

amateur

TAPE RECORDING

VOL. 4 NO. 2 SEPTEMBER 1962 PRICE 2 -

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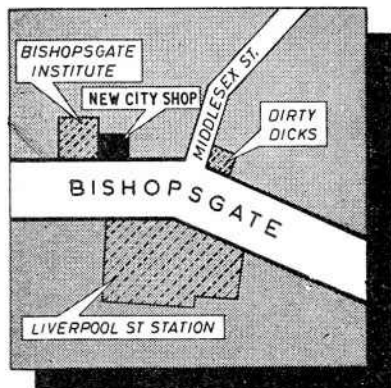
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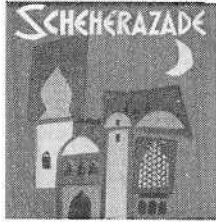
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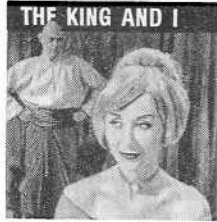
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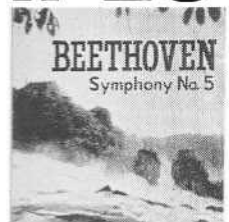
33. These two suites, containing some of Bizet's most thrilling music, are given magnificent performances by the Sinfonia di London under Muir Mathieson. Also on disc: mono/stereo



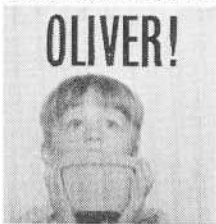
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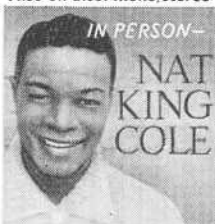
33. Beethoven 5th, plus Esmont, Josef Krips and LSO in a titanic interpretation which matches the tremendous power of this celebrated music. Also on disc: mono/stereo



30. Ian Carmichael, Joyce Blair, star cast/orchestra. As Long as He Needs Me, Consider Yourself, all the hit numbers from Lionel Bart's great show. Also on disc: mono/stereo



39. Great ballet conductor John Hollingsworth and the Sinfonia di London in a sparklingly fresh interpretation of Tchaikovsky's famous Ballet. Also on disc: mono/stereo



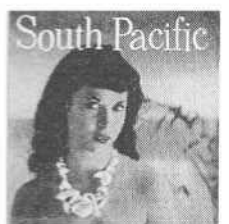
59. The silken voice of Nat King Cole in Walkin', Because You're Mine, You'll Never Grow Old, Baby Won't You Say You Love Me and 8 more. Also on disc: mono only



40. Superb singing by Bruna Rizzoli and Giuseppe Savio with the chorus of the Teatro Nuovo di Milano and orchestra conducted by Napoleone Annovazzi. Also on disc: mono only



52. Gracie Fields sings her favourite songs for you, including In My Little Bottom Drawer, Sally, Song of the Mountain and ten others. Also on disc: mono only



25. Ian Wallace, Joyce Blair and chorus. Some Enchanted Evening, I'm In Love With a Wonderful Guy, and all the unforgettable songs from this great musical. Also on disc: mono/stereo



34. Stardust, How High the Moon, Nearness of You, 'Round Midnight, King David—eight numbers by the vibraphone genius, Lionel Hampton. Also on disc: mono/stereo



48. Deep in My Heart, Drinking Song, Serenade—all the old favourites, fresher than ever with Marion Grimaldi, Linden Singers and Orchestra. Also on disc: mono/stereo



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58. The fabulous dynamic Duke Ellington himself in eight great numbers including Stomping at the Savoy, In the Mood and Honey-suckle Rose. Also on disc: mono only



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35. Ol' Man River, Bill, Make Believe, many more well-loved numbers from this famous musical memorably sung and played by full star cast. Also on disc: mono/stereo



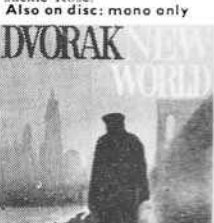
44. Leopold Ludwig and LSO combine brilliantly in an exciting 'double': two of the world's greatest symphonies receive vivid new interpretations. Also on disc: mono/stereo



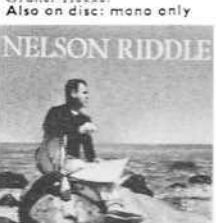
62. The best of Irving Berlin, Easter Parade, The Girl that I Marry, How Deep is the Ocean, What'll I do, 8 more. Raoul Pollack, his orchestra and chorus. Also on disc: mono/stereo



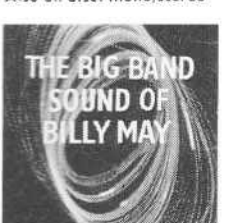
38. Hervey Alan, Ian Wallace, Marion Grimaldi and chorus sing the immortal favourites: Cobbler's Song, Robbers' Chorus, Chu Chin Chow, etc. Also on disc: mono/stereo



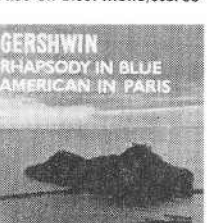
11. Dvorak Symphony No. 5—From The New World. Leopold Ludwig conducts the London Symphony Orchestra in a dramatic and moving performance. Also on disc: mono/stereo



71. The smooth sound of the Nelson Riddle Orchestra in Touch of Your Lips, Body and Soul, The Tender Touch, As You Desire Me—11 favourites in all. Also on disc: mono only



64. The unmistakable sound of the Billy May Band in a tremendous selection—It Happened in Monterey, Bye Bye Blackbird, Be Honest with Me, 9 more. Also on disc: mono only



13. Gershwin's Rhapsody in Blue and American in Paris. Pittsburgh Symphony Orchestra conducted by William Steinberg. Jesus Maria Sanroma, piano. Also on disc: mono/stereo



65. Our Love is Here to Stay, The Nearness of You, Guilty and nine more great hits, all with America's top vocal group, the fabulous Four Freshmen. Also on disc: mono only



61. The world's 3 greatest sonatas—Beethoven's Moonlight, Pathetic and Appassionata—superbly played by famous T.V. pianist Joseph Cooper. Also on disc: mono only



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54. Tchaikovsky's last and greatest symphony, is here given a splendidly moving rendering by the Sinfonia di London conducted by Muir Mathieson. Also on disc: mono/stereo



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AMATEUR

Tape Recording & Hi-Fi

THE SOUND MONTHLY

In this issue

World of Sound	9
The ATR 4-Channel Mixer	10
Tape Family Robinson	15
Strictly Feminine	17
Tape Without Tears	19
Norrie Paramor	21
Special Supplement:	
40 Years of Tape Recording	23
Tape Guides	27
Tape Talk for Teachers	28
His Evening With the Stars	29
The Sound Scene	30
News from the Clubs	34
Hi-Fi Discs	37
Tape Parade	39
The Things You Say	41
The Tape Directory	43
Spool Talk	44

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ON THE COVER

HERE IS THE finished article—the ATR 4-Channel Microphone and Signal Mixer, which you can easily assemble if you follow the instructions and diagrams beginning on page 10. It has been specially designed by the Technical Editor for home constructors who want to save money while they reap the satisfaction of building their own equipment.

Vol. 4, No. 2

September, 1962

Keep up with the Robinsons!

By THE EDITOR

IT takes all sorts to make a world. But tape recording types seem to fall into three main categories:

1. *The Know-it-all type.* If not quite in the 'professional' class, he gives the impression he is—or soon will be. He has friends at the BBC, owns lots of expensive equipment, and scorns anything less than 7½ ips (it used to be 15). He talks glibly of frequency response curves, baffles us with the mysteries of impedance, and appals us with his insistence on a recording quality which only he can attain.

How we poor amateurs envy him—and despair of ever matching him, the man who can never go wrong!

2. *The Do-it-all type.* He started with a modest machine (to *Know-it-all* 'a load of junk'), learned how to make full use of it, bought another, and gradually acquired—or built—enough equipment to do the things he once thought beyond him. He goes in for all the competitions, all the projects of the tape club of which he's a paying member. A dab at dubbing and editing, he loves to remove a deck and is always at hand when anybody needs his heads demagnetised or his plug leads resoldered.

A useful type, who really enjoys tape recording. A Smith helping the Joneses to keep up with the Tape Family Robinsons . . .

SCARED OFF

3. *The Hang-it-all type.* He doesn't know the difference between wow and flutter, still puts his mic by the loudspeaker to record music—his sole activity aside from tapesponding. He hasn't cleaned his capstan since he bought his machine, and never spliced a tape except to mend a break. He once went to a tape club and was scared off by a *Know-it-all* who said, 'You *can't*, old boy—it just isn't done.'

After a few months he'll decide there's no future in it, leave his tapespondents in the lurch and go back to stamp collecting or ice-skating.

Which type does *ATR* cater for? We aim to interest all three—even No. 1, in his more condescending moods. We know that No. 2 is as keen on this magazine as he is about every aspect of his hobby. He writes in to say so—and we know he'll love building that Mixer . . . As for No. 3, we shall always try to help him into the No. 2 category where all of us speak the same language, learn by our mistakes, and get a lot of fun out of it.

Let's hope he'll never become a No. 1! There's no future in it . . .

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TRM

WORLD of SOUND

A NEWS COMMENTARY

By JEREMY GILES

Red tape only

SALE (Cheshire) Borough Council have turned down the suggestion that their discussions should be tape-recorded.

And when a member of Spilsby (Lincs.) Rural District Council turned up at a meeting with a home-made recorder and asked permission to tape part of the proceedings for an aged ratepayer, the chairman ruled that the matter be referred to a committee.

Said the would-be recordist: 'I don't think I'll bother . . .'

Hear, hear!

Delegates to Berkshire Baptist Association annual assembly heard the induction of their new president, the Rev. Alfred S. Bell, through a tape recording when a prior engagement prevented his personal appearance.

Business as usual

. . . And musician-landlord George Dury of the Red Lion Inn, Bishop Sutton, catered for his customers as usual while on holiday by taping his popular electronic organ recitals before he went away.

That lonely feeling

A tape recorder and pre-recorded tapes of Strauss and Beethoven were among the equipment with which 23-year-old Michel Siffre retired to a cave 400ft underground for a two months' vigil. When he emerges he will undergo tests by French army doctors studying the effects of complete isolation.

Long play

A tape library for the blind made by handicapped war veterans at a hospital at West Roxbury, Massachusetts, now extends to more than 1,000,000ft. It comprises readings from literature, philosophy, science and technology, accountancy, law and medicine.

Over the river

In the 150th request programme he had organised for patients at Cleaver Hospital, Heswall, Mr.

Monty Lister of Bebington (Cheshire) featured a souvenir tape recording he made on the first Hovercoach passenger trip across the Dee.

Caw, caw!

Tape-recorded distress cries designed to scare birds away from Kent cherry orchards proved so effective that villagers complained they frightened the children too. But farmers say the scaring machines, tried out on the Continent, are a must. Using two-track tape, they produce the amplified calls of four different species to order.

In the Archives

The Story of Sarah, an hour-long recording made by amateur Mrs. Sylvia Whitehead at her Bromley (Kent) home, has gone into the B.B.C.'s Sound Archives after getting its second airing—an honour reserved for recordings of 'outstanding quality and interest.'

Sarah was a Bantu domestic servant employed by Mrs. Whitehead when she lived in South Africa.

Glug, glug!

Experimenting to discover how frequently a human being swallows in different situations, Dr. Clement S. Lear of the Harvard School of Dental Medicine used a throat microphone and a tape recorder. One of his findings—during a night's sleep you swallow seven or eight times every hour.

If you can't take his word for it, mind you don't swallow that mic . . .

THE P.C. AND THE TAPE RECORDER

SHOULD a police officer use a tape recorder to help him memorise a conversation between two accused men in their cells—who don't realise they are being recorded?

The men, who were concocting an alibi when they were taped, appealed against their conviction on the ground that the policeman's evidence about their conversation should not have been allowed.

But the Court of Appeal decided that he had only used the tape recorder as he

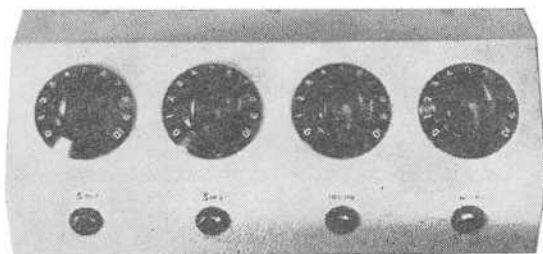
would have used a notebook and pencil, to refresh his memory, and the appeals were dismissed.

The court reserved its opinion on whether the tape recording itself could have been admitted in evidence.

Commented *The Solicitors' Journal*: 'Whilst the court's reluctance to anticipate a question which was not actually before it is understandable, it is a pity all the same that it should have missed an opportunity to express its opinion on a point of such practical importance . . .'

Save money! Here's all you need to help you construct—

THE ATR BUILD-IT-YOURSELF 4-CHANNEL MIXER



●If you're planning to do anything the least bit creative in tape recording, the first thing you'll need is a mixer unit.

Here are complete, easy-to-follow instructions and diagrams enabling you to construct the *ATR* 4-Channel Microphone and Signal Mixer, specially designed by the Technical Editor, F. C. Judd, A.Inst.E.

THE value of a microphone mixer can never be fully appreciated until one has been used. But a high-grade mixer is an expensive item and can cost nearly as much as a good tape recorder.

So-called 'simple' mixers employing three or four potentiometers are quite useless for mixing microphone inputs because of the risk of noise and hum and the severe attenuation offered by the circuit elements. Successful mixing of microphone channels can only be accomplished by using pre-amplifiers in conjunction with a passive mixing network.

The microphone signals are first amplified sufficiently to overcome the inherent losses of the mixing network, which also ensures that the signals are higher than any noise produced by the actual gain controls.

A unit like this would probably cost you 15 gns. in a shop. If you build it yourself it will cost you little more than £5—and you'll get all the enjoyment of making your own equipment.

This is the first of a series of constructional features which *ATR* is planning to meet readers' needs.

By using triode valves one can effect a saving on the total cost of the mixer, since double triodes may be employed (two valves in one envelope). With a modern triode such as the Mullard ECC83, or the equivalent, considerable amplification without noise can be achieved.

In fact, the *ATR* mixer has a signal-to-noise ratio of better than -50 dB. By use of negative feedback its frequency response is comparable with any modern high-grade recorder, being perfectly level between 30 and 15,000 cps.

It employs a cathode follower output, which permits a long cable between the mixer and the recorder and is also an effective means of achieving a suitable impedance match with the usual high impedance input of the tape recorder, whether a microphone or radio input.

WHAT YOU NEED

HERE is a list of the components you need to build the *ATR* 4-Channel Mixer:

Valves (Mullard ECC83), 2. Valveholders (9-pin Noval)
2. 18-way tagboard (6½in × 2in), 1. Gain controls (1 M.ohm Log), 4. Control knobs, 4. Sockets (input and output) 5.

Capacitors: 0.1 μfd 500 V wkg., 5. 8 μfd electrolytic 350 V wkg., 2. 25 μfd electrolytic 350 V wkg., 1.

Resistors (high stability ¼ watt): 10 M.ohms, 2. 100 K.ohms, 2.

Resistors (20pc ¼ watt): 100 K.ohms, 1. 470 K.ohms, 4. 220 K.ohms, 1. 47 K.ohms, 2. 1.2 M.ohms, 1. 2.2 K.ohms, 1. 68 K.ohms, 1. 1000 ohms, 1.

Note: If a master fading control is required the Resistor R.12 can be replaced by a 1 M.ohm (Log) potentiometer wired as shown in Fig. 7.

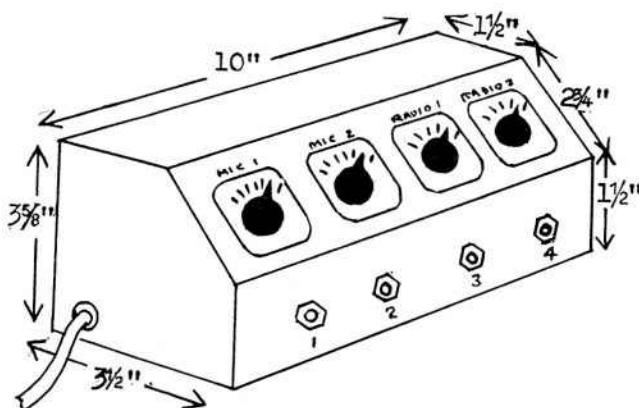


Fig. 1: Case for the Mixer.

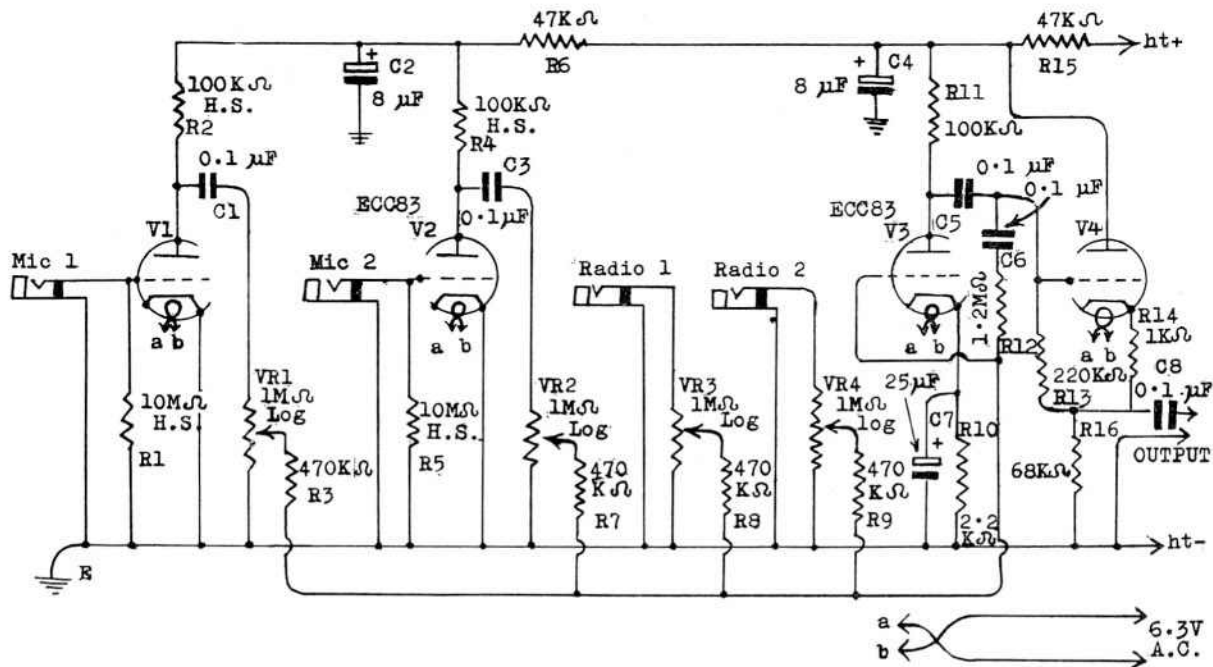


Fig. 3: Circuit of the ATR 4-Channel Microphone and Signal Mixer.

Few components

The circuit of the ATR mixer, shown in Fig. 3, employs the fewest possible components. The input sensitivity for the two microphone channels is 2 mV, which is ample for crystal microphones and sensitive moving-coil or ribbon instruments having their own matching transformers.

The input sensitivity for channels 3 and 4 is 100 mV, which is suitable for radio tuners, gramophone pick-ups (except low impedance or low sensitivity reluctance types) or the output from another tape recorder; preferably a high impedance output for external amplifier. Each channel is completely

SEE PAGE 13

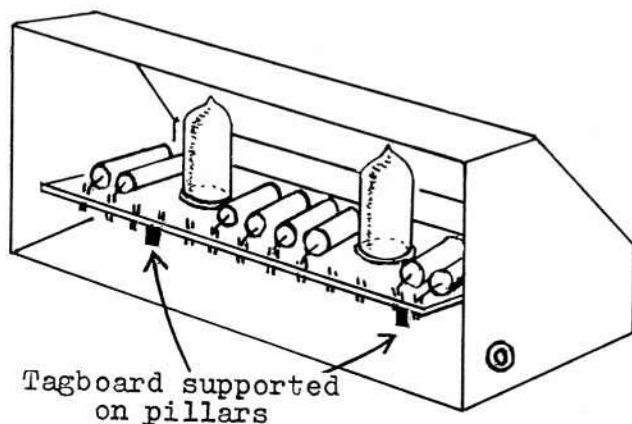


Fig. 2: Rear view of case showing tagboard assembly.

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(Approved by A.T.R. Technical Editor F. C. Judd)

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THE ATR 4-CHANNEL MIXER

—from page 11

independent of the other and each can be faded in or out at will.

Power requirements for the mixer are modest, since it needs only 250–300 V at 5 mA for the h.t. and 6.3 V at 0.6 amps for the valve heaters. These supplies could be drawn from any tape recorder with an h.t.-l.t. socket for external equipment. Alternatively, a small power supply is not difficult to construct, or it can be obtained from the Esisolder Iron Co. Ltd., of Worthing, who can also supply the complete kit of components and case for the mixer.

Construction

The diagrams of Figs. 1 and 2 show a suitable size and shape for the case and a method of mounting the chassis. The main layout should follow that shown in Figs. 4 and 3 which, in conjunction with Fig. 4, provide all the point-to-point wiring details.

TURN TO PAGE 33

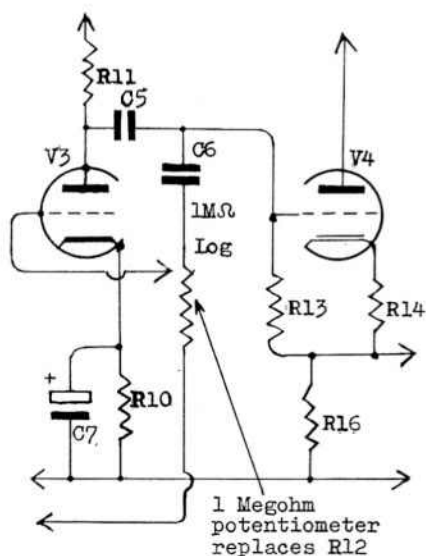


Fig. 7: Modification for a master fader.

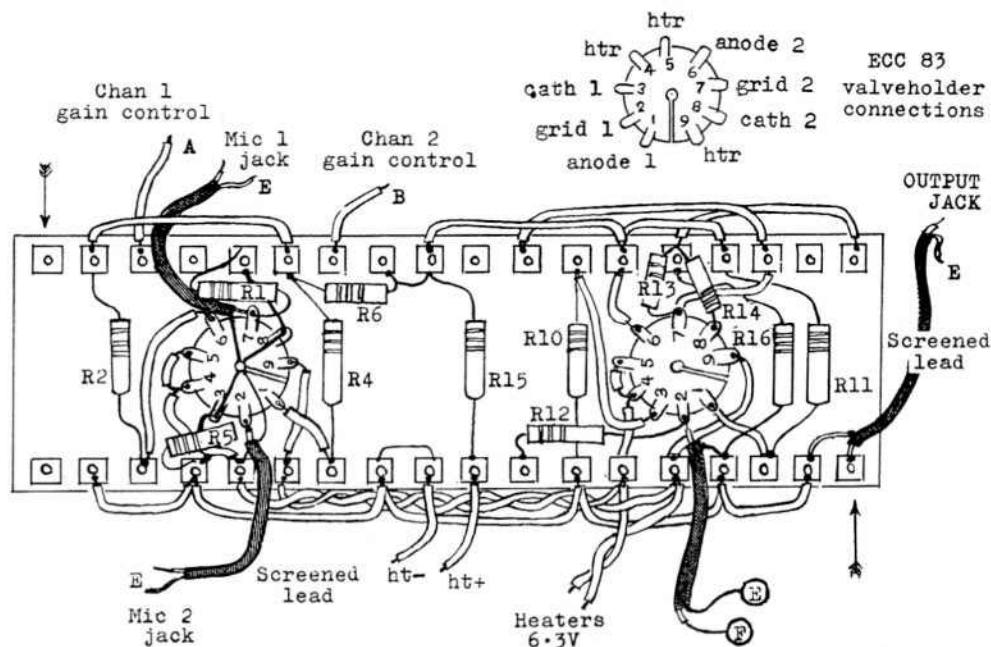


Fig. 4: Underboard wiring of the ATR 4-Channel Mixer.

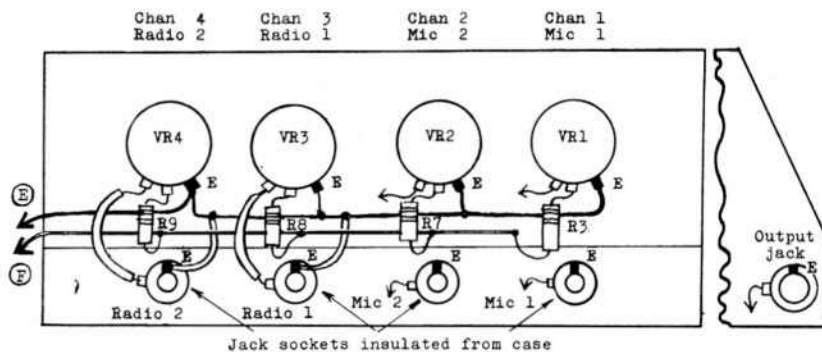


Fig. 5: Diagram of wiring inside the case.

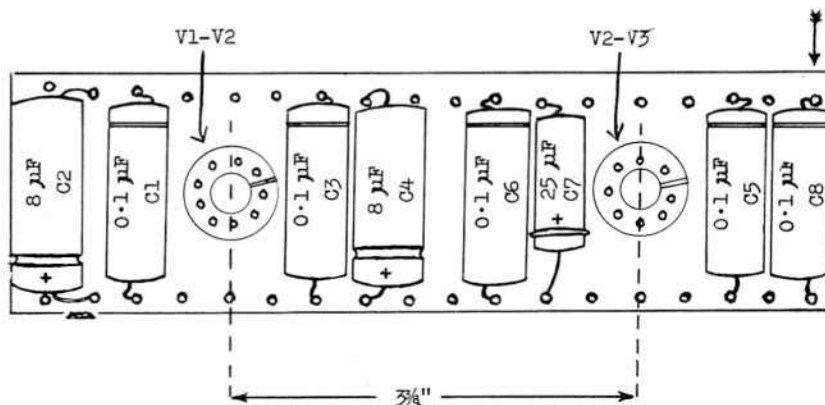


Fig. 6: Diagram of the top-of-board wiring.

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STAR FEATURES

Three tape speeds

$1\frac{1}{2}$, $3\frac{3}{4}$, $7\frac{1}{2}$ i.p.s.

Frequency response

60 to 10 Kc/s at $1\frac{1}{2}$ i.p.s.

60 to 15 Kc/s at $3\frac{3}{4}$ i.p.s.

60 to 18 Kc/s at $7\frac{1}{2}$ i.p.s.

Wow/Flutter

$\pm 0.1\%$ at $7\frac{1}{2}$ i.p.s.

$\pm 0.12\%$ at $3\frac{3}{4}$ i.p.s.

$\pm 0.2\%$ at $1\frac{1}{2}$ i.p.s.

Four-tracks

Selected by positive piano-type keys.

Signal to noise ratio

Better than 50 db at $7\frac{1}{2}$ i.p.s.

Better than 45 db at $3\frac{3}{4}$ and $1\frac{1}{2}$ i.p.s.

Pressure sling

This, unlike the conventional pad, is flexible and maintains even pressure over the whole surface of the head. It gives better H.F. response and minimises "drop-out" effects.

Multi-disc clutches

In addition to the normal slipping clutches the TK.40 embodies additional multi-disc clutches to remove excessive tape strain. Using *double-play* tape you can switch immediately from fast-forward to fast rewind or vice versa without tape breakage or stretch.

Inching

Fast-forward and rewind are controlled by a slider actuating a progressive clutch. Inching is thus unusually easy and accurate. A lock position is also provided.

Cine-socket

To connect magnetic heads from a cine projector to the TK.40 to record sound films or play back from them.

Built-in tape cleaner

Retractable, and press-button operated.

Indicator re-set

The digital indicator is provided with a button for immediate zero re-set.

Automatic stop

At the end of the tape.

Remote control

An adaptor is available.

Mixing facilities

For microphone/pickup and microphone/diode.

Monitoring

Through loudspeaker when required.

Synchronous recordings

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PUT THAT TAPE RECORDER TO WORK FOR YOU!

RACHEL LINDSAY advises . . . and passes on some readers' ideas

THE more letters I get from you, the more I realise the uses to which recorders can be put. And in case any of you have just bought machines and are wondering what to do with them, apart from the usual party fun, here are some suggestions from other ATR enthusiasts.

C. J. Wormleighton of Blackburn uses his recorder to tape incoming telephone calls for any member of the household who is out, the machine being switched on by the person answering the phone. This is especially useful for anyone with a teenage family.

I once answered the phone to a character called Joe who wanted to give a message to one of my nieces. "Meet me at the coffee bar. Wear so and so. We're going to do such and such, and meet this one and that one . . ." At the end of two minutes I completely lost count of everything he had said, and my garbled version of the message almost broke up a beautiful romance! If only I'd put it on tape . . .

Easy to learn

Mrs. Savage of Hornsey is learning to play the piano by correspondence course and has dictated the instructions on to tape. She also makes a recording as she plays each exercise, and after she's practised it a few times she finds it most encouraging to play back her original recording and see how much she's improved.

She also learns her instructions by playing them over while she's doing housework or sitting down sewing or knitting. In other words, she's learning the easy way.

N. B. Chard (Chippenham) found my idea for taping recipes useful. Many

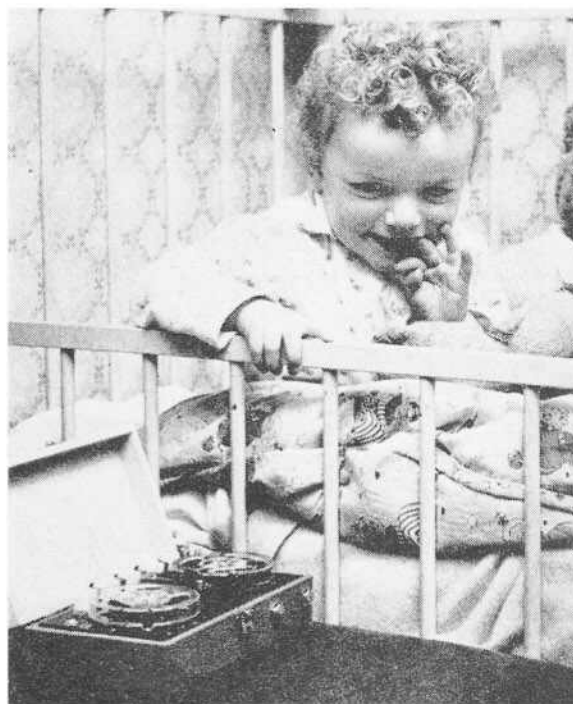
Daddy's stern tones on tape may help to get the little bouncer bedded down for the night

thanks for the compliment; and thanks also for your idea, which is very good. The Chards are keen colour slide photographers and like to do their own processing. Here's what they say:

'This calls for accurate timing, temperature of solutions, etc. By putting the instructions, accurately timed, on to tape,



'With Fred on night shift, I couldn't sleep, so . . .'



clock-watching becomes unnecessary. When there is a gap of a few minutes between one operation and the next, taped music gives us something to listen to while we're waiting.'

Memory aid

Lionel Brooks of Finchley is a fire brigade officer. While studying for promotion exams he taped important, salient facts. After he'd played them back a few times he found them much easier to remember than normal book learning.

Mr. Jones of Arley, Cheshire, has twin sons at school, and says:

'They have a lot of homework and miss many good quiz programmes of an educational nature. I tape these and they can then listen at their leisure. Also, as they both learn music, I tape all the world's best musicians.'

I think this is a marvellous idea. And I'm sure these suggestions will help you to think of more ways to put your tape recorder to work for you.

Please let me have every one you find useful so that I can pass them on to those who are letting their machines lie idle . . . they shouldn't!

Thanks to all of you who've written in telling how you've splashed out on tapered trews and gay blouses instead of the usual serviceable skirts and sweaters worn on most tape recording sessions. Keep up the good work!



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Z for IMPEDANCE

MOST tape recording enthusiasts are at some time or another faced with the term, all too casually used, *Impedance*. It is found in technical specifications, in instruction manuals, in technical and non-technical books on tape recording, and in the various journals. But what is Impedance?

From the term itself one might deduce that whatever it is it impedes something. Broadly speaking, it is the equivalent of resistance as applied to pure D.C. Impedance is, therefore, always associated with alternating voltage or current. An A.C. circuit as shown in Fig. 1 may contain resistance, inductance and capacitance, each of which can oppose a flow of alternating current.

When a circuit like this is coupled to an A.C. signal source, such as the output from an amplifier or a tape recorder, its opposition to an alternating voltage is called the *impedance* and is denoted by the symbol *Z*.

Reactance

The impedance of a whole circuit such as in Fig. 1 cannot be found by simply adding together the reactance (of the inductance and capacitance) and any pure resistance, since the relative current and voltage phases in the circuit may not be the same. For example, the inductive and capacitive reactances have exactly opposite phase effects and must first be subtracted from each other to find the total reactance in the circuit.

TAPE WITHOUT TEARS

By A. LESTER RANDS

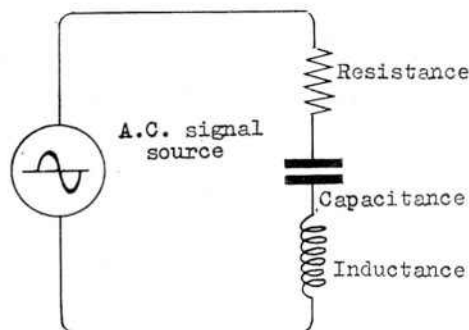


Fig. 1: Diagram of an A.C. circuit.

Reactance, of course, brings in another term to be explained, but for the purposes of this article let us take that as read. It does not arise in practice, as far as the tape recording or hi-fi enthusiast is concerned. However, when calculating the impedance of a circuit like that of Fig. 1 the reactance must first be derived from the formula $X = (X_L - X_C)$ where X is the total reactance, X_L the inductive reactance and X_C the capacitive reactance.

The impedance is then found by compounding the total resistance with the reactance in the circuit. It is derived from $Z = \sqrt{R^2 + X^2}$ where Z is the impedance required to be known, R the total pure resistance in the circuit and X the reactance as above. Current flowing in the circuit may then be found by Ohm's Law, except that Z now replaces the more familiar R ; for example, $I = E/Z$.

An amplifier or tape recorder input or output circuit may contain little or no inductance or capacity. In an amplifier output there is, of course, the inductance of the output transformer secondary, and this must be taken into account when calculating the output impedance. Most input circuits, such as those for a microphone or radio, contain almost pure resistance plus a small amount of capacity provided by either the valve or any frequency correction network associated with the input.

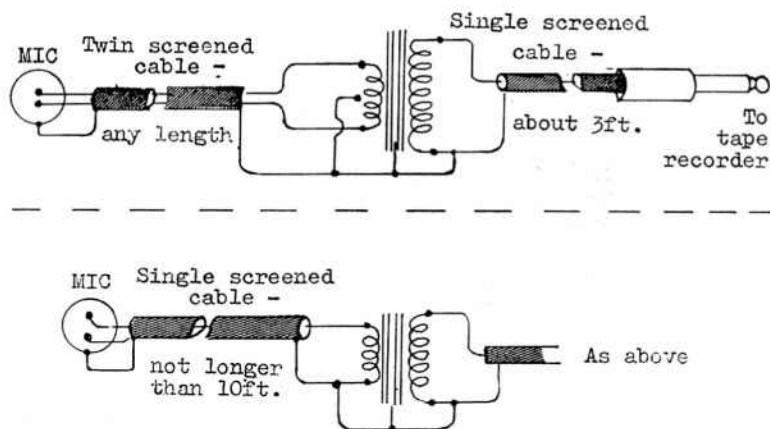


Fig. 2: Top—Balanced input and transformer connections for low *Z* mic. The transformer should be situated about 2-3ft. from the recorder. Bottom—Unbalanced input and transformer connections for low *Z* mic.

Matching

In order to transfer all the available signal from one source to another—as from microphone to tape recorder—it is highly essential that the *impedance* of each is *matched*. The same applies to the transference of a signal from an output socket, as from an amplifier to a loudspeaker.

The range of impedance likely to be met with in tape recording or hi-fi is quite high. It may extend from the lowest loudspeaker

SEE NEXT PAGE

impedance of 3 ohms to the very high impedance of a crystal microphone which may be between 2 and 5 million ohms or megohms. But there is a good deal of tolerance as far as accurate *matching* is concerned, because a crystal microphone can be operated without too much loss when connected with an input socket having an impedance of less than 1 million ohms—1 megohm.

Similarly, a microphone with an impedance of 1,000 to 2,000 ohms will operate, though with some loss, with an input impedance of 100 thousand ohms—100 K.ohms. In this case, a lot would depend on the sensitivity of the input circuit and the available output from the microphone.

Sensitivity

The *sensitivity* of input and output circuits is also very closely involved with impedance. Sensitivity means the smallest signal that can be applied to the socket for maximum output from an amplifier, or full recording level for a tape recorder. Supposing the tape recorder has a socket marked sensitivity 100 mV ($100 \times 1/1000$ th of a volt) at an impedance of 100 K.ohms. This means that whatever is plugged into that socket must have an *impedance of the same value* and a *signal of the same order* if the recording level is to reach maximum.

Supposing the signal source provides 200 mV. Theoretically, the signal is too high and would over-record. But, generally, an input socket of this nature will also accept a much greater signal than that shown for the smallest input; certainly more than twice as much signal can be accepted by any input socket so long as the impedances of both signal source and socket are reasonably matched.

Here is a problem which many tape recordists refer to us. You have purchased a low impedance microphone and want to use it with a high impedance tape recorder input. Well, this

requires the use of a matching transformer between the microphone and the recorder to step up the impedance from 25 ohms or so to something approaching 1 megohm. The makers will supply suitable matching transformers for any low impedance microphone, but it is essential to connect it correctly to obviate hum pick-up, especially if long cables are to be used. Have a look at Fig. 2, which shows how the connections should be made.

Next month: Copying recordings, using two tape recorders or one tape recorder, a deck and pre-amplifier.

FUN WITH A PHILIPS

Users of Philips tape recorders will be glad to find that the Focal Press have done for them what they have previously done for the owners of Grundig and Walter machines. *The Philips Tape Recording Book* is a comprehensive guide to all their models and accessories by that enthusiastic writer Frederick Purves, who was also responsible for *The Grundig Book*.

More than that, it is a splendid guide to tape recording itself. The finer points of the hobby, such as dubbing and editing, doing tricks with tape, and the many uses for the tape recorder at work and at play, are all thoroughly covered in the course of 14 chapters, reinforced by a glossary, a data section and dozens of diagrams.

At 13s. 6d., it's a book no Philips owner can really afford to be without. Anybody, in fact, could learn from it whatever his equipment. It's heartening to find a technical expert giving this advice: 'Don't take your tape recorder too seriously. Tape recording isn't the solemn technical rite that some people like to make it . . .'

J. G.

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NORRIE PARAMOR predicts—



THE TAPE RECORD BOOM WILL BE HERE SOON

PRE-RECORDED tapes in America have developed into big business.

Thousands of tapes are issued every month and magazines are being published devoted solely to noting these releases. And believe me, these are really mammoth jobs, crammed full from cover to cover with all the information you need—and more!

**What's next in
pre-recorded
tapes? Here's
the answer**

Someone asked me if I thought that we in England would soon be reaching the stage when the popularity of pre-recorded tapes would warrant a magazine of this sort. Quite honestly, I think the time is pretty near when we will be able to produce such a publication, entirely devoted to tape releases.

It seems incredible that in such a short time the sale of pre-recorded tapes should even give rise to thoughts of a project of this sort. But there it is . . .

Big demand

These tapes have proved much more popular than was ever imagined when it was decided to put them out at 3½ ips. The demand, in fact, was more than anyone had bargained for, and production had to be stepped up quickly to cater for it.

The main reason for their popularity is, of course, the fact that tape recorders themselves have become popular. They are now part of everyday life—like television. Apparently about 80 per cent of English homes today have TV sets, and I'd say that tape recorders are very quickly catching up on that percentage.

It's so easy to take a portable tape recorder around, to your friend's house or a party, without having to cart dozens of records with you.

At the moment all the pre-recorded tapes E.M.I. has put out are from L.P.s already on the market—things like Cliff's 'The Young Ones,' for instance, and others which have been doing very well in disc form. I suppose you could call it a form of insurance . . .

Special issues

But I have had quite a lot of enquiries about the possibility of issuing tapes other than of music already on the market as L.P.s. In other words, as in America, specially recorded for the tape market without a cover disc.

Well, as with the special magazine, I believe it won't be long

before these tapes are available. **In fact, if all goes well, they should be released in a few months' time.**

If you ask me, I'd say it is only a matter of time—maybe less than a year—before pre-recorded tape in this country becomes a sphere of recording entirely on its own, completely independent of disc production. Be patient a bit longer, and you'll see.

And soon I'm going to heave the cases down and start packing for that world tour I was telling you about—that is, if I have time! At the moment I'm busy writing film scores for about three films, which is keeping me pretty busy.

Meeting Helen

While I'm away I'm planning to look up Helen Shapiro and see how she's getting on. She'll be doing shows in New Zealand and Hawaii—lucky girl. I shall look in on her in New Zealand; then I'll go on to Japan, and meet her again in Hawaii.

Lured by the prospect of days in the hot sun on those golden beaches under the palm trees, I'm shooting through the work like a maniac! And who knows, by the time I'm back those new pre-recorded tapes may be on sale . . .

What *The Times* thinks

IN two weighty articles on 'Tape and Disc and the Future,' *The Times* concluded that 'the market for tape is likely to grow steadily over the next few years, without necessarily reducing the market for discs.' It went on:

'There seems no likelihood of tape ousting disc as the principal medium for recorded music in the near future. This could only happen if a company were suddenly to embark on a large-scale tape programme . . .

'Looking indefinitely far ahead, to the time when really first-class reproducing equipment is cheap, when simple cassettes . . . are standardised, and when the industrial problems of tape production are solved, tape could well become the primary medium. But . . . by that time the simple disc could have undergone a revolution too, or some entirely new form of reproduction could have been devised.

'All we can confidently say at the present moment is that the time of tape may well come, but the day of the disc has not even begun to pass.'

TELEFUNKEN

QUALITY FOR EVERYONE!

6 SUPERB MACHINES TO SUIT EVERY TAPE RECORDING NEED!

The unique Telefunken range caters for everyone; the lover of good music; hi-fi enthusiast; pop recorder; family man and business man. Their attractive features have made them the choice of many of Europe's Broadcasting Stations. They include Automatic Recording; four-track and stereo; exceptional versatility with every modern facility for trick recording and effects.



TELEFUNKEN MAGNETOPHON 95

★ **YOUR DEALER WILL BE HAPPY TO DEMONSTRATE THEM TO YOU**

1 Telefunken Magnetophon "Automatic"

The world's first Automatic Tape Recorder. Eliminates almost all controls. You merely switch on and press recording button. Running time 3 hours with 5½ in. DP tape. 50 gns.

2 Telefunken Magnetophon 75-15

Tape speeds 3½ ips and 1½ ips with frequency response of 60-16,000 cps and 60-9,000 cps. Playing time of 6 hours on 5½ in. DP tape. Tone control. Extension speaker socket. 50 gns.

3 Telefunken Magnetophon 95

Twin-Track. Speeds 7½, 3½, 1½ ips, 7 in. spool. Frequency response 30-18,000; 30-16,000; 30-9,000 cps. Facilities for superimposition and "straight-through" amplifier. 59 gns.

4 Telefunken Magnetophon 96

Four track. Speeds, spool size and frequency response as Magnetophon 95. Superimposing, intertrack, transcription and straight-through amplifier facilities. Ideal recorder for cine enthusiasts. 69 gns.

5 Telefunken Magnetophon 97

Four track. Full stereo recording and playback as well as all the unique feature of the Magnetophon 96. Extra speaker in lid for Stereo playback. 95 gns.

6 And the NEW Telefunken Magnetophon 85 De Luxe

New styling. New mixing facilities. New magic eye recording level indicator. Tape speeds of 7½ ips and 3½ ips with frequency response of 30-20,000 cps ±3dB and 30-15,000 cps. 6-watt push/pull power stage. Separate Bass and Treble controls. DC heated preamplifier valves. 83 gns.

(All prices exclusive of microphone.)

Send for Illustrated Literature on Telefunken Tape Recorders, Microphones, Tapes and Accessories

TELEFUNKEN

The Originators of Tape Recording

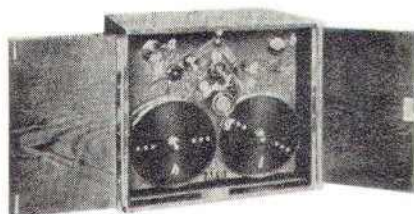
THE WELMEC CORPORATION LIMITED, 147/148 Strand, London W.C.2





FORTY YEARS OF TAPE RECORDING

IT ALL BEGAN WITH TELEFUNKEN...

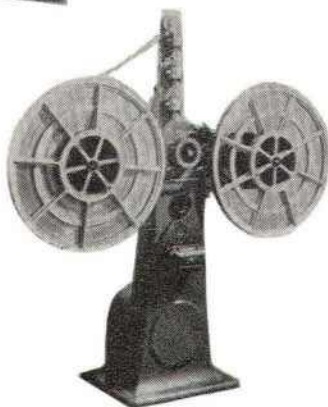


An early model of the Magnetophon, which was one of the marvels of 1934.

How's your history? THOMAS SHERIDAN tells the story of the Magnetophon, which really set the spools spinning



A steel tape recorder used by the BBC for recording programmes 30 years ago. Splicing was done with a soldering iron...



READ any book on tape recording and you'll find in it very little history. You might find a mention of Valdemar Poulsen, the Danish engineer credited with being the 'father' of magnetic recording. It was he who, back in 1893, invented the Telegraphon, the first wire recorder—or the first which really worked.

His main objective was to record Morse signals. But after his primitive machine had carried off the Grand Prize at the Paris World Exhibition, pioneer Poulsen formed an American company to manufacture the Telegraphon, which was used quite extensively in Europe for taking office dictation and recording telephone conversations.

It looked something like an ancient phonograph minus the horn, except that the revolving drum was wound with iron wire which moved past a recording and playback head at 80 ips. It was a special type of wire, and such were the difficulties of production that eventually the company had to give up the struggle.

But this didn't stop the inventors pinning their



Another early version of the Magnetophon, complete with headphones. The year was 1935.

A later model of the Magnetophon, with recording and reproduction amplifiers mounted in a plain cabinet.



SEE PAGE 24

Still later... and what a contrast! The Magnetophon 76 has the familiar styling which has only recently been modified.





From WIRE to TAPE

paper and plastic tape which took place in Germany at this time. Though the use of powdered magnetic material had been suggested by one of his countrymen in 1920, it was Fritz Pfleumer who finally began to resolve the tricky problems involved.

He took out his first patent, covering a method of coating plastic or paper tape with a magnetic material, in 1928. At about the same time, patents for a similar development were issued to an American experimenter, but nothing more was heard of it and for many years the Americans continued to produce recording machines using metal tape or wire.

The first tape—of paper

Pfleumer's first tape was far from being the durable but tractable material we treat so casually today. He merely coated his paper with powdered material which often came off in a fine spray as the tape flew across the recording head of the primitive instrument he used for his tests. But the results he achieved were promising enough to induce the A.E.G. Company of Germany to take up his work in 1931 and develop the first paper tape.

Four years later, A.E.G. introduced the Magnetophon at

FROM PAGE 23

faith to wire—or steel tape, which Poulsen first thought of using. Though, in one of the earliest works on the subject, published in 1892, Oberlin Smith had warned against wire as a recording medium. In his view, better results would be obtained from a thin ribbon of cotton or silk into which particles of magnetic material might be woven.

Making such a ribbon proved a bigger problem than making an efficient recording machine. But it must be remembered that these early experimenters were trying to produce results without the facilities of modern electronics which came to the aid of their successors.

Enter the valve

It was the invention of the radio valve and the development of amplification methods which gave magnetic recording the stimulus it needed. And steel tape seemed practical enough in an age which had not yet witnessed the marvel of plastics.

But the real breakthrough leading to the perfection of the present-day tape recorder came out of the experiments with

Today's tape recorder is used to make the modern magic lantern show more interesting.



Left: The Magnetophon of 1935 in its veneered cabinet, on castors. Right: The 1962 product—the Magnetophon Automatic.

From WIRE to TAPE

the annual Radio Fair in Berlin. This, the genuine prototype of the modern domestic recorder, was originally designed as a dictation machine, and it had many drawbacks. The tape still flew past the recording head at 40 ips. Frequency response was almost straight, from 50 to 5,000 cps, the noise level somewhere near -35 dB. Pre-magnetisation and erasure was by direct current. To give a reasonable recording time, cumbersome reels were necessary.

Still, it soon became apparent that A.E.G., the parent company of the present firm of Telefunken, were on the right track. The development of plastic tape by BASF ensured that the Magnetophon had come to stay, to improve out of all recognition.

The exact sequence of development in those formative years is difficult to trace now, but the first Magnetophon to be used in German broadcasting was the K4 model of 1938. Its frequency range was hardly better than that of the steel tape machines preceding it, but the signal-to-noise ratio was slightly superior and it was much easier to operate.

The tape, consisting of black iron oxide on a cellulose acetate base, was coarse-grained and brittle, but it was lighter and much cheaper than steel tape. Since it could also be more easily cut and joined, the added facilities of editing became evident.

The war's stimulus

Then came the war . . . and the further development of magnetic recording was stimulated on both sides. In Britain and America, advances were made in the production of wire recorders, with which the U.S. Forces were still being equipped in 1943, though paper tape had been produced in America in 1939.

Only when the Allied Forces occupied Germany in 1945 did the full impact of the intensive development which had taken place there make its impression. Among the facts which British and American Intelligence unearthed was that Magnetophons with a tape speed of 30 ips had been installed at Radio Luxembourg by 1941.

One of the most important factors in the improvement of its performance revealed itself in a German patent of 1940 covering the application of high-frequency bias to the oxide-coated tape used in the Magnetophon, which instantly became the inspiration for post-war development of tape recording in the United States—with the accent on plastic tape.

By 1952 the firm of Telefunken, which had been prominent in the telecommunications and radio field since it was founded in 1897, had begun the large-scale production of Magnetophon tape recorders in Germany. Two years later it took over from A.E.G., with which it had been associated since 1903, the Magnetophon manufacturing plant at Hamburg, and by 1957 was making multitrack machines for commercial application.

From a big, semi-professional model, the AW2, employing the two speeds which were to become general—7½ and 3½ ips—the KL25 portable model with 7in. spools was developed



Practically anything is possible with the modern tape recorder. And if dolls can talk, why not into a microphone . . . ?

in 1954. The first serious approach to the domestic market came with the KL65U, a single-speed (3½ ips) machine with 5in. spools which formed the basis of a series. The KL65S introduced 1½ ips as a second speed and could be obtained in the form of a table model without a power stage or loudspeaker, and in a portable version complete with playback facilities.

By this time the Welmecc Corporation was marketing Telefunken products in this country. The name Magnetophon was preserved in the KL65X, which also offered two alternative models and led the way for the popular 75 series which has been developed over the past four years in accordance with the needs of thousands of enthusiasts.

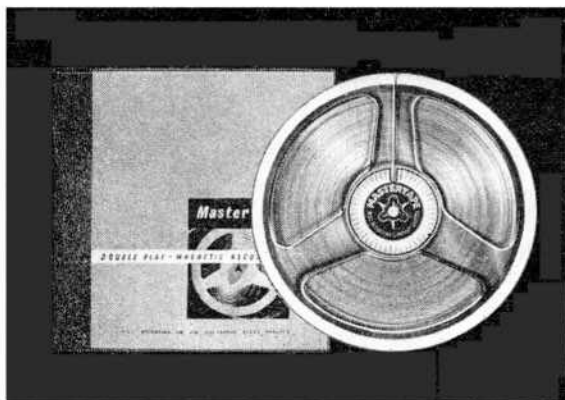
The machine that thinks

With the Magnetophon 76 and 77 came the introduction of four-track recording and multiple superimposition facilities, which were achieved without any appreciable change in design. Complete re-designing followed towards the end of last year, resulting in the appearance of the three-speed 95, 96 and 97 models, in which the emphasis is on purely mechanical control, the 96 giving the added advantages of 4-track technique and the 97 full stereo facilities.

The latest phase in this consistent development of the instrument to which tape recording owes so much may be seen in the new Magnetophon Automatic, in which the controls have been reduced to the barest essentials for the benefit of those who demand simplicity combined with quality. It may be said, in fact, to do all the thinking for you.



as perfect as human skill can achieve



For almost a thousand years before our calendar began the Celts grew to be one of the greatest races of all time. Yet a mystery surrounds their culture and is evident in their art, of which this silver brooch is a typical example. The wonderful intricacy of design seems filled with some profound but inscrutable meaning. The great quality of skill and craftsmanship are however unmistakable.

In Mastertape, also, the qualities which outstanding craftsmanship and skill alone can produce are evident to the most discriminating connoisseur of fine sound recording and reproduction. In fact Mastertape is the end product of nearly thirty years research and development by a British pioneer company in recording techniques. Mastertape is specially approved by GRUNDIG (GT. BRITAIN) LTD. for use on their machines, as well as by many other leading tape recorder manufacturers. Those who really care for fine recording always insist on Mastertape. Obtainable from your local dealer or, in case of difficulty, write to the address below for your nearest stockist.



**British Mastertape
Makes Sound Sense**

Mastertape

M.S.S. RECORDING COMPANY LIMITED, COLNBROOK, BUCKS.
Tel: Colnbrook 2431

A MEMBER OF THE **BICC** GROUP OF COMPANIES

— Send for free full colour brochure of useful hints and list of tape prices and accessories —

TAPE GUIDES

Practical tips from readers
are wanted for this page.
Each one published wins a
guinea

Saving postage

HERE'S how one ATR reader saves 2s. 6d. on every spool of tape when taping with South Africa at the rate of 1s. 3d. per half ounce.

Remove one flange from an empty 3in. tape spool. Drill two holes through the hub at its outer edge as in Fig. 1 and make two slits in the remaining flange so that they meet the holes.

When recording track 2 wind off the tape on to this special spool. When the recording is completed, pass a piece of

thread through each hole and tie round the tape, which can now be eased off the hub and posted.

Reader T. Kent, Sheffield, who receives one guinea for this idea, claims that it saves as much as one ounce for the spool. The spool-less tape can be replayed or re-spooled by putting a circular piece of cardboard over the boss of the tape recorder.

Windshield

Reader A. C. Adams, Prestatyn, has discovered that a plastic lampshade makes a good windshield for a microphone and has some effect as a reflector.

This idea can be improved on; in fact, a really effective windshield designed by ATR Technical Staff can be made as shown in Fig. 2. A wire framework is first made up with an opening to fit over the microphone. The frame is covered with silk glued on with strong adhesive.

Reader Adams also receives a guinea for his tip.

Neck halter

A simple neck halter for a stick microphone can be easily made with a brass clip and a length of picture cord as shown in Fig. 3.

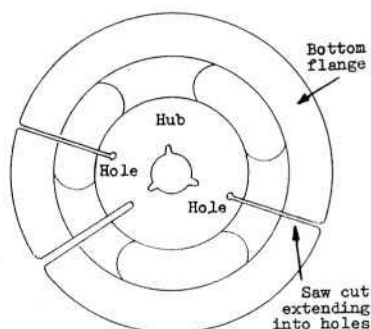


Fig. 1

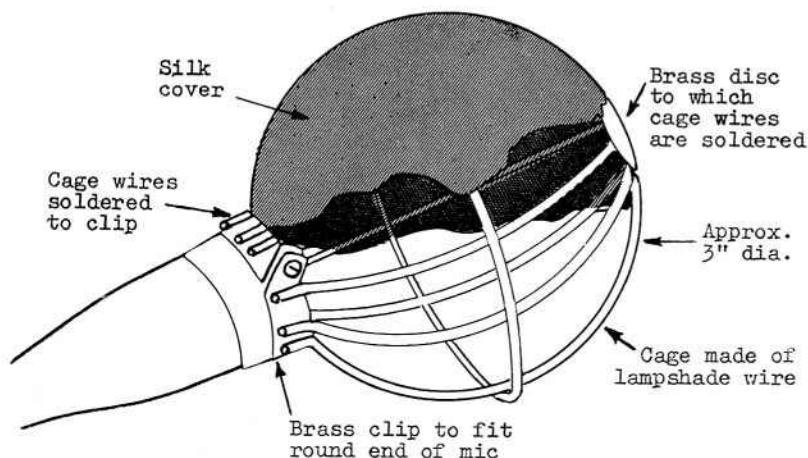


Fig. 2: Windshield for a microphone.

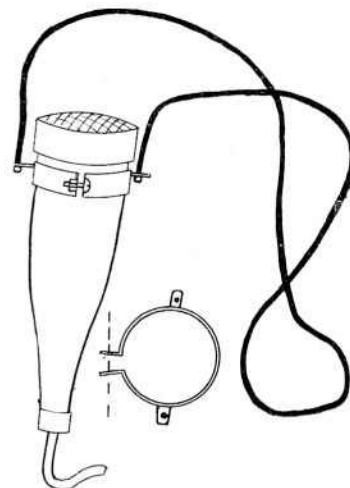


Fig. 3: Neck halter for a stick microphone.

A neck halter leaves both hands free and is particularly useful when recording interviews. Each person involved can have a microphone at close range, obviating high background noise. Both microphones can be connected together and fed to the microphone socket direct or separately through a mixer.

BASF Cutter Box

A comprehensive accessory kit of practical value to every tape user is the BASF Cutter Box. It has a semi-automatic splicer with spare knife and groove, four tape clips, 50 automatic stop foils, a 35ft. roll of splicing tape, three 80ft. rolls of green, white and red leader tape, and a supply of spool labels.

It comes in an attractive rigid plastic box, priced at 52s. 6d.

IF you're interested in bargains in equipment or accessories, you can't do better than examine the Classified Advertisements in this issue. See page 46.

*In Liverpool and Leeds they're learning,
by tape, about the American way of life . . .*

TAPE TALK FOR TEACHERS



Long Island story

HALF the world may still not know how the other half lives. But tape recording is helping to enlighten the younger generation in a way no other medium can—by really personal contact.

Third-year boys at Speke Secondary School, Liverpool, will start this coming term to exchange books, newspaper cuttings and tape recordings with the Great Neck Junior High School on Long Island, New York. The scheme, organised on this side by an English teacher, is intended to give the English boys a better idea of the American way of life they hear so much about, and enable them to form friendships they may continue after school.

Of course, it's not a new idea. Since Hough Side Secondary Modern School at Bramley, Leeds, had an American exchange teacher two years ago, boys and girls have kept in touch by tape with the pupils of La Colina Junior High School in Santa Barbara, California, who compete with them in writing historical essays. And scholars who left Hough Side recently sent them a recording about their first jobs.

So well-spoken!

For two years pupils of Westborough Junior School, South-end, have been using the tape recorder in their work—with results which the headmaster, Mr. R. W. Croucher, describes as 'most gratifying.'

Each term now they make a 20-minute tape on some set subject, such as their hobbies, and send it to a school in America. In this way they expect to learn a great deal about community life in Kansas and North Dakota.

The two-way process has its hazards. Since the floods in Louisiana, Westborough has received no reply from the school

in New Orleans with which it used to tapespond. Perhaps it is just as well. The last recording received from there was so much in the accent of the Deep South that it was difficult to follow.

According to Mr. Croucher, American children seem very self-conscious about their diction and express admiration of the way the English pupils speak.

Audible exhibits

The notion of using tape recordings as background material for open days and exhibitions is finding favour with schools everywhere.

At Hildenborough (Kent) Primary School a half-hour tape included a play written by one of the girls, a country dance session, and performances by the school choir and percussion band. Parents visiting Highfields Junior School, Stafford, also heard the children's voices on tape.

To meet the demands of pupils and parents, a complete performance of *The Gondoliers* by Ecclesfield Secondary School, near Sheffield, was taped. Now LP records are available as permanent mementoes.

Piano spoils

The latest application of the tape-tuition method is being attempted by Mrs. Kathleen Taylor of Wallington (Surrey), who is offering to give piano lessons by tape. She intends to concentrate on the north of England where, she says, people are much more hardworking than those in the south. 'I feel the idea might catch on there.'

Mrs. Taylor has been teaching the pianoforte for 25 years, mostly to adults. 'I think I know all the mistakes people are likely to make and can point them out on the tape before they make them,' she told an interviewer who thought her project newsworthy.

TAPE IN THE HIGH COURT

Tape recordings may oust shorthand notes in the High Court if experiments which start there next month prove successful. A courtroom has been fitted out with microphones, two tape recorders and a control panel.

The court shorthand writers are sceptical that tape can substitute for shorthand, which has been used in the courts since the 17th century. Identifying speakers is only one of the difficulties, they say.



He spent an Evening with the Stars

A SATISFIED CUSTOMER PAYS A CALL

WHEN Mr. Peter Bastin of Worcester started tape recording nearly ten years ago, he plumped for a Philips machine. Since then he has bought five of them—and nine other machines of various makes, some of them much more expensive.

Says he: 'For all-round value and reliability, I have found Philips by far the best.' In fact, he considers Philips the most enterprising, enlightened manufacturers of domestic tape recorders in the field—and he should know.

A local government architect, Peter Bastin has his own home studio in which he has made all kinds of recordings. One of the most precious is the sound album devoted to his 10-year-old son, who can operate all his father's equipment.

All types of music appeal to him, including jazz and the electronic organ. A 'surrealistic sound' tape he made was broadcast on Radio Luxembourg. He keeps in touch with other enthusiasts in many parts of the world, and believes in tackling anything which offers a challenge.

'I am not put off by the purists,' he said. 'If you go your own way, you will find the answers to the problems which come up through your own experience.'

His prize

Mr. Bastin's latest acquisition is a Philips Starmaker tape recorder which he won in the 'Audio Stars' competition organised by *ATR* in conjunction with Philips Electrical Ltd. He came to London to be presented with it—and took the

opportunity to look over the showrooms at Century House, Shaftesbury Avenue, and tell them what he thought of their products.

Showroom manager Mr. I. R. Thomas and Mr. E. Field, who handed the Starmaker to the winner, were very happy to have such a satisfied customer around.

Mr. Bastin enjoyed the other part of his prize as a guest of *ATR* at The Talk of the Town. In the party was Fontana record star Carmita (pictured above), whose range is three and a half octaves and whose great-grandfather was a shipwrecked Spanish mariner who married the daughter of King Cakabau of Fiji in Queen Victoria's time.

He also met Liza Kirk, star of the show.

And just to round off his evening with the stars before he called it a day, Mr. Bastin visited a West End jazz club.



Mr. Bastin receives the congratulations of Philips' Mr. E. Field (right) and *ATR* Editor Walter Gillings at Century House.

MUSIC ON TAPE LIMITED

makes a special offer to A.T.R. readers

TRAD ON TAPE!

✱ A fifteen-minute session of jazz by
LORD TRAD AND THE SATURDAY KNIGHTS
for only 12/6—in mono or 4-track stereo
at 3 $\frac{1}{2}$ ips

First in the tape record field with
4-track stereo at 3 $\frac{1}{2}$ ips,

MUSIC ON TAPE LIMITED

invites you to make use NOW of this
A.T.R. privilege coupon.

To: Music On Tape Ltd.
188, Vauxhall Bridge Road,
London S.W.1

Please send me 'TRAD ON TAPE'. I enclose PO/Cheque for 12/6.

Mono ☐ 4-track stereo ☐

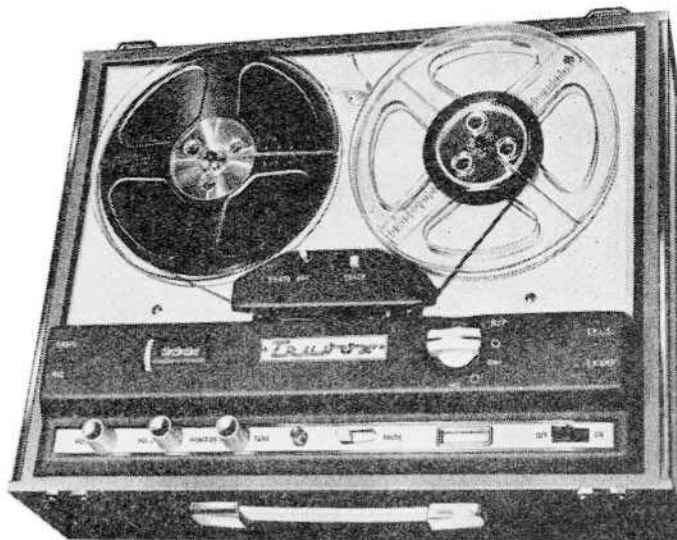
BLOCK CAPITALS please

Name:

Address:

*There's news of tape recorders
at the Radio Show and a
review of the Sony 777 in*

THE SOUND SCENE



The new model in the Truvox Series 60.

TWO NEW TRUVOX MODELS

TWO new models in the Truvox Series 60 tape recorders will be available in September. They are the R62 2-track and R64 4-track, both of which will sell at 39 gns. Each model provides two speeds—the 2-track $3\frac{1}{2}$ and $1\frac{1}{2}$ ips; the 4-track $7\frac{1}{2}$ and $3\frac{1}{2}$ ips. Both will accommodate 7in. spools.

Frequency response, according to the makers' specification, is 40 to 14,000 cps at $7\frac{1}{2}$ ips, 40 to 10,000 cps at $3\frac{1}{2}$ ips, and 60 to 6,000 cps at $1\frac{1}{2}$ ips. Signal to noise ratio is -40 dB at the higher speed in each case.

Equipped with an automatic stop and single-knob tape control, the machines give facilities for monitoring through the Rola Celestion loudspeaker while recording, and have independent mixer input controls.

The new models are styled in copper, grey and black, giving a handsome appearance. Dimensions are 17in. \times 13in. \times 7in.; weight 27 lbs.

SOUND RANGE AT RADIO SHOW

The new 1963 range of Sound Riviera tape recorders, introduced at the Radio Show, includes the single-speed 2-track model in a restyled case, price 22 gns., and a new 4-track model priced at 25 gns. The three-speed 2-track model, price 29 gns., has also been restyled and a 4-track version made available at 31 gns.

In the Sound Slimline range there are two new models in 2-track and 4-track versions. Two single-speed models are priced at 32 gns. and 37 gns., and the three-speed versions at 40 gns. and 45 gns. All have facilities for mixing, superimposing and monitoring, and the 4-track models provide stereo playback facilities.

THE AMPLIGRAM MAKES ITS BOW

An auto-change record player equipped with microphone and amplifier, enabling the owner to make announcements, sing or play an instrument to the accompaniment of the music, has been introduced at the Radio Show by Fidelity Radio.

Claimed as unique in Europe if not the world, it has been dubbed the Duet Ampligram and priced at 27 gns.

A 4-track version of the Argyll Minor tape recorder priced at 24 gns. was also shown on the Fidelity stand, with a restyled version of the Argyll Major-4, price $29\frac{1}{2}$ gns. At the unaltered price of 22 gns., the Minor 2-track model is now equipped with a tape position indicator.

DYNATRON ENTERS THE FIELD

A tape recorder made by Dynatron Radio, on view at the Radio Show, marks their debut in this field. The TRP2 is available in 2-track and 4-track versions with two speeds— $7\frac{1}{2}$ and $3\frac{1}{2}$ ips—three separate motors, and full mixing and monitoring facilities. Inputs for two microphones, gramophone and radio and built-in echo effect facilities are also provided.

The new machine presents a good appearance in a black carrying case with silver trims.

THE DANSETTE CONSORT

Dansette Products have also entered the tape recorder field with the Consort, a single-speed ($3\frac{1}{2}$ ips) model selling at 22 gns. Designed for both home and office use, it was on view at the Radio Show.

Maximum spool size is $5\frac{1}{2}$ in. and the compact cabinet measures 14in. \times $12\frac{1}{2}$ in. \times 7in. Power output is $2\frac{1}{2}$ watts.

STEREO MODELS BY TANDBERG

A new stereo version of the Tandberg tape recorder—Series 7—will be released in October. It will be available in two models—No. 74, 4-track, and No. 72, 2-track—incorporating three speeds which can be changed while it is running.

Equipped with a two-head system, it has two 7in. \times 4in. speakers and two 3 watt output stages. Each channel will operate independently of the other, and all recordings, mono or stereo, may be monitored.

Housed in a teak cabinet 16in. \times 12in. \times 6in., the new

Tandberg machine will accommodate 7in. spools and retail at 93 gns. A carrying case will be available at £7 1s. 8d. The new series is a companion to the Series 6 and is not intended to supersede it.

GARRARD BATTERY TAPE DECK

Garrard announce the addition to their range of a Battery Tape Deck, claimed to be capable of high-class performance.

The deck has been designed to accommodate open spools up to 4ins. dia. as well as the well-known Garrard magazine which can be of advantage for instant loading in outdoor and mobile conditions. It is a two-speed model with low battery consumption, giving fast-wind in both directions.

ACOS DYNAMIC MICROPHONE

The well-known Acos Mic 39 microphone is now available with a dynamic insert. The crystal version will continue to be produced, but as an alternative Mic 39 is now being made with an advanced dynamic insert, incorporating a transformer to provide high and low impedance matching.

The new Dynamic Mic 39, it is claimed, gives excellent performance under a greater variety of recording conditions, particularly where long leads are used. Frequency response is 80 to 10,000 cps ± 3 dB, and approximately 10 dB down at 50 cps and 15 Kc/s.

The retail price is £7 10s.

THE SONY 777 PROFESSIONAL TAPE RECORDER

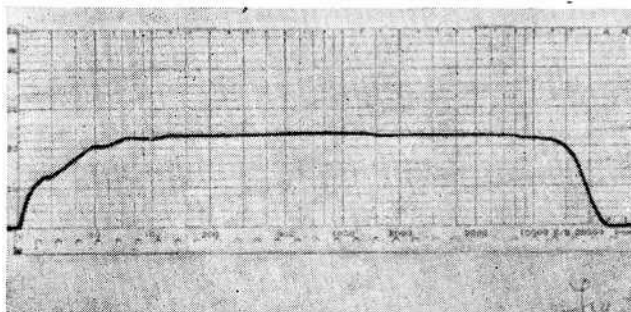
Reviewed by F. C. Judd, A.Inst.E.

THIS review is the result of requests from many readers. Although the price of the Sony 777 is considerably higher than that of even the most expensive domestic tape recorders, there is a demand for a truly professional machine by many discriminate enthusiasts and small studios.

The Sony 777 is of Japanese manufacture and is a compact, self-contained studio recorder with all the facilities required for such work as tape-to-disc copying and the very exacting standards of performance associated with professional recording.

The specification, which is fairly formidable, is one to which the manufacturers must strictly adhere and to which every machine must conform. The most remarkable thing about it is its extremely low noise level which can be attributed to the

SEE NEXT PAGE



Pen recording showing frequency response for $7\frac{1}{2}$ ips of the Sony 777.



The kits you enjoy building

THE RADIO SHOW, Earls Court.
August 22nd—September 1st
All models exhibited

STAND
15

When adding to your hi-fi equipment
—Tape, Record, Radio—



EQUIPMENT CABINETS
(£11.12.6 to £18.12.0)

TAPE AMPLIFIER UNITS, Models TA-1M and TA-1S. The mono version, TA-1M, can be modified to the stereo version, TA-1S, by the modification kit TA-1C. Special features include the provision of a bias level control; easy to read thermometer-type recording level indicators; large printed circuit boards. TA-1C £6.10.0, TA-1M £18.2.6, TA-1S (identical presentation) £23.6.0.

HI-FI STEREO 18W. AMPLIFIER, Model S-99. Within its power rating, this handsome looking amplifier is the finest available, regardless of price. U/L push-pull output. Printed circuit board construction. £26.19.0

HI-FI STEREO 6W. AMPLIFIER, Model S-33. Only 0.3% distortion at 2½w/chl. £12.8.6.

HI-FI 12W. POWER AMPLIFIER, Model MA-12. Generous auxiliary power supply (single channel). £10.19.6.

STEREO CONTROL UNIT, Model USC-1. With variable filter, switched rumble filter, and printed circuit boards. It operates direct from tape heads. Total power requirements 250v 10mA DC, 6.3v 1.5A AC. £18.18.6.

Our Hi-Fi Speaker Systems do justice to the finest programme source—All delivered complete with speakers etc. Parts pre-cut for easy assembly; left "in the white" for finish to taste.

The 'COTSWOLD', acoustically designed enclosure (26" x 23" x 15½") with 120° polar distribution; freq. resp.: 30-20,000 c/s. £21.19.0.

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(b) Full details of models

(Block capitals please)

NAME

ADDRESS

THE SOUND SCENE

—continued from page 31

use of transistors and a faultless tape bias and erase oscillator.

There is no hum, though the machine is operated entirely from an internal mains power supply. The gain controls on playback can be opened to their fullest extent, when only the noise of virgin tape can be heard.

Electronic control

The control system for playback, re-wind, stop, start and speed change is entirely *electronic*. It is delightful to touch a button and watch the immediate response to the function selected. The machine is for two-speed operation— $7\frac{1}{2}$ and $3\frac{1}{4}$ ips—and the deck will accommodate 7in. spools which can be held in place by special retainers, permitting vertical operation.

Aside from a tape position indicator, there is an automatic stop system operated from a tension arm, a wow stabiliser, and a three-head record/playback assembly permitting direct monitoring through an internal loudspeaker.

On the control panel are push buttons for record, playback, re-wind and so on, two tone controls for bass and treble lift or cut, the main record volume control, monitor and playback volume control, and a large scale VU recording level meter which is illuminated when the machine is switched on. The record/playback controls are interlocked, and monitoring of inputs or of recording itself can be selected during recording.

The 777 employs in all 22 transistors, including 5 Mesa silicon power transistors. No output transformer is used in the




The Sony Model 777 professional tape recorder.

playback amplifier and the high quality of reproduction is maintained up to the full output of 8 watts. The input and output sockets are standard jack types and provide for two microphone inputs (high impedance) and a standard 600 ohm line input. Output sockets are for a 4 to 16 ohm external speaker, a headphone or external amplifier monitoring point, and a 600 ohm line outlet.

Another useful feature is the remote control box which can be attached to the machine by a 10ft. cable and which will permit full control of record, playback, stop, start and rewind operations.

Accessories

The 777 is supplied with an amazing array of accessories. Besides the remote control box with cable and plug, there are a high-grade dynamic table microphone, a 7in. spool of standard play tape and spare spool, a spare capstan and pinch wheel (60 cps mains supply), two spool retainers (for when the machine is used vertically), and an accessories case with shoulder strap which will carry 7in. spools of tape in boxes.



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LD/66

**TAKES THE
GUESSWORK
OUT OF RECORDING**



Frequency range substantially flat from 80 to 11,000 cycles.

With rear folding support, or special stand mounting stirrup.

Details of this and other LUSTRAPHONE models on request.

Fine quality reproduction of speech and music awaits the user of this superbly designed general purpose microphone by LUSTRAPHONE. Its sensitivity, wide frequency range and sound-pattern enable excellent recordings to be made with absolute assured results. Its rugged design and modern style housing ensure safe working under rigorous conditions. Available in high or low impedances. Plastic housing. Complete with cable.

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£4.2.6

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LUSTRAPHONE LTD. ST. GEORGE'S WORKS,
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Phone: PRImrose 8844

ABRIDGED TECHNICAL SPECIFICATION

Power requirements: 110-117/220-230V. 50 cps or 60 cps; 130 watts.

Recording standard: Twin-track international.

Frequency response: 30 to 18,000 cps at $7\frac{1}{2}$ ips; 30 to 10,000 cps at $3\frac{1}{4}$ ips (dynamic range).

Signal to noise ratio: -50 dB.

Tone controls: Bass ± 10 dB at 50 cps; treble ± 10 dB at 10,000 cps.

Erase: Better than -70 dB.

Tape re-wind time: App. 45 secs for 1,200ft tape.

Bias frequency: 80 Kc/s ± 10 per cent.

Dimensions: 16in. \times 16 $\frac{1}{2}$ in. \times 10 $\frac{1}{2}$ in.

Weight: 42 $\frac{1}{4}$ lbs.

(The remainder of the specification items are mentioned in the review.)

Special tools are a crosshead screwdriver, an Allen key for head assembly, a pair of scissors and splicing tape, cleaning cloth, and extension lead with plugs and jack.

Performance

As with most professional recorders, the frequency response is perfectly smooth and maintained only up to the point where noise and harmonic distortion would become a problem. The pen recording reproduced here is the actual response at 7½ ips of the machine reviewed. Every machine carries its own response curve and each one must agree with the specification.

It is only necessary to feed an audio generator into the Model 777 while recording and to measure the output during the frequency sweep to realise the extremely smooth performance it provides. Harmonic distortion is maintained at only 1 per cent for maximum recording level, and hum and noise is better than -50 dB. When recording continuous tones it is virtually impossible to detect the slightest frequency variation between the tone being recorded and the same tone being played back via the monitor tape-head and amplifier.

Only a wow and flutter meter, or an oscilloscope, will actually show the wow percentage which, as given in the specification, is 0.15 per cent r.m.s. at 7½ ips and 0.2 per cent r.m.s. at 3½ ips.

The mechanical performance is almost silky, everything responding to the lightest touch, thanks to the electronic control system and the three-motor drive for the deck mechanism. There are no pads or brushes to keep the tape in contact with the heads. This is done by tension applied by the spring-loaded arms of the stop lever and the speed stabiliser.

Though the internal amplifier and speaker provides excellent reproduction, the full realisation of the quality provided by a machine of this nature is possible only with an external high-grade amplifier and loudspeaker. Its use and performance in the studio is certain to be appreciated by any professional recording engineer, and it should also prove itself with the advanced amateur recordist who knows what a good recording should sound like.

It retails at 190 gns. complete with accessories, and is distributed by Tellux Limited, Avenue Works, Galleons Corner, Colchester Road, Romford, Essex.

THE ATR MIXER — from page 13

The valveholders are mounted on an 18-way standard tag mounting board which in turn is secured in the case on two stand-off pillars about 1in. long. The gain control and input sockets are all mounted symmetrically on the front panel and wired as in Fig. 4. The output socket can be mounted at either end or at the rear of the case, whichever is convenient.

It is important that leads which are earthed (those marked E) should be connected where indicated. Do *not* fit a pilot lamp on the front panel unless it can be completely insulated from the panel.

Specification

Here is the full technical specification of the ATR 4-Channel Mixer;

Frequency response: 15 to 20,000 cps ± 2 dB.

Hum and noise: -50 dB.

Crosstalk between channels: -45 dB.

Channels 1 & 2 gain: app. 40 dB.

Channels 2 & 3 gain: app. 6 dB.

Microphone input sensitivity: 2 mV.

Radio 1 and 2 inputs: 100 mV.

Power consumption: h.t. 250-300 V 5 mA; l.t. 6.3 V A.C. 0.6 amps

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The 'NUMIX' 1.

accessories for your

Ferrograph

The Nusound 'Numix'

The 'NUMIX' is a convenient mixer which enables a Ferrograph user to mix and fade at will two programmes, from microphone and radio/radiogram. Alternatively, speaker output sockets from power amplifiers can be used. Any combination of two programmes is possible with the Nusound 'NUMIX'

Price: £4.7.6. Radio Lead complete 7/6

Write for leaflet on 'NUMIX 1', 'NUMIX 2' and 'MONITOR' UNITS

THE CLUBS ARE FIGHTING TO WIN THE CUP!

- If your tape recording club is making good progress, doing some original work or giving service to the community, it should be in the running for the *ATR* silver trophy to be awarded to the society which has made the outstanding contribution to the club movement during the year.
- Every month we select the Top Ten Clubs from those who send in news of their activities. The club gaining most points in this monthly contest receives a 5in. spool of L.P. tape, and the points awarded to each society determine its position in the Club League table. At the end of the year the club at the top of the League will be awarded the *ATR* Club Challenge Cup.
- This month several new clubs enter the competition, which is becoming more and more intense. There's still time for your club to make its mark! Send your news to the Club News Editor, *ATR*, Room 532, Ulster Chambers, 168 Regent Street, London, W.1.

Best interviews

BOURNEMOUTH Tape Recording Club members compared their taped interviews and decided that the best were those of Mr. D. Hayter and two new members, Mr. and Mrs. Phillips. The club visited the BBC studios at Southampton and saw equipment used in both sound and television.

Lifeboat trip

After taking a trip in the Shoreham lifeboat to record material for a sound

programme, **Brighton Tape Recording Club** members were asked by the Royal National Lifeboat Institution to help at a garden fete where they organised a 'Spot the tune' competition.

They also held an open meeting at which they presented a number of World Record Club tapes. The club is anxious to hear from manufacturers willing to give demonstrations. New address of Secretary R. Vivian is 110 Surrenden Road, Brighton.

New magazine

Cambridge Amateur Tape Recording Society is producing a bi-monthly magazine, *Tape Notes and Comments*. The first issue boasted a printed wrap-around cover depicting various applications of tape recording, a picture of the University and, on the back, a photo taken at a typical club meeting.

Full houses

Members of **Dartford Tape Recording Club** paid a return visit to the Bromley club and held a joint meeting with a local cine club, when Mr. B. Wilson of BASF talked to a packed audience and demonstrated some early tapes made by the company. At a later joint meeting Mr. Martin of Zonal Film Ltd. gave a demonstration of sound stripe on 8mm and 16mm film to another full house, and was kept to a late hour answering questions from members of both clubs.

Future projects include visits to the Bluebell Railway, a local drama group and astronomy club, and to Wrotham for

electronic music, as well as giving assistance in sound film making.

Carnival plans

Mr. Monks of Fi-Cord International gave a demonstration of the new 202 and 101 models to **Hastings and District** club. Local cine club members visited the tape club for the showing of the film documentary, *This is the BBC*.

In anticipation of recording the Hastings Carnival procession, the club interviewed Carnival Queen Colleen Robinson. It is hoped to start a hospitals and old people's homes programme in the near future.

Hull's progress

John Borwick of Emiguide fame paid a visit to **Huddersfield Tape Recording Society** to talk on tape and microphones. Membership has risen considerably during the year, and the club counts among its successes interviews with Cliff Richard, Eden Kane and Helen Shapiro used in local hospital broadcasts.

Keener contests

A vast improvement in the number and standard of entries in club competitions has been evident at **Middleton**. Winner of the first contest, with a tape called *Jersey Holiday*, was Tom Ingham. Subject of the July contest was *My Tape Recorder*, and entries are being judged by the West Herts. society.

In view of the large number of portables owned by members, instruction in interviewing was given in a lecture by Jim Cartmel.

First national rally

The first National Tape, Cine and Audio Rally will be held on October 6 this year, **Northampton Tape and Cine Club** announces. Among the attractions will be special demonstrations of manufacturers' equipment, an exhibition and entertainments by local artistes, as well as separate cine demonstrations.

The rally will be held in a separate hall from 2.30 to 9 p.m., but the rest of the programme will run from 10.30 a.m.

THE WAY TO MAKE FRIENDS

MORE than 500 photographs and slides and a total of 17 tapes were brought back from Jersey by members of the **International Tape Fellowship**—Jack Talling, founder and general secretary, Barrie Carter, co-founder, and Terry Nurse—after a fortnight's visit to the holiday island.

One of the oldest inhabitants, an auctioneer acknowledging bids in both French and English, and tourists on a visit to a prehistoric underground tomb were all successfully recorded.

The visitors, who hope to build up a complete sound picture of Jersey, found their tape recorders very useful in making friends. And the tables were turned when they themselves were interviewed by the Jersey Tourist Association.

At the invitation of founder Graham Ahier, they attended Jersey Tape Club, where they heard a recorded review of the year 1960. They also visited the island's Go-Kart Club, where they raced against the 'Tom-Toms' team from Ireland.



North London's Ray Maslin interviews Mr. B. George, owner of the steam engine which drove a fairground organ at the Forty Hill Rose Fayre held at Enfield.

Clubs intending to send representatives should inform the secretary at 17 Shakespeare Road, Northampton, as soon as possible.

Social work first

Having resolved to devote itself to social service work, **North Herts. Tape Recording Club** visited Ladybarn Home for the Aged at Letchworth and recorded messages from residents to their relatives at home and abroad.

In the future the club intends to assist the blind residents of a local Government training centre and other handicapped people in the area. Members have received encouragement from local welfare societies and are looking forward to much hard but rewarding work.

Prompt service

Soon after the opening of Forty Hill Rose Fayre, one of Enfield's biggest fetes, visitors heard through headphones interviews with stallholders and sounds recorded on the spot. The programme was among several attractions on a stand run by **North London Tape and Hi-Fi Club**, where visitors also heard each other's voices played back to them with

echo effects and listened to a continuous six-minute tape of local sounds.

The club conducted an interview with the Rose Queen, Maureen Talbot, and recorded music from a 46-key fair organ driven by a 1912 steam engine.

Course planned

The **Rugby** society plans to hold another tape recording course, on the lines of that held some years ago, between now and next May. This will be for the benefit of members and other local enthusiasts.

BRC memories

Some of the recordings made by the British Recording Club in its heyday were heard on a tape made for the benefit of former BRC members by the **Sound Hunters of Wakefield** as a tribute to its memory and the work of its former officials.

Hon. member

Thorn Electrical Industries (Spenny-moor) Tape Recording Club recorded the dedication by the Bishop of Durham of the Roll of Honour newly installed in the Town Hall. The club provided stereo sound facilities when Miss Nancy Roberts of *Double Your Money*, helped by two other judges, selected Spennymoor's National Savings Personality Girl for 1962. Miss Roberts agreed to become an honorary club member and heard the playback of an interview with her.

To provide background music for a mannequin parade at Durham Town Hall, the club pre-recorded electric organ music by a local hotel organist.

Going again

After some difficult months during which activities have been at a standstill, the **Sunderland** club is now back on an even keel and has changed its name from Magno to **Sunderland Recording Club**. Secretary Andrew Lillie has also changed his address to 16 Chester Street, Sunderland. He writes:

"The encouragement given by ATR and the activities of other clubs reported in your columns has given us the incentive to keep going. You will be hearing from us again!"

THE LEAGUE POSITION

	Pts.
1. NORTHAMPTON	34
2. THORNTON HEATH	33
3. CAMBRIDGE	23
4. RUGBY	22
5. SWANSEA	21
6. WHITSTABLE	20
7. HULL	19
8. NORTH LONDON	17
9. WALTHAMSTOW	15
10. MEDWAY	14
11. SOUTH DEVON	11
12. BIRMINGHAM	10
12. BRIXTON	10
12. SPENNYMOOR	10
15. BATH	9
15. CARLISLE	9
15. LIVERPOOL	9
18. WEST MIDDLESEX	8

The Mayor-making

Swansea Tape Recording Society gained permission to record the Mayor-making ceremony at the Civic Centre, where a woman—Miss Rose Cross—was elected to the office for the first time. The club's programmes for Mount Pleasant and Garnoch hospitals continue to develop, and the message service for long-term patients is much appreciated.

Sixpenny sheet

The Taper is the title of a club magazine (price 6d.) now being produced by **Thornton Heath Tape Recording Club**. The front page bears the symbol with which chairman E. J. Bashford won a contest for a lapel badge design to be adopted by the club. Contents include an article by R. J. Robson on the delights of tapesponding, to which he was introduced in 1959 by the first issue of *ATR*.

TURN TO PAGE 36

TOP TEN CLUBS FOR SEPTEMBER

- | | |
|-----------------|-------------------|
| 1. SPENNYMOOR | 6. THORNTON HEATH |
| 2. SWANSEA | 7. CAMBRIDGE |
| 3. BRIGHTON | 8. NORTH HERTS. |
| 4. NORTHAMPTON | 9. HASTINGS |
| 5. NORTH LONDON | 10. WAKEFIELD |

The club was visited by *ATR* Technical Editor F. C. Judd, who gave a demonstration of the varied effects that can be achieved with tape which proved both instructive and entertaining.

Carnival at Walthamstow

With the co-operation of the carnival authorities and the Connaught Hospital League of Friends, **Walthamstow Tape Recording Society** broadcast a running commentary on the local carnival procession. This was preceded by a special edition of record requests chosen for patients by relatives and friends.

Windsor takes stock

At its second annual meeting the Phoenix Drama and Tape Recording Society decided to change its name to the **Windsor and District Tape Recording Society**, to give it local identity. Other changes include the appointment of a programme director to replace the offices of tape producer and stage producer.

Though the drama unit lacks support, efforts will be made to strengthen it and a cine unit will also be encouraged. Experiments will be made into every

possible application of tape recording including puppetry, colour slides and animated cartoons.

Eltham and Wellhall: Tape and cine enthusiasts in this area are asked to contact M. McCoy, Royal Herbert Hospital, Woolwich, S.E.18.

EXCLUSIVE TO CLUBS—THE TAPE LIBRARY

TAPE clubs all over the country are taking advantage of the new Tape Library Service which *ATR* has introduced for their benefit.

Recordings obtainable from the Library comprise material not normally available elsewhere, such as instructional lectures and demonstrations, sound effects tracks, electronic music and other items of particular interest to clubs, who are invited to make their own contributions towards expanding the Library.

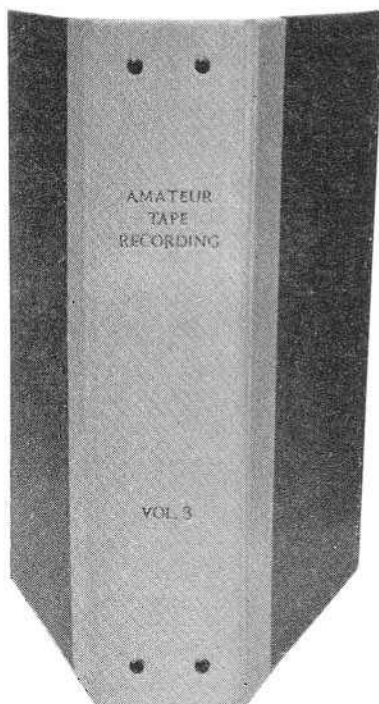
These recordings are available only to tape recording societies, who will be permitted to make copies so long as they are for use of club members only. To obtain a recording, clubs have only to send an appropriate reel of tape on to which it will be copied at the required speed. In each case, a fee of 7s. 6d. is charged to cover the cost of copying, packing and postage.

What's in stock

Among recordings now available are lectures on *The Technical Elements of Tape Recording* and *The Elements of Electronic Music*, an instructional aid to *Experiment in Sound*, and a selection of *Musique Concrète* by French composers, in stereo. Sound effects available range from railway and sea sounds to jungle animals and space travel effects.

Other lecture tapes on *Creative Recording* and *Stereo Recording and Sound Effects* will be available in September. A selection of *Church Organ Music* in stereo, and a talk on *Musique Concrète* with illustrations, are also in preparation.

For full details of how to use the Library, and of its contents, responsible officers of clubs should apply in writing to *ATR* Tape Library, c/o 152 Maybank Road, South Woodford, London, E.18. Only postal inquiries will be entertained.



Bind those back numbers !

THIS handsome Easibinder, in which you can preserve your copies of *ATR*, is now available for Volume 4 as well as for Volumes 1, 2 and 3.

In response to many requests, the Publishers have made arrangements to supply them to readers for only 13s. 6d. each, including postage and packing.

With your Easibinder, specially designed for this magazine, you can keep your copies from getting soiled or lost by securing them quickly and easily as soon as you have read them.

Send your order to: Binder Dept., **Amateur Tape Recording and Hi-Fi**, Ulster Chambers, 168 Regent Street, London, W.1.

* Limited numbers of most issues of *ATR* are still obtainable. Issues out of print are: Vol. 1, No. 12; Vol. 2, No. 11; Vol. 3, Nos. 1, 2, 3 & 6. Send your orders for back numbers, price 2s. 6d. each (post free), to **Amateur Tape Recording & Hi-Fi**, Back Nos. Dept., Vernon Holding & Partners Ltd., 43/44 Shoe Lane, London, E.C.4.

RUSS ALLEN raves about a record he almost didn't hear . . .

COLE PORTER in *Percussion*, arranged and conducted by **Irving Joseph**. Series 2000, Time Oriole OT 2525.

The title was so off-putting that I almost didn't bother to listen. How wrong I would have been!

Cole Porter's tunes at any time are great and Irving Joseph's arrangements superlative. The tone colour, the rhythms and contra-rhythms! My toes curled up with delight on first hearing, and after

the result is a very intriguing sound. Watkins plays extremely well and excels on 'Why not?'

There's much to commend this interesting experiment.

● **Amanda Ambrose Swings at the Black Orchid**. Starlite LP7. *Johnny Frigo*, bass; *Frankie Rullo*, drums.

Miss Ambrose is fun. She may not be the greatest pianist or singer but she does everything with tremendous aplomb. She has the same heart-rending quality as Judy Garland.

The title's so right: she really does swing at the Black Orchid, and I'm only sorry they didn't record this one live—I'd have liked to hear the audience reaction.

Enjoy Amanda in your own home.

● **Buddy Tate and Clark Terry**, *Tate-a-Tate*. Prestige/Swingsville 2014. *Tate*, tenor; *Terry*, trumpet & fluegelhorn; *Tommy Flanagan*, piano; *Larry Gales*, bass; *Arthur Taylor*, drums.

This is delicious, unadulterated jazz. It conforms to no label and swings, with Tate, Terry and Flanagan all soloing at their best. Six tracks, all good, include a refreshing version of 'A-Train'.

A tête-a-tête with 'Tate-a-Tate' will make you feel great, mate.



repeated playings I'm still raving about it.

The wide instrumental range and depth of recording makes this a must for hi-fi. Listen to 'D'lovely'—crazy! 'Love for Sale'—the finest arrangement ever. The counter melody is so catchy, too.

My only complaint: I'd like to know more about Irving Joseph and the musicians. So will you.

● **Frank Sinatra**, *London by Night*, Capitol T20389.

Twelve typical tracks by The Legend from '57 to date, with backings by *Billy May*, *Nelson Riddle* and *Gordon Jenkins*. If you like him, it's the most; if you don't, it's the least. I thoroughly enjoyed.

● **Johnny Griffin**, *Change of Pace*, Riverside RLP 368. (Recorded February 7 & 16, 1961). *Griffin*, tenor; *Julius Watkins*, French horn; *Bill Lee* and *Larry Gales*, basses; *Ben Riley*, drums.

You may feel that no piano and the use of two double basses is but an extension of the Gerry Mulligan idea. Perhaps in a way it is, except that Griffin has got the second, non-rhythm bass, playing a very much third front line voice. Mostly this bass plays arco, and



● **André Previn and J. J. Johnson**, with *Red Mitchell*, bass, and *Frank Capp*, drums, play *Kurt Weill's Mack the Knife* and *Bilbao Song*. C.B.S. BPG 62017.

Previn, continuing his successful series of show tune jazz-ups, has now called in J.J., and it makes for a fascinating quartet who blow a minor storm on Kurt Weill's operetta tunes.

I do wish, though, that they hadn't tried a nonsense on 'Mack' with Previn playing in G♭ and J.J. in C. Ugh! Still, that's the only fly in a spot of highly efficacious ointment.

● **Rodgers and Hart**, *Percussion and Strings*, arranged and conducted by *George Siravo*. Series 2000, Time Oriole OT 2523.

Like 'Cole Porter in Percussion', the recording is superb. Though not so extravagantly arranged and with a more obvious use of percussion, it's a gorgeous presentation of 12 beautiful tunes.

Besides some unbelievable strings and those demned drums there are brass and saxes and all that. Some of the string writing is quite extraordinary and will give your tweeter a fair ol' towsin'.

● **Costanzo plus Tubbs**, *Equation in Rhythm*. Fontana TFL 5190.

This is for those who like drumming of the African type. There are 12 tracks, some quite short, and they all have Mr. Costanzo and his bongoes. He is the acknowledged bongo king and plays them like a musical instrument.

Two tracks feature *Tubby Hayes* with his exciting big band. Though the sleeve notes credit only two musicians, the remaining tracks feature others, particularly *Shake Keane* and *Little Jesus*, plus singers (African) and a great variety of shakers, rattlers and etcetera. Not forgetting the contribution by *Phil Seamen*.



The Best of Both Worlds of PRE-RECORDED TAPES MONO & 2 and 4 TRACK S-T-E-R-E-O



The most famous of overtures and a choral version of the Polovtsian Dances. Vienna State Opera Orchestra, conductor Jacha Horenstein. **MONO AND 2 AND 4-TRACK STEREO. 3¾ AND 7½ IPS**



Pianist George Feyer's greatest recording success. Overtwenty numbers including La Mer, La Vie en Rose, Allouette. Piano and rhythm accompaniment with elegance and dash. **MONO ONLY 3¾ AND 7½ IPS**



Fascinating sentimental "oldies". Slow Boat to China, April in Paris, and Love is the Sweetest Thing are some of the exceptional arrangements played on the mighty Wurlitzer organ by Jackie Brown. **MONO ONLY 3¾ AND 7½ IPS**



Authentic Hungarian gipsy interpretations of Liszt's Hungarian Rhapsody No. 2, and five of Brahms' Hungarian Dances. Different, fascinating and romantic sound. **MONO AND 2 AND 4-TRACK STEREO. 3¾ AND 7½ IPS**



A unique recording of a Steam Caliope. Rollicking tunes like Mac-Namara's Band; There's a Tavern in the Town; When Irish Eyes are Smilin'; and Stars and Stripes. A real collectors piece. **MONO ONLY 3¾ AND 7½ IPS**



The "All Star" Brass Band conducted by Harry Mortimer, OBE, bring Introduction Act 111 Lohengrin, Trumpet Tune and Air by Purcell, and Music for the Royal Fireworks by Handel, plus many others. **MONO ONLY 3¾ AND 7½ IPS**



No one plays quite like Morens Ellegaard, his tonal registrations are fascinating. Among the many items is the Ritual Fire Dance, Toccata Fugue in D minor and Finlandia. **MONO ONLY 3¾ AND 7½ IPS**



Dixieland at its best, the authentic original sound of Livery Stable Blues, Tiger Rag and many others. Great stuff this, for those who are addicted to it. **MONO AND 2 AND 4-TRACK STEREO. 3¾ AND 7½ IPS**



The first of a series of Fair Organ music. Containing Moulin Rouge, Around the World theme, Vaya Con Dios and Old Comrades March and many others. A real collectors piece. **MONO ONLY 3¾ AND 7½ IPS**



The first of two exciting recordings of percussion instruments. Numbers include Turkey in the Straw, Easter Parade, Sleigh Ride and five others. **MONO AND 2 AND 4-TRACK STEREO**



Lenny Herman and his Band bring dancy arrangements of such old classics as Sweet Rosy O'Grady; Grandfather's Clock; Bird in a Gilded Cage and many others. **MONO ONLY 3¾ IPS 7½ IPS**



Here's the authentic Inca and jungle beat, with words in Spanish and English. Fascinating numbers like Voodoo Dreams; have to be heard to be appreciated. **MONO AND 2 AND 4-TRACK STEREO**



For those who are interested in acoustic phenomena; Pitch and the Mel Scale; Standing Waves; Doppler effect; Echo and Reverberation; Delay Distortion and many other fascinating facets of sound. **MONO ONLY 3¾ AND 7½ IPS**



This unique recording explains and demonstrates the use of the tape recorder, acoustics, cycles per second; decibels; equalisation balance and distortion, demonstration of mixing and a visit to a recording session. **MONO ONLY 3¾ IPS**



Tells the full story of High Fidelity with fascinating musical examples. Covers the nature of sound; tone; scale; intervals and studio acoustics. Has been recommended by "The Gramophone". **MONO ONLY 3¾ AND 7½ IPS**

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tape parade

- * **Porgy and Bess**, George Gershwin. Lawrence Winters, Isabelle Lucas, Ray Ellington, Barbara Elsy, Pauline Stevens, The Linden Singers, and The New World Show Orchestra conducted by Johnny Douglas. Arrangements by Bobby Richards. Produced by Cyril Orndel. **World Record Club, TT 161.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, 40 mins.

The George Gershwin classic is presented very stylishly on this tape, especially considering it is an all-British production. The choice of vocalists is good, and each part is given an appropriate voice. I just love Ellington as Sporting Life.

- * **Romantic Guys**. Jack Haskell, Stuart Foster, Vic Cordell, Dick Noel, The Honeydreamers, with Hugo Montenegro and his Orchestra. **Music on Tape, CC443.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, 40 mins.

This tape features a dozen numbers sung in several varied styles by some good vocalists, who are given excellent big band backing.

I have heard some of these singers before, though they could hardly be called well known. Still, there's not room for everyone at the top . . .

The selection of pleasant songs includes 'A Romantic Guy I,' 'Impossible Love,' 'Blue Missouri Moon' and 'Sequoia Love Song.' It's entertaining enough.

- * **Felix King and Orchestra. Music on Tape, TR 1143.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, 40 mins.

Famous for many years as a recording pianist and as a regular contributor with his orchestra to the BBC *Music While You Work* programmes, Felix King features on this tape some of the music he has helped to make familiar.

There are no clever-clever arrangements, just plain Felix King beating out a selection of well-known French tunes

in the manner which has suited his radio audiences for years. Good for dancing, too.

- * **I Wanna Be Next**. Mack Antony singing with The Harold Geller Sound. **Music On Tape, CR 343.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, 45 mins.

This one is for the younger element with plenty of beat and suitable guitar backing. The whole thing is interesting and lively, with songs which can be appreciated, and Mack Antony has a good voice. What's more, the reproduction is some of the finest I've ever heard at $3\frac{1}{2}$ ips.



STAN WHITE
keeps you posted
on pre-recorded
tapes

- * **The Rite Of Spring**. Sir Eugene Goossens conducting The London Symphony Orchestra. **World Record Club, TT 159.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, app. 40 mins.

In this recording the familiar Stravinsky work is performed to perfection, as far as my ears are concerned. The whole production, including the colourful cover, is first class and good value.

- * **Symphony No. 9 in E minor**, Vaughan Williams. Sir Adrian Boult conducting The London Philharmonic Orchestra. **World Record Club, TT 144.** Dual $\frac{1}{2}$ -track mono, $3\frac{1}{2}$ ips, app. 40 mins.

This music gives the famous orchestra an excellent chance to show its paces. The performance is superb, and makes this tape another excellent buy.

Two other **World Record Club** releases will be of interest to classical music collectors. The reproduction is all that can be desired from the $3\frac{1}{2}$ ips speed.

- * **Symphony No. 6, Op. 54**, Shostakovich. Sir Adrian Boult conducting The London Philharmonic Orchestra. **TCM 28.** Dual $\frac{1}{2}$ -track mono, app. 40 mins.

- * **Symphony No. 5 in B flat major, Op. 100**, Prokofiev. Sir Malcolm Sargent conducting The London Symphony Orchestra. **TCM 29.** Dual $\frac{1}{2}$ -track mono, app. 40 mins.

I wonder why so few people are buying the high quality two- and 4-track stereo tapes which are now available from most of the pre-recorded tape firms? I would welcome enlightenment.

Stereo tapes are all the rage in America. Why do you still prefer $3\frac{1}{2}$ ips mono? Is quantity rather than quality still the governing factor? Let's have your views on this, will you?

Tape helps in search for teenage talent

THE search for new musical talent among teenagers still goes on—with the help of tape.

In a tie-up with the film *The Music Man*, Grundig are organising a contest to find the best amateur musician among youngsters under 20.

Auditions will be held in 250 ABC cinemas between now and December. The winning soloist or group will be recorded and the tape entered for one of eight regional finals from which the winners will go forward to the national finals and an audition by ABC Television. Prizes include eight Grundig tape recorders to the value of £450.

In a recording studio at the Boys and Girls Exhibition, Olympia, Stuzzi held another contest on the lines of that which led to the discovery of The Allisons.

The best recordings will be heard by a judging panel including disc jockey Kent Walton and E.M.I.'s Ron Richards. From six finalists appearing live before the judges the winner will be chosen.

Prizes are a Stuzzi Tricorder worth 63 gns. and auditions with a recording company and Radio Luxembourg. Two other Tricorders will be given to runners-up.

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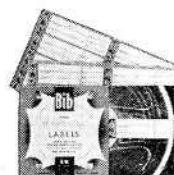
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THE THINGS YOU SAY ...

Piano problem

T. O. Downey, Swindon, Wilts., writes:

VISITING a professional pianist friend of mine, I was able to obtain some quite good recordings of his Bluthner grand piano, which is in quite good condition, with the aid of my Ferrograph 4A/N monaural recorder and Reslosound ribbon microphone. At my home I was also able to record my own upright piano, which was about 60 years old and in poor condition. But the recordings were good, the top two octaves being as clear as a bell.

I now have a reconditioned baby grand which is a good piano to play; but to my disappointment I find my recordings of this instrument poor. Can you give me any idea why this should be and what pianos are best for recording, if any particular makes can be recommended?

(Recording the piano is one of the most difficult exercises in tape recording. A good deal depends on the piano itself, the microphone and its positioning, the room acoustics and, last but not least, the playback system. Successful recordings are mainly the result of careful experiment in placing the microphone and using a high-grade amplifier and loudspeaker for playback.—Technical Editor.)

Wanted—standard spools

J. V. Herbert Cookson, New Longton, Nr. Preston, Lancs., writes:

Isn't it time manufacturers got together and produced a standard plastic spool, at least for mains recorders?

I do not know which is the best way to wind tape on a spool, but I and many of my friends just hold it against the hub with one finger and turn the spool two or three times. This is difficult where the hub is recessed between the spokes. Some audiophiles fill up the recess with leader and splicing tape, but the method I have described avoids kinking the tape or the leader.

I suggest that all spools of whatever size should have the same (small) size hub so that 'clock' readings would be similar; and that no spools should have the hub in a recess between the spokes.

Perhaps your readers would like to comment on the best way to start tape off on a spool.

(Spools with recessed hubs are difficult to thread, but they all have a small slot or eye which may be used to capture the leader tape.—Technical Editor.)

Those repairs

J. W. Fish, Salford, Manchester, writes:

About a year ago I bought a tape recorder—a simple one without speed change and other facilities, but still a very satisfying machine. Until three months after purchase, when

the motor began to make a scraping noise: cost of repair, £2 10s.

That was all right, but a few weeks later the same trouble began all over again. Cost of second repair, £1 10s. It makes me furious to think that the public nowadays has to be overcharged for repairs by inexperienced engineers. I would be interested to hear what other readers have to say on this subject.

(Readers in need of reliable repair services should refer to ATR Approved Dealers' advertisements in every issue. If there are none in your particular area, we will do our best to advise you.—Editor.)

No response

E. Perry, Hackney, London, writes:

I fully agree with *Spool Talk* about a Code for Tapesponding. So far this year I have sent a 3in. tape to Oxford and another to New Zealand and not yet had a reply. The New Zealand tape I sent airmail (4s. 6d.) and enclosed return postage vouchers.

I received a 3in. tape from a London correspondent who asked me to reply with a 7in. reel, which I did—and have waited six weeks to date for a reply. If this is how our tapespondents carry on, I'll stick to letter writing—it's cheaper.

I have tape friends in America, Canada and Germany and have never had cause for complaint. It seems that most of the trouble is at home here in England . . . why?

(We have our theories. But see Spool Talk, page 44.—Editor.)

For ex-tinkerers

B. J. Claxton, Bridlington, Yorks., writes:

May I say a definite 'Yes please!' to constructional features. I'm sure that nine out of ten readers must have turned, as I did, from tinkering with radios and electrical apparatus to the fascinating pastime of recording.

I feel justified in suggesting that the much-awed mixing unit would be very popular with the majority of readers. How about it?

(We felt so, too. How about that?—Editor.)

Can you help?

Paul L. Newman, Aylesbury, Bucks., writes:

If anyone who has a recording of the consecration of Coventry Cathedral is willing to make it available to me for dubbing, I will pay postage both ways.

(Any offers?—Editor.)

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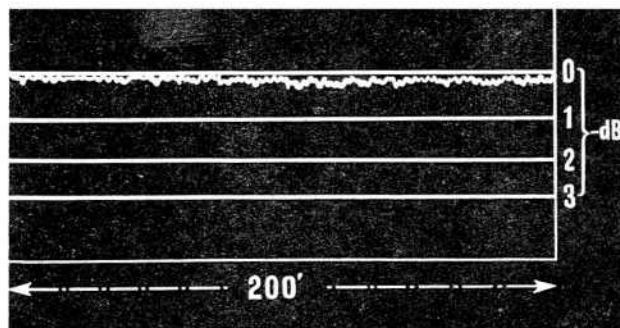
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of the penrecording made by
F. C. Judd, A.Inst.E, Technical Editor
"Amateur Tape Recording"

On Doubleplay Polyester 'ELECTRONIC WORLD' TAPE

Mr. Judd's other test findings include:—
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THE TAPE DIRECTORY

the tape directory

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AUSTRALIA

PETE AUBREY, 18, P.M.G. linesman, 5 Marnhill Street, Elizabeth Grove, South Australia. SW radio, motor cycling, hot rods, cars; jazz, pop instrumentals. Philips, 5in. 3 $\frac{1}{2}$. **Anywhere English speaking.**

BRIAN AUBREY, 21, copper tube inspector, 5, Marnhill Street, Elizabeth Grove, South Australia. Sound effects, collecting book matches; all types except classical, opera, folk songs. Philips EL3517/30 5in. 3 $\frac{1}{2}$. **Anywhere English speaking.**

BOB BURTON, 20, projectionist, P.O. Box 14, Tennant Creek, Northern Territory. All sports, films, cars, pop records. Philips 4-track, 7in. 3 $\frac{1}{2}$. **U.S.A., U.K., Canada.**

RON McCULLOUGH, 32, engraver, Flynn Street, Rockhampton, Queensland. Photography, electric guitar, tropical fish; jazz, pops, Hawaiian. Philips 4-track, up to 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking, especially Hawaii, Japan, U.S.A.**

SOUTH AFRICA

HAROLD (& GLADYS) ROSSELL, 45, plant supt., 14 Darvill Road, Pietermaritzburg, Natal. Journalism, travel, still colour slides; trad, light classical, dance tempo and vocals. Akai M6, 7in. 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **U.K., Canada, N.Z., W. Australia, Tasmania.**

CANADA

PETER SCULTHORPE, R.R.I. Wellington, Vancouver Island, British Columbia. Fishing, outdoor life, ham radio, boats, travel, Western songs and music. No type specified, 3 to 5in. 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking, males only.**

U.S.A.

JOHN PATRICK BOYLE, 23, student teacher, 152-30 10 Avenue, Whitestone, 57, L.I., N.Y. Sports, radio, TV, travel,

humour, photography; popular, Broadway shows. Webcor, up to 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking, especially Canada, Australia, U.S.A.**

BEDFORDSHIRE

RICHARD HOWARD, 30, photographic salesman, 73 Brookfield Road, Bedford. Transistor radio construction; trad jazz, pops. Carousel, 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking, families preferred.**

DERBYSHIRE

BERNARD GOODWIN, 21, civil servant, 20 Mundy's Row, Marlpool, Heanor. Photography, cinema, cars; all types, classical to pop. Philips EL3542 4-track; Grundig TK1 Portable, 3 to 7in.. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking.**

ESSEX

DENNIS ROOKARD, 20, 8 Railway Square, Brentwood. Photography, ham radio; pops to classical. Philips EL3542, 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere. Don't write first; just send tape.**

MARTIN J. DOYLE, 45, packaging salesman, 20 Ashmour Gardens, Romford. Amateur theatre, music, drama, opera; all good music. Elizabethan De Luxe 2-track, 7in. 3 $\frac{1}{2}$, 7 $\frac{1}{2}$, 15. **U.S.A., Canada, Eire, U.K.**

HAMPSHIRE

MIKE SMALL and JOHN MILLER, 33 & 34, 19 Deacon Road, Kinson, Bournemouth. All aspects recording, photography, chess, stamps, motoring, family chit-chat; classics to jazz. Two Philips, Civic and Carousel, 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Anywhere English speaking.**

RAYMOND McLEAN, 32, motor engineer, 20 Beaconsfield Road, Fareham. Boating, fishing, radio, drama, sound effects; pop to light classical, dance music. Fidelity Argyll Major 4-track, 5 $\frac{1}{2}$ in. 3 $\frac{1}{2}$. **Anywhere English speaking.**

Particulars of Tapespondents are given in the following order: Name, age, occupation, address; special interests, tastes in music; type of machine, spool sizes, speeds; area of tapesponding required.

KENT

DAVID F. BIRD, 22, radio & TV engineer, Radac House, 92 Gardiner Street, Gillingham. Cine and still photography, electronic music; classical, pop. Philips EL3541, up to 7in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$. **Anywhere in U.K. and Ireland.**

LANCASHIRE

PHILIP T. ROBBINS, 15, schoolboy, 11 Kingston Avenue, Accrington. Piano playing, photography; jazz to opera. Alba 2-track, 5 $\frac{1}{2}$ in. 3 $\frac{1}{2}$. **U.S.A. Australia, U.K., English speaking.**

R. A. EATON, 50, driving instructor, 75 Linden Road, Burnage, Manchester, 19. Motoring, home recording (piano music); light classics, pops. Wyndors, 5in. 1 $\frac{1}{2}$, 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **U.K., U.S.A., anywhere English speaking.**

ALAN WILLEY, 27, civil servant, 59 Thirlmere Drive, Liverpool, 21. Playing and multi-recording electric guitar, printing, electronics, photography; mainly guitar music. Brenell Mk. 5, 3 to 7in. 1 $\frac{1}{2}$, 15. **Anywhere.**

GRAHAM SHENTON, 20, butcher, 27 Poplar Street, Ardwick, Manchester, 11. Radio, reading, dancing, electronics, hi-fi; all except jazz. Verdik S1, 7in. 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **English-speaking girl about same age, American, Swiss, French, German or Danish.**

LEICESTERSHIRE

ROY VICTOR HUDDLESTONE, 31, jeweller, 9 College Avenue, Melton Mowbray. Anything, everything stereo; all music. Reflectograph 570, up to 8 $\frac{1}{2}$ in. 3 $\frac{1}{2}$, 7 $\frac{1}{2}$. **Everywhere stereo tape has arrived.**

HOWARD ANTHONY, 19, shop assistant, 34 Main Street, Evington, Leicester. Sports, photography, motor cycling; pop, classical. Bush TP50 4-track, 5 $\frac{1}{2}$ in. 3 $\frac{1}{2}$. **Australia, N.Z., Holland, America, Switzerland, U.K., English speaking only.**

LINCOLNSHIRE

TERENCE F. T. JONES, 25, storeman, 173 Yarborough Road, Grimsby. Football, photography; modern jazz, classical. KB RT20, 5in. 7 $\frac{1}{2}$. **U.K., West Germany, English speaking.**

MICK BRYAN, 14, schoolboy, 41 Kesteven Road, Stamford. Swimming, cars, growing dahlias; pop, trad. Philips 4-track, up to 7in. 3 $\frac{1}{2}$. **America, Canada, Germany, English speaking.**

oooooooooooooooooooooooooooo

SPOOL TALK

Do your part

SEVERAL sufferers have applauded the idea we put forward of an international Code of Conduct for tapesponding. Our Canadian friend who suggested it, noting the experience of a Birmingham reader who has found British 'contacts' most unreliable, now wants to make it a Top Priority project.

He offers to examine all the information and suggestions we can collect from those who are concerned with upholding the established traditions of the hobby. At least, we *thought* they were established . . . It appears there are some who either don't realise they exist or just don't care to observe them.

Our reader in Canada feels that if individual tapespondents and those who belong to clubs will put their ideas and criticisms on paper—not on tape—for him to sort out, he might come up with something constructive in about six months from now. He wants to gather suggestions on how to make tapesponding more mutually profitable, too.

Lost faith

So do we. So does everybody—except those who are profiting at the expense of others. Between us, we might make this a more enjoyable, less hazardous hobby than it has become for some who have lost their tapes, their patience, and their faith in the British character.

We shall be glad to forward any letters which may throw light on such points as these:

1. How best to choose your tapespondents.
2. How to establish good relationships from the start.
3. What to talk about—and what not to talk about.
4. How to make your tapes more interesting and valuable.
5. How to pack and send tapes to satisfy the postal authorities as well as your tapespondents.
6. What to do when a tapespondent doesn't respond; and, perhaps most important of all—
7. How to end tapespondence with a particular contact without giving offence.

If you have anything to say on any of these points, drop a line to us, marking your letter 'Code of Conduct,' and we'll see that it gets into the right hands. And don't forget that we're offering guineas for your *Tapesponding Tales* . . .

THE TAPE DIRECTORY—continued from page 43

LONDON

EDWARD HIGGS, 14, schoolboy, 66 Attlee Terrace, Prospect Hill, Walthamstow, E.17. Radio, geology; pops to classics. Grundig TK14, 5½in. 3¼. **U.S.A., Canada, Australia.**

J. MARLOW, 25, film library packer, 11 Cheseman Court, Sydenham, S.E.26. Films, records; all kinds. Philips EL3541, up to 7in. 3¼. **U.S.A., especially girls.**

P. F. and MRS. CHOPPING, 32, train driver, 141 Malyons Road, Lewisham, S.E.13. 35mm photography, railways, family; classical and folk. Philips EL3585, 3 or 4in. 1½. **Canada, U.S.A., Australia, N.Z.**

NORTHUMBERLAND

MICHAEL R. BELL, 15, student, Sea Lodge, Cresswell, Morpeth. Reading, sketching; Scottish folk dance, pops, etc. Carousel 2-track, 7in. 1½, 3¼, 7½. **Germany, Australia, Canada, English speaking only.**

NOTTINGHAMSHIRE

BOB JOHNSTON, 20, trainee manager (Canadian), 226 Derby Road, Nottingham. Popular music, trad jazz. Philips EL3585, 3 or 4in. 1½. **English-speaking tape enthusiasts anywhere.**

RON TANSLEY, 23, fireman, 1 Hodgkinson Street, Netherfield, Notts. Films, reading, hi-fi, glider flying, 35mm photography; trad and modern jazz, pops, comedy and Latin. Norfield, 3 to 7in. 1½, 3¼, 7½. **Anywhere.**

OXFORDSHIRE

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CLIVE REDGRAVE, 24, cinema projectionist, 40 Marston Street, Iffley Road, Oxford. Theatre, horse riding, cinema; all but jazz. Ferrograph 4AN, up to 8½in. 3¼, 7½. **Anywhere English speaking.**

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A. Brown & Sons	40	Francis	12	Recording Machines	45
CBS	12	Gevaert	8	Reslosound	12
Chelsea Record Centre	40	Grundig	14	R.E.W. Earlsfield Ltd	45
City & Essex T. R. Centres	3, 45	Howard	16, 45	C. Sharp & Son Ltd.	45
Clyne Radio Ltd	45	Lambda Record Co	45	Sheen T. R. Centre Ltd.	41
Cussins & Light	45	Lancashire Hi-Fi	45	Southern Recorder Service	45
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De Villiers	42	G. L. Morton & Co. Ltd.	45	Tellux	6
Elstone	20	M.S.S.	26	Valradio	40
E.M.I.	2	Multicore Solders	40	Welmec Corporation	22
Esisolder	11	Music on Tape	29	World Record Club	4, 5
Esoteric	38	Nusound Recording Co	33, 45	Zonal	18
A. C. Farnell Ltd.	20				

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