

MAY 1962

1/6

# TAPE

RECORDING MAGAZINE



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STAND-BY-STAND SURVEY**

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complete with  
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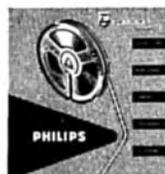
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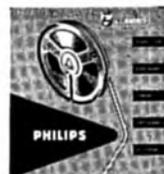
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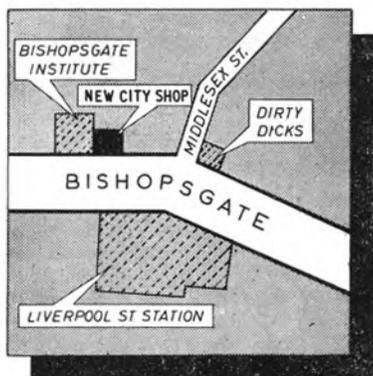


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Let it be sufficient for us to say that among regular users of the Ferrograph are Broadcasting and Television organisations, H.M. Services, leading personalities in the world of music and drama, educational authorities, explorers and news commentators, and record manufacturing companies. Surely no higher tribute can be paid to Ferrograph quality than the recognition that with so many the final choice depends, not upon price, but upon the more lasting qualities of performance and reputation.



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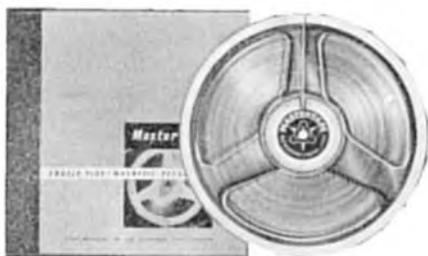
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# TAPE

RECORDING  
MAGAZINE

Vol. 6 No. 5 May, 1962

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COVER PHOTOGRAPH: A study in the compilation of sound effects. While the narrator reads from a script, his assistant controlling the Philips tape recorder, stands by to provide "noises-off" with a child's plastic trumpet. Other items in everyday use are close to hand for further sounds.

"TAPE Recording Magazine" is published on the third Wednesday in the month, by Print and Press Services Ltd., from 7, Tudor Street, London, E.C.4.

"TAPE Recording Magazine" is available by a postal subscription of 20s. per annum including postage, or it can be obtained at newsagents, bookstalls and radio and music dealers. In the event of difficulty, write to the Publishers at 7 Tudor Street, London, E.C.4.

Back numbers, if still in print, are available at 2s. 6d. per copy for issues up to November 1959, and 2s. per copy for later numbers.

Address all communications  
7 TUDOR STREET, LONDON, E.C.4 FLE 1455-6

### EDITORIAL

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R. DOUGLAS BROWN

Assistant Editor, FRED CHANDLER

### ADVERTISING

Advertisement Manager,  
KENNETH P. WILSON

# THE EDITORIAL VIEW

**L**ONDON'S International Audio Festival is now firmly established as one of the three leading events of its kind in the world and much of the research, manufacturing and marketing work of the British tape recording industry is geared to its time-table. There is stimulating advance news of interesting new equipment which will be seen for the first time at the forthcoming Festival.

The industry has had a welcome stability during the past year and the latest statistics show a healthy rate of growth in sales of tape recorders. A very big challenge lies ahead, however, and British firms will need all their know-how and energy and imagination to capture a good share of the expanding world market for tape and associated hi-fi equipment.

The question that occupies many minds at this time is: How shall we fare if and when Britain enters the Common Market? This is no longer an academic matter. By the time we come round to another London Audio Festival, Britain is likely to be in the European Economic Community or, at least, about to enter. The degree of

protection against Continental equipment now accorded the British industry may be ending.

There will be two problems: to hold our own in the British market and to expand exports in the six countries which already form E.E.C.

**I**T may surprise many readers to learn that the British hi-fi industry has managed in the past to export (not only to Europe, of course) between two and three times as much equipment (in value) as has been imported from abroad. It is doubtful, however, whether British hi-fi exports have exceeded £250,000 a year.

In fact, big opportunities are developing in Europe as the standard of living rises. Some countries have already followed the example of British enthusiasts and gone in for the "unit" system of high-fidelity equipment (as distinct from the "packaged" stereogram or cabinet radio). But the idea is only just beginning to catch on in France and Italy.

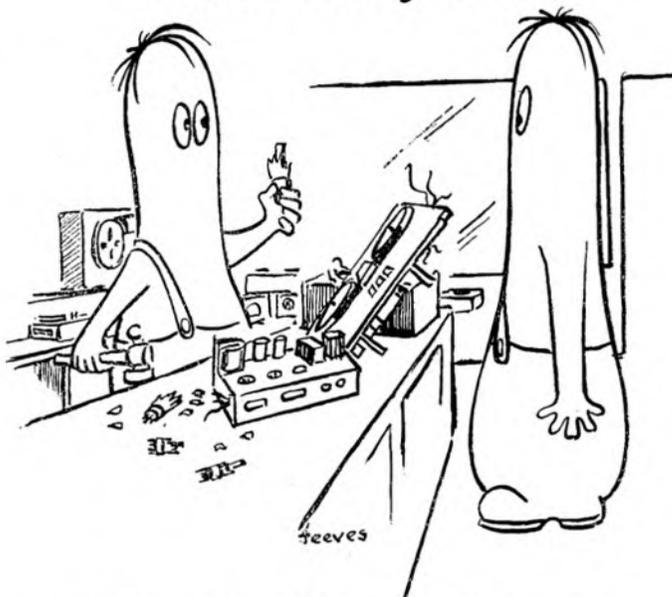
The good showing by British manufacturers at the recent International

Festival of Sound in Paris shows that our firms are not blind to the chance they now have.

**N**OT nearly enough has been learned yet of the progress of the Japanese industry, for it is bound in the future to have a profound effect on the world market. The Japanese electrical industry has had a phenomenal growth—its exports have increased seven-fold in the last four years. The United States has felt the first impact, of course, but quite a range of Japanese recorders is now on sale in this country, too. And much of this equipment is of a very high standard indeed.

Tape recorders, in fact, are now one of the main items in Japanese electrical goods exports. The number manufactured in Japan last year is estimated at 800,000. But an immense amount of technical and marketing research is going on today and some novel ideas in the tape field are currently being investigated. Unfortunately, the language problem makes it difficult for observers in this country to keep closely in contact with developments.

## LAUGH WITH JEEVES



"Lucky you brought it in for a check-up sir, every one of the valves was soft."

**T**HE skill of one section of the British hi-fi business—the retailers—is well illustrated by two catalogues which have just arrived on my desk. One is called "Hi-Fi Journey with Lasky's," costs five shillings, and is in fact a very well-produced handbook of 128 large pages, listing and describing recorders, amplifiers, control units, turntables and pick-ups, radio tuners, speakers, microphones and most other things you can think of.

The other, equally glossy but not as bulky, is called "This year of hi-fi 1962" and is, in fact, the catalogue of Imhofs. It lists the same type of material, but not as comprehensively.

Both productions make hi-fi seem exciting and luxurious: they give it a Rolls-Royce aura. And studying the products that the two firms are offering for sale becomes as pleasant a way of spending an evening as you can imagine.

It is salesmanship of a high order.

**THE EDITOR**



THE sound impulses on a recorded tape, when amplified sufficiently, can be made to perform a number of duties. Two Frankfurt electrical engineers who are also model train enthusiasts experimented along these lines and the result, as shown left, is a fully automated electric railway. This is just one demonstration of the uses of tape that BASF Chemicals Ltd will provide in their Demonstration Room (312) at the Audio Fair.

## THE 1962 INTERNATIONAL AUDIO FESTIVAL

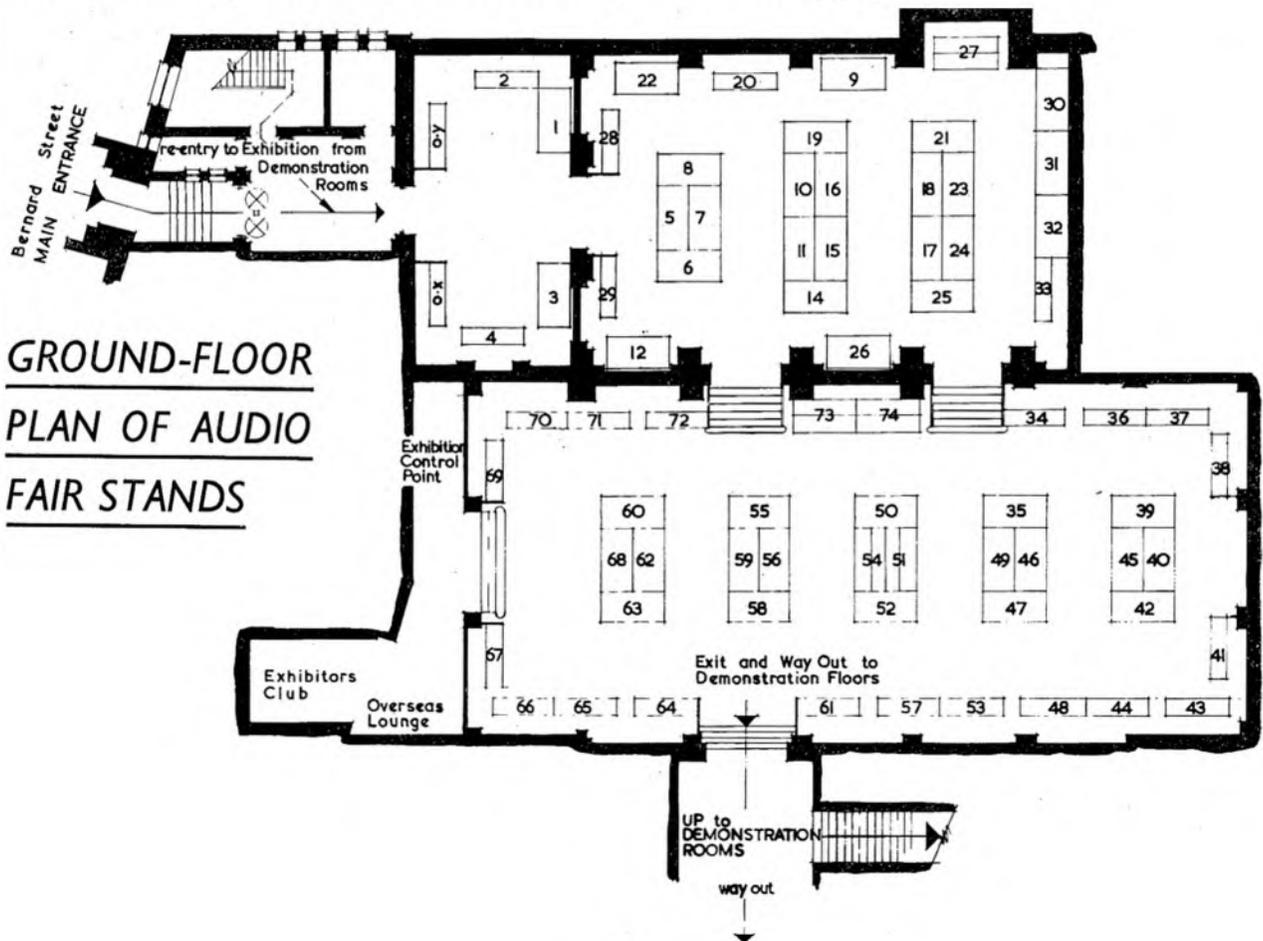
THE 1962 International Audio Festival and Fair will be open to the public from 11 a.m. to 9 p.m. from Friday, April 27 to Sunday, April 29, at the Hotel Russell, Russell Square, London, W.C.1. Admission is free, but only by ticket. Tickets are available from local dealers, direct from the Festival Director, 42, Manchester Street, London, W.1., or from the offices of "TAPE."

This will be the seventh Audio Fair to be held in London, and will be the biggest yet, with a number of firms exhibiting for the first time. An interesting

variety of entirely new equipment is to be shown. "TAPE Recording Magazine," therefore, has prepared this detailed survey for its readers—the fullest coverage of the Fair to be found in any journal.

Those who hope to attend will find it an invaluable guide, if studied carefully beforehand, of what they should look for, and where it is to be found.

Those who cannot get to the Fair will be fully in touch with all the latest developments if they study the succeeding pages of this issue.



**ACOS (Stand 64, Demonstration Room 302).**

*Cosmocord Ltd., Eleanor Cross Road, Waltham Cross, Hertfordshire.*

A dynamic version of the Acos 39-1 stick microphone will be shown for the first time by this company. Preliminary information suggests it will be a high quality moving coil unit.

Their current range of microphones and pick-ups will of course be featured, and they will also repeat their successful performance of last year, with live demonstrations of both mono and stereo microphones.

Among the microphones to be exhibited will be the Mic 45, crystal hand unit at £2; the Acostereo Mic 44, crystal, for stereo use at £6 6s.; and the Mic 39-1 crystal stick microphone at £3 3s. including desk stand, or with a floor stand adaptor, for an additional 12s. 6d. The Acos Stylus Pressure Gauge at 12s. 10d. can also be seen and tested.



**A.K.G. (Stand 69, Demonstration Room 321).**

*Politechna Ltd., 3, Percy Street, London, W.1.*

The complete range of A.K.G. microphones marketed in this country by Politechna will be shown. The range includes some 25 instruments including, in the dynamic group, the D9 (omni-directional model), D11, D12, D19B (cardioid), D15 (reporter cardioid), D88 (cardioid stereo type), DYN60G (close-talk omni-directional) and the DYN60K (mini microphone).

The A.K.G. professional studio microphones which include the dynamic cardioid types D20B, D24B, and D25B for boom mounting, D30B with a four-pattern change switch, D36B with a selector switch giving the choice of nine patterns, and the D45B, the boom-mounted version of the D36B, will also be available for close inspection.

Among their condenser instruments will be the C12, giving a choice of nine patterns, and its stereo version, the C24, which has two capsules each having a separate selector unit giving nine patterns. In addition, one has the facility of being able to orientate the top capsule through an angle of 180 degrees in relation to the stationary capsule.

The three-ounce K50 headphones will also be shown, plus the ST200 microphone floor stand.

The newest products from AKG will include the D58 noise-cancelling microphone; the K58, which is the K50 headphones plus a D58 microphone mounted as one unit for close-talk applications; and a new dynamic stereo microphone (D88EA).



**AMPEX (Stand 1, Demonstration Room 254).**

*Ampex (Great Britain) Ltd., Arkwright Road, Reading, Berkshire.*

Ampex will be showing professional and domestic tape recorders manufactured by Ampex Corporation in America, and Ampex Electronics Ltd. in England.

On show for the first time will be the SA-10 speaker amplifier unit and the MX-35 four-channel mixer. The domestic equipments now available consist of

portable recorders and speakers only. The former contains a series of new, improved mechanisms known as the 1200 series. Over 170 modifications have been made to produce the 1200 series from the earlier 900. New head design and improved tape guiding permit four-track recording and reproduction.

Another first time showing will be the complete range of high-grade audio tape, manufactured in three basic types. Series 500 is a high quality product for domestic use, and incorporating the exclusive "Signature Binding" for tape box markings. The 600 series is a general-purpose professional tape with high frequency response characteristics, and the 400 series has been designed to meet the most exacting requirements.

The universal model 351 introduced at last year's show will again be on view, incorporating a few minor changes.



**The Belcanto tape recorder to be seen on the Bang & Olofsen stand**

**ARMSTRONG (Stand 9, Demonstration Room 359).**

*Armstrong Wireless & Television Co. Ltd., Warlters Road, Holloway, London, N.7.*

Two stereo tuner/amplifier chassis will be displayed by Armstrong among their wide range of tuners and amplifiers. The larger of the two, the Stereo 12M/T2, is described as the most complete chassis ever produced, combining an AM/FM tuner, a comprehensive control unit, and two high fidelity amplifiers in one unit. Each amplifier provides 8 watts push/pull output, and the tuner covers the full VHF, medium or long wavebands. There is an automatic frequency control on VHF and a ferrite aerial with two IF stages on the AM bands. The price is £44 15s.

A junior version, the Stereo 55, providing 10 watts output, five each amplifier, with mono and stereo inputs for pickups, tape record and playback and also for possible future stereo radio is available at £33 15s.



**BANG & OLOFSEN (Stand 19, Demonstration Room 355).**

*Aveley Electric Ltd., Ayrton Road, Aveley Industrial Estate, South Ockenden, Essex.*

Bang & Olofsen the Danish company, exhibiting at the show for the first time, have made the theme of their display "High Fidelity for the Home." The range of equipment on show includes

items already acclaimed as some of the finest in the world, together with others recently introduced.

In the latter category is the Belcanto half-track tape recorder, a single, 3½ ips, speed machine, with a frequency response extending from 40-11,000 cps. Maximum reel size is 5¼ inches providing a playing time of 45 minutes per track using standard tape. The price for this model will be announced at the Festival.

Other items will include tone arms, stereodyne cartridges, a four-speed stereophonic record player, and a transistorised all-wave portable radio set.



**B.A.S.F. (Stand 36, Demonstration Room 312).**

*B.A.S.F. Chemicals Ltd., 5a, Gillespie Road, London, N.5.*

One company which can be relied on to provide interesting demonstrations for visitors, is B.A.S.F. who have previously introduced their film *The Magic Tape* which eventually had a nation-wide audience. They have two novel applications for their products this year which will attract the interests of all model makers and music lovers. The first is a model railway layout which is controlled by impulses recorded on B.A.S.F. tape. Visitors will be able to see the rolling stock start, stop and carry out instructions given by the tape recorder while authentic background noises recorded on the same tape complete the realism.

The second demonstration provides an excursion in sound, whereby visitors will have the pleasure of seeing a colourful visualisation of music as translated by a new technique for displaying impressions of sound on a screen. The music, recorded on B.A.S.F. tape, plays while electronic impulses and waveforms control the display on a cathode-ray-tube, colour being provided by a spinning disc system. Regular readers will recall a similar experiment described in the August 23, 1961 issue of *TAPE*.



**BRENELL (Stand 70, Demonstration Room 259).**

*Brenell Engineering Co. Ltd., 1a, Doughty Street, London, W.C.1.*

Brenell are regular exhibitors and they inform us that they will this year be demonstrating a wide variety of tapes to entertain their audiences, and to emphasise the quality of their equipment.

Piano, organ and harpsichord recordings are a strong enough test for wow and flutter, and the wide dynamic range and frequency response will be featured on both mono and stereo models.

The recently introduced Mark 5 Type "M" recorder (reviewed on page 26 of this issue) is expected to receive a great deal of attention from enthusiasts, while the do-it-yourself experts will find the Mark 5 deck as popular as ever. It is now available in a model capable of accommodating spool sizes up to 10½ inches in diameter.

Others of their machines to be shown will be the Mk. 3 Star mono with two or four tracks, and the stereo version, and two Mk. 5 recorders, standard and with a recording level meter. The Mk. 5 stereo, in a steel frame, will complete their showing.

**BRAUN (Stand OY, Demonstration Room 319).**



**BUTOBA (Stand 40, Demonstration Room 118).**

*Denham & Morley Ltd., 173-175, Cleveland Street, London, W.1.*

The latest in the Butoba range of battery portable transistorised tape recorders, the MT7, will be shown for the first time in public. This is smaller in size than its predecessor the MT5, which will also be shown, and has been designed primarily for the popular market. It is described as ideal for use with cine work, and has sufficient quality to compare with mains machines in the lower price range.

Two speeds,  $3\frac{1}{2}$  and  $1\frac{7}{8}$  ips are provided on this two-track machine which will accommodate  $3\frac{1}{4}$ -inch reels. The quoted frequency response is 100-12,000 cps and 100-5,000 cps respectively. Output is rated at 0.8 watts. A mains converter unit is available as an optional extra, and the batteries used include four  $1\frac{1}{2}$  volt U2s. The all-up weight is 8 lb.

The MT7 uses six transistors, one diode, and a magic eye tuning indicator DM71. A guaranteed speed of  $\pm 0.5$  per cent is quoted.

No price has yet been announced for this model.



The Butoba MT7, see text above

**CHAPMAN Stand 18, Demonstration Room 347).**

*Chapman Ultrasonics Ltd., 24, Upper Brook Street, Mayfair, London, W.1.*

The most popular items of the Chapman range to be shown will be the tuners, Model FM95 AM/FM in two versions, unpowered or self-powered supplied ready for shelf-mounting and which can easily be fitted into a cabinet with other equipment; and the S6BS/FM six stage AM band spread and high gain FM tuner, described as the finest in their range.

The model 305 stereo main amplifier and control unit will also be shown, plus a complete range of equipment in the professional and industrial category including the fully transistorised microphone mixer Type SRM5 and a ten-watt 6 ft. Line Source loudspeaker, model 6LS, illustrated on page 20.



**CELESTION (Stand 58, Demonstration Room 348).**

*Rola Celestion Ltd., Ferry Works, Thames Ditton, Surrey.*

The recently introduced Colaudio II loudspeaker will be the highlight of the stand occupied by this company. The outstanding feature of this unit is its small cabinet of less than two cubic feet. This is made possible by the new

## New Acos microphone—battery portable announced—tape displays

twelve-inch bass unit having a diaphragm moulded from one of the new expanded materials. Working with this bass unit is an improved version of the HF1300 treble unit, and together they produce a frequency range from 30-15,000 cps. It is housed in a simple cabinet finished in selected walnut veneers.



**CLAIRTONE (Stand 12, Demonstration Room 161).**



**CLARKE & SMITH (Stand 7, Demonstration Room 211).**

*Clarke & Smith Manufacturing Co. Ltd., Melbourne Works, Wallington, Surrey.*

This year Clarke & Smith will be exhibiting two separate ranges of audio equipment.

Firstly there are the H.M.V. High Fidelity Components, for which they are the sole UK distributors. This is a compact range including a matching loudspeaker system for stereophonic reproduction, and a console cabinet with ample accommodation for all H.M.V. components and record storage space.

They will also feature the well-known "Stereoscope" integrated amplifier claimed to be the most up-to-date and efficient model in its class. It features a one-inch oscilloscope built into the front panel which gives a visual indication of stereo balance, and also serves as an output meter and response check. The accent of the display will be the provision from one company of a complete hi-fi system including loudspeakers, console cabinets, amplifiers, and a radio unit.

The stand will also show the new E.M.I. Pick-up RPU100.

The Clarke & Smith Sound Equipment Division will share the stand, showing a wide range of public address equipment.



**COLLEL (Stand 48, Demonstration Room 320).**



**CONNOISSEUR (Stand 47, Demonstration Room 304).**

*A. R. Sugden & Co. (Engineers) Ltd., Market Street, Brighouse, Yorkshire.*

The recently introduced range of Craftsman enclosures will be demonstrated in Room 304. These units have an extremely good frequency response, require a minimum of mounting space and, having omni-directional characteristics, are particularly suited for stereophonic reproduction.

Other items to be seen include the Connoisseur stereo pick-up Type CS1 with ceramic head, the Mark III arm together with their range of Mark II heads for mono replay. Either of these arms will accommodate a stereo head or the Mark II heads for microgroove and standard recording.

The Type B variable three-speed transcription unit and the Craftsman fixed two-speed turntable will also feature. Pride of place will undoubtedly go to the new three-speed transcription turntable the Craftsman III.



**DECCA (Stand 68, Demonstration Room 212).**

*The Decca Record Company Ltd., 9, Albert Embankment, London, S.E.1.*

A great deal of interest will be shown around the Decca stand where the ffs Mark II head and "Professional" arm will be shown for the first time.

For those who cannot afford the luxury of the ffs pick-up, they will also be demonstrating the "Deram" cartridge, described as the only cartridge in the world at such a low price which can be demonstrated to cause such an absence of record wear.

Wives of hi-fi enthusiasts will be particularly interested in the Decca Stereo Decola "separates" — independent speaker units, amplifier and playing deck — based on the single unit instrument which Decca introduced three years ago. Here is a set of equipment that is already built into attractive pieces of furniture.

To demonstrate their equipment Decca will be using passages from their most recent L.P.'s whose technical and artistic excellence is recognised the world over.



**E.M.I. ELECTRONICS (Stand 54, Demonstration Room 354).**

*E.M.I. Electronics Ltd., Hayes, Middlesex.*

A versatile two-channel tape recorder is the RE301 to be demonstrated for the first time by this company. The RE321, TR52/2 and TR90 professional tape recorders will also be on view.

Measure of the RE301's flexibility can be gauged by the variety of work for which it is used. Apart from formal studio and concert hall recordings, it has also been used for recording phenomena of a transient nature as encountered in aircraft noise tests.

The RE321 battery portable, a transistorised version of the famous L2, is another of their products used to a great extent by BBC and broadcasting organisations throughout the world for on-the-spot news reporting.

Their TR90, a studio tape recorder, is designed for the user of magnetic tape recordings of the highest quality. Variations of this model are supplied to nearly all broadcasting organisations in the world. It is available in console, transportable, trolley or rack-mounted versions.

Their portable stereophonic recorder, type TR52/2, is designed for the professional user, especially the small studio with a limited budget.

Loudspeakers, Emitape, and various other recording accessories will also be exhibited.

# More hi-fi speakers — Grampian announce ribbon microphone— new German microphones

## FI-CORD (Stand 71, Demonstration Room 311).

*Fi-Cord International Ltd., 40a, Dover Street, London, W.1.*

The latest battery recorder from the Fi-Cord stable will be shown for the first time at the Audio Fair. Full specifications of this new model, together with an illustration, are given on page 33, in our "New Products" section. This worthy successor to the Fi-Cord IA, which is now discontinued, is enclosed in an elegant and practical leather ever-ready case with a separate pouch to carry a microphone and other accessories.

Also to be featured on their stand for the first time will be the range of microphones made by Beyer of West Germany, who have recently given Fi-Cord sole UK distribution rights. Seven instruments from this company will be shown ranging from the M51 moving coil non-directional unit at £4 10s. 9d. to the M160 double-ribbon directional at £45 7s. 6d.



## FERROGRAPH (Stand 61, Demonstration Room 247).

*The Ferrograph Co. Ltd., 84, Blackfriars Road, London, S.E.1.*

On the Ferrograph booth will be displayed the usual series 4A/N(mono) and 420(stereo/mono) tape recorders. In addition they will show a series of accessories including de-fluxers, plugs and sockets, and Hublock tape reels.

In the demonstration room will be a continuous playing of demonstration music, using the 420 model. Other models will be displayed for examination.

No new models are expected since the well-known custom and policy of the company does not demand new models every year.



## GARRARD (Stand 37, Demonstration Room 248).

*Garrard Engineering and Manufacturing Co. Ltd., P.O. Box 4, Newcastle Street, Wiltshire.*

Garrard, specialists in the manufacture of sound reproducing equipment for over forty years, will display a wide range of models.

Of particular interest to tape enthusiasts will be the Garrard magazine-loading tape deck in two- and four-track versions, which is incorporated in a number of the lower-priced tape recorders. Library storage units, plus a tape position indicator for use with this unit will also be shown.

Their other products include turntable units, record players and transcription motors, pick-up arms, a stylus pressure gauge, and styli.

## GEVAERT (Stand 60, Demonstration Room 122).

*Gevaert Ltd., Great West Road, Brentford, Middlesex.*

Gevaert were among the first manufacturers of magnetic tapes, but it is only in recent years that these have become widely known in this country. Today an increasing number of tape recorder manufacturers supply Gevasonor tapes as standard with their equipment.

Of particular interest to the serious recordist enthusiast this year is the introduction of tapes on 10-inch plastic spools, for use on recorders such as the Revox stereo recorder, and the modified Mk5 Brenell deck. At a recording speed of 7½ ips. this tape makes possible uninterrupted recording of up to 64 minutes with standard-play tape, and 96 minutes using long-play tape.

The prices of these new tapes wound on six-spoke plastic reels, are: 55s. for 2,400 feet (standard play) Type M; 80s. for 3,600 feet (long-play) Type LR; and 95s. for 3,600 feet (long-play on tensilised polyester). Empty-ten-inch spools in box with a plastic bag costs 10s. 6d.



## GENERAL GRAMOPHONE PUBLICATIONS (Room 244).



## GOODMANS (Stand 14, Demonstration Room 317).

*Goodmans Industries Ltd., Axiom Works, Wembley, Middlesex.*

Goodmans will be showing an entirely new high-fidelity range. Foremost of

these will be the Axiette 8, described as the smallest true hi-fi speaker made, and retailing at £5 10s. A new version of the Axiom 10 (£6 2s. 6d.), successor to the popular Axiom 110 and 112, will also be showing, and for April release, two entirely new twelve-inch cone Axioms. The Axiom 301 (£14) replaces the Axiom 300 and 400, and the Axiom 201 (£9 15s.) is a new twelve-inch unit specially developed to fulfil the demand for a unit between the 10 and the 301.

All of this new range have Feroba II anisotropic magnet systems and exceptionally robust yet elegant styling.

In room 317 the Axiette 8, the twelve-inch Axioms and the AL/120 compact system will be demonstrated in stereo.



## GOLDRING (Stand 53, Demonstration Room 215).

*The Goldring Manufacturing Co. (Great Britain) Ltd., 486-488, High Road, Leytonstone, London, E.11.*

A wide range of transcription equipment will be shown by this company. New items of interest will include the Goldring/Lenco Model GL70 transcription unit, which incorporates an 8 lb. diecast turntable and Swiss manufactured light alloy pick-up arm, Model L70, designed for extremely low tracking errors. It is wired for both mono and stereo use. Also to be demonstrated will be the popular GL58 transcription unit.

Pick-up arms will include the Model G60, with the unique slide-in platform device, and the Lenco L80, a 12-inch version of the new L70 model. New types of ceramic and crystal cartridges will be shown, together with high quality moving magnet stereophonic cartridges from the famous American Pickering range.

Their range of replacement sapphire and diamond styli has again been increased to include all the known makes recently introduced in this country. Other accessories to be seen include a stylus pressure balance, and microscope.



## GRAMPIAN (Stand 59, Demonstration Room 252).

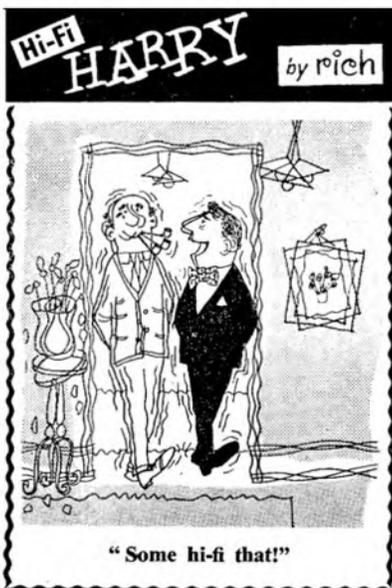
*Grampian Reproducers Ltd., Hanworth Trading Estate, Feltham, Middlesex.*

The Grampian ribbon microphone will be making its debut at this show. Small in size, attractive in style, and outstanding in performance, this instrument is bound to attract much interest.

Two models will be shown, the GR1 with a reduced back sensitivity, and the GR2 with a figure-of-eight sensitivity pattern.

The versatile DP4 range of wide sensitivity microphones together with a comprehensive range of stands, swivel-holders and other accessories and the DP5 and DP6 microphones can also be seen.

Outdoor recording enthusiasts will have the opportunity to examine their parabolic reflector which concentrates sound from a distant source to a focal point—the microphone. Another addition to the Grampian range is the reverberation unit. There will also be demonstrations of the Vibromajor, Valencia and



Tremulo-Super guitar amplifiers, plus the Handi-Page, a transistorised loudhailer, and the Model 621 radio receiver amplifier for public address use.



**GRUNDIG (Stand 8, Demonstration Room 115).**

*Grundig (Great Britain) Ltd., 40, Newlands Park Road, Sydenham, London, S.E.26.*

Grundig will be showing their current range of recorders, the TK1, TK14, TK40 and TK60.

The latest addition to their range is the TK40, which was announced in our last issue. A four-track machine, it provides three speeds,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$  and  $1\frac{7}{8}$ , and provides a maximum frequency response of 60-18,000 cps  $\pm 3$ dB at the top speed.

A wide range of facilities are available on this machine, including synchronised superimposition, mixing, remote control, magnetic heads for use with a cine projector plus "inching" forward or backward with the fast wind control. The price is 75 guineas, including the GDM18 moving coil microphone.

Least expensive in their range is the TK1, an 8 lb. battery portable model which was shown for the first time last year. The single  $3\frac{3}{4}$  ips speed provides a playing time of 16 minutes per track using double-play tape. It has a quoted frequency response of 100-8,000 cps  $\pm 3$ dB and costs 29 guineas.

At 35 guineas is the TK14, another single speed,  $3\frac{3}{4}$  ips, recorder, operated by mains power. Maximum spool size is 5 $\frac{1}{2}$  inches, and the response is given as 60-12,000 cps  $\pm 3$ dB.

Top of their range is the stereophonic TK60. This two-speed machine,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$  ips, weighs 55 lb. and accommodates seven-inch spools. It costs 128 guineas.



**HANOVER PRESS LTD. (Room 334).**



**HANSOM BOOKS (Room 241).**



**HI-FI NEWS (Stand 67).**



**ILIFFE ELECTRICAL PUBLICATIONS (Stand 3).**



**IRISH BRAND (Stand 23).**

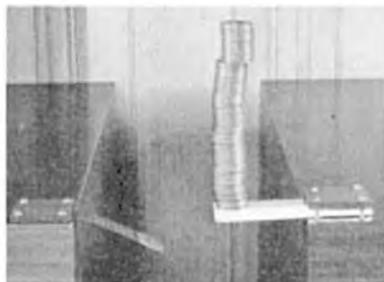
*A. C. Farnell Ltd., Hereford House, North Court, Vicar Lane, Leeds 2, Yorkshire.*

In addition to a display covering the full range of Irish Brand tapes, a new and original method of tape identification will be featured.

Irish Brand "Signature Binding" is now included free with every 5,  $5\frac{1}{2}$ , or 7-inch reel of tape. A handsome Moroccan leather self-adhesive box binding may be titled in 23 carat gold-leaf and attached to the box by the user.

# German recorders introduced —three new loudspeakers

**JASON (Stand 29, Demonstration Room 217).**



**Demonstration of the strength of the Leak Sandwich loudspeaker cone (see text right)**

**KEF Electronics (Stand 20, Demonstration Room 214).**

*KEF Electronics Ltd., Tovil, Maidstone, Kent.*

Many novel features have been incorporated in the series of K1 loudspeaker units to be shown in public for the first time by KEF Electronics.

The heart of this unit is a slim panel bearing three unique moving coil radiators for low, mid-range and high frequencies. Each unit is specially designed for the new system, incorporating the latest techniques and materials.

The first of the three, the K1 Slimline, reflects the trend towards slim enclosures. Constructed from solid Iroko timber, it is fitted with an exclusive patented strut enabling the cabinet to stand upright, or tilt slightly upwards to direct the sound towards the listening area, or to suspend the cabinet from a wall. Measuring 27 x 17 x 6 $\frac{1}{2}$  inches, it weighs 40 lb., and costs £37.

Their second model, the K1 Monitor, is an elegant 4 cu. ft. enclosure weighing 70 lb., and measuring 39 $\frac{1}{2}$  x 17 x 14 inches. Like the Slimline and "Baffle" it is suitable for 8-16 ohm amplifiers and with a maximum power handling capacity of 50 watts (25 watts rms), it costs £52.

The K1 Baffle measures 26 $\frac{1}{2}$  x 16 $\frac{1}{2}$  x 4 $\frac{1}{4}$  inches and weighs 23 lb. It costs £27. One of the features of the K1 series is the availability of the panel mounted systems wired complete and ready to play. Conversions of existing cabinets can be undertaken with the minimum of effort and success is guaranteed. Details of suitable cabinets for home construction are also available. The "Baffle" is one such unit.



**LEAK (Stand 4, Demonstration Room 113).**

*H. J. Leak & Co. Ltd., Brunel Road, Westway Factory Estate, London, W.3.*

The "Sandwich" loudspeaker introduced at last year's show will again be

on view and demonstrated with the Point One Stereo pre-amplifier and Stereo 20 amplifier by this company.

The "Sandwich" is a "very-low-distortion" moving coil loudspeaker system which costs £39 18s. 0d. The cabinet measures 26 x 15 x 12 inches and is claimed to avoid the "boxy coloration" of conventional speakers. A 13 inch and three inch speaker of novel design and a half-section cross-over network complete the system.

The illustration on this page shows a section of a very stiff paper cone flexing under the weight of one  $\frac{1}{2}$ d., and a section of the immensely stiff "Sandwich" cone, which weighs the same as the paper cone on the left, supporting the weight of 100 halfpennies. The revolutionary Leak cone comprises two skins of very thin aluminium separated by a filler of very light plastic material expanded to a thickness of  $\frac{1}{8}$  inch.



**LEEVEERS-RICH (Stand 22, Demonstration Room 313).**



**LOEWE-OPTA (Stand 55, Demonstration Room 314).**

*Highgate Acoustics, 71-73, Great Portland Street, London, W.1.*

The recently introduced German range of tape recorders will make their first appearance at the Audio Fair.

Three models will be shown, the first of these being the Optacord 403, a two-speed  $3\frac{3}{4}$  and  $1\frac{7}{8}$  ips, model at £45 3s. Six inch reels are accommodated on this two-track recorder providing a playing time of six hours using double-play tape at the slower speed.

The Optacord 404, a four-track version of the 403, and the Optacord 412, single  $3\frac{3}{4}$  ips, speed battery/mains operated recorder can also be seen.

Of particular attention on this stand will be details of their Optacord 500, a video tape recorder first shown in Germany last year, and the first machine of this type to come from that country.



**LONG-PLAYING RECORD LIBRARY (Room 232)**



**LOWTHER (Stand 34, Demonstration Room 237).**

*The Lowther Manufacturing Co., Lowther House, St. Mark's Road, Bromley, Kent.*

The latest introduction to the Lowther range of enclosures, the Corner Acousta unit, will be seen for the first time at the Fair. Their current Acousta unit will also be displayed, incorporating a number of modifications. This enclosure, for vertical or horizontal use, affords the maximum performance in direct radiation (mid and high frequencies) and strict exponential bass horn loading for



NEW  
**FI-CORD**  
**202**

**PORTABLE  
 BATTERY/MAINS  
 RECORDER**

*so much in so little space*

**The FI-CORD 202 offers all these features:**  
 2 speeds— $7\frac{1}{2}$  and  $3\frac{3}{4}$  • Standard 4" spools •  
 Vu-meter • Fast forward wind • Fast rewind  
 • Resettable counter • Manual and automatic  
 volume control • Built-in loudspeaker • Ex-  
 tension speaker socket • Low and medium  
 input sockets • Socket for remote control •  
 Safety record switch • Easy-load battery cas-  
 settes • Battery warning lamp • Mains input.

FI-CORD 202, the new portable battery/mains high fidelity tape recorder, has been developed after years of exacting tests in the Fi-Cord laboratories. It is a worthy successor to the famed FI-CORD 1A, used internationally by broadcasting companies during recent years.

FI-CORD 202 is for the most exacting professional and equally for the enthusiastic amateur demanding the highest professional standards. It incorporates all the practical advantages of a full-size recorder in a small, light-weight machine.

FI-CORD 202 gives you high fidelity recording at your fingertips—whenever you wish, wherever you go.

**AND the FI-CORD 202 weighs only  $6\frac{1}{2}$  lb, measures  $9" \times 6\frac{1}{2}" \times 4\frac{1}{2}"$ .**



**Price: 66 guineas**, including long life mercury batteries and tape.

**ACCESSORIES INCLUDE:**  
 Carrying case, choice of microphones, power packs for mains and car.

Write for fully illustrated brochure and address of nearest stockist to:

**FI-CORD INTERNATIONAL**  
 40a Dover Street, London W1. HYDe Park 3448

low frequencies. Fitted with the Lowther P.M.6 Drive unit, also to be shown, the performance throughout the musical range is described as quite outstanding.

Their Audiovector is another compound horn enclosure for reproduction of speech and music. This incorporates the P.M.4 Drive unit, which will be shown along with the P.M.2 Mk I and P.M.2 Mk II. A tuner, three power amplifiers, master control unit, and a stereo control unit will also be exhibited.



**LUSTRAPHONE (Stand 6, Demonstration Room 149).**

*Lustraphone Ltd., St. George's Works, Regent's Park Road, London, N.W.1*

Following their usual practice, Lustraphone will exhibit their complete range of microphones together with transistor audio amplifiers, transistor mixer units, and a complete range of accessories incidental to sound system requirements.

For stereo use the Lustraphone dual-head microphones offer correct compensation, create natural reproduction, and reduce "trial and error" time. Both of their instruments in this category can also be used for mono recording.

Being so fully British in design, materials and manufacture, Lustraphone are placing great stress on the slogan—*Buy British First and Foremost*. Their equipment can leave enthusiasts in no doubt as to the sincerity of their aims.



**MORDAUNT (Stand 27, Demonstration Room 256).**



**M.S.S. (Stand 35).**

*M.S.S. Recording Co. Ltd., Poyle Trading Estate, Colnbrook, Slough, Buckinghamshire.*

M.S.S. will be exhibiting their full range of magnetic recording tape with all accessories including a tape storage rack which will hold ten boxes of any size.

They will also show their record/replay and erase heads which are suitable for use with any tape recorder.



**MULLARD (Stand 10, Demonstration Room 111).**

*Mullard Limited, Mullard House, Torrington Place, London, W.C.1.*

The Mullard stand will feature comprehensive ranges of transistors, valves and inductors for audio applications together with audio circuit design information.

With the range of audio transistors on display, power outputs of 100 mW to 20 watts are obtainable. These transistors are shown together with details of amplifiers providing various outputs within these limits. Of special interest will be the AC107 low noise transistor.

The ECL86, in the "World Series" of audio valves, a triode-pentode with an output of 4 watts and a sensitivity three times greater than that of the ECL82, plus the EM87, a new voltage level indicator for tape recorders will also be shown.

Amongst the many technical publications available on the stand will be *Mullard Circuits for Audio Amplifiers*

# Five models by Philips

## —Reflectograph enclosure

(price 8s. 6d.), a 136-page book containing information on the design and construction of 11 different types of audio circuits.



**ODHAMS PRESS (Stand 21).**



**ORIOLE (Stand 28, Demonstration Room 356).**



**ORTOFON (Stand 72, Demonstration Room 112).**

*Metro-Sound Manufacturing Co. Ltd., 19a, Buckingham Road, London, N.1.*

Sole distributors for the Ortofon range in this country, Metro-Sound, will be exhibiting a wide range of these Danish products which include moving-coil pick-ups, pick-up arms and hi-fi equipment.

Among the items to be seen will be the SPU-G/T stereo cartridge, a moving-coil pick-up incorporating built-in microtransformers enabling it to be matched to almost any hi-fi amplifier. Monaural cartridges will also be shown. Among the pick-up arms will be the SMG212, SKG212, and the RMG and RKH309, specially adapted 16-inch versions of these professional grade units.

To be shown for the first time in this country are the new Ortofon custom-built loudspeaker units. A stereo amplifier KS601, incorporating two push-pull outputs each of 15 watts will also feature.

In their demonstration room, visitors will be able to see and hear the Ortofon combined stereo gramophone equipment unit incorporating Ortofon cartridges, pick-arms, stereo amplifier, and loudspeaker.

**PAMPHONIC (Stand 15)**

*Pamphonic Reproducers Ltd., Westmorland Road, London, N.W.9.*

Pamphonic are introducing a special domestic unit, the "Cosmonaut," designed to match the average living-room space, and built to accommodate the famous Reflectograph tape recorder.

The unit takes up only 24 x 12 inches of floor space when closed, and when opened the recorder projects ten inches from the cabinet. The slim-line design permits easy selection of the best possible position in any living room, and it is also designed to match the Pamphonic Pillar speaker. A handy accessory compartment is provided for microphone, tape spools, cables, etc., or an AM/FM tuner, together with its own matching wood panel can be fitted into the space. The price is 25 guineas, and delivery is eight-ten weeks.



**PARMAN (Stand 11, Demonstration Room 352).**



**PHILIPS (Stand 46, Demonstration Room 342).**

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

The Philips display this year will include five different tape recorder models. Each fits into a different category and price bracket, giving at least one machine to meet the requirements of every enthusiast.

Their demonstration room will be arranged to enable individual presentation of each machine in one room with a listening room next door.

The five machines to be shown are the EL3583, a battery portable with upright styling costing 24 guineas; the EL3514 "Starmaker," a mains-operated machine also vertically styled, providing accommodation for the largest loudspeaker in a machine within its price category of 27 guineas. Four-track operation is combined with very simple controls.

The EL3541 Family Model is a 34 guinea four-track recorder with a maximum spool size of seven inches. This is being exhibited for the first time.

Three speeds, plus facilities for superimposition and automatic tape end stop are provided in the EL3542, which costs 59 guineas, and in the top price bracket the EL3536 affords the stereo enthusiast his entry into Philips range. This unit has one built-in loudspeaker, and another in the detachable lid. Three speeds are provided, and it sells at 92 guineas.

In addition to the recorders, there will be a display of the wide range of Philips magnetic tapes and tape recorder accessories. Professional microphones and equipment will also be shown, the star attraction in this section being the condenser microphone, Model EL6050, which is used in the studios of BBC, ATV and Granada TV.



"Cosmonaut" enclosure for the Reflectograph tape recorder (see Pamphonic)

**PICTURE STORY PUBLICATIONS**  
(Stand 41).



**PLANET (Stand OY, Demonstration Room 233).**

*Planet Projects Ltd., Planet Works, Conlan Street, London, W.10.*

This newcomer to the tape field appearing for the first time will show the Planet U1, three-speed tape deck. Full particulars of this model are given on page 32 of our "New Products" section, together with an illustration.



**PYE (Stand 30, Demonstration Room 234).**



**QUAD (Stand 31, Demonstration Room 147).**

*The Acoustical Manufacturing Co. Ltd., Huntingdon.*

All the established units in the famous Quad range will be on show, including their electrostatic loudspeaker, power amplifier, control unit, AMII and FM tuners.

No new developments are announced or expected from this company, an outstanding example of a firm which, having developed products of such unchallenged quality that an enviable reputation has been founded on them, does not experiment with new lines.



**RADFORD (Stand 5, Demonstration Room 121).**

*Radford Electronics Ltd., Ashton Vale Estate, Bristol 3, Gloucestershire.*

A stereo control unit Type SC2, a development of the DSM, will be shown for the first time by Radford. The new model uses four triode stages in each channel, input selection and equalisation being effective by a push-button switch. Similar to the SC2, but with greater facilities is the SC3. In addition to being able to work directly from a tape head with full CCIR or NARTB characteristics, the tone control is increased to  $\pm 20$  dB. The main feature of this unit is a composite third channel which may be used to feed a centre amplifier loudspeaker system.

Other items to be displayed include the PSI power supply unit providing HT and DC heating for the two stereo control units; the MA15 Mk II power amplifier having an output of 15 watts, with its more powerful sister the MA25 Mk II with 25 watts output; and the STA12 Mk II and STA15 stereo power amplifiers providing 12 and 15 watts output respectively.

Kit versions of the MA15 Mk II and STA15 will also be displayed, showing a new technique. The kits will comprise the parts *exactly* as used in the manufactured item, with all wires cut to length and the ends trimmed.



**RECORD HOUSING (Stand 63, Demonstration Room 213).**

**REFLECTOGRAPH (Stand 16, Demonstration Room 152).**

*Reflectograph Ltd., Westmorland Road, Colindale, London, N.W.9.*

Noticing the great stride towards tape since the last Audio Fair, Reflectograph are concentrating their exhibit on tape recorders. They will not be showing any disc equipment this year.

Their established Model A, mono-two-track, and Model B, mono-four-track, will be shown with the Model C stereo-two-track and Model D, the mono replay only instrument. The continuous playback Model E, suitable for providing background music in commercial use will also feature.



**RESLO (Stand 17).**

*Reslosound Ltd., 24, Upper Brook Street, Mayfair, London, W.1.*

A stereo twin microphone mount, Type TMI, on which can be fitted two of the well-known Reslo microphones is the latest products of this company and will be of prime importance to visitors to this stand.

The microphones concerned are the RBL/T ribbon instruments and these are accommodated at a space of five feet. Also to be shown will be the slim and versatile pencil ribbon microphone Type PR specially designed for the amateur recordist and available in three impedance models.

A transistorised line coupling unit, Type GE, will also feature. This unit is designed to accept any low impedance input from 15 to 1,000 ohms, and to plug into the high impedance input socket of a tape recorder or amplifier.



**ROBUK (Stand 52, Demonstration Room 315).**

*Robuk Electrical Industries Ltd., 559-561, Holloway Road, London, N.19.*

The Robuk RK3 tape recorder was first shown at last year's Audio Fair. Few alterations, apart from detailed improvements and general advancement of production techniques, have been made to the model seen then.

During the past year the RK3 has become a firm favourite with enthusiasts



Three units from the Derritron Group. On the left is the Reslo SE coupler and Reslo Pencil ribbon microphone, and extreme right the Chapman Line source 6 ft. column loudspeaker



in this country, and in the export field where the greatest number of sales has been made, distribution having been established in 51 overseas markets.

This model was reviewed in *TAPE* dated June 28, 1961, when it was described as combining "many of the facilities and standard of performance found only on some more expensive machines, with a simplicity of operation that enables any member of the family to achieve satisfactory recordings."

At the modest price of 36 guineas, this three-speed,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$ ,  $1\frac{1}{4}$  ips, machine provides facilities for mixing two microphones, or pick-up and microphone, superimposition, monitoring, pause control, extension loudspeaker sockets, and accommodation for seven-inch reels. It has a rewind speed for 1,200 ft. of tape of less than one minute, weighs 25 lb., and measures  $16 \times 11\frac{1}{2} \times 7\frac{1}{4}$  inches.

The models demonstrated to visitors will be playing normal "home" recordings, not specially prepared professional studio recordings, and visitors will be invited to establish for themselves the excellent standard that can be produced privately.



**ROGERS (Stand 2, Demonstration Room 202).**



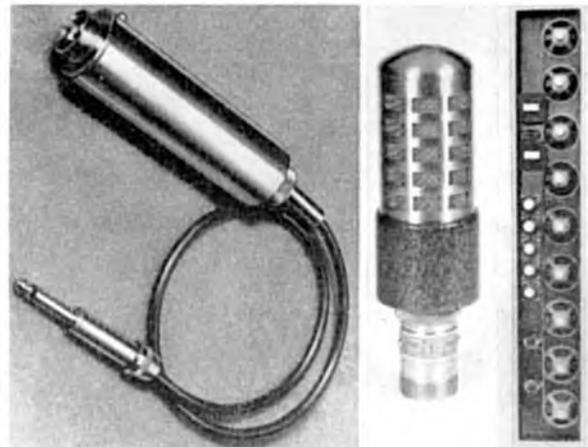
**SAGA (Stand 57, Demonstration Room 159).**

*Saga Records Ltd., 127, Kensal Road, London, W.10.*

Saga Records are producers of *Saga* and *Dandy*, tape and disc records, and *Language* disc records.

They will be giving tape and disc record recitals in the Demonstration room, while on their stand visitors will be able to examine and choose from their wide range of musical reproductions.

Their disc catalogue contains 12-inch LPs in the *Sovereign* label, which includes popular and classical music retailing for 21 shillings. Other 12-inch LP lines are the *Scala* and *Studio* series retailing at 29s. 9d, and the *Celebrity* series at 39s. 9d. *Dandy* children's records are 7-inch LPs with illustrated descriptive books at 9s. 11d.



# New tape deck—mount for stereo microphones—more models from Japan—Oscar winner

The *Language* records are also 7-inch LPs each carrying 200 basic words of the principal European languages.

Their latest catalogue contains full details of the all Saga tape releases up to and including June 1962. The structure of the catalogue has been simplified and all mono Saga tapes are on five-inch spools at 3½ ips, with stereo tapes on seven-inch reels at 7½ ips.



## SCOTCH BRAND (Stand 49, Demonstration Room 120).

*Minnesota Mining and Manufacturing Co. Ltd., 3M House, Wigmore Street, London, W.1.*

Scotch Brand will be showing the full range of magnetic tapes and accessory items. This includes three standard-play tapes, No. 111 acetate all-purpose, No. 311, PVC coated all-purpose and No. 102, with a polyester base. They will also display No. 150 an extra-play tape with a polyester base, and No. 200 double-play tape with a super-thin polyester base.

Among their accessories will be coloured leader tape, and No. 41 pressure-sensitive splicing tape.

Copies of the popular *How to do it Booklet of Tape Recording*, and the Scotch Playing Time Calculator will also be freely available on their booth and in the demonstration room.



## SIMON (Stand 65, Demonstration Room 220).

*Simon Equipment Ltd., Recorder House, 48 George Street, London, W.1.*

The pride of place in the Simon exhibit will go to the SP5, latest in the line of tape recorders designed and produced by Simon since 1948.

This has a quoted frequency response of 30-20,000 ± 3 dB, wow and flutter less than 0.15 per cent, six watts output through the 10 x 6 inch main and 4 inch tweeter interval speakers, and facilities including monitoring, master fading, inter-track transcription. It employs transistors and printed circuits, and can be easily converted from monaural to stereo record and replay. Both versions will be shown.

The well-known Simon Cadenza ribbon microphone and crystal microphones plus the Cymbal and Minstrelle tape recorders will be used to provide demonstrations of mono and stereo recording and reproduction.



## SHURE (Stand 43, Demonstration Room 361).

*Shure Electronics Limited, 84, Blackfriars Road, London, S.E.1.*

The comprehensive range of Shure microphones will be displayed, including

broadcast and de-luxe recording grades in addition to general purpose and communication instruments. All directional characteristics are available, and the types of elements include ribbon, moving coil, controlled magnetic, ceramic, crystal and carbon.

With semi-professional and professional grade tape recorders the use of a microphone of comparable quality is more than justified, and Shure microphones such as Model 545 "Unidyne III" and Model 535 "Slendyne" will be of particular interest to the serious worker in this field.



## S.M.E. (Stand 66).

*S.M.E. Ltd., Steyning, Sussex.*

The new series II precision pick-up arms models 3009 and 3012, to be shown by this company, embody all the best features of the earlier models to which have been added improvements for still greater ease and flexibility of use. Minimum vertical and lateral friction, accurate longitudinal lateral balance, resonance placed well outside recorded range and damped, plus flexibility in operation to enable a wide range of cartridges to be used are just some of these features. In addition a built-in hydraulically damped control effects raising and lowering of the arm anywhere on the record, and different stylus positions are quickly accommodated by moving the arm base on its bedplate which is graduated for easy reference.



## SONY (Stand 74, Demonstration Room 117).

*Tellux Ltd., 44, Brunel Road, London, W.3.*

Since their initial appearance at the Audio Festival last year, Tellux Ltd. have introduced a number of new models. This means that they will be exhibiting this year no less than seven of these Japanese manufactured recorders with prices ranging from 29½ up to 190 guineas.

A number of accessories will also be displayed including an extension loudspeaker system (Sony SS80) for one of their stereo recorders, a condenser (37A), and two dynamic (F3B and F7) microphones.

Also featuring will be the Sony headsets, and Sony magnetic recording tapes in standard and long-play varieties.

The three new recorders to be shown for the first time in this country are the models 777, 464 and 362B. The first is the 190 guinea, all transistor professional studio recorder, incorporating three motors, three heads and with push-button remote control.

The second is a stereo/mono machine featuring many extras including 8mm cine synchronisation. It costs 72 guineas,

five guineas less than the 362B, a de-luxe, three-speed half-track model, fully transistorised with push-button mixing.

The established range will include the two- and four-track stereo and mono 521 (reviewed in our September 20, 1961 issue) which sells at 124 guineas; the 262, described as being for home entertainment and serious recording, price 57 guineas, and the 101, a two-speed transistorised model which sells at 47 guineas. Bottom of their price range is the 111, a compact two-speed recorder weighing only 10 lb. complete with carrying case and all extras, at 29½ guineas.

Also to be seen on their stand will be nine radio sets, in both portable and desk versions.



## SOUNDCRAFT (Stand 26, Demonstration Room 218).

*Soundcraft Magnetics Ltd., Haddenham, Buckinghamshire.*

Appearing for the first time at the Audio Festival, are Soundcraft who have been uniquely honoured in being awarded Hollywood's coveted Oscar for their work in magnetic oxide coatings, the only manufacturer to receive this award.

Examples of their tapes on spool sizes from 3-7 inches will be seen and recordings heard of their quality. Ranging from the standard-play tri-acetate on a 3-inch spool at 5s., their products include long-play tri-acetate, long-play Mylar, and double-play Mylar, with a 7-inch reel selling at 77s. 6d.



## S.T.C. (Stand 50).

*Standard Telephones & Cables Ltd., Connaught House, 63, Aldwych, London, W.C.2.*

The complete range of microphones will be shown, plus accessories and cables for use with the STC instruments.

Of particular interest will be their model 4108, an electrostatic condenser microphone for studio use, a prototype of which was shown for the first time last year. This instrument with a frequency range from 30-15,000 cps and a cardioid directional response has a built-in transistor and valve head amplifier, and a separate power unit. The microphone measures 5½ x ½ inches, and the power unit measures 8½ x 4½ x 6 inches.

A newly-developed pre-amplifier, Type SRPIA, with variable tone controls will also be shown. This has been developed to feed low power to a transmission line at 600 ohms, or to the 45 or 150 watt power amplifiers produced by S.T.C.

Also on their stand can be seen the 4021-J moving coil microphone which incorporates an acoustic baffle to give high frequency directional properties; the 4032-G an all-weather instrument with full marine and tropical protection; and the 4033-A cardioid microphone incorporating two elements, moving coil and ribbon. A switch provides the choice of elements, or both can be used together for cardioid response.

Another of their models is the 4104-A noise cancelling microphone specially designed for broadcasting commentators where the highest signal-to-noise ratio is required.

**STUZZI (Stand 56, Demonstration Room 114).**

*Recording Devices Ltd., 44, Southern Row, Kensington, London, W.11.*

Stuzzi will be showing a range of five tape recorders, a radio tuner, a new attachment for the Tricorder, and a portable radio.

Latest of their range is the new Stuzzi 401 tape recorder incorporating two speeds  $7\frac{1}{2}$  and  $3\frac{1}{2}$  ips, and recording on four tracks.

Another new item is the Diktamat, a device which operates a tape recorder by sound and stops it a few seconds after the sound ceases. It works equally well from a microphone or a telephone adaptor, and is designed specifically for the Tricorder, the three-speed, including the ultra-slow 15/16th ips, recorder which is in its third Audio Fair. Among the features of this 63-guinea recorder are monitoring, mixing, pause control, variable superimposition, remote control, and projector control facilities.

The Stuzzi Junior 4M is a popularly priced recorder, 26 guineas, with four-track recording operation, facilities for superimposition and straight-through amplification, and incorporating the single,  $3\frac{1}{2}$  ips, speed BSR deck. The export version of this model, Polycord Junior 4M will also be shown.

For speech purposes only is the minute Stuzzi Memo-Cord, the world's smallest tape recorder. Reel driven with average



**The Stuzzi Diktamat, described above**

speed at 1.3 ips, and a frequency response from 400-4,000 cps it provides a playing time of 15 minutes on each of its four tracks. It measures  $4\frac{1}{2}$  x  $3\frac{1}{2}$  x  $1\frac{1}{2}$  inches, weighs 11 ozs., and costs 25 guineas.

A transistorised self-contained AM tuner for local reception and strong foreign stations, covering 190-550 m. and 1,500 m. pre-tuned on long waves at £5 9s. 6d., and the Minerva AM/FM radio suitable for hi-fi recording or where AM conditions are difficult complete the Stuzzi exhibits. This latter model sells at 29½ guineas.



**TANDBERG (Stand 24, Demonstration Room 255).**

*Elstone Electronics Ltd., Edward Street, Leeds 2, Yorkshire.*

The two latest additions to the Tandberg range will be seen. First of these is the two-track version of the Series 6 Stereo recorder.



**Three microphones by Tannoy. Left to right: The single element ribbon unit; Velocity ribbon microphone; and the moving coil**

This will be demonstrated together with the already established Series 6 four-track recorder, and the Tandberg 3B mono instrument.

The second newcomer is the Tandberg radio receiver, the Huldra 6-22. This AM/FM unit incorporates a number of unusual features including special facilities for use with the Series 6 tape deck. The price is 100 guineas including stereo amplifiers.

A number of Tandberg accessories will also be on view. Among these will be their Crystal microphone, Model CM-6 at £3 7s. 6d.; a Dynamic microphone, DP4/H with 18 feet cable at £8 16s., luggage-type case TC-56, for the series 6 deck, which costs £7 1s. 8d.; monaural headphones Model TE-1 at 4 guineas; and a remote foot pedal switch with a 6 ft. cord at £7.



**TANNOY (Stand 39, Demonstration Room 204).**

*Tannoy Products Ltd., Norwood Road, West Norwood, London, S.E.27.*

A complete departure from previous exhibitions is forecast for the Tannoy Group who will be showing for the first time ever a range of microphones to be marketed under the "Slendalyne" label. Although they have manufactured microphones for internal use before, this company has never made their instruments available to the public before.

First model is the Slendalyne single element ribbon cardioid microphone. This has a uni-directional characteristic giving a front-to-rear discrimination in excess of 15 dB over the entire audio range. Their second model, a velocity ribbon microphone, has a symmetrical figure-of-eight bi-directional characteristic making it suitable for indoor use in difficult acoustic conditions, and the moving coil microphone is of the pressure type ideal for outdoor use.

They will also be exhibiting their entire range of hi-fi equipment, including Dual Concentric loudspeakers, a wide range of enclosures, and the Vari-Twin and Vari-luctance pick-up cartridges.

Of special interest will be a rectangular free-standing version of the GRF enclosure which will be shown for the first time.

**TELEFUNKEN (Stand 62, Demonstration Room 242).**

*Welmeec Corporation Ltd., 147, Strand, London, W.C.2.*

The current range of Telefunken tape recorders, including the latest three models 95, 96, two and four-track versions of a three-speed machine incorporating a host of features and the 97, a four-track stereo recorder, also with three speeds and accommodation for seven-inch spools can be seen.

Other models to be shown will be the established 75-15, 85KL, and the professional M24.

One last-minute addition to their exhibit is expected to be an echo mixer providing reverberation facilities for use with the Telefunken 97 model.



**TEPPAZ Stand 45, Demonstration Room 222).**



**THOMPSON, DIAMOND AND BUTCHER (Demonstration Room 335).**



**TRUVOX (Stand 44, Demonstration Room 336).**

*Truvox Ltd., Neasden Lane, London, N.W.10.*

Two models to be exhibited for the first time by Truvox are in the recently announced Series 80 range. These are stereo tape units for easy connection to any existing stereo set-up, available in two versions, four-track (PD86), and two-track (PD87).

Either mono or stereo facilities are available on these self-powered units which record independently but playback through conventional reproduction equipment.

The Series 80 unit comprises a precision built tape transport with three heads (erase, record, playback) and two record amplifiers with push-button controlled level meter, plus two replay pre-amplifier channels correctly and automatically compensated for tape speeds of  $3\frac{1}{2}$  and  $7\frac{1}{2}$  ips.

Four other tape unit models, PD82 and PD84 standard version, plus their PD83 and PD85 professional versions will be exhibited, in addition to the associated decks of the Series 80 units, the D86 and D87, 32 guineas each.



**The new stereo tape unit to be exhibited on the Truvox stand**

**VITAVOX (Stand 25, Demonstration Room 337).**

*Vitavox Ltd., Westmorland Road, London, N.W.9.*

The Vitavox stand will display a wide range of products from small hand microphones used for high quality speech, and small high frequency tweeters up to the "Hallmark" and "Bitone" loudspeaker systems for both mono and stereo use.

Included in their display will be balance control units, dividing networks for dual-channel systems, high frequency horns, general purpose pressure units, the Type S1 high frequency pressure unit, and a wide range of cone type loudspeakers including the famous DU120 Duplex Co-axial Full Range unit.



**VORTEXION (Stand 73, Demonstration Room 145).**

*Vortexion Ltd., 257, The Broadway, Wimbledon, London, S.W.19.*

Two new items, an event in itself, are announced by Vortexion.

First is the new CBL in-line stereo machine incorporating the usual facilities of the earlier WVA and WVB machine also to be shown, including monitoring before and after recording, and the ability for multiple superimposition. This two-track model will enable the user to record a programme from track one on to track two, and at the same time mix in two separate additional inputs.

Their second new item is the RPBM, record/playback mixer unit with a wide range of features. These include facilities for providing echo effects, three separate channel inputs, monitoring before and after playback, and separate amplifiers. It is suitable for use with any deck.



**WAVERLEY RECORDS (Stand 51, Demonstration Room 221).**



**W. B. STENTORIAN (Stand 33, Demonstration Room 322).**

*Whiteley Electrical Radio Ltd., Victoria Street, Mansfield, Nottinghamshire.*

The comprehensive range of Stentorian loudspeakers includes units varying in size from 1¼ inches to 18 inches in diameter with a variety of cone construction, speech coil impedance, and magnet strength to suit all requirements.

Following the success with their eight-inch units fitted with 16,000-gauss magnets, a complementary twelve-inch unit has been designed. This has a specially designed cone and suspension and has an aluminium voice coil. A selection of these loudspeakers is being demonstrated in examples from the wide range of ready-to-assemble cabinets.

Stereophonic reproduction requirements are catered for by the normal floor cabinets, the Senior and Junior Column enclosures, and by the Clumber compact loudspeaker system. To enable users of WB12 amplifiers to convert to stereo systems, a stereo control unit has been introduced for use with either two WB12 amplifiers, or with the WB8S stereo amplifier.

**WHARFEDALE (Stand 38, Demonstration Room 334).**

*Wharfedale Wireless Works Ltd., Idle, Bradford, Yorkshire.*

Main feature of Wharfedale's exhibit will be the new "Slimline 2" loudspeaker for stereo or mono reproduction. Another in the current trend of small units, it measures 25 x 20 x 7 inches, and weighs 32 lb., and is equipped for horizontal or vertical mounting. Impedance is 10-15 ohms, with maximum output rated at 15 watts r.m.s.

The price is £22 10s. (unpolished less 10s.) with tropical models available for an extra 30s.

Among the drive units to be demonstrated are the Super 3 tweeter, Super 5 for middle and high frequency, and three 8 inch "Bronze" units. Four other eight inch units in the Super 8 range, all fitted with the Wharfedale Golden magnet, plus large units up to 12 inches will also be featured and demonstrated.

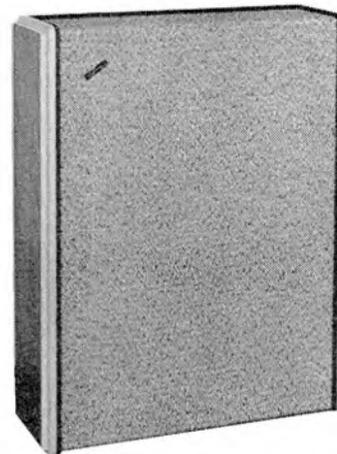
The familiar W2, W3, and W4 enclosures, containing respectively 2, 3 and 4 speakers, plus the PST/8 small enclosures, the AF12 reflex cabinet, and the Airdale omni-directional three-speaker corner system, shown for the first time last year, are other units available for examination.



**WYNDSOR (Stand 32, Demonstration Room 261).**

*WyndSOR Recording Co. Ltd., WyndSOR Works, 2, Bellevue, Friern Barnet, London, N.11.*

The new WyndSOR International tape recorder (described in "New Products" in our last issue) will be one of the most



**The Wharfedale "Slimline 2" loudspeaker enclosure**

interesting features of the Fair. This comprehensive tape unit, designed to operate in the vertical plane, has been achieved to give several advantages, including ease of operation, straight convection ventilation, and to occupy less working area.

Included in the price, 75 guineas, is a low impedance ribbon microphone with extendable lead. Other features include eye-level controls, illuminated record level indicator (red for record, green for playback), and an eight-inch round loudspeaker.

Demonstrations of this recorder will take place with and without external speakers, provided the intending purchaser with a fair assessment of its capabilities. Stereo reproduction using extra amplifiers will also be given.

Also on their stand and to be demonstrated will be a brand new all transistorised pre-amplifier, plus the special models which have made great demand on the export market, the Heron tape recorder and the Heron Companion disc reproducing unit.



**ZONATAPE (Stand 42, Demonstration Room 236).**

*Zonal Film Facilities (Magnetic Coatings) Ltd., Zonal House, Westfield, London, W.3.*

Their full range of domestic recording tapes will be shown and demonstrated, with full emphasis laid on their colour coding system. This is red spools for PVC standard tapes, green for polyester long-play, blue for polyester double-play, and plain spools for standard play acetate based tape. Their spools range from 3, 5, 5½ and 7-inch sizes.

Also to be seen will be examples of their production in the professional field with, for interest sake, spools of their video-tape products, plus computer tapes in half-inch and one-inch widths which are 100 per cent drop-out tested.

In their demonstration room can be heard several professional recordings made on Zonatape.

## STEREO FORTNIGHT

A SPECIAL stereo fortnight to be run at the time of the Audio Festival has been organised by TeleTape, the London tape record and recorder dealers.

As part of a special display, they are offering prizes to the value of £100 in the form of tape records. To win these awards, visitors to their showrooms will have to place in order of importance a list of features that describe tape records as being a more practical proposition than disc recordings, and add a description of the Audio Centre.

The TeleTape Stereo Competition is open to every purchaser of one tape record (any size, speed, mono or stereo) from TeleTape during the period April 1 to May 4.

The lucky winners may choose any tapes from the 1,000 or more listed in the TeleTape catalogue. Among the judges will be the well-known composer and arranger Leslie Bridgewater, and B.B.C. sports commentator Murray Walker.

Further details may be obtained by writing direct to TeleTape at 33 Edgware Road, London, W.2.

# SPECIAL SURVEY: 3

## The clubs in the south of England

FOR the third in the present series of articles spotlighting the clubs in Great Britain, "TAPE" casts its eyes to the south. Here the clubs are few and far between. One of the oldest and one of the youngest in formation, can be found south of a line from London and west as far as Southampton.

Nothing truly remarkable can be ascribed to any, but once again the activities are varied and many, the memberships large and small. Perhaps the smallest club of all time is to be found in this area. But more of them later.

Dealing with them alphabetically, we find top of the list is the club in Bournemouth. This is the oldest club within the area defined, and one of the earliest clubs formed in this country. In fact, they were the fourth tape recording club to be formed.

The present secretary Mrs. J. L. Lawson notes that nine enthusiasts attended the inaugural meeting on February 7, 1958. From this early beginning they have managed to secure a regular membership of a present total of 22, with many of the founder-members playing an active part.

The club has two technical men, A. C. Rees and W. Rawlins. These two are described as always being ready to help and advise, and have given many and various lectures on the techniques of recording to the less able.

The club is keen to encourage the newcomer, and holds a regular novices night with an "Any Questions" interlude. This meeting is advertised in the local

paper with a general welcome to see how the club works.

Demonstrations by manufacturers have been held with just some of the names who have attended including E.M.I., Lustraphone, Fi-Cord and local dealers, Tape Recorders of Bournemouth Ltd. This latter company has given the club much support in the way of prizes, demonstrations and talks on new recorders.

Members' "Tape Time" is another regular feature. Each week a special period is set aside for any member to play a favourite tape, produce a new script, or introduce a new tape for the entertainment of the remainder. They also spend a great deal of time with sound effect production and play-reading.

Although to date they have not won any

prizes, the members claim to have had great fun entering a tape in the British Amateur Tape Recording Contest.

They have organised tape exchanges with other clubs, and have a special association with their nearest contemporaries at Southampton with whom they have exchanged visits. Relaying tapes to sick people is just one of the services provided.

Then there are their tape exercises. For this, members select a sealed envelope and are instructed to carry out whatever order it contains. In each case the member is to provide a five-minute tape including sound effects. The winner gets a prize.

Among recorders owned are Grundigs, Telefunken, Philips, Elizabethan Princess, Brenell Mk. 5 and a Fi-Cord. Home-built machines using Wearite and Brenell decks are also included in their display.

\* \* \*

The secretary of the Crawley club, who has held this position since the foundation of the club, is R. C. Watson. In November 1958, following an article in *TAPE*, he initiated steps to form a club. He wrote to us for assistance, and following the publicity given the first meeting was held in April 1959.

The original membership was nine. Five of these founder-members still attend meetings, and a total of sixty en-

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thusiasts have belonged from time to time. Their present membership is thirty, with average attendance around the twenty mark.

In the early days, says Mr. Watson, they found most members needed to be "entertained" at meetings. These were the ones that eventually dropped out. Their present list are all active and most material for their meetings is supplied by the members themselves.

They have a technical panel comprising Messrs. Whitehead, Taylor and Crome. Club activities include taping local history (Old Crawley), working with local dramatic societies, exchange meetings with the local cine club, and exchanging tapes individually and collectively. In the latter category an exchange with the Bridgwater club is now in progress.

Two major projects are destined for 1962. In May they organise another "Talent on Tape" competition. This annual contest, now in its third year is run in conjunction with their local paper, the *Courier*.

In September they have arranged to have a room at the *Leisure and Pleasure Exhibition*, a four-day event to be held at Crawley College.

The recorders owned by members cover almost every available make. At a recent live recording session they had 15 different sets working at one time, including Ferrographs and Vortexions in the larger class down to the smaller newly-purchased Philips battery portable. Most popular brand of tape is "definitely C.B.S." They find this suitable for all of their recorders, and now stock it as a club sales point.

Formed in February 1960, after adverts appeared in the local paper appealing for support, the **Eastbourne** club's initial



Members of the Crawley club seen during a recording session for the Talent Contest. Left to right are: Bob Crome, Bill Watson (secretary), Fred Whittingham (treasurer), and Tony Greenway.



membership comprised two men and three women. Since then membership has risen to 26 members, including seven women.

Among their regular activities are a monthly service for either a hospital, Old People's Home, or (once) Dr. Barnado's Home. Further services of this type have been conducted, including once in 1961 when Raymond Francis of TV fame, President of the club, visited the members when they gave a party for physically handicapped children.

The club is keen on outside activities, and have made visits to the clubs at Brighton, Hastings, Friern Barnet and Crawley, and to the local BBC studios where they were shown all the recording apparatus.

A claim to fame is made as a result of interviews recorded at the club late last year by the BBC. Douglas Brown,

Editor of *TAPE* and compere of the Network Three programme *Sound* interviewed the members for a special programme broadcast on Christmas Eve. Eleven members of the club were featured, and the programme also included part of a carol service recording made by members earlier the same month.

In the two following *Sound* programmes, secretary Dee Harris took part in a discussion with two other club members from Coventry and London on the technique of interviewing.

Interviewing visiting celebrities also forms a great part of their activities. Among the persons interviewed in the past two years sending messages to the aged and infirm, have been Anna Neagle, Andre Melly, Sarah Churchill, and the 1960 *Tape of the Year* producer, Norman Paul.

A few plays have been recorded with sound effects produced by the technical members. Among outside events recorded have been the Eastbourne Carnival in 1960 and 1961; a tour of the Hastings dungeons; and a visit to Gibraltar. They have also organised a stand at the Sports and Hobbies Exhibition at the Winter Garden.



The **Hastings** club is one of the newest clubs in existence, being formed as recently as last September. Their first meeting took place on the 19th of that month following an announcement in the local paper. Twelve enthusiasts attended, and this has since been increased to twenty.

One of their claims to fame is that Stanley Unwin, TV's nonsense speaker, has agreed to become their President.

Among their activities are included visits from manufacturers who provide talks and demonstrations, and from a local dealer who provides demonstrations of the latest models. They have arranged exchange visits with the club in Eastbourne, and have welcomed along a member of the local cine club who gave a demonstration of tape and cine synchronisation. Member R. Mann has shown a tape and slide show, and the members recently held a recording session with the assistance of visiting instrumentalists.

A recent innovation of the club is the production of a tape play. Tony Jackson

(Continued on page 37)



Our top photograph shows members of the Hove group all set for a dubbing session and mixing session. Left to right are: Graham Watkins (treasurer), Geoffrey Owen, Bert Guernsey (secretary), Ernie Pembroke, and Michael Foot. In the lower photograph are the enthusiasts from Hastings. Standing left to right are: Tony Jackson, Tony Stevens (vice - chairman), John Aitchison (secretary), Harold Thompson (chairman), John Ashman (treasurer), Bill Mackay, Martyn Harvey, and Ian Hills. Seated are Jack London, Rosemarv Parminster and Angela Aitchison



**W**HEN a tape recorder performs exactly as the manufacturers claim it will do, there is little more to be said by the reviewer, and this recorder is a case in point. It does precisely what it is supposed to do and does it well.

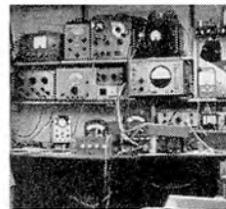
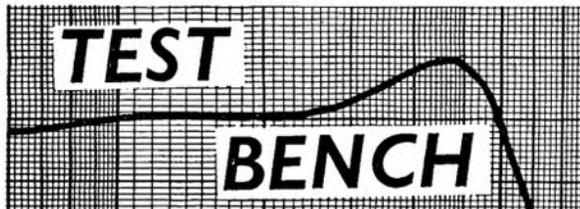
After extensive use, not a single defect has been noted and using it was a pleasure. Admittedly, at 88 guineas it's a bit expensive, but it is value for money, which is more than can be said for some costly recorders.

It is self-contained, in a mottled-grey, plastic-covered wooden case, with detachable lid, the overall size being 18 x 17 x 9 inches, and it weighs 40 pounds. Two sliding doors in the rear of the case give access to a compartment for microphone and mains lead stowage and a panel on which are mounted the mains on/off switch, fuse, and voltage adjuster.

The recorder operates from 50 cps mains supplies of 210/240 volts (or 110 volts, to special order), the total consumption being 120 watts. It is supplied with a reel of tape, but no microphone, sufficient gain being available in the recording amplifier for any type preferred by the user. A red lamp on the front panel indicates when the recorder is "ON."

#### Assembly

The recorder is divided into three units. The tape deck, a power supply and bias oscillator unit, which is fastened to the bottom of the case, and an ampli-



## BRENELL MK 5 M

fier unit, which is mounted on a separate control panel on the front of the recorder.

This is only the second machine I've met in which maintenance has been simplified by careful design. Removal of the amplifier section is simplicity itself. Only two screws to withdraw at the ends of the panel and the unit lifts out in one piece. The leads are long enough to allow it to be examined with the deck and power supply still in case. No struggling with the whole assembly just to change a valve or component, or make some slight adjustment.

(Have you ever tried to operate a tape recorder upside down, in order to trace a fault? If you have, you'll understand my enthusiasm for this design). Full marks for easy servicing of the amplifier section.

#### Tape Deck

This is a twin-track, three-motor deck, of Brenell's own design, giving speeds of

1½, 3½, 7½ and 15 ips. Two interchangeable brass bushes, of different diameters, are provided for fitting on the capstan motor spindle, the smaller giving the first three speeds and the larger, the last three. A three-position speed control, on the deck, is marked for both ranges.

Other controls include a record/off/playback switch, with a safety interlock to prevent accidental selection of "record"; a pause button, which disengages the tape from the capstan; a superimpose button, which lifts the tape from the erase head; and a fast forward/rewind switch, which can only be operated when the R/P switch is in the centre (off) position. Also included is a tension control which enables extra braking to be applied to the take-up spool on rewind, so that the tape, which is lifted away from the heads on fast wind, is wound tightly and securely on to the feed spool.

The maximum spool size useable is 8½ inches and 1,200 ft. of tape can be re-

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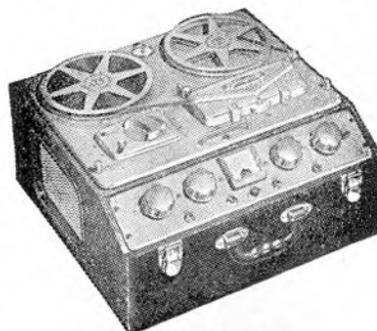
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wound in 45 seconds. Braking is positive, but not vicious and there is no tape spillage.

There are separate heads for erase, record and playback, the R/P heads having independent azimuth adjustment. After leaving the heads, the tape passes round a nylon pulley, which has height adjustment, so that it can be set to feed the tape on to take-up spools of different kinds without the risk of rubbing the edges of the tape. The pulley also reduces friction on the tape face during operation.

A digital rev. counter-type tape position indicator, driven from the take-up spool spindle, completes the deck assembly. Track sense is to international standards, i.e., upper track moving left to right. Wow and flutter figures are as follows: Less than—0.25 per cent at  $1\frac{1}{2}$  ips; 0.15 per cent at  $3\frac{1}{2}$  ips; 0.1 per cent at  $7\frac{1}{2}$  ips, and 0.05 per cent at 15 ips.

#### Power Supply Unit

A transformer and EZ80 valve rectifier, followed by resistance/capacity smoothing, provide 300 volts H.T. and valve heater supplies. Connections to the deck and amplifier unit are by means of cables fitted with plugs and sockets, for ease of assembly and removal. An EL84 pentode valve oscillator provides the erase and bias signals, the latter being adjustable for optimum performance.

#### Amplifier Unit

Separate amplifiers are provided for record and playback, each assembled on a small chassis. These are fastened to the control panel, with a record-level meter between them. It is thus possible to monitor through the playback amplifier whilst recording is taking place, and, if the signal source is a microphone, echo effects can be produced by picking up the delayed sound from the loudspeaker, the amount of the delay depending upon the tape speed in use.

The recording amplifier consists of an EF86 pentode coupled to a 12AX7 twin-triode, with both halves in cascade, the output feeding the record head and a monitor socket. (Impedance, 2 Kilohms min.) Another 12AX7, with one half diode connected, acts as rectifier and control valves for the record level meter, which has a right-hand zero movement.

When the recorder is operative, the needle swings to the left and zero record level is then set by means of a control just below the meter, with the input gain controls turned fully off. Overmodulation is indicated when the needle reaches a red section at the right-hand end of the scale.

Input sockets are provided for microphone and radio/gram, each with its own gain control, to enable programmes to be mixed. The impedance of the microphone socket is 1 megohm, with a sensitivity of 3 millivolts. The impedance of the radio socket is 0.5 megohm, with

sensitivity of 300 millivolts. A four-position switch selects the correct equalisation, for each tape speed, on both the record and replay amplifiers.

The replay amplifier has four stages, consisting of an EF86 pentode, a 12AX7 twin-triode, and an EL84 output pentode. The response is from 25—25,000 cps  $\pm$  dB, and the output power approximately  $2\frac{1}{2}$  watts. It incorporates independent bass and treble controls, the former giving a variation of  $\pm 6$  dB at 70 cps and the latter  $\pm 6$  dB at 15,000 cps. There is also a socket for an external (15 ohms imp.) loudspeaker, the internal 'speaker, a 9 x 5 inches elliptical unit, being muted when the external one is in use. The above frequency response does not, of course, include the internal loudspeaker.

As there is an input socket for external signals, with an impedance of 1 megohm and a sensitivity of 30 millivolts, connected to the first half of the 12AX7, the replay amplifier may also be used for low-power, HI-FI reproduction of records, etc. If it is desired to use the recorder with an external amplifier, a frequency-corrected 200 millivolts output signal, at 50 Kilohms impedance, is available at another socket, fed from the output of the second stage. With a pair of high-impedance headphones, this socket can also be used for low-level monitoring. It does not mute the amplifier output, so that the playback gain control must be turned to zero if no sound is required from the loudspeaker.

The frequency response range of the overall recorder, lower register at 40 cps, is up to 20,000 cps at 15 ips, with restrictions at 18,000 cps, 13,000 cps, and 6,000 cps respectively at  $7\frac{1}{2}$ ,  $3\frac{1}{2}$  and  $1\frac{1}{2}$  ips. All figures  $\pm 3$  dB.

#### General Comments

No difficulty was experienced in familiarising myself with the recorder and putting it into operation. A clearly-written handbook is provided and all sockets and controls, except for the on/off switch, are on the front panel, making connections easy. The handbook, incidentally, gives some useful tips on the choice and use of external equipment.

Within a few minutes of removing the recorder from its packaging, it was quietly recording a radio programme as a first test and the result was very good—even more so when an external loudspeaker assembly was connected.

Replay through an external HI-FI amplifier was quite impressive, and

further tests with other sound sources gave results which demonstrated clearly that this recorder, particularly at the faster speeds, is something out of the ordinary.

Even the slower speeds give good enough reproduction of music to satisfy most listeners, but this is a connoisseur's recorder, capable of satisfying the most critical ear.

Subsequent frequency tests, simplified by the use of a bias-signal filter and some useful tips on test methods, kindly supplied by the manufacturer, confirmed that the performance was well up to specification. Careful layout, screening and choice of components have kept hum and noise to a very low value, the point at which hum became apparent being the point at which the audio signal blasted the eardrums!

The results are as clean and satisfying as its appearance, full justice being done to any sound source the user cares to choose. As I have already said, it does just what it's supposed to do and does it well. Further comment in this direction would be superfluous.

I have only one small criticism of the design. The head cover is in two parts, the rear one being detachable by means of an upward pull. The ends of this section are tapered, parallel with the deck, with no rear "drop," and make ideal grips for lifting the cover, but they feel as if an uneven pull or a sudden sticking of the fixing pins would cause them to snap, and a little strengthening here could be advantageous.

Apart from that minor detail, it's a very fine recorder, and if you can persuade your nearest and dearest to buy one for you, you're a luckier man—or woman—than I am!

#### Specification

If I listed all the performance figures, assembly details and the comprehensive facilities, it would take almost as much space as the rest of the article, so you're not going to get all the information from a quick look at the end, this time. You'll just have to resign yourself to reading from the beginning. Well worth it, I assure you. Try it. Ready? Go.

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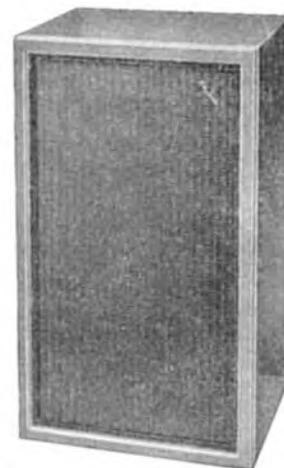
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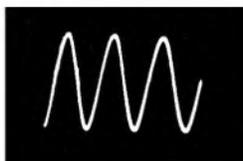
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# TAPE RECORDS REVIEWED

**B**BETTER and better. The second batch I have had of **World Record Club** stereo tapes is outstanding. I would not go so far as to say that the frequency range is as wide as on the best stereo discs, but there is little or no feeling of constriction on top and—most important of all—the string tone begins to sound free and natural. It has the right amount of edge instead of the pinched noise which suggests a basic restricted range counteracted by an exaggeration of what top there is.

But in any case I have been far readier to think kindly of these two new tapes because of the quality of performance they provide. Josef Krips's cycle of the nine Beethoven symphonies with the London Symphony orchestra may not be the most flamboyant in the catalogue. Krips is in running parlance a stayer rather than a sprinter. The electric intensity of a Toscanini performance, the monumental expansiveness of a Klemperer performance may not be there. But Krips still provides completely satisfying accounts of these masterpieces, carefully thought out, crisply executed, the musical values always paramount.

Previously I had heard the disc versions of No. 6, *The Pastoral*, and No. 7, and now on stereo tape I have No. 3, *The Eroica* (STT74 [45 minutes] £3), and No. 5 (STT97 [34 minutes] £2 10s.). On this evidence at least I would say that the rule with Krips is the earlier the symphony the better the performance. This is quite against my expectations.

I was expecting Krips with his unobtrusive staying powers to be at his best in the gentle Viennese landscape of the *Pastoral* and in the often equally rustic No. 7—"the apotheosis of the dance" in Wagner's famous phrase—but somehow the more dramatic qualities of Nos. 3 and 5, while admittedly not rousing Toscaninian intensity, provide really imaginative results. The speeds in all four movements of No. 5 are admirably chosen, the first movement a nicely judged allegro between the scampering haste of the Toscanini imitators and the plodding solemnity of the Klemperer imitators (both Toscanini and Klemperer themselves quite capable of carrying almost any speed off convincingly).

The crescendo into the joyful finale—like letting sunlight into a dark church as someone once said—is splendidly exciting, the bite on the brass in the main theme beautifully caught. My only doubt about the tape is that this symphony provides rather short playing time.

The *Eroica* symphony at least can give no cause for complaint on that score. It is incredible that this enormous work, twice as long as most symphonies written before it, should have appeared in the very first years of the nineteenth century. It speaks quite a new language, the great structure of the first movement still

arguably the most impressive demonstration of extended symphonic argument ever written, just as the first movement of the Fifth is the most concentrated. Krips controls the structure splendidly, the playing alert from beginning to end.

The slow *Funeral March* second movement is less obviously successful as a performance. Krips's speed is extraordinarily fast. This in itself is no bad thing, for though the greatest interpretations from Toscanini and Klemperer, among others, often favour very slow speeds indeed, Beethoven himself provided a metronome marking that argues something much brisker.

Krips keeps the tread of the movement going very clearly, but where I feel he falls down is that he fails to underline the tragedy of the music. This is rather too extrovert; there is no broken heart, no agonised lamentation for the passing of a great hero. But again the emphasis on purely musical values brings its compensation; the smaller-scale view fits into place against the beautifully wrought first movement, the well-pointed scherzo and the strong finale. And whatever one's doubts it is an interesting performance.

EDWARD GREENFIELD

**O**NE of the most exciting series of popular music available to pre-recorded tape enthusiasts is **Music-on-Tapes'** "Salute" Series—"Salute to Tommy Dorsey," "... to Count Basie" and so on. Made on the Continent in 1958 with a degree of dedication to the original which is astounding, they are based on the scores used by the bands copied.

Nothing can quite replace the original product. But there are no Duke Ellington or Mantovani records available for tape buyers in this country. This series comes close to what is wanted.

Music-on-Tape found itself with additional titles from those listed in the actual series itself and has now brought out *Salute to Salutes* (CA 15).

This takes the form of a sampler. Eleven tracks represent the twelve bands in the main series (Mantovani is missing). It is not the conventional sampler, however, for none of the tracks are taken from the actual records.

As might be expected, the glimpse of Ellingtonia (*Passion Flower*) is not as accurately reproduced as, say, *Intermission Riff*—Sam Wetzel's famous piece for the Stan Kenton band—which is difficult to play but not beyond the reach of a competent musician.

The spirit of Perez Prado, the king of the mambo and the wilder type of latin-american beat, is well captured in *Mambo a la Perez*. Tommy Dorsey—one of the hardest leaders to work for—would not have been too displeased, one feels, with *Yes Indeed*. The trombone choir is brilliant.

(Continued on page 58)

## MUSIC ON TAPE TAPE RECORDS

\*NEW THIS MONTH

### \*Romantic Guys

Jack Haskell, Stuart Foster, Vic Cordell, Dick Noel, and the Honeydreamers with Hugo Montenegro and his Orchestra

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THE NIGHT OF THE SENIOR PROM  
A SONG OF LOVE  
MY FIRST, MY LAST, MY ONLY LOVE  
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MI AMOR (LYDIATE-RABINOWITZ)  
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DON'T DECEIVE ME  
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(TIMOTHY)  
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IT would appear—judging by our I-mailbag—that we have by no means exhausted the subject of clutch operation, and relevant faults.

Unfortunately, in the matter of mechanics, things aren't always what they seem to be. Many of the supposed clutch faults may have different origins. Like the difficulty T. M. E., Dumfries, is experiencing with his Grundig TK20.

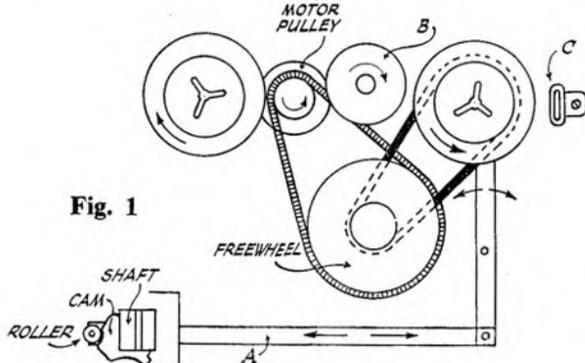
This machine, which has a remarkably good spooling action, uses an "assisting brake" between functions. Reference to Fig. 1 may help to make this clear.

The function switch (at lower left-hand of deck) has a shaped cam on its square shaft. This cam selects the lateral movement of rod A. This causes the take-up spool (R.H.) to move in an arc, engaging the idler wheel B, which in turn engages the drive pulley, transmitting the full forward drive for *Fast wind* but standing free for the other functions of *Record/playback* and *Fast rewind*.

In this "standing free" position, drive to the spool is via a belt from the capstan pulley to the lower half of the spool drum, with a simple friction clutch transmitting the torque to the upper half.

So far, so good. But to assist spooling and make switch action more positive, Grundig incorporate a static brake, which is shown in Fig. 1 at C. If the take-up drum is not engaging this brake *between* the functions of *Fast rewind* and *Neutral* or *Playback* and *Off*, tape spillage will occur.

This is precisely what T. M. E. complains of, and for which he is blaming the clutches. We would advise him



to remove the top plate of the deck and check that the roller is moving properly on the switch cam and rod A making its full movement. It will be noted that this movement appears to "over-run" as the switch is turned

# THE PROBLEM OF SPILLAGE

HARRY MACK continues his series offering advice on problems of general interest to recorder owners

from *Fast rewind* to *Neutral*. The result should be to engage the right-hand brake-drum momentarily, checking clockwise motion sufficiently to allow the belt and clutch action to take up tension in an anti-clockwise sense.

If this is not happening, the possible cause is a worn felt. This can be removed and reversed quite easily, or softened and made "rough" if necessary. A further possibility is the bending of the bracket on which the felt is mounted. This can be straightened so that in the *playback* position the drum is just clear of the brake felt.

Keeping to the same machine, we meet a further complaint which really does sound like clutch fault on the right-hand spool. A. B. writes from Barnes to say that he has intermittent spillage *during playback*.

Provided the right-hand belt is doing its job properly, the take-up tension is produced by friction between the upper and lower sections of the spool hub.

This is easily dismantled, as can be seen from the exploded view of Fig. 2. Take care when removing the spring A, which will flip away and—like a collar stud—find the most inaccessible hiding place. Lift off the inner hub and check that the centre recess is clean. Any evidence of scarring of the plastic will indicate that this portion is sitting too low on the main drum and fouling the centre screw.

Cause of this is inevitably a worn felt B, which is press-fitted into a circular recess of the upper plate. The felt is easily prised out and reversed. However, care must be taken when re-inserting, to lay the felt in its recess properly; it will tend to stretch and overlap. And don't for-

get that little PVC washer beneath the circlip when re-assembling.

A very different problem of over-spill, this time on switching from fast rewind in either direction of a Regentone TR50, is reported by P. W. M., Hull.

This tape recorder uses the Motek deck with three motors and a very fast rewind action. Between each function, the *Stop* button must be depressed. This engages the brakes, which are "wrap-around" types, lengths of linen tape riveted to plates, fixed at the outer end and tautened by a peripheral

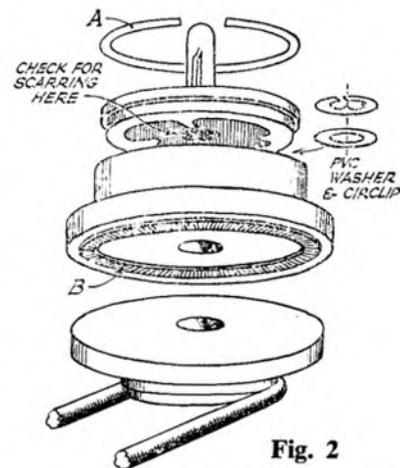


Fig. 2

movement at the inner end. Fig. 3 should make that rather ponderous explanation more clear.

The tape brakes, "a", are fastened to levers "b", which pivot on the slide rods "c", and are sprung to engage the heads of screws "d". These are threaded through the plate of bracket "e", thus providing some adjustment of individual brakes.

When the *Stop* button is depressed the lever "f" moves in the direction of the arrow, allowing the levers "b" to swivel, assisted by the springs. This tenses the brakes against the spool drums. When correctly adjusted a quite definite braking action can be obtained, but there are several points to note. The lateral rod which is

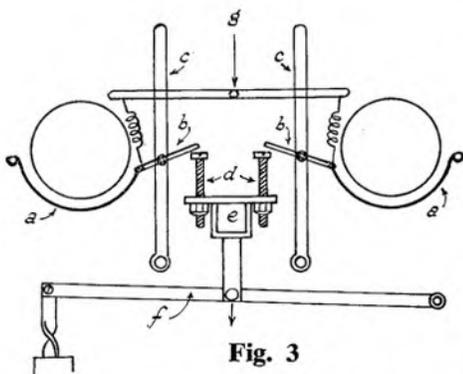


Fig. 3

pivoted at point "g" should be tight and parallel with the edge of the deck. The long levers "c" should be at the same slight angle to the perpendicular. Usually, these levers are marked with paint near the top end during production, and any subsequent movement is easily seen. Make sure there is no looseness at these points, then adjust screws "d" for final setting.

Correct adjustment is as follows. With the Stop button depressed, check that the locknuts of "d" are clear of the brackets by about  $\frac{1}{16}$  inch. By adjusting the length of the screw the amount of tension applied to the brakes can be decreased to the point where action of any button other than the Stop will allow the drums to turn freely.

This deck, and its companion models, as used by Regentone for their RT51 machines, has another feature that has sometimes given trouble. This may be the fault that **A. J. E., Chichester** complains about—intermittent action on *Playback* or *Record*.

If we analyse the action of the deck, we see that recording is from right to left, not, as is more usual, in the left to right direction. Thus, for *Record* or *Playback*, the left-hand motor must provide take-up torque, the tape being

driven in the conventional manner, by capstan and idler wheel.

As the machine is working correctly on *Fast wind* we can assume that the motor is in order, and the trouble lies somewhere in the switching.

There should be no need of a diagram to explain that when the *Record* or *Playback* buttons are pressed a resistor is switched in series with the left-hand motor, reducing the current, putting the motor on low load, cutting down the torque. This resistor, value 1,000 ohms, is a large, wire-wound component, usually grey, and it is mounted on a tag strip at the base of the *right-hand* motor.

After a period of use, heat may affect the solder at the connections, or the resistor itself, causing it to go periodically open-circuit. If there is any doubt, the resistor should be replaced. A substitute should be obtained at any radio shop, but be sure and get a ten watt resistor.

Another resistor fault that causes (among other things) the tape spillage that was our original theme, has been passed on by reader **J. L. O'N, Solihull**.

As this is on the Brenell Mark V Tape Deck, and is a rather unusual

fault, it may be of interest to show the switching arrangement in this case. See Fig. 4.

Points to note are the way the return line for the capstan and take-up motor connects via the neutral position of the *Rewind* switch; (a mechanical arrangement prevents the rewind switch from engaging until the *Play/Record* switch is at the *Stop* position) and the way the culprit, the 500 ohm resistor is short-circuited for 15 ips recording and bypassed for rewinding. This is quite a neat device.

The fault our friend had was a lack of take-up on the lower speeds. Study of the circuit will show that the resistor is a prime suspect, especially if *Rewind* operates normally, thus exonerating the mechanical section of the switching.

When working on this machine note that motor and switch connections are bypassed by suppressors. These should always be replaced after repairs.

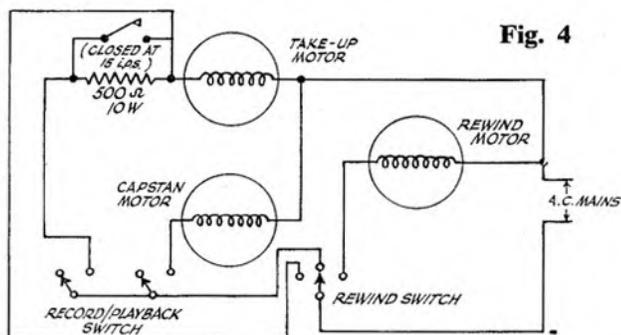


Fig. 4

Thank you J. L. O'N for that one, and our thanks too are due to other readers who have written about unusual or perplexing faults. We are always pleased to hear of these, as well as those solutions you dreamed up. We will endeavour to pass them on in later articles, when they fall in context with the subject under discussion.

When writing to manufacturers for information about new products, please mention that you saw it in "TAPE Recording Magazine."

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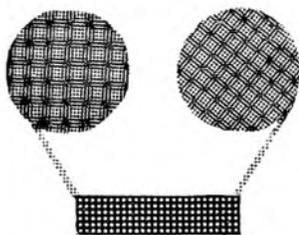
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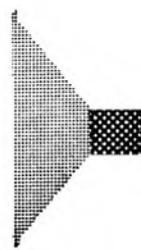
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## NEW PRODUCTS



## TWO JAPANESE MODELS

**N**ORTHGATE (CAMERAS) LTD., a newcomer to the tape field, have recently announced two tape recorders manufactured in Japan. Both feature upright styling, as can be seen from the accompanying photograph.

The first model; the Akai Terecorder De-luxe 69, is a two-track machine with two speeds, 7½ and 3½ ips. The quoted frequency response is 30-12,000 ±2dB at the top speed, with wow and flutter given as better than 0.1 per cent. The signal-to-noise ratio is given as better than 50dB.

Seven-inch NARTB reels can be accommodated, providing a playing time of just over one hour per track using standard-play (1,200 ft.) tape. Rewind time for this length of tape is 150 seconds.

The maximum output power of the built-in amplifier is six watts (3 watts undistorted), enough to drive a larger size extension loudspeaker of up to 12 inches. The built-in loudspeaker is a 6½ inch unit. A four-pole induction motor is incorporated.

Other features include a meter recording level indicator, digital rev. counter, pause control, and the facility for straight-through amplification. A pilot lamp is incorporated to indicate when recording is in operation, and all controls are interlocked to prevent accidental selection of an incorrect operating mode. Designed for either vertical or horizontal operation, the Akai 69 is supplied with reel adaptors to hold the spools in position.

The power required is AC 100 or 117 volts, 50 or 60 cycle interchangeable, and the power consumption is 60 watts. It weighs less than 28 lb. with all accessories, and measures 16½ x 13½ x 10 inches.

It is supplied with dynamic microphone, two five inch reels of tape, service cable, a capstan for 50 cycle use, splicing tape, and costs 79 guineas.

Optional accessories include telephone pick-up, monitoring earphone, endless tape magazine, tape splicer, stereo head assembly, and microphone stand.

The second new model is the Akai Terecorder Model M-6. This model will record and playback either four-track stereo or mono, and also play back two-track stereo tape records. Three speeds are provided, 15, 7½, and 3½ ips, and the frequency response at 7½ ips is given as 30-20,000 cps.

The wow and flutter figure is given as better than 0.07 per cent RMS, with the hysteresis synchronous motors used, and the signal-to-noise ratio quoted as better than 45 dB.

Accommodation for seven inch reels is provided, making available a playing



The Akai Terecorder M-6

time of just over an hour per track using standard tape. Rewind is accomplished within 2½ minutes.

Among the features are two VU meters for recording level indication on each channel, a digital rev. counter, pause control, and an automatic device which stops the reels at the end of the tape, or if the tape breaks. In addition, the pinch wheel is automatically released from contact with the capstan providing protection against a "flat" on the soft rubber surface. Dual head and pre-amp outlets are provided for connection direct to any other pre-amp or stereo amplifier, and it incorporates two separate frequency equalisers designed to provide correct compensation at each of the lower tape speeds.

Versatility of the multi-purpose use head is the keynote of the Model M-6. By setting the pointer of the track selector control it is possible to play two of the four-tracks together, thus providing facilities for superimposition.

The machine measures 20½ x 14 x 8½ inches, and weighs 46½ lb. Two dynamic microphones are included with the machine, plus a 5 inch spool tape and spare spool, capstan for 50 cycles mains operation, radio leads, splicing tape, and caps for the tape reels. The price is 130 guineas.

Designed for use with the Model M-6 are two stereo loudspeaker units, Model SS-50. These are two eight inch mechanical two-way (with build-in co-axial tweeter) speakers in a dividable carrying case. These matching units cost 30 guineas.

Northgate (Cameras) Limited, 119-125, Wardour Street, London, W.1.

# NEW FI-CORD ANNOUNCED

THE manufacturers of the highly successful Fi-Cord IA transistorised battery portable tape recorder announce a second machine, the Fi-Cord 202, illustrated right a combined mains and battery operated machine.

Apart from a complete departure from their previous style, two important additions are noted on this two-track recorder. First, the ability to operate from a mains supply, and secondly, provision for powered rewind.

A top speed of  $7\frac{1}{2}$  ips is provided, plus an additional speed of  $3\frac{1}{2}$  ips. It will accommodate four-inch spools, providing a playing time of 25 minutes per track, using long-play tape at the slowest speed. Forward wind is accomplished in  $1\frac{1}{2}$  minutes for this length of tape (450 feet) and  $2\frac{1}{2}$  minutes for reverse wind.

The quoted frequency response at  $7\frac{1}{2}$  ips is 50-12,000 cps  $\pm 3$  dB, and at  $3\frac{1}{2}$  ips, 50-8,000 cps  $\pm 3$  dB. Wow and flutter figures are given as within 0.3 and 0.4 per cent R.M.S. respectively. The noise level is given as 50 dB unweighted.

Two separate sources of 7 to 12 volts capable of 170mA are required for power. Separate batteries (in interchangeable cassettes) for motor and electronics are employed, and each cassette may be loaded with the Fi-Cord 202 Mercury packs or with seven mercury cells (Mallory Type ZM12 or RM12). The provision for coupling to a main supply also allows for a 12 volt power unit.

Battery life (Mercury) for the motors



is approx. 20 hours at  $7\frac{1}{2}$  ips, and 30 hours at  $3\frac{1}{2}$  ips. The life for the electronic batteries (Mercury) is 60 hours at either speed. These times are reduced by constant use of the fast wind operation. A battery warning lamp is incorporated.

Among the features are digital rev. counter, Vu-meter, and manual and automatic volume control.

The loudspeaker is a three-inch unit (20 ohms), providing an output of 180 milliwatts. Low and medium input sockets are provided, plus provision for remote control. The dimensions are  $9 \times 6\frac{1}{2} \times 4\frac{1}{2}$  inches, and it weighs  $6\frac{1}{2}$  lb., including batteries. The price is 66 guineas.

Accessories available include carrying case, choice of microphones, and power pack for mains or car.

*Fi-Cord International, 40a, Dover Street, London, W.1.*

## Newcomer to tape field introduces 3-speed tape-deck

THREE speeds,  $7\frac{1}{2}$ ,  $3\frac{1}{2}$  and  $1\frac{1}{2}$  ips, with wow and flutter figures quoted as better than 0.08 per cent, 0.15 per cent, and 0.18 per cent respectively are provided in a tape deck recently announced by Planet Projects Ltd.

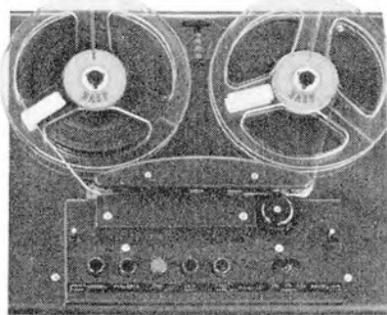
The new unit, the Planet U.1 tape deck, incorporates a single Papst hysteresis synchronous motor, driving a  $2\frac{1}{2}$  lb. brass flywheel. Facilities for mounting four heads are provided.

The standard unit is fitted with two high impedance Miniflux high fidelity record/playback heads, and a Miniflux erase head using Ferrite core material which, having a three field gap system, gives additional pre- and post-erasure of the tape.

Alternative head combinations such as half- and quarter-track stereo, are available. Professional full-track head assemblies can also be supplied to special order.

The deck measures  $14 \times 12\frac{1}{2}$  inches on the top plate (or  $14\frac{1}{2} \times 12\frac{1}{2}$  inches with the seven-inch spools in place), and the bottom plate measures  $11\frac{1}{2} \times 10\frac{1}{2}$  inches. The depth between the bottom and top plates is 2 inches, and the motor protrudes a further  $2\frac{1}{2}$  inches.

The press button controls include normal record with interlock to prevent accidental erasure, fast forward and reverse wind, and a pause control with pause



lock. It also features a solenoid-operated automatic stop through metal foil. When this operates, all idler pinchwheel pressures are released. A four digit tape position indicator is incorporated.

One of the main features of the deck is the use of stainless steel pins, which give a wrap-round effect on the heads. No pressure pads are used, thereby reducing head wear to a minimum. Idler and pinchwheel frictional surfaces are moulded from an entirely new material claimed to be greatly superior to rubber.

The standard model will retail at £39 10s.

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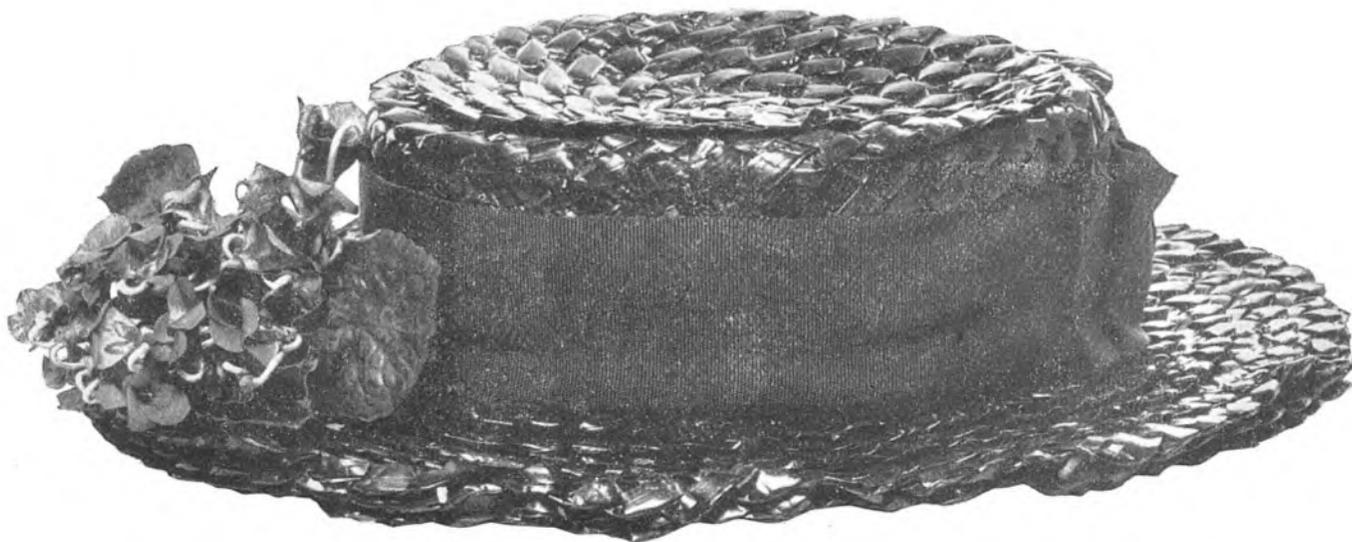
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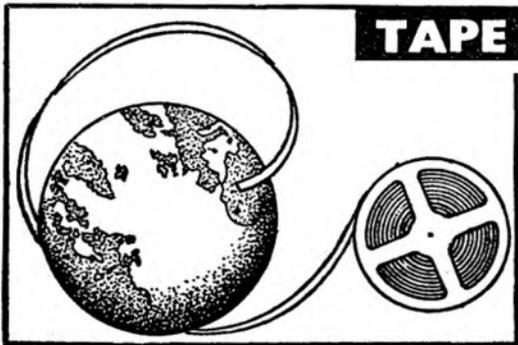


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# TAPE EXCHANGES

*Tape goes round the world! There is no comparable means—except costly travel—to form friendships with men and women in other countries and continents. Every month, in this feature, we list enthusiasts who are seeking tape contacts.*

**Abrey, E.** (37). 19 A.M.O., Felixstowe, Suffolk. Oil painting, classical music and jazz. 7½, 3½, 1½ ips. 7-inch spools. Robuk RK3. Europe and U.K.

**Gilbert, Miss Jacqueline P.** (10). 11, Ashurst Road, Cosham, Portsmouth, Hampshire. Books, animals, films, "pop" music. 7½, 3½, 1½ ips. 7-inch spools. Collaro Studio and home-built amplifier. Anywhere overseas. English-speaking only.

**Gomez, Philip Joseph** (33). 24, Cleveland Terrace, Darlington, Co. Durham. 8mm cine, scouting, general interest. 3½, 1½ ips. 7-inch spools. Philips EL3542. Male contacts only, especially Holland.

**Gould, Douglas** (29). 67, Queens Crescent, Kentish Town, London, N.W.5. 8mm cine, and photography, philately, humorous records, 3½ ips. 5½-inch spools. Cossor CR1603. Family and female contacts in U.S.A. and Italy.

**Griffiths, Denis J.** (40). 10, Woodfin Crescent, Merry Hill, Wolverhampton. Fiction writing, all music, general interests. 7½, 3½, 1½ ips. 7-inch spools. Robuk RK3. Letters not needed.

**Hardy, Jerry** (29). 65, Watling Gardens, London, N.W.2. Religion. 3½, 1½ ips. 5-inch spools. Philips.

**Harvey, Alex** (20). 92, Bracknell Avenue, Soudens, Kirkby, Liverpool, Lancashire. Photography, radio, motor-cycling, "rock" music. 3½ ips. 5½-inch spools. Philips EL3541, 4-track. Continent or U.S.A.

**Hinton, Brian** (31). 6, Cranbourne Close, Ashton-under-Lyne, Lancashire. Foreign travel, general interests. 3½ ips. 3-inch spools. Trav-ler battery portable.

**Hoggan, Preston** (31). 6, Blinkbonnie Terrace, Slamannan, Stirlingshire, Scotland. Photography, films, general interests. 7½, 3½ ips. 7-inch spools. Walter 505. Male contacts preferred.

**Holden, John** (40). 45, Rufford Road, Southport, Lancashire. Theatre, opera, music. 7½, 3½ ips. 8½-inch spools. Ferrograph.

**Howarth, Robert** (22). 16, Wallace Road, Copnore, Portsmouth, Hampshire. Walking, youth work, general interests. 3½ ips. 5½-inch spools. Elizabethan, 2-track.

**Howe, A.** (39). 46, Rathbone Street, London, W.1. Plays, films, "pop" music, sunbathing 3½ ips. 5½-inch spools. Ferguson. Male contacts preferred.

**Howe, John W.** (59). 84, Sproat, Detroit (1), Michigan, U.S.A. Travel, piano and organ music. 7½, 3½ ips. 7-inch spools. Knight 4035, 2-track mono.

**Hunt, Derek** (31). 68, Hay Green Lane, Bournville, Birmingham 30. 7½, 3½, 1½ ips. 7-inch spools. Elizabethan Princess.

**Jordan, John C.** (34). 13, Grange Loan, Edinburgh, Scotland. Harmonica, classical, jazz and "pop" music. 3½, 1½ ips. 7-inch spools. Philips Stereo, U.S.A., France, Sweden, U.K.

**Lansbury, Basil** (41). 6, Granville Road, Hillingdon, Middlesex. Photography, travel, motoring, organ, most music. 7½, 3½, 1½ ips. 7-inch spools. Vogue, 2-track. U.K., Europe, Canada, U.S.A.

**Levi, Mrs. Edna** (31). 131, Car Manor Road, Leeds 17, Yorkshire. Theatre, travel, charity work. 3½ ips. 7-inch spools. Elizabethan. Overseas only.

**Lomas, Arnold** (34). 2, Hamerhill, Blackley, Manchester 9, Lancashire. Arts, gardening, wide musical tastes, general interests. 3½ ips. 5½-inch spools. Grundig TK20 and 819, Casian Trav-ler. Overseas preferred.

**Luthran, Philip** (50). 1450, South 52nd Street, Philadelphia 43, Pennsylvania, U.S.A. Folk music. 7½, 3½, 1½ ips. 7-inch spools. Norelco 400, 4-track.

**Malekin, Ramsay Macdonald** (32). 54, Holmside, Gillingham, Kent. Photography, travel, Continental music, home life, motoring. 7½, 3½, 1½ ips. 7-inch spools. Marconiphone. New Zealand.

**May, John B.** (24). 27, Beech Gardens, Hamble, Southampton, Hampshire. Photography, philately, films, radio. 3½ ips. 5½-inch spools. Elpico TR 400, Fidelity Minor, Philips EL3585, U.S.A., France, Channel Islands, U.K.

**McIntosh, C.** (38). 31, Queen Anne's Grove, Chiswick, London, W.4. Travel, light music and operettas. 3½, 1½ ips. 5½-inch spools. Telefunken 76K, 4-track. Germany, Austria, Switzerland.

**Mellor, Ken** (29). 111, Earlsfield Road, London, S.W.18. 8mm cine, all music, radio. 7½, 3½, 1½ ips. 7-inch spools. Home-built, 2-track and Clarion.

**Miller, Kenneth.** 1500, Grand Concourse, New York, 57, New York, U.S.A. Outdoor recording, sound-hunting. 7½, 3½ ips. 3-inch spools. Fi-Cord.

**Molloy, Owen** (30). 2, Marske Terrace, Walker Estate, Newcastle-on-Tyne 6, Northumberland. Outside recording, 35mm photography, films and radio, philately, all music. 15, 7½, 3½, 1½ ips. 8½-inch spools. Brenell Mk. 5, Stella ST470, Collaro Mk. IV Transcription unit. Overseas only.

**Moss, Paul** (21). 4, Queen Street, Cogginhall Near Colchester, Essex. Sport, cinema, jazz and "pop" music. 3½ ips. 5½-inch spools. Grundig TK14.

**Pugh, Norm** (??). 73, Boundary Road, Epping, New South Wales, Australia. 35mm photography, all music. 3½ ips. Letters not required.

**Quelch, James E.** (40). 160, Langley Road, Slough, Buckinghamshire. Photography, travel, philately. 7½, 3½ ips. 7-inch spools. Sony 521.

**Radford, A. W.** (31). 19, Freelands Road, Iffley Road, Oxford. 35mm photography, travel, motoring, trad jazz and Spanish music. 3½ ips. 5½-inch spools. Brenell Mk. 5. New Zealand and Spain (Spanish spoken).

**Sykes, Michael W.** (27). 7, Hyde Park, Halifax, Yorkshire. Railways, opera, Spanish music. 7½, 3½, 1½ ips. 7-inch spools. Elizabethan TT3, Madrid and Barcelona (English speaking only).

**Tansley, Ron** (23). 1, Hodgkinson Street, Netherfield, Nottinghamshire. 35mm photography, jazz, "pop" music, TV, reading. 7½, 3½, 1½ ips. 7-inch spools. Norfield, Motek K10 deck.

**Taylor, Brian** (25). 4, Memorial Houses, Victoria Drive, Eastbourne, Sussex. Hi-fi, organ and light orchestral music. 7½, 3½ ips. 8½-inch spools. Home-built unit with Wearite deck.

**Teather, Rusty** (22). 23, Lyndhurst Place, Rotherham, Yorkshire. Photography, short-wave radio, coins, philately, jazz and "pop" music. 7½, 3½, 1½ ips. 7-inch spools. Stella ST450, Fidelity Argyll Minor. Female contacts preferred, letters not needed.

**Thompson, F.** (21). 47, Walmer Street, Salford 5, Lancashire. Motors and motor-cycling, swimming, Do-it-yourself construction. 3½ ips. 5½-inch spools. Grundig TK14.

**Wargas, Eduardo** (25). 58, Gloucester Drive, London, N.4. 3½ ips. 5½-inch spools. Sound Riviera. Female contacts preferred. (French and Spanish spoken).

**Wedemeyer, Hannes.** (20). 70, Gresham Road, Staines, Middlesex. Electronics, computers, ham radio, classical and water music. 15, 7½, 3½, 1½ ips. 8½-inch spools. Home-built with Brenell deck. English or German speaking contacts.

**Williamson, Ernest.** 4, Garrick Avenue, Golders Green, London, N.W.11. Colour photography,

transistor radio construction, rockery plants. 3½ ips. 7-inch spools. Körting and Grundig.

**Wintringham, J.** (40). 17, Marshall Street, Middlesbrough, Yorkshire. Photography, folk music, bird-song. 3½, 1½ ips. 5-inch spools. Telefunken and Fi-Cord. Denmark, Spain and England.

**Ziggs, George** (37). 135-30, 82nd Drive, Apartment 2-L, Kew Gardens 35, New York, U.S.A. World Affairs, opera, languages. 7½, 3½, 1½ ips. 7-inch spools. Uher and Wollensak. England and Continent.

## FAMILY EXCHANGES

**Bellas, John L.** (27). 39 A.M.O., R.A.F. Regiment Depot, Catterick, Near Richmond, Yorkshire. Motoring, records, and general interests. 7½, 3½, 1½ ips. 7-inch spools. Robuk RK3 and Philips EL3527. Wife also joins in conversations.

**Horton, Valerie** (29) and **Paul** (31). 190, Dudden Hill Lane, London, N.W.10. Philately, music, home and family. 3½ ips. 7-inch spools. Stella. Anywhere, particularly Australia.

**Nye, Mr. and Mrs. R. J. H.** (26). Newcastle House, 22, High Street, Lewes, Sussex. Records, television, radio. 7½, 3½, 1½ ips. 7-inch spools. Elizabethan FT3. U.K. and Channel Islands.

## TEENAGE EXCHANGES

**Clifford, Derek** (15). 14, Cowley Drive, South Woodingdean, Brighton, Sussex. Photography, all jazz. 3½ ips. 5½-inch spools. Elpico TR400. English, French and German-speaking countries.

**Church, Christopher** (19). "Tanglewood," Crossways Road, Hindhead, Surrey. Shooting, trad jazz and Spanish music. 3½ ips. 5½-inch spools. Ferguson 4TR41. Spain and America.

**Dean, Paul** (15). Ruthin School, Ruthin, North Wales. Shooting, fishing, golf, jazz and "pop" music, travel. 15, 7½, 3½ ips. 7-inch spools. Wyndor Viscount, 4-track. Especially U.K. and Canada.

**Glendenning, Michael, A.** (17). 44, Budshead Road, Ernestite, Plymouth, Devon. Electronics, trad jazz. 3½ ips. 5½-inch spools. Peto Scott.

**Hazelwood, Michael, J.** (19). 4, Brookside Close, Dunchurch Road, Rugby, Warwickshire. Skin-diving, motoring, "pop" music. 3½ ips. 5-inch spools. Philips and Stella. Canada and U.S.A. (particularly Beverly Hills area).

**Hillman, Anthony** (19). 93, Horsneile Lane, Bracknell, Berkshire. Driving, cycling, philately. 3½ ips. 5½-inch spools. Grundig TK14.

**Newman, Paul** (18). 45, Russell Avenue, Aylesbury, Buckinghamshire. Archaeology, history, philately, coins. 3½ ips. 5½-inch spools. Peto Scott, 4-track.

**Shifrin, Gerald** (16). 3424, Milverton, Shaker Heights 20, Ohio, U.S.A. American folk music, English, French and Spanish. 7½, 3½, 1½ ips. 7-inch spools. Telectro, 2- and 4-track. England, France (English-speaking only).

**Walmsey, Miss Peta** (19). 43, Larkholme Lane, Broadwater, Fleetwood, Lancashire. Gardening, woodwork. 3½ ips. 5½-inch spools. Fidelity Argyll.

## INTER-CLUB EXCHANGES

**Jarrow:** R. Ollier, 30, Crawley Avenue, Hebburn-on-Tyne, Co. Durham.

Tape recorder owners wishing to make contact with others of similar interests are invited to complete and return this form.

Name ..... Age .....

Address .....

(BLOCK LETTERS PLEASE)

Other interests .....

Speeds to be used ..... Maximum spool size .....

Recorder owned .....

Special areas to be contacted ..

(Unless otherwise stated, I am prepared to accept tapes from any part of the world)



# News from the Clubs

## AYLESBURY

A membership of 32 is claimed by the members of a tape recording club in Aylesbury which is formed from members of Hazells Club, the social section of a printing works in that town.

Meetings are held monthly on Thursdays (next, May 10), and membership is open to any enthusiasts in the area.

The recording of outside activities for a blind persons' service scheme takes up quite a great deal of their time. They compile a fortnightly News Tape for the blind with items taken from the local newspaper. Every other Monday and Thursday they visit St. John's Hospital at Stone providing a programme of music for the patients in the wards, and organising a dance for the walking patients.

A library of 18 tapes has been compiled which is available to members on a monthly loan basis.

Details of the club are available from the secretary L. W. Powell, St. Chad's, Vale Road, Aylesbury, Buckinghamshire.

## CAMBRIDGE

A bring-and-buy sale organised by the members of the Cambridge club for their February 28 meeting, brought forth only one item. This was an old radio set which eventually sold for 3s. Their entries for the competition were also poor, the final points being awarded to P. Shiston, J. Holliman, and R. Barry respectively.

At the meeting a week earlier the members welcomed along representatives from Grundig. The meeting was well-attended and those present saw the full range of this company's tape recorders and accessories.

Recent meetings have included schedules to include a recording session for social services (March 21), play-reading and another sale (March 28), and a film show (April 11).

An "At Home" has been arranged for their meeting on May 2 when members of the Northampton club will visit. The evenings entertainment schedule has been allotted so that the hosts provide entertainment of the first half with their guests taking over the second half.

As an encouragement to regular attendances, the club has brought an attendance book into use. The secretary is offering a prize at the end of the year to the member who attends most meetings.

## CRAWLEY

Among recent meetings of the Crawley club have been a demonstration of dubbing; talks on microphone and radio recording; and live recording of a musical group.

The dubbing session was presented by Bob Crome who provided a fascinating display of how to play and dub a tape on one machine. The recorder used was the H.M.V. DSR1 which is equipped with three heads. No details of the session were provided but full information can be provided if required.

On the same evening members heard a tape recorded by Jack Wyatt's son who is a Merchant Navy man. The tape was made while his ship was speeding through a storm to a ship in distress. One part of the recording, made on deck, sounded like ten express trains in a tunnel, while another extract recorded in a cabin provided an eerie experience of the rolling motion and creaking timbers.

Jim Burtenshaw provided the February 5 evening's entertainment with a talk on how to make and connect mains and microphone leads, and descriptions of microphone techniques. To follow he demonstrated the effect of tape speed on quality, and lectured on loudspeakers and their enclosures. His talk closed with some remarks on cleaning and maintenance.

The February 19 meeting, set aside for listening to competition tapes, was later given over to a live recording session. The leader of the Jerry Lewin Group, resident band at the Tilgate Forest Hotel, offered to bring his band along to give the tape members some live recording experience.

One of the members of the Crawley club told an embarrassing tale of how he sat beside his radio tuner, recording button at the ready, for 2½ hours waiting to get on tape the "blast-off" of Colonel Glenn. I can sympathise with this member. After recording the first attempt, broadcast on Network Three some weeks earlier, my own recorder developed a fault during the actual flight day. Does anyone have a copy of the latter stages of the count-down and the flight, for dubbing?

## FRIERN BARNET

A start on the club tape was made by the Friern Barnet club at a recent meeting. After a few false starts the interviewing went well although the unexpected question popped in here and there caused a few fluffs. Later on the members experienced difficulty in the dubbing process.

The members are currently searching for a good "gimmick" for the Friern Barnet show in which the club will be represented.

Among plans for the future is an organised visit to the Audio Fair, on April 26. Other club members wishing to make personal contact with these members are advised to be in the Hotel foyer at 6.30 and 7.30 p.m.

## HALESOWEN

Since the announcement of the proposed formation of a club in Halesowen appeared in our February issue, Roy Finch has achieved remarkable success.

In four weeks from an initial eight members, the club has risen to a total membership of 16, and are holding weekly meetings every Monday at the Queen's Head, Halesowen.

Activities so far have included a display of all the members' recorders, a "five-minutes-or-else" contest quiz, stereophonic music demonstrations, and the inauguration of a hospital request service.

The members are currently concerned with compiling a tape on *Halesowen—Past and Present*. They are keen to exchange tape with other clubs, and welcome any suggestions along these lines. Letters should be sent to Mr. Finch at 37, High Street, Halesowen, Worcestershire.

## HOVE

Members of the Brighton and Hove Coffee Pot, a social club for graduates and students, welcomed four members of the Hove tape club along to one of their meetings at the Royal Pavilion, Brighton, recently. The invitation was to give a talk and demonstration of the uses of a tape recorder. Individual recordings, and tapes from the club's library were played on a Grundig TK5 and Elizabethan Essex to illustrate the 75-minute taped lecture which was played on a Grundig TK820.

## LONDON

The March 8 meeting of the London club began with a tape/slide show *62 Rally* presented by chairman Ken Blake. Thoroughly enjoyed by all present, the show by this master of the mode, was thought to be the best in his series.

This was followed by a "Passing the buck" tape. This necessitates a member starting a story, recording for two minutes, and then passing the "buck" on to another member. It passed from Fred Fowle to Ron Tucker and ended in the sure and firm grip of Bill Groves.

The ten-minute-tip that evening was Godfrey Mousset talking on soldering and jointing cables. Everybody enjoyed the idea of binding fingers to cables with string. No doubt in many of their members' homes there are sore fingers.

## MAIDSTONE

Members of the Medway and Sheerness tape clubs were present at the latest three meetings of the Maidstone society for a series of lectures by manufacturers.

First on the list was a visit by Mr. Clifton of E.M.I. Tape Ltd. who spoke about the manufacture of his company's product at their February 7 meeting. Thirty-one members attended and enjoyed an interesting "Any Questions" session concerning the noise and effects of tape on different machines.

On March 28 the combined membership of the three clubs welcomed Mr. A. A. Haining and Mr.

Powell of Simon Equipment Ltd. These two gentlemen provided mono and stereo demonstrations using their versatile SP5 tape recorder with Tape Records and dubbed tapes. The SP5 was thoroughly examined and tested and the final decision of the club members was that it gave a good account of itself.

It was the turn of BASF Chemicals on April 4 when Mr. Frank Parrington visited the club to present two colour films on the manufacture of BASF tape. The ever-popular film *The Magic Tape* was of course featured and the second film detailed some of the other products made by this firm.

## SOUTH AFRICA

The January 22 meeting of the Tape Recording and Hi-Fi Society of South Africa was attended by 23 members. On the agenda was a demonstration of the Ferrograph 420 tape recorder which raised lively interest and gave a good account of itself.

Among decisions made during the evening was the purchase of equipment. Negotiations are now taking place for the purchase of two loudspeaker enclosures, a second 5-20 amplifier, an azimuth tape; and, for a later date, a stereo pre-amplifier.

A resignation has been received from the secretary, and any correspondence to this club should temporarily be addressed to the chairman, D. A. Stevenson, at Room 26, Staff Single Quarters, Venterspost Gold Mine, P.O. Box 5, Westonaria, South Africa.

## SOUTHAMPTON

The latest meeting of the Southampton members began with a demonstration of stereo sound given by Mr. Thear on a Grundig TK60. Mr. Scarbro then gave a lecture on tape decks using the TK60 and a Ferrograph to illustrate his talk.

Later that evening, Mr. Wrigley played extracts from the four-hour recording of the enthronement of the Bishop of Winchester, a recording made by Messrs. Wrigley, Graham, and Wallbridge using three recorders and five microphones.

## STOKE NEWINGTON

A change of secretary is announced for the Stoke Newington club. Edward Horne who has worked hard in the position for over two years has decided to take a rest and his position will now be taken by Mr. R. Bullen. The new address for your files is 4, Tysen Road, Stoke Newington, London, N.16.

Following a publicity drive to encourage a greater membership the club now has ten names on its book. This has led to a decision to carry on their work in local hospitals and to contact again the local Blind Association with a view to helping them where possible.

Other items lined up for the future are a visit to the Audio Fair, and demonstrations of the Grundig stereo and Elizabethan Major tape recorders.

## TUFNELL PARK

Four meetings of the Tufnell Park club have been held since their inaugural meeting held on February 27. These have been held at the home of secretary G. Wilgrove, at 38 Highgate Road, London, N.W.5.

So far they have featured a film show and demonstrations of editing and splicing, and have produced a magazine which is to appear monthly in the future.

## WORLD TAPE PALS

The Annual General Meeting of the UK section of World Tape Pals is to be held on April 28.

During the evening, which is also to be a Social, the results of their Tape Contest will be announced. The judge is *Tape's* Special Assignment writer Denys Killick, and the prizes will be presented by Vivienne Gooding. Wellington Acoustics Laboratories Ltd., and E.M.I. have supported this competition which is intended to be the first of an annual event. Details of the meeting, and of this section of WTP are available from the UK representatives Rhona and John James, 45, Boundary Road, Colliers Wood, London, S.W.19.

# The Southern clubs survey

(Continued from page 25)

wrote the script, entitled *Reactor Five*, which calls for a number of weird sound effects.

Tape exchanges are pursued enthusiastically by a number of members individually.

The latest acquisition of the club is their own fanfare. This, provided by R. E. Turral, will be used to introduce all their tape exchange productions.

Among the recorders owned are a Vortexion, two Ferrographs, a Brenell 5 M, Spectone, Stella, Cossor, Philips, Reps, Truvox, Grundig, Sound and Telefunken. They also own two Grundig TK1 battery portables.

\* \* \*

An attendance of 34 persons was recorded at the initial meeting of the **Southampton** club, held in October 1960. Among those present was Dr. H. M. King, Southampton's M.P., who is also a keen tape recordist. The idea of the formation of a club came from D. Gannaway, who was elected their first secretary.

Membership stayed around the 25-30 mark for some time. But at the end of June last year the members had to relinquish their meeting rooms. The club was without a home until October when they found rooms at Southampton University. The long break, combined with the unsuitability of the new venue led to a drop in membership to around a regular 10-15. The committee felt they

were not receiving enough support, tendered their resignations, and a new committee was formed in February this year.

In March another move was made to their present premises in Manchester Street where they now meet fortnightly. Membership has already started to climb, and the members now believe they have really found their feet.

Despite these setbacks the hard core of enthusiasts in the club have continued to hold lively and interesting meetings. Their activities have included a few attempts at play-reading (which were later abandoned because of the lack of rooms for members pursuing other interests); an attempt to run a hospital service scheme; a stereo recording session with the help of a local rhythm group and a Grundig TK60; and an unusual experiment with orchid grower D. Briggs providing a taped narration when he displayed some of his choice blooms.

The machines mainly used by members are Ferrograph 4As and Grundig TK60s, and the secretary possesses a stereo set-up which he built himself using a Wearite deck and a Goldring turntable.

Although no construction work by the club has yet been accomplished, they are currently planning to build a recorder round a Wearite motor and capstan assembly when the secretary replaces his with a Papst mechanism.

\* \* \*

Bert Guernsey, Ernie Pembroke and Graham Watkins were the founder mem-

bers of the **Hove** club which met for the first time in June 1960. The official title is the Hove and District Tape Recording Group, for their membership is only six, a total achieved soon after formation.

Each member prefers the small informal group enabling every member to take part in whatever project is planned, thereby keeping a lively interest going. They meet weekly, and their boast is that they have still yet to find themselves with nothing to do on meeting nights. Their attitude is not a selfish one, for they are willing at all times to assist newcomers to tape recording.

Among their activities have been inter-club tape exchanges, production of feature tapes, and participation in a round-robin tape between the Bedford and Carlisle clubs. Their latest feature tape on *Our Contemporary Town* is at present in production.

Ernest Thornton, a member, is the organiser of two clubs for old people in Southwick. The tape group have collaborated with him in the production of a 45-minute tape describing the activities of these organisations, including musical items by the members.

Other voluntary work has included assistance in the preparation of musical programmes for a local hospital; at bazaars; and for the local Scout Group.

Equipment construction has included a simple nine-channel mixer unit which is added to the four-channel electronic unit, condenser, ribbon and moving-coil microphones, already in their possession. Their recorders include four Grundigs, a Stella, Elizabethan, Cossor four-track, and a Stuzzi Magnette battery portable.

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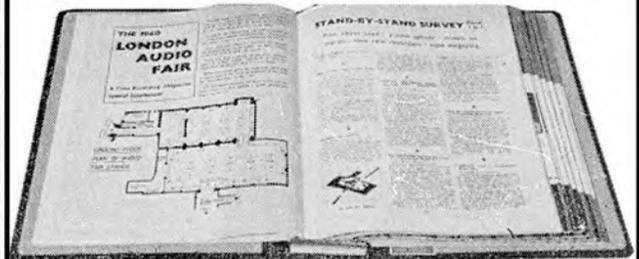
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be able to show that they have taken an active  
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to sound recording. Applicants should appreciate  
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work on a shift basis (not nights), to travel in  
the United Kingdom and overseas at short notice  
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a car essential. Tuition can be arranged for non-  
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envelope and quoting reference 62.G.117.T.R.M.)  
should reach Appointments Officer, Broadcasting  
House, London, W.1 within five days.

**Tape Record Reviews**

(Continued from page 29)

*Salute to Salutes*, good in itself, has  
great appeal for all big-band fans who  
miss this sort of material in the tape  
market.

Another Music-on-Tape collection  
does not appeal to me. I doubt if few  
but film fans will enjoy *Film Music* (TR  
34), another package of material origin-  
ally made for issue as singles by Rank  
Records.

Most are film title themes—*Upstairs  
and Downstairs*, *Conspiracy of Hearts*  
and *Ferry to Hong Kong*.

It is difficult to build a suitable pro-  
gramme from this kind of material. Curt  
Jurgens talking does not easily match the  
vocal pyrotechnics of the Mike Sammes  
Singers or the lush strings of Ernest  
Maxin's orchestra. The record is, as it  
were, strictly for the record—its enter-  
tainment value is dubious.

No doubts about *Jazz Giant*, one of  
several good jazz tapes being issued by  
*Saga* (STG 8062). This features Coleman  
Hawkins, a real giant in his calling.

No details of when it was recorded  
are given, but it sounds as though it was  
about ten years ago. With someone of  
Hawkins stature this is no drawback. He  
has survived all the changing fortunes  
and styles of the jazz world.

Items range from *I'll Never be the  
Same* to a Hawkins original, *My Own  
Blues*. All are masterful performances  
with a good, if not star-filled accompany-  
ing group. I like.

**DON WEDGE**

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	Deposit		18 Monthly Cash Payments		Gns.
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<b>MAINS 2-TRACK</b>					
Truvox R82 ...	11	11 0	2	11 4	55
Brenell 3 Star ...	12	4 0	2	14 0	58
Reps R10 ...	12	8 0	2	15 1	59
Brenell Mk. 5 ...	14	4 0	2	18 11	64
Telefunken 85KL ...	17	19 0	3	12 3	79
Ferrograph 4A/N ...	18	1 0	3	14 6	81
Brenell 5 Type "M" ...	18	10 0	4	2 2	88
Simon SP/5 ...	19	11 0	4	6 10	93
Reflectograph "A" ...	22	5 0	4	17 6	105

### 4-TRACK MONAURAL

Grundig TK24 ...	11	11 0	2	11 4	55
Brenell 3 Star ...	12	4 0	2	14 2	58
Philips EL3542 ...	12	8 0	2	15 1	59
Stella ST455 ...	12	8 0	2	15 1	59
Truvox R84 ...	12	8 0	2	15 1	59
Elizabethan Major ...	14	5 0	3	0 0	65
Reps R10 ...	14	10 0	3	4 5	69
Grundig TK40 ...	15	15 0	3	10 0	75

### 4-TRACK STEREO/MONAURAL

Korting MT 157 ...	17	17 0	3	19 4	85
Telefunken 77K ...	17	17 0	3	19 4	85
Philips EL3536 ...	19	12 0	4	5 7	92
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Grundig TK14 ...	3	13 6	3	13 6	35
Elizabethan TT3 ...	4	2 0	4	1 11	39
Spectone "161" ...	5	2 11	5	2 11	49
Reps R10 ...	6	3 11	6	3 11	59
Telefunken 95 ...	6	3 11	6	3 11	59

### 4-TRACK

Stuzzi ...	2	16 6	2	14 6	26
Philips 'Star Maker' ...	2	16 9	2	16 9	27
Argyll 4-T ...	3	4 0	3	4 0	29½
Elizabethan FT1 ...	3	11 5	3	11 5	34
Philips EL3541 ...	3	11 5	3	11 5	34
Stella ST 454 ...	3	17 9	3	17 9	37
Sound ...	4	15 0	4	14 6	45
Elizabethan FT3 ...	4	15 0	4	14 6	45

### BATTERY

Clarion Mk. 1 ...	1	19 11	1	19 11	19
Philips EL3585 ...	2	10 5	2	10 5	24
Stella ST470 ...	2	15 0	2	12 3	25
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Butoba MT5 ...	6	18 8	6	18 8	66

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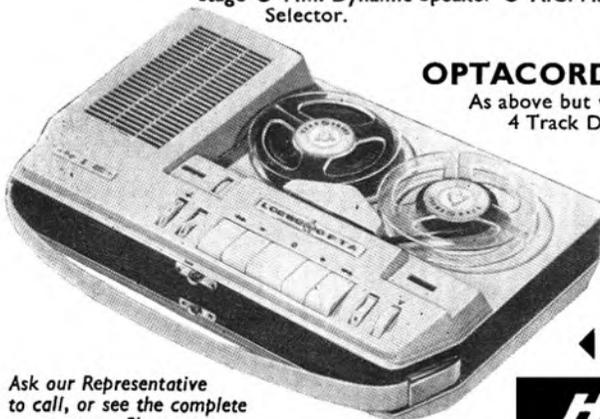
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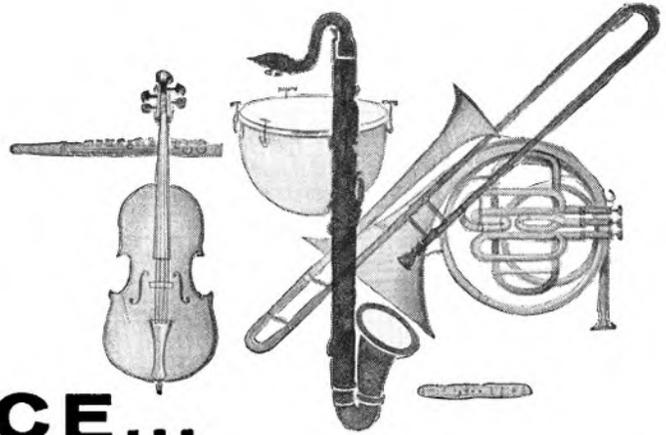
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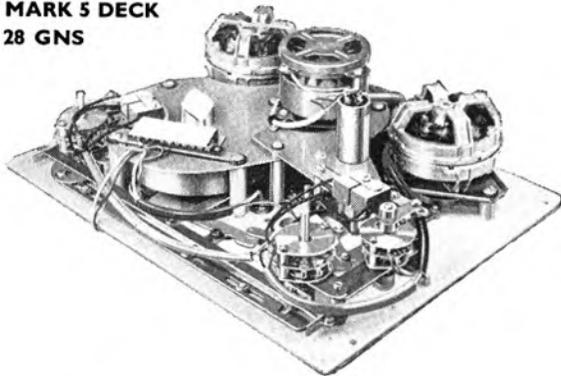
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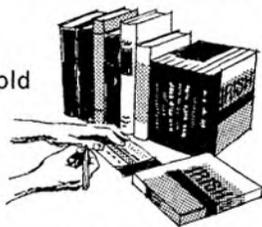
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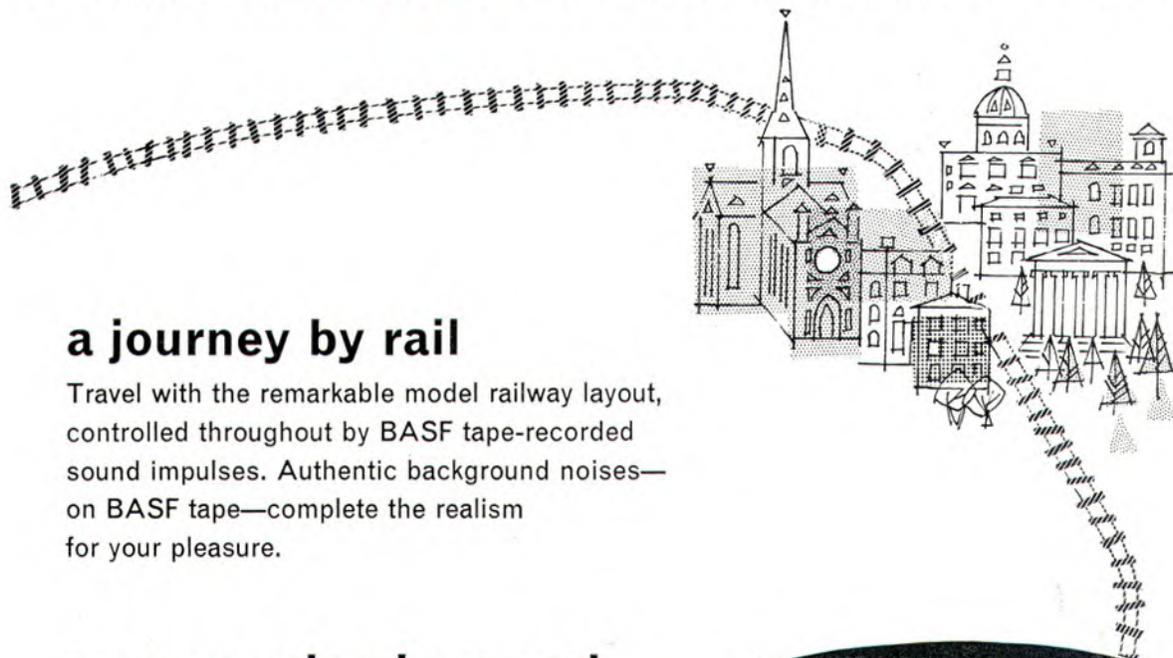


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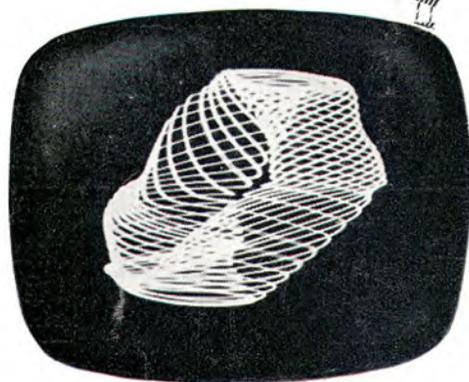


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