

Amateur Tape Recording

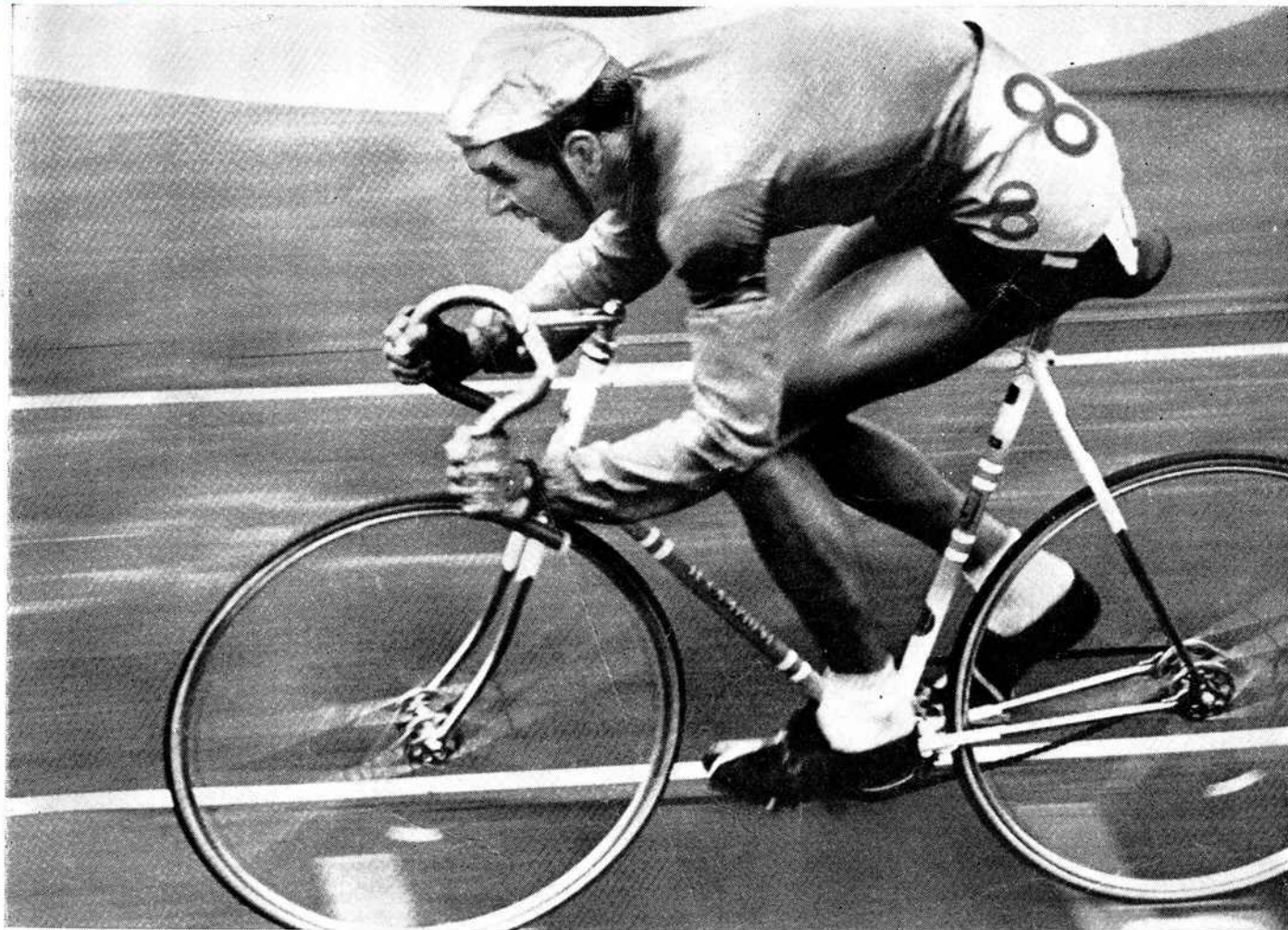
VIDEO&HI-FI

April 1966 Vol 7 No 9 2/6

audio fair preview issue



STAYING POWER!



HERE'S WHY MAKERS AND OWNERS OF TAPE RECORDERS ARE CHOOSING MALLORY BATTERIES



Powerful *new* Mallory alkaline manganese batteries get their muscle into the longest recording/playback session—and stay fresh-as-new to the end. No distortion troubles. No loss of volume. Even after lying idle they'll spring into fresh-battery action the instant called upon. And their powerful capacity for work goes on long after others would have been replaced.

Try them yourself when replacement time is due—you'll be pleased you made the change!



for new ideas in batteries

MALLORY BATTERIES LIMITED CRAWLEY SUSSEX Crawley 26041

Amateur Tape Recording

Vol 7 Number 9
April 1966

Feature	Author	Page
Language Learning with a Tape Recorder	F. C. Judd	10
Seven Inch Spool Conversion	B. E. Wilkinson	14
Audio Fair Preview	ATR	16
Tape Recorder Servicing	Gordon J. King	20
Things You Say	ATR Readers	24
Licensing Scheme	ATR	24
On Test - Goodmans' Magnum K	F. C. Judd	25
A Million Slides!	Graham Harris	26
The Professionals	ATR	28
Tape Reviews	Russ Allen	32
Front Cover Story	F. C. Judd	33
Sound Scene	ATR	35
Audio View	ATR	36
Tape Club News	Kim Cook	38
Tape Directory	ATR	40

EDITORIAL COMMENT

We are pleased to hear that Ferrograph are to introduce a new tape recorder, the Connoisseur 633 which will have a special performance specification as well as the kind of facilities favoured by the keen recordist. There is a need for tape recorders of this calibre and many enthusiasts are willing to pay the comparatively high price for an instrument like this Ferrograph 'special' which costs £126.

But what about those who cannot afford this expensive 'Rolls-Royce' performance? Are there any medium-priced machines that offer a reasonably good standard, reproduction-wise, plus the 'special' facilities that are not usually found on most domestic-class tape recorders?

There are not many that in themselves become a recording studio in miniature.

Some have mixing usually for two channels only—microphone and so-called radio or gram, some have track to track re-recording, some have an extra tape head for off-tape monitoring, some have only direct monitoring, but few have everything. We do appreciate that a tape recorder with everything involves complex circuit design and could therefore be very costly. However, we find that Wyndson have come very close to the mark with their Vanguard (to be reviewed in next month's issue of *ATR*) and which sells at 59 guineas. Truly a tape recorder for the creative recordist. It can be seen and heard at the Audio Festival.

Electronic music enthusiasts should make a point of getting the May issue of *ATR*. It will contain a special feature devoted to the subject, and there will be something for the home constructors too. Like most of the audio manufacturers who are exhibiting at the '66 Audio Festival, we are keeping some things secret until the day arrives.

FRONT COVER

Our front cover this month shows the special electronics and acoustics studio at the Philips factory in Eindhoven, Holland. The fascinating array of equipment in this studio includes powerful cine projectors, a complete multi-channel (Todd-AO) sound system for use with wide-screen films, banks of professional tape recorders, transcription units and amplifiers. All these, and the special lighting arrangements, can be operated from the central control panel by one person.

Editor: F. C. Judd, A.Inst.E. Art Editor: Bob Gordon. Advertisement Director: Lindsay Masters. Advertisement Manager: E. McKeown. Circulation Manager: David Hughes. Editorial, Advertising and Subscriptions: Amateur Tape Recording, Haymarket Press Ltd, 9 Harrow Road, London W2, Ambassador 3200. Amateur Tape Recording is published by Haymarket Press Ltd. © 1966 Printed by The Sidney Press Ltd, Bedford. Title registered at Stationers' Hall. Subscription Rates throughout the world 30s. post paid for twelve issues.

In 'Front Cover Story' on page 33 the Editor gives his impressions of some of the special demonstrations which he saw and heard in the Philips studio during his recent visit to Eindhoven.

***Mariner**, like many other space and missile projects is equipped with communications components devised and manufactured by the makers of 'SCOTCH' Magnetic Tape.*



The research that leads the way
in space now gives you:-

LOW NOISE
**Dynarange
Scotch
Magnetic Tape**

brings recording even closer
to original sound

New low noise Dynarange 'SCOTCH' Magnetic Tape represents a major break through for 3M research. It is the ultimate in Hi-Fi recording tape, designed for the expert who wants to get the best from his equipment.

Dynarange brings recording even closer to original sound, because it is coated with a remarkable low-noise oxide which greatly reduces inherent background noise. The result is a signal-to-noise ratio of three to five decibels (db) better than conventional tape and a consequent increase in dynamic range.

So with Dynarange 'SCOTCH' Magnetic

Tape you can faithfully reproduce an increased range of sounds, and it also provides an improved frequency response which ensures greater clarity of reproduction particularly in the critical high frequency range.

Dynarange is so sensitive it enables you to cut recording speed by half yet retain full fidelity. So you can record twice the music per foot without sacrificing quality.

Dynarange tape is available in 5", 5½" and 7" reel sizes for both standard and long play, and 8½" long play only.

Please write to 3M Company at the address below for price list and technical information.

— first with the new ideas



Minnesota Mining & Manufacturing Co. Ltd., 3M House, Wigmore Street, London, W.1.
Tel: HUNter 5522. 3M and SCOTCH are trademarks of Minnesota Mining and Manufacturing Company.



TO MEET THE STANDARDS OF THE CONNOISSEUR... Ampex 800 Series of Stereo Tape Recorders for sound perfection

Designed to out-perform all other Tape Recorders in their price range, with *solid state* electronics for maximum reliability. A revelation in pure sound reproduction in 4-track Stereo or Mono. For true fidelity recording or hours of the most satisfying listening pleasure this superb Ampex instrument defies comparison at anything approaching the price. Look at the features that put the Ampex 800 Series years ahead: Versatile 3-speed Operation • Precise Dual Capstan Drive • Interlocked Tape Controls

• Lifetime Ampex Deep-Gap Heads • Accurate Record Level VU Meters • Uncomplicated, straight line Threading • Simplified Operation • Die-cast Aluminium Construction • Constant Speed, High-efficiency Motor. Additional features are Automatic shut-off switch—turns off tape transport when tension is lost; automatic tape lifters eliminate head wear during fast wind operations; automatic digital counter allows you to return to a selection on your tape quickly.

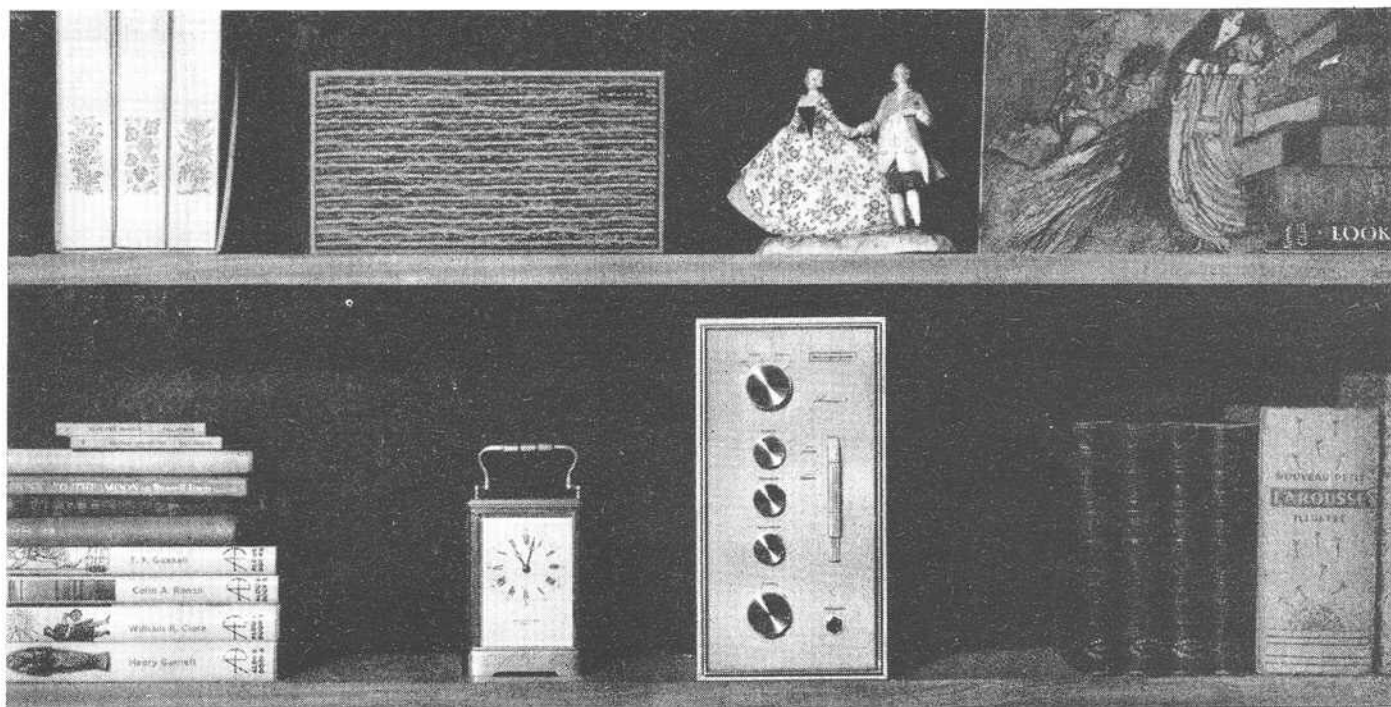
AMPEX

Ampex sales and service facilities are conveniently located throughout Europe and the Middle East. For more information write to: Ampex Great Britain Ltd., Acre Road, Reading, Berkshire, England. Telephone Reading 84411 • Ampex S.A. Via Berna 2, Lugano, Switzerland. Telephone 091/3.81.12 • Ampex Europa G.m.b.H. 6 Frankfurt Main, Düsseldorf Strasse 24, Germany. Telephone 252001-5 • Ampex, 41 Avenue Bosquet, Paris 7e, France. Telephone 705.38.10.

See and hear demonstrations of AMPEX equipment:

AUDIO FAIR, LONDON, APRIL 14-17. HI-FI SHOW, U.S. TRADE CENTRE, APRIL 14-22.

DESIGNED FOR MODERN LIVING



GOODMANS HIGH FIDELITY

GOODMANS HIGH FIDELITY Loudspeakers are world famous.

Now **GOODMANS** proudly present their fully transistorised High Fidelity Amplifier — **MAXAMP 30** — for the enjoyment of the hard-to-please audiophile — and his design-conscious wife. See (above) how elegantly it graces a treasured display-shelf. The pleasing and unobtrusive styling—with amazing compactness—is obvious. The accuracy of MAXAMP's High Fidelity sound reproduction is a revelation which will delight you.

MAXAMP 30 is a fully transistorised stereophonic High Fidelity amplifier using Silicon Transistors throughout. It is precision engineered and has performance of the highest order. It will deliver continuously up to 15 watts of power on each channel—and it looks as good as it is. Its polished wood cabinet with "Danish Silver" scratch-grain control panel blends with any decor, as does the MAXIM.

MAXAMP 30 £49.10.0.

MAXIM £17.10.6.

Whether you are using Tape, Radio or Disc, Goodmans MAXAMP 30 offers you outstanding High Fidelity listening pleasure. Combined with MAXIM it takes up next to no space. Your 'Hi Fi' now becomes as portable as your tape recorder.

GOODMANS INDUSTRIES

AXIOM WORKS · WEMBLEY · MIDDX

Tel: WEM 1200

A Division of Radio Rentaset Products Ltd

MAXIM, the ORIGINAL and unequalled High Fidelity Loudspeaker mini-system. Complete full-range High Fidelity performance—yet no bigger than a shoebox. The meticulously finished enclosure in hand-rubbed Teak (or Walnut) measures only 10½" x 5½" x 7¼"—the same dimensions as the MAXAMP 30.

PLEASE SEND MAXAMP 30 booklet and 1966 Hi-Fi Manual together with name and address of my nearest Goodmans dealer.

Name

Address

.....

..... TR4

Sheppard Sound Equipment Ltd

request the pleasure of your company
at their
High Fidelity Showroom and Studio

at RADLETT HERTS

"OUR CUSTOMERS HAVE A SENSE OF SECURITY"



Comprehensive range of equipment on display for immediate demonstration

THE WIDEST RANGE OF TAPE RECORDERS and

Specialist TAPE RECORDER Maintenance Service covering Beds . Bucks . Herts . Middx . all N.W. London

Akai . A.K.G. . Ampex . Armstrong . Bang & Olufsen . B.A.S.F. . Beyer . Decca
Dynatron . EMI . Ferrograph . Garrard . Goldring . Goodmans . Kef . Kodak . Leak
Lowther . Ortofon . Quad . Radford . Revox . Rogers . Shure . S.M.E. . Sony
Tandberg . Tannoy . Thorens . Truvox . Finest selection of Stereo Records
Design Furniture . Howland West . Record Housing.

In Attendance

J. L. SHEPPARD DIRECTOR . HIGH FIDELITY CONSULTANT

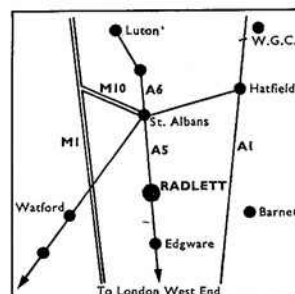
M.Inst.B.E., Grad.I.E.D.

B. H. CUTTS COMPANY SERVICE MANAGER TAPE RECORDER SPECIALIST

C. G. TUCKWELL SENIOR ENGINEER (R.T.E.B. C & G 1st class)

NO PARKING PROBLEMS

EVERYTHING IN STOCK FOR IMMEDIATE DELIVERY



31 NEWBERRIES PARADE . WATLING STREET (A5)

Telephone RADLETT HERTS 5440

Early Closing Wednesday . 9 a.m.-6 p.m. Open Lunch Hours . Late night Fridays 7.30 p.m.

TRUVOX

MUCH TOO IMPORTANT NOT TO SEE AND HEAR



Series 100
2 & 4 track
Tape Recorders



Series 100
 $\frac{1}{2}$ & $\frac{1}{4}$ track
Stereo Tape
Units



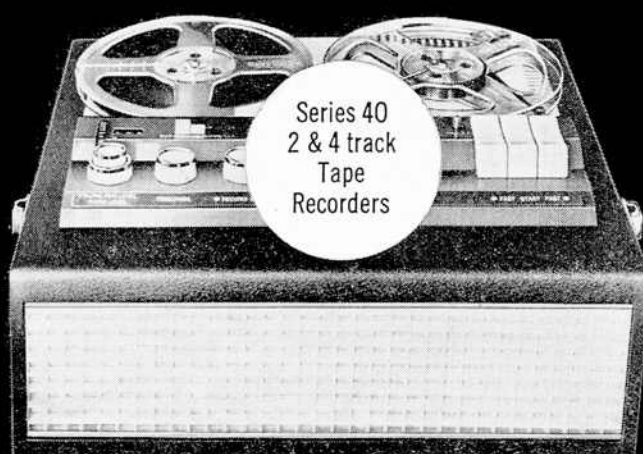
FM 100
Tuner Unit



TSA 100
Amplifier



AND A
GREAT NEW
SPEAKER - SO
NEW WE HAVEN'T
PHOTOGRAPHED
IT YET!



Series 40
2 & 4 track
Tape
Recorders

DEMONSTRATION ROOM **548*** INFORMATION ROOM **562**

talk, v. to talk; de: to talk over, u.
e: to talk, sujet de la table.
r for the talk of the table.
s: to be the talk of the table.
os de table. || talkative
d: bavard, m. || talking
conversation, f.; bavardage, m.
s: talking-to, semonce.
m.: grand; haut; how
are you? quelle taille avez-vous?
tall tale, conte à dormir
s: suit, m.; v. suffer;
candle, chandelle.
f: pointage, m.; v.
shop, maga-
domes-
divol-

fu. (tele-
tape [tép, v.
bande, f.; v.
acier; border; m.
insulating tape, bande
(electr.); measuring tape, m.
souple; paper tape, paperbande
plier gommé; red tape, paperbande
rie administrative; tape-recorder, m.
magnétophone; tapeworm, ténin
(med.).
taper [tépér] s. bougie; clre,
clerge; cône (techn.), m.; v.
ler; fuseler; tapered, tapé
conique; en pointe; effilé.
tapestry [tapétrí] s. tapisserie.
v. orner de tapisserie.
taploca [taploók] s. taquet;
tappet [tapít] s. goudron, m.;
bitumer; tarry, g.
tar [tár] s. goudron, m.;
bitumer; tarry, g.

LANGUAGE LEARNING WITH A TAPE RECORDER

Turn your tape recorder into a personal language laboratory and learn the easy way

The purpose of this article is to show that learning a new language in this day and age of electronics can be made much easier with the help of a tape recorder. During the past few months I have visited several language laboratories in this country and on the Continent, thus gaining much valuable information about language tuition with tape recording systems. Various language institutes have also provided details of their courses, most of which employ tape or disc as the medium for acquiring correct pronunciation, etc.

In addition and to verify, as it were, the potentialities of learning a language with the help of recordings and a tape recorder, I have been learning the language of Holland—Dutch if you like, or more correctly Nederlands. Progress? Well, in a little over three months I have learned sufficient to hold fairly good conversation and to write and read the language as well. You may think it odd for someone to learn such a language since almost every other Dutchman speaks remarkably good English. There is a reason, of course, which I need not go into here, but nevertheless I have found my knowledge of this particular language more than just useful, a point which is perhaps important. When travelling in a foreign country, on business for instance, some knowledge of the language can be extremely useful. Also, for scientific or educational purposes it may be necessary to understand more clearly the technicalities of a particular subject. Even the best translation into English may not always convey perfect clarity. Most tape recording enthusiasts will already be familiar with tape recorder instruction books translated (?) from some other language into English! I hardly need mention also the usefulness of knowing even a few phrases in other languages when on holiday abroad or of being able to understand clearly foreign literature, films, drama and culture, etc.

You can probably think of many more reasons why even a partial knowledge of one or more foreign languages is useful. Language learning is also an interesting pastime in itself, especially with the aid of a tape recorder which allows you to hear your own spoken version of another language as others hear you.

The Language Laboratory

Thousands of colleges these days employ tape as the media for rapid and correct learning of foreign languages and the system is basically quite simple. For correct pronunciation, words and phrases in the language being learned are recorded on to one track of a twin-track tape system. This plays through the monitoring circuit and the pupil listens on headphones, during which time he or she can repeat and record the examples on to the other track. Equally, examples intended for translation from one's own language into the new language can be recorded for the pupil on one track whilst he or she records the interpretation on the other. Tapes thus recorded can then be replayed on both tracks together so that the pupil can hear the results of the exercise.

10 In a large language laboratory such as the one shown in Fig.1

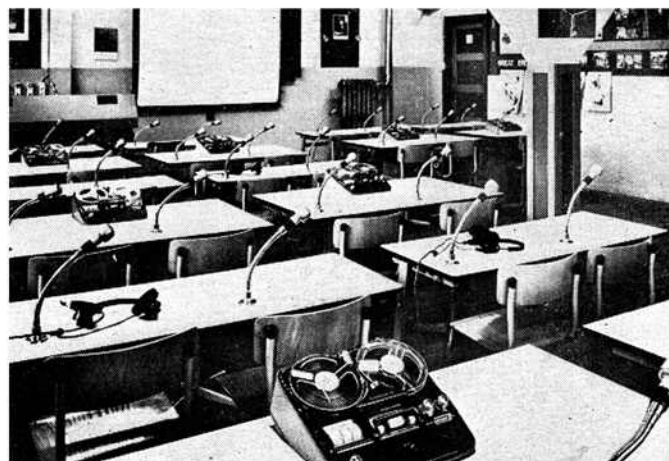


Fig.1. The English language laboratory at St Ignatius College, Amsterdam.

many tape record/replay units are employed in conjunction with a master record/replay and monitoring system under the direct control of the teacher. The system most commonly used enables the pupil to select and record or hear any part of the exercise in progress and the teacher to monitor the work being done by any individual pupil. It also allows for collective working between the teacher and pupils. The network of tape record/replay units is indeed quite complex and costly to install, but pays great dividends in terms of speed and correct learning of vocabulary and pronunciation. One large language laboratory in London which I visited can, on average, bring a foreign pupil to the stage of reasonable fluency in English within three months. The pupils are, of course, working each day during that period, but in most cases they will have begun with no knowledge of English whatsoever. At this particular laboratory I chatted in English with half a dozen students from almost as many different countries. They had been studying for less than two months and had started without any previous knowledge of English.

Your Own Language Laboratory

There are now a great variety of language courses available for home use and most of them employ pre-recorded tapes or discs for instruction and pronunciation. One can therefore learn and practice at home with reasonable assurance of success. I must point out here, however, that it is quite useless to attempt to learn a language completely from phrase books and so-called abbreviated recorded courses of useful phrases. These are, of course, quite helpful for acquiring a limited knowledge of a language—for finding one's way about or asking about hotels and train times, etc., when on a holiday or short business trip. As in learning any subject thoroughly and correctly, one must start at the beginning, and in language learning this is at the vowels, consonants and pronunciation stage. Some language books and courses use a phonetic script to indicate correct pronunciation which is useful at early stages. In its simplest form the

home language laboratory may consist of a tape recorder or record player on which to play the tapes or records of pronunciation and exercises provided as part of the complete course. A tape recorder is perhaps more advantageous, since one can record one's own versions of the exercises and hear the results immediately. With disc records only one must rely on someone else's judgment as to whether correct pronunciation is being achieved. Remember, we do not hear our own voice as others hear it. The only way of hearing one's voice as it sounds to others is via the tape recorder. This then offers a means of direct comparison between the correct pronunciation of the foreign tongue and one's own version, and here the tape recorder comes into its own.

At this stage a brief description of my own particular arrangement may help to provide an idea for a similar one employing a tape recorder and record player or two tape recorders. Much will depend of course on the particular language course chosen, on whether it comes with tape or disc and on the intervals between spoken phrases, etc. The main feature is that of being able to record from disc to tape, or tape to tape, along with one's own spoken version of the exercises via a microphone. Mixing will therefore be necessary and preferably with monitoring of both signal sources via headphones. This will allow you to hear your own voice in the headphones, which is about as close as you can get to hearing it as others would.

My own particular arrangement has a record player connected to one channel (upper track) of a stereo tape recorder with the monitoring output from this channel connected to a mixer. A microphone is connected to the other channel (lower track) of the recorder, the output from this also being taken to the mixer. The mixer output is connected to a pair of suitably matched headphones. This allows for hearing the instructions, etc., from the record, together with one's own voice whilst the two are being simultaneously recorded on separate tracks. On replay the two recordings can be heard together or separately as desired. A bit elaborate perhaps, but this may provide ideas as to how best to employ your own equipment. The important thing is to be able to make a direct comparison in one way or another between the voice on the instruction record and your own.

Language Courses

These are many and varied and cover just about every language likely to be required. *Linguaphone*, for example, can cater for 37 languages, and although a complete course is a little expensive it is, to say the least, very thorough. Instruction is by means of books and disc or tape records and includes a personal service of checking and correction. All *Linguaphone* courses are, incidentally, prepared and checked by top authorities in the particular language and can be recommended to the really serious student. The names and addresses of those able to supply language courses are given at the end of this article.

The language courses most commonly available are French, German, Spanish and Italian and another respected institute is *Hugo's*, who can supply courses complete with records in these languages as well as in Norwegian, Swedish, Russian and Portuguese. Then there is *Visaphone* who provide courses in German, Italian, French, Russian and Spanish, complete with LP records or equivalent tapes of instruction and illustrated books. These courses vary between £8 12s 0d and £12 12s 0d depending on the course and whether tapes or disc records are required. *Visaphone* also supply special language records for children as well as the 'Visatechnica' courses for technical terminology in French, German and English. They also produce elementary 'holiday' courses with 7 in LP records or tapes.

Another really comprehensive language course which has just become available for three or four different languages is by *World of Learning Ltd*, who supplied a sample course (Spanish) for me to evaluate. This comprises three 12 in 33½ LP records, five instruction books and a complete Spanish-English (and vice versa) dictionary — quite an array of material for a complete course and all presented in a handsomely decorated case. The price is 9 guineas and, although I have no knowledge of this particular language, a glance through the books and a listen to extracts from

the records left me with the impression of a very thorough and practical method. The *World of Learning* courses are available in Spanish, French and Italian.

If you require language courses on tape, mostly with instruction books, then *Teletape* of Marble Arch, London, have plenty to offer: *Tutortape*, *EMI Language Series* and *Lexiphone* alone cover some 50-odd courses of one kind or another in French, German, Russian, Italian, Spanish, English, Greek and Norwegian. Prices range from about £2 10s 0d for exercises in French, or complete, language courses for beginners and advanced students from around £4 0s 0d up to £9 0s 0d. The *EMI* series, for example, are all at £5 0s 0d, whilst *Lexiphone* elementary courses cost £2 5s 0d. Some tapes are available at 3¼ ips, others at 7½ ips, some at either speed.

Teletape very kindly sent a sample of the *HMV* language course for Spanish prepared by the Institute for Language Study for *HMV*. It comprises 40 lessons complete on two 3¼ ips tapes, together with a comprehensive instruction book, which also contains a 5,000 word Spanish-English-Spanish dictionary. The quality of the recordings is impeccable as also are the Spanish voices. Although this course does not cover the finer points of the language it will certainly teach more than sufficient for everyday conversation, reading and writing.

In addition to complete language courses, there are also many records available which are merely for learning phrases parrot fashion in conjunction with a booklet. These are of course useful to anyone contemplating a holiday abroad particularly in a country where only limited English may be spoken. The *Conversa-phone* records are a good example and are 12 in LPs complete with phrase booklet. The record repeats the phrases contained in the booklet with, of course, the correct pronunciation. The recordings are of good quality and individual subjects and phrases are sufficiently slow and spaced out to allow for repetition by the pupil. This makes these records ideal for use with a tape recorder as I outlined earlier. In addition to *Conversa-phone* are phrase



Fig.2. The Symphony sleep learning tape recorder with time switch and solenoid control marketed by Psychology Tapes Ltd.

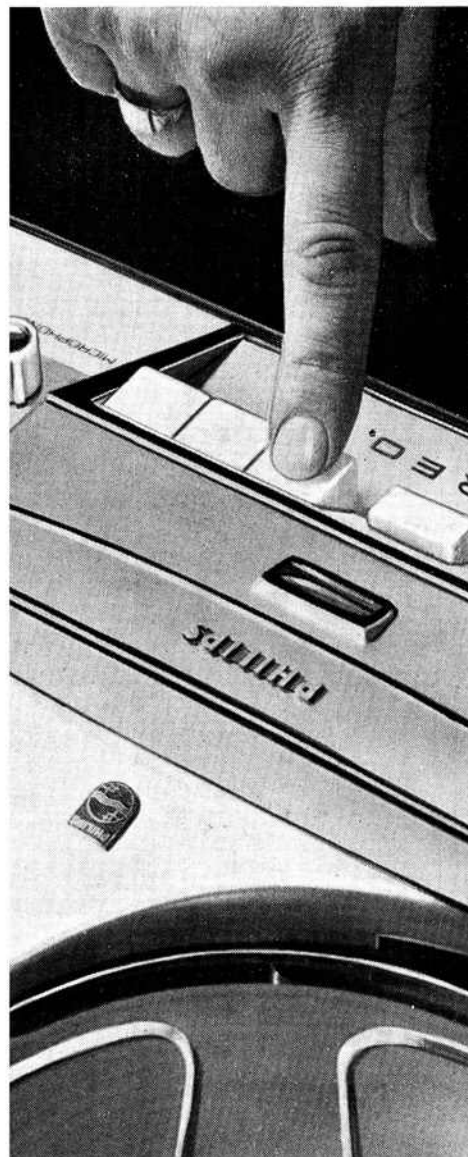
Fig.3. The new Veritone cassette tape recorder for which cassette language learning tapes are available.



**YOUR TAPE RECORDER
DESERVES THE BEST...**

**IN MICROPHONES
that means the
PHILIPS P.31**

This superb hypercardioid moving coil microphone offers the quality performance needed to complement Philips recorders manufactured since 1960, and most other makes of high class recorder. It has a level frequency response to ensure your recorder gets the finest input possible. It has a directional response to minimize unwanted extraneous noise, and permits substantially increased amplification without fear of acoustic feedback. It has a protected microphone insert and is extremely robust and insensitive to shocks and vibration, to ensure a lifetime of perfect, trouble-free use.



The Philips P.31 is supplied with flexible shaft, silent on/off switch, built-in matching transformer (giving adjustable impedances of 500Ω and 25,000Ω) and elegantly designed non-scratching stand. See it at your hi-fi dealer *today!*

The high quality Philips P.31 is supplied complete for only **18 gns.**

***Peto Scott for all Philips
Professional Sound equipment***



PETO SCOTT LTD

Addlestone Road, Weybridge, Surrey
Telephone: Weybridge 45511

records with booklets by *Odhams* and also the *Lexiphone* series for elementary holiday phrases marketed by *Visaphone*. The latter have illustrated phrase booklets. *Conversa-phone* cover thirty different languages and *Lexiphone* booklets are available for French, Italian, German, Russian and Spanish.

Finally, I feel that so-called sleep learning should be mentioned, as *ATR* readers often write for information about this for use in conjunction with other subjects. On sleep learning itself I cannot comment and can only mention that tape equipment, tapes and tuition courses on all kinds of subjects are available. Specialists in this field are *Psychology Tapes Ltd*, who, in addition to complete tape recording outfits for sleep learning as shown in Fig.2, can also provide language courses of various kinds on tape for, as they put it, 'normal conscious study plus supplementary pre-sleep study'. Their language courses cover French, German and Russian.

Sleep learning equipment and language tapes are also available from *Educational Recordings Ltd*, who also distribute *Visaphone* language tapes. Although I have never attempted sleep learning, I have tried listening whilst in a comfortable and relaxed condition to recordings of myself talking about tape recording (recorded lectures given in the past). The usual result is that within ten minutes or so of concentration and listening I am sound asleep!

For the benefit of those readers desirous of learning languages here is a list of all the institutes and distributors of language courses that employ tape or disc recordings and who will send the requisite information if you write to them:

The Linguaphone Institute Ltd Courses in many languages with disc or tape.
207/209 Regent Street
London W1

Hugo's Language Institute Ltd Hugophone courses with discs only.
2 Southampton Place
London WC1

Visaphone Co Ltd Complete courses with tape or disc. Also holiday phrase instruction, etc., with discs or tape.
17 Middleton Road
London NW11

Teletape Ltd Comprehensive selection of language courses with tape. Catalogue available.
33 Edgware Road
London W2
(and other branches)

A Soloway Ltd Large selection of disc records for phrases, etc., including complete English courses for foreign students.
Cudworth Street
London E1

Transatlantic Records Ltd Conversa-phone phrase disc records with booklets for phrases in many languages.
120/22 Marylebone Road
London W1
BBC Publications Dept Language courses with disc records. Lists available.
35 Marylebone High Street
London W1

J. A. Davis & Son Ltd Language courses with disc records.
94 Denmark Hill
London SE5

N. Walker Language courses with 3½ ips tapes.
28 Linkscroft Avenue
Ashford, Middlesex

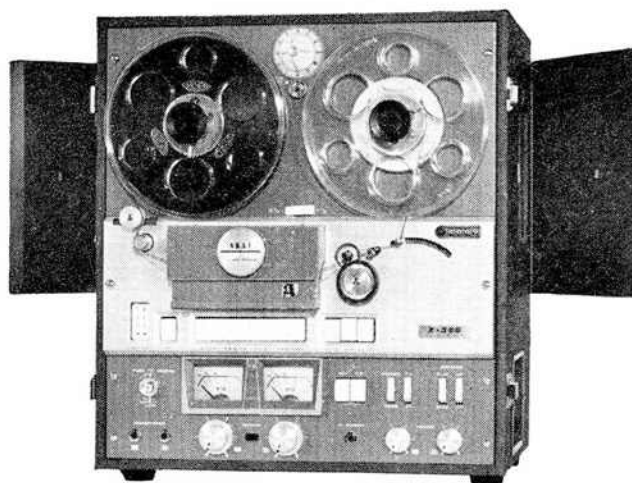
Interlingua Tapes Ltd Language courses on tape.
188 Brompton Road
London SW3

World of Learning Ltd Comprehensive and complete Language courses with LP disc records.
Parkbridge House
Richmond, Surrey

Foyles Ltd Distributors of various language phrase records, including Conversa-phone.
119 Charing Cross Road
London WC2

Psychology Tapes Ltd Language tapes and sleep learning equipment.
16 Kings College Road
London NW3

continued on page 50



NEW— The Akai X355

24,000 Cycle 50 Watt Cross Field Professional Stereo with

REVERSE PLAY — automatically
REPEAT PLAY — automatically
SELECT PLAY — automatically

3 heads plus X-field; 3 motors; computer-type solid state circuitry with removable modules; push button solenoid controls, echo effect, remote control play optional, 10½" reel adaptable, Sound-on-Sound, Sound-over-Sound, Sound-with-Sound, channel transfer sound, hysteresis synchronous capstan drive, electrical speed change, 4-digit push button index counter. This instrument features 2 types of Automatic Reverse Play actuation—timed adjustable indexer, and precise tape foil sensor method. 68 stereo watts output. **239 gns.**

Also available in deck style for easy rack mounting



Hear Akai recorders at:

Leech & Hainge Limited
57-61 London Road
Southampton
Telephone: 25328

An Akai Main Dealer

SEVEN-INCH SPOOL CONVERSION OUTFIT

B. E. Wilkinson tackles the problem of replaying a 7 in spool on a recorder that normally takes only a $5\frac{3}{4}$ in spool

How to replay a 7 in spool on a recorder that will normally take only $5\frac{3}{4}$ in spools – that was the problem. It was not intended to use the larger spool permanently, but occasionally for replaying borrowed tapes of this size and when extra playing time was required. The conversion, it was decided, had to be in the form of an outfit of parts as in *Fig.1* which could easily be fitted to the recorder when required. The outfit consisted essentially of auxiliary spool shafts, which carried the 7 in spools, a pulley system by which the drive from the recorder platforms was taken to the auxiliary shafts, and a pair of plates which carried the shafts and were fitted to the recorder deck. (See *Fig.2*.)

It is not possible to be specific about the plate dimensions, as this will depend on the deck geometry of the particular recorder. The plates used on the recorder shown are triangular in shape, have a base length of 2.3 in, and are 3 in high. They are made from fairly stiff alloy plate, and have three holes – two to clear 6BA at the base, for securing to the deck, and one $\frac{3}{8}$ in at the apex. It is difficult to be specific about the method of fixing the plates to the recorder deck. Where deck retaining screws are conveniently positioned, these can be used to hold the plates. On the recorder shown, two pairs of holes were drilled in the metal deck. It is, however, most important to be sure about the plate position before drilling any holes in the deck. The edges of the 7 in spools must clear any deck projections, and since 3 in spools are used as pulleys, the distance between recorder and auxiliary spindles must be greater than 5 in ($3\frac{1}{2} + 1\frac{1}{2}$) in. In order to avoid the necessity of removing the deck every time the plates are to be fitted, I secured 6BA nuts under the four deck holes with Araldite.

Each shaft carrying a 7 in spool is free to rotate in the threaded fixing collar of an old potentiometer or wafer switch. The collar is removed by breaking up the potentiometer around it, and is mounted in the $\frac{3}{8}$ in hole at the apex of the plate, a nut securing the collar from underneath. The 3 in and 7 in spools of each auxiliary spindle are clutched together to rotate as one. The shaft is a 1.6 in length of $\frac{1}{4}$ in brass or iron rod, chosen because of its availability from old potentiometer and switch shafts. Now, the shaft diameter of 0.25 in is not a satisfactory fit into the 0.3 in diameter centre-hole of the standard reel, but the problem is solved by wrapping a strip of thin tinplate around the shaft. The strip is cut to a width of 1 in, and is tightly wrapped around, until the shaft is a snug fit in a reel hole. This amounts to about 2 turns, and is dependent on the tinplate gauge. Only one spigot is necessary to lock the spools, and this is formed by unwrapping the end of the strip slightly, and bending as shown (*Fig.1*). The assembly is then held firmly by means of a pair of pliers, and the tinplate soldered to the shaft at each end and along the edge. I found that the solder tended to run, so that the excess had to be filed off before the sleeved length would fit into a spool hole. Two sleeved shafts are made, and fit into the collars as shown. A washer ($\frac{1}{4}$ in internal diameter) prevents the lower edge of the spigot from rubbing against the stationary collar. Lubrication is not necessary when

the outfit is used for a short time occasionally, but when used for

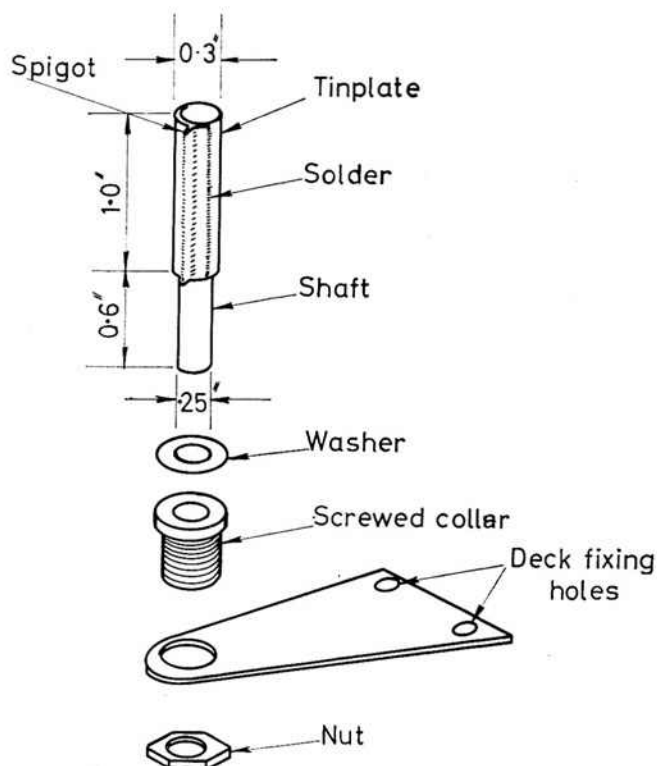


Fig.1. Component parts for the 7 in spool conversion.

a long period a drop of machine oil on each shaft improves the smooth running. The completed conversion is shown in *Fig.3*.

There are two pulley systems, each comprising two standard 3 in spools, one on the recorder platform, the other on the auxiliary spindle underneath the 7 in reel. The spools of each pair are connected by a rubber belt passing around the hubs. I used elastic of the type intended for the rubber motors of model aircraft, binding the ends together with cotton to form a loop. The belt tension seems to be fairly critical. If a belt is too tight, the added side load on the recorder platform may affect the drive, while a loose belt may not provide any effective drive, particularly in the fast forward and rewind function.

It is important that the recorder drive mechanism is in good condition to overcome the added friction caused by the extra shafts and the belts. Where the slipping clutches of a recorder seem to be working at reduced efficiency, or it is suspected that the recorder drive is slipping internally, the mechanism should be stripped and cleaned. The torque developed by the 7 in take-up spool during record and replay must be sufficient to ensure that tape is taken on smoothly. Intermittent movement of this spool indicates excessive flexibility in the home-made belt.

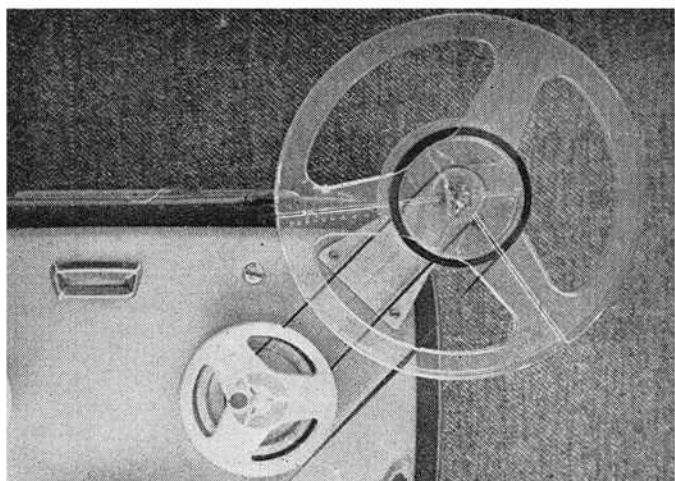
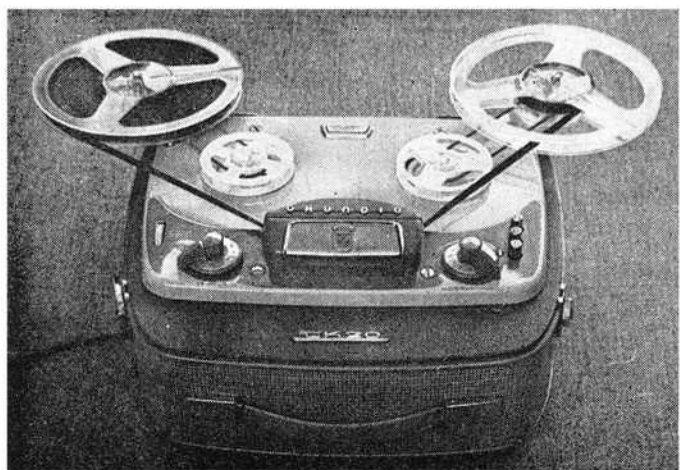


Fig.2. Close-up view of the spool drive system.

Fig.3. A Grundig TK20 modified to accommodate 7 in spools.



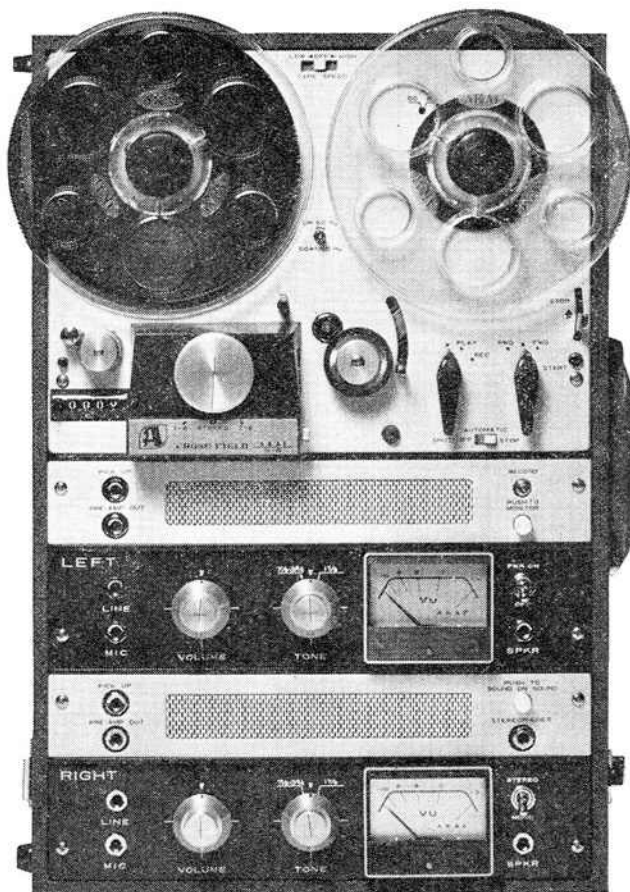
The 3 in spools of each pair are positioned at about the same level, so that with the 7 in spools in position, the tape must take a descending path to the tape guides at the head and capstan assembly. If the slope is too steep, the tape will foul the edges of the 7 in spools, particularly the one taking on tape. Furthermore, when the spool taking on is almost full, there is a possibility of the tape fouling the edge and falling down to become wrapped around the pulley underneath. On the recorder shown, the tape slope is reduced by using half a 3 in spool as the pulley on each extra spindle. The hub is sawn in half to form two identical one-sided pulleys, the sides being positioned down on the spindles, so that the lower face of the 7 in spool forms the upper side of the pulley. If the tape still fouls the periphery of an almost full or over-full spool, a small block of wood of appropriate height, placed on the recorder deck under the tape path to the take-up spool, will act as a guide, raising the tape to the spool level.

The system works satisfactorily in record and replay, but in the fast forward and rewind functions the added friction imposes a load on the recorder drive, particularly when the tape is being wound on to an almost full spool. This is overcome by lifting the tape out of the head assembly before either of these functions is selected. The tape thus runs directly between the two 7 in spools, with no variation in height.

100% AUTOMATIC LIP-SYNC SHOOTING

is possible with an electric camera and the amazing Synchrondek. It will synchronise your projector, too! Find out more. FREE literature from

SYNCHRODEK, Dept. ATR 101, 2 Warwick Court, London, WC1



M8 Akai's exclusive cross field 22,000 cycle stereo

Professional stereo specifications. Plays 4 speeds including the new LP speed of tomorrow $1\frac{7}{8}$ i.p.s., Sound-with-Sound; Electrically switched hysteresis—synchronous motor; speeds $1\frac{7}{8}$, $3\frac{1}{2}$, $7\frac{1}{2}$ and 15 i.p.s. optional, 2 VU meters, 4 digit push button reset—index counter; 2 built-in extended range high fidelity speakers; mute-monitor and PA switch. Separate tone and equalization controls for each channel. Isolated amplifiers; vertical or horizontal operation. Titanium strip heads. **136 gns.**

AKAI

PULLIN
PHOTOGRAPHIC
(A Company within The Rank Organisation)

Hear Akai recorders at:

Nusound

2 Maryland Station, E15 · 205 High Street, North, E6
228 Bishopsgate, EC2 · 242/4 Pentonville Road, N1
82 High Holborn, W2 · 36 Lewisham High St, SE13

An Akai Main Dealer

AUDIO FAIR PREVIEW

F. C. Judd surveys a selection of the equipment you will be able to see and hear at the 1966 International Audio Festival and Fair – 14 to 17 April

What this year's Audio Fair really has to offer must remain to be seen. We do not anticipate anything as highly spectacular as matchbox-sized hi-fi outfits with full frequency range loudspeakers or wristwatch tape recorders or even electric shavers with built-in tape recording or radio facilities. (Yes, we watch 'Danger Man' on ITV as well!) However, we do hope to see new developments in transistorized hi-fi amplifiers, loudspeakers that don't necessitate having the floor reinforced, tape recorders that should by now also weigh a good deal less than before and occupy no more than the width of a bookshelf and, last but not least, stereo radio equipment designed to operate with a compatible system which the BBC have been too long thinking about anyway.

The response to our request for advanced information from the various exhibitors has not been too encouraging. Most of them seem to regard their new (?) products as being as top secret as the latest atomic science development. So please don't blame us if your favourite brand of audio equipment isn't mentioned here. It will still be worth the endless trek up and down the stairs of the Russell Hotel if you visit the '66 Audio Fair to see and hear for yourself what the backroom boys have been hatching up during recent months.

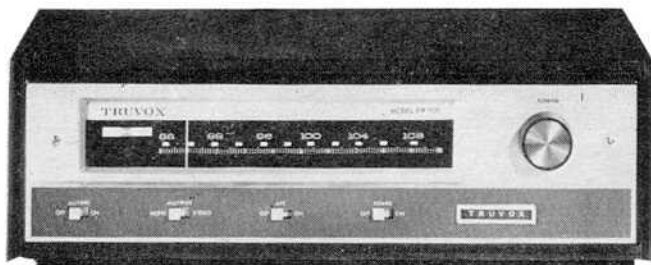


Fig.1. The Truvox FM 100 radio tuner.

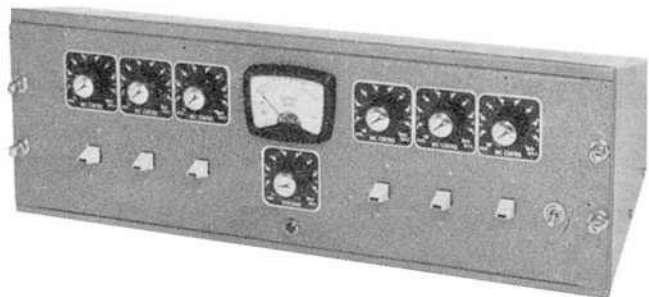


Fig.2. The new Grampian six-channel microphone mixer with in-built pre-amplifiers.

First on the list are **Truvox**, one of those who have a secret – a surprise addition to their present range – which will be released at the Audio Fair. They will also have on show and for demonstration the FM 100 tuner (*Fig.1*) and the Series 40 tape recorders, as well as the Series 100 hi-fi amplifiers. We wonder what their secret is; perhaps it is a new range called *Series 007*.



Fig.3. The Armstrong Audio model 127 integrated stereo tuner amplifier.

Ferrograph announce a new item, no secret this time, which will be the *Connoisseur 633*. It will be a mono tape recorder, having, in addition to the usual facilities, mixing and monitoring of both input and off-tape signals. The price of this fabulous recorder is £126 and it will be issued complete with a test certificate of performance, a Bruel and Kjoer frequency response test graph and speed micrograph. It will carry an almost unlimited guarantee for three years. How's that for living up to a reputation in tape recorder manufacture?

Our old friends **Grampian Reproducers** will be showing their entire range of microphones, mixers and other accessories as well as a new six-channel mixer/pre-amplifier designed for mains operation. A battery version will also be available to order. This new mixer has six independently controlled microphone inputs, master fader, output meter, base and treble controls, a frequency response of 100 to 15,000 c/s and is available with various input and output impedances. Truly a versatile mixer as shown in *Fig.2* and it should create a good deal of interest.

BASF are preparing a special demonstration at which it will be possible to listen to a selection of short pre-recorded items covering a variety of topics of special interest to recording enthusiasts. It will also be possible to record your own selection of these items on a free sample of BASF tape which you can take home with you. BASF engineers will be present to discuss technicalities, and the full range of BASF tapes and accessories will, of course, be on display.



Fig.4. The SME precision pick-up arm and cartridge.



Fig.5. The Akai tape recorders – models X4 portable (left) and M8 stereo (right).

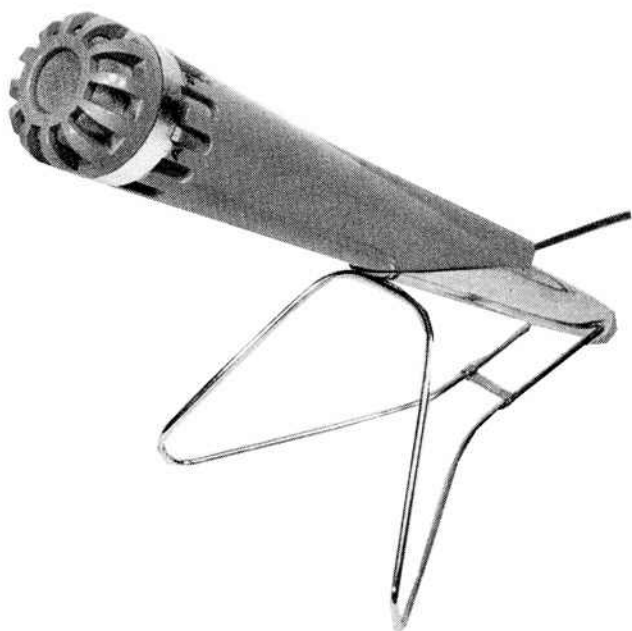


Fig.6. The SG Brown variable polar response microphone type IC 600.

Armstrong Audio haven't yet announced anything new but we hope to see transistorized equipment from them – valves are old fashioned, you know. They are, however, still reliable and there are still some things you just cannot do with transistors. On the Armstrong stand will be their full range of amplifiers and tuners including the model 127 integrated stereo tuner amplifier (Fig.3) and their stereo radio multiplex decoder. No doubt Armstrong Audio will be demonstrating this in conjunction with the BBC experimental stereo radio broadcasts.

Pick-up arms and accessories do not come into the world of tape very much, but nevertheless are always of interest especially to

continued overleaf



X4–Akai's exclusive stereo portable, featuring a rechargeable battery

Record stereo anywhere ! Playback on mains or battery.

Cross Field head. 17 hours of interviews and music on one reel of 5" tape ; 20,000 c.p.s. response at 7½ i.p.s. ± 3 db. 30-5500 ± 3 db. at 15/16 i.p.s. 2 VU meters. 32 solid state elements ; 4 speed ; Piano key controls. Light and small enough to fit into a briefcase or shoulder case. 4 watts stereo output. **99 gns. A.C. Adapter £20.**



Hear Akai recorders at :

Tom Molland Limited
102 Cornwall Street
Plymouth
Telephone : 69282

An Akai Main Dealer

the disc-to-tape enthusiasts. **SME** will be showing their Series 2 precision pick-up arm and although this has no significant changes in design, the manufacturer has introduced a revised balance system which allows for cartridges of 3-17 grammes to be balanced in either the standard or lightweight shell. A beautifully engineered SME arm and cartridge is shown in *Fig.4*.

Let's return to tape recorders for the moment. The **Akai** range will certainly be worth looking at and listening to. Two models are shown in *Fig.5*. These are already well known – the X-IV portable and the M8 stereo machines with separate amplifiers and twin VU meters. A special feature of these recorders is the cross field record head system which maintains a high degree of performance in frequency response. The sound-on-sound facility of the M8 provides for multi-recording from a single source.

As well as high quality headphones, **S. G. Brown** will be showing their new dual-function microphone Model 1C 600. This has a ceramic piezo-electric transducer which provides an excellent frequency response characteristic. It also features a novel shutter mechanism that enables the user to modify the polar response in such a way that the microphone can be made sensitive only to sound occurring in close proximity. The frequency response is 50-12,000 c/s and it has a nominal impedance of 150 Kohms. It is available with a desk stand as shown in *Fig.6*.

Goodmans Industries Ltd need little introduction and we anticipate that the Magnum K will be the highlight of their audio demonstration room. If, however, you seek something less expensive and smaller, take a look at *Fig.7*, which shows three of Goodmans' speakers – the Magnum K together with the Mezzo and the miniature Maxim. The latter two are both for bookshelf standing. The Magnum K makes a nice sound as we know from reviewing one for this issue of *ATR*.

Good loudspeakers call for comparable amplifiers and here **Quad** may have something to offer. Aside from their usual range of domestic hi-fi amplifiers and the famous Quad electrostatic loudspeakers, they will be showing for the first time a new 50-watt power amplifier for professional and industrial purposes (*Fig.8*). This is an all-transistor amplifier for monitoring, line and studio use which will deliver peak power up to 120 watts depending on the load. In addition, Quad will of course be demonstrating the Quad 22 control unit, Quad 2 amplifier and FM and AM tuners as well as their multiplex stereo decoder.

Tandberg (Elstone Electronics) have announced nothing new but will be showing and demonstrating the current range of Tandberg tape recorders, radio receivers, loudspeakers, accessories and slide synchronizer. **Pamphonic** will also be worth a visit as they will be showing a useful range of microphone mixers as well as public address amplifiers.

Richard Allen have announced nothing new either but offer a very comprehensive range of loudspeakers including their high fidelity modules (*Fig.9*). These modules require only a suitable cabinet and consist of bass and tweeter units with a crossover network. For those who want only speaker units there are plenty to choose from, ranging from 2 in tweeters up to 12 in bass units. There is also the Minette complete outfit which will handle 10 watts at 15 ohms and has a frequency response of 45 to 20,000 c/s.



Fig.8. The new Quad 50-watt studio and industrial amplifier.

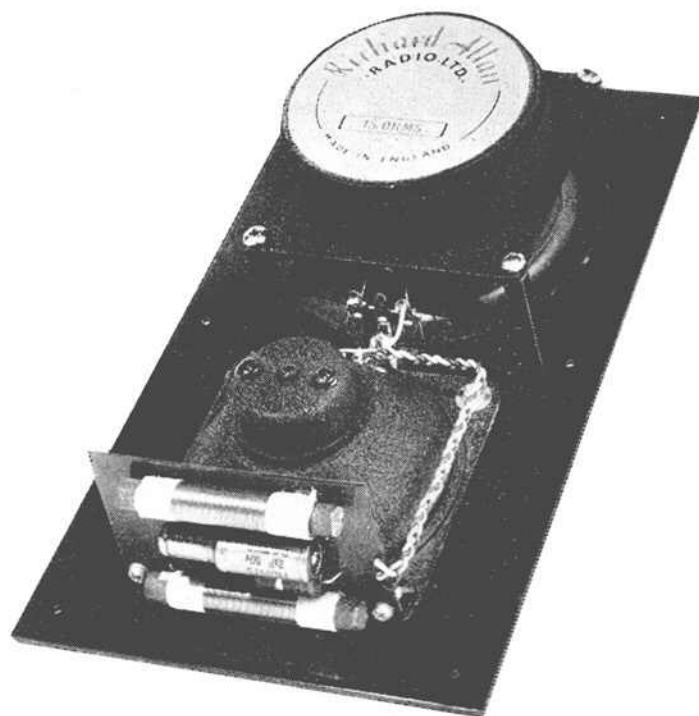


Fig.9. The Richard Allen loudspeaker module.

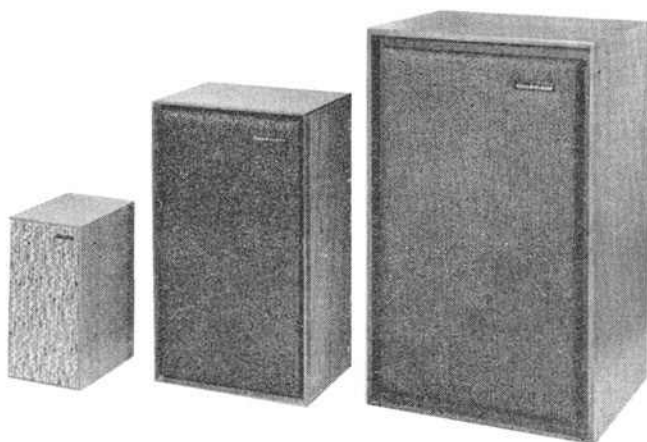


Fig.7. 'We three' – the Magnum, the Mezzo and Me! by Goodmans Industries. (The little one is the Maxim.)



Fig.10. The Uher 4000 Report-L portable tape-recorder with four-speed operation.

For tape recorders we suggest Uher will be worth hearing and seeing, especially the 4000 Report-L, a portable of no mean performance and which has four tape speeds (Fig.10). For stereo see and hear the Uher Royal Stereo model, also with four speeds. It has a novel 'mode' selection system for eleven different functions. Goldring have nothing new for this year's Fair, but are renowned for utterly reliable transcription units and good after-sales service. From their catalogues we chose the Goldring G65 transcription arm which will fit not only Goldring Lenco transcription units but also many other makes of turntable as well. It is shown in Fig.11 and is adjustable for height to suit various turntables and cartridges.

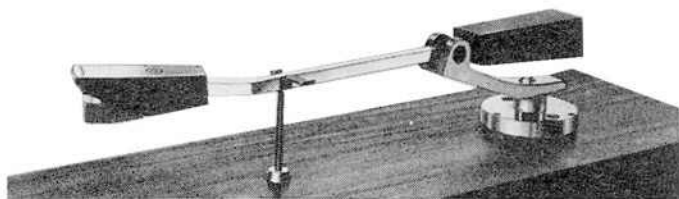
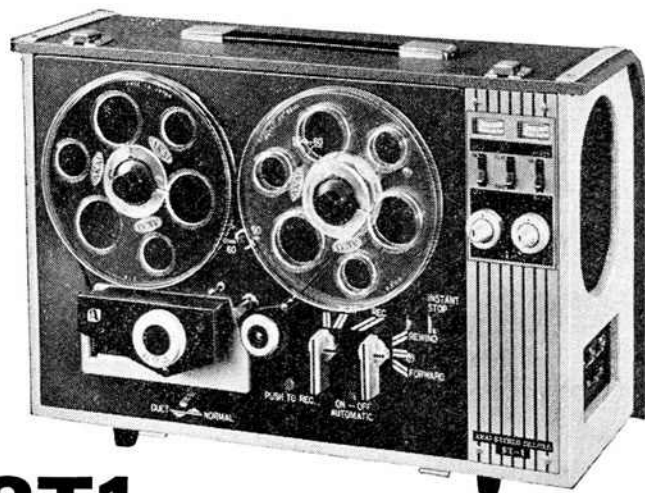


Fig.11. The Goldring G65 transcription arm.

Make a note *now* of the dates of this year's Audio Fair – Thursday, 14 April, to Sunday, 17 April, 1966, at the Russell Hotel, Russell Square, London WC1. The Fair is open to the public from 4 pm to 9 pm on the Thursday, 11 am to 9 pm on the Friday and Saturday, 11 am to 8 pm on the Sunday. Nearest Underground station – Russell Square, or a short walk from Holborn Underground station.

ATR will be there as usual to welcome you on stand 35. We shall have the Special Audio Fair issue of ATR and the new ATR Audio and Tape Recording Circuit Handbook on sale – and a good selection of ATR back numbers. See you there!



ST1– Akai's 'stereo-in-a suitcase'

2 large 5" x 7" speakers built into the sides of the cabinet. Precision titanium strip micro gap heads. Hysteresis synchronous motor. 4 tracks. 2 speeds. Sound-on-Sound. "All-in-one" portable design. 2 VU meters. Automatic shut-off. Solid state pre-amps. 40-15,000 c.p.s. at 7½ i.p.s. ± 3 db. 6 watts stereo output. **94 gns.**

AKAI

PULLIN
PHOTOGRAPHIC
(A Company within The Rank Organisation)

Hear Akai recorders at:

**W. G. Graham, Hi-Fi Corner
1 Haddington Place
Edinburgh
Telephone: WAV 7901**

An Akai Main Dealer

TAPE RECORDER SERVICING

Part V of the series by Gordon J. King



Can you test and service your own tape recorder?

Our primary explorations have so far been concerned with faults affecting both record and playback functions. We shall now commence to concentrate mainly on faults that occur either on record or replay separately.

Playback normal – no record

This is a typical symptom in this respect, and one which is not particularly uncommon. If the machine is used for making tape records as distinct from playing pre-recorded tapes, it is then unlikely that the owner will be aware that it is only the record function that has failed, especially if the 'record level' indicator continues to operate. The first thought will be that the instrument has failed altogether, and only by playing a previously recorded tape will it be discovered that the playback function is normal.

When the machine fails, therefore, the first thing to do is to establish when, at least, one function is operating. This is quickly proved, as pointed out in a previous article, by running the machine in the playback position with a tape of known recording. If this proves that playback is normal, then the symptom as above is proved, and the next move is to discover what has gone wrong in the record circuits.

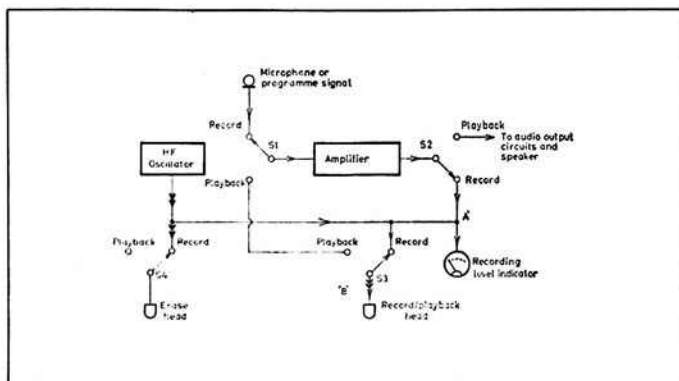
20 Now, at this stage, the line of attack much depends on the exact

nature of the machine. If it is of the ordinary domestic type with common record and playback circuits and stages as referred to in the previous articles, the area of fault can be narrowed right down very quickly and almost certainly it will be eventually discovered that something has gone amiss in the record/playback switching.

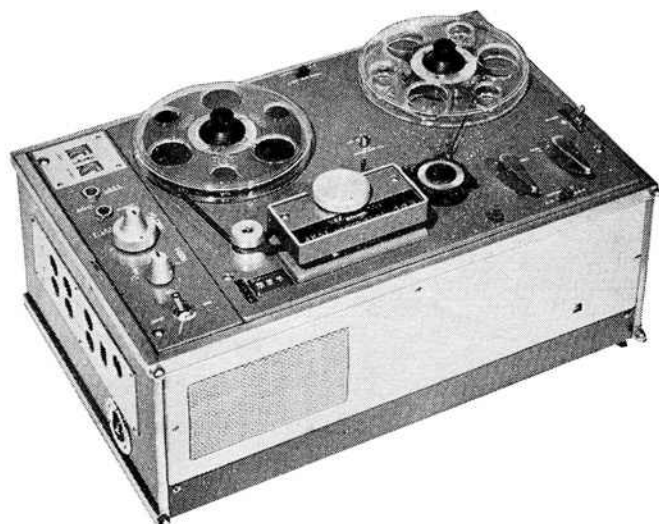
However, before getting too involved in the switching circuits, a few basic tests should first be performed. Some idea of the whereabouts of the fault can be gleaned by checking on the operation of the recording level indicator. If this responds normally to input signals from a microphone or other programme source, one can immediately be sure, of course, that the programme signal is reaching the input circuits, that it is being amplified by one or two stages, depending on the design of the circuits, and that it is arriving at the level indicator.

The signal is monitored by the level indicator on many machines at the anode of the record amplifier or output valve. The anode then often feeds to the head switching and thence to the head itself. Thus, if the indicator is responding to the signal, the chances are that an open-circuit exists between the anode and the head. The head itself must be all right, of course, since the machine is capable of playing a tape record that is, assuming that a

It is clear, then, that if the signal is available at point A to work the recording level indicator, yet lacking at point B (the head), something must be amiss in the circuit of S3. In practical circuits, however, the circuit is rarely as straightforward as suggested by the block diagram in Fig.1. The connection from the anode of the record output valve will probably be seen to join to the recording level indicator and then get lost in a jumble of wires to the record/playback switch.



continued overleaf

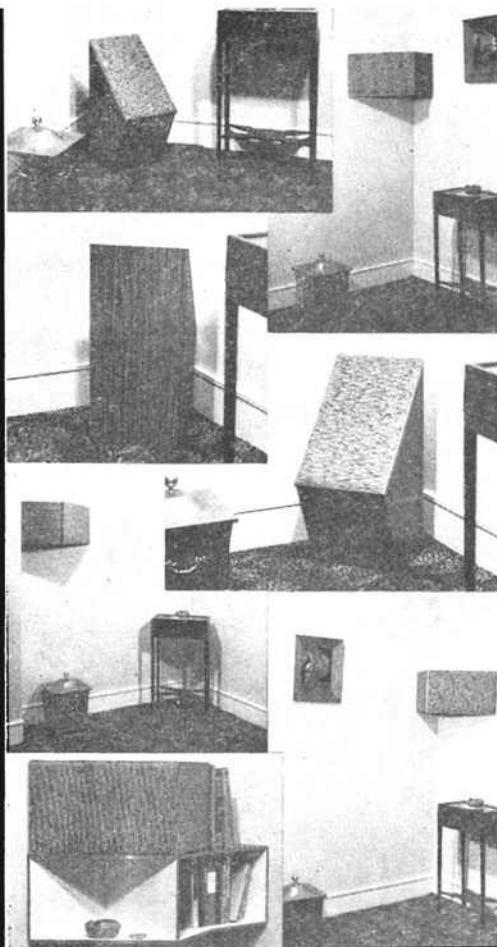


44S—Akai's 'universal model' stereo

AKAI  **PULLIN**
PHOTOGRAPHIC
(A Company within The Rank Organisation)

An Akai Main Dealer

V A R I A T I O N S



**ON AN ORIGINAL THEME
BY THE MOST VERSATILE HI-FI
LOUDSPEAKER IN THE WORLD**

Available in FRANCE, SPAIN, SWITZERLAND, AUSTRIA,
AUSTRALIA, MALAYSIA, HONG KONG, LEBANON,
SOUTH AFRICA, NORTHERN IRELAND.

All export enquiries to
WILMEX LTD., COMPTON HOUSE, MALDEN ROAD,
NEW MALDEN, SURREY, ENGLAND. Tel. Malden 9566-7

Southern trade enquiries to
HOWLAND - WEST LTD., 2 PARK END, SOUTH HILL
PARK, LONDON N.W.3. Tel. SW1-6666

NORTHERN TRADE ENQUIRIES AND ALL PERSONAL
QUERIES TO

THE RECTAVOX COMPANY

THE RECTAVOX COMPANY, CENTRAL BUILDINGS,
WALLSEND, NORTHUMBERLAND. TEL. 624845.

**O
M
N
I**

£39-10

anode circuit of this valve (which takes in the grid in parallel) is loaded to the meter M1 through R4. C3 in parallel with the movement gives a degree of damping, while C4 provides some frequency correction.

On this model switch S2 connects the recording level indicator circuit only in the record position, the indicator being inactive in the playback position. This, however, is not a common feature of all recorders; on some models the indicator also responds on playback.

It will be seen that the anode circuit of V1 has a connection to the playback output stage. This means, then, that V1 is common to both record and playback. We have seen that in the record position V1 serves as the output stage; in the playback position, therefore, the valve serves simply as an audio amplifier or driver for the playback output stage (which, incidentally, in the machine under discussion is an EL84).

It follows that the signal fed to the playback output stage could be utilized for ordinary monitoring purposes. Indeed, such a facility is often provided, and in the Fidelity Playmaster Major a muting switch allows the switching of this monitoring channel. The switch is simply arranged to short-circuit the control grid of the playback pentode (EL84), as shown in Fig.3.

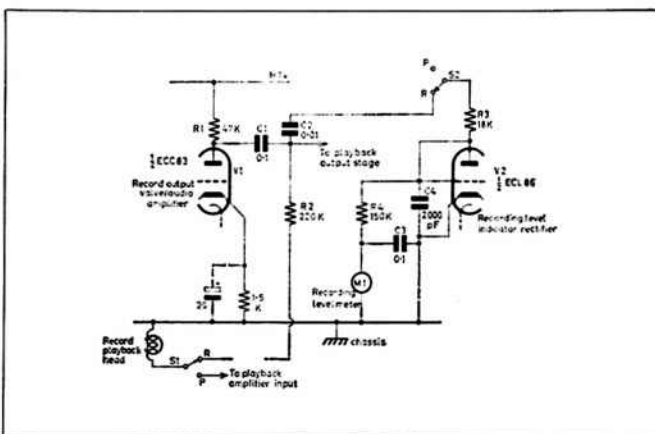


Fig.2. The record output stage and recording level indicator circuits of a Fidelity recorder. These are fully explained in the text.

Further fault diagnosis aid

Here, then, is a further aid towards fault diagnosis. If the microphone or programme input signal can be monitored on the internal speaker, one can be absolutely sure that all is well up to and beyond the record take-off point for the head. Apart from employing the speaker in the monitoring channel, some models have facilities for an earpiece or headphones.

The muting switch in Fig.3 would, of course, be switched to the on position (short-circuit removed) on playback to avoid shorting the wanted playback signal.

A monitoring channel of this nature is also useful for checking the quality of the record signal at the output of the record amplifier valve. If the signal is pure at this point and yet the signal imparted to the tape is distorted, it is fairly clear to see that the trouble would be caused either by excessive over-modulation (as a function of the tape magnetism) or by lack of hf bias. We shall have more to say about this category of fault later, however.

No indicator response

Well, so far we have discovered where the fault would lie in the event of a symptom of normal playback but lack of record accompanied by normal operation of the recording level indicator and/or monitoring channel. It is now necessary to progress to the condition where the above-mentioned symptoms are present and where there is no indication on the recording level indicator or response in the monitoring channel.

We are still assuming that the machine operates perfectly well on playback. The first item to question, therefore, is the input signal and its source. Mostly, the microphone occupies this position, and the symptom could be caused by nothing more involved than a broken connection on the microphone plug or a fractured conductor in the cable.

The first thing that we must do, then, is either to check the microphone and its connections and lead or to try the machine with an alternative programme source or with a microphone definitely known to be in good order.

Microphone check

There are various ways of checking microphones, but these require an instrument of some sort. The simplest way I know is to connect the leads of an ohmmeter across the connectors of the socket. A high impedance microphone (a moving-coil or ribbon instrument with an inbuilt transformer, for instance) will show a resistance value in the order of 1,000 ohms or so, while a low impedance counterpart (without an inbuilt transformer) will register in terms of tens or hundreds of ohms. This test should not be applied to crystal microphones.

The above test will prove continuity and will reveal a short-circuit in the plug or cable, but it will not tell conclusively whether or not the microphone proper is capable of producing a signal. However, if an ear is held very close to the grill of the microphone, a weak crackle should be heard when the ohmmeter connections are scraped. This is due to the battery in the ohmmeter causing the microphone to act rather like a loudspeaker. It is important that the ohmmeter's battery is no greater than 3 volts, for too high a voltage or current through the microphone could damage it. If a crackle is so produced, it can be assumed that the microphone is capable of delivering a signal.

Of course, not all enthusiasts will possess an ohmmeter. It is still possible to check the microphone, but with a 1.5-volt dry cell (such as a U2 or U11) connected in series with a 4.7 k resistor to limit the current. If all is well the crackle as previously described will be heard. Condenser microphones are not so easy to check, and if one of these is suspect it would be best to let a hi-fi or tape recorder dealer make the test. Alternatively, programme signal from an entirely different source or from a different microphone could be used to check the input circuit.

Once it has been established that signal is getting into the recorder, then more sophisticated methods are required for further tests. These will be dealt with next month.

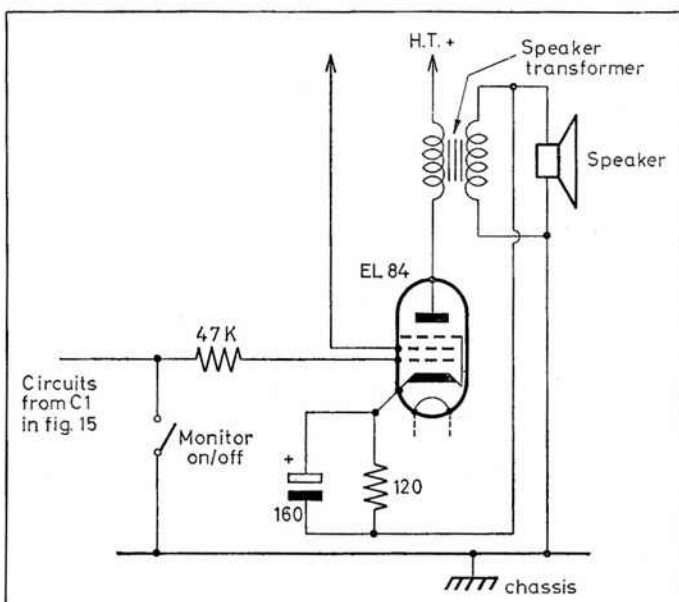


Fig.3. For muting the monitoring signal on 'record' a simple short-circuit on/off switch is sometimes utilized in the control grid circuit of the playback output valve, as shown.



NEW 910 Akai engineering in a mono recorder

Same basic Akai deck as the stereo machines. 4 track or 2 track; 2 speeds— $7\frac{1}{2}$ i.p.s. and $3\frac{3}{4}$ i.p.s. Response $40-12000 \pm 2$ db. at $7\frac{1}{2}$ i.p.s. Built-in speaker or monitor headphone. 3.2 watts output. P.A. system amplifier isolated from deck; can be used separately or together. Mixing facilities provided; VU meter; 3 digit counter; Pause control. A very good quality mono machine. **62 gns.**



Hear Akai Recorders at:

Sheppard Sound Equipment Ltd
31 Newberries Parade
Watling Street
Radlett, Herts
Telephone: Radlett 5440

An Akai Main Dealer

THE THINGS YOU SAY

Gone Cine?

On looking through the February copy of *Amateur Tape Recording*, I wonder if the title is not wrong. It seems to me that more and more space is devoted to cine. I realize that the two are being closely united, but surely those people who are interested in this can buy magazines devoted to the subject. When one considers the size of the magazine, if all the adverts and cine articles were removed there would be very little about tape recording, and that is what the recording enthusiast wants. I know that I am not alone in this view. Let us have more about recording and let the photographers have their own magazines.

London SW6

Margaret Russell

Even discounting all ads and the cine articles, the February issue of ATR did contain over 21 pages of tape editorial, and we feel that ATR compares well with its competitors in this respect. What do other readers think?—Ed.

Tape Packing

In response to Mr Highcock's letter in the February issue, may I suggest two alternative packings which two of my tapespondents use regularly?

One of them buys stainless steel 'tape containers' into which he puts the tape. Tape and container are then placed in an envelope, the whole lot weighing just under 3 oz.

The other one collects tobacco tins from various friends of his. Into these he places a small sponge to hold the tape firmly during transit. Any type of tobacco tin can be used, but the circular ones are the best. These tins are sent openly with a small adhesive tape round the joint to secure the lid. Weight? Only 2½ oz.

I think that you will find that both of these methods offer a more permanent solution to this problem of broken cartons than the use of cigarette packets.

Leeds

Jason C. Atkinson

Eight Years...

May I thank David Lazell for his light-hearted piece on Eight Years of Tape Swopping (February issue). Below the flippant exterior of his article there was a great deal of solid advice. I have been at the game a fair time myself, but do not spread myself as much as David does. The essential lesson is to be natural. Talk about who you are, what you are, and why you are – NOT what you would like to think you are. Falseness will ring out as loud as Big Ben.

I have one or two very good pals on the other side of the world and find I'm at the end of the first track of a 3 in reel before I know where I am. Sometimes my conversation is specific but very often not so.

The key to the whole thing is to master the art of speaking freely, as though your correspondent was sitting across the table to you. Only you can achieve this – no one can tell you how.

London E17

W. J. Tomlinson

Change of Address

Thank you for bringing our products to the notice of your readers (February issue, page 14). However, we have now moved from the Long Lane address to new and enlarged premises at 333 Broadway, Bexleyheath, Kent, from where we can offer our complete range range of services and equipment.

Bexleyheath, Kent

D. E. Benson
EVT Magnetics

Phonopost

On behalf of members of this organization in particular, and tape talkers everywhere in general, may I say thank you to Mr Wedgwood Benn for introducing the Phonopost Service for sending tape recorded messages overseas by air mail.

The high rate of air mail postage previously required, coupled with the slowness of air mail, has for a long time hampered the growth of organizations like ours, which after all greatly helped to foster international peace and understanding. Now, thanks to the PMG's far-sighted attitude, we can go into the future with confidence.

Incidentally, this action has placed this country ahead of America, the home of tape talking, where this concession was recently cancelled.

Addlestone

Surrey

B. Ashfold

Worldwide Tapetalk

Licensing Scheme for Amateur Recording Enthusiasts

A licensing scheme has been announced by the Mechanical Copyright Protection Society Ltd. Although we do not propose to comment on this at the moment, we believe that many readers may find the idea acceptable since the licence would enable them to 'make recordings within the law'. We will, however, be pleased to have readers' comments on the practicability or otherwise of the MCPS scheme, which is as follows:

For an annual fee, any number of recordings may now be made of musical works under MCPS administration which have been previously recorded in this country for retail sale or produced on publishers' library records, provided that the use of the recordings so made is limited to:

- (a) Private exhibition in homes.
- (b) Private exhibition in amateur tape and cine clubs for the benefit of other recording enthusiasts.
- (c) Submission for judging in national and local amateur competitions.

The licence will not authorize the public performance or broadcasting of the musical work, which authorization must be obtained from The Performing Right Society Ltd, 29/33 Berners Street, London W1.

In the event of public exhibition, or any other kind of exhibition not allowed by the licence, enquiry must also be made to MCPS in advance, as to the possibility and cost of the extension of the recording licence.

The licence will not include the right to make a reproduction of, or publicly to perform a gramophone record, which permission must be sought separately from the record manufacturer or the Institute of Amateur Cinematographers.

No declaration of the works recorded will be required but the licensee should make and keep a record thereof, as if wider cover is eventually required, each musical work would have to be specifically mentioned.

Annual Fees

- (1) To make 'sound only' recordings – 10s 0d per annum
- (2) To make (1) and recordings synchronized to film, filmstrip and slides by any known means – £2 10s 0d per annum
- (3) To make (1) and (2) and recordings for use on a home television tape recorder – £5 0s 0d per annum

Applications for licences should be made in writing to the Licensing Department, MCPS, Elgar House, 380 Streatham High Road, London SW16, accompanied by a remittance for the appropriate fee.

It will be realized that this scheme is a considerable advance on the part of copyright owners to meet the special needs of the amateur recording enthusiast and it is hoped that the response will indicate the wish of the majority to make recordings within the law.

ON TEST

The Goodmans Magnum K Loudspeaker

The Goodmans Magnum K loudspeaker was originally designed for professional use to a specification that left no room for 'ifs' and 'buts'. So successful were the results with this new speaker that Goodmans decided to release it, with the same specification, for home use. Three weeks of using two of these excellent loudspeakers leaves no doubt as to their capabilities.

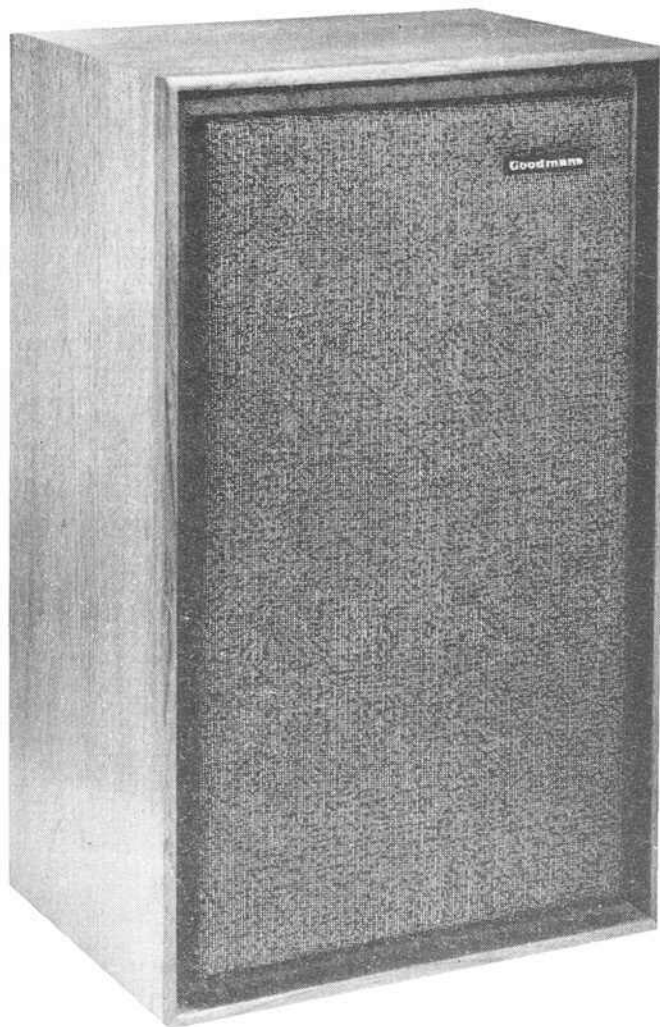
The Magnum K system employs a 12 in bass unit, a mid-range unit and a high-frequency unit with appropriate cross over filters, and separate attenuators for controlling the levels of the middle and upper frequency units. The attenuators are a really worthwhile part of the system, for they allow the user to set the response to his own liking and/or to suit room acoustics, etc. The bass reproducer is a new 12 in unit of most generous proportions with an air cushion suspension and a bass response that leaves no more to be desired. Tests with two different hi-fi amplifiers, comparison with other similar loudspeakers and many different kinds of music, etc., could not fault the real depth and smoothness of the bass.

The treble and mid-range units operate with a multiple section cross-over network and the attenuator. Crossover frequencies are 1,500 c/s and 6,000 c/s. The mid-range unit is a direct radiator and the high frequency unit a back loaded radiator. The Magnum K system will handle 25 watts at 4 to 8 ohms which is now becoming a more widely accepted output impedance for hi-fi amplifiers. The frequency response is 30-20,000 c/s and the makers response curve is shown in Fig.1. Weight is 47 lb and the cabinets are available in teak or walnut finish. Size of the unit is 15 in x 24 in x 11½ in.

Accurate testing of any loudspeaker calls for an anechoic chamber as well as other very expensive apparatus. *ATR* is not blessed with an anechoic chamber; and in fact, only very few loudspeakers and microphone manufacturers have one. Our tests were therefore confined to listening under more domestic conditions but with the loudspeakers operating from the best tape, FM radio and record reproducers and hi-fi stereo amplifiers with a maximum of 20 watts output (mono) or 10 watts per channel (stereo).

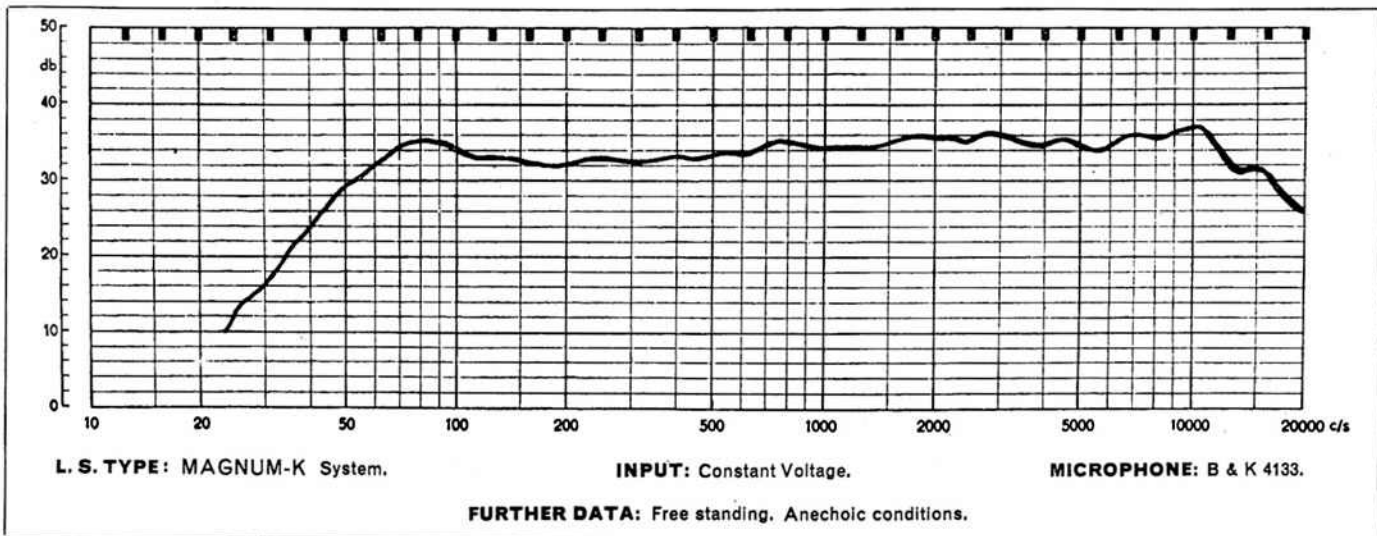
Direct comparison was made with other high quality speakers and the two Magnum Ks were switched between two different hi-fi amplifiers. One does not need to lend an over-critical ear to appraise the quality of reproduction of which these speakers are capable and it is quite easy to understand why they satisfied professional users. Moreover, they are solidly built and, judging by the interior lining and cabinet construction, the designer was obviously determined to have no spurious resonances. We think there will be a long queue at the Goodmans demonstration room at the coming Audio Festival to hear these superb loudspeakers. So if you are interested, a visit to your local hi-fi dealer now might be well worthwhile.

The Goodmans Magnum K speakers are manufactured by Goodmans Industries Ltd, Axiom Works, Wembley, Middlesex, and retail at £36 15s 0d. If you intend writing for a Magnum K leaflet ask also for a copy of Goodmans High Fidelity Manual as well.



The cabinet of the Magnum K is available in teak or walnut finish.

Frequency response of the Goodman's Magnum K loudspeaker.



A MILLION SLIDES!

Graham Harris
considers the creative side
of a tape slide show –
the presentation

Before you put your total stock of 35mm transparencies through the projector with an audience, think about it for a while! One thing that must be appreciated by now, if not through personal experience, then from recent *ATR* features by Gordon King and me (pardon the plug), is that even a simple batch of your recent holiday slides will be made better with the use of a tape recorder. The initial virtue of the tape recorder is in the tidier presentation it gives to a series of pictures, simply because a pre-recorded sound track dictates the exposure time of the slides and, to an extent, the choice. Besides all this, it's more professional.

I don't propose to deal with the technical marriage of tape and sound, as this side of the matter has been adequately dealt with by Gordon King in previous issues. I am more concerned with the creative side of the tape slide show called the presentation.

THE SLIDES

For the immediate purpose attention is given to the familiar holiday tape slide show, although the medium gives excellent service to documentary and educational programmes, on which I hope to enlarge later. The cost of a 35mm colour transparency, although relatively economic compared with other forms of photography, tends to harbour the idea that 'waste is evil'. This is probably due to the bulk of exposures on a roll which does make the initial outlay on film more than with the album snap medium. One has to buy a roll of at least 20 exposure film

received and in most cases the time exposure of the slide on the screen has been cut to 10 seconds and less. This has meant an average of 90 slides for one show. Regarding the slides, 'brevity' is the key word to enable the show to swing and go with a punch. For an audience to say afterwards, 'It's a pity that there weren't more' rather than 'Jeepers! When's this going to end?' means that an element of professionalism has been accomplished. To throw an audience into a state of tongue-lashing hunger craving for more will make you and your tape slide show most sought after.

THE IDEA

It's no use pretending that putting sound to a series of slides is an original idea – it isn't! The slide wagon is full! However, an artistic show is a rare thing indeed. The point is, that any interested reader of this magazine is capable of doing it and taking the front seat on the wagon. Having sorted out the slides, you need to place them in sequence and this is where the story really begins. It's no good leaving the slides to recapture the holiday spirit. They are only pictorial evidence that you went on a holiday and an audience is usually panting for proof of this. Even before the sound track can be considered, the story line should be plotted. This requires thought if the usual form is to be abandoned, and abandoned it should be! The usual form is the straight monologue that needlessly describes each slide and offers an itinerary from which no one can escape!

GIVING CHARACTER

The tape slide show should be like a story with a theme and character and, if possible, a plot. The theme should be fairly simple to develop, depending on the variety of slides and any sounds recorded at the time with a battery-operated portable recorder. For instance, if the holiday has been in Blackpool, the theme could be the commercialism of the pavements. (Don't be afraid of controversy; it's the salt and pepper of the subject.) If the holiday is abroad, the buildings which differ from the English homes could be the theme. What one should try to do is to keep away from the drag of a straight documentary of the places. Once you have chosen a theme, keep it to the forefront of your mind. The character depends on the treatment given to the sound track, the commentary and the script. If your intention is to make a tape slide show of your next holiday (and this is the better way), then do something with the slides before they reach the laboratories, like angle scenes and views that cannot be found on postcards. Inclusion of personal anecdotes, opinions on the currency, the language and the people freely discharged in the script will help to develop the character. Don't let your show plod on like a mundane catalogue. Let it breathe, live and speak for itself.

A plot is not so easy to come by. I once produced a holiday tape slide show which had as a plot three people who set out on holidays to three countries, Austria, Switzerland and Italy, with the idea of seeing each other in Europe. The show then dealt with the three individual journeys to an undecided rendezvous. It was an epic that lasted an hour, comprising of slides from three different holidays and which I called 'See You In Europe'. I don't know who was more tired out, the audience or me. The plot which showed the three characters just missing each other all over the place gave the show that spark of difference but it was too long! To have a plot, obviously fiction has to be used. Why not? If you choose to put on a show with the hint of an international jewel-thieving basis, so what? If it provokes questions being asked, you have stimulated interest.

THE SOUND TRACK

I have already said that it is advisable to take a battery portable recorder with you on holiday and use it in conjunction with the camera. (I said it in November *ATR* and I'll say it again!) I have said, 'Use the recorder and record anything!' To have miles of taped sound effects is far better than nothing at all. You can always scrap the sounds that you will not use and the tape can be used again. You can't do that with a roll of film.

NARRATIVE

The basic ingredient of the sound track is the narrative. It is with purpose that 'commentary' is not used in this sense, because too many



Ah! You're just in time. We're running through our holiday slides!

for about 25s from which all 20 exposures are made and usually 20 slides are going to be shown and the audience be damned!

Aunt Matilda standing, blurred and over-exposed, on an unidentifiable beach may send Aunt Matilda into abandoned hysterics all over the carpet, but it's doubtful if anyone else will be moved – except doorwards. Yet there are so many slides of this nature inflicted on private audiences. The host does not have the prerogative to send an audience into a state of neck-aching boredom! Let's face it! Besides being producer, director, cameraman, sound technician and script writer, the brains behind a tape slide show is an artist and, as such, the first thing to do is sort out the too personal, the under- and over-exposed slides, the out-of-focus failures and the black blobs and keep them well away from the eyes of the audience!

The maximum time to leave a slide on the screen is 15 seconds. It doesn't matter how good the picture is, to leave it longer is tempting yawns. (Even with the luxury of cine, the recommended exposure of a scene from one position is 15 to 20 seconds.) This will mean a minimum of four slides a minute and theoretically 60 slides for a 15-minute show. However, I will say that after many trials and errors involved in the making of tape slide shows I have found the 15 to 20 minute show to be the best

people still only comment on the slides being shown, saying nothing more than what is obvious from the pictures. The narrative should serve as a link from one sequence to another, developing into a story. It is a good rule to make little or no reference to the pictures and to allow them to shine in their own merit. As a change from the usual monologue, a dialogue in the form of a conversation can be used in a way that puts the audience into the position of eavesdroppers. I was involved in a production that used the voices of a man and his wife talking about going on a future holiday to Germany and discussing what they might be seeing. In other words, the slides and sound effects from a holiday were used to illustrate a holiday that was yet to happen. The fact that I was the man's voice and had not been to that particular part of Germany caused a slight embarrassment at question time after the performance and especially since the woman in question was not my wife – still, that is beside the point. The technique was different and that was the point.

EFFECTS AND THINGS

Since the narrative is the basic ingredient of the sound track, the sound effects are the spices for the mixture. Care must be taken with the choice and the blending. If the recorder has been used on location then obviously the sounds should be played, as near as possible, with the corresponding slides. Car sounds, etc., with a street scene, bells and a choir with the scene of a church, cowbells with Alpine panoramas and trains, cars and horses clapping with various travel pictures. It may seem to be pointless to make such an obvious statement and yet because it is so obvious these normal sounds are the first to be forgotten. It's not always easy to record the sounds with the photographs – as in the case of a beginner on skis. Sound effects can, of course, be assimilated where the original was never caught, but there is no use in pretending that this is a five-minute job! It is more a matter of trial and error than technical know-how! I remember the case of the breakfast room where I had slides of an hotel dining hall but no sounds to back them up. Chewing sweets over the microphone and clattering a couple of spoons resulted in something that sounded more like a herd of angry pigs straining at their chains. The end product was found in a recording of a supermarket taken during one of the quieter hours!

THE USE OF THE QUILL

Not everyone is bestowed with the gift of writing epics by the light of the midnight oil, but a script is a necessity for a tape slide show unless you happen to have the verbal genius of a Ustinov. You need a script which is the schedule that guides the sound effects into position with the slides and at the same time ties up the loose ends.

The layout of a script depends on personal preference. It should, however, be concise and easy to follow. Pointless to say? Not really! I've seen some intricate, data-smothered scripts which, when added to a pile of slides, recorders, mixers, mounds of entangled wire and sound

effect tapes and loops, have added to the glorious confusion and created emotional conflict! When someone else is involved in the production, as in the case of a team in a recording society, an easy-to-follow script is a blessing. My own layout contains three vertical columns. One for the slide number and timing, one for the sound effects and the last one for the narrative. No one can be taught how to write a creative script. It depends on the imagination and humour of the writer, but I would stress that it should be kept brief (remember the slide timing will restrict



...as in the case of a beginner on skis.

the flow of words) and conversational. This means writing the narrative as you would speak and not as you would imagine the BBC to want it. This only results in stilted clichés such as 'and as the sun sinks slowly in the east', which is not only boring but factually wrong!

It is also worth mentioning here the importance of acquiring the right sort of voice for the narrative. Because it is your slide collection and your tape recorder, it does not necessarily mean that the show wants your voice to be heard. Most people are sensitive about their own voices. After eight years of recording I am disturbed with my own voice, although I seem to be involved with the narrative in most of the tape slide shows produced by our club. I have one of those deep voices that plays havoc with the magic eye. I tend to accentuate the stress syllables of all words and this does not make good recording. I have found that the best results for voice reproduction come from speaking quietly and clearly across the mike.

WHEN THE FUN REALLY BEGINS

The slides are sorted, the sound effects are available (it's preferable to dub the required effects, in sequence, on to one tape at the fastest speed you have, as this prevents the frustration of continually sorting through a jungle of small tapes), the narrative is written and the production personnel are strapped to their seats. (I really do advocate a team in lieu of doing the lot on one's own. Insanity is only just over the spools.) Let the spools turn! Don't run away with the idea that this finale is a just a few minutes' work! I don't know if George, the chairman and producer of tape slide shows in the Warwick and Leamington club, is a particularly meticulous fanatic, but we've found that for every minute of the show that goes out, an hour's work is involved (recording, dubbing, editing, re-recording, scrapping, moaning, resigning, etc., all ingredients of the fun). It is no good rushing through a thing like this. I've tried it and failed. We prefer to take our time. The audiences love it and they never see behind the scenes. They don't yawn either!



...being producer, director, cameraman, sound technician and script-writer ...

EDIT YOUR TAPE TRACKS WITHOUT USING PROJECTOR

Saves projector lamp and film wear. It's incredibly easy, convenient and accurate. Like to know more? Then send, today, for FREE literature to

SYNCHRODEK, Dept. ATR, 2 Warwick Court, London, WC1

THE PROFESSIONALS

This month
Tom Dissevelt

Those who dare open their hearts to the artistic voice of the new era of music should also listen to the composers who feel that their musical thoughts can be best expressed only by electronics. One of these composers whose electronic music has already made LP records is Tom Dissevelt, a name perhaps not unknown to *ATR* electronic music enthusiasts.

For Tom Dissevelt the tape recorder is the orchestral platform on which he assembles the many electronic voices required for a composition. To him the tone generators are the orchestral instruments with a thousand different sounds and timbre. His music may be scored in lengths of tape, frequencies and decibels and there is usually only one human member in the 'orchestra' – the electronics engineer who will select, shape and record according to the composer's music score.

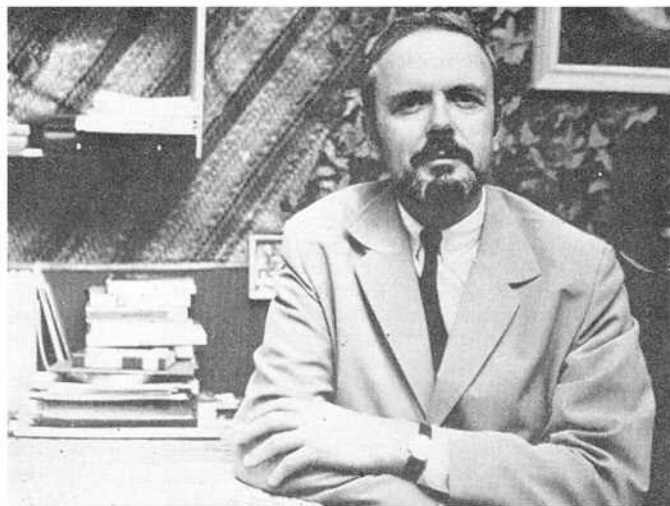
As a boy Tom Dissevelt soon became interested in music. It had been in the family so to speak for years, for even his grandfather was a clarinet player, composer and arranger. He studied music seriously and was schooled in harmony, counterpoint and arranging and in playing the piano, trombone and double bass. By 1947 he was arranging for orchestral radio programmes and continued playing with orchestras as well as composing classical and jazz music.

Today he plays the double bass and does arranging and composing for Radio Hilversum orchestral programmes, but not so long ago new sounds caught the imaginative ear of Tom Dissevelt. Other composers he then discovered were already employing the new electronic orchestral instruments that could be voiced only through a loudspeaker.

Tom Dissevelt listened to the new sounds created in the electronics laboratory and quickly realized what fascinating possibilities the tape recorder and electronics had to offer. His day came when Philips Records asked him to compose and produce electronic music in their specially equipped studio at Eindhoven with the help of Dick Raaymakers, the brilliant electronics engineer then in charge of the studio. His first record, *Electronic Movements*, was created from electronics and tape.

About two months ago I talked with Tom Dissevelt in an hotel lounge in the small town of Baarn in Holland. Baarn is also the home of the Philips recording studios and administration in Holland, but Tom lives quite conveniently in the residential town of Soest between Baarn and Utrecht. He spoke freely of his work in music and specially of electronic music. 'Music produced from pure tones and assembled on tape just cannot be produced in a hurry. There is no short cut, although some studios are beginning to use keyboard electronic tone generators.'

This I can confirm, because later I visited electronic music studios in Utrecht and in Ghent (Belgium) where keyboard systems are



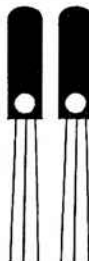
being used. But Tom Dissevelt, like many other composers who see clearly the almost unlimited potentialities of electronics, does not deprecate the work of amateurs. He quite rightly maintains that they should follow their own instincts and creative moods and not be put off by criticism or derision. Electronic music should not be entirely confined to the more serious and classical sphere either, he says, and his four pieces in *Electronic Movements* clearly show that electronic music with a popular rhythmic flavour is perfectly feasible.

His latest LP made with Philips comprises fourteen separate pieces with the common title *Fantasy in Orbit* on Philips 633-302BL (840-233 BY Stereo). The message in this music is that a man in orbit never loses contact with earth. He is still bound to it by receiving impressions from the countries over which he passes in flight. Each piece of music conveys these impressions in a fantasy of drifting, whirling and space-like sounds created from electronics but born in the mind of the composer Tom Dissevelt.

There are three records at present available containing electronic music by Tom Dissevelt but they may well have to be specially ordered from your record dealer. The records are:

Electronic Movements. Philips 430-736 PE. Single 45 rpm.
The Fascinating World of Electronic Music. Philips P.08168L. LP 33 $\frac{1}{3}$ rpm. (This also contains items by Kid Baltan who is in reality Dick Raaymakers.) There is also Tom Dissevelt's record *Fantasy in Orbit* as mentioned above.

Bang & Olufsen —
for those who value design
and quality above price



COMING TO THE AUDIO FAIR?

Don't forget to visit 70-71 Welbeck Street, where the U.K. Sales Division of Bang & Olufsen are giving a three-day demonstration of all their superbly designed and engineered audio and hi-fi equipment. Specialists will be available to advise you.

The showrooms will be open to the trade exclusively on the first day, 14th April, and to the public from 11 a.m. to 7.30 p.m. on 15th and 16th April.

Bang & Olufsen U.K. Sales Division

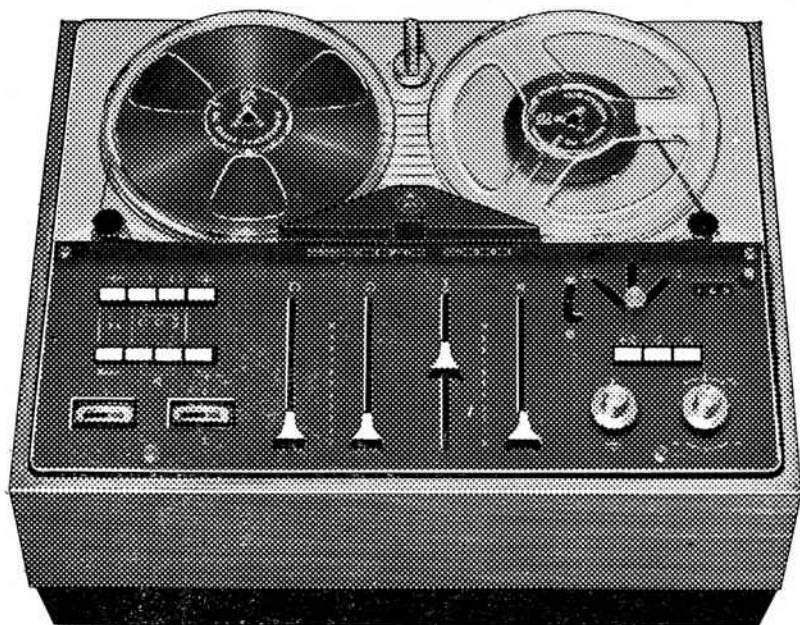
(A Division of Debenhams Electrical & Radio Distribution Co. Ltd.), 70-71 Welbeck Street, W.1.
Tel: Hunter 2143

Bang and Olufsen



for those who value design and quality above price

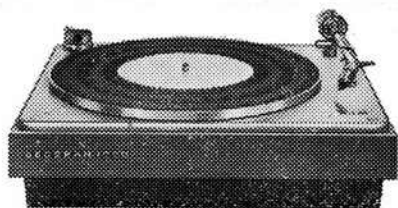
Enthusiasts demand the best—they choose the Bang and Olufsen Beocord 2000K tape recorder



Modern design distinguishes the Beocord 2000K from conventional tape recorders. It has been designed by top Danish engineers to give you the following features: Built-in 3-channel mixer section which gives an amazing variety of recording effects such as 'sound-on-sound', the synchronizing of two recordings on separate tracks, echos on both stereo and monaural recordings.

Power output is 2 x 8 watts, distortion at 5 watts less 1%. FREQUENCY RESPONSE: $7\frac{1}{2}$ in./sec.: 30-20,000 c/s (± 2 dB: 40-16,000 c/s); $3\frac{3}{4}$ in./sec.: $1\frac{7}{8}$ in./sec.: 50-8,000 c/s (± 2 dB: 50-6,000 c/s). Price 119 Gns.

Also available to the same specification is Model 2000T which has two speakers built into the lid of the portable carrying case. Price: 123 Gns.



BEOGRAM 1000 V. A four speed stereo record player featuring the famous B & O pick-up cartridge with Diamond stylus. Suitable for use with the Beomaster 1000 and B & O pressure chamber speakers. 34 Gns. Complete with cover.



BEOMASTER 1000. Hi-Fi enthusiasts will acclaim this outstanding compact all-transistor Hi-Fi Stereo amplifier FM Radio combination. 2 x 20 watts output. Long, low cabinet, suitable for bookcase installation. Price: 79 Gns.

Write or send this coupon now for fully descriptive colour literature and for the name of your nearest B & O Appointed Retailer to: Department BATR.1.

BANG & OLUFSEN
U.K. SALES DIVISION

(A division of Debenhams Electrical & Radio Distribution Co. Ltd.)
Mercia Road, Gloucester.
Telephone: Gloucester 26841.

Name

Address

London Showroom
70-71 Welbeck St.,
W.1.

FI-CORD IS EVERYTHING IN SOUND REPRODUCTION

FI-CORD



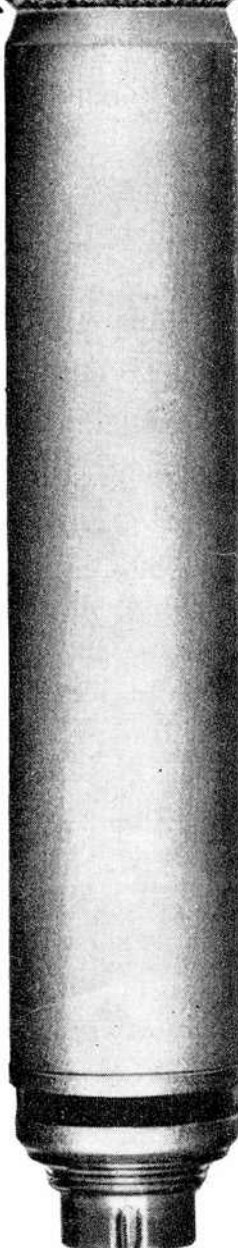
202A

Built to the same specification which made the Fi-Cord 202 the first choice of broadcasting and film companies. The new Fi-Cord 202A offers still more refinements. Among these are a button-operated battery tester with separate indicator scale, and a redesigned control panel, giving greater ease of operation. With a frequency response of 50—12000 c.p.s. ± 3 db at $7\frac{1}{2}$ i.p.s., this hand portable battery/mains recorder captures every sound as faithfully as studio equipment: rechargeable batteries: long life mercury batteries: power pack for use with 12 v. car battery: power pack for use with AC mains 110-240 v.

For further details, please complete and post this coupon to:

FI-CORD INTERNATIONAL

Charlwoods Road • East Grinstead • Sussex
Telephone: East Grinstead 21351



FI-CORD 801

Omni-directional studio microphone (dynamic moving coil). Shockproof and proof against changes in temperature. Frequency response 50 to 18,000 c.p.s.



BEYER M119

Moving coil omni-directional microphone very good for interviewing and general background recordings smooth response. Frequency response 50-16000 c.p.s.



BEYER M260

Dynamic Ribbon Microphone. A cardioid pattern studio quality microphone at a price the amateur can afford. Frequency response 50—18000 c.p.s.

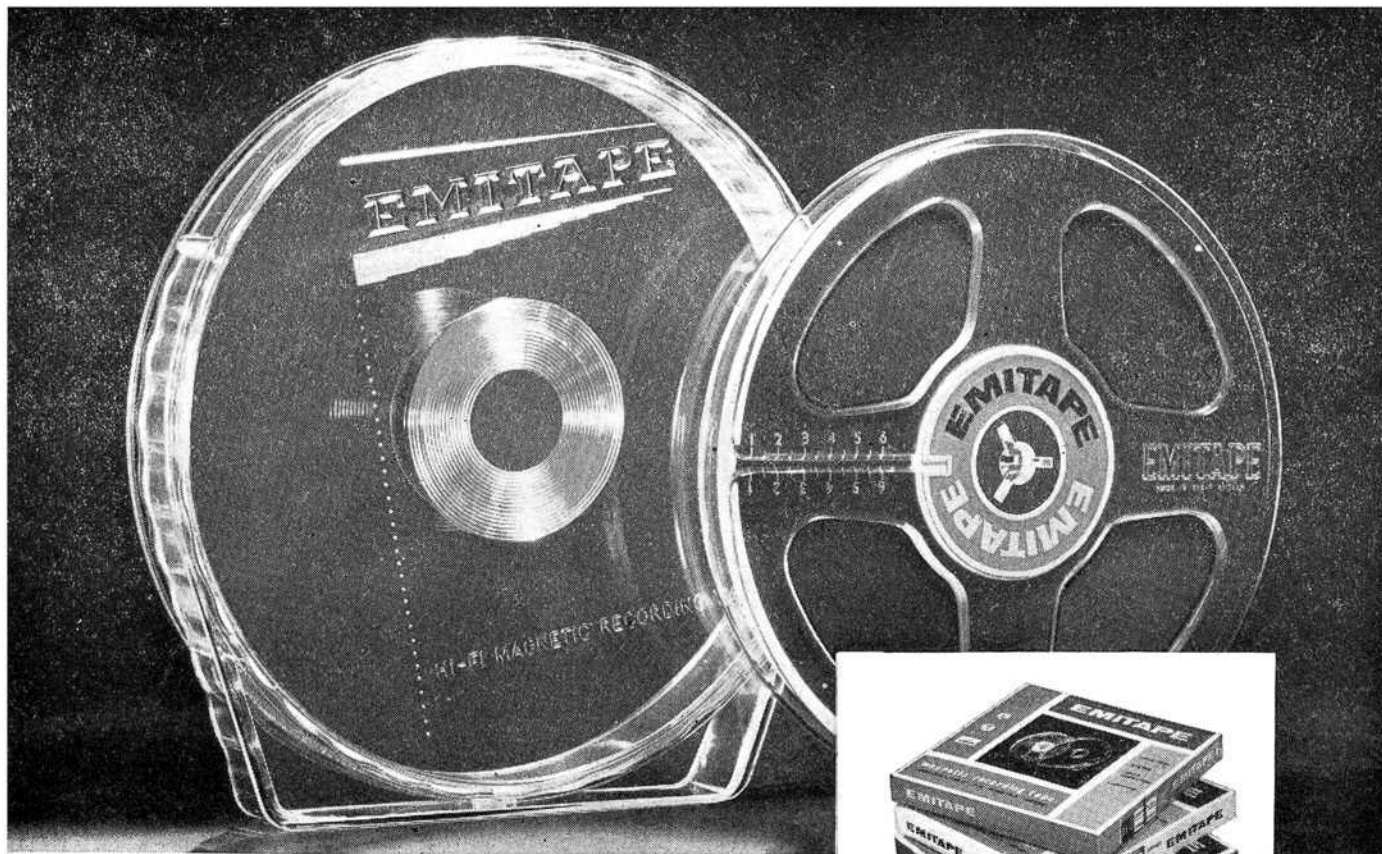
Please send information and literature on the full range of microphones and the Fi-Cord 202A.

NAME

ADDRESS

.....
.....
.....

EMITAPE SETS A NEW SOUND STANDARD



NEW TAPE

NEW EMITAPE the most advanced magnetic recording tape in the world. Automated control and rigid inspection at all stages of manufacture, using the most specialised equipment in the latest magnetic tape factory in Europe, ensures that every reel of the new range of EMITAPE is of superlative quality for your recorder.

New magnetic oxide coating techniques, combined with new high strength polyester base films, provide:

★ WIDER FREQUENCY RANGE ★ IMPROVED UNIFORMITY
★ GREATER STRENGTH ★ SUPER LONG-LIFE

— together with all the long established EMITAPE features acknowledged by the BBC and other leading broadcasting and recording organisations throughout the world.



NEW PACKS

All four grades of EMITAPE – Standard, Long, Double, and the new Triple Play are packed in special dustproof library cases at *No Extra Cost*. These library cases have the added advantage of being self-standing for compact storage and transparent for easy reference.

TRY THE NEW EMITAPE NOW!

EMITAPE

The tape that stands on its own

AT YOUR LOCAL DEALER NOW

E.M.I. TAPE LIMITED • HAYES • MIDDLESEX

Send off this coupon now for a leaflet giving full details of NEW EMITAPE.

NAME.....

ADDRESS.....

A

TAPE REVIEWS

by Russ Allen

A good mixed bag this month – including Brahms, Beethoven and Beatles!

The Sound of the Mammoth Fair Organ (110-key Gavioli).

Recotape 3½ ips. £1 10s 0d.

When I was a lad, the travelling fair with its glorious entourage of wagons, snorting steam engines, hissing naphtha flares and an atmosphere of fun and excitement that no longer exists with the modern fairground, was an event to which we looked eagerly forward. With those romantic thoughts in mind I got this tape. *Teletape* tell me it's a best seller. It certainly is a mammoth organ, a bit too mammoth for my ears and certainly not intended to be played in one's own front room. To record it must have been a tremendous headache and it is difficult to say much about recording quality under the circumstances, but there was a patch on my copy where for several seconds the sound practically failed away altogether.

For fanatic devotees of the Mighty Fair Organ.

Memories are Made of This. Ray Conniff and his Orchestra and Chorus. Columbia 4-track stereo tape. £3 15s 0d.

Most of us must be familiar with the much imitated Conniff formula of voices singing syllables, oo's, ah's, ow's, etc., as instrumental lines in orchestrations. Not a particularly original trick, but Conniff popularised it on the pop market and it is certainly a pleasant sound.

The twelve tunes are all hits of the last ten years, *Tammy*, *Foolish Heart*, *Love Letters in the Sand*, *Three Coins in the Fountain*, an' that.

Extremely well recorded with good stereo separation. Splendid orchestrations, dynamic-

ally just right. Magnificently packaged with quite the heaviest, solidest 7 in spool yet.

Rubber Soul. The Beatles. Parlophone TA-PMC 1267 3½ ips. £1 15s 0d.

The Beatles' most ambitious effort. I loved it all. New sounds, George playing Indian Sitar, Paul with a 'fuzz' bass (a fab sound), Ringo on Hammond organ. Their singing is neat, harmonically interesting. Their lyrics clever and original; note particularly *Nowhere Man*. Melodies as beautiful as *Michelle*. Guitar playing, vocal backing and solo voice all stand out. Another beauty is *Girl*, a John solo with a tremendous arrangement, with the backing voices of Paul and George splendid. Excellent lyrics again on *I'm Looking Through You*, which contains the so profound line, 'love has a habit of disappearing overnight'.

Another favourite of mine is George's number *If I Needed Someone*, which has a fascinating bass line.

Rubber Soul is a delightful collection of Beatle talent and I'm confident there isn't another group in the world their equal.

Beethoven: Violin Concerto in D major Op 61.

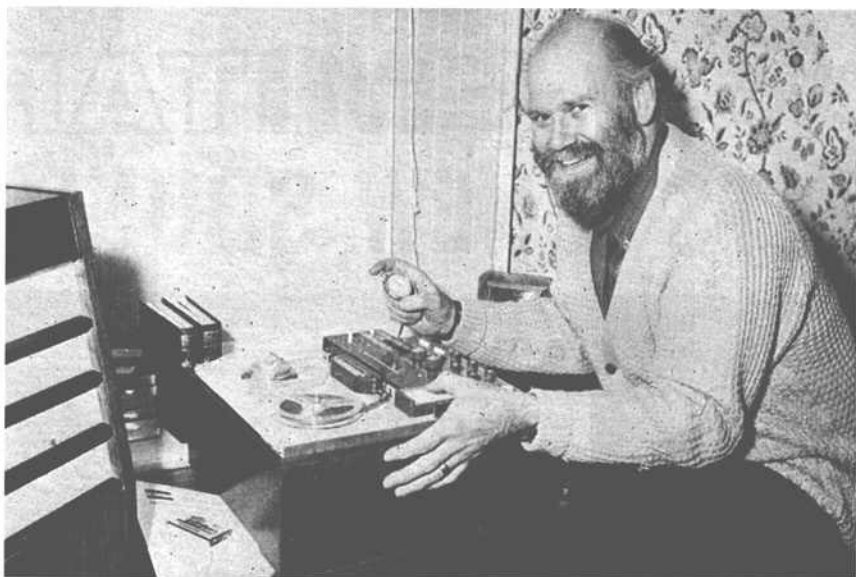
The Philharmonia Orchestra conducted by Erich Leinsdorf.

Brahms Violin Concerto in D major Op 77.

The Philharmonia Orchestra conducted by Anatole Fistoulari. Soloist: Nathan Milstein *Angel Stereo 4 Track 3½ ips £6 0s 0d.*

This tape comes as a breath of fresh air and almost as an answer to my diatribe in the March issue. Two complete works, each lasting over half an hour.

I am now more than ever convinced that good stereo recording is by far the best way to enjoy music in one's own home. Close your eyes, and with the fullness of stereo you can believe yourself in the concert hall, particularly as in this case when the recording is so good. Both these works I already have on mono hi-fi discs and they are great favourites. Regrettably I must confess that they just don't measure up any more. I'm afraid that I shall have to either put up with second best or start spending a lot of money on tapes of this quality. (Anyone want to buy a collection of mint condition hi-fi LPs?)



Russ Allen times a stereo tape on the Truvox PD 104 deck.

One thing I feared, particularly with solo violin, was the possibility of wow at 3½ ips. My fears were groundless and certainly with the Truvox deck there was not a trace.

Milstein's cadenzas in both works were tremendously exciting. My only complaint was the entrance to the Larghetto in the Beethoven, where the recording sounded a little muffled for a few bars and there were some faint breathy noises later on which could in fact have been Milstein breathing.

But oh! the sheer joy of sitting back, feet up and hearing a work of this length straight through without having to get out of my chair. Splendid stuff and, furthermore, beautifully packaged in a container that opens like a book and is substantial enough to act as a permanent container, and with sleeve notes to boot.

Angel Tapes are specially imported from the USA by EMI Recordings.

Summer Sequence. Woody Herman and his Orchestra. World Record Club TT137. £1 9s 6d.

Track one features Charlie Byrd's acoustic guitar playing which is most always a joy to me and that combined with the Herd makes some very attractive though not momentous big-band jazz.

Track two is a different kettle of fish, as it is a somewhat more serious affair. Sadly there are no sleeve notes at all, but if I recall it aright, and I hope I have, the suite was written by pianist Ralph Burns, a member of the Herd at that time, around about 1945. It is laid out as four parts but in fact this was done to facilitate issue on two 78 rpm 10 in discs. Much of the writing is interesting and fits the band far better than Stravinski's *Ebony Concerto* which I reviewed earlier. Burns is a talented writer and arranger and though I wouldn't dream of comparing him with Stravinski, this is one instance where a lesser figure writing in his own idiom can achieve more than a giant who is not.

Unlike the Stravinski, Burns has left plenty of room for solo improvisation and various members of the Herd really blow some good jazz.

Tapes, other than Pickwick, by courtesy of Teletape, Shaftesbury Avenue, London W1

FRONT COVER STORY

The magnificent studio shown on our front cover this month is at the Philips factory in Eindhoven, Holland. The ELA (electronics and acoustics) studio is probably the only one of its kind in Europe and is devoted almost entirely to the purpose of demonstrating the latest electrical, electronic and acoustic developments by NV Philips Gloeilampenfabrieken, better known to us in England as Philips Electrical.

All the equipment used in the studio, including powerful cine projectors and a complete multi-channel (Todd AO) sound system for use with wide screen films, is remote controlled from a central panel. The banks of professional tape recorders, the record transcription units, amplifiers and lighting, etc., can also be operated from the central control by one person. The seating is luxurious and carefully placed so that the audience can enjoy both absolute comfort and the best possible effect from the various demonstrations that go to make up the daily programme for visitors.

A special programme was arranged for your ATR Editor, which began with a most convincing demonstration of the Philips cassette tape recorder and ended

with a fifteen-minute excerpt from the film *Lawrence of Arabia* shown in colour on wide screen with Todd AO multi-channel sound designed and produced at Eindhoven. The film was shown via one of their latest high brilliance projectors using pulsed light.

Another quite staggering highlight of the programme was full cinema screen sized television projection of pictures taken live from TV cameras on the roof of the factory. The brilliance and definition were so good that it was possible to read the registration numbers on motor cars as the cameras automatically zoomed on them from hundreds of yards away.

The Philips EL3400 TV tape recorder was also shown in action and here, too, the performance was, to say the least, impressive. But the highlight of the whole programme was a series of multi-channel recordings of electronic music produced by Henk Badings. Sound and music can be directed from every conceivable part of the studio by means of an automated tape replay system and dozens of loudspeakers. The grand finale of the electronic music selection was a cascade of whirling sound played whilst the studio was plunged into total



darkness. For the listener this created the somewhat nerve-shattering impression of being spun round in a high-speed centrifuge in one direction with intense sound whirling in the opposite direction and at the same time rising and falling in height. It was like being whirled through space together with a thousand demons screaming unearthly sounds that somehow resolved into a frightening musical impact. One is afterwards lightly informed that this particular demonstration is the latest Philips development for brainwashing! The electronically brainwashed victims are afterwards restored to equilibrium in the Philips special restaurant where every year some 20,000 visitors to the Eindhoven factory and the ELA studio are wined and dined in the best Netherlands tradition.

THE RECORDER CO.

for best machines on advantageous terms

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
4-TRACK STEREO/MONO			
Sony TC200	18 18 0	4 14 6	72
Akai 445	21 10 6	5 0 10	82
Philips EL3534	24 3 0	6 0 9	92
Tandberg 74	24 8 3	6 2 1	93
Akai ST1	24 13 6	6 3 5	94
Sony TC500	27 11 3	6 17 10	105
Grundig TK46	28 1 9	7 0 6	107
Beocord 2000TM	31 4 9	7 16 3	119
Beocord 2000SC	32 5 9	8 1 6	123
Akai M8	38 6 6	9 11 8	146

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
MAINS 2-TRACK			
Fidelity Playmatic 2	7 7 0	1 16 9	28
Grundig TK120	7 15 0	1 18 9	29½
Grundig TK18L	10 15 3	2 13 10	41
Tandberg 823	14 3 6	3 10 11	54
Reps R10 Mk. II	15 9 9	3 17 6	59
Tandberg 92	18 2 3	4 10 7	69
Brenell V Series 3	19 8 6	4 17 2	74
Truvox R102	19 19 0	4 19 9	76
Truvex 5/3 Mr.	20 14 9	5 3 9	79
Brenell 5/3 Mr.	24 8 3	6 2 1	93
Ferrograph 631	24 18 9	6 4 9	95
Ferrograph 631H	26 5 0	6 12 11	100
Revox 736	32 11 0	8 2 9	124

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
STEREO TAPE UNITS			
Beocord 1500 Teak	23 7 3	5 16 10	89
Truvox PD 104	23 7 3	5 16 10	89
Ferrograph 632	33 1 6	8 5 5	126
Ferrograph 634	34 12 6	8 13 4	132

Open Saturday 6 p.m.—Friday 6.30 p.m.

H.P. also over 18 and 24 months

If unable to call, write for free brochure, or send deposit now for quick delivery

**FREE DELIVERY
PART EXCHANGE**

THE RECORDER CO.

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
MAINS 4-TRACK			
Fidelity Playmatic 4	8 2 9	2 0 9	31
Ferguson 3212	8 13 3	2 3 4	33
Philips EL3558 Teak	11 0 6	2 15 2	42
Grundig TK17L	11 5 9	2 16 6	43
Ferguson 3214	11 11 0	2 17 9	44
Grundig TK400	12 6 9	3 1 9	47
Grundig TK23L	12 17 3	3 4 4	49
Tandberg 843	15 9 9	3 17 6	59
Wyndor Vanguard	15 9 9	3 17 6	59
Philips EL3556 Teak	16 5 6	4 1 5	62
Reps R10 Mk. II	18 2 3	4 10 7	69
Truvox R104	20 14 9	5 3 9	79
Grundig TK40	22 16 9	5 14 3	87

4 TRACK BATTERY OPERATED TELEFUNKEN "301"

Playing time 6 hours at 3½ i.p.s. using 5" Triple Play Tape. Microphone included.

54 GNS. Deposit £14.3.6 and 12 pmts. £3.10.11

Accessories available: Carrying Case £7.12.6

Mains Unit with rechargeable Battery £15.15.0

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
BATTERY			
Philips "Pocket"	6 16 6	1 14 2	26
Philips EL3586	6 16 6	1 14 2	26
Optacord 408 Bat/Mns.	10 4 9	2 11 3	39
Telefunken 300 2-Track	12 17 3	3 4 4	49
Telefunken 301 4-Track	14 3 6	3 10 11	54
Ficord 202A	17 6 6	4 6 8	66
Grundig TK6 Bat/Mns.	18 2 3	4 10 7	69
Uher 4000L Report	27 0 9	6 15 3	103
Akai X4 Stereo4-T	34 7 9	8 12 0	131



BEOCORD 2000TM

2 or 4 TRACK STEREO—8 WATTS PER CHANNEL
—TEAK or ROSEWOOD
119 GNS. Deposit £31.4.9 12 M'thly p'mts. £7.16.3

BEOMASTER 1000

HI-FI STEREO AMPLIFIER combined with FM
RADIO, 2x15 WATTS OUTPUT, PUSH BUTTON
SWITCHING, TEAK.
79 GNS. Deposit £20.14.9. 12 M'thly P'mts. £5.3.9

BEOGRAM 1000

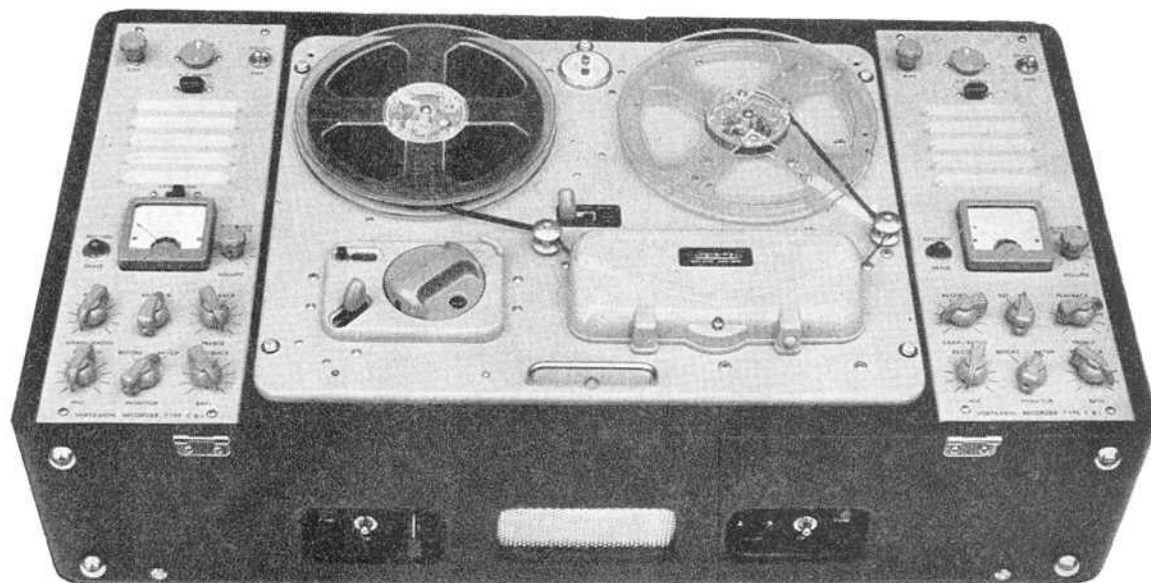
4-SPEED STEREO/MONO RECORD PLAYER.
B & O DIAMOND STYLUS and BALANCED
TONE ARM, TEAK or ROSEWOOD.
34 GNS. Deposit £8.18.6. 12 M'thly P'mts. £2.4.8

We will be pleased to demonstrate these fine models
or send full details.

(DEPT. A) 188 WEST END LANE,
WEST HAMPSTEAD, LONDON, N.W.6
Telephone: SW1 4977

—Vortexion
quality equipment

TYPE C.B.L. TAPE RECORDER



Here is a versatile Stereophonic Recorder which has no equal in its price group.

IT CAN record monaurally or stereophonically with its own mixed inputs from Gram., Radio or other sources and from high grade low impedance balanced line microphones. With good microphones, etc., the result is a suitable master for disc manufacturers. "Before and After" monitoring is provided, together with adjustable metered bias for perfection.

IT CAN also make a recording on one track and then transfer it to the other track while measuring and listening to it and adding one or two more signals also metered.

IT CAN repeat the process and transfer this combined signal to the first track with one or two more signals. Composers use it for this purpose. One track may have music or commentary and the other cueing signals or commentary, and either may be altered without the other.

IT CAN play back stereophonically or monaurally with its own amplifiers of $3\frac{1}{2}$ watts each.

The **Vortexion W.V.B.** is a high quality monaural machine with "Before and After" monitoring. The recording inputs are a high sensitivity socket for moving coil or ribbon microphone and a high impedance socket for radio, etc., either of which can be selected by a switch. Superimposing and echo work can be done, and the playback has reserve gain for abnormal requirements. This model cannot be converted for stereo playback, but it is a thoroughly reliable machine for the engineer specialising on monaural work.

The **Vortexion W.V.A.** is a monaural machine which has a performance equal in sound quality to the other models. It possesses all the features of the W.V.B. except for "Before and After" monitoring, Dubbing and Echoes. The recording being made can be heard on the internal loudspeaker, as in the W.V.B. and C.B.L. The controls are uncomplicated.

All tape recorders have adjustable bias controls, low impedance mic. inputs for unlimited lengths of cable, highly accurate position indicators and meters to measure recording level and bias.

VORTEXION LIMITED, 257-263 The Broadway, Wimbledon S.W.19

Telephone: LIBerty 2814 and 6242-3-4

Telegrams: "Vortexion London, S.W.19"

SOUND SCENE

BBC record

With the recent opening of the BBC Television and VHF sound relay station serving the Cambridge area, the Corporation has achieved a world record coverage for its programmes. BBC-1 television programmes are now available to 99.4% of the population of the UK, and the sound programmes on VHF are available to 98.7% of the population. This is the highest percentage coverage for any country in the world. The recent swift expansion and improvement in VHF services must surely mean an increase in the sales of VHF tuners and other equipment and could well result in greater use of tape recorders in conjunction with them. All we need now is a programme for audio enthusiasts!

Weekend in Paris

Anyone who fancies a free weekend for two in Paris should visit the Agfa-Gevaert stand (Booth 21) at the Audio Festival. This is the prize being offered to the exhibition visitor who guesses the length of magnetic recording tape sealed in a 12 in transparent cube. Entry to the competition is free and can be made at the stand. The holiday can be taken any time between the end of the Festival and 1 September. The weekend, organized by Frames' Tours, will start on Friday evening with the winners flying to Paris by BEA Trident where they will stay at the luxurious Hotel Franklin in the heart of the French capital. A tour of modern Paris and an evening visit to three night clubs, including the Moulin Rouge, have been planned for the Saturday, while the Sunday will be left for the winners to spend as they please, with the return flight in the evening.

Celestion increase

Celestion Ltd have regretfully announced price increases for three of their 'Studio' series high fidelity loudspeakers. The new prices are: Model CX 1512 12 in co-axial unit now £12 5s 0d (formerly £11 10s 0d); Model CX 2012 12 in co-axial unit now £17 10s 0d (formerly £16 10s 0d); the Ditton 10 compact system £16 10s 0d plus £2 16s 0d pt (formerly £16 3s 2d plus £2 14s 10d pt). The new prices result from increased prime manufacturing costs.

New number

The telephone number of Bosch Ltd of 205 Great Portland Street, London W1, is now Langham 2672/5. The service department is still at 20 Carlisle Road, London NW9, telephone Colindale 0161.

Mastertape exhibition

Supported by the slogan 'Relax with us in comfort in the Mastertape suite', Mastertape (Magnetic) Ltd has announced that during the period 14-17 April the company will stage an exhibition in a suite of rooms in the Morton Hotel, Russell Square, London WC1, telephone Brunswick 6231/4.

The exhibition covers all aspects of the company's products throughout the world. Members of the trade and all interested people from home and abroad are welcomed to the suite.

Contest entry forms

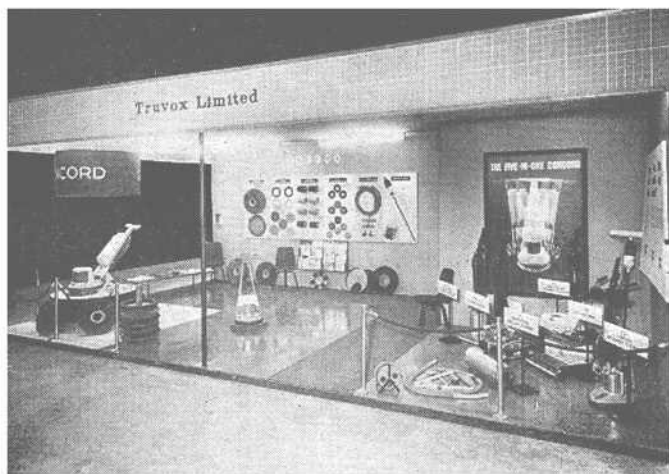
Rules for the 1966 British Amateur Tape Recording Contest, together with entry forms, were first published in *ATR* in February's issue. For those who require more than one entry form, or who do not wish to cut the form from their copy, leaflets containing entry forms are available from the *ATR* offices at the address on page 3. The leaflet contains full details of rules and prices as well as an entry form. The contest is sponsored by nine well-known tape companies - Agfa, BASF, EMI, Grundig, Ilford Zonal, Kodak, Mastertape, Philips, and Scotch.

Hospital recordings library

The British Library of Tape Recordings for Hospital Patients, sponsored by the King Edward VII Hospital Fund, has for its object the provision of a library of tape recorded books for children and adults who, while confined to hospital, are unable to read. For the project, recording and playback facilities were required that would withstand the heavy and perhaps rough usage by inexperienced people. After a number of tests over the past five years Brenell equipment was chosen. The result can be seen in the photograph on the right, showing the replay machine (centre) which feeds eight recorders operating at four times their basic speed. In 15 minutes tapes with a total replay time of 32 hours can be made from one master.

Truvox helps Truvox

Many of our readers may not be aware that Truvox Ltd, besides being an audio manufacturing company, has another, totally different division - making floor polishing and treating equipment. When the latter division was taking part in an exhibition recently it was felt that a new form of presentation would aid the impact of the latest Truvox polisher, and the audio division came to the fore. A special recorded commentary pointing out the major design features of the new machine was made. Two Rola Celestion Ditton speakers were suspended in the black drums, while in the stand office at the exhibition a continuous loop cassette on a Truvox R 102 was being fed into a TSA 100 amplifier, with leads taken from the amplifier direct to the speakers in the upper and lower drums at the left of the stand. Simultaneously, a slide synchronizer and a rotary impulse switch were used so that lights on the large board to the right illustrating the five-in-one-machine lit up the various plus features of the new product. The recording equipment performed faultlessly throughout the whole exhibition and the company feels sure that this novel presentation produced a larger number of enquiries than would have been produced by a normal display.

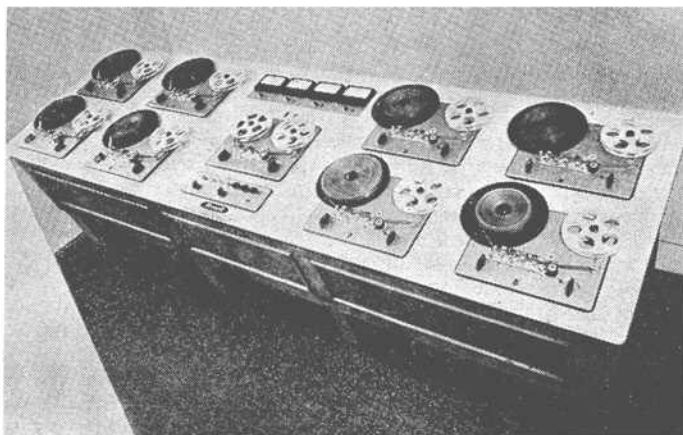


Audio Fair tickets

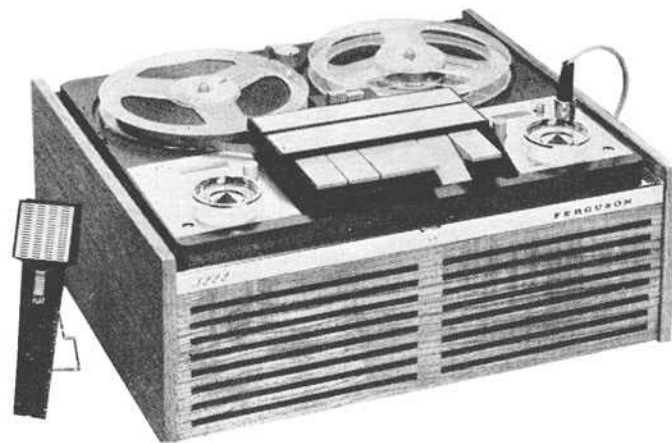
Those of you planning to visit the 1966 International Audio Festival and Fair at the Hotel Russell, Russell Square, London WC1, between 14 and 17 April are advised to write now for free tickets. Each ticket admits two people, and individuals or parties writing to *ATR* at the address on page 3 and enclosing a stamped, self-addressed envelope will receive their tickets by return of post.

Federation news

The Librarian of the Federation of British Recording Clubs, Miss Peggy Buchanan, has just issued a catalogue of winning and commended tapes in past national and international tape contests that are held in the Federation's archives. The catalogue is issued to every member club and associate member free, but can be obtained by non-members for a fee of 10s 6d, which includes the additions and amendments service for a period of two years. Any readers interested in obtaining copies of any of the tapes in the Federation's library should write to Miss Buchanan at 33 Fairlawnes, Maldon Road, Wallington, Surrey.



AUDIOVIEW NEW PRODUCTS



The Ferguson Model 3222 two-speed four track recorder. Finished in teak, price 35 gns.

Four from Ferguson

Ferguson have announced that four new recorders are now available. The Model 3214, the prototype of which was seen at the Ferguson trade show last year, is a four-track, three-speed machine incorporating input mixing controls, recording level meter, automatic stop, remote control for microphone, pause control and inching facilities. It has a 7 in × 4 in speaker, takes spools up to 7 in in diameter and has piano key controls. Price is 44 gns.

Models 3218 and 3222 are similar but have only two speeds, and a maximum spool capacity of 5½ in. The Model 3222 costs 35 gns and includes push-button controls, tape position indicator, tape inching, recording level indicator and automatic stop as well as having a straight-through amplifier/superimpose button.

The Model 3218 costs 34 gns, the only difference from the 3222 being the cabinet, which is in leathercloth instead of teak.

The fourth new model is the 3220, which is a single-speed 3½ ips machine. It is a two-track model with piano key control, pause control, tape position indicator, inching facilities and recording level indicator. Price is 25 gns.

Further details on any of these models can be obtained from Ferguson Ltd (Radio Division), Thorn House, Upper St Martin's Lane, London WC2, or appointed dealers.

New Sanyo

New from Sanyo is a two-speed battery/mains portable, which operates from ac 110/240 volt supplies or six U2 batteries. It features an automatic recording level control, speeds of 1½ ips and 3½ ips, remote control for microphone and 5 in reel capacity. Circuitry includes eight transistors, four diodes, dc erasing and ac bias. The specification of this new MR 110 Batmain claims a frequency response of 100 to 7000 c/s at 3½ ips and 100 to 4,000 c/s at 1½ ips, while output is 0.8 W undistorted. Size is 11½ in × 10½ in × 3½ in, and price is 36 gns.

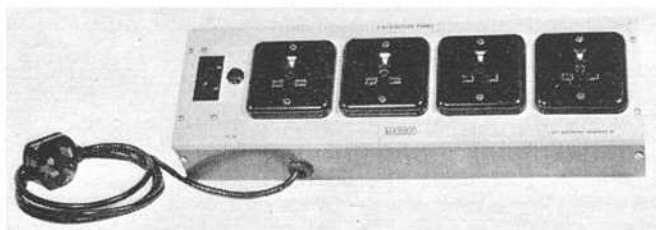
Useful accessory

APT Electronic Industries Ltd of Chertsey Road, Byfleet, Surrey, manufacturers of the Lektrokit rack and chassis systems, have introduced a mains distribution panel to provide a safe, portable means of taking up to four electrical devices from one mains socket. The new distribution panel is a fully assembled and pre-wired unit, which provides four 3-pin 13 amp outlets. It also provides for conversion of existing 5 or 15 amp distribution systems to 13 amp socket outlets.

The front panel of the unit, housing the four shuttered socket outlets, together with a combined switch and magnetic circuit breaker and a red neon indicator, is finished in grey stove enamel. It is mounted on a dark grey hammertone finished enclosure which measures 15 in × 5½ in × 2½ in, and has rubber feet on the underside. The panel may be used as a free-standing unit on a bench or floor, or by fitting standard Lektrokit brackets may be mounted flush or projecting in a standard 19 in Lektrokit rack. It may also be fitted to a wall or bench face. Price of the unit is £5, and further details can be obtained from APT Electronics and the address above.



The new Sanyo Batmain MR 110 battery/mains portable.



Letrokit mains distribution panel. Price £5

ERA prices announced

As mentioned in last month's issue of *ATR*, CBS International has appointed Denham & Morley as UK distributors of the ERA (Extended Range Audio) tapes. Denham & Morley have now announced that the tapes available and their prices will be as follows. Standard (½ mil acetate) tapes: CIP 1, 3 in, 150 ft, 6s 6d; CIP 6, 5 in, 600 ft, 21s 0d; CIP 9, 5½ in, 900 ft, 28s 0d; CIP 12, 7 in, 1,200 ft, 33s 0d. Double play (½ mil mylar) tapes: CMXP 3, 3 in, 300 ft, 12s 6d; CMXP 12, 5 in, 1,200 ft, 36s 0d; CMXP 18, 5½ in, 1,800 ft, 50s 0d; CMXP 24, 7 in, 2,400 ft, 68s 0d. Triple play tape: CMT 36, 7 in, 3,600 ft, 5 gns. Further details from Denham & Morley Ltd, 173/5 Cleveland Street, London W1. Euston 3656.



WHO SAID BEAUTY AND BRAINS DON'T GO TOGETHER?

This great new tape recorder is best in its price range for performance and looks!

Philips 'High Performance' Tape Recorder with Furniture Look Model EL3556 62 gns.

Whoever said beauty and brains don't go together was wrong! For Philips brilliant new High Performance tape recorder is more than a leader in its price range for performance, reliability and technical excellence. It also has Philips breakaway Furniture Look—it's a handsome, contemporary piece of furniture that's *designed to look right in your home*. Judge for yourself. Its technical features include four tracks, four speeds, separate treble and bass controls, powerful four-watt output through the 7" x 5" loudspeaker, a frequency response of 60-18,000 c/s at 7½ ips, a signal to noise ratio that's better than 47dB and Duoplay, Multiplay and Stereo playback facilities. In styling, too, it's way ahead. Rich teak veneer combines with dark grey polystyrene to form the sleek cabinet. All controls are sensibly grouped, clearly marked for easy operation. Supplied complete with moving coil microphone, L.P. tape, empty spool, and direct recording/playback lead.

Philips Family de luxe Model EL3558 42 gns.

Rich teak veneer cabinet. Automatic recording control regulates recording level—manual control provided. Four tracks, two speeds. Mixing, monitoring and parallel track replay. Supplied with moving coil microphone, LP tape, empty spool and direct recording/playback lead.



To: Philips Electrical Ltd. (Dept. ATR. 2), Century House, Shaftesbury Ave., London WC2

Please send details of Furniture Look recorders & free booklet 'All about Tape Recording'

Name.....

Address.....

PHILIPS—THE FRIEND OF THE FAMILY

(PTRO129)

tape club news

Audio Fair time is now almost upon us again and many clubs will be arranging outings to London. This is the ideal opportunity for social get-together among club members and their families, for although not all wives are hi-fi-minded, no wife in her right mind would turn down a free trip to the metropolis to do some window shopping and perhaps pick up a few bargains. Youngsters, too, could perhaps get together for a trip to one of the sights or museums as well as having a few hours with dad in the festival itself. So how about it wives - if you can't beat 'em, join 'em, even if it is under slightly false pretences! And it would eliminate that bogey of having to cancel coach trips at the last minute because not enough seats have been taken to justify the expense. And anyone organizing such a trip to the Audio Fair has only to write to me at the address on page three for free tickets.

Unfortunately, this is my last month as Assistant Editor for *ATR*, as for health reasons I have had to give up the arduous hours of commuting. Fortunately the many ties and friendships I have made with recording enthusiasts everywhere and club members in particular will not be broken, for I will be continuing in my capacity as Club News Editor. So I look forward to continuing my friendship with you all through these columns, if not through the many other pages of the magazine, and, of course, commuting will be back on my programme for the period of the Audio Fair. Last year I found that I didn't meet as many club people as I would have liked, simply because I couldn't be on the stand all the time. (Club News Editors do have to eat and rest their weary feet from time to time, you know!) However, I can assure you that I will definitely be around at the Russell all day on Saturday, 16 April, specially to meet and chat to club members. See you then! K. C.

B-TRAC

The dark winter evenings have been brightened for members of the Birmingham Tape Recording and Audio Club by a series of particularly interesting and useful club nights. A fascinating documentary on the busy days of the canals was presented by Brian Vaughton. The tape included many stories by old barges and canal workers about life on the waterways in the old days.

Cheerful film shows have also been presented by Charles Horrell and Alan Crook. Excellent coloured films of Jersey, Japan and Bournemouth, some with taped commentary, some with the sound recorded on magnetic striped film were enjoyed by all.

Members of the club also came to the rescue of a blind member of the Listening Library when they collected his machine, completely stripped it down, cleaned and lubricated it and fitted a new drive belt, all in the space of two hours.

Derby

The main project undertaken by members of the Derby Tape Recording Club during recent

weeks has been the preparation of a programme for the local Merlin Boys' Club, run by the Toc H. The programme has been designed to show the boys the many uses of magnetic tape ranging from music through drama, sound tracks for films, to sound effects and documentaries.

Trevor Gilbert of the Midland Association and B-TRAC, now recovered from his accident, has visited the club to show some of his 8mm film with stereo sound track and commentary. After a brief interval for refreshment, club members, who had been joined for the evening by members of the 854 Cine Club, heard Mr Gilbert describe how the sound track had been compiled with the aid of a multi-track recorder. This month has also seen the club's most successful competition, with a record number of entries. This was won by Martin Stanway. Club Chairman Dave Lund then explained the problems of writing a script for competition work, and the advantages that a well-thought-out script can bring.

Ferrograph Owners

A venue for the British Ferrograph Owners Club AGM has now been fixed. The meeting will be held on 17 April at 'The Swan', Cosmos Place, Southampton Row, London WC1, at 1 pm.

Club member Les Marsh has submitted details of an ingenious slide-changing device to the club's committee and it will be released as soon as possible. No physical contact with the tape is employed with the unit and it is inexpensive to build and use.

The latest edition of the club's magazine, *Ferro*, contains constructional articles by Fred Kemp-ton, a history of the Ferrograph company by its director, R. W. Merrick, and details of the home construction kits now available to club members.

Harvey School Club

A new tape club has been formed by members of the Harvey Grammar School in Folkestone, Kent. Programme organizer is Paul Markland, of 4 Crossways Close, Sand Estate, Dymchurch, Romney Marsh, Kent. Paul himself provided the programme material for the club's first meeting, which consisted of a tape about editing and splicing, followed by a practical demonstration, and rounded off with a discussion of future plans for the club. The first meeting was attended by about 20 pupils, but attendance was even greater at the second meeting, when the BASF film, *The Magic Tape*, was shown.

The club has the support of two masters at the school, Mr Cooke and Mr Westall, but help and advice from other clubs would be very gratefully appreciated.

ITACS

Disappointing news from the International Tape and Cine Society is that Vic Bull has resigned from the society. Vic is shortly forsaking his bachelor existence and feels, understandably, that home and wife come before hobbies. Vic has been, at one time or another, secretary, treasurer, tape magazine editor and latterly librarian for the club, so his efforts will be sorely missed. His place as librarian has been taken by John Rudkin.

Two very encouraging test reports are included in the latest edition of the club's *Tape and Cine Reel*, both of Concordia products. The first test, conducted by Gerry Boarer, was of Filmagic Longlife Cleaning Fluid and Longlife Lubricating Fluid, and the second, conducted by Roger Pirie, was of Concordia Recording Tape. Both Filmagic products showed up very well, and the Concordia tape was pronounced excellent value for money at 18s per reel. Frequency response was excellent; with the possible niggle of top response boost, drop-out was detected only slightly at 1½ ips, noise level after erasure was very low and sensitivity was excellent.

Leeds

Best compliment of the month was paid to

members of the Leeds and District Tape Recording Club by Mr Cole, secretary of the Leeds Traction Engine Club. Tape club members had recorded a Gavioli organ the size of a double-decker bus as well as a number of other traction engines and interviews with owners. When the recordings were played back Mr Cole complimented club members on the quality and arrangement of the recordings and interviews, saying that they were better than those made for the local news broadcast programme 'Scene'.

Interesting facts came to light when, at one meeting, someone dug out all the resolutions that club members had made at the beginning of last year, and it was discovered that most members had in fact kept all their resolutions. Member Chris Eagle talked to the club on the dos and don'ts of recorder maintenance, illustrating his points by stripping his Tandberg 6. He did stress that when a machine is stripped all screws, nuts, etc, should be put into a small tin - saves hours hunting round on the floor for them afterwards. This session was followed by a break for tea, which was promptly left to get cold when one member came out with an Akai X335. A second outing to record fairground organs brought a show of portable recorders including Akai, Luxor, Philips, Ferrograph and Tandberg machines. An early arrival ensured that members got the best recording positions, including mains points for extras. This proved a very wise move, as when the rally enthusiasts arrived the session nearly turned into a free-for-all!

Leicester

Leicester Tape Recording Club recently celebrated its seventh birthday with a party at which the guest of honour was club president Mr T. A. Walden, who is also Director of Leicester Museums.

The club has decided that for the benefit of new members one meeting a month during the current session is to be devoted to recording techniques and accessories.

All members are busy at the moment making arrangements to man a stand at the 'Leisure 1966' exhibition to be held at the Granby Halls, Leicester, from 20 to 23 April. The proceeds are being given to the Lord Mayor's appeal for a medical centre for the city and county.

A recording of church music and massed school choirs was made and then taken round the city Old People's Welfare Centres by the members, who split up into parties of three for this purpose.

The club now meets on the second and fourth Thursday in each month at the Leicester Museum, and the new Secretary is Mr P. Warrington of 20 Langham Drive, Narborough, Leics.

London

Members of the London Tape Recording Club have now produced their magazine programme 'Air Space', with the help of Jim Dale and his equipment.

The club has had two visits from Walter Buchanan - one covering matching microphones, technical problems in recording, and recording in general, the other dealing, among other things, with an ancient wire recorder which 'Buck' made many, many years ago.

The latest meeting was set as an exercise in creative recording for which members had to make a three- to four-minute tape with one mic and one recorder only.

Millom

Millom Club is unfortunately suffering from a spate of membership losses. As reported in last month's *ATR*, club Treasurer Ken Bannister was killed in an accident, and two other members, Phil Darke and Mike Halliwell, both in the Army, have been posted to Wales. However, a new recruit to the club has been acquired from the town of Barnoldswick, a mere 100 miles away!

The club is now taping with the Belfast club, and has also been in contact with a former

local band leader, now teaching music in Canada. The club is to organize an annual tape competition with a silver trophy to be bought from club funds in memory of Ken Bannister.

Montrose

The accent at the Montrose and District Tape Recording Club has been on individual projects carried out by members. Mr and Mrs Murray had produced an excellent recording entitled 'Heartbeat', and Mr Letham had made a film about Montrose supplemented with a tape commentary and background music. Mr Ritchie had recorded one of Scotland's famous Burns Suppers, and after editing it had played it back to a number of old folk who hadn't been able to get to the supper. Mr and Mrs Paton have both been actively working on educational tape. Mrs Paton's tape has been presented to one of the local schools, and Mr Paton's recording of a Comenius organ has been given to the Dundee Education Authority's music department.

Newcastle

The Newcastle and District Tape Recording Club has now completed and edited its first attempt at a sound magazine. Most of the work was put in by Malcolm Hill, Bob Turner and Malcolm Watt, and the finished tape was about 20 minutes long. This covered most of the club's activities during the past year as well as a recording of the last steam-drawn passenger train to leave Newcastle Central station. The evening devoted to playback of this tape was a very full one, with a demonstration tape from BASF also being played. A demonstration of stereo using two Telefunken portables and a tape with a twist were also part of that session and the evening was rounded off by recording a short tape sketch in conventional stereo on David Wright's Beocord 2000.

The meeting immediately following this was billed as an FX night, everyone being invited to bring along sound effects of every kind, home made, authentic or commercial. The clubroom resounded to noises of aircraft, electronic music, sine waves and sea waves. The club has also had an evening of films about tape including 'Magnetic Memory' from 3M, 'The Magic Tape' from BASF and an 8mm film from Mastertape. However, the organizers of this evening were a little disappointed at being unable to get a film from one of the largest tape firms, EMI.

North London

The committee of the North London Tape and Hi-fi Club is quite worried about falling membership. During the past two years many of the club's most active members have left due to circumstances beyond their control. The club now has representatives in such far-flung places as Luton, Daventry, Chester, Belfast, and Melbourne, Australia. Unfortunately, their places have not been filled in the clubroom, so the committee is making an all-out effort to attract more people to meetings. So far a local residents association has given the club a useful mention in their magazine, and an advertising card has been placed in a nearby shop window. Discussions are taking place to discover what other useful methods of advertising can be employed.

A number of acoustic screens for club use have been completed, and more are in the process of being made. A rota service covering several club members has been compiled and members will be reminded of their turn for helping with the War Memorial Hospital service. Pullin Photographic have visited the club to demonstrate the Akai range of recorders, and club members themselves have tested and demonstrated machines in the 40 to 80 guinea range for comparison. An outside recording session at St Matthew's Church, Ponders End, yielded excellent recordings of both choir and organ.

Norwich

Membership of the Norwich Tape Recording Society has now increased so that now there

are never less than 20 at a club meeting. With the increased revenue from subscriptions that this has meant, it looks as though the club will make a profit this year that can either be salted away or invested in club equipment.

At a recent meeting when a Fi-cord demonstration had been booked, it was learned that Bob Danvers-Walker was to come along too. With a bit of quick thinking, club Secretary John Butcher went to work raising all the publicity he could muster. The local press, libraries, schools, the BBC local 'What's On' programme and members themselves spread the glad tidings, with amazing results. An estimated 65 turned up, and the clubroom was almost at saturation point! Bob and Keith Monk of Fi-cord were quite overwhelmed, and the local press turned up to take some photographs, one of which was used in the next issue of the local paper. Among the visitors were a number of members of the Great Yarmouth TRS, and the meeting gained the Norwich club extra prestige. Convinced that publicity is the key to success, the club is now undertaking to give talks and lectures to other local organizations, and all these and other club meetings are publicized by notices put up in local libraries. Club members are also helping local people contact friends and relatives overseas by tape, and are really promoting the idea of tapesponding in the area.

Reading

This year's annual exercise for the Reading Cine and Tape Recording Society was to produce a short advertisement tape, or tape and slide show. One entry, Derek Holt, warned of the dangers of that embarrassing complaint that even your best friends won't tell you about - wow! However, the club won't disclose his cure-all product except to say that it didn't produce any unfortunate side effects like flutter on your base!

Rita Noyes, wife of club chairman Doug, provided a slide and tape show, illustrating a new use for adhesive tape - for sealing the lips of garrulous husbands who sit up in bed at night and try out their next evening's club speech! Club members thought that this might have been a preparation for an artful new way of getting over the problem of lip synch, called lip seal, but all felt sorry for this long-suffering cine wife!

Marjorie Davies, in full flight after winning the Tape and Slide Cup of the Year, hit on a photogenic product called 'Green Fingers' advertising a fictitious brand of garden spray to turn anyone into a Percy Thrower. Slides were clicked on at such a rate using an auto slide changer than the effect was almost one of single shot cine.

Rugby

Members of the Rugby Tape Recording Society have been extremely busy in recent weeks and there has been a burst of enthusiasm from hitherto reluctant newcomers. Cyril Handford, Bill Long and Len Stephens visited an old people's home to give a tape slide show, Bill Long and Len Stephens gave another tape/slide show to a nearby ladies' Round Table Club, and John Bannister, Bill Long, Jack Willis and Tom Reader attended the Percival Guildhouse, Rugby, to meet members of their House Committee to discuss the making of a feature tape on their history and present-day activities.

An automatic heckler was provided by John Bannister for his own talk on the history and development of tape recording from about the year 1868. John mentioned names like Edison, Blattner and Poulsen, and the early problems of amplifying sound to a useful level, while 'Philip' kept interrupting with pungent comments and effects. The culprit turned out to be an up-to-date portable in the Philips range, specially rigged up for the purpose!

The club's 'Knowhow' series of talks and demonstrations by the club's experts is continuing very successfully. Recent topics have included dubbing and splicing, tapesponding, tape with slides. As usual, the club is planning to visit

the Audio Fair on the Saturday, and it is hoped that enough travellers can be raised to make it possible to hire a coach for the purpose.

Thornton Heath

First of the 1966 monthly competitions of the Thornton Heath Tape Recording Club was an open choice contest, and the first prize went to Barry Griggs. His tape was on brass bands and started with a very old recording of his father playing in a London band and brought the subject right up to date with a recording of a Salvation Army band which had been playing in London's Oxford Street the previous Saturday.

PJC Sound Recording, a subsidiary of the club which specializes in location recording for other local societies, has been busy with the local 'Selsdon Stager' production of three one-act plays for the Croydon Drama Festival. PJC has provided all the effects and background music for the productions.

Several new members have joined the club recently, including one interested in drama and play reading, so the club may well be entering a drama tape in this year's BATRC.

The club's second hospital programme for the Croydon General Hospital is now well under way, and Barry Griggs and Barry Mitchell, two young reporters for the programme, have landed quite a scoop. They had approached Al Read for a message, were invited to call at the BBC on the Sunday morning, used the studio equipment and Mr Read did an impromptu sketch for them, ringing up the hospital and enquiring after his ma-in-law in his own inimitable style!

Ted and Margaret Bashford and Morris Webb provided an excellent evening's entertainment with a tape they had put together about the many outside services the club provides for outside charities. Other tape activities included the preparation of items for the club's return tape to the Kidderminster club.

ATRA in NZ

The Australian Tape Recordists Association is hoping to form a local branch of the club in Christchurch, New Zealand, shortly. The main aim of the club will be to provide a hospital messages on tape service and a recording service for the blind. It is also hoped to start a library, and hold regular novice classes for newcomers to tape recording, as well as organizing maintenance evenings and drama tape classes. A number of keen enthusiasts in that part of the world have already expressed enthusiasm for the idea, but more are needed. How about it Kiwis?

Secretaries, NB!

Club reports should be sent to Mrs Kim Cook, the Club News Editor, at 9 Harrow Road, London W2, and should be clearly marked as club news on the envelope. And it would help to speed matters up if any requests for special information, technical advice, etc, could be sent separately. Copy dates for forthcoming issues are:

June issue (published May) copy should arrive by 18 April

July issue (published June) copy should arrive by 16 May

Meanwhile, I'll be looking forward to seeing you all at the Russell on Saturday, 16 April.

K.C.

TOP TEN FOR APRIL

1. Rugby
2. Norwich
3. Thornton Heath
4. Leeds
5. Derby
6. Montrose
7. ITACS
8. Newcastle
9. North London
10. B-TRAC

THE TAPE DIRECTORY

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

AUSTRALIA

David Paget, 21, salesman, 35 Searle Road, Elizabeth Fields, South Australia. Reading, writing, tapesponding, SWL, comedy, world affairs, motoring, 35mm and movie photography; pops, instrumentals, folk, trad, Beatles, Stones. Philips EL 3541, 4 track, 7 in, 3 $\frac{3}{4}$. English-speaking young couple anywhere.

NEW ZEALAND

W. David Campbell, 29, New Zealand Railways, PO Box 181, Waipukurau, New Zealand. C & W, organ, humorous. Sony 521, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Falkland Islands, Switzerland (English-speaking).

Roy Cooper, 41, grocery trade, 53 Killarney Street, Alexandra, Otago, New Zealand. Humour, sound effects, stamps, sound/slide shows; any except pop and heavy classical. Studio (Collaro) and Okicorder portable, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. All.

RHODESIA

Reg Catterall, 33, clerk, PO Box 188, Bulawayo, Rhodesia. World affairs, people; anything but classical. Philips, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$. English-speaking.

SOUTH AFRICA

P. M. Williams, 20, student, Russet Rowan Rue, Kenilworth Cape, South Africa. Science, politics, drama; classical, folk. Home-made 'Studio' Deck (stereo) 4 track, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. UK.

SWEDEN

Carin Harriman, 15, schoolgirl, Olshammarsg 27 VII, Bandhagen 4, Sweden. Travel, children, tape recording; pops, Beatles, P. J. Proby. Philips 3549 4 track, 7 in, 1 $\frac{1}{2}$, 1 $\frac{1}{8}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. UK girls and boys age 15-18.

USA

Rolfe Blaess, 26, retail shoe salesman, 104 North Wilson Avenue, Jefferson, Iowa 50129, USA. Tapesponding, photography, general interests, people; pop music. Tandberg 52 and

Tandberg 64, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Anywhere, tapes promptly answered.

Jerry Lipman, 47, medical lab technician, 1750 Rivera Street, San Francisco 16, California, USA. Researching and collecting articles and music (tape or discs) of composer Michael William Balfe (1808-1870), William Wallace and Sir Julius Benedict; other general interests. Sony 262-SL, Wollensack, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. England, Ireland, Scotland, anywhere English-speaking.

Kenneth Miller, photographer, 1500 Grand Concourse, New York 57, NY, USA. Outdoor recording with portables, has large library of material for exchange. All speeds. World-wide.

BRITISH FORCES

Roger C. Childs, 28, Royal Air Force, STN/Workshops, RAF, Marham, King's Lynn, Norfolk. Motoring, dancing, music; American swing, classical, pop. Elizabethan 117, stereo, 4-track, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Britain and anywhere abroad, especially America.

Alan Charles Crass, 19, marine engineer RN, 534 Mess, HMS *Ark Royal*, c/o BFPO (Ships). Fishing, recording; modern jazz, pop. Ferrograph 5/NA, 8 $\frac{1}{4}$ in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Any foreign country.

G. Dickinson, 35, HM Forces, Army Stats and Records Centre, HQ MEC Aden, BFPO 69. Motoring, travel, cine; light, classical. Philips EL 3531 (stereo), 7 in, 3 $\frac{3}{4}$. Germany, Sweden, USA, USSR, Japan.

Malcolm Garnett, 30, HM Forces, 23846256 Cpl Garnett M., Command Pay Office, BFPO 1. 35mm photography, customs of different countries; military bands and Dixieland. National RQ 705, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Holland, Luxembourg.

BEDFORDSHIRE

Keith Foster, 22, driver, 328 Ashcroft Road, Stopsley, Luton, Beds. Motoring, football, spiritualism; organ, pop, jazz, some classical. Fidelity Playmatic, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Africa and anywhere English-speaking.

B. S. McMurdie, 1 Brackendale Grove, Limbury, Luton, Beds. Spiritual truth, thinking and The Grail Message 'In the Light of Truth'. Elizabethan LZ 24 and Robuk RK 3, 2 and 4 tracks, all speeds. Anywhere.

CAMBRIDGESHIRE

Keith Bates, 15, schoolboy, 'Sevrick', Broadend Road, Walsoken, Wisbech, Cambs. Painting, records, cinema, tape recording; jazz (especially Kenny Ball), pop, show. Sobell 'Festival', 5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$. Preferably girls in any English-speaking country including Britain.

CO DURHAM

John Bean, 16, student, 38 Teesdale Avenue, Billingham, Co Durham. Photography, electronics, music, literature; classical, some light. Magnavox Deck, Linear Amplifiers, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$, $\frac{1}{2}$ track. Preferably girls in UK and USA.

CORNWALL

Christopher Piper, 19, trainee manager, 11 Adelaide Terrace, Truro, Cornwall. Reading, amateur script writing for boonie shows; pop, light music. Challenge De Luxe, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. USA.

CUMBERLAND

Michael Meade, 15, schoolboy, Austin Friars, Carlisle, Cumberland. Pop music, electronics, cycling, cars, 16mm cine; pop, light opera. Ferrograph 4 AN and Grundig TM45, 8 $\frac{1}{4}$ in, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$ only 2 track, please. Anywhere English-speaking.

ESSEX

Ronald Beange, 28, clerk, 1 Sownham Road, Wickford, Essex. Music, people and their habits in foreign countries, almost anything; anything. Elizabethan 2 or 4 track, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. English-speaking countries anywhere but British Isles.

HAMPSHIRE

Clive J. Beilby, 11, schoolboy, 37 Manners Road, Southsea, Portsmouth, Hants. Stamp collecting, model gardens, books; pop and light classical. Fidelity, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Anywhere.

Ian Drinkwater, 17, student, 6 Ashmore Road, Winchester, Hants. Anything electrical, radio, hi-fi, youth hostelling, geography, tape recording, travel, outdoor hobbies; light, pop, modern jazz, some classical. Stella 4 track, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, UK especially Wales, USA, Australia, either sex, preferably teenagers.

Steven J. Kimberley, 14, schoolboy, 50 Barnbrook Road, Sarisbury Green, Southampton, Hants. Photography, swimming, French language, travel, cycling; pop, light, classical, Glen Miller. Fidelity Playmaster, 3 in-5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$, 2 or 4 track. Girls in UK, Europe, Australia, New Zealand, Egypt.

HERTFORDSHIRE

Eric Tyers, 16, electrician's mate, 23 Healey Road, Holywell Estate, Watford, Herts. Special sound effects, travel, swimming; pop, Latin-American. Grundig 4 track TK24, 5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$. Anywhere.

LANCASHIRE

Jay Alan Fisher, 17, trainee manager and salesman, 49 West Drive, Scale Hall, Lancaster, Lancs. Pop music, girls, cars; Buddy Holly, pop music. Elizabethan 200 2 track, 5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$. UK, USA, females preferred.

William Lund, 43, bus conductor, 344 Preston Road, Fenisccliffe, Blackburn, Lancs. Everything; anything. Philips Hi-Fi, 7 in, 1 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$. Anywhere.

Albert F. Massey, 53, production manager, 125 Makin Street, Walton, Liverpool 4, Lancs. Religion C/E, psychical study, general. Grundig, 5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$. U.K.

Fred Power, 25, hairdresser, 153 Devon Street, Ardwick, Manchester 12, Lancs. Cine, model-making, humour; R & B, jazz, folk. Spectone, 2 track, 7 in, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$, 15. USA, France (English-speaking).

LINCOLNSHIRE

Stanley Harris, 36, factory maintenance, 5 Carlton Road, Boston, Lincs. Tape recording, TV; all music. Westminster, 2 track, 5 $\frac{1}{2}$ in, 3 $\frac{3}{4}$. Australia, New Zealand, Holland.

LONDON

David Braysher, 18, toolroom apprentice, 25 Villiers Road, Willesden Green, London NW2. Tape recording, swimming, sailing,

rifle shooting; all music except jazz. Brenell 2 track mono, 8½ in, 1½, 3½, 7½, 15. Anywhere English-speaking.

Edward Eldridge, 35, store manager, 30 Salisbury Mansions, St Anne's Road, London N16. Photography, general topics; any music. Philips Stellaphone, 7 in, 1½, 3½, 7½. UK, USA, South Africa.

Stuart H. Garrett, 32, audio-visuals producer, 121 Shirland Road, London W9. Colour photography, tape recording, hi-fi; everything. Beocord 1500 and Brenell Mark 5 series 2, 7 in, 1½, 3½, 7½, 15. Anywhere English-speaking, especially the Far East and Asia.

Terry Maloney, 19, postal clerk, 30 Alexandra Street, New Cross, London SE14. Photography, motorcycling, travel; ballads. Elizabethan Popular 200, 5½ in, 3½. UK, USA, Australia, Canada.

Colin Smith (and two friends), 18-19, printing, 158 Old Ford Road, Bethnal Green, London E2. Scouting, photography, transistor work; pop instrumentals, R & B. Ferrograph (2 track), Elizabethan (4 track), 7 in, 1½, 3½, 7½. Canada.

Frank Percy William Smith, 45, resident porter GLC, 4 Gooch House, Bourne Estate, Portpool Lane, London EC1. Cine, holiday camping; Scottish dance music, Hawaiian music. Philips EL 3549 (4 track), 7 in, 1½, 3½, 7½. Anywhere English-speaking, preferably USA and Canada.

MIDDLESEX

Paul del Bravo, 16, A-level student, 53 Wood End Gardens, Northolt Park, Middlesex. Colour photography, audio and hi-fi, sketching; Bach to Weber via Sinatra. Truvox R102, 2 track, 7 in, 1½, 3½, 7½. Australasia, Pacific.

Michael Edward Pugh, 22, records clerk, 32 Methuen Road, Edgware, Middlesex. Motorcycling, fishing, photography; all types. Philips EL 3541, 7 in, 3½. Anywhere.

NORTHUMBERLAND

John Keers, 16, shop assistant, 11 Weardale Avenue, Cowpen, Blyth, Northumberland. Meeting people, reading, music, sport; pop, R & B. Philips EL 3586, 4 in, 1½. USA, England.

NOTTINGHAMSHIRE

Neil R. Combe, 16, schoolboy, 628 Western Blvd, Nottingham, Notts. Books, photography; most classical some pop. Baird 'Varsity', 7 in, 1½, 3½, 7½. Anywhere in Europe including Great Britain.

Robert George Cox, 19, student, teachers' training college, Hillsborough, Church Lane, Clarbrough, Retford, Notts. Messing around with radios, amplifiers, etc., tape recording, guitar playing, mouse breeding; Bach to Bacharach (not Stones). 'Sound' 4 track, 7 in, 1½, 3½, 7½. Australia.

OXFORDSHIRE

Noel Jonathan, 26, recording engineer, 28 Shakespeare Road, Eynsham, Oxford. Sound recording, motion picture production; mainly 20's-40's popular. Vortexion, Emi, Ferrograph, 10 in, any speed. Norway, Sweden.

SUFFOLK

Eric and Margaret Manning, 32/26, salesman/

secretary, 46 Bridge Street, Stowmarket, Suffolk. Travel, 35mm slides, motoring, cookery; anything except jazz. Ferguson, 5½ in, 3½. Greece, Italy, France (English-speaking).

SURREY

Nick Kemp, 17, student, 1 Barham Road, S Croydon, Surrey. Classical guitar, Goons, archery; classical. CR 1621, Civic T72, 4 in, 7 in, 1½, 3½, 7½. New Zealand, USA, UK.

SUSSEX

Peter Bastable, 34, crane driver, 39 Clive Way, Pound Hill, Crawley, Sussex. Sound effects, photography, work for the blind, tape recording; all music. Philips 3542, 2 and 4 track, 7 in, 1½, 3½, 7½. Anywhere outside the UK.

Derek John Coates, 23, scaffolder, 3 Stapley Road, Hove 4, Sussex. Tenpin bowling, motorcycling, association football; country and western. Grundig TK23, 5½ in, 3½. UK, USA, Australia.

John C. Tugwell, 21, service rep, 24 Frith Road, Hove 4, Sussex. Tape/slide shows, photography, sound effects, SWL, motoring; mood and descriptive. Reflectograph and Fidelity 202, 8½ in, 3½, 7½. Anywhere.

Ernest Walters, 18, clerk, 8 Cedar Close, Langley Green, Crawley, Sussex. Bus-spotting, recording; pop folk, some gospel. Philips EL 3586 2-track, 4 in, 1½. UK, USA.

WARWICKSHIRE

Keith Fisher, 31, electrician, 49 Brixham Drive, Wyken, Coventry, Warks. Bird recording and all outdoor sounds; anything except pop and jazz. B & O, 7½ in, 1½, 3½, 7½. America.

Elaine Handcox, 16, office junior, 4 Byfield Place, Windmill Lane, Balsall Common, Coventry, Warks. Photography, tape recording, SWL; pop and light music. Brenell Mark V, 8½ in, 1½, 3½, 7½, 15. Australia, Canada, female preferably; no need to write.

Edward Hill, 29, warehouseman, 328 Haslucks Green Road, Shirley, Solihull, Warks. Yoga, travel, astronomy, stamps; jazz, pop, classical. HMV 4 track 2204B, 5½ in, 1½, 3½. Scandinavia, USA.

John W. Miles, 19, plumber, 35 Leyland Road, Coventry, Warks. Fishing, swimming, ice-skating; light classical and pop. Majestic, 5½ in, 3½. Australia.

David Palser, 19, engineering apprentice, 136 Clifford Street, Lozells, Birmingham 19, Warks. Music, gardening, sports, photography; jazz, pop, classical. Civic model T62, 5 in, 1½, 3½, 7½. Scotland.

Joyce and Fred Powles, 43/49, typist, housewife/proving lab technician, 140 Taylor Road, Kings Heath, Birmingham 14, Warks. 35mm photography, 8mm general, TV, records cine; light music of other countries. Stellaphone 4-track, 7 in, 1½, 3½. Any English-speaking.

WILTSHIRE

Kenneth Hardman, 26, electrician, A/C Servicing Squadron, RAF Lyneham, Wilts. Hiking, motor-cycles, outdoor recordings, psychic research; most music, especially modern jazz. Philips portable, 3½ in, 1½. Females only (18-24), anywhere English-speaking.

WORCESTERSHIRE

Dr Alan Brian Day, 28, audiologist, 138 Cinder Bank, Hetherton, Dudley, Worcs. Electronics, cine, photography, boating; light classical. AKAI M6, Philips EL 3586, 7 in, 1½, 3½, 7½, 15. America, Germany.

Wilf Gale, 34, meter reader, 43 Clent Court, Dudley, Worcs. Duplicating of all kinds, cooking, church work; church organ, brass bands. BSR Bermuda, 5 in, 3½. Anywhere.

YORKSHIRE

J. A. Berbezier, 20, assistant sawyer, 30 Victoria Road, Askern, Nr Doncaster, Yorks. Electronics, travel, nature, books, history, jokes; pop, light, classical. Philips EL 3541D/ISH, 4-track, 7 in, 3½. USA, France, females only; no need to write.

Gerald England, 18, student, 32 Rhyddings Drive, Ackworth, Pontyfract, Yorks. Maps, philosophy, mathematics; C & W, chamber. Fidelity Argyl, 5½ in, 3½. Eire, France, Sweden, Iceland, India.

Brian Spencer, 15, schoolboy, 29 Brunswick Road, Rotherham, Yorks. Photography, tapping, TV; pop and folk (Dylan, Baez). Fidelity Argyl, 5½ in, 3½. Anywhere English-speaking (girls welcome).

Jennifer Tasker, 16, student, Golf House, Heworth, York, Yorks. Golf, different ways of life; from classical to pop. Philips EL 3541, 7 in, 3½. USA, Australia.

Roy Teather, 24, 101 Rotherview Road, Canklow, Rotherham, Yorks. Photography, recording, stamps; all music. Ferrograph, HMV, 7½ in, 1½, 3½. Anyone anywhere.

IRELAND

Cyril Heatley, 34, technician, 5 Melvin Road, Terenure, Dublin, Ireland. Reading, tape recording; anything stereo. Sony 521, 7 in, 3½, 7½, 2 and 4 track. Anywhere.

John Park, 31, aircraft fitter, 68 Parkmount Street, Belfast 15, Northern Ireland. Photography, recording, almost everything; pop, light and modern, brass bands. Ferguson, 2 track, 5½ in, 3½. Anywhere.

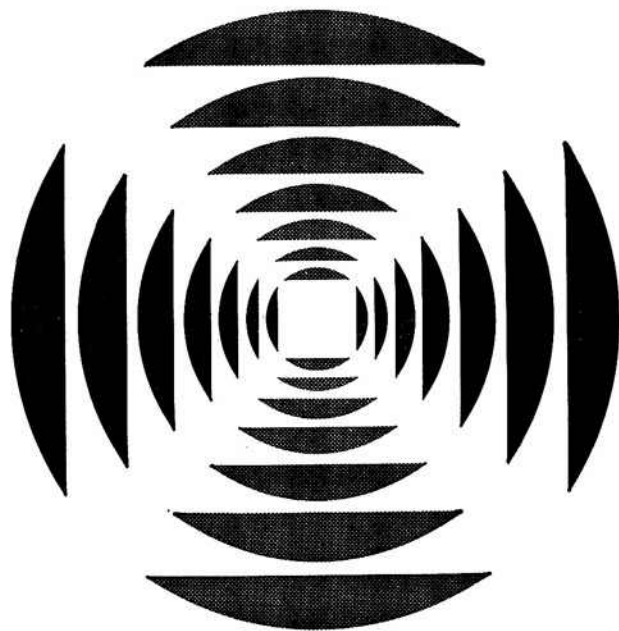
SCOTLAND

William S. Cumming, 23, painter and decorator, 51 Wester Drylaw Drive, Edinburgh 4, Scotland. Fishing, chess, anything crazy or interesting; C & W, pop (not much), general. Philips automatic 2 track, 5½ in, 3½. Anywhere English-speaking.

Gordon L. Mann, 16, schoolboy, 3 Well Street, Monifieth, Dundee, Scotland. Photography, scouts; pop and light classical. Elizabethan Pop 200, 5½ in, 3½. Anywhere out of the UK (English-speaking).

Anne McVittie, 18, student occupational therapist, 8 Dick Place, Rosyth, Fife, Scotland. Folk singing, guitar, reading, TV, guinea-pigs; folk songs, pop, classical. GEC 2-track, 5½ in, 3½. Anywhere.

Thomas S. Sinclair, 26, divinity student, 1 Glencairn Road, Langbank, Renfrewshire, Scotland. Theology, music, reading, 35mm photography, history. Philips EL 3549 4-track, 7½ in, 1½, 3½, 7½. English people anywhere, especially USA, Africa, Far East and UK.



now hear this!

An announcement of outstanding interest to all High Fidelity enthusiasts.

Leading U.S. manufacturers are coming to Britain for the first-ever all-American exhibition of high fidelity equipment.

See and hear their latest products at the

american hi-fidelity equipment exhibition

April 14-22, 1966

United States Trade Center

57 St. James's Street London SW1

TRADE VISITORS ONLY

April 14 (10 am-9 pm) and 15 (10 am-5 pm)

PUBLIC VIEW

April 16-22 daily (except Sunday) 10 am-5 pm
with an extension to 9 pm on Tuesday & Thursday

Complimentary tickets can be obtained in advance from leading suppliers of high fidelity equipment; from The Director, United States Trade Center, (HYDe Park 5921) or at the reception desk during the exhibition



Sponsored by the United States Department of Commerce, in conjunction with the American Institute of High Fidelity.

SOUND EFFECTS RECORDS Now available from Amateur Tape Recording

Please allow two weeks for delivery

CASTLE, 7" 45 rpm records, approximate playing time 10 minutes. Each contains selection of sound effects in separate tracks. Complete with sleeve and paper inner jacket. Sleeve includes description of each sound effect and playing time in seconds

A ABX/1—BELLS AND SIRENS Price 7/6

Side 1—Fire engines with bells Fire engine—alarm and sirens
S.S. Queen Mary siren Factory siren Telephone bell Door bell
Side 2—Clock chime Alarm clock Westminster chime Bow bells

B AFX/1—WILD ANIMALS Price 7/6

Side 1—Male and female lions Gibbons Chimpanzees Bell bird
Rattlesnake Baboon Viper Emperor geese Fish eagles Mountain lion (puma) Kookaburra (laughing jackass)
Side 2—Elephants Mississippi alligator Indian tiger Sea lions
Male lion In the jungle (a background of typical sounds)

C BGX/1—BACKGROUND SOUND EFFECTS Price 7/6

Side 1—Sea (breakers) Wind (howling—cree) Thunder (light rain)
Side 2—Rain (heavy shower) Factory sounds (industrial) Traffic (busy street)

D EFX/1—ELECTRONIC SOUNDS AND MUSIC Price 7/6

Side 1—Space ship—take off Space vehicle—imaginary take-off
Space vehicle—imaginary landing Ring modulation—tonal Modulated tone glide (descending) Modulated tone glide (ascending)
Sibilant—white noise (pitch octave low) Sibilant—white noise (pitch octave high) Three-tone modulation Filtered tone Stridor (tonal) Ring modulation and sibilant

E EFX/2—ELECTRONIC THEMES AND MUSIC CONCRETE Price 7/6

Side 1—DeKa F Study in Sine-tones
Side 2—Sound object Montage

F HMX/1—HAUNTED HOUSE, MYSTERY SOUNDS AND MUSIC Price 7/6

Side 1—Thunderstorm Mysterious Electronic Music
Side 2—Spooks Intruder Creaks Fright Dungeon Ghosts Ghouls Maniac laughter

G MFX/1—AUTHENTIC HIGH-FIDELITY SOUND EFFECTS Price 7/6

Side 1—Lion roaring Twin piston aircraft landing Building and debris falling Road drills and compressor Ship's siren Steam train leaving station Small steam loco and whistle Cell door, keys and locks
Side 2—Police car and bell, chase Police launch and siren Steam goods train and whistle Car door slam, and starter Storm at sea, thunder, wind and gulls Tube train, stop, doors and start

H MFX/2—AUTHENTIC HIGH-FIDELITY SOUND EFFECTS Price 7/6

Side 1—American police car with siren—arriving American police car with siren—departing American police car escort with siren—passing American police motor-cycle patrol with siren—stopping Applause (hand clapping) Orchestra tuning up Car crash Glass breaking (repeat)
Side 2—City and Waterloo tube train—arriving City and Waterloo tube train—departing Footsteps (continuous track) In subway (mixed) In narrow streets (female) On pavement (mixed) Running in street (female) Running in street (male) Up and down (wooden stairs) Workmen hammering and sawing

I MPX/1—MILITARY PARADE AND WARFARE SOUNDS Price 7/6

Side 1—March past—Guards and crowd sounds, etc. Royal Salute—Parade commands and National Anthem Drums and pipes—with parade commands
Side 2—Aircraft—low level attack (bombs, machine-gun fire, aircraft) Artillery—tanks—rifle fire, etc.

J TFX/1—AUTHENTIC BRITISH TRAIN SOUNDS Price 7/6

Side 1—Train departure—main line Train arrival—main line Express train passing—with whistle Fast goods train passing—with whistle Express train passing Small tank loco—passing
Side 2—Local passenger—arrive and depart Fast goods train—passing Central London tube train—arrive and depart Train over points and crossing Slow goods train passing—with whistle

K MFX/3—HORSES Price 7/6

(10 effects) Trotting Walking Jumping Composite recording of foxhounds, calls, horns, etc. Cow Cate Pigs Blacksmith's shop

L LFX/1—SOUNDS OF LONDON Price 7/6

Guards, Bow Bells, River, Markets etc., etc., with linking commentary. Ideal for cine films and colour slides

M RSX/1—ROAD SAFETY Price 7/6

With Jack Warner (Dixon of Dock Green) and Coco (Bertram Mills Circus) Documentary with sounds

BEST BUY BRITISH GUARANTEED TAPE

Brand New Polyester and P.V.C. Base Genuine Fine Quality Tapes boxed individually representing the best value on the market ever. Our money-back guarantee (including return post) is your opportunity to test out at no cost whatsoever to yourself.

POLYESTER TRIPLE PLAY

3" Reel 600ft. 12/9 ALL ORDERS
5" „ 1800ft. 23/9 POST FREE
5½" „ 2400ft. 29/9
7" „ 3600ft. 39/9

P.V.C. BARGAIN PACKS

3"	Reel	150ft.	S.P.	5 for 10/-
3"	„	225ft.	L.P.	4 for 10/-
3"	„	300ft.	D.P.	2 for 10/-
5"	„	600ft.	S.P.	2 for 13/6
5"	„	900ft.	L.P.	2 for 19/9
5"	„	1200ft.	D.P.	2 for 27/9
5½"	„	1200ft.	L.P.	2 for 23/6
5½"	„	1800ft.	D.P.	2 for 34/6
7"	„	1800ft.	L.P.	2 for 29/6
7"	„	2400ft.	D.P.	2 for 46/9

Remember, Our Guarantee is Your Safeguard.

Jack Jones Electronics Ltd.

Nash House, New Street, Worcester

Telephones Worcester 26316 and 22235

Please send me the following records
Please indicate with a tick in the appropriate squares.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I enclose postal order/cheque for _____ to cover the cost of record/s, plus 12d post and packing for first record and 4d. for each additional record ordered.

NAME _____

ADDRESS _____

ATR4

ATR, HAYMARKET PRESS LTD,
9 HARROW ROAD, LONDON W2

Please allow two weeks for delivery



**what's behind
this drape
will make
the newest sound
at the Audio Fair
and will be
the talk of
the audio world**

Sonotone

**Stand 1 Demonstration Room 218
THE RUSSELL HOTEL April 14th-17th**



UK distributor:
Metrosound Manufacturing Co. Ltd.
Bridge Works, Wallace Road
London, N.1. Tel: Canonbury 8641

STOP PRESS!

The outstanding new Brenell Hi-Fi TAPE LINK will be exhibited at the Audio Fair, built into a modern Hi-Fi cabinet together with other first class equipment. This will include AM/FM tuners, amplifiers, pre-amplifiers, record-playing equipment and the Brenell Hi-Fi Mono/Stereo Tape Link and matching deck. All other models will, of course, be demonstrated.

DON'T FORGET!

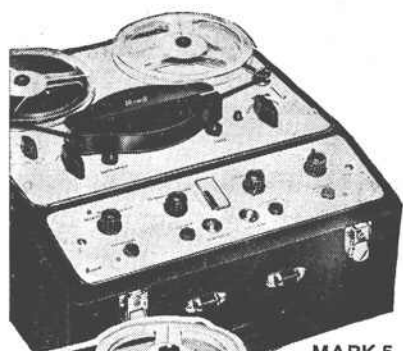
Booth

37

Demonstration Room

149

Brenell Tape Recorders



MARK 5
SERIES 3

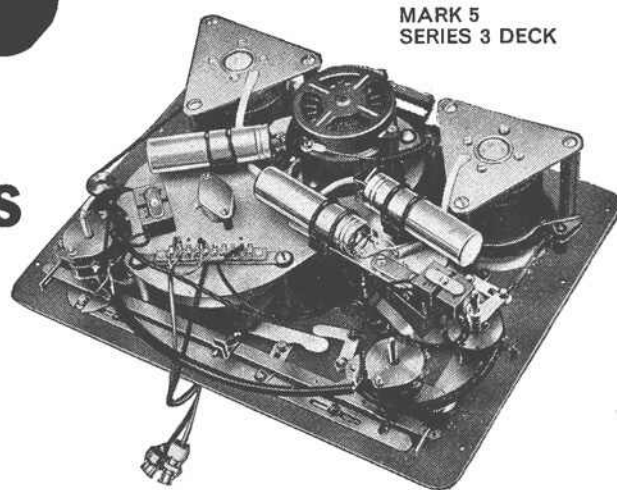
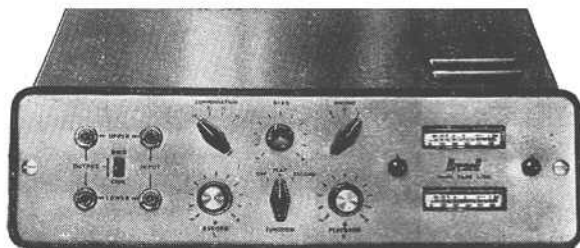


MARK 5
TYPE M
SERIES 3



STB2

MONO/STEREO
HI-FI TAPE LINK



MARK 5
SERIES 3 DECK

If you are unable to visit the Audio Fair please send this coupon for leaflets.

To BRENELL ENGINEERING CO. LTD.
231/5 Liverpool Road, London, N.1.

Please send me details of: (tick leaflets required)

☐ MONO TAPE RECORDERS

☐ DECK

☐ STEREO TAPE RECORDERS

☐ TAPE LINK

NAME.....

ADDRESS.....

GD415

Brenell

**BRENELL ENGINEERING
CO. LIMITED**

31/5 Liverpool Road, London, N.1. Telephone: NORth 8271 (5 lines)

stertape Mastertape Mastertape



ANOTHER 'MASTERTAPE' FIRST

See what we're up to! Relax in comfort with us in the Mastertape Suite at the

MORTON HOTEL

next door to the Hotel Russell

AUDIO FAIR TIME April 14th-17th

pe Mastertape Mastertape Maste

Mastertape (MAGNETIC) Ltd., Colnbrook, Bucks.

CIRCUITS FOR AUDIO AND TAPE RECORDING

a new ATR handbook designed specially for those who like to construct their own equipment. The circuits—for amplifiers, pre-amps, tuners, echo units and many other items—range from the very simple (for the beginner) to the more difficult (for the experienced constructor).

PRICE 8s 6d post free from

ATR, Haymarket Press Ltd,
9 Harrow Road, London W2

COMING TO THE AUDIO FAIR?

Then you must see the full range of Sony tape-recorders, transistorised radios and portable T.V. sets, which will be demonstrated at the Sony U.K. Sales Division Showrooms, 70-71 Welbeck Street.

Our special trade preview day for this three-day demonstration will be 14th April, and experts will be available to advise you between 11 a.m. and 7.30 p.m. on 15th and 16th April.

SONY®

RESEARCH MAKES THE DIFFERENCE

Sony U.K. Sales Division

(A Division of Debenhams Electrical & Radio Distribution Co. Ltd.)
70-71 Welbeck Street, W.1. Tel: Hunter 2143



Model TC250A
An all transistor 4 track
stereo/mono
studio quality tape deck—
the ideal addition
to your home sound system—59 gns

Specifications

Power requirement	100, 110, 117, 125, 220 or 240 V, 40 watts, 50/60 cps.
Tape speed	Instantaneous selection, 7½ and 3½ ips, (19 and 9.5 cm/s.)
Frequency response	30-18,000 cps at 7½ ips, ±3 db 50-15,000 cps at 7½ ips 30-13,000 cps at 3½ ips
Signal-to-noise ratio	Better than 50 db
Flutter and wow	Less than 0.19% at 19 cm/s Less than 0.25% at 9.5 cm/s
Harmonic distortion	1% at 0 db line output
Erase head	In-line (stacked) quarter track, EF17-2902H
Record/Playback head	In-line (stacked) quarter track, PP30-4202
Bias frequency	Approx. 55Kc
Level indication	Two VU meters (calibrated to 0 VU at 12 db below saturation of tape)
Input	Low impedance microphone inputs — Transistorised (will accommodate any Microphone from 250 ohm-1 K ohm impedance) Sensitivity — 72 db (0.2 mv) High impedance auxiliary inputs Sensitivity — 12 db (0.2 v)
Output	Low impedance line outputs Auxiliary Record/Playback connector 2SD64 (x6), 2SB382 (x2), 2SB383 (x2)
Transistors	Approx. 16.9 lbs.
Weight	14.2 (W) x 6.3 (H) x 11.4 in (D) (360 x 158 x 287 mm)
Dimensions	Connecting leads
Accessories	Head cleaning ribbon 60 c/s pinch wheel capstan

SONY®
RESEARCH MAKES THE DIFFERENCE

Features

- Long life, solid state, all transistor circuit.
- Single lever control for all tape functions.
- Smooth and wide frequency response.
- Automatic end of tape switch, tape index counter.

For further details and address of your local dealer return coupon to:

SONY®
SONY U.K. SALES DIVISION
 Mercia Road, Gloucester. Tel: Gloucester 26841
A division of Debenhams Electrical and Radio Distribution Co. Ltd.

NAME

ADDRESS

ATR3

London Showroom, 70-71 Welbeck St. W.1

FRANCIS OF STREATHAM

include among their customers many who call personally from all over the country, because of the stocks and service in **TAPE AND HI-FI EQUIPMENT** to be found there. With so many shops to choose from, there must be excellent reasons why people prefer to buy from Francis. Perhaps you would care to find out by calling or writing to us about your requirements.

- ★ **VERY LARGE STOCKS OF TAPE AND HI-FI EQUIPMENT**
- ★ **NO EXTRA FOR CREDIT UP TO 18 MONTHS**
- ★ **OWN SERVICE DEPARTMENT**
- ★ **FREE SERVICE DURING GUARANTEE PERIOD**

FRANCIS OF STREATHAM

169-173 STREATHAM HIGH RD., LONDON, S.W.16

Between St. Leonards
Church and Streatham Stn.

Open all day
Saturday

Phone STR
0192/0466



TAPE RECORDER COVERS

Smart waterproof cover to give complete protection to your tape recorder. Made from rubberised canvas in navy, wine, tan and bottle green with white contrasting pipings, reinforced base, handy zip microphone pocket and name panel.

GRUNDIG TK 1	with pocket	49/6
GRUNDIG TK 5	with pocket	55/-
GRUNDIG TK 6	—	67/6
GRUNDIG TK 8	with pocket	63/-
GRUNDIG TK 14, 18 & 23		59/6
GRUNDIG 14L, 17L, 18L & 23L		67/6
GRUNDIG TK 20	with pocket	52/6
GRUNDIG TK 24	with pocket	55/-
GRUNDIG TK 25	with pocket	55/-
GRUNDIG TK 30	with pocket	60/-
GRUNDIG TK 35	with pocket	63/-
GRUNDIG TK 40 & 41		66/-
GRUNDIG TK 46	with pocket	82/-
GRUNDIG TK 60	no pocket	75/-
TELEFUNKEN 85	with pocket	65/-
TELEFUNKEN 75/15 and 76K	with pocket	55/-
TELEFUNKEN 95 & 96	with pocket	69/6
PHILIPS 8108	with pocket	57/6
PHILIPS EL3534	with pocket	87/-
PHILIPS EL3536	with pocket	70/-
PHILIPS EL3538	with pocket	63/-
PHILIPS EL3541/15	with pocket	57/6
PHILIPS 3541H		72/-
PHILIPS EL3542	with pocket	63/-
PHILIPS EL3548		79/6
PHILIPS EL3549	with pocket	79/6
PHILIPS EL3556	with pocket	67/6
PHILIPS EL3558	with pocket	65/-

PHILIPS STARMARKER	...	66/-
COSSOR 1605	with pocket	84/-
COSSOR 1602	with pocket	57/6
COSSOR 1601	with pocket	63/-
COSSOR 1604	...	79/-
STELLA ST455	with pocket	63/-
STELLA ST454	with pocket	57/-
STELLA 459	with pocket	84/-
STELLA 458	...	79/-
STUZZI TRICORDER	with pocket	58/-
SABA 2305	with pocket	79/6
ELIZABETHAN FT1	with pocket	66/-
ELIZABETHAN LZ 29	...	75/-
BRENELL MK. 5	with pocket	77/-
ROBUK RK3	...	67/6
SONY 521	...	90/-
FERROGRAPH	...	80/-
REVOX	...	84/-
OPTACORD 412, 414 & 416		63/-
TRUVOX R92 & R94	...	99/-
TANDBERG 72, 74, 62, 64, 92, 843 & 823	hard case 141/6 soft case 112/6	

CALL, SEND MONEY OR REQUEST
C.O.D. WITH YOUR ORDER TO:

A. BROWN & SONS LTD.

24-28 George Street, Hull
Tel. 25413/5

YOUR LOCAL

WORTHING, SUSSEX



1 Becket Buildings, Littlehampton
Road, Worthing 5142

Stocking Ampex, Ferrograph, Revox, Sony, Tandberg, Truvox, Philips, Bang & Olufsen, on fully comparative Demonstrations

WIMBLEDON'S TAPE RECORDER CENTRE

All leading makes in stock—Ferrograph, etc. Stereo—Mono—Pre-recorded Tapes—Accessories—Microphones. Qualified staff of long experience at your disposal backed by fully equipped workshop for guaranteed 100% after-sales service.

TEL-LEE-RADIO

220 The Broadway, WIMBLEDON, S.W.19 LIBerty 4946

TAPE RECORDER CENTRE (HX)

AGENTS FOR ALL THE LEADING MAKES OF RECORDERS AND HI-FI including:—B&O, BRENELL, BRAUN, DUAL, FERROGRAPH, FI-CORD, GRUNDIG, KORTING, OPTA-CORD, PHILIPS, REVOX, ROBUK, SABA, SONY, TANDBERG, TELEFUNKEN, TRUVOX, ETC.

30 KING CROSS STREET, HALIFAX

Halifax 66832

PART EXCHANGE WITH PLEASURE

GODLEYS SHUDEHILL, MANCHESTER 4

Telephone: BLACKfriars 9432
Confidential Credit Facilities
Part Exchange Welcome

Agents for Ferrograph, Tandberg, Brenell, B & O, Vortexion, Truvox, Sony, Leak, Quad, Armstrong, Clark & Smith, Lowther, Goodman's, Wharfedale, Garrard, Goldring, Dual, Decca, Record Housing, Fitrope, G.K.D., Fisher, Ampex, etc.

TAPE HI-FI CENTRE SHEEN

SPECIALISTS IN TAPE RECORDERS, ACCESSORIES HI-FI EQUIPMENT
YOUR CENTRE FOR FRIENDLY HELP—SALES AND SERVICE

3 & 4 STATION PARADE,
SHEEN LANE, SHEEN
LONDON, S.W.14

Now Open Until 8pm Fridays
PROSPECT 0985
(Opposite Mortlake Station, S.R.)

OWNERS OF AUTOMATIC SLIDE PROJECTORS...

give your shows the professional touch with a tape recorder and the famous automatic SYNCHRO-SLIDE—synchronised music, commentary, etc., for the cost of only 14 guineas (or Easy Terms). Send for FREE illustrated literature today!

SYNCHRODEK

Dept. ATR No. 27, 2 Warwick Court, London, WCI

TAPE 70

PROFESSIONAL Tape at a MODERATE PRICE

From your dealer or DIRECT from:—

LEDA TAPES (A), 30 Baker Street, London, W1

THE EASY WAY TO TRANSFER TAPE TO STRIPE

Own a stripe projector? If you have a tape recorder as well, you can easily transfer tape-tracks to stripe with 100% accuracy ... with Synchrodek. Write for FREE literature, to

SYNCHRODEK, Dept. ATR 102, 2 Warwick Court, London, WCI

DEALERS

CLASSIFIED ADVERTISEMENTS

Visit the North's Finest Tape Recorder Showroom. All leading makes in stock, ready for demonstration. Tape, Mics., Mixers, all accessories, Tape Records. Separate Hi-Fi and constructors showrooms. Full Technical Service.



KINGS SQUARE, YORK. Tel. 55666

LAMBDA RECORD CO. LTD.

Suppliers of Fine Tape Recording and Hi-Fi equipment, Microphones and Accessories. Specialist Technical Service Department. Part exchange and H.P. welcome. Suppliers to Schools, Universities, Atomic Energy Authority, Leading Architects and Broadcasting Organisations.

70 LIVERPOOL ROAD, LIVERPOOL 23

Tel. GREAt Crosby 4012

Tape recorder service in the

BIRMINGHAM! AREA L. BISHOP LTD.

1708 BRISTOL ROAD, SOUTH, REDNAL
BIRMINGHAM

Telephone: RUBery 2709

GRUNDIG SPECIALISTS

WORTHING TAPE RECORDER CENTRE

Tape and Hi-Fi Experts. Agents for all makes of Tape Recorders and equipment. Servicing and Repairs.

22 New Broadway,
Tarring Road, Worthing,
Sussex.

Telephone: WORTHING 3830

G. L. MORTON & CO LTD

12 OXFORD STREET

NEWCASTLE UPON TYNE

Classified advertisements in Amateur Tape Recording cost 1s per word, minimum 10s. Box Nos. 1s 6d extra. Advertisements and remittances should be sent to Advertisement Manager, 'Amateur Tape Recording', 9 Harrow Road, London W2.

PERSONAL

You ought to send for a copy of 'Psychology and Whisper Teaching' to 1 York House, Huddersfield - 5s 9d post free. (TC)

Sleep learning and therapy. Two revolutionary new techniques in their respective fields of Academic Learning and Mental Health which have been rendered possible by the invention of the modern tape recorder. Learn difficult lessons, memorize new data at short notice, master foreign languages, parts in plays or improve your mental powers. Send now for free details of our Sleep Study Recorder, Time Switch, Pillow Speaker, Cassettes, Induction and Language Tapes, and general information about these vital subjects. Psychology Tapes Ltd, Dept ATR, 16 Kings College Road, London NW3. PRImrose 3314. The foremost suppliers of Sleep-Learning Equipment in Britain (TC)

Highest cash prices offered for good quality Tape Recorders. Hi-Fi Equipment and LP Records. REW. Earlsfield Ltd, 266/8 Upper Tooting Road, London SW17. Tel BAL 9174 (TC)

Friendly Folk Association, Torquay, (Est 1943.) Worldwide correspondence, taping/introductions, friendship/marriage. Brochure free. (4/66)

Could you spare an hour of your time once a month to help Oxfam? Extra voluntary helpers urgently needed to collect 2s 6d Pledged Gifts from eight friends or neighbours. You could easily raise £1 a month. A Devon helper writes: 'Everyone has been so kind and willing and I've made new friends through collecting.' Please write for explanatory leaflet to Miss Joan Chapman, Room 50, Oxfam, Oxford. (H)

Listen and learn recorded tuition. Tapes and discs. Courses on book-keeping, banking, commerce, economics, law, statistics, shorthand, good speech and foreign languages. Free catalogues from Students' Recordings Ltd (Dept ATR), 15 Devon Square, Newton Abbot, S. Devon. (5/66)

Learn while you sleep. Learn languages, memorise speeches and sales presentations, absorb business statistics or the highway code while asleep with Learnasleep Equipment. Details from Sleep Learning Supplies (Dept ATR), 60 Hatherley Road, London E17. (TC)

The perfect companion to ATR is 8mm Magazine - an unbeatable combination for the sound and cine enthusiast. 8mm tells you all you need to know on how to take cine films and where to look for subjects. Packed with news of the latest cine developments, unbiased test reports and hints on sound and cine. All for only 2s 6d a month, or special introductory subscription offer of 25s a year from Subscription Dept, 8mm, Haymarket Press Ltd, 9 Harrow Road, London W2. (H)

Marriage/Friendships. Introductions everywhere, all ages. Send for free details. SAE Alpha Correspondence Agency, 30 Baker Street, London W1. (8/66)

MAGNETIC TAPE

A unique tape buy! Top brand 7 in, 2,400 ft, 25s; 5 1/2 in, 1,200 ft, 15s; P & P: 1 at 2s, 2 at 2s 9d, 3-6 at 3s 6d. Bargains in all sizes. SAE for list. E. C. Kingsley & Co Ltd, 93 Tottenham Court Road, London W1. EUSon 6508. (TC)

Ferrydynamics' 'International' Tape: Polyester: 7 in, 2,400 ft, 22s 6d; 5 1/2 in, 1,800 ft, 20s; 5 in, 1,200 ft, 14s; 7 in, 1,800 ft, 19s; Acetate: 7 in, 1,800 ft, 13s 9d; 5 1/2 in, 1,200 ft, 11s 9d; 5 in, 900 ft, 9s 9d; 7 in, 1,200 ft, 11s 9d; 5 in, 600 ft, 7s 9d. Also complete range British PVC tapes at lowest prices. Refund guarantee. P & P 2s. SAE list. Leda Tapes, 30 Baker Street, London W1. (4/66)

TAPE TO DISC

J & B Recordings. Tape/disc. Mobile unit. Wedding experts. 14 Willows Avenue, Morden, Surrey. Mitcham 9952. (3/66)

Tape to Disc Recording. Finest professional quality: 10 in LP, 42s; 12 in LP, 48s; 7 in EP, 21s; 40 ft recording studio; 48 hour postal return service. Any speed tapes. SAE for leaflet. Deroy Sound Service, 52 Hest Bank Lane, Hest Bank, Lancaster. (TC)

Rapid Recording Service. Records made from your own tapes (48-hour service). Master Discs and pressings. Recording Studio - Demo Discs. Mobile recordings, any distance. Brochure from 21 Bishops Close, E17 (TC)

If quality and durability matter (especially with LPs from your precious tapes), consult Britain's oldest transfer service. Our mobile units attend anywhere for mono/stereo master recording. Records published tax free for schools, choirs, orchestras. Sound News Productions, 10 Clifford Street, London W1. (6/66)

EQUIPMENT FOR SALE

Unbiased guide. Our latest sixty-five page, photographically illustrated hi-fi equipment catalogue (4s 6d). Advisory service, preferential terms to Members. Membership 7s 6d. You'll be glad to have consulted Audio Supply Association, 10 Clifford Street, London W1. (6/66)

Synchrodek. Unopened, unregistered guarantee card, unwanted gift. Offers around £12 10s 0d. Box No. 021, ATR. (4/66)

Hi-fi by post. Express Mail Order Specialists. Most items sent within 24 hours. 18 months free service. Free subscription for 12 months to famous Hi-Fi magazine. Send 6d in stamps for further details and leaflets (state interests). EME (Mail Order Division), 188 Queens Road, Watford 41037. (8/66)

Philips EL 3556 tape recorder, brand new, unused. Cost £65. Offers. D. J. Williams, 65 St Mary's Road, Poole. (4/66)

PRE-RECORDED TAPES

American 4-track stereo tapes covering most famous labels at realistic prices. Why pay more? Imported directly by us, saving distributors' profits. Vast selection at 75s each - send SAE for free lists or call at London showrooms. Teletape of Marble Arch, 33 Edgware Road, W2. (TC)

American pre-recorded stereophonic 4-track tapes supplied. Send 5s for catalogue of over 4,000 tapes. American tapes, 17 Temple Road, Blackrock, Co Dublin, Ireland. (6/66)

Two-track tapes. Armed forces, radio broadcasts. Rare radio broadcasts and jam sessions. Air checks and out of print recordings by all the great bands. Bill Ordowski, PO Box 121, Port Huron, Michigan, USA. (4/66)

Hungarian recorded tapes, original gypsy music, folk-songs. 4-track, 5 in spool, 3 1/2 ips; mono, 21s 6d; stereo, 24s 6d. Send PO to 'Csardas', 105 Holmrook Road, Preston. (4/66)

BINDERS FOR 'ATR'

You can bind your own copies of 'ATR', in only a few seconds, with an *Easibinder*. It will keep your copies in perfect condition, and will open flat at any page of any issue.

These binders are strongly made with stout board, covered with leathercloth, and cost only 15s, including postage and packing. Order now from: Binder Department, ATR, 9 Harrow Road, London W2

L.E.C. (Leyton) ELECTRICAL CO.

120 HIGH ROAD, LEYTON, E.15

LEYtonstone 6814

Stockists of: Ferrograph, Vortexion, Brenell, Revox, Rogers, Armstrong, Leak, Goodmans, KEF, Record Housing Furniture, etc. Tapes by BASF, AGFA, ZONAL 3" to 10". Demonstrations in the Home. Tape to Disc Service.

MASSEY'S CENTRE OF SOUND

121-123 High Road Chiswick London W4
telephone CHiswick 2082

AMATEUR TAPE RECORDING SUBSCRIPTION FORM

Make certain you receive your copy of AMATEUR TAPE RECORDING Video and Hi-Fi by completing this form and sending it, with your annual subscription, to:

AMATEUR TAPE RECORDING, SUBSCRIPTION DEPT,
9 HARROW ROAD, LONDON W2

Please send AMATEUR TAPE RECORDING Video and Hi-Fi for one year, commencing with the next () issue, to the address below. I enclose the annual subscription of thirty shillings (30s). ATR will pay the postage.

Name _____

Address _____

Date _____

Tape Club members wishing to avail themselves of the special Club Subscription rate of 25s per annum should apply to their local Club Secretary. All Club orders must bear the Club Secretary's signature and be sent to the Subscription Department.



GRAMPIAN REPRODUCERS LTD.

HANWORTH TRADING ESTATE
FELTHAM, MIDDY.

FELTHAM 2657

the Grampian Ribbon Microphone

With a frequency response, virtually level from 40 c/s to 15 kc/s, it is the ideal microphone for the studio and where a high standard of fidelity is essential.

Model GR.1. Semi-cardioid response, giving partial suppression at the rear face. Ideal for overcoming problems of feedback between microphone and speakers.

Model GR.2. Has a 'figure of eight' sensitivity pattern. Discriminates against unwanted side-noises, both in the vertical and horizontal planes.

Complete with 18ft. screened lead, swivel holder and connector. A range of accessories is available — please send for illustrated leaflet to:



LANGUAGE LEARNING WITH A TAPE RECORDER

continued
from page 13

Sleep Learning Supplies Ltd
60 Hatherly Road
Walthamstow, London E17
Educational Recordings Ltd
21 Bishops Close
Walthamstow, London E17

Language tapes and sleep learning equipment.

Language tapes and sleep learning equipment.

We have just received information that *Veritone* have now marketed their cassette tape recorder (shown in Fig.3) and that cassette language tuition tapes are available as well as pre-recorded music cassettes.

F.C.J.

ALMOST ANY PROJECTOR CAN BE SYNCHRONISED

All you need is the Synchrodek and a tape recorder. Then you can have perfectly synchronised, high quality sound with your films. Full details and FREE literature from

SYNCHRODEK, Dept. ATR 104, 2 Warwick Court, London, WCI

MORE APPLAUSE FOR YOUR SLIDE SHOWS—

if you present them with fully synchronised sound. You can do it easily with an autoprojector, tape recorder and the famous SYNCHROSLIDE. Cost only 14 guineas (or Easy Terms). Send for know-how and literature—FREE.

SYNCHRODEK

Dept. ATR No. 28, 2 Warwick Court, London, WCI

Bib PROFESSIONAL TAPE SPLICER

Complete with
razor cutter



A handy precision tool for quick and accurate editing—no wastage or post editing clicks. Pays for itself by using up all your odd lengths of tape.

18/6 each

MULTICORE SOLDERS LTD., HEMEL HEMPSTEAD, HERTS

Bib NEW INSTRUMENT CLEANER

Ideal for
tape heads



For cleaning tape heads, tape recorders, plastic, chrome, glass, printed surfaces and also the exteriors of electronic equipment. Anti-static, non-flammable and because it does not smear it is easy to use. In handy 4 oz. bottle. 4/6 each

DON'T MISS MAY issue ATR

- Special Audio Fair Guide
- Tape record/replay amplifier circuit
- Tracking Ancient Folklore
- Let's make a Dramatape
- On Test: Wyndson Vanguard Grampian Echo Unit
- The Electronic Music Makers

Plus all the regular features

MAY ATR OUT 14 APRIL

Order your copy now!



LEARN WHILE YOU SLEEP!

Languages, studies, scripts, etc. by means of tape recordings played at a whisper through under pillow speaker **SLEEP-O-MATIC UNIT**

including two-speed tape-recorder complete with microphone, time-switch and under pillow speaker £27/10/- plus 6/- post (Batteries 5/-). Two models available, one for mains only and one for batteries which can be supplied with a mains power pack at 50/- extra. Both will take our special radio tuner at 42/-.

Publications on "Sleep Learning" and "Mental Power Through Sleep Suggestion". Full details on request.

RAPID RECORDING SERVICE
21 BISHOPS CLOSE, LONDON E.17

Are you at sixes and sevens with Tandberg?



SERIES 6



SERIES 7

Q. Tandberg stereo tape recorders have been highly recommended. Which shall I buy Series 6 or Series 7?

A. For playback purposes Series 6 requires additional power amplifiers and loudspeakers. If the tape recorder is not to be used as part of a Hi-Fi installation then Series 7 is the one for you.

Q. The Tandberg Series 7 is a complete Stereo Record and Playback system, incorporating power amplifiers and loudspeakers. If I should decide to buy Hi-Fi equipment later can I use a Series 7 with it?

A. YES Series 7 has high impedance outlets designed to feed Hi-Fi pre-amplifiers.

Q. If that is so why should a Hi-Fi owner consider Series 6?

A. Because Series 6 has separate Record and Playback Heads, two recording amplifiers and two playback pre-amplifiers. These special features permit instant playback monitoring off the tape at the time of recording. "Sound-on-Sound" is also possible.

Q. Does this mean that Series 6 recordings will be superior to those of Series 7?

A. Not necessarily! The expensive "Off-the-tape monitoring", as used in professional recording studios, is well worth while, but with only a little care and experience tapes can be made on Series 7 audibly indistinguishable from those of a Series 6.

Q. "Sound-on-Sound" has been mentioned. I am very interested in photography and would like to synchronise Sound with my pictures. Is "Sound-on-Sound" similar to "Superimposition"?

A. Quite definitely No! Superimposition consists of partially erasing the first recording with consequent degrading of sound quality. With "Sound-on-Sound" a master recording, on one track, is

transferred and mixed in perfect synchronisation with a second recording on the other track. Multiple recordings are possible without loss of quality.

Q. Is "Sound-on-Sound" possible with Series 7?

A. No. Not to the same extent. It is possible with Series 7 to playback track one and record track two in synchronisation with it. Afterwards both tracks can be played back, and mixed as required, either through stereo speakers or combined through the centre channel outlet.

Q. I suppose if I require the very best reproduction, and signal to noise ratio, I must buy a two track Tandberg?

A. Tandberg made the 15 i.p.s. speed, with its large reels, obsolete by low speed performances never previously thought possible. Tandberg engineers pioneered, and later perfected, four track tape recording techniques. We challenge you to detect audible difference between two and four track Tandberg recordings.

Q. Then which shall I choose four track or two track?

A. If you tend to be rather conservative. If you do not expect to purchase pre-recorded stereo tapes, which are all 4-track nowadays, and if tape economy is not a consideration then a 2-track 6 or 7 may be the one for you. Please note, however, that 4-track Tandbergs outsell 2-track by five to one.

Q. In conclusion will you please run through the complete technical specifications for me?

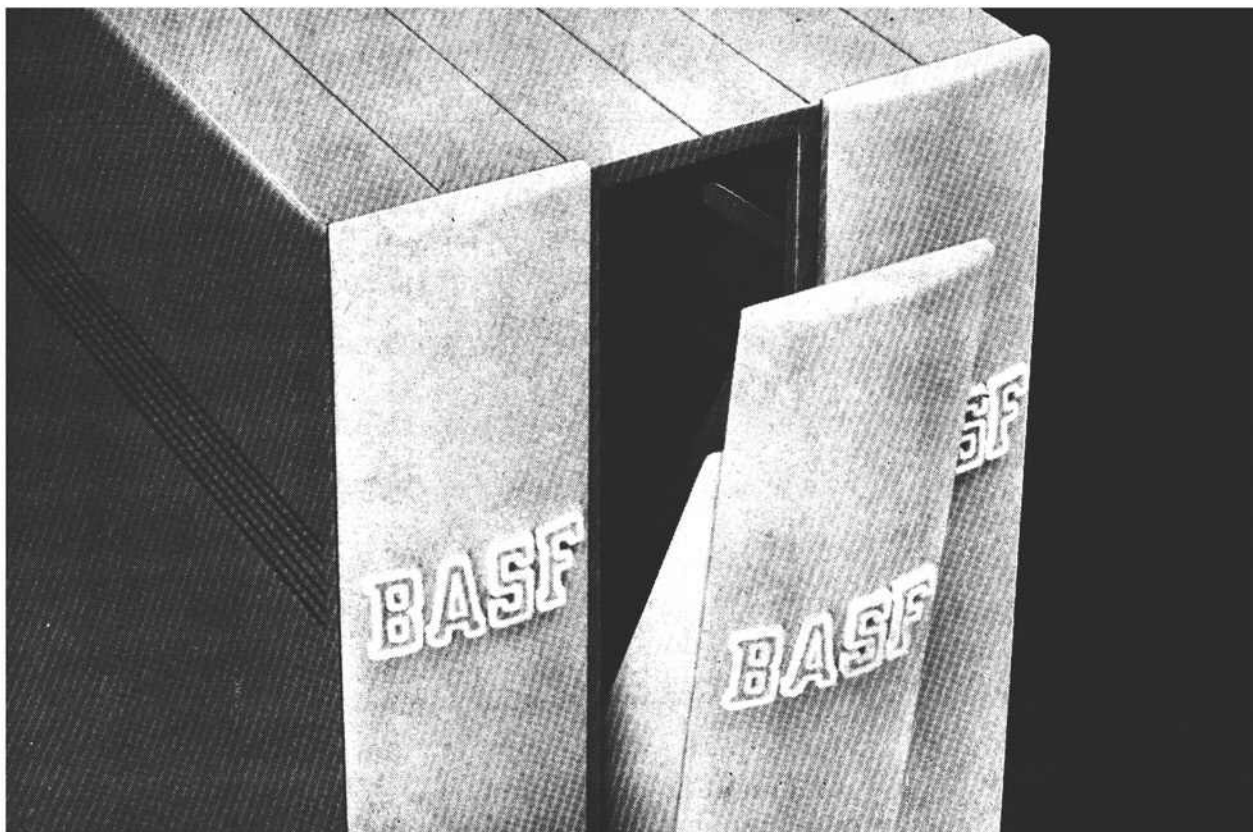
A. Unfortunately we have no more space, but we shall be pleased to send you illustrated literature, describing the complete Tandberg range, Mono or Stereo, upon request.

Visit us at Booth 17, Dem. Room 222, at the International Audio Festival at the Hotel Russell, Russell Square, London W.C.1, on April 14th to 17th

For further information and specifications please write to: Dept. ATR

ELSTONE ELECTRONICS LIMITED, 81 Kirkstall Road, Leeds 3. Leeds 3-5111 (7 lines).

Tandberg



**The only catch about
this new better-looking, longer-lasting
library box from BASF is deliberate.**

(It goes click)



Inside the hard wearing Polystyrol case of the new BASF library box is a hard wearing Polystyrol catch. Its sole function is to ensure that when the easy-swivel cassettes click tight, they stay tight. So your tapes stay in. And the dust stays out.

The new BASF library box is better-looking, harder wearing — and costs no more. It's solidly built to

give your valuable tapes greater protection, longer playing life than ever before. The new library box is available with either Long Play or Double Play tape in 5", 5½" and 7" spools. See it at your dealer's now. And for a ready reference to your collection ask him for the BASF Library Index, FREE.

BASF CHEMICALS LIMITED • 5a Gillespie Road, London, N.5 • Tel : CANonbury 2011

