reading unit with a sound head and amplifier attached to the viewer, and with a two-way synchroniser keeping film and track in step. In its simplest form a unit such as this would be adequate for breaking the track down into beats for camera instruction charts for animation

SOUND AND CINE

PLUS A REVIEW OF THE "SYNCHRODEK"

film making, but for sound editing a motor would have to be added to drive both tracks at a constant speed.

The *Visacoustic* is the answer as far as 8 mm stripe goes, but there is still no inexpensive *Editola* for 16 mm. The *Synchrodek* (see Test Report in next column) and the *Cinecorder* analyser are steps in the right direction, and when the manufacturers can drag themselves away from the separate tape versus mag stripe battle we may see something to delight the 16 mm utility man.

Add your own sound to package films

This battle is getting interesting. Dominus are introducing sprockets into their double-band projector combined tape recorder. *Cinecorder* are experimenting with 16 mm coupling. A new U.S. double-band projector is expected shortly. There are now about a dozen good 8 mm stripe projectors on the market with prices from £150 to £200. Another interesting point is that there are quite a number of striped package films on sale now for your home movies shows, added to this is the fact that the projector can be used to add sound to silent package films. A film like "Speed Crazy" (*Walton Films*), sold silent for 24s., can be sent to *Zonal* for striping at 1½d. per foot and sound effects added in the usual manner. I have seen a copy of this film with a rather ingenious track made up of fake effects, such as the noise of a vacuum cleaner for an electric train. This sort of thing is great fun to do, especially during the winter months when your own filming is down to zero. Walton, too, are adding stripe to many of the 8 mm silents in their catalogue, and I have just seen one of their Abbott and Costello films in which the dialogue was hilarious.

The Cinecorder scores in the end

A rather ambitious project tackled by Bury Amateur Cine Society was an hour-long 8 mm colour documentary with stripe sound. The film, which shows four aspects of Bury—civic, pictorial, day to day, and industrial—took several cameramen 12 months to shoot. Five types of film stock were used—Anso 100 ASA, Anso 25 ASA, Agfacolor, Kodachrome Daylight and Artificial—with no obvious colour shock changes in the final print. You can get away with this sort of thing if you confine all one sort of filmstock to one particular sequence. For instance, complete winter sequences using Agfacolor, night sequences using Anso and summer sequences using Kodachrome, could come off without comment from the audience. Apparently Bury followed this system, for the film was shown publicly to an audience of 800 with an excellent result. The only snag from the projectionist's point of view was that the sound stripe proved faulty and a *Cinecorder* had to be enlisted for a separate tape sound track for the presentation.

Harry Kumel

Another name to remember is that of Harry Kumel, the brilliant Belgian amateur film maker who has had over a dozen international successes in the past four years. He comes up now to win the Grasshopper Group competition with his 16 mm optical sound film—"Aether". This is another one of his daring colour experiments, and is the story of a man's sensations as he is undergoing an operation. The key colour is a bright red and the sound track consists of nothing more than steady heartbeats. The camerawork is all zooms and angles and is effective to a frightening degree.



The Synchrodek

THE *Synchrodek* is a time measuring sync unit, designed to enable any variable speed cine projector to keep in step with any constant speed tape recorder, or any variable speed recorder with any constant speed projector (the *Gramdeck*, mounted on a variable speed turntable, would suit this last).

The mechanism consists of a differential gearbox, the top half of which is driven by a flexible shaft from the projector, the bottom half revolved by the tape pulley. The action is quite simple; the tape pulley turns in an opposite direction to the flexible shaft and if one half of the gearbox changes speed in respect to the other half then a pointer on the dial set in the top of the unit will show in seconds the amount of sync loss. The dial is calibrated to show up to 20 seconds. As soon as there is any loss of sync the pointer will show it, and the variable control on the projector or *Gramdeck* can be adjusted to regain sync immediately and to bring the pointer back to zero.

Setting up is quite easy, but the position of the unit must be decided experimentally, according to the design layout of the tape recorder and the scope of the 20 inch flexible cable from the projector. The height of the tape pulley can be adjusted from 4 in. to about 5½ in. by means of extendable plates on each end of the unit. It is important that the tape path should be level and running evenly in the centre of the rubber pulley and a trial run should be given to check this position.

Several Uses

The uses of the unit are several. (1) As an advance on the strobe pulley system for making a synchronised recording and playback (2) for checking the amount of sync loss during both machines' run up period (3) for using in conjunction with a viewer for sound editing and (4) for accurate tape-film measurement.

When producing a sound track, a system of standards should be devised so that the whole equipment can be set up at any time in exactly the same way as when the original recording was made. The importance of clearly defined sync marks, arranged in an easily understood manner, is obvious and the procedure outlined in the pamphlet should be followed closely.

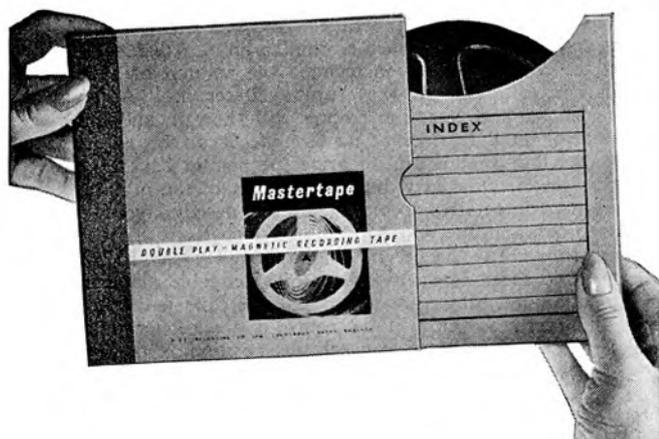
The pointer must always be zeroed before recording or playing back, but this procedure can be modified under certain circumstances. If it is required that the sound should start before the film, the pointer can be set at any position on the dial and the projector started up when the pointer reaches the zero position.

For sound editing, or as a measuring device, the *Synchrodek* can be used without the projector by mounting a sprocket wheel on the viewer and connecting this sprocket to the unit by the flexible cable. Slight modifications have to be made to almost all projectors, however, by replacing existing sprockets with *Synchrodek* sprockets or attachments. This can be done simply and the extra cost is a few shillings. It would be as well to give details of your projector when ordering a unit.

I found the *Synchrodek* quite a useful accessory, especially for sound editing with my *Bolex* G3. It is a neat and sweet running compact little unit measuring 8 in. × 6 in. × 4½ in with tape pulley fitted on. Price: £9 19s. 6d. Manufacturers: *Synchro-Sound Instrument Co., 1 Church St., Barnoldswick, Colne, Lancs.*

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READERS' PROBLEMS

Voltages in Canada

Dear Sir:—I shall be visiting Canada later this year, and I hope to take with me a tape of recorded messages. This tape will be recorded at either $3\frac{1}{2}$ or $7\frac{1}{2}$ i/s with a recorder operating on 240 volts 50 c/s. (1) Will it be possible to play these tapes on North American tape recorders? (2) Will it make any difference if the voltage and cycles are different. (3) Do recorders in North America operate at the same speeds as those in this country.

Yours faithfully, A. W., London.

The tape speeds to which you refer are international standards and they, or their metric equivalent, are in use throughout the world.

The fact that a different frequency of mains supply is in use will not affect the replay of your recordings because the tape recorder will be arranged to operate at the standard speed.

Were you to take your own 50 c/s recorder with you then you would find it would replay your tapes approximately 20% fast.

15 i/s Pre-recorded Tapes

Dear Sir:—I would appreciate your help. I am buying a $7\frac{1}{2}$ -15 i/s Ferrograph soon. (1) Are there professional tapes available at 15 i/s (maybe the magazine could help in loan of demonstration tapes for the South Birmingham Tape Club, which I am helping to formate)? (2) What is the reason 15 i/s is not so well known here as in the U.S.A.? (3) Why are there so many conflicting reports concerning external speakers? I have known people buy no less than six different speakers over a period of 12-18 months. Is it trade denial to the public? For example, I called on five different retailers, two quoted Wharfedale, others Goodman and W.B., each contradicting as to the best one. The manufacturers of good recorders recommend mics. e.g. Grampian DP4, Reslo Ribbon, etc. Why not ex speakers?

Yours faithfully, D.O., Birmingham 32.

We doubt very much whether you will be able to lay hands on commercial tapes recorded at 15 i/s in this country. It is true that this speed is widely used in professional circles for broadcasting, and the recording of Masters for gramophone records, but it is seldom used elsewhere. The advantages of the 15 i/s speed, as you probably know, are excellent high frequency response and ease of editing. In amateur circles, however, it is usually accepted that the $7\frac{1}{2}$ i/s speed gives adequate results on these two points.

Turning to the question of loudspeakers, it is an excellent plan to use an external loudspeaker for the quality playing back of recordings, but in the nature of things you will find that opinions as to which loudspeaker is best will always differ. You must realise that the type of enclosure used, and even the room itself, very much affect the performance of any given drive unit. However, all the makes you mention can be strongly recommended and are capable of first-rate results.

You are quite right in saying that manufacturers of tape recorders are often more explicit in recommending specific microphones to be used with their machines, but do not usually specify the external loudspeakers. We suggest that the reason for this is perhaps the necessity of matching microphones exactly as against the comparative ease of matching loudspeaker impedances, which are more standardised.

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our readers write

. . . about inductance loops

From: W. E. Hawkes, 112 St. Leonards Road, Duckworth Lane, Bradford, 8.

Dear Sir:—Having been a reader of your magazine since November 1959, I am writing to ask if you could help me. I own a Grundig TK 20, and I am interested in the method of private listening by means of a high impedance loop wound around the room where I have my recorder, and using same in conjunction with a deaf-aid type of earpiece fitted with a listening loop, and I should like to know if you can clear up the following points for me.

1. The gauge of wire and also the length required to form the loop around the room. Size of room— $3\frac{1}{2}$ yards \times $3\frac{1}{2}$ yards.
2. The deaf-aid type of earpiece which I have, is a crystal type. Can I fit a small listening loop to this? and if so, what length and gauge of wire would be required to wind say on to a small bobbin, and connect same to earpiece leads.

I trust that the high impedance output socket of the TK 20 will be suitable i.e. 1.8V/10K ohm.

Yours faithfully.

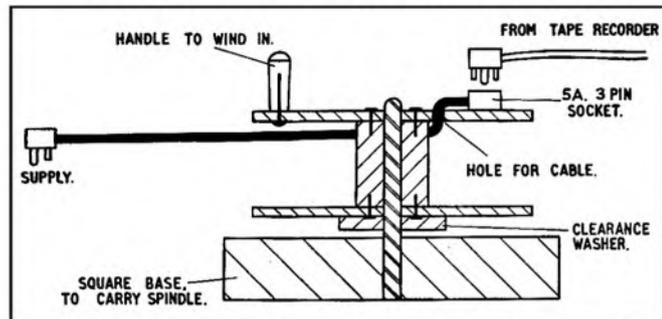
* * *

. . . about extending cables

From.—T. White, 91 Shaw Lane, Barnsley, Yorkshire.

Dear Sir:—I have just read the article "Home Recording" and note the arrangement recommended for extending a power cable. I had a similar problem recently in connection with fitting an electric motor to a lawn mower. The problem lay in satisfactorily winding the cable back on the drum. Due to the lay of the wires within the cable it has a tendency to tie itself in knots.

I enclose a sketch which I hope will explain how I overcame all these troubles. A 3-pin 5 amp socket is mounted on one



face of the drum, this being wired up to the inner end of the cable, the idea being to disconnect the short tape recorder cable from the extension, thereby leaving the drum free to be wound up by means of the handle provided. The great feature of this arrangement is that the cable is wound up without twisting its core. I hope you find this idea useful.

Yours faithfully.

* * *

. . . about outdoor recording

From: A. C. Cleeve Sculthorpe, 82 Lichfield Road, Coleshill, Nr. Birmingham.

Dear Sir:—"Home Recording" by John Borwick (June Tape Recorder) has made me recall some outdoor recording I did several weeks ago.

I have an Elizabethan 4 track recorder, also a Clarion portable. The latter fits into my bicycle bag, and can be used in that position with only the microphone extending from it. I have recorded church bells with excellent results. With the speaker

switch turned off while recording and the volume set to 8-10, I have recorded church bells from a distance of a mile in the country. Included in this tape were the sounds of a barking dog, a rooster crowing well over a quarter of a mile away, and a cuckoo. The Clarion will also pick up the chirping of small birds two hundred yards away. When played back on the same recorder the tape is loud and clear; but, of course, much louder on the Elizabethan. When winter comes, these spring and summer recordings will bring back memories.

There are many things one can record with a small portable—train sounds in a large station, approaching trains in the country, "sounds" at a cricket match, conversations in the local country inns, etc. A good point about the Clarion is it can be easily hidden in a cycle bag, or carried as a parcel with the microphone out of view in one's hand and "close-up" recordings made secretly. The microphone supplied with the Clarion seems to work well outside without being affected by wind noise.

Yours faithfully.

* * *

. . . about copyright

From: M. E. Barber (secretary), The League or Dramatists, 84 Drayton Gardens, London, S.W.10.

Dear Sir:—You will remember that in the July 1959 issue of *The Tape Recorder* you published an article by Mr. Peter Ford entitled THIS IS COPYRIGHT in which attention was very properly drawn to the need to obtain permission from the copyright owner for the public performance of a tape-recording made of a dramatic work.

While we maintain that permission is also necessary for the making as well as the performance of the recording, it is not with that aspect of the matter that we are now primarily concerned. What does concern us is that we are given to understand that Youth Clubs and others, no doubt through ignorance, are playing recordings before audiences without having obtained permission to do so.

Yours truly

* * *

. . . about cheap tape

From:—S. Jepson, St. Aubin, Jersey, C.I.

Dear Sir:—A letter in your June issue asks about experiences of those who have bought "cheap tape." Years ago I did this, spent lots of hours recording for cine, with spot-on sound effects, etc., and after several months noted that the coating was flaking off beautifully! In parts the clear base was evident for several inches! The supplier may or may not have known of this defect, but when I complained and sent him a sample of the defect, he kindly sent me a bonus spool! Beware of so called cheap tape!

Yours faithfully.

* * *

. . . about ditto

From E. Holt, 30 Eddington Lane, Herne Bay, Kent.

Dear Sir:—I have been very interested in the comments on cut-price tape in your magazine, and would like to add some of my own to the collection.

Firstly, re Mr. Botley's letter in your last issue, I have found the same fault with cut price tape—that of causing flutter. Another fault is an annoying mechanical hiss produced by the tape as it passes through the sound channel. Possibly these two faults are due to the same cause:

ILFORD SOUND RECORDING
445 HIGH STREET NORTH, MANOR PARK, E.12

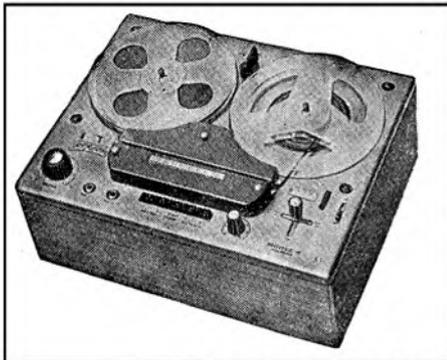
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READERS' LETTERS—(continued)

excessive roughness of the oxide coating. I would be interested to know if this is the case and, if so, if it would cause excessive head wear.

Mr. Botley also mentions well-known brands being sold at cut price. I also have bought tape this way, but from a shop in Manchester. Of two spools that I bought, one was satisfactory, the other is very poor, the oxide scraping off and gumming up the heads.

I have also purchased tape produced by another well-known firm, which produces a horrible squeaking noise on both my recorders.

Finally, what I think is needed in the world of electrical equipment is some body similar to the Bureau of Weights and Measures, which could go into any shop at any time and test, say, a tape recorder to see if it was up to the quoted specification. Any firms whose machines were regularly below specification should be prosecuted, for gross misrepresentation, if nothing else.

I feel I must tell you of the tape amplifier I purchased a few months ago. After about six hours playing a capacitor gave out. I returned the amplifier to the shop, where it was changed for a new one. After a couple of days, exactly the same fault developed in the new amplifier. Back to the shop I went, and again I was given a new amplifier, this time from a different batch. This one lasted about two weeks before the same capacitor short-circuited. This time the amplifier was sent back to the makers, with this complaint, and also that the magic eye didn't work.

On being returned from the makers the magic eye still didn't work, but apart from this the amplifier was all right, and has been ever since. Even now, if I try to record with the playback volume control set too high, the whole thing oscillates. Other faults with it are: one valve-holder is mounted crookedly; another is so loose on its rivets that it can be moved bodily up and down $\frac{1}{2}$ in.; one electrolytic condenser is loose; there are two bad dry joints in the circuitry and both volume controls have gone noisy.

As if the above isn't enough, the deck I bought with the amplifier has developed an alarming degree of wow and flutter.

Sometimes I feel like using a sledgehammer to put the recorder out of its misery.

Yours faithfully,

* * *

... about a one machine problem

From:—D. C. Comper, 28 Putney Hill, London, S.W.15.

Dear Sir:—Your July editorial poses a question vital to the future of tape-recording as a hobby. Just what do the average owners of these boxes of tricks use them for? It would seem to me that the vast majority use them as very expensive copying machines, making nonsense of the Copyright laws and disappointing copies, or to provide very lo-fi and much too loud background music for parties. After a few months the fascination wears off and the poor machine is condemned to some dusty domestic limbo to become a playground for baby spiders. But I feel it would be very wrong to place any blame for this state of affairs.

It is all very well for the . . . well, let's call them experts, to say that a tape-recorder is a creative instrument, I agree without qualification except to ask how one is to be creative with a single machine at one's disposal? So much "creation" seems to depend on dubbing and mixing that at least one other machine, and preferably two more, together with a good quality mixer, are essential. Even if one machine is only a play-back deck it still adds up to a lot of apparatus. What is it possible to do with the single machine at the disposal of the average tape-recorder owner? I am sure your magazine is doing an invaluable service to the hobby in trying to find out in order to encourage the majority.

Yours faithfully,

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MAGNEGRAPH

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TAPE, RECORDERS & ACCESSORIES

FIRST DETAILS OF NEW PRODUCTS

● We remind our readers that notices of equipment listed and illustrated in this monthly feature are in no sense reviews. When figures, specifications and diagrams are published, these data are extractions from manufacturers' lists. When samples of this equipment are submitted for test, they are passed to our technical contributors, whose reports are published in a separate section.

★
**WYNSOR
 "HERON"
 RECORDER**



A NEW WyndSOR recorder—the Heron—was announced recently. It is housed in a lightweight cabinet of Swedish grained fibreboard and is fitted with a B.S.R. deck. Features include $3\frac{1}{2}$ i/s tape speed, two track, maximum spool size $5\frac{1}{2}$ in. High and low inputs are provided together with three outputs. The internal speaker may be used for monitoring. Superimposing facilities are fitted and the machine can be used as a straight through amplifier. Wow and flutter is claimed to be 0.4% with a signal-to-noise ratio of better than -40dB. A 7×4 in. loudspeaker is fitted in the cabinet which measures $16\frac{1}{2} \times 14\frac{1}{2} \times 5\frac{1}{2}$ in. and weighs 17 lbs. The price is £26 5s., and it is manufactured by the WyndSOR Recording Co. Ltd., 2 Bellevue Road, Friern Barnet, London, N.11.

★
**SOUND
 RIVIERA**



The *Sound Riviera* is a compact tape recorder operating at $3\frac{1}{2}$ i/s and capable of 3 hours recording and play back time. Over 3 watts output is available from the elliptical loudspeaker. Frequency range claimed is from 40 c/s to 10,000 c/s. Facilities include, monitoring from headphones, output for external amplifier, extension speaker sockets: inputs for microphone, radio/gram, record player and telephone pick-up, edge-wise controls and a Magic Eye.

The machine is housed in lightweight three colour portable carrying case with detachable lid and gilt fittings. It is supplied complete with crystal hand microphone, $5\frac{1}{2}$ in. spool of tape, take-up spool and recording leads. Size is $13\frac{1}{2} \times 11\frac{1}{2} \times 6\frac{1}{2}$ ins. Price £23 2s. Manufactured by Tape Recorders (Electronics) Ltd., 784-788 High Road, Tottenham, London, N.17.

★ ★ ★
The Dokorder from Japan...

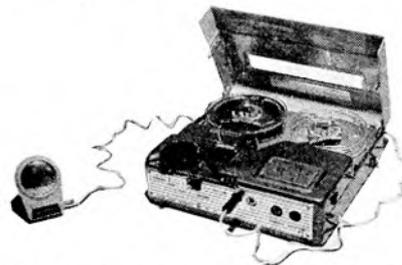
ANOTHER Japanese transistor portable tape recorder just announced is the *Dokorder*. Weighing only $2\frac{1}{2}$ lbs. it runs

★
**JAPANESE
 DOKORDER**



at two speeds ($3\frac{1}{2}$ and $1\frac{1}{2}$ i/s) and takes 3 in. diameter spools. Six transistors are used in the printed circuit which operate with five 1.5v penlight cells. Claimed frequency response at $3\frac{1}{2}$ i/s is 200 to 5,000 c/s, and at $1\frac{1}{2}$ i/s 200 to 3,000 c/s. An internal speaker is provided, but the microphone may be used as a play-back unit if required. Rewind is hand operated and the battery life is 2 hours. The size of the *Dokorder* is $7\frac{1}{2} \times 2\frac{1}{2} \times 3\frac{1}{2}$ in., price £39 10s. It is imported into this country by The Goshō Company Ltd., Stone House, Bishopsgate, London, E.C.2.

★
**TRANSI-
 CORDER
 T.R. 100**

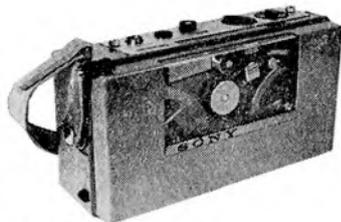


RECENTLY there has been a sudden increase in the number of Japanese tape recorders available in this country. One of the latest to arrive is the *Transicorder T.R. 100*, a transistorised portable machine priced at £40 19s. Tape speeds quoted are $3\frac{1}{2}$ and $1\frac{1}{2}$ i/s with a maximum reel size of three inches. Six transistors are used in the circuit, including two power transistors and two diodes. Two meters are fitted, giving the recording level and the battery life. The machine has a power rewind and all the operations are controlled by a single lever. The size of the *Transicorder* is $7 \times 7 \times 1\frac{1}{2}$ in. and it is supplied complete with back unit if required. Rewind is hand operated and the battery tape and spool, but the microphone and case is extra. Sole distributors are Ciné Accessories (Brighton) Ltd., 15 Bond Street, Brighton, Sussex.

NEWS has just been issued by Grundig (Great Britain) Ltd., of a new tape recorder—the T.K.14—which will be the lowest priced mains recorder manufactured by the Company. It is a single speed machine of $3\frac{1}{2}$ i/s, with a claimed frequency response of 40 to 12,000 c/s and a signal to noise ratio of 50 dB. Wow and flutter figures, 0.2%. The machine is supplied with 1,200 ft. of tape on a $5\frac{1}{2}$ in. spool, giving a playing time of 2 hours. Other features included are magic eye level indicator, $5\frac{1}{2} \times 4\frac{1}{2}$ in. loudspeaker, power output 2.5 watts, digital type indicator, press-button controls, and inputs for microphone and radio. The machine weighs under 20 lbs. and measures $14\frac{1}{2} \times 11\frac{1}{2} \times 6\frac{1}{2}$ in. It is supplied complete with tape, spare spool, connecting lead, and the new Grundig moving coil microphone for £36 15s. Further details can be obtained from Grundig (Great Britain) Ltd. 39/41 New Oxford Street, London, W.C.1.

EQUIPMENT REVIEWED

**SONY
EM 1
PORTABLE**



Sony E.M.1. Portable Recorder

It will be obvious from the photographs and description which appeared in the June issue of this magazine that the Sony E.M.1 is tops as a status symbol. When I collected it from the *Tape Recorder* offices my taxi driver was quite clearly very impressed, and he twice asked me if I wanted to stop anywhere on the way to the station. I think he half expected a "this is your life" interview. On the train also the Sony aroused some envious looks, and as soon as my compartment cleared I began my "field tests." I collected quite a selection of station announcements and train starting and stopping noises, together with a long length of *diddle-de-bom* noise recorded inside the carriage for my effects library. Home playback tests indicated that the tape was running fast during the recording session; and when played on a professional $7\frac{1}{2}$ i/s recorder, most of my material sounded slow and low pitched.

Speed

This introduced me to one of the cunning accessories: a strobe tuning fork which carries a pair of tiny shutters on the blade tips, so that when struck it opens and closes the viewing slit about 120 times per second. The pressure roller of the recorder carries two strobe patterns so that the speed may be set to exactly $7\frac{1}{2}$ i/s—to a very high accuracy, independently of any mains supply. The correct setting would appear to be when the outer pattern rotates very slowly in a clockwise direction, and the inside pattern anti-clockwise at the same rate. When the outer ring is stationary the speed of the tape is 1% slow, and when the inner ring appears to stand still the speed is 1% fast.

Erase is carried out by a multi-pole permanent magnet which has no physical gap but is magnetised rather like a piece of tape with six alternate poles on one half of its circumference and is completely demagnetised on the remaining 180 degrees. The magnet, which is in the form of a guide pillar is rotated by mechanical linkage with the record-play switch so that the magnetised side is brought into contact with the tape during record so that any given point on the tape is first saturated and then subjected to a series of decreasing magnetic reversals which leave it erased with a very low remanent magnetisation. I should mention that *Indicord* was used to make the magnetic pattern visible on the erase head and so lead to a better understanding of its function.

Record Play Response

A series of tones were injected at .2 millivolt level in series with the moving coil microphone provided and measured at the output jack on replay. Fig. 1 shows that no equalisation is provided on playback, and it must be assumed that this jack is meant to be used for headphone monitoring during recording, and for checking that the required signal is on the tape, and that the recorded tape must be played on a properly equalised playback chain for decent quality. Accordingly the tape was transferred to a professional recorder which had been carefully calibrated on a $7\frac{1}{2}$ i/s C.C.I.R. test tape. Fig. 2 shows the response when all known corrections were applied to compensate for small deviations from a true C.C.I.R. playback response. The level on this test recording was 6 to 8dB below test tape level and so further tests were made to see that true peak recording level could be

recorded without distortion. Three per cent tape distortion was obtained for an input level of 1.5 millivolts into the 600 ohm microphone input socket.

Record Level

No recording level indicator is provided, but there is little risk of overload with even the loudest sounds and with the gain control fully advanced. Normal interview speech about 6 to 10 inches from the microphone produced a mean r.m.s. signal at the microphone input socket of about .2 millivolts. With the gain full on, the level on the tape was about 6dB below test tape or normal recording level, and nearly 20dB below audible tape overload. This obviates the need for constant adjustment of the gain control, but the recorded signal noise ratio is limited by erase, bias and tape noise.

Signal Noise Ratio

This brings me to one of my main criticisms of this machine: the noise level is much too high for a professional unit of this class. Admittedly the noise can easily be masked by high ambient

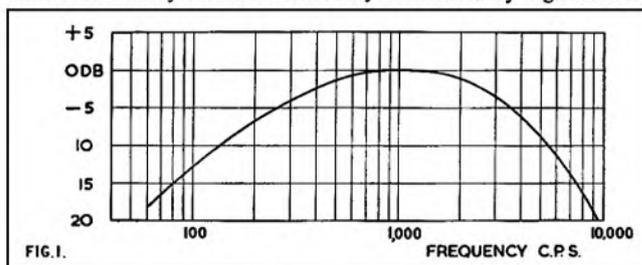


FIG. 1.

Record/Replay Response curve. Sony E.M.1.

acoustic background noise picked up by microphone, but we must apply professional standards to a recorder in this price range, and the measured figures speak for themselves. If we take bulk-erased, full-track tape as a reference level, the noise from tape recorded on this machine is some 10 to 15dB higher. It is difficult to be more precise than this as the noise contains very low frequency transients. The permanent magnet erase head is the main offender; it leaves a very small amount of magnetisation on the tape which shows up minor imperfections in the smoothness of the tape oxide as a low-pitched, grumbling background noise.

The annoyance value of this noise component increases with extension of the low note response of the reproducing system. I tried several British and Continental tapes, and most of them were 3 to 6dB better than the tape supplied with the recorder. The other component of the noise was high pitched and hissy in character and proved to be actual recording of the bias waveform. The bias frequency was only 30Kc/s — I double checked this by playing a tape at $1\frac{1}{4}$ i/s so that the recorded bias was reproduced

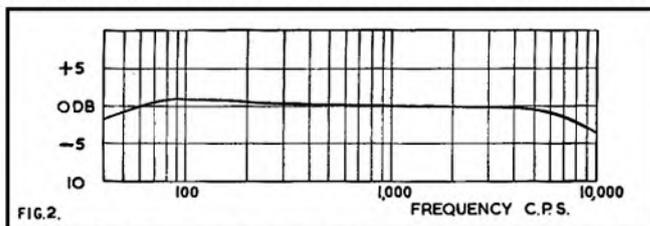


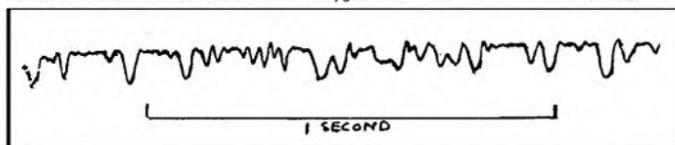
FIG. 2.

as a clearly audible 7.5 Kc/s tone. I can assume only that the low bias frequency was chosen to penetrate the tape oxide as deeply as possible, and so help to erase some of the effects of the multi-pole erase system. The measured figures do not look too bad: 42-45dB below peak recording level, until one realises that the noise from properly erased and biased tape is nearly 60dB below 3% distortion level. If the recorded signal really reaches peak level then the noise is not too obvious; but if a weak signal is

to be recorded such as bird song then it may be completely spoiled by the erase and bias noise.

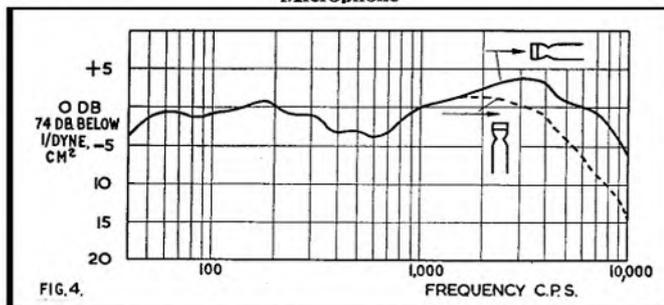
Wow and Flutter

Fig. 3 is a "fluttergram" or pen recording of the instantaneous speed variations, as measured by recording on the E.M.1 and playing the tape on a professional playback unit which has combined wow and flutter below 0.1% r.m.s. The rather one-sided look



of this recording made me at first suspect overload of the pen recorder or misalignment of my discriminator, but careful checks showed them both to be in order, and it must be assumed that the record shows the action of the flyball governor in the spring wound motor. Again, the measured figure of 0.35% r.m.s. does not look too bad, but the audible effect on, say, a piano recording is quite painful and not at all up to hi-fi standards. A portable recorder such as this poses rather special problems in achieving adequate wow and flutter performance, particularly with a capstan speed of around 78 r.p.m. If the flywheel is made large enough to smooth out gear and governor flutter, the speed will vary as the machine is moved; if, on the other hand, the flywheel is made small and light enough to be handleable, then we have the effect noted above.

Microphone



A Sony FP-1 moving coil microphone was provided with the recorder and the response is shown in fig. 4. The response is within plus or minus 4dB from 40 to 10,000 c/s on axis, and within the same limits up to 5,000 c/s at 90 degrees. The long handle acts as a bass chamber, and a number of small holes around the base provide a further bass lift due to phasing. I found that it was subject to rather heavy handling noise, and that one particular source of trouble was the cable exit and securing spring at the base of the handle. It was possible to reduce handling noise by looping the cable back along the handle, so that the hand holding the microphone insulated the moving cable from the sensitive anchorage point.

Appearance and general arrangement of controls get full marks. Recorded response is very close to the C.C.I.R. 100 microsecond characteristic. The multipole erase magnet is a bright idea which does not quite come off. It would be better to provide no erase facilities, and to insist on the use of bulk erased tapes, than to spoil the performance with erase noise and low bias frequency. Wow and flutter are adequate for speech and sound effects, but even background music could be affected by the bumpy tape transport.

One other very minor criticism: the 5 in. reels are not secured to the supply and take-up turntables by the usual cine type radial slots at the centre of the reels, but by a large peg on each turntable which passes through one of three holes in the reel hub. Such holes are provided on almost all 7 in. reels sold in this country, but only one make of 5 in. reel has them, and it is a bit frustrating to find you have a reel of tape which simply can not be fitted to this machine.

I am truly sorry not to be able to give a better report on this recorder; but it is, after all, a professional unit in the top price bracket and as such no compromise is possible in the performance standards demanded.

A. Tutchings

STELLA
ST
454



Manufacturer's Specification: 4 track. **Frequency Response:** 50 to 14,000 c/s. **Signal/Noise ratio:** better than 40 dB. **Wow and Flutter:** less than 0.3%. **Outputs:** 2.5 watts, 2 Volts @ 50 k ohm, 100 mV @ 1 k ohm, and "Stereo" socket. **Tape Speed:** 3½ in./sec. **Inputs:** 3.0 mV @ 100 k ohm, 150 mV @ 1 M ohm. **Loudspeaker:** 4 in. dia. **Rewind:** 1,200 ft. in 2 minutes. **Maximum reel size:** 7 in. **Size:** 15½ in. x 12½ x 6½ in. **Weight:** 19 lbs. **Price:** 37 gns. **Made by Stella Radio & Television Co., Ltd., Astra House, 121/3 Shaftesbury Avenue, London, W.C.2.**

THIS tape recorder is manufactured in Holland and it is understood that the identical "works", in a different case, may be obtained under the trade name of "Philips". The first impression, on unpacking the machine, is good, since the necessary extra recording leads and so on, are included, together with a microphone and well thought-out instruction book. Surely though, it would have been possible to supply better than the 900 ft. reel of tape and similar sized spare spool? Mention must be made of the surprisingly large pocket in the case to house the microphone, recording leads, mains lead and plug, still leaving room to spare. The mains voltage adjustment and input/output sockets are also behind the same flap which, however, being of plastic might be rather too easily broken.

Operating Controls

The operational controls of the machine are quite ingeniously devised, and can be readily understood with the aid of the instructions. Provided the trouble is taken to read these properly (and it is a wise man who always does this!) quite successful recordings should be made by the most non-technical of owners. The track selection switch operates in the usual manner, selecting either the top outer, or lower inner track, the tape running from left to right according to the international standard. To obtain the other two tracks the tape should be turned over. The head connections for the track not in use are taken to an adjacent socket, of the continental three-pin variety, to allow connection to an external amplifier for 4 track stereo working. It must, however, be considered doubtful if the performance of the heads would be suitable for satisfactory stereo.

Head Measurements

There was a difference of 3½dB @ 1 Kc/s in the outputs of the two head windings, the lower output, as might be expected, coming from the track at the edge of the tape, although the lack of variation would seem to indicate that the tape was not the primary cause. Also noticeable was an inherent misalignment between the two tracks, some 5dB variation in the output @ 10 Kc/s could be obtained depending on which track was in use when head alignment was carried out. As might be expected, the best overall frequency response was obtained with the heads aligned to a midway position. This frequency response was reasonable, by normally accepted standards, between about 70

Table 1

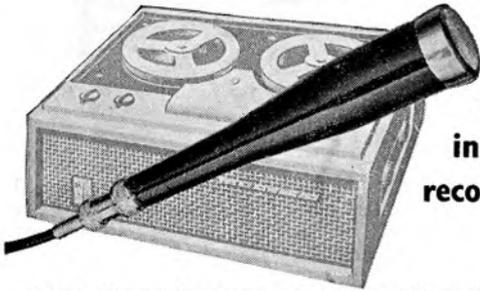
Track	Distortion	S/N Ratio	Output
1	1½%	49 dB	1.6 V
2	2½%	52½ dB	2.4 V
Input (full mod.) 1 Kc/s Mic. 3.5 mV RAD 152 mV.			

c/s and 10 Kc/s. The claim in the Technical Specification, of course, with no reference to level, means little or nothing.

The figures in the table relating to sensitivity, output, distortion

(continued on page 345)

Grampian DP4



brings out
the best
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Even the most expensive recorder will only give its best performance if a good quality, reliable microphone is used. In the DP4, with a uniform wide frequency response from 50 c/s to 15,000 c/s, Grampian have developed an outstanding, moderately priced instrument which will please the most exacting recordist.

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Retail Price.—DP4/L complete with connector and 18 ft. screened lead ... £8 0 0 (Medium or High Impedance models ... £1 0 0 extra) A complete range of stands, swivel holders, etc., is available also. A matching Unit (Type G7) can be supplied for adapting the microphone for a Recorder having a different input impedance, or when a long lead is required ... Retail Price £3 5 0

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- ★ 5½" reels giving maximum 3 hours playing time.
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- ★ Single master control.
- ★ Very low battery consumption.
- ★ Smart black/grey finish. Overall size: 14 x 13½ x 5½". Detachable lid and carrying handle.

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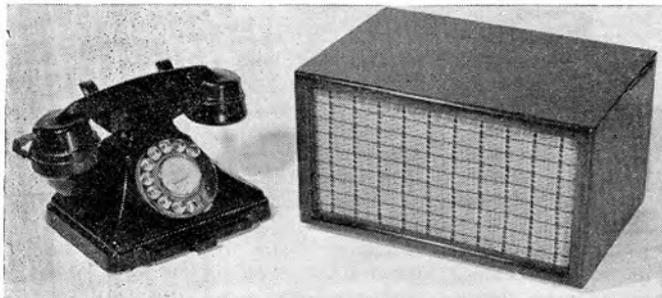
tion and signal/noise ratio were all taken at 1 Kc/s at a recording level where the "magic eye" level indicator had closed to the degree outlined in the instructions. These figures must be considered to be quite satisfactory, as must be the fact that no wow or flutter was discernible on a sustained 6 Kc/s note.

The ST.454 has a single motor drive for the tape deck, and such machines always tend to be slow in their spooling times. In this instance the forward and reverse winding times for the 900 ft. of tape supplied were equal at 2 min. 12 secs., rather more than the 2 min. for 1,200 ft. quoted.

It is the writer's firm belief that if the specification for frequency response were expressed correctly, and the inspection and test tightened up to ensure that the machine, as sold, met the specification, then the ST.454, at 37 gns. would represent very good tape recorder value. **A. B. S.**

* * *

High-Q Flexette Speaker



Manufacturer's Specification

Dimensions: 11½ × 6½ × 7½ in. **Frequency Range:** 45-15,000 c/s. **Power Handling Capacity:** better than 4 watts continuous, 8-10 watts peak. **Drive Unit:** 4-in Lorenz, reinforced paper cone. **Gap Flux:** 11,000 gauss. **Finish:** medium walnut polished veneer. **Price:** £5 19s. 3d. including Purchase Tax.

Manufactured and distributed by **Technical Suppliers Limited, Hudson House, 63 Goldhawk Road, London, W.12.**

NINE tape recorders out of ten possess an output socket labelled "External Loudspeaker," and there are several good reasons for using it. To take the question of sound quality first, the loudspeaker built into a portable recorder has to be restricted in size and weight, so that the quality suffers too. Otherwise the term "portable" ceases to have any meaning.

Also the housing of the unit is something of a compromise—though there are a few exceptions—since the speaker has to share a box, measuring perhaps 18 in. square by 6 in. deep, with valves, motors, transformers, flywheels and the rest. Conditions which to say the least of it are hardly conducive to the best high fidelity sound reproduction.

From the operating angle too, the built-in loudspeaker has its limitations. Obviously, for easy operation, the tape recorder should be conveniently situated for handling. But this may not be at all the best place for the loudspeaker. A good example is the playing of a tape soundtrack to accompany a cine or colour slide show. Here the tape recorder ought to be alongside the projectionist or his assistant, but the loudspeaker will be better placed near the screen. In fact, for any room there will usually be one or two "best places" for a loudspeaker; and it would be too much of a coincidence for these to suit the tape operation too.

So an external loudspeaker is a useful accessory, nine times out of ten. The question remains, what type of external loudspeaker? Well, if sound quality were the only criterion, and expense no object, we would go straight for a full-scale hi-fi speaker system costing about as much as the tape recorder itself. Now this new TSL loudspeaker makes no claim to rival systems 10 times its size and 20 times its weight. It lines up more nearly—in price and bulk—with the ordinary extension speaker. And tested in this context it can be highly recommended.

The 4-in. drive unit, tested on its own, gives clean reproduction over a wide range of frequencies, though not extending very far in the bass. The enclosure is ingenious without being in the least complicated. It is a bass reflex design in miniature. The internal

EQUIPMENT REVIEWED—(cont.)

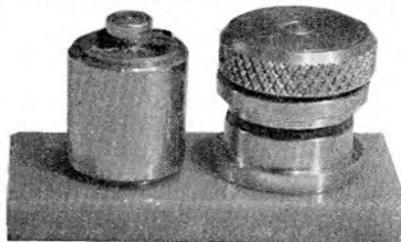
volume is approximately 330 cubic inches, half-inch thick acoustic damping is fixed to the bottom and the solid back, and a 3¼ × 1½ in. port is let into the front panel alongside the main speaker opening. These dimensions have clearly been calculated to make the most of this particular drive unit, and would no doubt be disastrous with any other.

As it is, a pleasant natural quality results both on speech and music. The lack of extreme bass is not particularly serious, remembering that the microphones supplied with portable recorders cannot reproduce the lowest frequencies either. And we have by way of compensation a complete avoidance of the boxiness and "single-note bass" so often a feature of simple solid-back cabinets.

* * *

THE number of people who combine colour photography with tape recording steadily increases. Apart from the complicated, but highly enjoyable work of assembling a sound track to fit the sequence of slides, perhaps the trickiest operation comes when we give a showing to the assembled guests. Using a hand-operated slide projector it can become quite difficult to change slides in correct relation to the sound track and it is here that the automatic slide projectors come into their own. Of course the majority of these are simply intended for remote control via a push button switch on an extension cable, but to eliminate the operator completely it is obviously better if the projector is switched automatically from the tape. This is a comparatively simple matter to arrange since all that is required is that a pair of electrical contacts shall be short circuited each time that we require a change of slide and is indeed incorporated in one or two foreign tape recorders.

Now for the first time this new accessory from Technical Suppliers Limited enables an automatic slide projector to be switched from any known make of tape machine. The heart of this device is a metal head, the two contacts of which are separated by a



**T.S.L.
SYNCHROFO**

narrow insulated gap. This is mounted together with a rotating guide on a plastic baseboard which is self-adhesive and so may be fastened in any convenient position on the recorder. A supply of 1-in. long self-adhesive metal foils is provided and these are attached to the commentary tape as required. As the tape passes over this special switching head, the slide changer mechanism is operated each time that one of the foils goes by.

Practical Tests

The device was tested on a wide range of equipments and from the point of view of easy setting up and re-arrangement is highly recommended. The process of finding the best spot at which to change slides is simplicity itself—requiring only running the tape and stopping at the required positions. It was found that the foils could be peeled off and re-positioned to take care of any after-thoughts and since they measure less than ¼-in. across, it is possible to employ both tracks in the ordinary half track system. In fact the Synchrofo switching head may be reversed to be actuated by foils on either the upper or lower half of the tape. Certainly for amateur use where attempts to superimpose switching tones

(continued overleaf)

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on top of the recording could easily be disastrous, this new tape/photography accessory will be most welcome.

The writer found that the visible cue provided by the shiny metal foils assisted even if manual change of slides was being undertaken, due for example to giving an impromptu slide show using a borrowed hand-operated projector. The unit costs £2 7s. 6d. including 40 Synchronfoils, a junction strip and supply of connecting wire. Extra Synchronfoils are available price 7s. 6d. per 100. Manufactured and distributed by **Technical Suppliers Limited, Hudson House, 63 Goldhawk Road, London, W.12.** J.N.B.

READERS' PROBLEMS—(continued from page 338)

Dear Sir:—I have recently taken to reading your articles in *The Tape Recorder* since at the moment I am building my own tape/gram/radio set of which the tuner, amplifier and pre-amplifier has been completed. The pre-amp is the model that you mentioned in the September 1960 issue of the magazine, giving a gain in the order of 150, but, it seems that this is not enough—the input from the built unit being 2/5 volt audio. It looks therefore as if a two valve pre-amp will be needed and I wondered if you could suggest a suitable circuit? I also wondered if by coupling the two circuits you discussed in your above article together using the one with feedback as primary, whether it would suffice, I would certainly like to use EF 86's. The input impedance of the amplifier is one megohm, I intend using a Collaro Studio Tape Deck and the impedance of the pickup is 400 ohm. I wonder if you would like to comment on some interesting figures I found on the pre-amp stage. At the moment the grid leak resistance is not High Stability, but this should make little difference to the readings; and I have checked and re-checked the circuit and I am positive it is correct. Using a Model 7 Mark 2 Avo I found that, with H.T. of 260v—8 μ F voltage 150v, screen voltage is 0.1v, cathode voltage is 0.23v. I feel that the last two readings are a bit strange, especially the V. screen, even taking into account the 1 or 2 milliamps that the Avo, might take. The anode voltage was 90 volts. I may add the unit seems to work extremely well.

Yours faithfully, E.G., Lincoln.

I must confess to some surprise that the pre-amplifier circuit to which you refer is not giving enough gain for your purpose, but this is of course a function of the signal from the tape head and the input requirements of the main amplifier. There would seem to be two possibilities that you might try. A two valve pre-amplifier wherein each stage was wired up to my second circuit should present no difficulty, or for even greater gain, the circuit I gave in the December issue could be used but without the frequency selective components if equalisation is not required. The feedback line around the double triode would consist of a resistor only, value dependent on gain required, while the coil, capacitors, and preset resistor in the cathode circuit, would all be omitted. The voltage readings you give are not at strange as they might seem, such effects are common when the meter consumption is several times that of the valve being measured.

* * *

Dear Sir:—My radio chassis is insufficiently sensitive to operate with my tape recorder. The record output of my radio is 150-200 mV at 1 Megohm, and the tape recorder input is 0.5v. at 1 megohm. Have you any suggestion for matching these for better results

Yours faithfully, R. M., Islington.

The simplest way in which you can make successful recordings from your radio chassis would be to reduce the output to a level whereby it can be fed to the microphone input of your tape recorder amplifier. To do this a potential divider is required. This would consist of two resistors, value 1M ohm and 100K ohm, which should be connected in series. The free end of the 100K should be connected to the earthy side of the radio output, the free end of the 1M going to the live contact. The input to the tape recorder will be connected across the 100K, at which point the signal should be at a suitable level for good recording.

The alternative is to use a mixer unit, such as the Spectone 142A having an output of 0.5 volts and several inputs including a radio input of an appropriate level.

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All advertisements for the September issue must arrive not later than August 4th.

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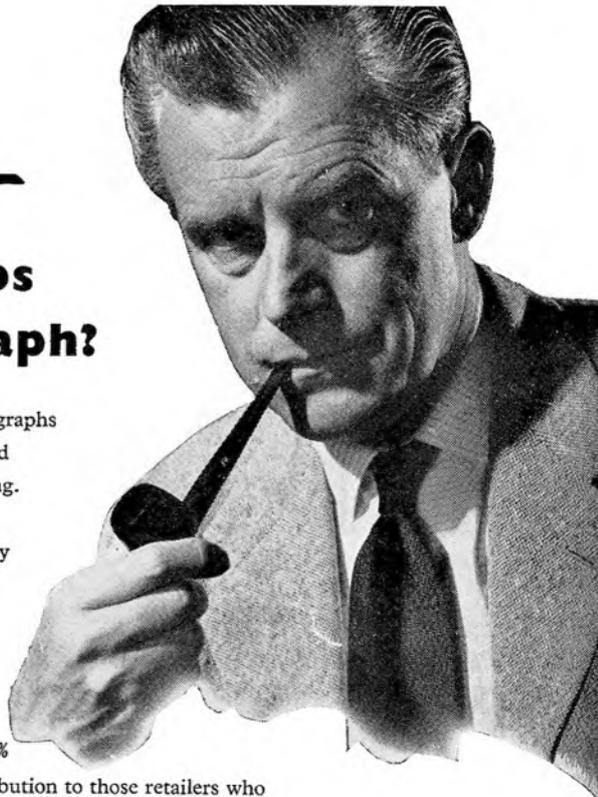
Why do so few shops stock the Ferrograph?

A fair question, Sir, and here's our answer. Ferrographs are *not* massed produced. Each is individually assembled by engineers who are dedicated to the art of tape recording. Each instrument must pass the most stringent series of tests it is possible to devise. All this takes time, costs money and inevitably curtails production. But the unswerving adherence to such a bold policy has been largely responsible for creating the fabulous reputation enjoyed today by the Ferrograph throughout the world.

We freely admit that because there are so few Ferrographs available for the home market (last year 47%

of our output went overseas) we must limit distribution to those retailers who specialise in Sound Recording and Hi-Fi equipment. For—as we have frequently stated—*Recording* is our business. We have no intention of developing the Ferrograph as a possible competitor to the gramophone.

We believe that those whose needs cause them to choose a high performance instrument like the Ferrograph are much more concerned with quality of reproduction than with short-life narrow gap heads, extreme pre-emphasis, ultra-slow tape speeds, hum bucking and other such artifices. For us there can be no compromise with quality. Should you have difficulty in locating a near-by Ferrograph Dealer, please get in touch with us.



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