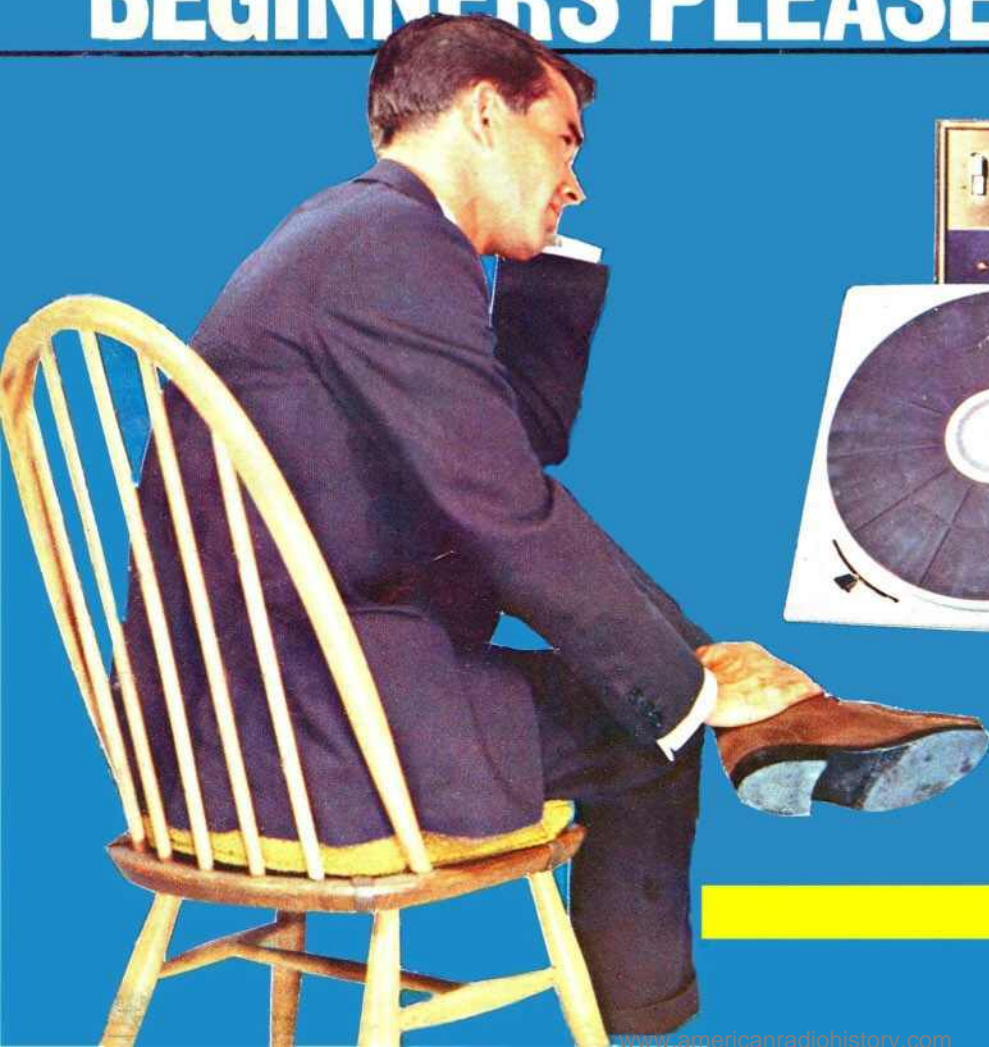


# AMATEUR TAPE RECORDING

VOL. 5 NO. 3 OCTOBER 1963 Price 2/-

*What to do with your  
NEW EQUIPMENT*

ATR INSTRUCTION BOOKLET **NO.4**  
**'BEGINNERS PLEASE'**





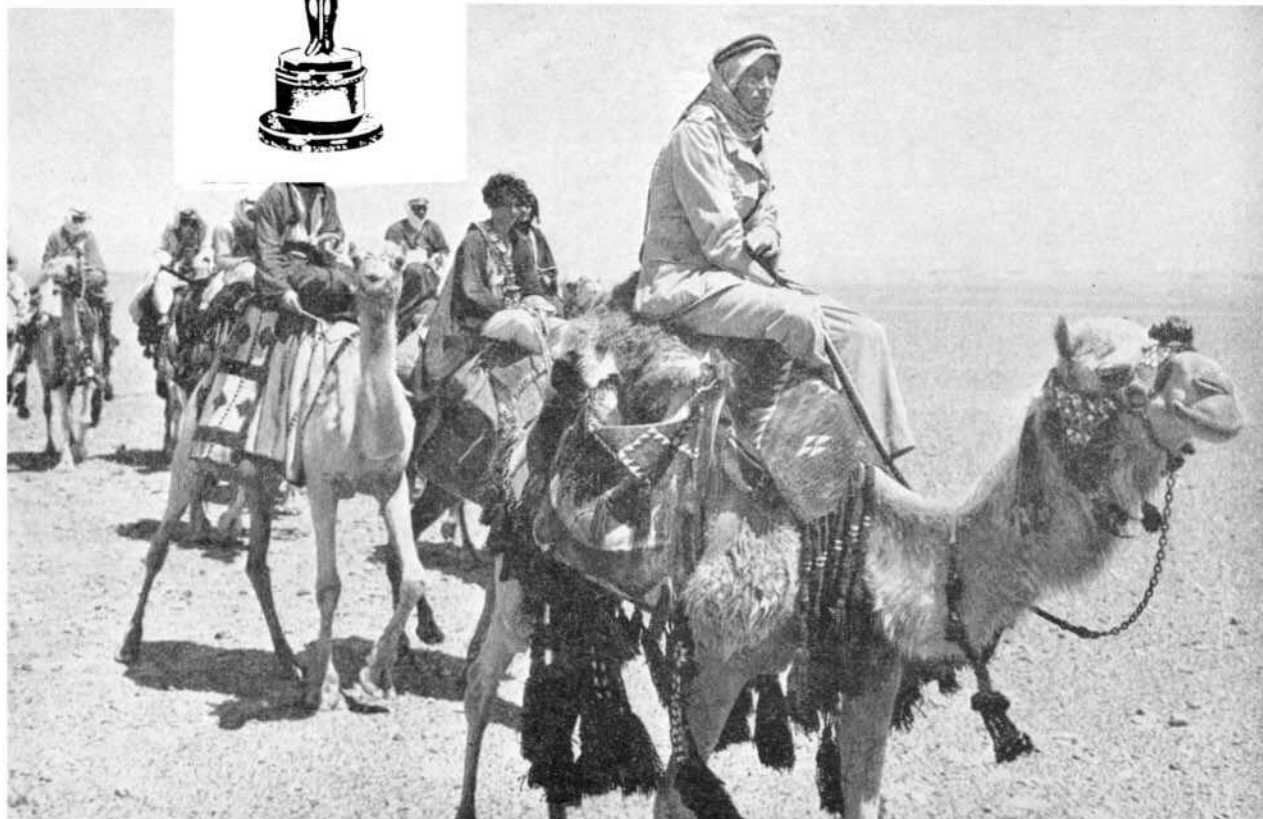
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next  
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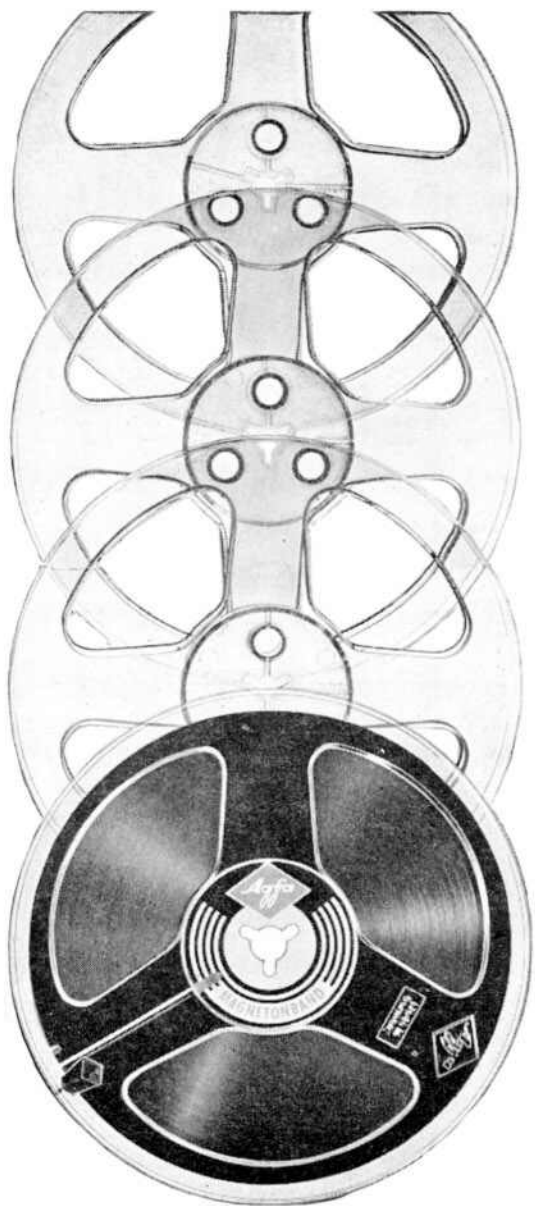
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# AMATEUR TAPE RECORDING & HI-FI

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amateur the  
professional  
touch . . .*

## In this issue

I Want A Damp Studio	8
Great Recording Dens	11
Val Parker	13
Electronics Without Tears	14
Sound Workshop	17
Pull-out Booklet -	19
Beginners Please	
Hi-Fi Discs	28
The Things You Say	30
Switchboard U	31
Soun Scene	33
Tape Club News	35
Stereophonic Sound	38
Approved Dealers	41
Classified Advertisements	42

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## ON THE COVER

- Our cover illustrates the newcomer to Tape and Hi-Fi's dilemma: what to do with all his weird and wonderful equipment once he's purchased it. How to extract the fullest possible enjoyment out of his equipment. If you, too, want to know, then turn to page 19 — now!

Vol. 5, No. 3

October, 1963

## Another Audio Fair?

by the Editor

**I**T'S on the cards that another Audio Fair is on the way, this time one to be held in the North, and probably any time now.

The Trade demand for this Fair has been stepped up due to there being no National Radio Show this year, and buyers from the North, desperately seeking any avenue along which to display their latest equipment, have been pressing hard for it.

And how long overdue!

All Tape and Hi-Fi enthusiasts, whether rank amateurs or bold experts, need to be kept up to date on the latest advances made by the various manufacturers. DIRECT CONTACT is one means of securing this, and an Audio Fair is always a positive means of relaying information between source and demand.

The town tipped as most likely to house the Fair is Harrogate. Indeed, three highly successful Fairs have already been held there before. One in 1957, one in 1958, and a further one in 1959. So far, all the Northern wholesalers contacted have given this enterprise their unanimous approval.

It will be known as the Northern Audio Fair, 1963.

Let's hope we see it.

## We Aim To Please

**W**E aim to please. That well-worn phrase has yet never been injured by ATR. We DO aim to please — both the experienced Tape and Hi-Fi man and the comparative newcomer to the scene.

This month, we aim to aid the newcomer to the intricate world of Tape and Hi-Fi, and place him on a higher level of understanding.

For that purpose we have prepared for this month's ATR another of our highly-popular 16-page booklets, entitled — BEGINNERS PLEASE.

It's an introductory booklet to the world of sound. And for those who find this particular world somewhat bewildering, BEGINNERS PLEASE provides a practical guide to knowing more about all kinds of equipment and is a repository of tips and hints on how to use it properly.

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October, 1963

# I WANT.....A DAMP STUDIO!

by Peter  
L. Bastin

*Some thoughts on acoustics in the home studio.*

**T**HE proper acoustic treatment of studios is essential for good broadcast or recorded sound. The BBC and the major recording studios spend a good deal of money on this important item and employ specialists to calculate the degree of reverberation and damping required.

## ● Acoustics explained

Without being too technical, a few basic facts about acoustics may be helpful to the enthusiast. There are two main sources of noise—*background noise* and *intruding noise*. Background noise is the general noise associated with a room, and intruding noise is the noise entering from outside—for example, traffic. Loudness is measured in phons, and a decibel is a power-level difference or a measure of intensity. Various building materials have what is called a reduction factor, which means that their mass reduces the transmission of noise—for example, an 11" cavity wall has a reduction factor of 55 decibels. Therefore, if external traffic noise at

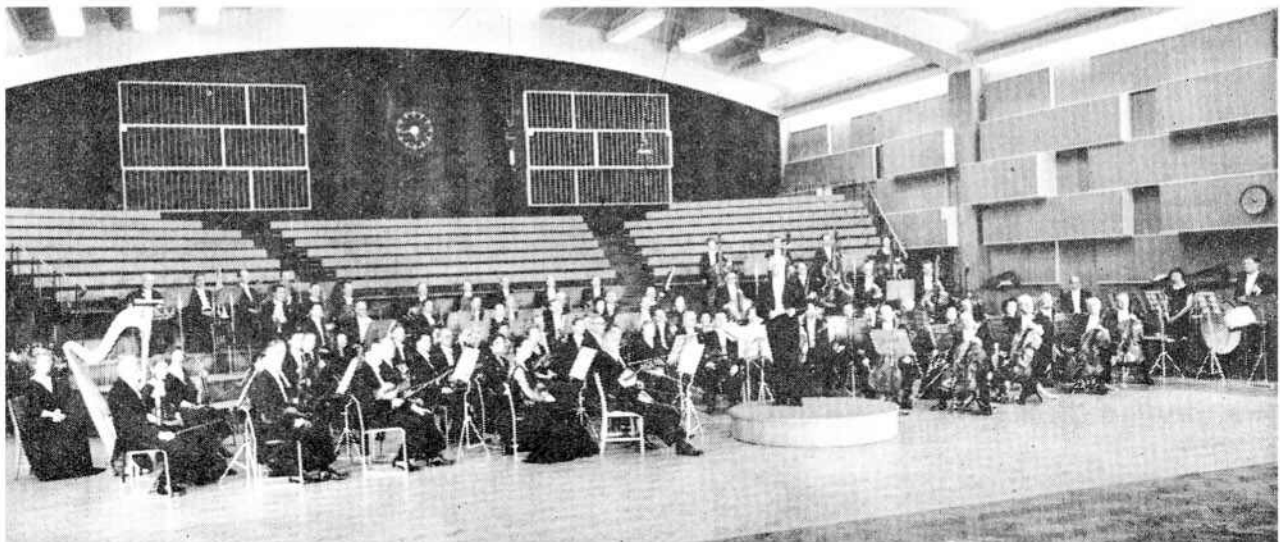
a level of 90 dB, enters a room through an 11" wall, the resulting level will be only 35 dB.

To arrive at suitable acoustic conditions for a studio, other factors must be taken into account. *Reverberation* or the duration of a sound, measured in seconds after its source has ceased, should not be confused with *echo*—the sort of thing you get in a large cavern or canyon.

Sound is reflected from a wall at an angle corresponding with that of the arrival of the original sound. This is a useful thing to remember when placing microphones against sound-reflecting surfaces. But the main consideration in equipping a studio will be to reduce reverberation and overtones to the minimum without producing too much of a 'blanket' effect. Treble reverberation can be controlled by the amount of non-porous surfaces on walls and ceilings.

The more shiny surfaces there are, the greater will be the treble reverberation. Middle frequency reverberation can be controlled by thick mattressing or curtains, and bass reverberation by panel or 'box' absorbers. Any rise in bass frequencies is undesirable, for it produces boxiness in tone.

- Clearly seen on the wall of the BBC's Maida Vale studio, are the acoustic 'dampers'.





# I WANT A DAMP STUDIO!

by Peter L. Bastin

## ● Speech needs heavy damping

An ideal studio for speech should be fairly well damped: acoustic tiles, heavy curtains on the walls and over any windows are all desirable. Some treble frequency reflection should be encouraged, otherwise the sound will be too dead. Care should be taken in this respect to mount microphones away from the direct effect of acoustic treatment—unless, of course, special effects are required. Microphones should be movable, preferably mounted on floor stands. The walls of the studio should be at least 11" thick, or failing that, covered with acoustic material on battens, away from the wall. Where a floor is above the studio, great efforts should be made to reduce impact noise and a carpet with a good rubber underlay will help enormously. The studio ceiling should be finished with acoustic tiles: PVC ones can be bought for about 1/- each.

Diagram of the 'reduction factor'.

## ● Special effects

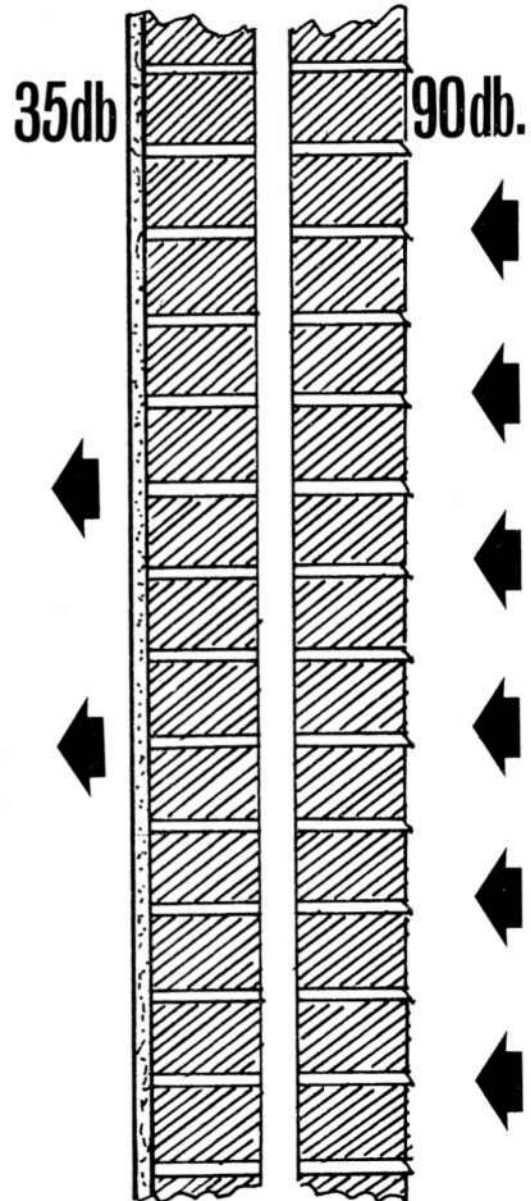
Sometimes special acoustic effects are required and for those with three-head machines which will produce reverberation, the following reverberation times may be helpful:

Law Courts, Conferences	: 1 to 1.5 seconds
Council Chambers	: 1 to 1.6 seconds
Halls	: 1.5 to 2 seconds
Concert Halls (part full)	: 1.6 to 2 seconds
Theatres (part full)	: 1.3 seconds
Churches (part full)	: 2 to 3 seconds

The subject of acoustics is somewhat involved and requires considerable calculation for perfect results. The various surface reflection and absorption values are necessary, together with reduction factors and other considerations, but a little common-sense, a good supply of curtaining, acoustic tiles and fibre board will produce a studio with very-nearly-professional qualities.

**NEXT MONTH ATR INTRODUCES AN EXCLUSIVE ARTICLE ON 'TELCAN'—THE AMAZING NEW DOMESTIC SOUND & VISION RECORDER THAT RETAILS AT A PRICE LITTLE MORE THAN AN AVERAGE RECORDER! DON'T MISS THIS WONDERFUL FEATURE!**

As illustrated, noise entering room at 90 decibel level, passing through 11" cavity wall, reduction factor, 55 decibels. Resulting noise will be only 35 decibels.

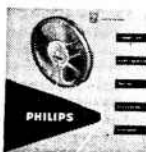


11" cavity wall.



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# Great Recording Dens by George, Ray and Dennis

The first three enthusiasts to show you inside their dens are George West, Ray Foster and Dennis Rookard.

**R**AY, of 38 Regnum Drive, Newbury, Berkshire, has been recording for a number of years, and has now amassed a variety of equipment. This includes three recorders (Grundig, Philips and Cossor CR 1605), two turntables, and an assortment of mics, and mixers, as shown in the top photograph. One of Ray's main interests is tapesponding, and in the past year he has made contact with 18 tape pals in ten different countries, all of whom he came to know through the ATR Tape Directory.



The second photograph shows **George West**, of 187 Oldham Road, Middleton, Lancs., in the den where he produces the monthly sound magazine of the Middleton Tape Recording Club. The den is actually a spare bedroom at the back of the house, where traffic noise is at a minimum, and it houses a highly modified Simon SP5, which can mix up to four channels on to one track, a Cossor 1603 three-speed, four-track machine, and a Truvox PD82 tape unit which George finds excellent for dubbing and editing. For sound effects discs there is a new Garrard turntable, and although the Grundig mixer shown in the picture belongs to another member of the Middleton club, it is housed in George's den when used by the club.



**Dennis Rookard**, of 8 Railway Square, Brentwood, Essex, has designed and constructed for himself the console for his equipment as shown in the bottom photograph. His console houses two 4-watt Tripletone amplifiers, a BSR TU8 record deck modified for stereo on disc with a filter for 78 r.p.m. records, and facilities for mixing record, radio, TV and mics. ! The radio tuner is a Hazeltine Sky Champion (R.C.A.) and is for medium and short wavelengths (10-1,500 metres). The mic. is a Grampian DP4/H, and Dennis also has a Philips EL 3542 tape recorder, which is not shown in this photo.



- George, Ray and Dennis each win themselves a guinea for letting us see their dens, and we shall be publishing three more each month. Those readers who have not yet sent us photos and details of their equipment, please don't hesitate to show us the way YOU set up your gear, even if it's only a tiny corner of a bedroom or living-room. Photos should be well defined, and a clear list of equipment and its uses is a great help. And don't forget, it could win you a guinea !

# NEXT MONTH YOU WILL KNOW

the result of our 'Memory Moment' Contest!

*The boy whose mother won  
the 'Miss Mannequin' contest!*

*First swim at fifty!*

*Meeting big stars in the  
recording business! What the campers saw  
at the Limbo dance contest!*

These are just a few of the hundreds  
of entries that have been pouring in  
— next month we name the winners!



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Tape recorders



# An Australian in London Town

Val Parker introduces some of the latest tapes on the market. And, for the folk-singing fans, there's a special tape recorded by Rolf Harris in the Down-Under club!

● **Music of Johann Strauss . . . Musical Arts Symphony Orchestra conducted by Leonard Sorkin.** Mono 3½ ips. Dual Saga ½ track 32/6d.

This is a pleasant, appealing tape with music that is easy to listen to. Each composition is well-known and loved and the orchestra responds to the rhythmic verve of the composer. This is an extremely competent rendering of such favourites as 'The Blue Danube', 'Pizzicato Polka' and 'The Tales From The Vienna Woods'.

● **Symphony of Dance . . . Musical Arts Symphony Orchestra conducted by Leonard Sorkin.** Mono 3½ ips. Dual Saga ½ track 32/6d.

Another excellent tape by the Arts Symphony Orchestra. As the title suggests it is a collection of ballet music the infectious snap and bounce of Gliere's 'Russian Sailors' Dance' and the 'Dance Of The Tumblers' from Rimsky-Korsakov's 'Snow Maiden'; the light, twirling motion of the Minuet from Bizet's 'L'Arlesienne Suite'; the slow, sad rhythm of Sibelius' 'Valse Triste'. On track two we have the wild thrilling music of Glinka and Borodin in the overture to Russlan and Ludmilla and the Polovtsian Dances. You do not need to be a follower of ballet to enjoy this music.

● **The Real Rolf Harris . . . recorded in the Down-Under Club.** Music on Tape. Dual ½ track mono, 3½ ips. 36/-.

This is Harris at his very best as a folk-singer. He sings with a whole range of talent from the full-throated raucous shout to heart-breaking pathos. The only adverse comment on this wonderful recording was the constant changing of the volume control as he changed from the full, hearty noise of 'Was You Ever Saw?' to the quiet of 'All Round My Hat'.

He introduces his own songs and is ably helped along by his enthusiastic audience, no doubt many of them exiled Australians. The whole recording is full of talent, life and vitality and can be heartily recommended as a pick-me-up for the blues!

● **Organ Forgeries . . . played by Jackie Brown.** Esoteric Production, mono 2 track, 3½ ips. 21/- 7½ ips. 32/-.

This tape will give a feeling of nostalgia for those of us who remember and enjoyed the many organ broadcasts from the B.B.C. in the past twenty years. Jackie Brown, by skilful impressionist playing, convinces us that we are hearing such famous names as Reginald Foort, Reginald Dixon, Sandy Macpherson and many other names which were household words when Jackie was a boy and I was following his almost Menuhin progress musically in our home town. Enthusiasts who have followed organ broadcasts over the years will be fascinated by the great likeness to the original tone and style which Jackie Brown uses. I think too, that in Jackie Brown we have an organist well fitted to bring back the big noise into musical favour again.

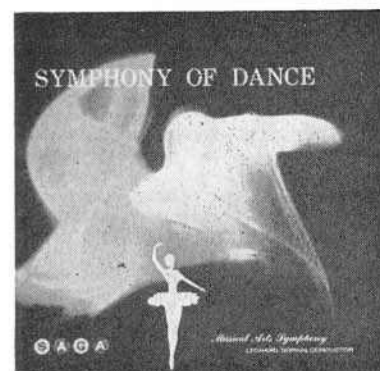
● **The Chocolate Soldier . . . by Oscar Strauss**

**The Firefly . . . by Rudolf Friml**  
Laurie Payne, Stephanie Voss, Barbara Elsy, Pauline Stevens, and the Linden Singers. World Record Club, Twin-track mono, 3½ ips. 29/-.

Track 1 is devoted to 'The Chocolate Soldier'. The overture is inclined to be harsh when the full orchestra is playing.

When Laurie Payne sings, his diction is clear and the rendering is sympathetic. I had difficulty in following all the words in the songs by Stephanie Voss but I must pay tribute to a particularly beautiful trio called Ti-ra-la-la sung exquisitely by Stephanie Voss, Barbara Elsy and Pauline Stevens. It raised the standard of the whole track to near perfection for me. Track 2 is 'The Firefly' and here the overture was much less harsh and there was a better balance between brass and strings. Once again I give particular praise to Laurie Payne in the singing of 'Giannina Mia'. A special word of praise must also go to the understanding backing of the Linden Singers especially in 'Sympathy' which showed me at least that they understood the meaning of the word!

This tape was pleasant, light entertainment for those of us who prefer melody to beat.



## Without Tears

### INDUCTANCE EXPLAINED

Inductance features in all kinds of radio and electronics equipment as well as in amplifiers, etc., where it is found with the more familiar shape of a transformer or perhaps as the bias oscillator coil in a tape recorder.

Inductance is often used in conjunction with resistance and capacity, or both, for the purpose of frequency selection in tuning. For example, an inductance (L) and a capacitance (C) will be resonant, or tuned, to a frequency (fo) when

$$\frac{I}{2 \times 3.14 \sqrt{LC}} = fo$$

(3.14=pi)

An inductance is really nothing more frightening than a coil consisting of a number of turns of copper wire. When a current is passed through

the coil, a magnetic field is created, rather like that which is permanently produced by a bar magnet. (See Fig. 1). The principle of inducing e.m.f. (electro motive force) in this way is called 'self inductance.'

We can also cause the generated field of one inductance to be induced into another inductance by coupling the two together. This is called 'mutual inductance' and is the principle of the transformer which, as I said earlier, will be found in all audio amplifiers and tape recorders. In low frequency applications this transference of power from one inductance to another, as in a transformer, is helped along by an iron core around which the coils are wound.

### TRANSFORMERS

The transformer may be used to step up or step down alternating voltage applied to one of its coils when the ratio of the turns of each coil are proportional to the voltage. The two coils as shown in Fig. 2 are called the primary and secondary respectively. The long lines between the coils represent the iron core.

By means of the transformer we can step down a mains supply voltage of 230v to 6-3v for valve heaters, or up to, say, 300 volts for the high tension supply of a tape recorder or amplifier. In the same way we can step down the high audio voltage at the output of an amplifier to the few volts required to driving a loudspeaker.

Remember, however, that when voltage is stepped down a large current can be made available, and when voltage is stepped up, the current that can be drawn from the circuit is smaller.

Inductances used for low frequency work are usually large, have lots of turns of wire and are mea-

sured in 'Henries'. Small inductances, such as those used as tuning coils, etc., have a small number of turns and are measured in milli-Henries or even micro-Henries (milli= 1/1000th, micro=1/1,000,000th).

### TUNING COILS

The small inductance or tuning coil such as those found in radio receivers are normally associated with a 'tuning capacitor' in order to resonate or tune the coil to a particular frequency. This is where the formula

$$fo = \frac{I}{2 \times 3.14 \sqrt{LC}}$$

(3.14=pi)

comes in handy, for it will indicate the resonant frequency providing the values of the inductance and capacity are known in Henries and Farads respectively.

● Fig. 1. The magnetic field of A, a bar magnet, and B, an inductance through which current from a battery is flowing.

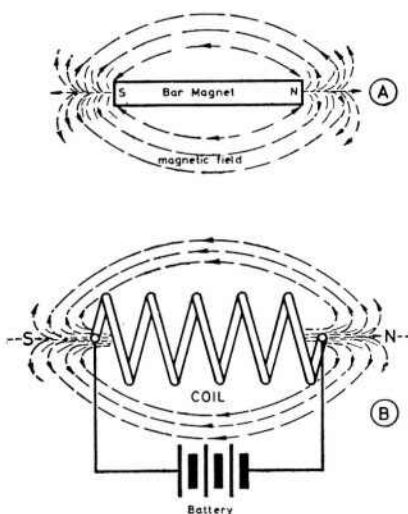
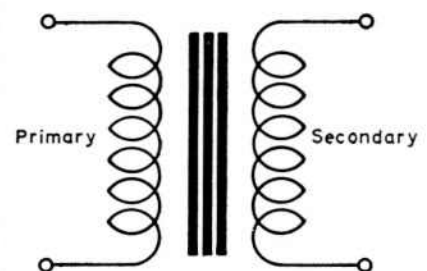


Fig. 2: The Transformer ●



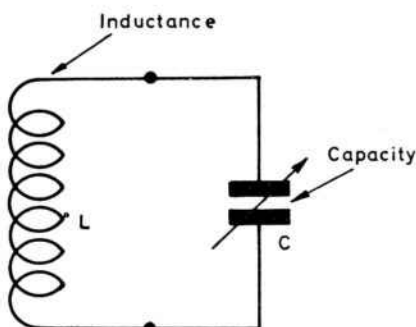
continued—

The tuned or resonant circuit is shown in *Fig. 3* and is the basis of all selective circuits used for tuning in radio frequency amplifiers and oscillators. Sometimes the inductance of a coil is increased by using moulded iron dust or ferrite 'slugs' inside the coil. These slugs can also be used to tune a coil by simply moving the slug further in or out of the coil. Some tape recorders employ this type of coil for the bias oscillator which operates at a comparatively low frequency between say 50 and 100 Kc/s. This is beyond the normal limit of audibility of course, otherwise we should hear the bias oscillator as a continuous whistle during the replay of a tape.

Inductance is also used in tape recording for frequency correction in the recording and/or playback amplifiers. These are usually coils

encased in a ferrite box, part of which becomes a core through the middle of the coil. This enables high values of inductance to be obtained with a small number of turns.

Next month we can begin on the different combinations of resistance, capacity and inductance and how they are used in electronic equipment and especially in tape recorders and amplifiers.



**LOOK OUT  
FOR THESE  
REVIEWS  
NEXT MONTH**

**The Brennel Mk 5  
tape deck—**

**The AKG D-77-A  
stereo microphone—**

**All tested in 'Sound  
Scene' next month.**

---

**FULL TAPE DIRECTORY  
NEXT MONTH ALSO**

**FIG. 3. The  
resonant or  
tuned circuit**

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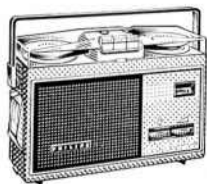
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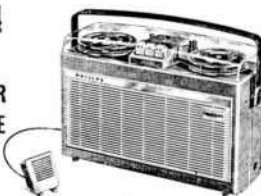


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**EL 3541**

PHILIPS  
FAMILY TAPE RECORDER

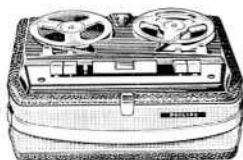
This truly remarkable four-track tape recorder incorporates many advanced features. An ideal machine for the family man.

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# ● ATR EDITOR, F. C. JUDD, A.Inst.E. follows on from last month with his SOUND WORKSHOP

**T**AKE a look at the photo (Fig. 1). All the equipment with the exception of the tape deck under test is home constructed and part of a fairly extensive 'Sound Workshop'; in fact, part of my own tape recording and audio testing equipment of about six years ago.



**FIG. 1:**  
Part of a sound workshop. On the left can be seen an oscilloscope. Centre: mixer and filters. Right: An audio signal generator.

## SET UP YOUR OWN WORKSHOP

Setting up a workshop of this nature is not difficult, and, for amateur purposes, does not have to be elaborate, but think of all the possibilities in experimental work, testing, repairing and constructional projects, etc., that lay in these few extra items of equipment. Already ATR has published (last month) constructional details for the most important item in a sound workshop, namely an **audio signal generator**. To this you can add an output meter (a circuit for this was included as well) and perhaps an oscilloscope and a valve voltmeter.

These items alone form the nucleus of a well-equipped audio workshop, but there are many more quite simple devices such as attenuators, filters, ring modulators, etc., that can easily be constructed. One also needs a few tools, such as a small electric soldering iron, cutters, pliers, hand drill and drills, etc., if additional construction work is envisaged.

## TESTING EQUIPMENT

Aside from actually constructing an audio signal generator such as the one in ATR Constructional Booklet No. 3, one could, of course, purchase one ready made or build from a kit of parts such as those manufactured by Daystrom Limited and Jason Electronics. There are one or two quite useful oscilloscopes available in kit form by the same manufacturers which will do all, and more, than is likely to be required for general audio work and include both X- and Y-plate amplifiers and a switched timebase; but perhaps you would like to build your own. A prototype simple oscilloscope employing a 1-inch tube like the one shown in Fig. 2 is already 'on the stocks' and this will be the subject of our next constructional booklet, but please be patient, it all takes time. The simple oscilloscope will, however, have its own timebase and X- and Y-plate amplifiers.

Another item, perhaps a bit luxurious for the amateur, but nevertheless extremely useful, is a valve voltmeter.

These are difficult to construct and calibrate, and few, except very experienced constructors ever build their own. A valve voltmeter like the one shown in Fig. 3 costs £13 18s. 6d. in kit form. It covers all the required DC and AC volts ranges as well as decibels and has the necessary high input impedance.

For general measuring purposes, such as AC and DC volts and current, ohms and continuity, etc., the AVO or Taylor range of meters cover just about everything. From time to time we shall be publishing constructional details of various other items of test equipment that can be added to your sound workshop, but remember, each piece of equipment you build will help to extend the range of your workshop practice and tape recording, as well as add a tremendous interest to your hobby.

## USING TEST EQUIPMENT

Aside from being able to accurately measure the performance of one's own tape recorder and amplifiers, etc., suitable testing instruments can also be used to check the results of a newly constructed piece of equipment and even 'get it going' properly. Nothing is more frustrating than to build something like a microphone mixer or tuner and find that because of some small error in wiring one is stuck with a 'dead' piece of equipment. This is where the multi-range volt/amp meter, for example, can be brought out to check HT and LT voltages, continuity of the circuit, the value of a doubtful resistor, and so on.

## USING THE ATR AUDIO GENERATOR

There are many uses for this little instrument, in testing, measuring and even for electronic music and sounds. The generator covers the full audio frequency range, and one of its primary uses is that of checking the frequency response of a tape recorder or amplifier, with the aid of an output meter or a valve voltmeter.

First, a suitable 'input' must be chosen. This should have a high impedance (greater than 10,000 ohms) for

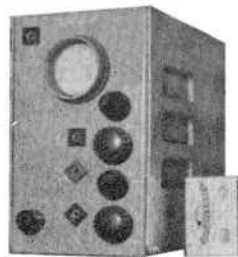
SEE OVER PAGE

**FIG. 2.** A simple home-constructed oscilloscope employing a 1" cathode ray tube.

**FIG. 3.** A Daystrom "Heathkit" valve voltmeter constructed from a printed circuit kit.

**FIG. 2**

**FIG. 3**



## SOUND WORKSHOP

### —continued from over page

direct connection to the output of the generator. Should it be necessary to check via a low impedance input, a series resistor of not less than 10K.ohms must be included. Now ascertain the voltage sensitivity of the input circuit and make sure that the attenuator of the generator is set to provide enough, but not more than enough, signal. A reference frequency of some kind must now be established and this is usually 1,000 c/s.

If a tape recorder is being tested, feed the generator into the radio or gram socket, open the volume control of the tape recorder to about three-quarters of its travel. Adjust the output of the generator to provide about half full recording level at 1,000 c/s.

If an amplifier is being tested, adjust its volume control to about half open and adjust the generator output so that the pure tone signal is at comfortable listening level as heard via the loudspeaker.

For frequency checking a tape recorder, bands of tones over the audio range shown in the specification should be recorded, viz., 50, 60, 80, 100, 200, 800, 1,000, 2,000, 4,000, 8,000, 10,000 c/s and so on. The tape recorder can usually be stopped and started by the pause button whilst the frequency dial of the generator is being reset.

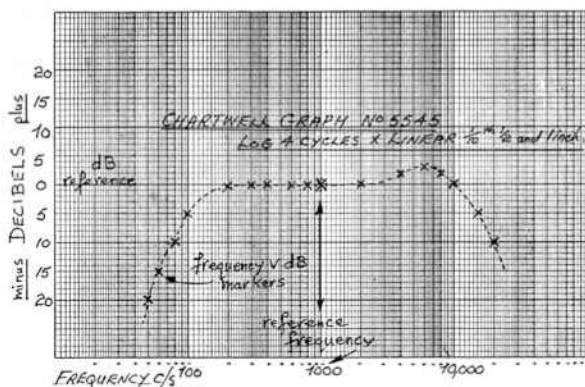
The same applies to amplifier testing, but, in this case, the readings on the output meter can be observed directly. In the case of the tape recorder, the output meter readings are observed during the replay of the recorded bands of tones.

The output meter should be connected across the speaker terminals, which is sufficient for a reasonably accurate check. The purists will probably raise sighs about pure loading, weighting, power output, etc., but we are not at this stage concerned with 'laboratory precision'.

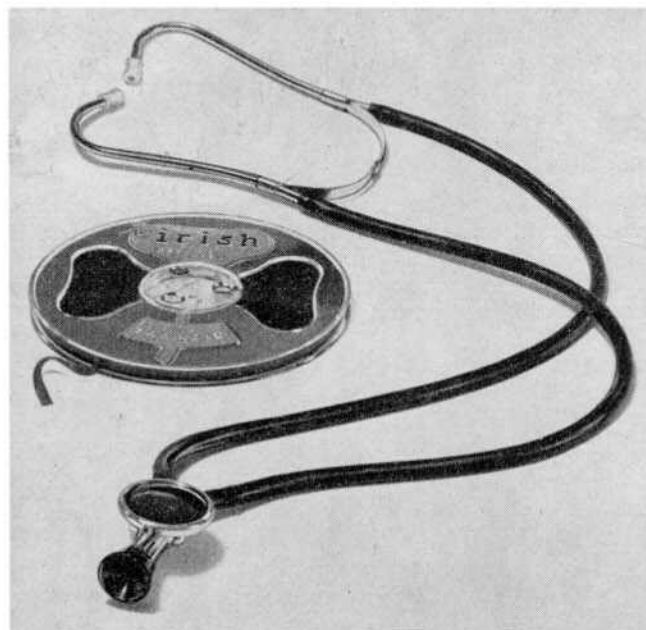
Whether the tones are from tape or direct, the 1,000 c/s tone should be used to make the output meter read 0 dB. All that remains is to plot the response curve on a 'four cycle log X linear' graph sheet, Chartwell Graph No. 5545, as used for the example shown in Fig. 4. Simply mark off the readings like those in the example and your response curve can then be plotted like the dotted line.

It takes a little practice to do this accurately and you can easily make errors through using too high a level from the audio signal generator.

I hope to do some more features later on 'Sound Workshop practice' that will help you to acquire the 'professional touch' to one of the most interesting hobbies of our time.



● Fig. 4. An example of how a frequency response curve is plotted.

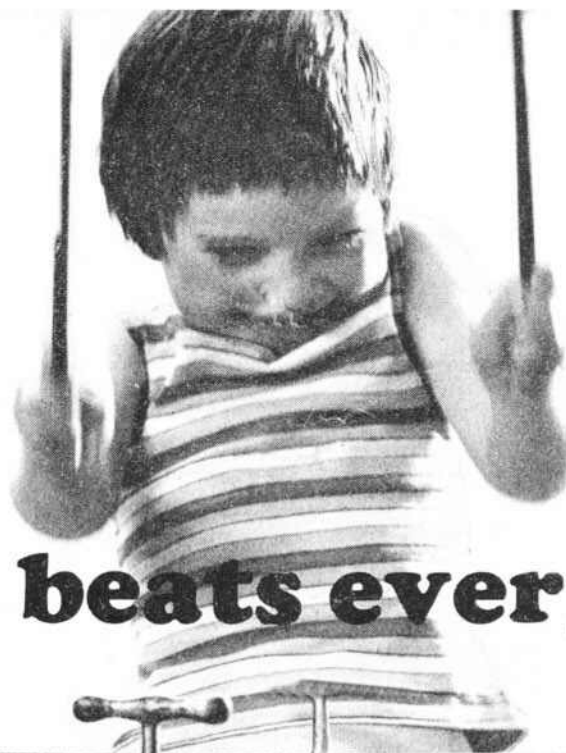


for the professional

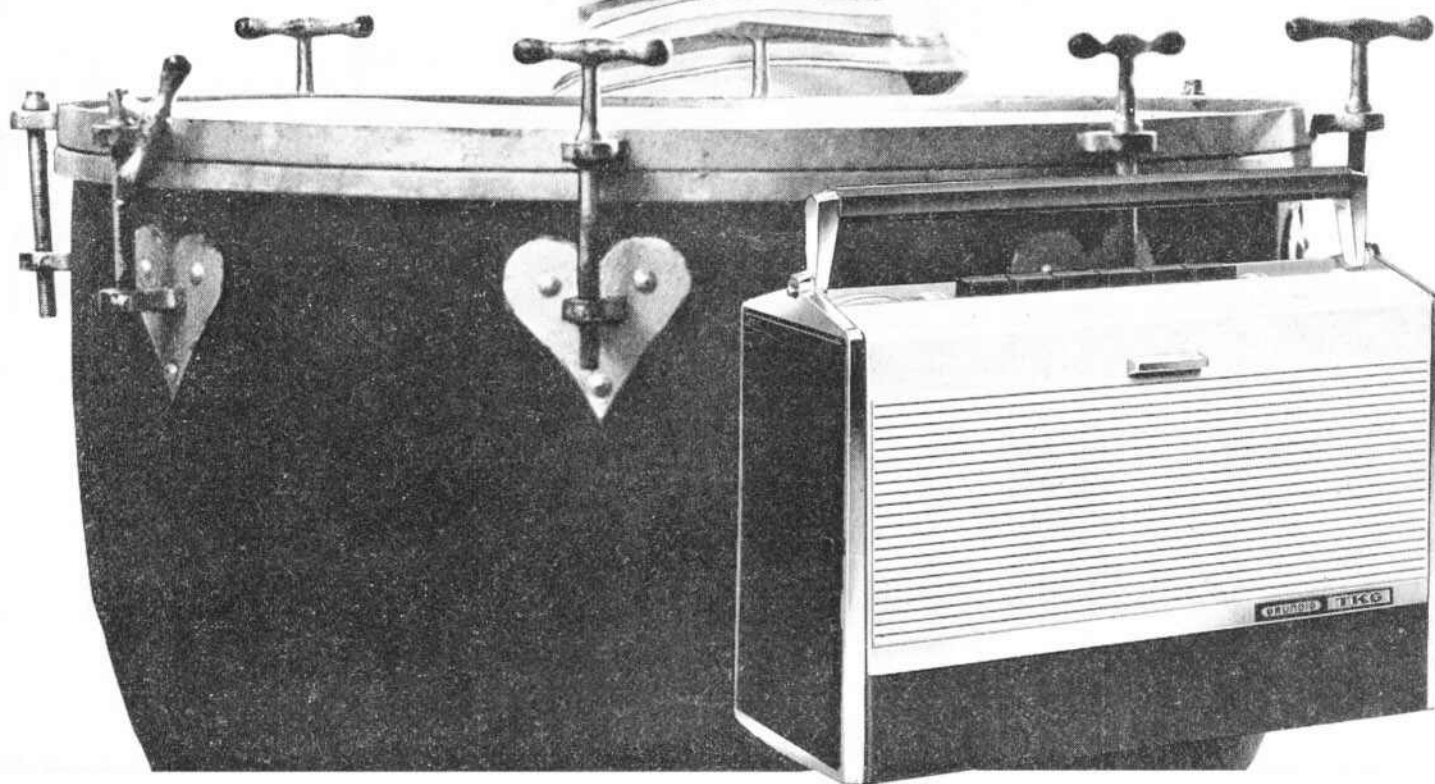
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ATR/10

Pages 20 - 27 missing from original

Russ Allen adds a word or two about the trials of a record reviewer . . . before going on to sample the delights of his latest batch of Hi-Fi discs . . . !



too much—  
too little—  
too good!

**T**HE penalty of reviewing is that, whether I want to or not, I have to listen to a whole lot of music. Some months it's very difficult indeed to find enough good discs to fill a page and then comes a month like this when I've enjoyed every record.

'Realm' have delighted me with two issues on their Classics of Modern Jazz series. Best of all, 'The Dizzy Gillespie Story' Vol. 2 RM 118 which covers the period March '51 to July '52 and what a fabulous feast of Diz that is!

The music has been taken from his old 78's and seems to have gained quality in the process. The other issue, also from 78's, is the Milt Jackson Quartet from a similar period and portends the MJQ, particularly as Lewis is on piano.

Good old new good ones and well worth the necessary coins of the realm.

\* \* \*

● 'The Magic Touch' Riverside RLP 419. Tadd Dameron Orchestra featuring Bill Evans, Johnny Griffin, Joe Wilder, Clark Terry, Philly Joe Jones, Jimmy Cleveland, Jerome Richardson, Charlie Shavers et al and not forgetting Miss



● It's that 'old' Gillespie magic—music to treasure taken from some of Diz's old 78's.

Barbara Winfield who sings for our delight on two tracks.

Dameron, composed, arranged and conducted a truly superb album and all concerned may be justly proud. Sheer joy—stop, look, listen and buy it.

\* \* \*

● 'Reaching Fourth' McCoy Tyner Trio. HMV CLP 1658. Tyner, piano; Henry Grimes, bass, and Roy Haynes, drums.

'DownBeat', the U.S. music magazine, critics' poll voted Tyner the pianist most deserving of wider recognition, and he really deserves to reach the nebulous Hall of Fame. Exciting, tasteful piano jazz that never drags for even one moment and with some fine bassing from Grimes, (didn't quite get the arco stuff) and swinging, sizzling drummery from Haynes.

You got it,—reach forth.

\* \* \*

● 'Affinity', Verve VLP 9035, is the Oscar Peterson Trio, being Peterson, piano; Ray Brown, bass; Ed Thigpen, drums. Recorded: Sept., '62.

A completely different sound from the Tyner set, this closely-knit group rarely disappoints. An affinity is what they have and each man is right there and so right. Of course I recommend, that's if you like Oscar, that is.

\* \* \*

● 'Sit Down and Relax with Jimmy Forrest'. Esquire 32-192. Recorded: Sept. 1st, '61.

This is the album I mentioned last month when reviewing 'Soul Battle' and it features Forrest on tenor, with Calvin Newborn, guitar; Hugh Lawson, piano; Tommy Potter, bass; Clarendon Johnson, drums.

An interesting set, relaxed for sure, with Forrest's tenor keeping a high standard throughout. Newborn and Lawson both contribute fine solo work. Forrest plays so easy, humorous a style, that one is inclined, at first hearing to, miss the intense jazz content and strength of his blowing.

A welcome new face on the scene—sit down and relax with Jimmy Forrest.

● 'Gerry Mulligan '63. The Concert Jazz Band'. Verve VLP 9037. Recorded: Dec., '62.

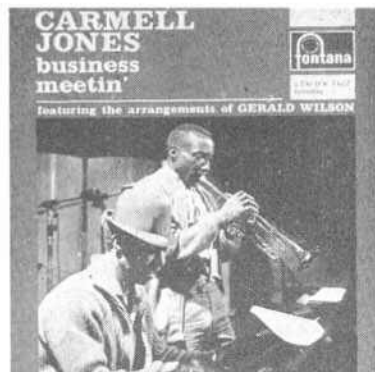
Mulligan brings on his clarinet this time, and it's a welcome new sound. Clark Terry on trumpet plays, as usual, a whole lot of fine jazz and, of course, there is Brookmeyer's trombone. The rhythm section of Crow and Johnson is as solid and musically interesting as ever, aided and abetted by guitarist Jim Hall's 'fill-ins'. Mulligan's quartet offerings are always great and the big band offerings even greater.

Yes! get it.

\* \* \*

● 'Business Meeting', Carmell Jones. Fontana 688 125 ZL, featuring the arrangements of Gerald Wilson.

An extremely fine set by this great, new on the scene, trumpet man. Eight tracks, four from a quintet and four with an added sax section, with a personnel including Bud Shank, Harold Land, Garry Peacock and Leroy Vinnegar. The pianist, Frank Strazzeri, has an original approach and his solos are sheer delight. I'd like to hear a lot more of him. I could also hear a lot more of Mr. Jones, because he is fast becoming one of the leading trumpet soloists in jazz today.



● Carmell Jones—an LP to establish this great trumpet man. With some wonderful piano accompaniment.



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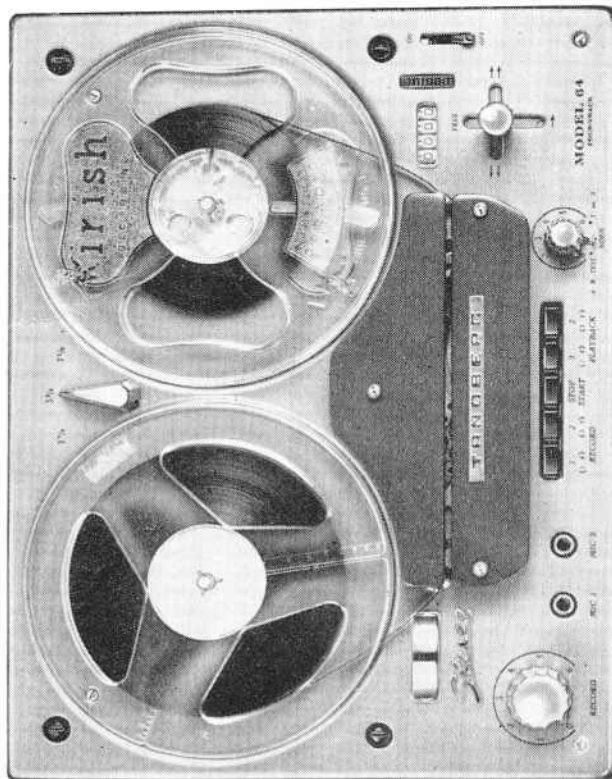
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AT.4



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# THE THINGS YOU SAY — *LIKE* BE WISE, BEWARE, BE WARY!

*A selection of letters from the ATR postbox*

## ● BE WISE

**B**E like Cpl. T. Owen, who got in touch with the overseas agents when purchasing a tape recorder . . . and experienced just how helpful they can be:

Seven months ago, in Singapore, I purchased a Philips tape recorder, EL 3541/D. In that time it developed four major faults, and, thanks to the agents, each time they were corrected for me. Last week, after another major mechanical breakdown, it was to my delight that they informed me they would be replacing my machine with a totally new one, EL 2541/00K. Considering the treatment I read about that is meted out to other tape recorder buyers overseas I would strongly advise anyone who contemplates buying a machine abroad, to first contact the agents like I did. They certainly were wonderful to me.

Good advice indeed Cpl. Owen, and a big hand for that grand after-sales service. Let's hope we hear of it being repeated to recorder buyers in Sutton, Shoreditch or Sutton Coldfield, as well as in Singapore, too!

ment even . . . send repeated letters . . . and again receive no answer at all. This is just what has happened to me.

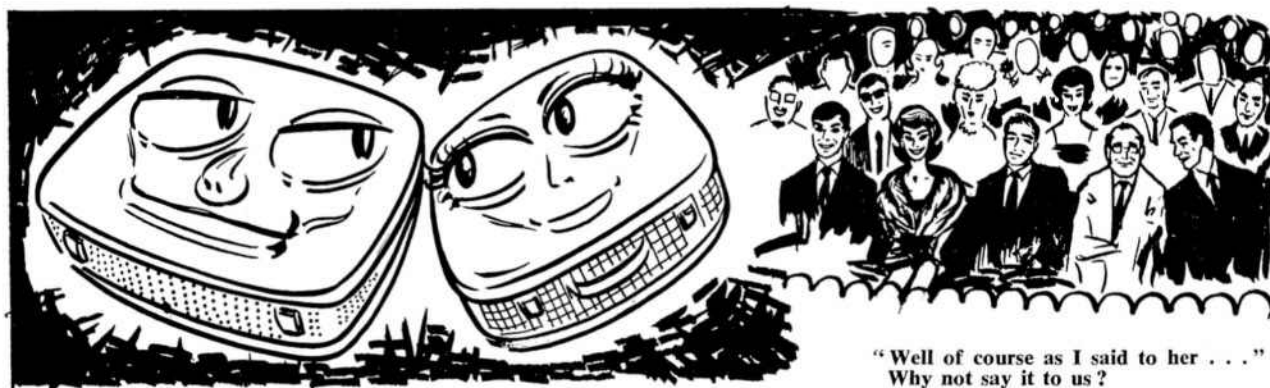
I know the tape sent was only a three-inch one . . . but if every three-inch tape I sent out, was 'lost' it wouldn't be long before my whole collection was diminished. I ask every Tapesponder to try to be sure to make a courtesy reply to every tape received. And please, mister . . . can I have my tape back?

**There's a message in your letter for every Tapesponder, Mr. Foster. Tapesponding does rely on TRUST. So how about it, everyone — let's see that that trust isn't broken!**

## ● BE WARY

Another word of warning, but this time, one that rings with the undertones of bewilderment, Over to you, R. Rigby of Bromley Cross, Bolton, Lancs.:

I own three tape recorders: two bought in Bolton, and the other bought in Germany. Both shops I bought my English models in have since closed, so several



## ● BEWARE

But now a note of warning in a letter from P. Foster of Cliftonville, Kent. ATR strongly advocates early replies, if possible, to all Tapespondents, and, even if this is not possible, at least just a card or acknowledgement. Tapespondents who insist on keeping tapes for lengthy periods of time, without even a courtesy reply, are much to be avoided. But, if their numbers increase, we could well find ourselves with a personal 'black list' of Tapespondents, and that would be a most unhealthy thing indeed. Such a thing as a 'black list' impossible? Just read P. Foster's letter:

Tapesponding relies entirely on trust. Once this trust is broken, I feel, a lot of the joy of Tapesponding has been lost, and a certain way to break that trust is to send a tape . . . receive no reply, or no acknowledge-

months ago I decided to take a trip up to the Home Music Centre in Manchester to buy a Ferrograph, also taking with me my German Telefunken to have cleaned and checked over. On arrival to the shop they welcomed me with open arms after telling them I wanted a Ferrograph, but, as soon as I mentioned I wanted them to check my other machine I was asked where I bought it, and then told they only repaired machines bought in the shop.

I went away puzzled by what they gained from this, for I promptly travelled the thirteen miles back to Bromley Cross still with the money for my Ferrograph in my pocket. Do they really expect me to visit Germany to have my Telefunken cleaned?

**We hope not! Perhaps if all shops began to take more of an interest in a customer's needs and requirements instead of shooting them off to the pay desk we'd have much better consumer/seller relations all round.**

- Colin Weston has designed this easy to assemble switchboard unit for the benefit of all ATR readers.

**C**ABLES, cables, cables everywhere and, as every tape recording enthusiast knows, cables are indispensable. Inevitably, cables tend to get tangled up, and the author has made a simple switchboard which, whilst keeping cables much neater, also enables different connections to be made between the tape recorder and ancillary equipment merely by the flick of a switch.

The switchboard has 6 lines and 2 connecting circuits, and each line can be connected to any other line using either of the connecting circuits. *Fig. 1* shows the schematic circuit of the switchboard. Double-pole, double-throw toggle switches are shown in the circuit diagram although the author's switchboard uses three-position key switches, as used in telephone switchboards. Alternatively, rotary switches could also be used. The actual type of switch is not important and any suitable switch may be used. The author's switchboard was built on a  $\frac{1}{8}$ " plywood panel, size 9" x 7" in order to fit into a wooden cabinet which is used to house various pieces of audio equipment on the 'unit'.

## SWITCHBOARD UNIT

principle, although it would be preferable to employ a metal panel and screening box. There is a risk of hum pick-up with unscreened switches and sockets, especially with high impedance lines. Coaxial sockets were mounted directly below the corresponding line switches.

### ● Applications

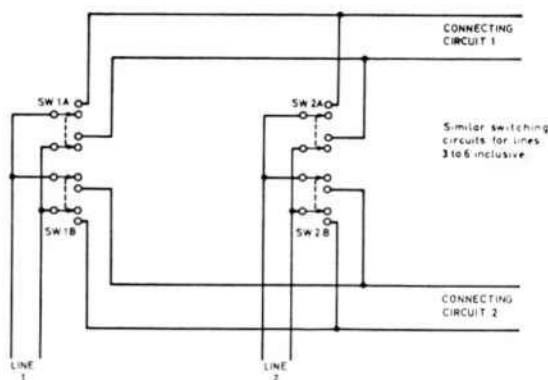
A few applications will now be considered, although to mention all the possible applications would take more space than is available.

For a typical system consisting of a tape recorder, radio, record player and microphone, and also a monitor loudspeaker, the switchboard can be connected as follows:—

Line	Equipment	Connecting Circuit
1.	Tape recorder output ...	II
2.	Tape recorder input ...	I
3.	Radio output ...	II or I
4.	Record player output ...	II
5.	Microphone ...	II
6.	Monitor loudspeaker ...	I

Using the shorthand notation that I/II means that Line 1 is switched to connecting circuit II, etc., several connections are possible.

With 5/II and 1/II, the microphone is fed into the tape recorder input, and with 6/I and 2/I, the monitor loudspeaker is connected to the tape recorder output. With 3/II, the radio output is also connected to the



tape recorder input, and similarly with 4/II for the record player. Here, the monitor loudspeaker is used to monitor the signal being recorded, whilst any combination of the microphone, radio and record player can be selected by the flick of a switch.

### ● The need for two recorders

It is often required to use two tape recorders for the purpose of dubbing tapes, and here the switchboard can be used to advantage.

Line	Equipment	Connecting Circuit
1.	Tape recorder A input ...	I
2.	" " A output ...	II
3.	" " B input ...	II
4.	" " B output ...	I
5.	Microphone ...	I or II
6.	Monitor loudspeaker ...	I or II

With the above connections, either tape recorder can be used for recording or playback, and in addition the microphone and monitor loudspeaker can be used in conjunction with either tape recorder.

All these connections are selected by means of the switches and many variations are possible. Without the switchboard, changing of cables would be necessary in order to change a particular connection. The switchboard can be used in a number of different applications and is a very useful unit to have available.

# FRANCIS OF STREATHAM

Akai Stereo M.6 ...	130 gns.	*Telefunken 95 ...	59 gns.
*Brenell ST.1 ...	£120	*Telefunken 96 1/2 Tr. ...	69 gns.
Brenell Mk. V Model M ...	88 gns.	*Telefunken 97 Stereo ...	95 gns.
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Cossor 1604 2 sp. 4 Tr. ...	39 gns.	Truvox Series 80 4 Tr. ...	59 gns.
Cossor 4 Tr. 1605 ...	62 gns.	*Vortexion WVA ...	£93.13.0
Cossor 4 Tr. 1603 ...	28 gns.	*Vortexion WVB ...	£110.3.0
Elizabethan 'Popular' ...	22 gns.	*Vortexion C Stereo ...	£148.10.0
Elizabethan L.Z.29 ...	36 gns.	*Vortexion CBL ...	£160
Ferguson 3200 ...	26 gns.	W ndsor Trident ...	33 gns.
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*Ferrograph Series 5 ...	83 gns.		
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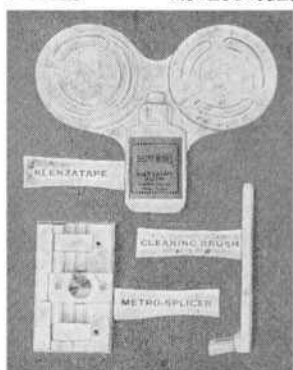
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# SOUND SCIENCE

## The Grundig TK. 18 under test

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



**W**HETHER the so called 'automatic' tape recorder will ever replace the conventional machine with a recording gain control and record level indicator, remains to be seen. I feel that the introduction of the Grundig TK.18 Automatic tape recorder, like others with similar AVC or compression systems will not satisfy the keen tape recording enthusiast. It will however, fulfil a demand for those who take the hobby a little less seriously and have no wish to be bound by level indicators, critical volume control settings and the like.

### Automatic Volume Control

The Grundig TK.18 is only automatic in that it sets its own recording level by means of an automatic volume control system (AVC) with a long recovery time. This should not be confused with compression systems used by some manufacturers, many of which have a short recovery time and can produce undesirable effects.

The Grundig AVC system will set itself to a level in accordance with the initial input signal and will remain operating at that level for some considerable time even if the input signal is reduced. No doubt Grundig have given considerable thought to their system, and providing one uses a little discretion, the recorder will handle almost any reasonable signal input. To see what sort of effect might be produced by gross overloading I fed in a pure sinewave with an amplitude of around 10 volts r.m.s. This immediately brought the AVC into operation, probably almost to its limit, but an oscilloscope check showed no obvious distortion.

### Performance

Aside from the automatic volume control system the TK. 18 has the usual facilities of a modern tape recorder. It is for single speed operation, viz.,  $3\frac{1}{2}$  i.p.s., and takes spools up to  $5\frac{1}{2}$ " diameter. Track designation is International half track, thus providing two recording tracks on standard  $\frac{1}{4}$ " tape. Other details are shown in the specification panel.

Tests showed a frequency response equal to that quoted in the specification, and various recording tests from an FM radio tuner and the microphone supplied with the recorder, proved that, with a little care and thought, quite excellent results can be achieved. Reproduction from the internal speaker is pleasant and crisp although lacking bass because of the small

- The TK.18 is manufactured by Grundig (G.B.) Limited Newlands Park, Sydenham, London, S.E.26, and retails at £40 19s. 0d., complete with dynamic type microphone, spool of tape and spare spool ( $5\frac{1}{2}$ " ), connecting lead for radio and illustrated instruction book.

baffle area provided by the recorder case.

The only comment I have concerning the operation of the AVC system is this. Since the AVC will present itself to a strong signal, say a loud passage in music, is the overall dynamic range effected? Perhaps the manufacturers could comment on this. Otherwise I found the TK.18 performed as well as the many other Grundig machines I have tested and, as I said earlier, should quite satisfy those who prefer the minimum amount of knob twiddling and button pushing.

A summarised specification of the TK.18 is shown below :

<b>MAINS VOLTAGE</b>	50 cycles AC only, 210, 230 V
<b>POWER CONSUMPTION</b>	60 watts (approx.)
<b>FUSES</b>	150 mA (H.T.) 400 mA (Mains) 200/240 V } surge 800 mA (Mains) } resisting 105/125 V }
<b>MAXIMUM SPOOL SIZE</b>	$5\frac{1}{2}$ inches
<b>TAPE SPEED</b>	$3\frac{1}{2}$ inches per second
<b>VALVES</b>	EF 86, EF 83, ECC 81, ECL 86, plus 2 metal Rectifiers International, twin track.
<b>RECORDING SENSE</b>	$\pm 0.2\%$
<b>WOW AND FLUTTER</b>	40 c/s—12,000 c/s 3-5 dB
<b>FREQUENCY RESPONSE</b>	
<b>INPUT SENSITIVITIES</b>	
Microphone	2 MV - 45 mV } Recording level
Radio/Pickup	100 mV - 2 V } automatically
<b>OUTPUT POWER</b>	2.5 watts } adjusted
<b>FULL LEVEL RECORDING</b>	
Output Level via Tape	700 mV (high impedance)
Distortion Factor	6% maximum
<b>IMPEDANCES</b>	
Microphone Input	1 Megohm (approx.)
Radio/Pickup Input	1 Megohm (approx.)
High Impedance Output	15 Kohm
Extension Loudspeaker Output	5 Ohms
<b>LOUDSPEAKER</b>	$5\frac{1}{2} \times 4\frac{1}{2}$ elliptical.
<b>HUM AND NOISE LEVEL</b>	
From high impedance output	3 mV (-47 dB)
From low impedance output	14 mV
<b>WEIGHT</b>	20 lbs. (approx.)
<b>MEASUREMENTS</b>	$14\frac{1}{2} \times 11\frac{1}{2} \times 6\frac{1}{2}$ inches



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# RECORDING RIVALRY

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**J**UST to whet your appetites and increase the suspense and friendly rivalry as you wait for the ATR competition results, we are showing you an artist's impression of the Fi-Cord Trophy, which will be awarded for the best documentary or actuality recording.

If a keen spirit of competition is a sign of a thriving club, most of our league members must be going great guns. Many of you have written to tell us how you watch with interest your positions — and those of your rivals! — in the League Tables. This month's figures should put the cat among those few pigeons who forgot their monthly reports, or didn't get them to us in time for publication!

### CLUB CHALLENGE

One club very much back in the swim is **Bethnal Green**, keenly disputing their new rivals of the **New Circle**. Club secretary Leslie Hastings, on behalf of Bethnal Green T.R. Society, wishes to challenge any other club in the league to a tape contest, to take the form of a 15-20 minute tape made up to a set theme, the form of which would be set by a third club acting as referee. The glove has been thrown . . .!

Bethnal Green has also been doing some serious thinking, along with **Catford**, **Ilford** and **Leytonstone** clubs, on the problems of decreasing membership, and the difficulties of maintaining an even balance between the amateurs and newcomers to T.R. Clubs, and the technically superior old-stagers. We at **ATR** are glad to see something being done about this, as it is apparent that many clubs unwittingly make less-practiced members feel inferior.

### NORTHERN GET-TOGETHER

Doncaster recently saw the inaugural meeting of the Federation of Yorkshire Tape Recording Clubs, which was pioneered mainly by the **Hull and District Tape Recording Club**. Hull members, pleased with the success of their brain-child, were doubly delighted when their secretary, Ken Fulstow, was made the first Chairman. The meeting was highly successful, and the way in which those present got down to brass tacks almost immediately was indicative of how pressing is the need for such local federations.

Local activities not forgotten, Hull have been doing great work for the premier local charity, the Sailors' Children's Society, whose recent carnival attracted over 20,000 people. Of these, about 600 attended one or all of the Club's attractions, and a considerable

sum of money was proudly handed over to the charity organisers. Hull club also collected recordings of some well-known personalities connected with the charity, who included the Burgomaster of Rotterdam, Brian Rix and Wilfred Pickles. A great month of achievement for Hull.

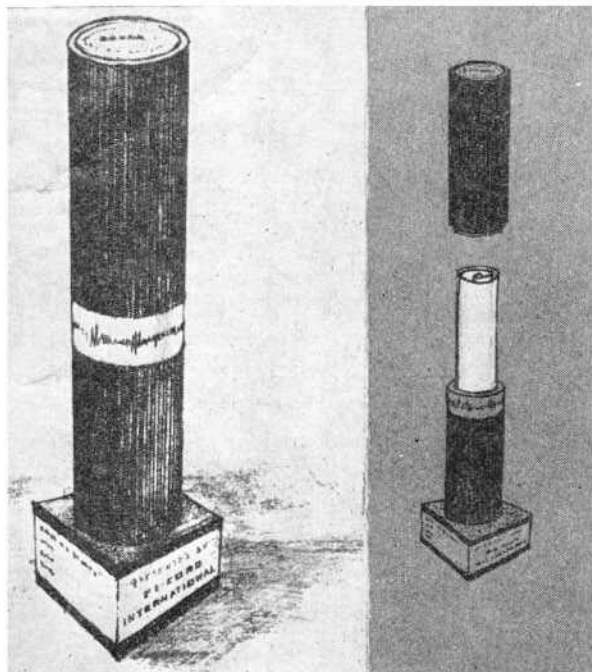
### ROTOR RECORDING

**Brixton** are at it again! Still exploring the more unusual realms of recording, they set off to Battersea Fun Fair and made recordings while actually being hurtled around at a terrific speed in the rotor there. Practical lesson derived from this experiment — for the best results, when proceeding at speed in this fashion, the tape recorder should be held upside-

down! All to do with centrifugal forces and the like! In more serious vein, the club is recording for the Streatham branch of Toc H a Carol Service at Yuletide to be relayed to the homes of elderly people in the area.

### MONOLULU IN MIDDLETON

At the recent Oldham Carnival the **Middleton Tape Recording Club** recorded quite an assortment of personalities, in-



● This elegant and unusual trophy, specially designed for Fi-Cord at the Design Centre, contains a scroll which will bear the winners' names.

## TOP TEN CLUBS FOR OCTOBER

- |                       |              |
|-----------------------|--------------|
| 1. HULL               | 6. N. LONDON |
| 2. BETHNAL GREEN      | 7. SOLENT    |
| 3. MIDDLETON          | 8. S.C.F.I.  |
| 4. BRIXTON            | 9. COVENTRY  |
| 5. SOUTH REACH C.R.C. | 10. BRIGHTON |

## THE LEAGUE TABLE

- |                        |    |
|------------------------|----|
| 1. BRIXTON             | 43 |
| 2. THORNTON HEATH      | 31 |
| 3. NORTHAMPTON         | 30 |
| 4. WALTHAMSTOW         | 27 |
| 5. BOSTON              | 24 |
| 6. N. LONDON           | 23 |
| 6. SOLENT              | 23 |
| 8. RUGBY               | 22 |
| 9. BETHNAL GREEN       | 20 |
| 10. SOUTHALL           | 18 |
| 11. HULL               | 17 |
| 12. HUDDERSFIELD       | 16 |
| 13. MIDDLETON          | 15 |
| 14. S. BIRMINGHAM      | 14 |
| 15. LEICESTER          | 13 |
| 15. SOUTH REACH C.B.C. | 13 |
| 15. VALENCE            | 13 |

## Tape Club News—continued

cluding members of the Temperance Seven, local Beauty Queens, the American drill team which took part, and the irrepressible Prince Monolulu! The club is now editing these recordings into a special programme.

Middleton club have also started an interesting documentary on the local Fire Brigade, which will probably take some months to complete, as they also have a project to record the Middleton Fair and edit a special programme for one of the nearby Old Folks' Homes.

### JOE'S JAUNT

The North London Tape and Hi-Fi Club hand over all honours to a young member of whom they are rightly very proud. He is 18-year-old Joe Collinson partially sighted, who is taking a course at Perivale Government Training Centre for Disabled. Between studies Joe toured the country collecting recordings of the bells of various abbeys, churches and cathedrals specially to send to a tape pal in Canada. Joe's enthusiasm caught the attention of the BBC who featured him in their South-East regional news, and both London evening papers, and we congratulate Joe on his success.

### OUTWARD BOUND

A number of members of the South Reach County Boys' Club are taking part in the Duke of Edinburgh's Award Scheme for young people. Secretary Terence Brett tells me that for the Bronze Medal section boys have to carry out

over a period of at least six months a pursuit of their own choice and show at the end of this time that they have a good knowledge of the subject and have shown progress to the satisfaction of the person in charge. The South Reach boys have all chosen tape recording as their subject, and in particular the group's hospital service section. We wish the boys every success and hope that ATR will prove of some use in providing their background knowledge.

### CHURCH CENTENARY

Brighton Tape Recording Club recently recorded the centenary service of St. Ann's Church, Brighton, complete with piano, organ and choir music.

The club is collecting sound effects records and books to serve as a small reference library for members' use. Anyone interested is asked to contact the club's new Secretary, Mr. H. Draper of 78 Beaconsfield Villas, Brighton.

### RED CROSS PAGEANT

When the British Red Cross held their Pageant depicting its origin and work they asked the Solent Tape and Audio Club to supply music and sound effects, and also to record the commentary. The whole pageant was recorded in the open air on Southsea Common, and luckily the weather held fine, enabling the club to make a most successful recording.

### WEDDINGS GALORE!

Summer seems to be the season for weddings in Coventry, as the Coventry Tape Recording Club has found out.

Being right up-to-date with popular demands, the Coventry members had already recorded the wedding of one member when they were asked to record yet another matrimonial ceremony!

### SCOTTISH WELCOME

Readers north of the border who are not yet members of a tape club will be interested to hear of the formation of a tape recording unit of the Scottish Catholic Film Institute. Meetings are held at 14 Newton Place, Glasgow C.3, on the first Tuesday of every month at 7.30 p.m. The club already compiles a monthly magazine on tape and is also building up a tape library of subjects of general interest as a prelude to its future activities. Anyone interested should contact secretary Brian Geary, either at 12 Ascaig Crescent, Glasgow S.W.2, or at the club address.

### IN BRIEF . . .

- Huddersfield T.R.S. are now meeting at Huddersfield Chamber of Trade, 8 Byram Arcade, on the 2nd and 4th Wednesdays of each month at 7.30 p.m.
- Hinckley T.R.C. have elected a new committee, and the new secretary is Miss Jose Clarke, 52 Lucas Road, Burbage, Leics.
- The president of the London T.R.C., Alan Stableford, has now moved to 11 Lyndhurst Way, Northfleet, Kent.
- Bedford T.R.C. also have a new secretary—Alan Hawkins, 15 Gloucester Road, Bedford, and meets every Friday evening at 131 London Road, Bedford.



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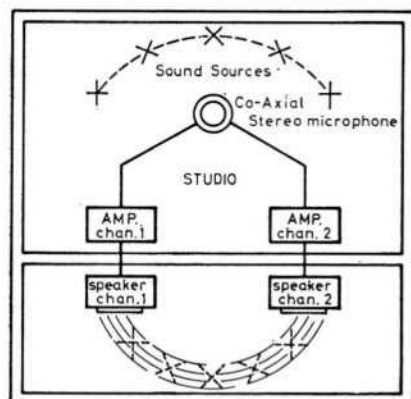


FIG. 2

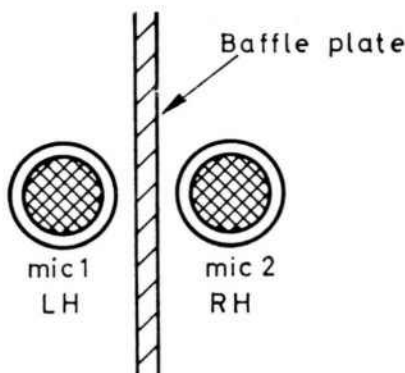


FIG. 3

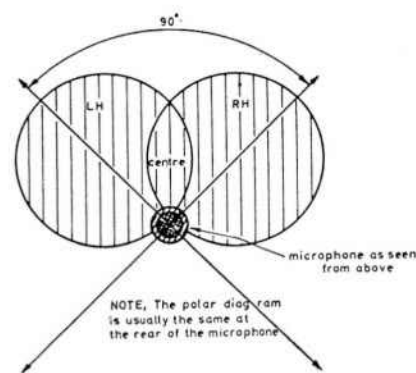


FIG. 4

## STEREOPHONIC SOUND

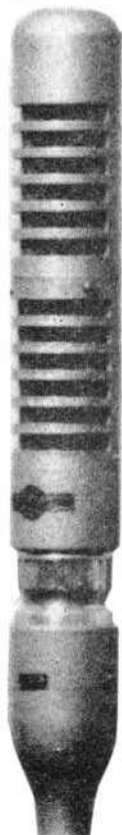


Fig. 1  
The Lustraphone  
Stereophonic  
Microphone.

E.M.I. developed the first practical methods of stereophonic recording replay which became known later as the 'stereosonic' system.

In this system two microphones were used, each placed one above the other co-axially. This arrangement allows sounds to be picked up from the left and right direction, as well as central positions, with equal amplitude or loudness. By feeding the two microphones to two separate amplifier and loudspeaker channels as in Fig. 2, the desired spatial effect could be reproduced outside the studio. It was then only a short step to devising a method of recording the separate signals on disc and to this end the now familiar double record groove was also invented by A. D. Blumlien.

Now, of course, magnetic tape lends itself to stereophonic recording by anyone with a stereo tape recorder.

### ● Microphone Techniques

The ideal stereo system is still the one employing two co-axially placed microphones, although reasonably satisfying results can be obtained with spaced microphones and various other arrangements such as two omni-directional microphones and a baffle. This latter system is based on certain theories concerning natural hearing, and the general idea is to substitute the ears for microphones and the head with a baffle as shown in Fig. 3. This system does indeed work and depending on one or two external factors, such as room acoustics, it does provide a better stereo effect than one can usually obtain with widely spaced microphones.

Let me make it clear, however, that there is no method superior to the co-axial microphone system that can be employed by amateur recordists.

### ● Making Stereo Recordings

Having outlined some of the special microphone arrangements, we can now decide on which are the most practical and how best to employ them. Room acoustics play an important part in stereo recording, but, in the main, the same rules apply as for recording with a single microphone and recording channel. Confusion of stereo information occurs if room reverberation is excessive. The same thing happens in natural hearing; in other words, excessive echo in a large room or hall can make it difficult to pinpoint the original position of a sound source.

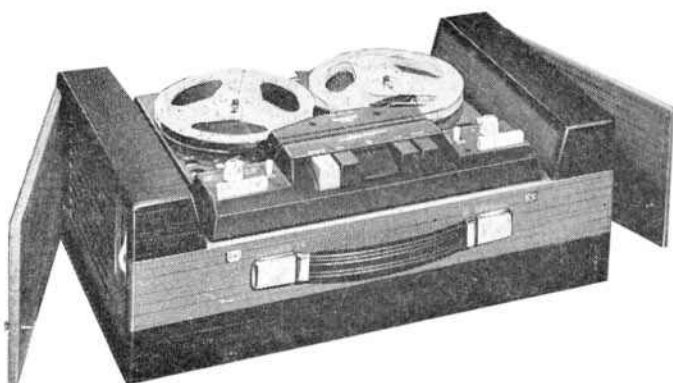
The best stereo effect will normally only be obtained with a properly designed co-axial microphone such as the 'Stereoilus' by Lustraphone Limited shown in Fig. 1. This has a polar pattern like that shown in Fig. 4 and assuming one has the right sort of room acoustics to begin with, it is only a matter of grouping the 'sound sources' in front of the microphone. For instance if the 'sound sources' are musicians they could be arranged as in Fig. 2 within the arc shown by the dotted lines.

Now comes the problem of balance and this is where a good deal of patience is required by both the recordist and those being recorded. For the best stereo effect and proper balance, direct monitoring over two channels is more than desirable; it is essential. One must be able to listen over two loudspeakers in a separate and sound proof room to what the microphones are picking up. Remember that what is heard will go onto the recording! Next month I will go into satisfactory. Next month I will go into greater detail about monitoring and outline various methods of doing it by somewhat less expensive methods.

**T**HE first experiments with stereophonic reproduction were made many years ago, but practical stereophony became possible about 1934 when the late A. D. Blumlien of

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### ADVERTISERS IN THIS ISSUE

Agfa	...	...	...	...	...	6
Associated Howard	...	...	...	...	...	34
A. Brown	...	...	...	...	...	12
B.A.S.F.	...	...	...	...	...	44
Denham and Morley	...	...	...	...	...	39
E.M.I.	...	...	...	...	...	40, 43
Elstone Electronics	...	...	...	...	...	29
Francis of Streatham	...	...	...	...	...	32
Ferrograph	...	...	...	...	...	29
Grampian	...	...	...	...	...	36
Grundig	...	...	...	...	...	27
Irish Tapes	...	...	...	...	...	18
Mallory Batteries	...	...	...	...	...	4
Minnesota Mining and Manufacturing Co.	...	...	...	...	...	5
Massey's Centre of Sound	...	...	...	...	...	32
Metro Sound	...	...	...	...	...	32
Philips	...	...	...	...	...	10, 16
R. E. W. Earlsfield Ltd.	...	...	...	...	...	12
Sheen Tape Recorder Centre	...	...	...	...	...	32
Simon Equipment	...	...	...	...	...	37
Truvox	...	...	...	...	...	2
Zonal Film	...	...	...	...	...	3

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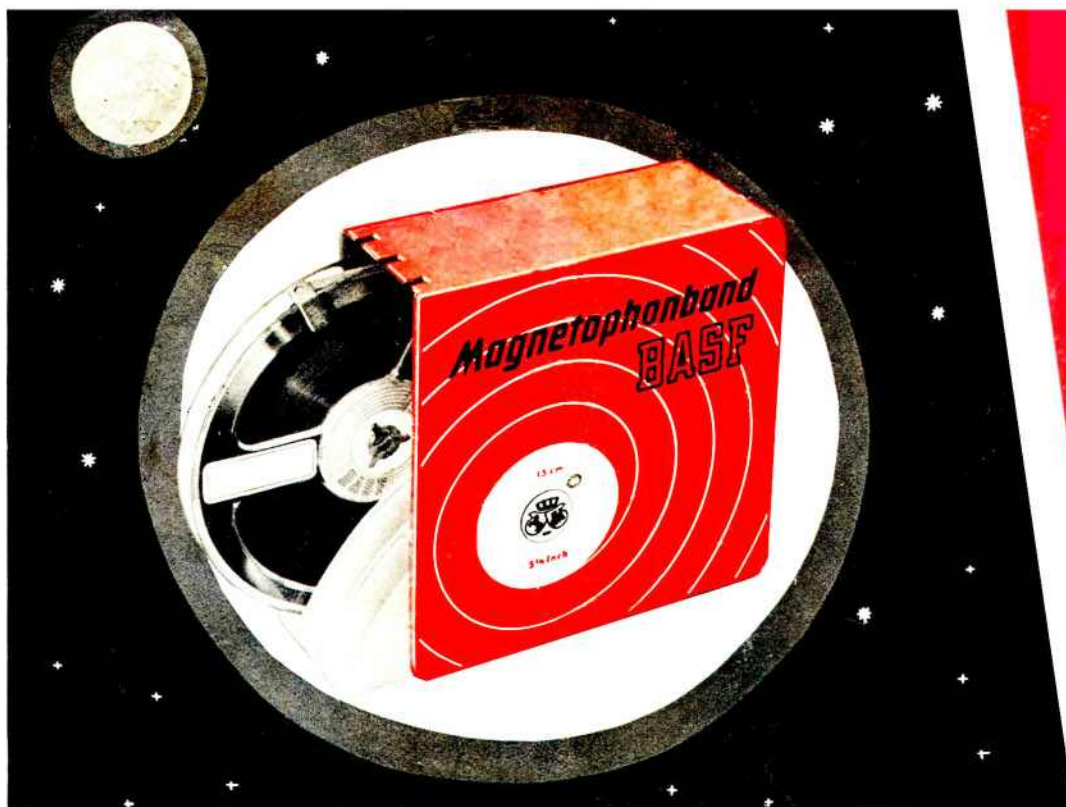
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