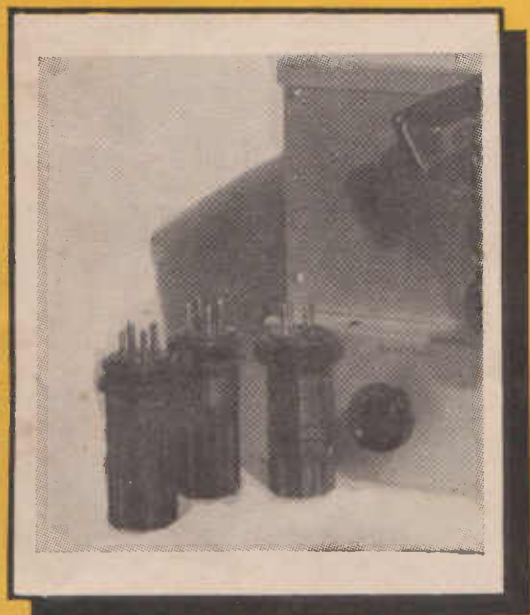


Registered at G.P.O., Sydney, for  
transmission by post as a periodical  
Circulating throughout Australia and  
New Zealand.

# *Australian* RADIO AND TELEVISION NEWS

A black and white advertisement for Philips valves. The background is a collage of various Philips valves of different shapes and sizes. A white rectangular box is overlaid on the center of the image, containing the text: "There's a **PHILIPS VALVE** for every socket in your receiver".

There's a **PHILIPS VALVE**  
for every socket in your receiver

# 10-WATT DISC SEAL TRIODE ME1001



**Upper Frequency Limit**  
3,750 Mc/S (8 cm.)

*Illustration slightly larger than full size*

PRINCIPAL CHARACTERISTICS	
Heater Voltage	6.3V.
Heater Current	0.4A.
Max. Anode Voltage	350V.
Max. Anode Dissipation	10W.
Max. Anode Current	50mA.
Max. Peak Anode Current	150mA.
Power output (at 3000 Mc/s)	0.5W.
Power output (at 500 Mc/s)	3.5W.
Mutual Conductance	6mA/V.
Amplification Factor	30

THE ME1001 is the first of a series of Mullard Disc Seal Triodes specially designed for U.H.F. applications. It may be used equally well as oscillator or amplifier in C.W. or pulse transmitting systems. Adequate cooling and low inductance are combined in the design of the anode and grid discs to give an anode dissipation of 10 watts and an upper frequency limit (as an oscillator) of 3750-3500 Mc/S (8-8.5 cm.). When used in a co-axial line circuit with an anode input of 10 watts, the output power is approximately 0.5 watts at 10 cm. (3000 Mc/S).

Full technical details of the ME1001 and other special Mullard VHF valves will be gladly supplied on application. The ME1001 is available ex stock.



**Mullard**  
*thermionic valves  
& electron-tubes*

**Mullard Australia Pty. Ltd., 35-43 Clarence St., Sydney, Tel. BX 2006**  
**592 Bourke St., Melbourne, Tel. MU 2366**

*Representatives in Australia for Mullard Electronic Products Ltd., London*

M18-49



# BOB DYER

comedian-compere of the "Atlantic Show," heard over station 2UW Sydney every Saturday night at 8 p.m., offers a 130 guinea jewelled watch to a contestant.



● Here, Bob Dyer is measuring runs in the "Longest Ladder" competition during a recent "Atlantic Show" featured on 2UW.



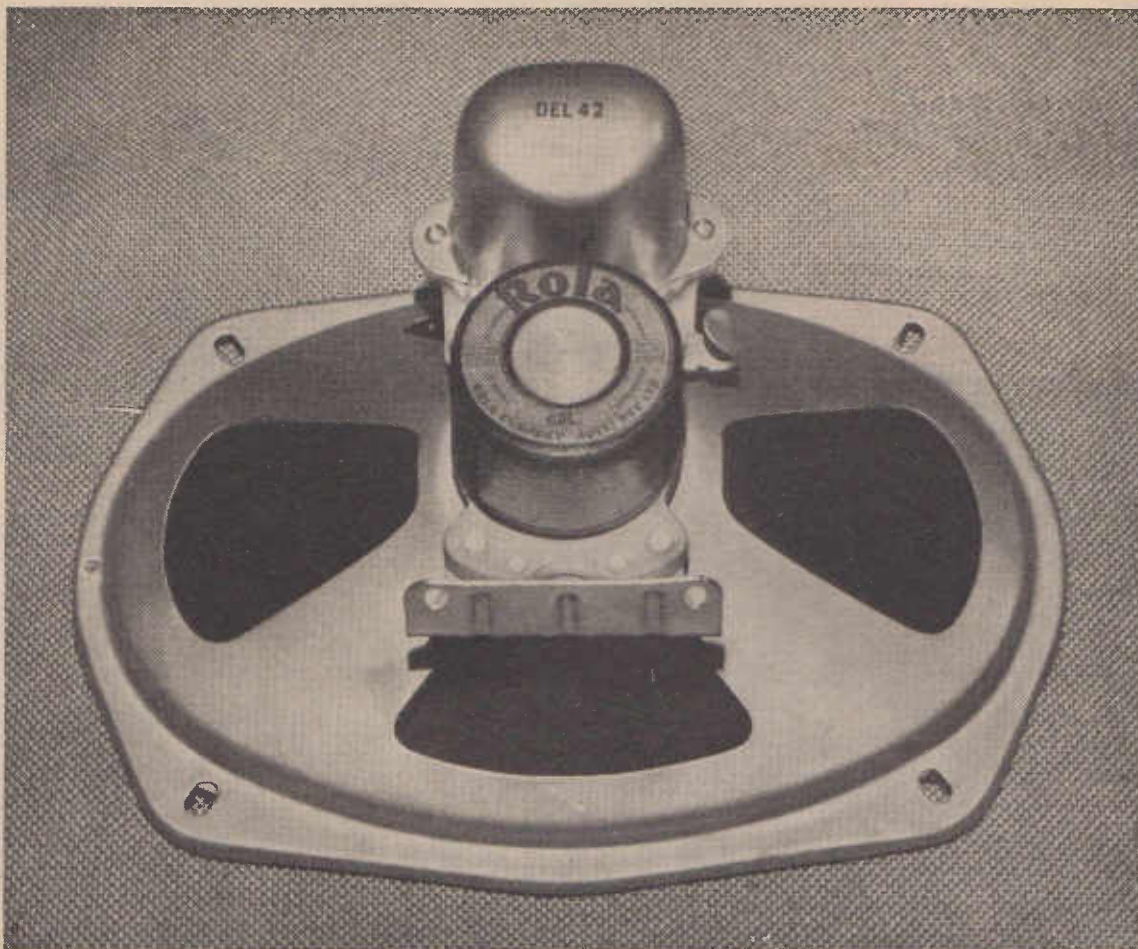
● Cilve Amadio (saxophone) with two members of his Quintet, Olga Krasnik (piano) and Edward Cochman (violin). The Quintet has been a feature of ABC programmes for more than 10 years, and brings to Sunday evening listeners programmes of pleasant and distinctive music. Featured on Interstate from 2FC at 7.30 p.m.

\* \* \*

● Fred Hartley rehearses a number with his ensemble in Sydney. They are L to R: Fred Hartley, Don Brunell (clarinet), Don Andrews (guitar), Eddle Fisher (bass), Phyllis McDonald (1st violin), Pat Buchanan (2nd violin), Rosalind Gumpertz (viola) and Muriel Lang (cello). Twice weekly from the ABC: Saturdays 6.30 p.m. from 2BL, National, and Sundays at 5.30 p.m. through 2FC, Interstate.







PERFECT FOR PORTABLES

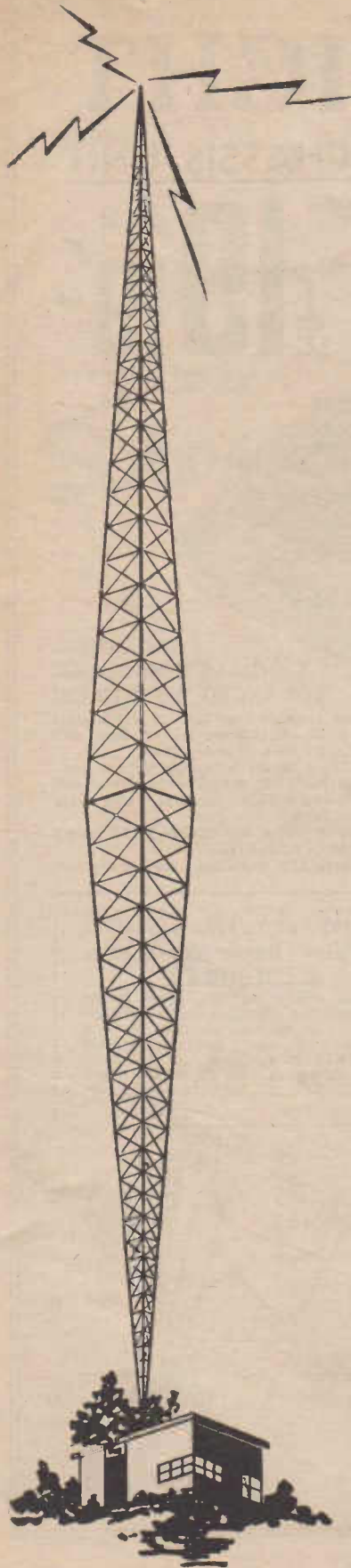
## This NEW ROLA ELLIPTICAL LOUDSPEAKER

This model is Rola's contribution to the compact design of next year's Portables.

The new Elliptical Model 6-9L gives the equivalent performance of an 8 inch loudspeaker (considered the ideal for high quality portables), yet can be fitted into the space normally taken up by a conventional six inch model.

ROLA CO. (AUST.) PTY. LTD., THE BOULEVARD, RICHMOND, VICTORIA,  
and at 116 CLARENCE STREET, SYDNEY





# AUSTRALIAN RADIO AND TELEVISION NEWS

THE PROGRESSIVE NATIONAL  
JOURNAL FOR EVERYBODY

EDITED BY DON B. KNOCK

Proprietors:

**HAYNOCK PRESS PTY. LIMITED, Publishers**

Directors: A. E. HAY, F.R.S.A., M.I.R.E., Business and Advertising

D. B. KNOCK, M.I.R.E., (Aust.) M.W.I.A., Editorial

Advertising Representative, N.S.W., D. R. WARDEN

All Correspondence: Box 5177, General Post Office, Sydney

Telegrams and Cables: "HAYNOCK", Sydney

Telephones: Editorial and General, FW 2143. Publishing and Advertising, JX 3212,

Secretary, BW 1633

Victorian Representative: R. HAIG-MUIR, A.M.I.R.E.

Melbourne Office: 29 Collins Place. Phone Cent. 1061

Telegraphic Address: "LITCHFILM", Melbourne

Advertising Space Rates available on application

VOL. 1 No. 5

NOVEMBER, 1949

**FEATURES THIS MONTH . . .**

	Page
Editorial	7
Television, Entertainment, and the Stage	8
Telenews	11
Martian Megacycles or Earthbound Electrons?	12
Broadcasting Brevities	14
Provincial Broadcaster—4TO Townsville, N. Queensland	18
Design and Construction, Voltage Amplifiers	20
In Lighter Vein	28
Short-Waves	32
Reader's Floodlight	33
Commercial Broadcasting News	34
Radiotips for Practical People	35
Round the Turntable	38
In Tune with the Trade	39
Amateur Radio Section	42
Reader's Exchange and Mart	50

Price per single copy one shilling. Subscription rate 12/- a year posted free to any address in Australia. 12/- Stg. to British Empire excepting Canada, Canada and U.S.A. 2 dollars 50 for one year. All other countries 15/-. The Editor invites contributions on any topic covering radio, television, home interests and handicrafts in general. Constructional articles are acceptable but these must be suitable for perusal by non-academic readers. Short stories and humorous articles will also be considered. If accepted, contributions will be paid for upon publication. A stamped addressed envelope MUST accompany all MSS for return if considered unsuitable. "AUSTRALIAN RADIO and TELEVISION News" is distributed through wholesale channels by Gordon & Gotch (Australasia) Limited. The publishers will permit the re-publication of Editorial matter only by written permission, otherwise the contents of this journal are strictly copyright.

**THIS MONTH'S COVER ILLUSTRATION:—**

Despite the fact that modern short-wave receivers use bandswitching, the plug-in coil is as useful as ever for the home-made receiver.

# RELIANCE SKY KNIGHT

5 Valve WORLD RANGE Radiogram CHASSIS UNIT

Complete

£ **19'19'**

Very Easy Terms in Sydney and Metropolitan Area.



NOW AVAILABLE  
RELIANCE  
SAPPHIRE NEEDLES

8/6 Post Free

## RELIANCE GIVES YOU THESE ADVANCED FEATURES!

- New type variable Tone Control which gives much more efficient mixing of Bass and Treble notes than ordinary types.
- Inverse Feed Back, automatic volume control, FM PLUG-IN, extension speaker socket.
- RADIO-GRAMO switch combined with wave change switch.
- Type EF50 Valve for NOISE FREE LONG DISTANCE RECEPTION.
- Latest type 12" Permanent magnet speaker.

## A FAMOUS

## NAME IN RADIO BEHIND THIS SET!

The Reliance Sky Knight is a companion to the famous Reliance Sky Raider and Sky Master, backed by over 20 years of technical experience in producing communication type receivers and luxury type multi-valve sets. The Reliance Sky Knight brilliantly combines many of the distinguished features of these super sets and it comes to you in COMPLETE form to enable you to fit it to your own cabinet easily and at low cost! If you wish, we will supply a cabinet, motor and P/U or record changer at low prices, too!

## NOW AVAILABLE!

### 16-Valve Super Sky Master RADIOGRAM

Limited number of this super luxury set available, complete in magnificent cabinet. It contains many of the new features of the 36-valve SUPER SKYMASTER exhibited at the Royal Show including a DOUBLE PUSH PULL PARALLEL audio with 807 type valves.

## FREE PACKING ——— FREE AIR FREIGHT

Wherever practicable we despatch by AIR FREIGHT. This is FREE IN N.S.W. and to Melbourne and Brisbane. Nominal charge elsewhere. The set is securely packed in a special carton. There is NO CHARGE for packing.

Write or Call For Full Technical Details

# RELIANCE RADIO

10 BARRACK ST., SYDNEY, NEXT DOOR TO LOTTERY OFFICE

Telephone: BX 2691-2-3



"YOU can be sure of THIS door"



READ AND  
ENJOY

# AUSTRALIAN RADIO AND TELEVISION NEWS

A MAGAZINE  
FOR EVERYBODY

Vol. 1, No. 5.

SYDNEY, AUSTRALIA.

November, 1949

## *Short Wave Propaganda*

### *European Misuse of Frequencies*

### *A Vital Factor in Shaping the World of*

## *TO-MORROW*

A FEW months ago a prominent American Communications Engineer expressed the opinion that of the 300 million people throughout the world who daily listen to some form of broadcasting, less than 3 per cent. hear any form of direct short-wave broadcasting. The guess is probably somewhere near the mark, and that being so, the thought arises about the appalling wastage of valuable frequency channels. One has only to run over the short-wave range of a dual-wave receiver to know that thousands of stations, large and small, are continuously jostling each other, churning out programmes of all kinds in languages of all kinds. Prior to the war, these frequencies were notable as being a verbal battleground for the Axis Dictators, with intensification of vituperation and hate as the war proceeded. Then came the end, and the Lord Haw Haw's were no more. Now, with the rumble of war hardly receded from memory, the higher frequency channels are again a stamping ground for propaganda and falsehood, look at it which way you will. There are countries employing powerful radiations to blot out or otherwise interfere with transmissions of other nations . . . it is the vicious use of short-wave radio all over again. A year or so ago there took place the world conference for the allocation of frequency channels at Atlantic City, U.S.A., where spokesmen for countries large and small decided the future of the long-distance frequency spectrum for a period of years. Said the publication "QST" at the time . . . "It is difficult to portray adequately the greed, rapacity and general radio dumbness of the average foreign spokesman for government broadcasting. With exceptions, of course, he is commonly a rather high-powered political character, not a real radio man and not a technical man, caring less than anything for the communication services, and rioting in the plenipotentiary powers given him by his government. Radio means only

broadcasting to him, and he doesn't care what happens to other services so long as he gets what he wants."

It cannot be denied that short-wave broadcasting has been and is being mis-used; one has but to listen to that portion of the spectrum that was once the exclusive amateur "forty metre band" to note the early morning chaos. Europe is a seething mass of broadcasters, not even to those who cannot really understand the language, particularly kindly disposed to each other. The ironical part of it is that in Continental countries for whom the anti-Western propaganda is intended, most of the peoples are too poor to live decently, let alone afford the dubious luxury of a radio receiver capable of receiving these transmissions. It is an insane state of affairs. The communication channels are inundated with propaganda, and as this journal sees it, the talking shop of Atlantic City didn't result in any real control over mis-users of channels; the same old state of affairs exists. At the close of each year the Christian world likes to stress the virtue of "Peace on earth and goodwill toward men." That condition will not be helped by the mis-use of communication frequencies. A much better thing for the world would be for men with authority and foresight in their own countries to give the amateur the means to spread goodwill among nations by widening instead of restricting frequencies. Short-wave broadcasting is, if used as in Britain and Dominions, a valuable asset. In weary years of war the tones of Big Ben were an eloquent assurance that the hub of the British Empire was still in situ. Short-wave broadcasting of the British and American kind amply justifies the use of valuable channels. They would have a better case to present for continuation than some others if called up to justify claims to frequencies.

DON. B. KNOCK.

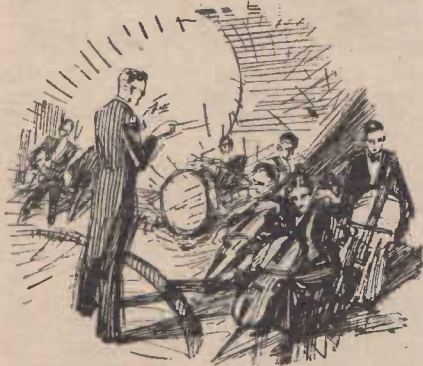


# TELEVISION, ENTERTAINMENT, and Stage Technique

By VIDEX

*There are many important aspects of Television, bearing upon the reaction of the viewer and the performing artist, which are not at first consideration apparent. Our contributor here throws some light on the subject from rather unexpected but sound angles. He is well familiar with everything that modern Television has to offer, and just what it presents in the way of problems. As he is a London correspondent his remarks may be taken as right up-to-date.*

**T**HE first thing that occurs to the man who will be interested in what he may see on Television is, just what kind of entertainment is likely to be offered? Also, will it be sufficiently diversified as to hold one's interest as time goes on, over periods of weeks and months? Under the heading of entertainment we can classify many obvious things. For example: thinking, listening to conversation, reading, watching objects in motion, and so on. Many people find it essential that they be entertained by others; some can entertain themselves with little difficulty. Entertainment, however, in the sense of screen and stage, is something that concerns people essentially in that it is dependent upon the process of seeing. Well to the forefront in this respect we find sport, newsreel films, film and stage plays. If you ask whether or not these may be applied with full effect on Television, the unhesitating answer is YES.



## Variety Of Entertainment

This new medium, all the time gathering momentum in Britain and U.S.A., will, it seems, be established before long in Australian Capital Cities. Once the administrative side

is organised (there is no technical obstacle in these days) Australian viewers should be able to enjoy in their own homes every form of everyday entertainment, which means film and stage presentations, topical and sporting events, talks, interviews and other events . . . SEEN and HEARD at the very moment they take place. The possibilities are so numerous that they open up a vast field. Here in London the stage side of Television has given viewers a very attractive bill of fare during the last twelve months. They have been able to see and thoroughly enjoy "Hamlet," Margaret Lockwood in Bernard Shaw's "Pygmalion," "Blythe Spirit," "Here Come the Boys," Sir Malcolm Sargent, and others. Other notable transmissions included the Olympic Games, the Lord Mayor's Show, and the Royal



Wedding. You could sit in your flat and watch Sir Don Bradman hitting sixers.

Let me assure you that familiarity with the little picture on the receiver screen becomes something of an obsession, for the reason that human beings react to the sense of seeing more easily than to hearing. The Television screen virtually insists that you concentrate on it, just as



*"Once the picture starts, you simply keep on looking."*

does the movie screen, and there is the intriguing fact that you are actually watching things AS THEY HAPPEN. The fact also is one having a tremendous bearing on the reactions of the people who go before the TV cameras . . . of which more anon. Once the picture starts . . . you simply keep on looking . . . you find that you don't want to miss anything on that receiver screen. This would, of course, not be the case if there were technical imperfections in TV transmission and reception to contend with; but the experimental period for modern Television was done with in pre-war years. Clarity and detail is quite remarkable, and in my opinion any suggestion that the 405 line British Standard is behind the times is just nonsense. If you can pick out a trace of the lines on an Alexandra Palace transmission, then you must be blessed (or cursed) with the multifarious eyes of a house-fly! Television has certainly come to stay . . . it is sweeping the country very quickly, and nothing can stop it. Knowing the Australian love of entertainment and sport, I say with confidence that TV will "catch on" in Australia with speedy momentum, and the public is fortunate to have available at this pre-establishment stage a publication such as "Australian RADIO & TELEVISION News." One of the most popular transmissions from the London Television station is called "Picture Page." This brings all manner of interesting people to the screen, and there is nothing haphazard about it. Those who plan the programming must needs have the advanced mental vision of the movie director who visualises the ultimate effect.



## How TV Plays Are Planned and Produced

With a suitable play available, the producer and staff get busy for about a month before the actual performance. Rehearsals are quite similar to ordinary stage preparation excepting that they are much shorter. None of this takes place at the Television studios, but on the day for the scheduled transmission, a rehearsal is held in the studio, and for the first time the cast goes through the show with the actual scenery, props and lighting. Then, when the show actually goes on the air right after the "work-out" the players get on with their job just as if they are playing to a crowded house at a theatre. But . . . there are very important differences.

## Television Actors Face Unusual Techniques

Whereas there is ample room on the theatre stage for players to move around, the Television set-up calls for a strict maintenance of individual positions to permit the camera to take everything in. The



camera comes in for close-ups and goes back for long-shots, and all the time there is some of the atmosphere of a movie set. But in acting for Television there is a technique that is neither stage nor film in concept . . . it is simply Television, and it is an exacting taskmaster. In the first place, the actor must be good at his or her job, which goes without much comment, but the important thing is that he or she must be good enough to get personality on to the Television screen without any audience reaction at all, yet knowing all the time that critical eyes are watching, and ears are listening. If and when the audience applauds, the Television actors don't know a thing about it. Neither do ordinary film actors . . . but there is a vast difference. The film player can be called upon again and again to re-act a scene or portion thereof until considered perfect. With Television, it

MUST be right from the start. One cannot go back and start all over again. That, too, goes for "live" broadcast plays, but what the show looks like to broadcast listeners relying on a loud-speaker alone to convey "atmosphere" is neither here nor there.

The Television actor must play in dead silence but must still be able to produce the same effects as if he had been interrupted by a hearty laugh from the audience. In ordinary stage work an actor has the audience "out there" to help him time his "patter," etc. He has time, when there is a laugh interruption, to think of his next line or so, and to say them. From audience reaction he takes his cue to raise or lower the voice, or alter intonation. In other words, the interruptions can be exploited. The dramatic actor can read warning signals similarly . . . a spate of coughing among the audience may be indication that people are bored . . . or not interested, and he knows at once, or should do, that he is "off the rails." Audiences don't cough overmuch at plays if they are really interested. When the time for exit comes, if an actor has amply pleased an audience, the surge of applause tells him that he has got over well. Not so with Television . . . in TV all that is completely absent. There must be reliance on good acting and experience to be successful. Remember these things about a Television play, especially if you are a broadcaster with aspirations. A Television play is a reproduction of a performance being actually put over at the initial time. When you look at a movie film, and hear the accompanying sound, you are seeing something of a "canned" nature. The action took place months, and perhaps years ago. You don't see the actors . . . they aren't there in person. They are merely images on a screen.

In Television the actors are virtually THERE at the instant . . . in person, and they are facing an ordeal in that they MUST remember words and action on the instant. Conversely, the audience looking at the screens of their Television receivers, are sub-consciously aware that those actors are there actually in person. There is really a much more intimate and personal feeling of contact than could ever be the case with film portrayal.

## Production Problems

As with the preparation needed for stage work, Television production calls for a large amount of organisation, but with the difference that the final polish must be given to the rehearsals in about a third of the time. Costuming has to be done, scenery painted, and props secured in a fraction of the time taken

for a stage play, and whilst shows are being prepared and rehearsed, there are afternoon and evening transmissions in progress at the same time. Very careful planning is needed, not only by the producer, but by the entire staff, which includes engineers, lighting people, camera crews and stage hands. Lack of studio space is a severe handicap in the present studio arrangements of the London service, but this will be overcome in the near future. Lighting itself, although fundamentally similar to film studio requirements, is a specialised business because of the many "shots" involving close-up, long-shots, etc. Then, when a Television show is over, there is no question of retaining the scenery and props, it must needs be torn down at once to make way for a new set-up. Obviously, the Television studios of the near future will have abundant stage space and will be able to utilize a succession of prepared sets; which will relieve some of the strain on those who at present do a magnificent job under very arduous conditions. Much of the popularity and success with the public of British Television is due to the untiring work and enthusiasm of those who work like Trojans at Alexandra Palace to ensure that each show shall be of the best possible calibre.

## About Prices


Naturally, "viewers," having paid out a lot of money for receivers, expect to have something good in return. The cost of sets is at present high, but undoubtedly it will come down. As I write this there is the announcement of the new £45 receiver by E.M.I., and with that lead it may be considered certain that other manufacturers will do likewise.

## What Of the Future?

There are people who say that Television is a threat to the stage and screen, but a little reflection will show that both the long-established mediums will never be killed by Television. The screen will be enhanced by the addition, but the stage will always be the same. Silents, talkies and radio have not, as was predicted, affected the stage adversely. Rather have they helped it. There is every probability that Television will do much to raise the standard of the entertainment world in general, for the well-known stars of stage, screen and broadcasting studio will have greater publicity than ever before, and also, new stars will be created. The time will come, when Television is an every-day medium in most of our homes, that people will go to the theatres to actually see from a flesh-and-blood angles, the stars who have been so attractive to them on their Television screens.

\* \* \*





AND NOW . . . a really comprehensive  
range of PHILIPS REPLACEMENT VALVES

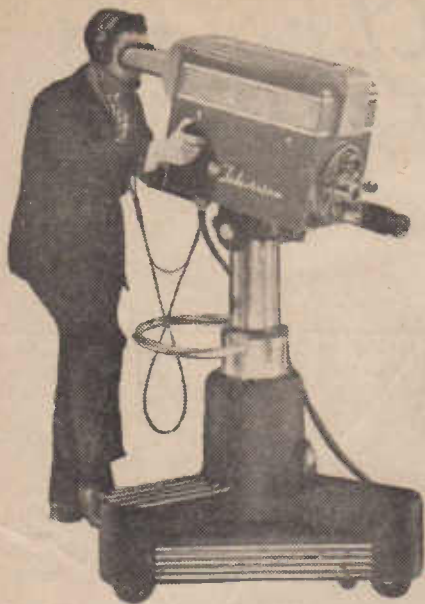
A more complete range of the "wanted" replacement types has seldom before been available. There's a valve from this amazing Philips range for every socket of every radio. Philips Valves are **DEPENDABLE** valves — technical perfection is assured through every stage of manufacture . . . the valves themselves are the result of many years of experience and research in the field of electronics.



**PHILIPS**  
**VALVES**



# Telenews



## COLOR TELEVISION

**SCENE:** Operating room, University of Pennsylvania Hospital in the United States. Date: May 31, 1949. Action: Skilled hands of a master surgeon swiftly and deftly bringing a baby into the world by caesarian section. Camera: Television—in natural color.

Thus, natural-color television was used for the first time for medical instruction in U.S.A. This development makes it possible for hundreds of medical students and physicians, seated before TV screens, to observe exactly what the operating surgeon sees. They can watch his every move at close range as he demonstrates the latest advances in medical technique and procedures. By means of a tiny microphone strapped inside his gauze mask, the surgeon can explain his actions as he performs them.

Before the advent of television, only one or two students were able to look over the surgeon's shoulder. Other observers sat in tiers around the operating table, too far away to see the fine details.

While wide use has been made of black-and-white television pictures in the last few years, natural-color television is an even greater aid in medical teaching, Dr. I. S. Ravdin reports.

"Color television provides a sense of depth which is necessary in teaching surgery," the Director of the Department of Surgical Research at the University of Pennsylvania's Medical School, says. "The deeper recesses of body cavities, which ordinarily are difficult to discern, can now be readily observed because of the various color graduations. Moreover, color permits recognition of changes in human tissues during the course of an operation."

Wide use of color telecasts for medical instruction already is under way in the United States. Members of the American Medical Association, at their annual convention in Atlantic City, New Jersey, early in June, saw color telecasts of operations being performed at the Atlantic City Hospital.

\* \* \*  
"Vaudeo": At least one American thinks British television surpasses that in U.S.A. Lloyd Espenschied, one of the inventors of coaxial cable, says: "I wouldn't give a damn for anything I've seen—it's the same as sound broadcasting—permeated with commercialism from beginning to end. We in the United States ought to be ashamed. The British have done a far better cultural job in both sound and television broadcasting."

## THE TELEVISION ERA

**F**ROM the point of view of those who have to create programmes, certain problems predominate which will have to be resolved as television comes to maturity. Take the case of the theatrical manager. One transmission of a play by television will be equivalent to, say, a six months' run at a large theatre.

There is the situation of the actor; it is not only that his total earnings from the run of a play may be lessened; it is possible that his engagements may be fewer, not only in the playhouse but on the air. In Churchillian phrase: "Never before will so many have been entertained by so few." And those artists possessing only radio reputations have their special anxiety, for their situation will be like that of the actors of the silent screen when they found themselves suddenly confronted with the "talkies." Some survived the change of technique and grew to greater strength and success; others fell by the wayside. Matters adjusted themselves finally; so they will again.

## THE NEW MEDIUM

Neither the future Television City nor its present makeshift can afford to build ivory towers. Full advantage must be taken of the best creative brains everywhere, be they writers, directors, designers, or actors.

Now that sight and sound have been joined together in radio marriage, no man can put them asunder. The need to control the new medium and to use its immense power with taste and discretion is evident.

—"VIDEX."

Addressing the Junior Chamber of Commerce in Melbourne recently, C. A. W. Harmer, O.B.E., Technical Director of Pye Ltd., of Cambridge, England, made the following points.

Main difficulty presented by television in Australia would be financial, this because of great expense in providing suitable programmes. There seemed to be several ways the problem could be tackled. It might be that "A" and "B" licenses could be issued in the same way as with ordinary broadcasting but with this difference—the Government could not lightly say it would issue licenses to all existing "B" Class stations. There would not be enough room in the ether. The answer might be for the "B" Class broadcasting stations in various centres of population to group together in the operation of a joint television station.

Whatever the ultimate answer, there is a wonderful opportunity for Australia to strike a happy medium between total State ownership of Britain and the system prevailing in America, where there are only commercial stations.

Services to rural areas do not involve insuperable problems. They could be provided by inexpensive television relay stations. These could be linked by air with the main city stations or could broadcast news and other films made especially for television.

In the development of programmes and technical development of TV generally England is far ahead of America. Television is an entirely new form of entertainment. The gags that helped to build up theatre audiences are often lost on a television audience, and whereas children can be excluded from a theatre, they cannot be excluded from a television audience. These things made necessary a modification of acting styles.

Australia, an ideal country for television, is obviously a country of sportsmen and has the ideal set-up for outside broadcasting. It has the same home habits as Britain, and this makes it a good television market. It also has the talent to provide good entertainment.

Overseas, television met in the initial stages with strong resistance from sporting bodies, but experience proved that it not only created in the viewer a desire to see boxing in the flesh, but the fact that a match is to be televised is looked upon as a guarantee that it will be a good show, and crowds patronise it.



# MARTIAN MEGACYCLES OR EARTH-Bred ELECTRONS ?

## A FANCIFUL DISCOURSE

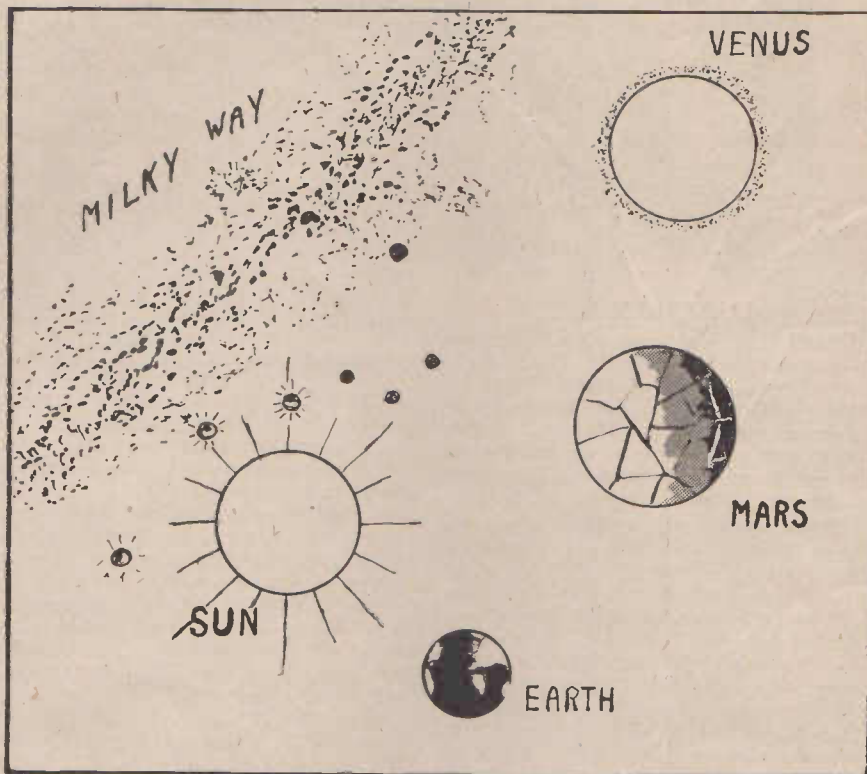
By REX BRANDON

**I**F YOU, dear reader, are a listener with a liking for seeking out the unknown in the shape of DX on short, and very short waves, you have probably at some time or other wondered at the origin of apparently unidentifiable sounds. You may ponder over the possibility of having stumbled across something extra-terrestrial, and in so doing you wouldn't be the first to get such ideas. Our contributor deals at large with an interesting subject in both serious and satirical vein, and leaves us with the certainty of knowledge, that if radio signals from Mars are not in our ether, our own unwanted man-made noises ARE aggressively in evidence.

During the last 25 years, several prominent people have expressed opinions that some day we shall be able to communicate by radio, or some variant of radio, with other inhabited planets in the Universe. It seems far from illogical to believe that there is life on other worlds; rather does it savour of a selfish insularity to assume blindly that out of the vastness of Space, this should be the only planet chosen to breed and support life of a kind we know as "human." Indeed, when we consider the billions of stars that obviously exist, it seems that there surely must be some of those stars similar to our Sun, with planets similar to our own, and with a planetary family whirling around them.

### Unfounded Rumours

For some time many people averred that radio signals could not leave this earth and travel as far as Mars, but since the Moon-Radar achievements of the last three years, such opinions have been more or less shelved. One thing we do know beyond doubt, and that is that if radio propagation is impossible for some insurmountable reason . . . there are still light waves. We know without getting involved in any arguments that these waves can and do get through the layers in the earth's atmosphere. Some years ago there were various rumours from time to time, of flashes of light being seen from the surface of Mars, but there appeared to be no foundation. The mysterious markings referred to as canals do



not as yet materialise as such when photographed, and it will be interesting to await developments in that direction when the massive 200-inch reflector telescope gets on the job at Mount Palomar, U.S.A. All that we know at present is that the "canals" suggest, by their geometrical pattern, an artificial formation, and Mother Earth, here or there, seldom chooses such angular design. As the vastness of Space goes, Mars isn't really very far away from us; in 1924 it was but 35 million miles distant. Astronomers know that Mars is a much older planet, from a habitable viewpoint, than our Earth. From this it may be assumed that Martians, if they existed, would be logically, almost millions of years ahead of us. There is one obvious set-back, however, for the reason that we don't see any giant Martian space ships flying about our heavens, and surely such advanced inhabitants would be far past the V2 stage?

It really is inconceivable that a people millions of years ahead of ourselves will not have established space travel! Consider this Red Planet further . . . from the radio signalling viewpoint. We know from spectra that it's chemical, and hence molecular composition is much the same as Earth. The U.S. Naval Research Laboratory, in an investigation of the atmosphere of Mars, found that skip distances during the Martian summer were best suited for communication at frequencies between 5 and 2 megacycles and that nothing higher in frequency than 5.5 megacycles would be suitable for long distance contacts between points on its surface. Let's skip Mars for the time being and take a look at that elegant planet . . . Venus. This is the only one left of our planets where life (in our own form) could possibly exist, but it would have been the very Devil to put up with in the way of climate.



It is believed that Venus always turns the same face to the sun . . . . we don't know that astronomically, for the surface of the planet is always obscured by vast steamy clouds. If one side does always face the Sun, then that side will be roasting hot, whilst the other will be eternally as cold as Space itself.

### Low Forms Of Life

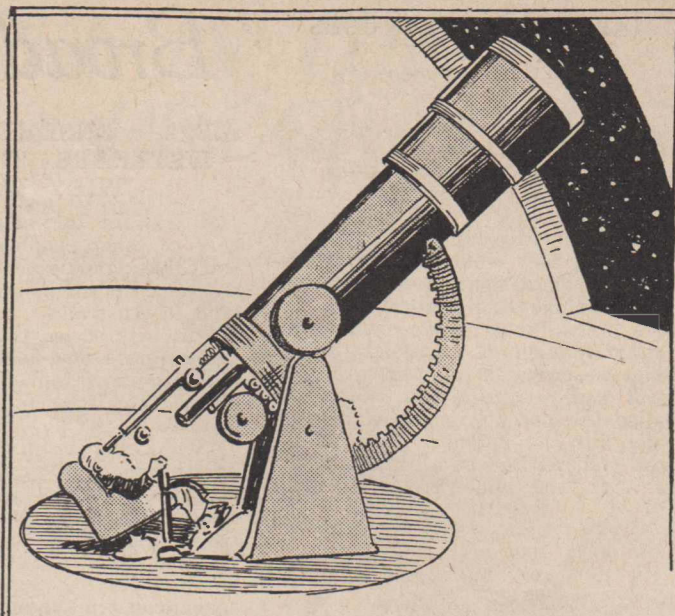
It is possible that a narrow belt would exist between the two territories and where climatic conditions could approximate those of Earth; there is plenty of air. With the unknown, it is unwise to be assertive, but it does seem as if life on Venus would be of a lower form, possibly reptilian or insect. That, however, does not imply complete absence of intelligence.

If then we are to consider the possibility of Life elsewhere in the Universe, we must turn to the more distant stars, probably in that huge area we know as the Milky Way. But to communicate with them by radio . . . . that is a very different matter. Even the nearest stars of the Milky Way are 25,000 light years away from us . . . which means to say, light, or radio waves would take 25,000 years, even moving as they do at the speed of 186,000 miles per second . . . . to reach the Milky Way. Imagine; observers on a planet located 2500 light years distant from Earth would now be witnessing the doings in the times of the early Romans! If we are to establish communication across the Universe, then it seems we must needs discover something very much swifter than our radio impulses. Of necessity then we come back to consideration of Mars in all this conjecture, and weigh a few more pros and cons. Among them we run across the question of noises . . . . radio noises . . . . and in some cases . . . . head noises! Mars has in the past been subject to a lot of blame for things attributable to that planet.

### In Search of Martian Meanderings

Let's get the old short-wave set warmed up and see what we can run across in the spectrum that may or may not be extra-terrestrial. Listen to that din . . . . like an aircraft in flight . . . . but it is merely a commercial telegraphy transmitter running idle on his dot wheel. The thing is too fast to read by human agency direct, as it belts along at 200 words per minute and the record for aural code speed is a third of that, and held by Ted McElroy, of U.S.A. You hear around 80 dots each second and a swinging note caused by the inosphere shifting so as to cause fading of the signal. If you don't know what the sources of such noises are . . . .

● "Let's skip Mars for the time being and take a look at that elegant planet Venus."



things like this will sound like Mars. Reports of signals supposedly originating out in space come in spasms, although there has been relative quiet on that front for some time. In the early 1930's a group of British enthusiasts with lots of imagination, sat up around the clock in front of a 24-valve affair, listening for noises from Mars . . . . or anywhere of similar status. They reported hearing funny sounds . . . . and considering the din possible from electrons careering around inside 24 valves together . . . . they might have originated between cathode and anode of the first valve in the set. They might also, of course, have been head noises!

Now the old set is really getting something . . . . hear those clicks? They simply cannot be peaked for tuning, for they seem to be everywhere across the dial, irrespective of which band we are using. They sound something like a telegraph sounder sending a lot of double dots (ink inks to Sig-men and Wmn) and they occur at regular intervals during the day and night. You live adjacent to the electric railway? Of course . . . . the sound you hear is caused by contacts under the track where certain signalling gear is actuated by wheel pressure. The sound you hear is from untuned waves from the sparking contacts, and all one has to do is to divide the number of clickety-clicks by four to find out how many carriages there are to the train.

Now what have we here . . . . a raucous hum . . . . somewhat after the nature of "tunable hum" as experienced with certain forms of home-made receiver. This, however, sounds particularly aggressive . . . . almost deliberate in nature. No . . . . this also . . . . has no Martian origin

. . . . it comes from earth-bound diathermy apparatus somewhere . . . . near or far. Hospitals use such machines to produce artificial fever in patients, and these machines are simply radio oscillators with a penchant for feeding back energy into the power lines (despite precautions), which then act as radio transmitting antennas. Diathermy and other RF medical machines can produce fever in patients, and something akin to apoplexy in "hams" and SWL's. Diathermy "hum" doesn't stay put on the dial; it wanders about, and if some evening you run across it you can either tune it out or relax and listen to what is most likely a broadcast of a bad case of arthritis. But it still isn't Mars.

Brrrp, Brrp says the next intruder on the dial, but a co-incidental glance out the window shows that the flashing neon sign outside the shop across the way is the culprit. There are ways and means of suppressing the noise from such sources, of course, subject to owner-co-operation. Another is a well-aimed brick!

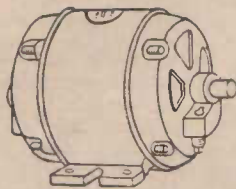
Now . . . here we really have something . . . . a peculiar sound . . . . and I'll wager than many DX fans have wondered about it. But it is merely a facsimile transmitter . . . . with a picture being sent by radio. It might be from London, Paris, New York, Sydney, or Moscow . . . . they all have photoradio outfits. The varying sound is caused by the scanning gear as it follows variations in picture density. The picture revolves, and as the impulses are sent out the noise is similar to the effect of tearing up one starched bedsheet after another! Ah . . . . at last . . . something that really does sound extra-terrestrial. Speech . . . . in some sepulchral unknown language

(Continued on page 14)



(Continued from page 13)

... a Martian, maybe . . . but, oh, bitter disappointment . . . merely a trans-ocean radiophone with the speech inverter in circuit! No chance of understanding it for the distortion is deliberate, and anyway, if it was Mars, they would call more distinctly! There's no doubt about it . . . a bloke who goes hunting for Mars must know how to discount a great number of man-made noises. When we consider the vast group of world radio transmitters alone, we realise the potential sources of confusion for the listener. Add to the radio transmitters of all kinds, shape and size, the huge group of noise



"Seemingly innocuous item."

sources that are not intended by design to have any effect at all on your receiver. These forms of interference need to be checked by the listener before he grabs the 'phone and tells the local daily that Mars has at last bust through our Heaviseid and other layers. They include such seemingly innocuous items as house door-bells and chime push-buttons, telephone dials, electric motors, tram cars, vacuum cleaners, motorised sewing machines, hair-dressers' electric clippers, mixers, refrigerators, floor-polishers, to say nothing of snow, hail, and lightning. Might as well give up the quest for Mars from the radio angle, because if the planet has been waiting to "come through" for centuries, a week or two more will be of no account. Anyway, if we are really determined to establish interplanetary communication in our own solar system we can do the obvious and go all out for light-ray communication. At least we are positive that light rays get across both ways. Just in case anybody starts talking of using radio to the other extreme . . . a wavelength of 30 million metres . . . as was mooted by somebody with deep imagination in earlier days . . . that means Ten Cycles per second . . . somewhat on the low side for Radio Frequencies. At least . . . the wishful one would be sure of a clear channel! So long.

# Broadcasting Brevities

## A.B.C. ENSEMBLE GIVES LISTENERS THE MUSIC THEY WANT

A zest for taking one-man Gallup polls of other people's musical tastes led Clive Amadio to form an instrumental unit which was the first of its kind in Australia.

Formerly styled the Mode Moderne Quintet, it is now heard every Sunday at 8.30 p.m. from A.B.C. Nationals under the title of Clive Amadio's Quintet.

"Its formation almost nine years ago broke new ground, because at that time it was the only musical combination catering specifically for the middle-brow," says Mr. Amadio. "It had been a hobby of mine, in between playing the clarinet and the saxophone in chamber music and popular music, to ask people what sort of music they liked best—the butcher and the barber, and everyone else I met.

### BARBER'S CHOICE

"One barber asked me: 'Why don't you ever play a rhumba?' I went away thinking, 'Why have we never played a rhumba?' We tried the following week, and it was one of the most successful things we ever did."

The Quintet's popularity over nine years of regular broadcasting is the result of this intensive cross-questioning. It set out to give listeners what Amadio describes as "pleasant" music—"that is, neither vulgar slush

nor specialised classical music, but something that people can listen to for half-an-hour or so while they darn a sock or eat a meal, without being annoyed.

"We tried to make the keynote of the session intimacy—right from the control-room to the listeners. Even the theme tune, 'From Me To You,' was aimed at giving a persuasive personal touch."

Another reason for the Quintet's popularity, Mr. Amadio thinks, may be that its members enjoy playing in it, and that their enjoyment infects their audience.

"The Quintet has always been a real hobby to me," he says. "In any case, creating something of your own is not like working for someone else, and you feel encouraged and vindicated when an experiment like this is successful."

He and Edward Cochman, the violinist, are the only remaining members of the original Quintet.

"Cochman was a young violinist from England," Mr. Amadio says. "I was very struck by his playing and his natural aptitude for light music; his style was like Albert Sandler's. He and I were the nucleus round which we built."

### IN THE BLOOD

A member of one of Australia's greatest musical families, he has also the distinction of having received the only tuition he has ever had in the clarinet and saxophone from his father, and of being the only Professor of Saxophone in Australia.

Personnel of the Quintet is as follows: Clive Amadio (leader, saxophone and clarinet), Edward Cochman (violin), Olga Krasnik (piano), Maynard Wilkinson (organ) and Charles Gray (bass).

They are all well-known Sydney musicians. Edward Cochman is a member of the chamber male group, Sydney Musica Viva; Olga Krasnik, apart from being pianist and celeste player with the Sydney Symphony Orchestra, is also a frequent broadcaster in sonata work; Maynard Wilkinson is official accompanist to the A.B.C. in Sydney; and Charles Gray recently came to Australia from England to take up his position as principal bass player with the Sydney Symphony Orchestra—he first visited this country with the Boyd Neel Orchestra.

Dulcie Holland, Bruce Finlay and Henry Krips arrange the music which is featured by Clive Amadio's Quintet. Different vocalists are featured with the Quintet each week, and recently Clive introduced instrumental soloists to listeners as well.



● CLIVE AMADIO, one of Australia's best exponents of the saxophone and clarinet, practices with muffled saxophone among the clothes in his wardrobe, to deaden the sound "so I won't be a public nuisance," he says.





### MACQUARIE NEWS

**2GB** AND Macquarie Network personalities were well to the fore in those Television previews in Sydney. At the Hotel Australia preview, the show was compered by Peter Barry, and some of the 2GB-Macquarie artists featured were Shirley Wallwork (finalist in last year's "Miss Entertainment" quest), Flo Paton (2GB staff accompanist), George Wallace, who is heard each Tuesday at 8 p.m. in "GEORGE WALLACE'S BARN DANCE" from 2GB and Network stations, and Willie Fennell, star of "THE RAINBOW SHOW," broadcast of a Friday at 7.15 p.m. All state that they enjoyed the experience, and proved that they could adapt their acts to this new medium.

John Walker was kept very busy at the Royal Easter Show in Sydney, where he acted as comper-commentator for the TV Exhibition. He has built up an unrivalled reputation as a radio personality, and created a great impression when he tried his hand at Television. It's our guess that Australia's present radio favorites will be the future top-liners in Television

"The Four Guardsmen," who are heard Friday nights at 7.15 in "THE RAINBOW SHOW" and Tuesdays at 8 o'clock in "GEORGE WALLACE'S BARN DANCE" from 2GB, not only display teamwork in their singing, but also in their hobbies. The quartet comprises David Beecham (first tenor), Jack Neary (second tenor), Stan Rogers (baritone) and Fred Omundson (bass). In a backyard workshop, they have constructed many models of sailing ships, galleys, together with plastic shoes. While touring for the Tivoli circuit, they used to take one model as a sample and display it to managers of departmental stores. Big stores in Sydney, Melbourne and Adelaide

# PEOPLE IN THE PROGRAMMES

were agents for their models. The Guardsmen arrange all their own numbers, and often rehearse them in the workshop, in which they have over £100 worth of valuable equipment.

The Four Guardsmen first met when they were members of the Police Force and singing in the Police Choir. They later decided to form themselves into a quartet, and made their first radio appearance on Australia's "Amateur Hour." They topped the poll, and received many engagements. Soon they had to decide whether to continue in the Police Force or devote all their time to professional singing. Fortunately for the musical world, they chose the latter. At present they are under contract to Artransa, the largest transcription house in the Southern Hemisphere, but by arrangement, they appear in 2GB-Macquarie radio productions. They are also in the course of recording a series of quarter-hour musicals for Artransa.

The 2GB STAFF SHOW, broadcast Saturday nights at 7.15 and Wednesdays at 1.15 p.m., has been the means of discovering another first-rate entertainer. She is Kathleen Lloyd, 20-years-old daughter of the late George Lloyd, well-known radio, stage and screen star. He played quite often with George Wallace, who is currently heard in his "BARN DANCE" show every Tuesday night at 8. Kathleen, however, is specialising in popular vocalising. Although untrained, she has amazed everybody with her easy style and clear diction. To encourage her, 2GB programme executives have cast her in a Monday morning programme at 8.30, "THE SUNSHINERS." In this, she is featured with Fred McIntosh and his Rhythm Boys, whose reputation ranks high in the entertainment world. It's a certainty that you'll be hearing a lot more of Kathleen Lloyd before very long.



● Claude (left) and Jack Hulbert, heard together in the weekly programme "Hulbert House," a BBC feature.

### MOST PEOPLE ARE GOOD PEOPLE

"I should like to make pictures based on the belief which I hold with the greatest possible strength, that eighty per cent of people in this world are kind rather than cruel, generous rather than mean, peace-loving rather than war-like, neighbourly rather than self-seeking. It's economic pressures, and the like, which make them behave otherwise, and I think people need to be constantly reminded of what is sometimes called "their better natures" but what in my belief is their real nature."

*Anthony Havelock-Allan, British film producer, speaking in the BBC's magazine programme "In Town Tonight."*

### ORSON WELLES' OPINION

In an interview for that excellent English publication, "Bandwagon," Orson Welles—whose radio shows took America by storm—says: "Radio interests me, but frankly I'm bored by Television. I can't see it at any time usurping the domain of the theatre or screen. After all, the technique simply seems to result in a dull, murky reproduction of something than another form of entertainment does much better."



### AUDIENCE IMPORTANT IN THE ATLANTIC SHOW

Bob Dyer, genial compere of the Atlantic Show, is permanently grateful to the audiences that pack the 2UW Theatre every Saturday night at 8 for his half-hour of fun.

"It's mainly the audience that makes this great show," says Bob, "for they're always willing to climb up on to the stage and join in the fun."

Yet we feel Bob himself must take most of the credit—not only is he heaps of fun himself, but he has the happy knack of "getting next to" his audience and making them keen to "be in it" with him.

All the leg-pulling, pantomiming and questioning is carried out in an amiable spirit of good sportsmanship, and when his turn comes, Bob Dyer himself is only too ready to be the butt of one of his own pranks. He has proved many times that he can take it as well as dish it out.

Now in its third year of broadcasting, the Atlantic Show has a waiting list of more than 50,000 seeking 2UW Theatre seats and a chance to "Pick a Box," as well as a listening audience of hundreds of thousands, who agree that the Atlantic Show is first-class fun for the whole family.

### TO BOP OR NOT TO BOP

That is the question! A 2SM fan, now on a visit to England, writes back to say that the 'teenagers over there have become Bebop crazy. Band-leaders Ambrose and Victor Sylvester class it as an ungodly noise . . . the greatest enemy of dance music . . . but Bebop is there, and it's going strong.

Its caterwauling ancestry comes from the Harlem of America . . . and it has a costume and a language all its own.

The regulation costume is a uniform-coat, beret and smoked glasses . . . in imitation of Dizzy Gillespie, who is to blame for the whole thing. Some think it'll be dead mutton in about six months . . . but we wonder! Youngsters get little satisfaction from shuffling around the dance floor in the old style that's been in vogue for the past 25 years or so.

### THE PIPER FROM OVER THE WAY

Noni Piper, 18-years-old blonde of Leichhardt, is the latest Australian film discovery.

With a small part in "Sons of Matthew" and feminine lead in "Into the Straight" to her credit, she was chosen to appear opposite Tommy Trinder and Chips Rafferty in the new film, "Bitter Springs."

Noni Piper . . . the pleasant type of lass whom a fellow likes to find as a neighbour over the way . . . got her first taste of Entertainment Business when she appeared in one of the plays broadcast from Station 2SM.

Dom Harnett, who was producing them, gave her the chance to fill one of the important roles . . . it gave Noni confidence, and going on from strength to strength, she looks like blooming into one of the best bets of the local film industry.

### BOOKWORMS, PLEASE NOTE!

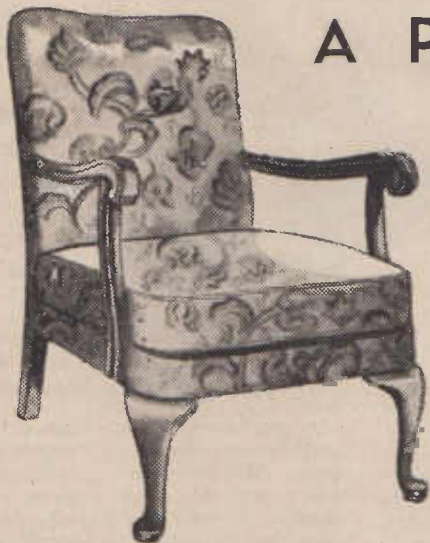
Camden Morrisby, 2SM's "Bookman," was one of the few radio men to devote a complete session to the memory of Henry Lawson.

Camden, one of the most intellectual coves in the business, knows his literature, and his Sunday sessions are well worth your attention . . . assuming that you're a Bibliophile, and we're sure you are!

### QUITE EASILY DONE

They were listening with rapt attention to the opera broadcast when it was noticed that the fire needed attention. Someone reached for the poker.

"How can I poke the fire without disturbing the music?" he whispered. "Between the bars," replied his neighbour.



## A PARKER-KNOLL CHAIR

### The Best Gift of all

WITH ENGLAND'S BEST FABRIC-COVERED SPRINGS

Choose your gift this year from Beard Watson's. A Parker-Knoll Chair is a gift of lasting comfort styled to suit any furnishing scheme. There are many designs available in a selection of beautiful coverings. Call and see the special Tension-Suspension Springing system that has made Parker-Knoll Chairs so famous. Parker-Knoll Chairs are made by and obtainable only from Beard Watson's.

DEPARTMENT FIRST FLOOR



## BEARD WATSON & CO. LTD.

GEORGE AND YORK STREETS (NEAR KING ST.), SYDNEY. PHONE: BX 3281.



## FRED HARTLEY ON THIRD VISIT TO AUSTRALIA

### Ensemble Heard Twice Weekly From The A.B.C.

Fred Hartley, noted English musician, is back in Australia on his third visit. In this country he combines business with pleasure, and shortly after his arrival, reformed his ensemble. This combination is now heard twice weekly for the A.B.C.—Sundays at 5.30 p.m. over the Interstate network, and Saturdays at 6.30 p.m. over the National network.

Personnel of the ensemble is as follows: Fred Hartley (pianist-arranger-leader), Phyllis McDonald (1st violin), Pat Buchanan (2nd violin), Rosalind Gumpertz (viola), Muriel Lang ('cello), Don Brunell (clarinet and saxophone), Don Andrews (guitar) and Eddie Fisher (bass).

Fred Hartley, who was the B.B.C.'s wartime Director of Light Music, first came to Australia in 1944 to advise the A.B.C. on light music programmes. He then formed his own ensemble of Australian artists, presenting two programmes weekly along similar lines to those he had broadcast from the B.B.C. These programmes were a great hit with Australian listeners, and on each visit to this country he has been engaged by the A.B.C. to present more programmes in his own inimitable style. Fred Hartley has broadcast similar ensembles in South Africa and Holland.

All music played in his sessions is specially arranged by Hartley himself. This year he is featuring many new arrangements of popular old tunes with an accent on simplicity. His life is a busy one. As well as the preparation of his music for his A.B.C. programmes, he is under contract to the Peter Maurice publishing company to write four new compositions a year. He fulfilled this part of his contract earlier this year, when he spent three months in Perth.

#### HIS FIRST QUINTET

Fred Hartley studied with Tobias Mathay and Harold Craxton. He held the Samuel Bennett Scholarship at the Royal Academy, was official accompanist there, and later at the B.B.C. In 1931 he commenced a programme of light music with the B.B.C. with his own quintet, and featuring his own special orchestral arrangements. About 50 of his copyright arrangements have been published, and he has also made many copyright arrangements of orchestral arrangements, which are available from music houses here as well as in England and America.



● A junior ballet show before the camera at and American TV Station.

Having controlled his own music business in England from 1937-1944, Hartley is a businessman as well as a musician, and at the present time owns a laundry business in England.

He wrote, in 1938, his own signature tune, "Life is Nothing Without Music," and was gratified to find it one of the hits in England when he returned last year, recorded by Ambrose and his orchestra, with Anne Shelton (one of England's leading vocalists) and Sam Browne.

His special orchestration of "Waltzing Matilda" was one of his most popular numbers during his B.B.C. broadcasts. He is looking for another composition with a typically Australian flavour and a catchy tune.

**B**OB DYER, fun-loving, likeable, wise-cracking compere of the "Atlantic Show," which is heard over Station 2UW every Saturday night at 8 o'clock, learned the type of humor the people want by way of one-night-stands, hill-billy humor and the rigorous training of road shows.

Bob was born on May 22, 1909, at a crossroads village in Tennessee, U.S.A., in an environment of honest, hard-working farmers.

Impatient with life on the farm, and to realise an ambition which he had nurtured from a youth, at the age of 17 he hitch-hiked his way North to try his luck as a guitar plucking, mouth organ playing hill-billy.

It was not long before he was noticed, for, within a few months, armed with his home-made instru-

ments and an extra shirt, he was on the air from Detroit and Chicago—at that time the biggest stations in American radio.

But, about this time, show business died in the States, and he then had to head South to join small touring shows, known as "tab" shows.

One day, on running across the biggest of these "tab" shows, he joined them and forgot about his fly-by-night occupations, for this was a show that worked the whole year round.

This was the company that he came to Australia with in 1937.

From then on Bob hasn't looked back. Going from success to success, he has now reached the pinnacle of Australian radio in his famous "Atlantic Show."

#### EX-PARADISE OF GAMBLERS

All who knew Monte Carlo in its Golden Days will recall the charm of the bewitching place . . . where Grand Dukes of infinite grandeur dined and wined their partners at the Cafe de Paris . . . and the aristocracy of Europe paraded through the exotic gardens.

Mr. E. J. Keenan, a Sydney radio man who visited 2SM Studios, says that all that glory has departed . . . maybe forever.

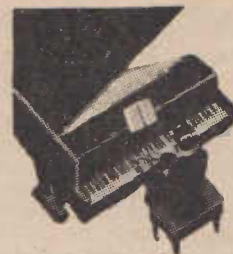
He said that no longer is Monte Carlo a close preserve for the extremely wealthy and the aristocratic . . . any visitor can play at the tables . . . and he staked the grand sum of ten bob, just to be able to say that he'd wagered at the renowned tables.

We'll let you guess the result!





# Australia's PROVINCIAL Broadcasters



● Victoria Bridge and Castle Hill, Townsville, North Queensland.

● *The story of the smaller broadcasting services throughout Australia is interesting, linked as it is with local development and history of the various country communities. Each rural station has its essentially localised associations, connected directly with the interests and welfare of the surrounding country. The success of the one is dependent upon the prosperity of the other, and by virtue of the commercial broadcasting systems, country listeners enjoy news and entertainment services additionally to the indispensable A.B.C. stations. The city-man knows very little about the service rendered by our provincial stations; they are to him but call signs on a list. We tell him here, something about these stations, and for our overseas readers interested in knowing something about Australian country life, we give a glimpse of the steady and encouraging development in these lightly populated districts. Managers of country stations throughout Australia are invited to forward details to the editor.*

**S**TATION 4TO Townsville commenced operation on October 5th, 1931. The transmitter and studios were at that time under a single roof at the corner of Bell and Morey Streets, South Townsville, in a building which was shared by VIT. (The A.W.A. Coastal Radio Station.) Some years ago the studios were transferred to their present location, Beak House, Flinders Street, Townsville. The 4TO power rating is 200 watts. The high fidelity A.W.A. transmitter installed approximately three years ago is still situated within the VIT building at South Townsville.

There are two separate studios at Beak House, as well as commodious office space, and the staff totals 13.

### Station Activities

There are 36,000 people within a five mile radius of the 4TO aerial, which makes Townsville one of the two largest country cities outside the Metropolitan area in Queensland, and the station takes a very active part in all local activities. Two sporting sessions weekly are devoted entirely to local sporting activities. Horse racing is not catered for. The Station's Sporting Commentator, Mr.

## STATION 4TO TOWNSVILLE NORTH QUEENSLAND

Tom Herhily, has been a prominent footballer and referee, and takes an active part in many branches of local sport. Bill McRohan, one of Townsville's coursing authorities, conducts a fifteen-minute coursing session each Saturday morning.

On a recent Friday night two International Rugby League footballers, Frosty Benton, Townsville, and Bill Horrigan, Ayr, were interviewed by the comper of the session, Bert Millingen, on the eve of a big inter-city Rugby League match, Ayr versus Townsville. The semi-finals and finals of the North Queensland Rugby League series of matches are regularly broadcast.

Every Sunday morning the various Church services are broadcast on a roster for one hour.

On Saturday nights at 7.30 the Townsville Branch of the R.S.S. & A.I.L.A. occupy a half hour on 4TO's programme, during which time publicity is given to the various requirements of the local league.

### Social Affairs

Apart from weekly Church services and the Saturday night "Diggers' Session," 4TO justifies its existence from a social angle by providing free time for publicity covering the requirements of all the worth-while institutions and organisations in the city—Y.M.C.A., C.W.A., Y.W.C.A., the New Settlers' League



of Queensland, the Boy Scout Movement, the Sir Leslie Wilson's Home for Bush Children at Townsville, the Townsville Branch of the Red Cross Society, the Adult Education Centre, the Townsville Old Age Pensioners' Association, the Townsville Amateur Dramatic Society, the Girl Guides. All take advantage of regular space provided.

The morning after the recent heavy cyclone struck Cooktown, 4TO opened a "Distress Fund." The fund closed after 4½ days with a total of £1200, which was distributed to the stricken Cooktown residents by the Townsville Red Cross Society.

### Political and Entertainment

4TO is regarded by the community as inseparable from any local activity afoot. For instance, a new party presented itself to the Townsville voters at the recent Municipal elections. This party was known as the Townville Citizens' Association, and was for the most part young men without any previous experience of Municipal government. Three-quarters of their publicity was carried by Station 4TO. All speakers made extensive use of the Station's "Wire Recorder," and the party completely swept the poll. The only present members of the old Council now sitting on the new one are the Mayor (Ald. J. S. Gill) and Councillor Parry. The other nine are the T.C.A. men.

The Station's programmes cover practically all the best national features—the "Lux Radio Theatre," Rita Marsden, "My Husband's Love," "Silks and Saddles," "Mary Livingstone," "Crossroads of Life," "Aunt Jenny's Real Life Stories," "When a Girl Marries," "Stepmother," "Doctor Paul," "Quentin Durward," "Dick Barton," "Danger Unlimited," "Hagen's Circus," "Martin's Corner," "Bottle Castle," "The Malvern Star Show," "Sherlock Holmes," "Music in the Tanner Manner," "Mobil Quest," "The Protex Show," "The Hit Parade," "Wild Life," "Bluey and Curley," "Calling the Stars," "The Quiz Kids," "National Fair," "Australia's Amateur Hour."

### New Feature

Thirty minutes each week is devoted to "The Old Timers" of the district. Many hundreds of old timers' names and addresses are re-registered at 4TO, and birthdays and cheerios, together with suitable music, are broadcast during "The Old timers" session.

Many country stations, in order to supplement revenue, are forced to seek revenue from outside smaller country towns, but so great is the demand for time on 4TO that after the needs of National and local Townsville clients have been met, no time remains available in which to place advertising from such sources.

### Townsville's Attractions

Situated on Cleveland Bay with romantic Magnetic Island four miles offshore, Townsville is a distribution centre, relying for its prosperity upon magnificent port facilities, advantages of which are taken by a greater tonnage of shipping per year than that of Brisbane. There are large railway workshops and two huge meatworks (one at Alligator Creek, and the other at Ross River, a few miles outside). The output of the Mt. Isa mines all passes through Townsville. Flinders Street, the main street, is over 3½ miles long, probably the longest street in Australia. Boasting the most picturesque water front of any town along the Queensland coast, the city is becoming more attractive each year. Thousands of tourists spend a few days each year in Townsville passing through and returning from Cairns. The majority explore the beauties of Magnetic Island, survey the surrounding countryside from the peak of Castle Hill, and include a trip to Mt. Spec, about 50 miles inland.

An infant movement now afoot has as the ultimate aim the setting up of a new State in North Queensland, and should this major change come about in the course of time, Townsville will be the natural capital.

### Station Staff

The personnel at 4TO comprises the following: Manager: Mr. J. Banney. Technician: Mr. K. Nutt. Accountant: Mr. J. Finch. Announcing Staff: Miss C. Jones (Announcer-Librarian), Messrs. M. Hulett, J. Taylor, W. Wynn, W. Burnett. Office Staff: Miss D. Scanlan (Manager's Secretary), Miss E. Venn, Miss E. Vedder, Miss I. Boyce, Master G. Brennan (Office Boy).

### THANKSGIVING!

Mummie's shut the door at last;  
Mummie's really gone.  
Now she's in the drawing-room; she's  
turned the radio on.

Johnny won that pillow fight ( fell  
and banged my head),  
So next we played a little game of  
"bouncing on the bed."

Then, after we had cleared away the  
feathers off the floor  
And sewn the pillow up again, we  
bounced a little more.

That singer made a lot of noise—  
ooh! lots more noise than us—  
I'm glad we've got a radio now; it  
saves a lot of fuss!



ONLY  
Experience  
GUARANTEES  
Top Performance

17 YEARS  
OF LEADERSHIP

Ducon Motor start capacitors are in use throughout the Commonwealth and have been so for many years. They are used in every capacitor start motor manufactured in Australia. The splendid performance of this new Ducon Motor start capacitor is one more illustration of Ducon's 17 years of leadership in the Capacitor field. Your good judgment is confirmed when you specify Ducon for all exacting capacitor applications.



**DUCON**  
*Capacitors*

**Ducon Condenser Ltd.**

73-91 Bourke Street, Waterloo,  
N.S.W.



# DESIGN AND CONSTRUCTION OF LOW LEVEL VOLTAGE AMPLIFIERS

FOR many years, the design of "pre-amplifiers" has been surrounded by a certain aura of mystery. Many of us amateurs sometimes idly wonder how broadcast stations, cinemas and other high-grade audio installations manage to



By  
**PHIL EDWARDS,**  
A.M.I.R.E.

reduce their hum-level to an acceptable figure. Turning to the commonly-available text books on the subject, we are confronted with vague statements about "good plate-supply filtering" and "shielding"—but never a word about the more subtle forms of hum injection. We are going to deal with him, because it does constitute the bulk of amplifier noise. Thermal agitation and shot-effect are much more serious in RF work than they are in audio, but even these can be reduced, as will be shown later.

## INTRODUCTION

The choice of the tube has a great deal to do with the inherent hum level of any stage. Broadly speaking, triodes, as R-C pre-amplifiers, are less prone to hum than are pentodes for a given voltage gain. Remember the "old-wives' tale" about inverse feedback reducing hum! This, of course, was the quintessence of nonsense—any designer who reduces the gain of an amplifier by the application of inverse feedback, and then considers that he has reduced the hum level, is indulging in some pretty woolly thinking. On the contrary, inverse feedback is liable to increase the relative hum level, because it vastly improves, amongst other things, the bass response!

Here, then, is plainly one avenue NOT to follow. What about plate filtering? Typical de-coupling R-C filters, such as the traditional 50,000 ohm resistor and 8 mfd. electrolytic

in series with the plate load of a pentode pre-amplifier, have a hum-reduction factor of approx. 300 to 1. This is a high order of hum attenuation, in view of the fact that the remnant ripple is fed to the PLATE of the pre-amplifier. Which is equivalent to saying that it is impressed across the grid of the next stage. Before this part of the circuit, we have a voltage gain of possibly 100 to 300 times. It is therefore logical to pay more attention to the grid circuit design (which includes the cathode circuit) if we are to effect a significant reduction in hum.

PENTODES like the 1603 do seem to be less prone to inherent hum than their equivalent types (6C6, 6J7G, 57, etc.), but regardless of this their chief virtue lies in the fact that their control-grid connection is made to the top of the tube. It is only fair to say that ALL tube types with this top-cap construction have an inherently-lower hum level than types like 6SJ7, 6SQ7 and 6SF5. It is also basically true that all metal tubes have a lower characteristic hum-content than their glass equivalents with "goat-shields." We are still dealing with known facts. The motive is to remind you of things you know, but frequently overlook. May we summarise thus?

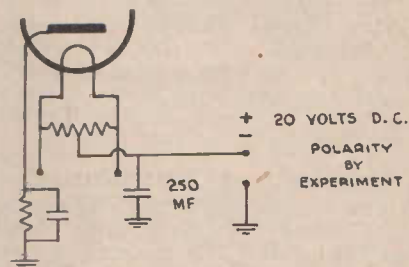
- (1) Triodes preferred as R-C pre-amplifiers.
- (2) Plate-circuit de-coupling need not be carried to extremes.
- (3) Tubes with top grid-cap most suitable.
- (4) Metal tubes another improvement.

This would indicate a choice between tubes such as the 6F5, 6Q7, 6R7, 6J7 triode-tied and others conforming to requirements (1), (3) and (4) above.

You might at this juncture be justified in asking the reason for the emphasis on triodes, when R-C pentodes as pre-amplifiers have such high stage-gain by comparison. The reason is this: We are trying to reduce the relative noise level. Triodes do this because of their superior cathode-filtration, and lack of multiple elements contributing "hiss".

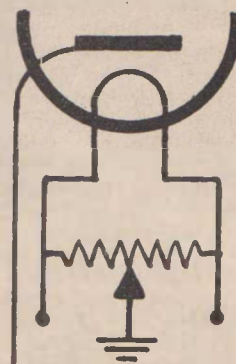
## CATHODES

There can be a leak from heater to cathode in a tube. Also, current may flow in either direction (emission). This can be cured by "jacking up" the offending element to a positive or negative D.C. voltage to the extent of perhaps 20 volts, relative to the other element. (See sketch).



Another rather obvious cure for practically all forms of heater-to-cathode leakage or emission is to run both elements at the same D.C. or A.C. potential—in other words, earth both the electrical centre of the heater AND the cathode. This creates a brand-new problem of biasing the stage. More of this anon.

Now we have just mentioned "electrical centre" of an A.C.-operated heater. You might imagine that a centre-tapped heater winding on the power transformer, or possibly a centre-tapped resistor across the heater, would give us a satisfactory "centre." The answer is decidedly negative. Such arrangements will very likely make some show of giving the PHYSICAL centre of a heater circuit, but the electrical centre can only be found as shown.



30-ohm W.W. potentiometers are readily available at radio dealers! Proof-resistance of the statement regarding electrical centres may be demonstrated by the fact that minimum hum will rarely if ever occur at the point of half-resistance. In literally hundreds of audio systems handled by the author, this has consistently been the case.

(Continued on page 22)



"D.M." writes:—

**R**ADIOSIS or electron poisoning is a disease on which I feel fully qualified to write, having suffered from this highly virulent and contagious illness for several years.

First symptoms of the disorder are that the victim is noticed at every opportunity to be peering at the works of every and any radio set which comes within range. It may also be noticed that he haunts book-stalls, avidly devouring any magazine including the magic word radio in its title.

The second stage of the disease has arrived when the patient is observed hurrying in and out of radio stores, generally speaking; hurrying in with a certain amount of money but coming out minus that and carrying oddly shaped parcels. These are quickly carried to his den, opened and gloated over, sometimes for hours on end. After obtaining several such parcels the real object of all is revealed when the sad case, brimming over with heart-touching optimism, commences to assemble a receiver.

This last stage is the most trying for people forced to live in contact with the victim, for he immediately becomes deaf to all voices or sounds except those emanating from his loudspeaker. Often he refuses food and drink for hours on end and becomes morose, taciturn and liverish.

Only cure for this condition is for the patient to hear something he calls a signal. When this happens he generally shrieks with delight and calls all and sundry in to listen to what is likely to be the most ear jarring noise imaginable.

After this the illness is in the hands of the gods. With luck, it may be the first and last attack, but unfortunately it is generally followed by others of greater intensity, all accompanied by fits of utmost depression and bursts of terrific elation.

Luckily radiosis is rarely fatal. The worst feature is that the victim rarely has any money to call his own, but in spite of this he nearly always claims that he would not have missed catching it for worlds.

"S.W.S.": Speaking of grammar, is there some good and vital reason why our commercial broadcasters must violate elementary principles—why announcements are heard that are replete with split infinitives and adjectives used where every eight-year-old child is taught to employ an adverb? Such and such a soap powder "washes cleaner"—for instance?

Is it that the broadcasters are "talking down" to their audience, thus prostituting radio's vast possibilities for cultural and painless educational progress?

#### A THOUGHT FOR AN IDLE MOMENT



"DYNAMIC SPEAKER"

#### EMPLOYMENT IN BROADCASTING

**S**EVERAL thousand new employees will be hired by the American radio and television industry in 1949, the U.S. Department of Labor reports. The workers will help staff the more than 500 new standard (AM) and frequency modulation (FM) stations and 100 new television stations that will begin operating this year and in 1950.

About 2700 AM and FM stations and 70 television stations are now operating in the United States. These employ some 45,000 persons full time and several thousand others, mostly singers and actors, on a free lance basis.

About one-third the full-time employees are in programme departments. They include announcers, writers, musicians and news personnel. Technical departments have the second greatest number of employees, most of which are transmitter and studio engineers. Other large groups in the industry are clerical workers, station managers, and salesmen.

As more and more television stations go on the air, technical departments will represent a larger proportion of employment in the industry, the Department of Labor says. Whereas technicians comprise less than one-fourth the full-time employees of radio stations, about half the staff at television stations will be technicians.

#### TAKING IT ON THE CHIN

Violins have been gregarious, right from the time of Stradivarius . . . and in the worst orchestral weather they like to string along together!

And talking of strings, attractive young Gwenda Colgan is doing very

nicely, thank you! Gwenda, a discovery of the famous 2SM "Gang," is doing very nicely with the "Firm." Although Gwenda knows the Irving Berlin score of "Annie Get Your Gun" backwards, sideways and every other musical way, it was our guess . . . being alongside the Maestro, that she'd never seen the show.

But she says Yes . . . she's seen most of it reflected in the glasses of those who sit in the front stalls! That's one way of seeing a show!

"ZO": Like many another in the broadcasting game, John Dunne, 2SM's ace announcer, graduated from Sydney's vanished Poverty Point. His star debut was in "My Lady Frayle" in 1918, and he followed it up with leading roles in 150 shows. He played with Moscovitch opposite Gladys Moncrieff, Josie Melville and Renee Kelly, and he was deputy for Gus Bluett, Alfred Frith, George Gee and Cecil Kellaway on many occasions. Versatile enough to play every male role in "Sally" and "The Lilac Domino"—not all at once—he has been equally varied in his broadcasting performances.

#### "BALLE TOMANIA"

Strictly speaking, balletomania is a passion for the art of the ballet. But 2UW borrowed the word to use as a title for an early Sunday evening session that makes very pleasing listening for everyone, whether he be a ballet fan or just one who enjoys melodious music.

"Balletomania," broadcast Sunday evenings at 6.30, features the music from the well-known ballets.

The series includes "Swan Lake," "Les Sylphides," "Scheherazade," "The Three Cornered Hat," "Giselle," "Petrouchka," "L'Après Midi d'un Faun," and other equally famous ballets, making an interesting and enjoyable spot of music for Sunday evening listening.

Once there was a broadcasting station staff that practised for weeks until they could exchange the big water-cooled tubes in less than one-quarter of the time stated by the makers of the equipment. They had it down to drill-squad perfection. So a foreign engineer came to visit them, and they staged a show for him. They shut down the station, snatched the 6-ft. tube out of the transmitter, slapped in another, spun down all the wingnuts, slipped on the connections like greased lightning, swung the tube holder upright, slapped shut the safety door and stood to attention while the chief punched the "on" button and—the big tube blew up!

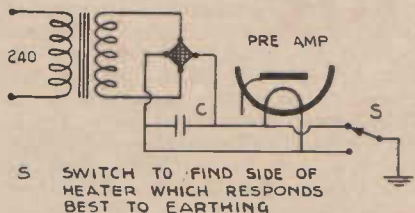


# VOLTAGE AMPLIFIERS

(Continued from page 20)

## EXTREME MEASURES

In an amplifier where some or nearly all of the foregoing measures have been taken, and the hum level is still not "down to standard," there is always the possibility of rectifying and filtering the heater supply. This calls for a small heater transformer, a dry rectifier to handle perhaps 300 m.a., and a relatively high filter capacity, of the order of 2000 mfd. or more.

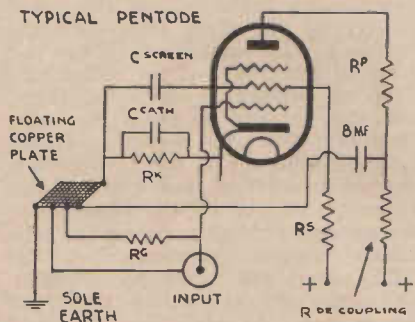


It helps if the rectifier circuit can be made a full-wave system, because the 100-cycle ripple is relatively easy to filter and thus calls for less capacity at "C". It is perhaps superfluous to add that the design of a choke to handle the heater current without objectionable voltage-drop would be quite a problem, so we therefore concentrate on the high capacity. The author prefers the first TWO heaters to be operated in series, and then a small transformer rated at about 14 volts, 0.5 amp. does the job nicely, putting a shade over 6 volts on each heater, with about 2000 mfd. at "C". The primary of the heater-rectifier-transformer must be fused, against the possibility of the condenser shorting out, due to heat.

Regarding other measures, the earthing system must next be considered. The correct technique is to create a "reference" earth, and this is done by mounting a square piece of copper sheet, about an inch square, on a stand-off insulator in that corner of the chassis where the various plate, grid and cathode returns are to be made.

Then ALL earth returns for that stage are made to the copper plate.

For the edification of newcomers,



this does include the earthy side of microphone jacks, which should be stood off from the panel and connected by an insulated earth wire to the common copper plate.

It remains merely to take the "master earth" lead from the copper plate to some point on the chassis which results in minimum hum. In the sketch, a pentode has been shown, to emphasise that ALL earth returns must be made to the floating earth. These include:—

Negative side of plate-circuit decoupling electrolytic.

Screen bypass.

Cathode bypass, and resistor.

Bottom of grid-input resistor, or transformer winding.

Earthy side of input jack.

Do NOT attempt to earth the centre of the heater circuit to the copper plate, as this may well undo all the work which this system is designed to do.

## SHIELDING

WE COME next to the question of shielding. The metal tubes themselves form a classical shield for all but the control-grid connection, which is by far the most susceptible point of the circuit as regards hum or any other influence. Grid caps of tubes must be shielded, whether the tube is metal or glass. The lead from the grid must also be shielded, and watch your brand of shielded cable. Some of the stuff has such a loosely-woven braid that it forms a very dubious shield, especially if there is any R.F. in the vicinity. Not only this, but some of it also appears to be a bad conductor, and sometimes it has been found necessary to parallel an earth lead from the microphone "head" to the input jack, and not rely on the braid to provide the sole earth.

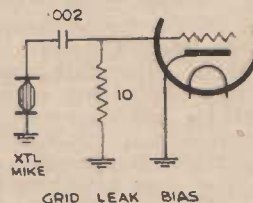
Sometimes, but not often, it helps to shield the heater leads, but this only reduces electrostatic induction, and will be precious little help if there is an input transformer anywhere within a few inches of the leads in question. Also, if the original hint of using a tube with a grid top-cap has been followed, the point of shielding the heaters is largely non-existent, unless the plate circuit of the same stage is of an unusually high impedance (such as when a 6J7 is coupled with a 0.5 meg. plate-load).

The 6F5 and certain other types, not necessarily high-MU triodes, lend themselves well to grid leak bias. There are at least two distinct theories as to the operation of such a grid circuit, but it is sufficient to say here that it requires about 10 megs. from grid to ground, with cathode earthed, and any input devices requiring D.C. isolation to be fed in via a condenser. This does mean crystal microphones! Further,

it is not merely a question of putting in any condenser. There is a definite optimum time-constant to be observed, and a 10 meg. grid leak calls for a 0.002 or 0.003 mfd. mica condenser. The resistor itself should be small, and of reliable brand, as these high values of resistance are always worth watching. The resistance itself is not critical in value, but should not, for preference, be lower than about 8 megs. and not higher than about 15 megs. Have you a good "megger"? As "Q.S.T." once said, "It is not necessary to own such equipment, but merely to know folk who do." . . .

## BIASING

For those who still prefer pentodes in their all-important first stage, the 6J7 and 6SJ7 do work satisfactorily with grid-leak bias, and the heater voltage need not be reduced to 4.5 volts provided the plate current does not exceed 1.0 m.a. As a typical plate current for a pentode-operated 6J7 is between 0.5 and 0.6 Ma., this stipulation is not difficult to meet.



It is perhaps unnecessary to point out, to the alert reader, that the motive for introducing the subject of grid-leak biased R-C amplifiers is related to the question of earthing the cathode. It is undoubtedly true that no normal value of cathode bypass, up to several hundred mfd., gives anything approaching the hum-filtration that direct cathode earthing does.

The alternative to grid-leak bias, whilst still retaining the directly-grounded cathode, is the "Mallory Bias Cell" system so widely publicised a decade or so ago in the U.S.A. In that country, such bias cells are small, noiseless and unobtrusive, and in the circuit have a full "shelf life." In Australia, there are no such cells commonly available, and the thinking experimenter hesitates to hook up a torch cell in an application where no current is to be drawn and the size is entirely unwarranted.

As a third and final alternative, it is possible to apply back-bias to a pre-amplifier. This is done in the conventional manner, from some power supply in which the C.T. of the secondary of the power-transformer is held off earth by the required resistance to develop a few

(Continued on page 24)



# A new name

## WITH A PROUD HERITAGE

Our name is UNITED CAPACITOR CO. PTY. LIMITED. You will hear us described more often simply as "U.C.C."

We have been established to consolidate, develop and extend the range of electrical and radio capacitors formerly made and sold in Australia by Tecnico Limited. They have joined with British Insulated Callenders Cables Ltd. (B.I.C.C.) and Telegraph Condenser Co. Ltd. (T.C.C.), both of England, to form our Company. Both English Companies are in turn associated with United Insulator Co. Ltd., of England (U.I.C.).

What import for you has the name "U.C.C."?

It means that you will be served by a Company which will complement Tecnico's high standards of manufacturing and service with direct access, additionally, to the vast experience of its British parent organisations.

We will offer you, too, a multitudinous range of capacitors manufactured by the British Companies, although numerous types have been earmarked for eventual local production.

Highlights in the British range are: Industrial power Factor Correction, Metalmite and Metalpack super tropical capacitors; Miniature Metalmites; Hi-K Ceramics having a K value of 3,000—an outstanding development; Micadisc and Silver Mica types; and Transmitting capacitors, including the T.C.C. "Hi-Load" Power Ceramics. A complete range of types for Television applications is available. Ultimately, all locally made capacitors will be branded "U.C.C.," but for a time, the "Tecnico" brand will appear on some items; among other reasons is the fact that stock already manufactured by Tecnico Limited is being taken over.

To the existing clients of Tecnico Limited, as well as to all potential purchasers of our capacitors, we pledge ourselves to render the best possible service. We believe that, with our combination of local and imported types, we can extend unique assistance to all, and we shall be grateful for the opportunity of so doing.

Our engineering staff will be glad to co-operate to the utmost in solving individual problems.

**UNITED CAPACITOR CO. PTY. LTD.**

**53 CARRINGTON RD., MARRICKVILLE, N.S.W.**

**Postal: Box 49, P.O., Marrickville. Phone: LL3211**

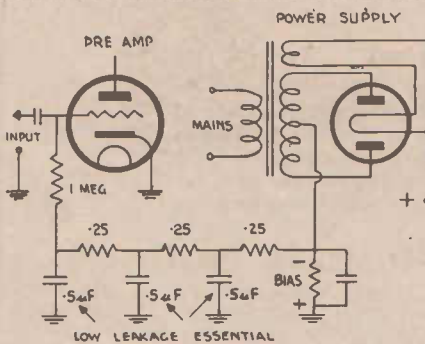




## VOLTAGE AMPLIFIERS

(Continued from page 22)

volts bias. It must be emphasised that extreme de-coupling is necessary for such a bias system, otherwise instability and hum are inevitable. Incidentally, never use 8-mfd. electrolytics where their leakage or voltage-versus-capacity characteristics are likely to militate against the proper operation of the circuit. This rules them out for a back-bias circuit such as the one we are considering. It also rules them out for cathode bypasses on pre-amplifiers. The capacitance of these capacitors has a definite relationship with the polarising voltage applied, and thus an 8 mfd. 525 P.V. electrolytic is worse than useless in a cathode circuit which features perhaps 1½ to 5 volts of bias. The reference to leakage is of course obvious.



### HUM LEVEL

We have now arrived at the stage where we can talk about a few figures. Broadcast practice in these times demands a total noise level (they mean ordinary old-fashioned HUM!) of something like 60 db. below 100 per cent. modulation. This is hard to achieve, because there is no noise in broadcast studios to mask any residual hum, and furthermore, artists and announcers work anything up to three feet from their microphones, causing an effective decrease in signal level as referred to the pre-amplifier grid. It is a fact that there are still certain stations which insist on using battery-operated pre-amplifiers in the interests of complete elimination of hum. They still have trouble from mains induction into their microphone transformers. Incidentally, they are forced to use A.C.-type tubes, as battery tubes have more microphonics.

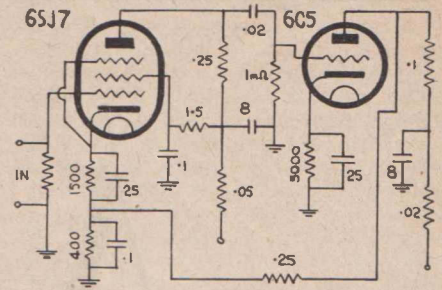
FOR amateur work, a noise-level of 40 d.b. below 100 per cent. modulation would be considered very fine. 30 d.b. below would still be acceptable. 20 d.b. and less fall into the "machine-gun carrier" class, in the author's opinion, and need attention as prescribed in this article.

For those not familiar with the Decibel, it is a unit used for power comparison, and is logarithmic. You need a reference. If 100 per cent. modulation is, say, 1000 watts of instantaneous audio power, then the hum-content would be one-hundredth of this, i.e. 10 watts, if the hum was 20 d.b. below full-modulation. The hum would only be 1 watt at 30 d.b. down, and 0.1 watt at 40 d.b. down. So you see that a 40 d.b. difference represents a ratio of 10,000 to 1. Put into layman's terms, the hum is a bare ten-thousandth of the programme peak-level. Such input stages as have been described here will give this quite easily, despite the formidable appearance of the figures.

We have not dealt with such obvious factors as keeping input transformers heavily shielded in magnetic metal; physical isolation of heavy power-transformer fields from low-level equipment; use of non-magnetic microphones in concentrated power-frequency flux regions (typical amateur conditions); employing non-magnetic chassis material; grounding of low-level stages to a really efficient earth; the suppression of R.F. feedback; and other widely-known sources of hum. The subject of R.F. feedback and its suppression might indeed form the basis of another article.

Perhaps it is necessary to comment that certain forms of hum pick-up are mechanical in origin, and, if a microphone has a rising bass response, or works into an amplifier which has one, any "buzz" from swing-chokes, power transformers, etc., will be amplified abnormally even though they might not sound aggressive to the ear. This again represents typical amateur practice, and the cures are, of course, firstly to tighten clamping bolts on transformers and chokes until they are absolutely "solid"; then to find out if any chassis is resonating; and finally to reduce the bass response of the amplifier, after which the higher-pitched harmonics of the mechanical hum will be the only residual noise. Reducing the bass-response is not merely a matter of using smaller values of coupling and bypass capacitance—this almost always causes severe waveform distortion of the frequencies above the low-frequency cut-off. Frequency-discriminating inverse feedback is more satisfactory. The sketch shows a method of obtaining a pronounced "top-lift" for any pre-amplifier using a pentode and a triode in the first two stages. This top-lift is of course just another way of reducing the relative bass response.

If a blocking condenser is inserted in series with the 0.25 meg. feedback resistor, it should be on the order of 0.25 mfd. In view of the



A METHOD OF OBTAINING DISTORTIONLESS TREBLE-BOOST

bulk of such capacitors, the circuit is acceptable as it stands, for the D.C. appearing at the cathode circuit, due to the bleed from the 0.25 meg. and the 400-ohm resistors in series, merely increases the bias by a fraction of a volt. Provided that the 0.25 meg. resistor is 1-watt rating, the circuit is entirely practical, and has the added attraction of minimising possible phase-shift which may attend the insertion of a blocking condenser.

If the 0.1 mfd. condenser across the 400-ohm resistor is removed, the amplifier becomes absolutely "straight-line" in its frequency response, from something like 20 cycles to about 15,000. The "top-lift" may be made to commence at various frequencies, and the amount of top-lift itself may be varied, by altering the value of the condenser and resistor respectively. The values shown are suitable for obtaining a pronounced treble-boost from about 3000 cycles upwards.

In conclusion, this circuit is not the best possible arrangement for a pre-amplifier because of the cathode circuit arrangement of the first stage. The reference is, of course, to the possibility of hum arising from the lightly-bypassed 400 ohm section of the cathode resistance. It should also be noted that no volume control can be inserted between the stages.

### CONCLUSION

In the writer's opinion, the lower limit of tube-noise in audio applications should be determined by thermal agitation and "shot effect". These noises appear as a broad-band "hiss". The first-named effect can be reduced by selection of coupling resistances and/or transformers with inherently-low tendency to generate this form of noise. Various grades and brands of carbon resistors show a surprisingly high inherent noise-level.

"Shot" effect cannot be controlled to any appreciable extent, but choice of tube, and possibly slight changes in heater voltage have been considered helpful. In audio work, however, almost any microphone, in-



cluding velocity types, should have adequate output even on the smallest sounds to mask "hiss" noise, regardless of the origin of said hiss. A well-baffled, large loudspeaker is imperative if noise is to be judged aurally. Naturally, the C.R.O. and DB. meters simplify the investigation. Headphones will only indicate the presence of higher harmonics of any hum, and should therefore be avoided for aural checks. As in the alignment of receivers, the human ear is often misled by apparent changes in noise-level. The acoustics of the room and other factors complicate attempts to judge arbitrarily the hum in an amplifier. It is indeed quite unnecessary to listen to any audio system at all, before it is put into service. All tests can be done on instruments, with consequently lower strain on the nerves of all concerned, and vastly greater accuracy.

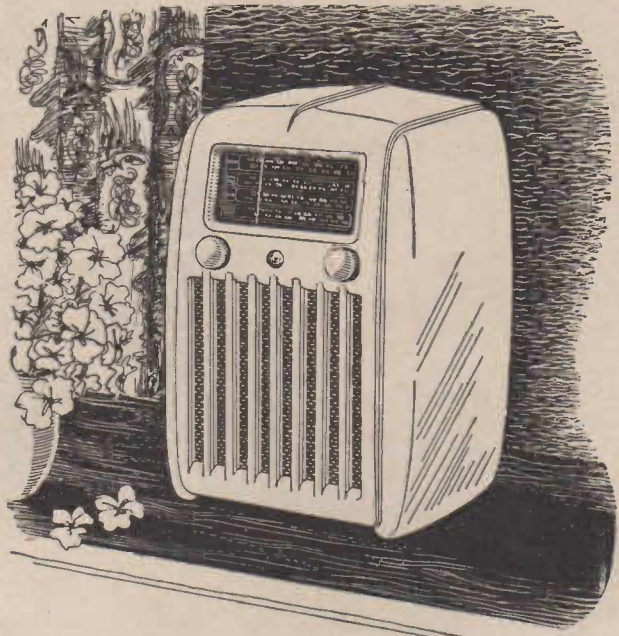
\* \* \*

#### AN AIR HOSTESS'S LIFE

Many girls regard an air hostess's life as one that is full of glamour. Helen Scharfe, who is an air hostess, exploded such an idea in a recent broadcast and said that there is a great deal of routine about the job. The hostess must see that travellers' papers are properly filled in for their destinations and that they are strapped in for take off and landing; she must serve them with drinks and food when required and hand them reading matter. And for those who still think it is a glamorous life, Miss Scharfe remarked that a three thirty or four a.m. start is nothing unusual, and that passengers need very careful handling at that hour.

She also looks after the children, who are put in her charge when they are going home for holidays. "I promise I'll see they don't smoke," she said, "and the next thing I know they've fastened the safety-belts across the aisles. By the time I've hopped over them all the cigarettes are out and they're sitting there as if butter wouldn't melt in their mouths. One lot of boys found out I was scared of spiders, and they made up a jolly good imitation of a tarantula out of a button and elastic and flung it at me. One man thought an aircraft was like a ship and that he could save money by not going in the cabin. He tried to book a deck passage. And another man wouldn't be parted from his donkey. He insisted on taking it along, and it was only when I showed him the inside of the plane and explained that the donkey would have nowhere to sleep that he agreed to leave it behind."

\* \* \*



## The newest and best mantel radio

- Improved performance — new circuits.
- Better tone — new loudspeakers.
- Greater convenience — on/off power switch on set and built in aerial.

● **MODEL** In ivory **£18-7-0**  
**520m** In walnut **£17-17-0**

*Authorised Radiola Distributors in all parts of the Commonwealth will gladly arrange demonstrations*

**AWA** **RADIOLA**

THE WORLD'S FINEST BROADCAST RECEIVER

MANUFACTURED AND GUARANTEED BY

**AMALGAMATED WIRELESS (AUSTRALASIA) LTD.**

AUSTRALIA'S NATIONAL WIRELESS ORGANISATION

47 YORK ST., SYDNEY

● 167 QUEEN ST., MELBOURNE

R1



# Radio and Television



- A preview of things to come. This "shot" shows 2GB (Sydney) announcer John Walker acting as commentator during the televising of Sydney Show events earlier this year. Equipment demonstrated was Pye-Astor.

Below:—

- Leo White, whose Latin American music with Brian Lawrence and the Lester Sisters has been an ABC feature, CARAMBA, on the Interstate network.



- The Australian counterpart of this scene is not so far distant. The television camera is scanning the swift moving play at a football final between Sweden and Bulgaria at the Wembley (London) Empire stadium. (Copyright photograph, courtesy BBC)



# NEWS VIEWS

- Well-known and talented film actress Anna Neagle is no stranger to the broadcasting studio. Here she is seen taking part in a BBC broadcast. One of her recent films showing in Australia has been "Elizabeth of Ladymeard."

(Copyright photograph, courtesy BBC)

Below:—

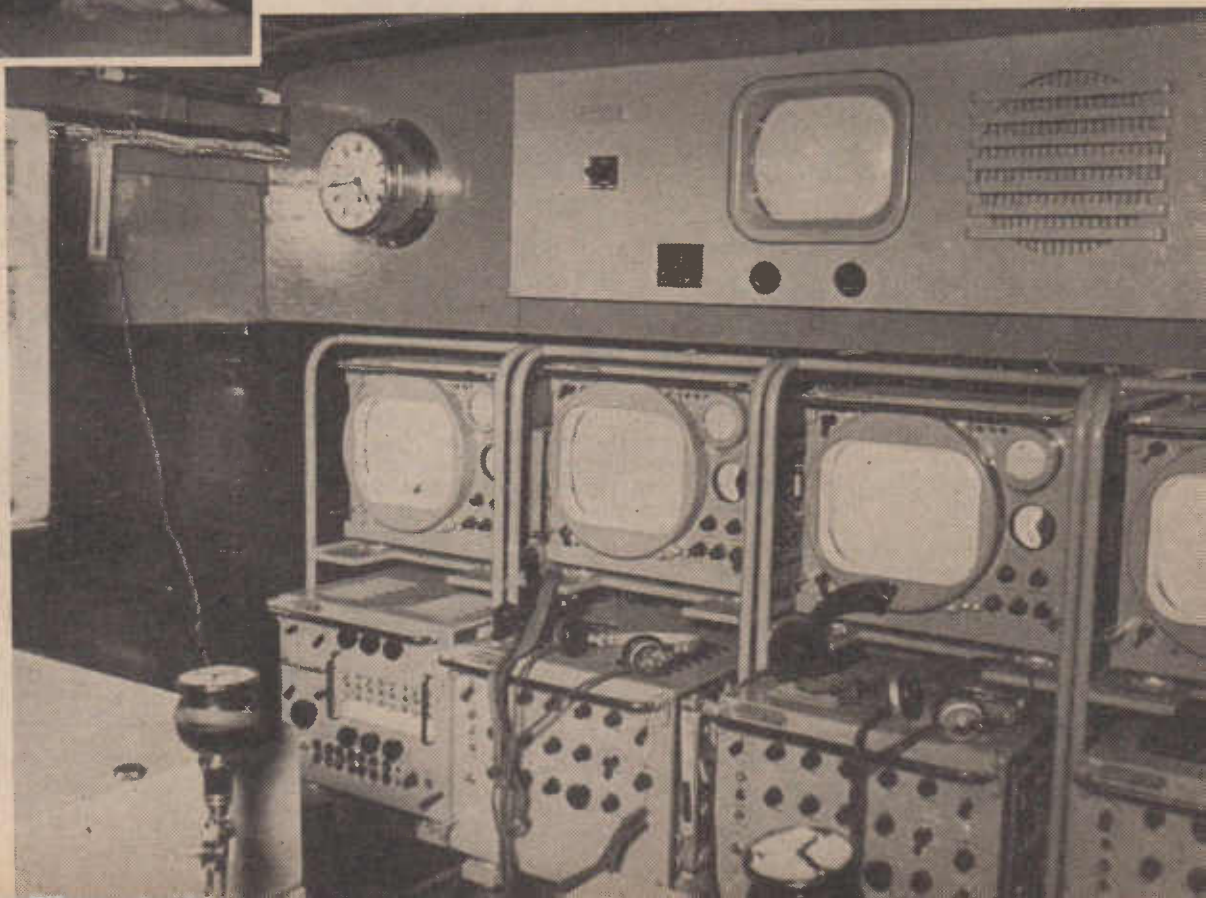
- Shown here is one of the British Broadcasting Corporation's internationally known broadcasters and commentators, Richard Dimbleby. His voice was heard from many scenes of action during the war.

(Copyright photograph, courtesy BBC)

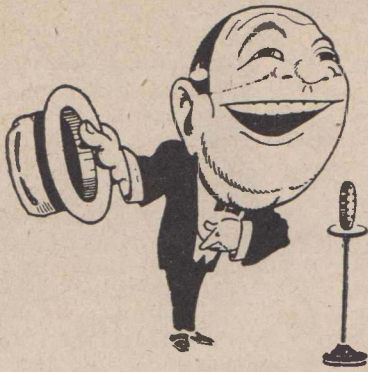


- The interior of an E.M.I. mobile television van used by the BBC. There are three C.P.S. Emitron cameras, and the picture monitors (in line) enable picture pre-selection. On the top screen is displayed the picture as received back from the transmitting station.

(Photographed by courtesy E.M.I. Ltd., England)







# IN LIGHTER VEIN

## THE FAMBLY-MAN

THE sharp-nosed little man with the brown Stetson hat gazed reflectively at the big fat man sitting opposite him in the tram. The big man had a clumsy brown-paper parcel between his feet, and every time a passenger got in or out that passenger tripped over the parcel, which gave forth a tinny sound, and the fat man hunched himself up and snapped out, "Sorry!" as if he meant something quite different.

The little man regarded the big fat man sympathetically, and summed him up. Little men are like that. They're good at it. Look at William Morris Hughes, look at Napoleon, or—but I digress.

The little man decided to cheer up the big man with interesting and informative conversation.

"Nice day," said the little man.

"M'brunth!" said the fat man.

Just here the tram passed the racecourse.

"Know anything for Sattedy?" asked the little man, nodding his head sideways towards the racecourse gates.

"Mrr-r-r!" remarked the fat man.

"I never got ter races meself," said the little man, "I allers listen in."

There was silence, broken only by the monotonous chant of the conductor, "Feeze pleeze."

"You got a redio?" asked the little man.

"Grum-m-m," said the fat man.

"Wunnerful, ain't they?"

There was no answer, so the little man tried again.

"Take these 'ere plays, now; thrillers they calls 'em."

The fat man shifted his brown-paper parcel uneasily, but said nothing.

"Ever listen to them mystery plays, where the deteckative solves the problem?"

Goaded to madness, the fat man barked, "No!"

"Ever read Edgar Wallace's books?"

"No! !"

"Ever read Sherlock 'Omes?"

"NO! ! !"

"Wunnerful at dedoocin' an' elimmeratin', an' all that, ain't 'e?"

"Bah!"

"Now you know," and the little man crossed his legs and proceeded to be really chatty, "I'm just like that. Great han' at dedoocin' an' annallersis, an' solvin' mysteries, I am. My ol' woman says I oughter be a D. Now, I'll jus' give you a little demmerstation. F'r example. Take your brown-paper parcel."

The fat man groaned feebly, and the crowded compartment pricked up its ears.

"In that there parcel," said the little man, warming to his work, "you 'ave a noo allerrminium saucepan. I can tell by ther shape of ther parcel. So I dedooce you're a married bloke. It's a large sauce-



pan, so I dedooce a fambly—I'm a fambly man meself. Bein' a married man it follers that your missus has been askin' you four times a week for three months to buy that there saucepan. Now, as it 'as taken you so long to buy it, it follers that you are neglectful an' 'eedless concerning the 'ome an' domestic affairs. Very likely you'll forget that there saucepan an' leave it in the tram when you get out. Am I right?"

"You're a flamin' idiot!" said the fat man venomously, and everybody smiled happily, this sort of happening cheered the homeward weary way.

"But," began the little man, "but look 'ere, matey, I'm only dedoocin' "

"You're only a snooping, petti-fogging, fatheaded, uneducated, uncultivated, stickybeaking moron, that's what you are!" said the saucepan man with conviction.

When the fat man got off at the next stop, he was swearing viciously. He was so angry that he forgot his saucepan.

The little man pounced on it. Held it up on high, waved it, and yelled after the fat man while the whole tramful revelled in the circus.

The conductor obligingly held the tram up for a minute, and all the passengers gazed after the retreating figure of the fat man and craned their necks in their interest.

But the big man wouldn't even look back. Having been told that he would leave that aluminium saucepan behind, and having left it, he wouldn't have come back for it if it had been made of beaten gold from Mount Morgan.

As the fat man disappeared around the corner of his street, the conductor gave a grin, and started the tram again. Then everybody kept quite still to hear the inevitable comments by the little man.

He shook his head and smiled pensively. "Yes," he said, "this 'ere radio 's a wunnerful thing, when you come ter think of it. A great edjucator, I calls it—brings out a man's gifts."

—“S.H.”

**AERIALS ELIMINATED**

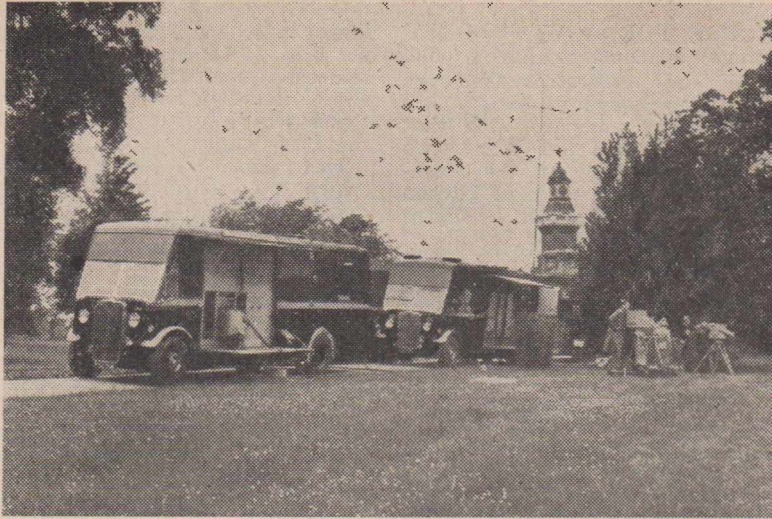
The CAPTAIN AERIAL UNIT equals a 50ft. high aerial, gives tone, volume, sensitivity, more stations, freedom from lightning. Reduces static, fits inside your set. Does away with poles and guy wires. Broadcast or short-wave reception. Installed in a minute—nothing to get out of order.

**PRICE ONLY 5/9.**

REG. POST FREE—NO C.O.D.  
Money Refunded if Not Satisfied

**REG COOKE**  
P.O. Box 9 (V), GERRINGONG, N.S.W.





● A BBC outside broadcast television unit "on location." In front is the radio transmitter van; at the rear the scanner van with receiving antenna, and at the right, the Super-Emitron cameras.

### TELEVISION ADVANCE

B.B.C. engineers, in collaboration with British manufacturers, are actively engaged on the exploitation of light-weight television equipment for outside broadcasts. The aim is to extend the scope of these operations and to increase the speed with which the equipment can be set up so that events of exceptional topical interest can be televised.

In particular, an improved radio-link has been developed to transmit television pictures from the cameras to Alexandra Palace for broadcast.

This equipment, which works on the extremely short wavelength of  $4\frac{1}{2}$  centimetres, is now being tested, and exceptionally clear pictures free from all interference are at present being received over a distance of seven miles. There seems to be no reason why equally good results should not be possible at ranges of twenty miles, or even farther.

At these extremely short wavelengths, the aerial can be made to concentrate the radio waves into a very narrow beam, rather as a search-light does. The transmitting and receiving apparatus is light and easy to carry, and thus marks an important advance from the apparatus used for this purpose before the war.

\* \* \*

### THE REAL LONDON

"Whenever I go to the East End of London—the East End with its kindly people and its busy streets—whenever I go there I feel I'm going home. I used to live there in Poplar, down by the West India Docks, and to me there's a reality about it which I don't find in other parts of London."  
—Howard Marshall speaking of the East End in the BBC's programme, "Churches at Worship."

Seagoing Television was installed on the pilot boat New Jersey, which works out of New York Harbor.

It is expected that the televisor will be a great help to morale aboard the boat, where as many as 35 pilots may be waiting for assignment to incoming or outgoing ships. Good signals from three New York stations were reported while the New Jersey was cruising off Ambrose Light, 20 miles from Manhattan.

A correspondent says of TV in "Manchester Guardian," England:—

"Authors are alarmed by television's voracious appetite for new material. Here the vague state of the law in respect of television copyright does not help matters. Already America plans revivals of previous productions, preferably on celluloid, to save expense. There is also talk of some form of international agreement covering the exchange of script material. Small wonder that the author, in company with others concerned, is alarmed by implications, the effect of which he cannot gauge.

"The intrinsic technique of television has not yet emerged. There are borrowings, of course, from the theatre, from the cinema, and from radio. For example, it is clear that the pursuit of complete realism, as practised on the screen, is vain. (Subjective realism, the true technique of the close-up, is another matter.) When all is done there still remain certain imponderables, something of the old magic of being read to aloud by the nursery fire, when one's imagination made pictures to accompany the words; only this time the fire is an electric one. It is this fluidity, this elusive quality, that makes the medium so fascinating to the artist."

## Train now for Television!

A complete correspondence course in BASIC TELEVISION is now available in Australia. This course has been prepared in England by E.M.I. Institutes Ltd. It is written by the engineers and scientists who *invented, developed and supplied* the E.M.I. Electronic high definition Television Transmission System to the British Broadcasting Corporation.

A thorough knowledge of Radio is essential for intending students of television. Courses in Preparatory Mathematics & Physics, and in Basic Radio are available for those not already qualified.

*Write now for prospectus and full details . . .*

## E.M.I. (AUST.) PTY. LTD.

2 Parramatta Road, HOMEBUSH, N.S.W.

R64/49



**USE** *Your head*



**SAVE** *Your face*



**BUK**

*Your Beard*



Start shaving the civilised way—the BUK way—no water—no blades—no soap—no mess. BUK Electric Dry Shaver gives the fastest, smoothest shave of all. BUK'S 60 self-sharpening cutting edges mow down the toughest beard.

To  
**Breville Radio Pty. Ltd.**

67 MISSENDEN ROAD, CAMPERDOWN

Please send me without obligation details of the BUK Electric Dry Shaver.

Name.....

Address.....

**NEW USE FOR A WASHBOARD**

Strange instruments have found their way into orchestras and even stranger ones appear in variety, but surely few can compare with that used by Albert and Les Ward, two Welshmen who play on the washboard. This humble piece of kitchen furniture, which North Country people call the "Monday Scrubber," is given supports to make it stand upright and combined with a platform from which hang all kinds of kitchen impedimenta, such as pots, pans, and nutmeg grater, with a bucket or two and a motor horn here and there. While Les plays the guitar and sings, Albert performs miracles on this strange "instrument," running the fingers of one hand up and down the corrugated zinc to give a wonderfully rhythmic, scratchy sound, punctuated with bangs and taps on the varied collection of oddments up above. Les made the contraption, working out the idea as he lay ill in hospital, but when he saw the finished product, got stage fright, and Albert now has to play it. Before Les became a Variety artist, his job was fitting hot water pipes, and his experience with nuts and bolts stands him in good stead when "the thing" has to be rigged up and dismantled.

The two of them first appeared in B.B.C. Variety, and since then have made over fifty broadcasts and several television appearances, where viewers marvel at the dexterity with which Albert plays his unorthodox "instrument" and also at the pleasing rhythms the two of them achieve.

— 0 —

**SOUND PROGRESS**

HOW many people who enjoy the BBC's short-wave programmes and the artists who take part in them, give a thought to technical progress? In a recent broadcast John Snagge, who for the past twenty-five years has been a noted BBC commentator, turned the clock back and spoke through the different types of microphone that have been used since the BBC began broadcasting in 1922.

It would seem that early listeners were so enthralled by the new miracle of entertainment in the home that they overlooked the poor reproduction of the first microphone, the old Peel-Connor, which was very like a hand telephone to look at. It sounded very like a telephone, too, and took all character from the voice. After the Peel-Connor came the Round-Sykes magnetophone, a cumbersome thing weighing approximately twenty-five pounds that in its covered case looked like a meat safe. It was the first moving coil microphone and the very light aluminium wire coil was stuck on to the microphone proper with three or four small pieces of cotton wool and vase-

line. After some minutes the magnet became warm, the vaseline would sometimes melt and the coil would slip. Nevertheless, the Round-Sykes was a great improvement on the Peel-Connor.

Next came the Reiss microphone, which was more sensitive, smaller and easily portable. It was succeeded by the Condenser, very like a wingless fifty pound bomb to look at. This in turn gave way to the familiar ribbon microphone, able to receive sound from both sides, which meant that several people could use it at the same time. A more faithful reproduction of atmosphere was obtained with the ribbon microphone, which gave a really "live" sound to broadcasting. Then came the moving coil microphone, with the great advantage of being only four inches in diameter. It is still used extensively in studios, in outside broadcasts such as the Coronation and as a hand microphone, particularly for interviews.

The latest development is the lip microphone, held less than an inch from the speaker's mouth and sensitive only for a matter of inches. It is used for sporting commentaries, when the noise of the crowd would drown the voice of a commentator using an ordinary microphone, and enables him to go on talking normally to listeners even though he cannot hear himself speaking.

\* \* \*

**DO YOU KNOW WINSTON CHURCHILL?**

"One of the most amusing things that ever happened to me was in Norway last October. A man on a bus asked me if I was British and if I knew Winston Churchill. I answered 'Yes' to both questions and before I could qualify the answers, I was dragged off to a party, made a hero of, and was toasted until my head reeled. It was such a grand party that I felt it would be tactless to explain that I wasn't a personal friend of Mr. Churchill's!"  
—Gordon Cooper, President of the Globe-trotters' Club, talking in the BBC's programme, "In Town Tonight."

**WOUNDED AT PRESTONPANS**

"A man stood up in the Westminster County Court and announced that he'd been wounded at the battle of Prestonpans and he wanted something done about it. Well, since as you all know the battle of Prestonpans took place in the year 1745, this must be considered a little odd. However there is, I'm afraid, a very distressingly simple explanation for it. The battle wasn't the 1745 one, but the 1948 one—from the film 'Bonnie Prince Charlie' — the man with the grievance was an extra, and he had his ankle pierced with a sword during the shooting of the film."

—Lester Powell speaking in the BBC programme "Across the Line."



## SHORTS FROM THE TALKS

### DOG FOR DISPOSAL

"In Kensington Gardens, in the heart of London, park keepers have at last succeeded in trapping a magnificent black Alsatian dog, which for months has been running wild in that delightful cultivated wilderness where Peter Pan made his home. If his owner can't be found, he will go to one of the people who have interested themselves in him since first spotted in the gardens. How many people? Not hundreds, but thousands! Oh to be an animal . . . in England."  
—Collin Willis speaking in the BBC programme "In Britain To-day."

### AGELESS BRITAIN

"Yes, Britain is a land of surprises and contrasts. I am told that she has a third unique quality: she never grows old. If that is true, and I've no reason to doubt it, then what Shakespeare said of Cleopatra 300 years ago could, with equal truth be applied to the Britain of to-day. He said: 'age cannot wither her, nor custom stale her infinite variety.'  
—R. Vunivalu of the Fijian Islands, who is doing a post-graduate course at Cambridge, talking in the BBC programme, "Calling the Islands."

## NO EXCUSE FOR BEING LATE

A discovery that will be of great benefit to a large number of people has been made because a watch-maker heard a cricket chirruping as he walked in the mountains of Switzerland. If such a tiny insect could make a sound clearly audible from a distance of a dozen yards why, he thought, could he not make an alarm bell that was small enough to go in a wrist-watch but yet noisy enough to wake a sleeper? The up-shot of his mountain walk was an alarm mechanism that works on the principle of the cricket's chirrup. The cricket makes his distinct and penetrating noise by rubbing the file like edge of one wing against the other; the watch-maker produced the same effect by setting a light hammer to vibrate against a thin metal diaphragm. The result is that now, in a case no bigger than that containing an ordinary wrist-watch, lies both the mechanism and the alarm bell. "This new alarm wrist watch," said R. E. Humphries, describing the discovery in the BBC's "Radio News-reel" should in time make us more punctual in our habits, because for the first time you can carry the equivalent of an alarm clock around with you. You can set it to remind you of your appointments."

## THE BELLS OF ST. CLEMENT'S

"Real dyed-in-the-wool Londoners are hoping that the day may not be far distant when they'll hear ringing out of the roof tops and spires of the Strand once more—the bells of a famous Church, playing a famous tune. Something rich went out of London life when German bombs rained down and hit St. Clement Danes, leaving only a fire-blackened shell to remind us of that loveliest of nursery rhymes 'Oranges and Lemons.' But the other day when I was 'bussing down the Strand and passed this island ruin, I noted that workmen were busily erecting scaffolding up the outside of a tower which survived the raid, as did the outer walls. By some miracle, the bells of St. Clement's were also preserved and the scaffolding going up was the first step towards the rebuilding of a church which has a thousand years of London history behind it. On the day we hear the tune of 'Oranges and Lemons' sounding above the roar of 'buses and the sounding of taxi motor horns—well, we'll dance a little jig, even if its only in our hearts, for we'll know that war-battered London has taken one step further from the nightmare days of the early forties."

Robert Reid talking in the BBC's programme, "Across the Line."

# "The YORK"

## 4 VALVE BROADCAST MANTEL

# KIT SET

### "The York" features:

Attractive, Bakelite Cabinet (as illustrated); size 10 $\frac{1}{2}$  in. x 6 $\frac{3}{4}$  in. x 6 $\frac{1}{2}$  in. Also available in cream.

Rola 5 inch speaker.  
R.C.S. Intermediates.

Valves, 6J8G, 6G8G, 6V6GT, 6X5GT.

Full Vision Dial.

A proved circuit with full instructions, easy to follow.



Complete to the last nut and bolt, including valves.

Price  
£15/19/-  
retail

Attractive Discounts to the Trade.

Build your own Radio Set and save pounds.



## BLOCH & GERBER LTD.

WITH WHICH IS ASSOCIATED

### THE WELDON ELECTRIC SUPPLY CO

46-48 YORK STREET, SYDNEY

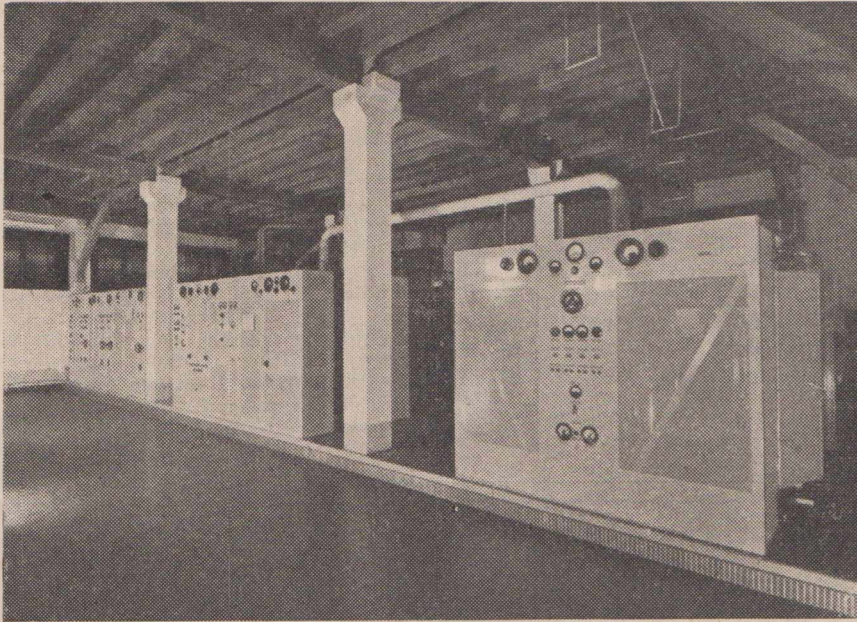
TELEGRAMS: "LESAB" SYDNEY

BX 4221 (10 LINES)

Also supplied as a Foundation Kit Set — a boon to the small manufacturer. Prices on application.



# SHORT WAVES



● Part of the interior assembly of the Schwarzenburg transmitter of the Swiss Short Wave Service.

## THE ART OF SHORT-WAVE LISTENING

Until recently the short waves were considered to be fields in which none but the expert enthusiast might wander. Lately, however, so much progress has been made at both the transmitting and the receiving end, that a time has now arrived when the veriest tyro may approach this type of work with some degree of confidence.

The short waves are, however, vastly different to those employed for ordinary broadcasting. This cardinal truth has to be accepted at the outset. Many people take up short-wave listening without realising its difficulties, only to drop it in disgust simply because they have failed to realise that it is not possible to switch on a short-wave set and listen to a station with the same ease and certainty as in the case of a broadcast receiver. Short-wave listening demands patience. It demands, too, a degree of keenness, together with a certain amount of cheerful perseverance.

The best short-wave receiver the

human brain can devise—irrespective of cost—cannot bring in a distant transmitter at will and with perfect reliability. Yet if the beginner can be made to realise this and the other difficulties to be encountered, it will be found that things are much more simple than has been anticipated and, very quickly, the new hobby will become an all-absorbing pastime. Short-wave work is not “dead easy,” but any listener who will bear this fact in mind, and who is prepared to take a little pains to achieve success, will find that his trouble has been well repaid. The disappointed short-wave listener is a direct hindrance to progress, for he misinforms his friends, and thus the short-waves acquire a bad reputation.

The most unfortunate part about short-wave listening is, in my opinion, the short-wave enthusiast himself. In his enthusiasm, he is apt—quite unintentionally—to give his friends to understand that short-wave work is easy, that stations are to be received at all times and without trouble. A distant station cannot be heard at all times. —“W.R.”

## WHERE IS LONDON?

The BBC's European Service is heard extensively all over Europe for habits formed during the war appear to have stuck and peace-time listening is apparently as widespread as it was during the years of the German occupation. How constant such listening is was revealed recently by a London newspaper, which told a charming story of a Czech child learning her geography lesson at school. “And where,” said the teacher, “is London?” “In the forty-one metre band” the pupil replied at once.

Nature, beating radio engineers by a few hundred thousand years, has provided the human ear with automatic volume control, the body with temperature control, and “seeing equipment” which is a highly compact television system.



## QUALITY TRANSFORMERS

and

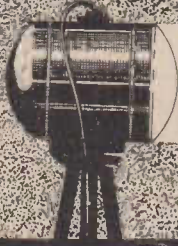
## METAL-WORK

Manufactured by

### TRIMAX Transformers

DIVISION OF CLIFF & BUNTING PTY. LTD.  
29-35 FLEMINGTON ROAD,  
NORTH MELBOURNE, VIC.





# READER'S FLOODLIGHT

## ARTICLES FROM OVERSEAS SOURCES

*Editors of successful and popular periodicals receive many letters of praise. Once in a long while there arrives the other kind. Helpful criticism is one thing, but unsigned abuse goes into the WPB. A screed referred to items in the "Home Workshop" as being from overseas sources. In nearly three decades, the editor of "R & TV" has amassed a few thousand radio, engineering, mechanics, aviation, science, hobby, and other magazines and has no less intention of referring to them than other people, and the protester does not need to look far. We are not aware that any contemporary in this country has a monopoly in the direction. If it should happen that some description clashes with contemporaries—that is unfortunate. Something like rival afternoon sheets hitting the streets with similarly worded posters. WE won't burst into tears about it.*

D.B.K.

*Major Collett, VK2RU, of Gosford, N.S.W., who is a radio dealer in the township and an enthusiastic VHF worker, makes a point of studying conditions for possible VHF DX communication. He writes regarding observations on the radio ranges—*

*"It's amazing the way they are running this year as compared with '47-'48. The general pattern is the same both years, and the daily variation practically negligible. The openings on the band were much the same—except more this year. But this cannot be taken too much for granted as this year there were many more stations on, and in any case two stations must be on at the same time to say that the band was open. However it has been amply demonstrated that when the ranges reach a certain level that the band is open in that particular direction.—Bearing in mind that the muf passes through the beacon frequencies before it reaches 50m/cs, giving the effect that the beacons reach terrific signal strengths and are starting to fade when 50m/cs opens.*

*It appears that streams of particles—clouds or what ever you like to call them—are continually flowing from the polar regions towards the equator, this appears to happen in both hemispheres, they appear to be more dense nearer the poles and peter out towards the equator. Apparently the "clouds" most directly under the sun become intensely ionized. As the sun moves to its southernmost path we have the effect of a fairly narrow band round the southern hemisphere in which the clouds become intensely ionized as they pass through. This band where the ionization occurs apparently follows the sun up and down the latitudes with change in season.*

*For a bit of proof. . . Searching through English, American or local mags fails to reveal any multiple hop contact via sporadic*

*"E" north and south—they are all along a latitude. All the other north-south multiple hop contacts are via F2. The beacon pattern is October TV, DN, CS, early November TV, CS, end of November, December and beginning of January AD, LT, HB, ML, PH, end of January TV, CS, February TV, CS, ON.*

*There are of course slight variations but not enough to affect the general pattern.*

From Mr. W. Sproge, Hon. Secretary, Radio Society of Western Australia Inc., 11 Gloster Street, Subiaco:—

*"My friend VK6KU has one of the turret receivers (as in R & TV for June, 1949), operating on 10 metres and so far has been extremely satisfied with its performance. We were using a 40 metre doublet antenna and comparing reports given by VK6HL, VK6MK, VK6KW, and VK6RU on DX stations. All these stations were using beam arrays, and*

*were only reporting the DX stations one S point better than we were giving. We compared the receiver with an AR88, side by side, and the "Turret" ran rings around the AR88. Last week-end we completed the 20 metre coil panel—as yet this is not fully adjusted, but it seems to have promise of being better on 20 than on 10. VK6KU will complete the job when he takes his annual leave very shortly.*

*(You must be getting particularly good results, gentlemen, with your turret-tuned receiver if it will out-perform an AR88, assuming of course that the latter is in good form. A considerable rise in RF efficiency CAN be obtained with a receiver where attention is paid to coil Q and L/C ratio, and there is even something to be said in favour of plug-in coils of reasonably large diameter as against a switched coil assembly with small coils grouped around switch banks with inevitably long leads.—Editor).*

**IRC RESISTORS**

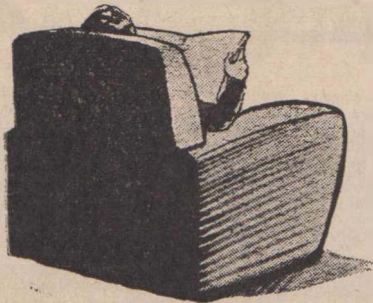
For leading makers of radio, communications and industrial electrical equipment throughout the world IRC makes resistors of more different types and shapes, for a wider variety of applications than any other resistor manufacturer.

*Sole Agents for Australia*

**Wm. J. McLELLAN & CO. PTY. LTD.**  
BRADBURY HOUSE, 55 YORK ST., SYDNEY • BX2508



# COMMERCIAL BROADCASTING NEWS and NOTES



The following extracts from the official Bulletin of the Australian Federation of Commercial Broadcasting Stations are made available by the courtesy of the President, Mr. J. E. Ridley. From an editorial:

“**R**ADIO has long since proved its excellence as a medium of entertainment and advertising; but while the quality of radio entertainment has steadily improved, the standard of advertising material has not quite kept pace. There are, to be fair, a good many intelligent and well-presented “commercials,” and advertising has improved in the last few months. But there is still a certain amount of irritating, often senseless radio advertising being turned out by copy-writers who, fortunately, are in the minority.”

**Radio Gains Recruits for Sydney University Regiment:** Another instance of radio's great value as a public service was illustrated in March of this year, when the Federation was instrumental in obtaining a radio appeal on behalf of the Sydney University Regiment. Within a few weeks of the appeal, membership of the Regiment increased by more than 100 per cent (we are told in a letter of appreciation from the Commandant), and new members are joining every day.

**4MB's Appeal For Legacy:** 4MB Maryborough (Qld.) recently co-operated with the Maryborough Male Choir in launching an appeal for the local Legacy Club. More than £150 was promised by telephone and acknowledged between choral items during the first Sunday morning broadcast. The appeal is now nearing the £1,000 mark.

## T.V. WON'T KILL A.M.

Dr. Frank Stanton, President of C.B.S., addressing the thirty-seventh anniversary banquet at the Institute of Radio Engineers, New York, expressed the view that television will not kill off radio.

He emphasised that television is not just a miniature of the radio industry “or anything else that has gone before.”

“It is a lusty baby—giant of a different family,” he said.

But its enormous influence and expansion will not cause it to swallow up other media, he emphasised.

“It is a matter of record that no mass medium once developed, has ever disappeared,” he argued. “Each has its own mass appeal, its own availabilities, its own use. And there are far too many people, with too many different tastes and desires and moods at different times of the day, for any one medium to serve them all.

“When radio first flourished,” he further explained, “many people felt it would do away with—or seriously hurt—newspapers and magazines, movies and phonograph records. Quite the contrary happened. All have grown since the advent of radio, as the wealth and population and leisure time of the nation have grown. And I see no good reason for thinking the advent of television will fundamentally change this.”

**Did You Know . . .** That the amount paid by the Commercial Stations to the P.M.G.'s Department for the use of land-lines, during the year ending 31st December, 1948, was £87,000? Due to the increase in rates, the amount that the Commercial Stations will contribute to Government revenue for the use of land-lines this year will be considerably higher.

## COMMUNITY SERVICE

**Sports Parade Raises £17,000:** The sum of £17,000 has been raised by 3KZ's “Sports Parade” on its tour of metropolitan town halls and country centres. The special Don Bradman testimonial show, held last year in the Melbourne Town Hall, raised more than £400 for the testimonial fund.

**2CA Aids United Nations Appeal:** Although the A.C.T. Division of the United Nations Association of Australia was formed only last March it has been actively engaged in publicity, by taking advantage of a series of broadcasts offered free of charge by the local commercial station, 2CA. In the U.N. Appeal for Children, the Division raised £2,968 thereby exceeding its quota by almost half. Canberra Broadcasters Ltd., gave its wholehearted co-operation in this Appeal.

## STATION SPARKLES

A delightful 2GB morning programme is “THREE GIRLS AND A PIANO,” broadcast every Friday at 8.30 a.m. This programme features three of last year's “Miss Entertainment” entrants, including the winner, Shirley Abicair, Patricia Church and Shirley Egan. Shirley Abicair has been featured in several 2GB-Macquarie productions. The other two girls have made appearances in the “2GB Staff Show.” Miss Church recently won her heat in the Mobil Quest. She has sung in presentations by the Rockdale Operatic Company, including the lead in “Carmen.” Flo Paton, newly appointed staff accompanist, accompanies the girls in this show.

If some daily newspapers are worth the 3d. they are now asking, we reckon pro rata that “R. & TV” is worth much more than the humble “bob” we charge. It isn't easy to produce a post-war magazine and sell it at pre-war prices, but we intend to stick at the “bob” level.



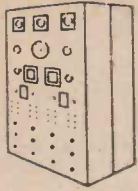
*More than*  
**A FINE HOTEL**

A hotel, certainly one of Sydney's leading hotels, but different to every other in many things. The Wentworth, for instance, has ever been noted for its quiet, restful atmosphere. Another thing, too, while away from the noise and bustle, you are nevertheless conveniently situated to everywhere. Service and cuisine are unexcelled.

**THE WENTWORTH**  
*in Sydney*

Phone BW 1561 (10 lines)  
C. D. Maclurcan, Managing Director

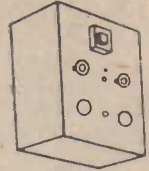




# RADIOTIPS

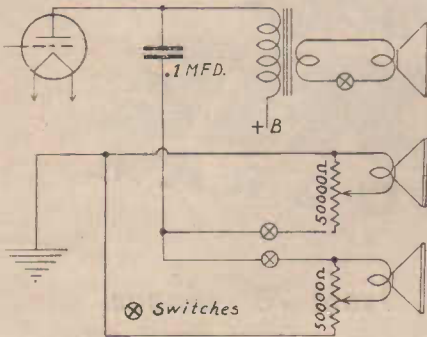
For

## PRACTICAL PEOPLE



### FITTING EXTRA SPEAKERS

THERE are certain advantages in arranging for extension loudspeakers in the home or elsewhere. For example, most homes have only one receiver, naturally retained in one room of the house. To hear programmes in other parts of the house it means that the receiver must be used at volume levels that prove nerve-wracking to those near to the loudspeaker, to say nothing of possible annoyance to neighbours.



### Other Applications

Another extensive application for extra speakers is found in schools where it may be desired to serve more than one room with programmes from a single receiver. Most receivers are to-day sufficiently powerful to operate up to a dozen additional extension speakers with ample volume. There are instances, too, where an extension may be needed externally to the home; in a garden, for instance, during summer days.

### Standard Connection Methods

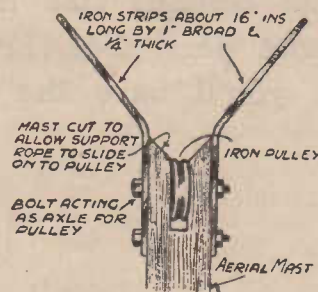
The method of connecting extra speakers is quite simple, and calls for no expense to speak of. Permag speakers are essential; a point which calls for little comment these days, as most speakers are of that kind; and if you have on hand any of the older magnetic types, in good order, these can be applied very conveniently. In receivers using a single-ended audio output valve, as most are, a lead is connected to the valve anode through a .1 mfd. 400 volt paper tubular condenser. The re-

turn lead of the loudspeaker to be used in extension is connected directly to the chassis of the radio receiver. Where two audio valves are applied in push-pull, the extension speaker is connected through two .1 mfd. condensers to the anodes of the valves. These connection schemes, whilst satisfactory for most ordinary needs, do not provide for switching off either the main or extension speaker, or for varying volume of the latter.

### Switching

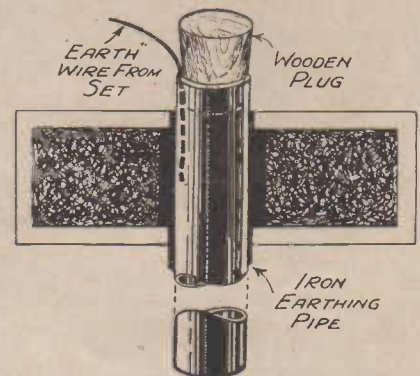
By including a single pole switch in each extension speaker lead from the coupling condenser, and a switch for the voice call circuit of the main speaker, either or both speakers may be controlled by a 50,000 ohm. potentiometer, as shown. The diagram shows the scheme for using two extension speakers, and these are indicated as being of the magnetic type (2000 ohms or more DC resistance). With Permag speakers fitted with output transformers, the potentiometer and connecting leads will be across the primary of the transformer.

"Brassex": It's often a difficult job replacing the rope halyard on an aerial-mast pulley. Illustrated is a method of fixing the pulley to the mast so as to obviate the difficulty. The pulley is fitted into a slot at



the top of the mast just large enough to take it without leaving any space on either side. Two iron strips are then fitted to the top of the mast in the manner shown. If need arise, a new rope can be thrown over the mast and between the iron struts.

### A FIRM CONNECTION



Soldering to an iron pipe already buried in the earth is not easy, but the alternative method of connection illustrated here is quite satisfactory.

"P.A.W.": Recently I experienced severe trouble in my receiver with radio-inductive interference from electrical machinery and tramway circuits. I tried many types of anti-interference aerials, but they could not be erected high enough or far enough from the sources of interference. I then tried an old dodge—a buried aerial—with great success. It was made of one of those old 250-turn two-pin honeycomb coils enclosed in a copper screening can. A lead was soldered to one pin on the coil and taken through a copper disc enclosing the can, heavy insulated wire being used for this lead-in to the receiver. With this make-shift underground aerial, buried only 12-ins. in the ground, most of the unwanted noise was eliminated.

"D.B.K.": When using screened leads in receivers, especially for grid circuits, low capacity is desirable between grid and earth in order to avoid loss of signal strength. The usual braided push-back wire is not the best for this purpose, and it is better to use large-diameter screening braid with a thin wire for the connecting lead. Push the wire well into the sleeving and it will follow a zig-zag course, thus reducing capacity loss.

(Continued on page 37)





*Rating the highest award in the world of fine radio*

THE SUPERB  
*new*  
**AIRZONE**  
 RADIOGRAM

from 75 guineas

**LOOK!** The Airzone new Radiogram de Luxe!

The supreme achievement in Airzone's long line of successes in building fine radio. A musical instrument without peer! See, hear and own this Radiogram and you'll have the finest money can buy!

**AIRZONE MODEL 5A2D3**

In either Walnut or Sycamore cabinet, with single record-player or automatic record changer.



Obtainable at all Radio Stores and Music Houses throughout Australia.

**AIRZONE** *fine* RADIO  
 AR. 25.

Manufactured by: AIRZONE (1931) PTY. LTD., 168-170 Parramatta Road, AUBURN, N.S.W.  
 Unit of Electricity Meter & Allied Industries Ltd.

AR-25



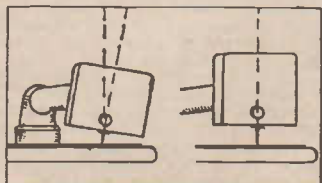
## RADIOTIPS

(Continued from page 35)

### PICK-UP HEIGHT

While most radio-gram constructors take the greatest care over getting proper tracking with a simple cranked arm pick-up, the importance of correct height is often overlooked.

A pick-up arm, the boss of which is set so that the needle tracks accurately over the record, can be too high or too low and this will, in the case of a cranked arm, vary the angle at which the needle meets the record. Looking at the needle in the direction of travel of the record, the angle should be exactly 90 degrees and any tilting to one side or the other will wear the record grooves unnecessarily. It is worth while checking up this point.



This diagram illustrates the tilting of a pick-up when the height is incorrect, as explained in the accompanying paragraph

Stoop down so that the eye is on a level with the record surface and see that the needle meets the surface exactly at right angles. An eighth of an inch or so difference in height at the pick-up boss will make an appreciable difference to the needle angle and thin packing must be used under the pick-up mounting to get the height correct.

"N.W.": After a year or two of use, a receiver is certain to suffer from the settling of dust on the variable condensers, unless they are totally enclosed. Dust sets up electrostatic changes between the condenser plates, causing a crackling sound when the condenser is rotated. It is best to clean the condensers with a folded strip of thick blotting-paper,

### FIXED CONDENSER CONNECTIONS

Modern tubular condensers are made in inductive and non-inductive forms, and it will be noted that some bear the letters "O.F." near one of the connecting leads, whilst others carry a coloured ring at one end. This indicates the outside foil, and to preserve the non-inductive characteristics it is necessary that the lead marked in this way should be connected to the earth line.

Electrical Interference is best cured by taking preventative measures on the interfering apparatus itself, where this is possible. In the case of vacuum cleaners, electric motors and dynamos the usual procedure is to connect a pair of 1 or 2 mfd. condensers in series across the brushes or terminals, another connection being made from a point between the two condensers to the frame of the machine. In the case of vacuum cleaners or small motors such as they contain, a 1 mfd. connected across the brushes is often all that is needed. Condensers must always be of test about double the voltage to which they are subjected. Electric signs are sometimes a difficult problem. In any case where the interference is severe, it may be prevented from radiating through the mains by placing a suitable choke in each lead; made of wire suited to carry the current, and of turns sufficient to act as an r.f. choke.

### HAND CAPACITANCE EFFECTS

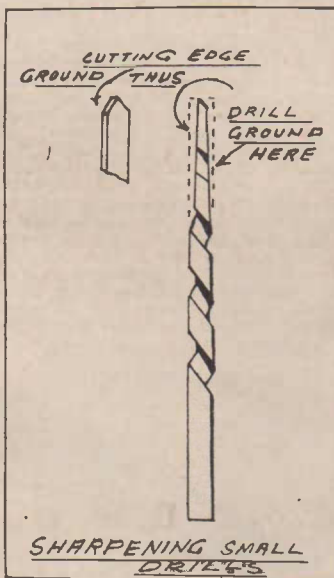
It is possible that hand capacitance—more correctly body capacitance effects have been the cause of more headaches and more harsh words than any other problem which confronts the constructor of short wave receivers. Many accept these effects as part and parcel of the short wave builder's heritage, but this view is entirely incorrect. With a correctly constructed receiver, hand capacitance effects can in most cases be completely eliminated.

It is not possible to state that attention to any one point will effect a cure in any given case. When designing a new receiver, thought should be given to the effects that may arise, and due precautions taken. For those already in possession of a receiver prone to such troubles, the following notes may be of assistance.

Now, the greatest trouble is primarily due to the presence of RF currents in the audio side of the set, so that the audio stages form part of the oscillatory circuits. The operator is at earth potential, from the receiver point of view, so that as his body varies its position in relation to the receiver, the effective tuned circuit capacitances alter accordingly, with the result that stations cannot be pinned down to any definite tuning point.

Obviously, it is possible to minimise these effects by using an earthed metal panel, and a metal cabinet, but this is just begging the question, and in any case may not provide a total cure. It is best to try preventing the entry of RF into the audio stages at the detector, by inserting RF by-pass capacitors, from either side of the RF choke in the anode circuit to earth. The best values can only be arrived at experimentally, but will be in the neighbourhood of 50 to 250 pf generally. Any single type filter can be compared to the shunt in a current meter; it provides an alternative path and by-passes most of the unwanted current, but invariably a small percentage gets through. It is important to note that these by-pass capacitors should be returned, not to any old "earth" point, but to the negative side of the filament, or the cathode, of the appropriate valve.

Grid stoppers, that is to say resistors inserted in series between the control grids of the audio valves and their respective input circuits, often prove beneficial. Suitable values again seem to depend on the actual receiver, and usually range from 10,000 to 100,000 ohms. Any remaining instability can in most cases be taken care of by fitting an RF choke in series with the output anode and the headphones or speaker with a by-pass capacitor of around 300 pf between anode and earth, or by using parallel feed (choke output) to the phones.



### SHARPENING SMALL DRILLS

No doubt many model engineers have found it difficult to sharpen up small drills, from 1/16-in. downwards. The sketch shows a most satisfactory way by flattening sides by grinding, then it is quite easy to apply the cutting edges. With the smaller sizes it is an advantage to work with magnifying glasses such as the "Binomag."

\* \* \*

### SUBSCRIBE NOW!

For 12/- a year you get  
"RADIO and TELEVISION"  
MAILED DIRECT





## RECORDED MUSIC RECITALS HERE TO STAY

Just over a year ago the film of David Jones Ltd., Sydney, commenced a series of recorded music recitals. Future of the plan depended to a great extent in providing first class reproduction of worthwhile music, and so the company installed an imported H.M.V. Electrogram, an instrument regarded by its manufacturers as the culmination of fifty years of research.

"D.J.'s" estimate that 21,000 people have attended the free recitals during the past year, and music teachers have travelled with their pupils more than thirty miles to attend.

## NEW FEATURE TO PLEASE MUSIC LOVERS

As manufacturers of both radio and records, The Gramophone Company maintains a close alliance between these two forms of home entertainment.

One of the newest devices to be incorporated in their radiograms is the Acoustic Range Selector. This calibrated system of tone control provides a flexibility of control to give top performance under all conditions. It is also designed to function on radio reception as well as records.

Personal libraries of recorded music often contain early electric recordings, and possibly some of the still earlier acoustical types. Suitable adjustment of the bass and treble controls enables the best possible results to be obtained from these older type of recordings, and absolutely complete response from more modern discs. By means of this tone control, reproduction may be adjusted to the acoustics of any particular room.

The Acoustic Range Selector is moulded in bakelite, and hairline adjustment is obtained by means of the two thumb operated wheels. Calibrated dials serve for identification of selected settings.

IT'S like meeting an old friend to hear again that pre-war Irving Berlin hit, "I've Got My Love To Keep Me Warm." It's back again, and in two different versions. One is by the Mills Brothers on Decca Y6170, which they back with "Manana," and the other is in dance tempo by Les Brown and His Orchestra on Columbia DO.3200. Ray Noble and His Orchestra appear on the reverse with "Streets of Laredo," from the film of the same name.

Favourite old tunes galore made "Words and Music" a most enjoyable film, and on H.M.V. EA.3845 Perry Como sings two numbers that were featured, "The Blue Room" and "With A Song In My Heart."

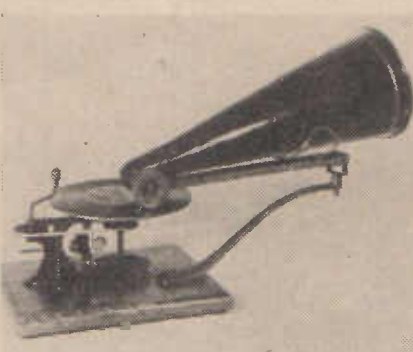
Speaking of hearts, that vocal charmer Dinah Shore will set many beating at double tempo as she sings "So Dear To My Heart," on Columbia DO.3299, and on turning over the disc we find she goes all old-world on us with "A Rosewood Splinet," a lyrical ballad wearing all the aspects of a great success.

The Disney film "So Dear To My Heart," from which Dinah takes her song, also has

another hit number called "Lavender Blue," a bouncy tune with a folksy lyric, which Sammy Kaye's Orchestra waxes on H.M.V. EA.3842. Freddy Martin and His Orchestra take over on the other side with "The Little Old Church Near Leicester Square," making up a bracket that will find full favour with dance fans.

Joe Loss takes us to "The Wedding of Lilli Marlene" on H.M.V. EA.3843, and another new hit—this time a blues number — "The Crystal Gazer" makes up the other side. An interesting note to the "Marlene" record is the fact that it was written to celebrate the recent marriage of Lale Andersen, who first sang "Lilli Marlene" in a German cabaret in 1938, to Arthur Beul, the composer of the song which later became the signature tune of the Allies in Libya. Husky-voiced Lale, by the way, is a descendant of Hans Andersen.

"Professor" Kay Kyser again mixes that distinctive recipe of melody and rhythm which has put him at the top of the entertainment tree in U.S.A. Hear him on Columbia DO.3301 in "Saturday Date," a bright little ditty about a couple who keep a regular "at home" date on Saturday nights. The backing is that popular novelty, "Horses Don't Bet On People."



## RECENT RELEASES ECHOES OF MUSICAL HISTORY

ALL the way from Glasgow comes this photograph of a veteran gramophone. It was accompanied by a letter from the sender, Mr. Hugh Wallace, who writes as follows:

"I enclose a photo of a very old gramophone which I possess, and it would be interesting to know if there are any more like it still in existence. It is a very unique instrument, in respect that it has no motor, but is driven by hand. I understand this is the first model on which disc records could be played. The turntable is seven inches in diameter and is a heavy casting weighing approximately 12 lb., and it acts as a sort of fly-wheel."

"Comparing this machine with the present-day electrically-operated gramophone, few people will credit that this early model was the forerunner of the magnificent range of gramophones

made by 'His Master's Voice' Company of today. Only the name of the company in those far-off days was 'The Gramophone and Type-writer Company.'

"Although it must be 50 years or more since this gramophone was made, it is still serviceable and gives very good reproduction, and I think you will agree this is a fine testimony to the high quality of goods produced by this world-famous company."

On delving into the question of the earliest disc records we learned from The Gramophone Company Limited at Homebush that the first disc-type record made in England appeared in their first Christmas list in 1898. Far from pretentious, it was a concertina solo by Percy Honri, accompanied on the piano by Fred Gaisberg, the title being "Happy Darkies." Copies of this 7-inch disc have long since vanished, but we were interested to hear that these two musicians recently had a reunion at the "H.M.V." studios in London, and just for old times' sake they made an impromptu recording of the same tune under modern conditions.

## IMPORTED ENGLISH RECORDS

From Beethoven's rich middle period came "Egmont Overture." It provides ample opportunities for individual interpretation, and, on Columbia DX.1273, the performance by The Philharmonia Orchestra, under Alceo Gallera, is so powerful and dramatic that one feels it would have won the warm approval of the great composer himself.

The same orchestra, this time conducted by Constant Lambert, is heard on Columbia DX.1449 playing the symphonic poem "In The Steppes of Central Asia," which composer Borodin dedicated to his friend, Franz Liszt. Lovers of exotic melody and rich orchestration will want to add this work to their collection.

Those who enjoy the unusual in music will appreciate "La Folia," played by violinist Alfredo Campoli on Decca AK.1670/1. The Folia is an ancient Portuguese dance, the rhythm and style of which was often used by 17th and 18th century composers. On the fourth side of the discs, Campoli plays "La Campanella" with the utmost brilliance.

A splendid musical feast awaits the purchaser of AK.1175/6. The National Symphony Orchestra performs Dukas' "The Sorcerer's Apprentice," well remembered from Disney's "Fantasia," and it is combined with a work in very distinct contrast, the beautiful Debussy prelude, "The Blessed Damosel."

The baritone Tito Gobbi, soon to be seen and heard in the forthcoming British film success, "The Glass Mountain" records on DB.6876 for H.M.V. a delightful bracket of two irresistible Neapolitan songs, "Torna" and "Dicitencello Vuje."

After an absence of some years, pianist Leif Poulshnoff makes a welcome reappearance on records playing two works of Chopin, the composer who featured largely in his wartime concerts for English troops and factory workers. On H.M.V. C.3773 he gives superb performances of "Nocturne in B, Op. 32 No. 1," and "Waltz in A Flat, Op. 34, No. 1."

Stravinsky, whose name is usually associated with such colourful works as "Petrouchka" and "The Rite of Spring," composed in 1946 a "Concerto in D for String Orchestra." On hearing it performed by the Halle Orchestra, under the leadership of John Barbirolli, on H.M.V. C.3733/4, we find that it has some technical affinity with the old Concerto Grosso. He uses solo instruments against the main body, and develops the work from a fundamental idea. Hear this music for its rhythmic ingenuity, harmonic daring, and masterly orchestration.

One of Tchaikovsky's most tuneful ballet suites, "The Sleeping Beauty," comes to records on AK.1524/5, played by the B.B.C. Theatre Orchestra. The set comprises: Introduction; The Blue Bird; Princess Florisse; Panorama; and the well-known Sleeping Beauty Waltz.

The exquisite voice of soprano Margherita Carosia has won for her many admirers, even though she has made only two previous records. Her newest, H.M.V. DB.6379, will add to her popularity, particularly since she has chosen one of the best-known coloratura arias from opera, "Una Voce Poco Fa" from Rossini's "Barber of Seville." On the reverse side she sings "Io Sono Doctle." Carosio is supported by the Royal Opera House Orchestra, Covent Garden.



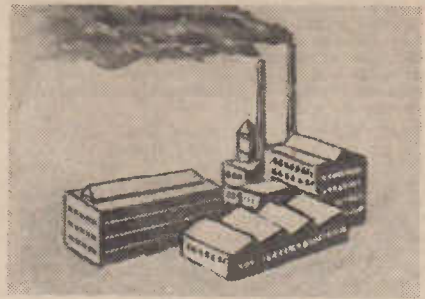
# In Tune with the Trade

## A PROUD HERITAGE FOR A NEW NAME

As from October, 1949, a new Australian company has taken over the capacitor division of Tecnico Limited. Managing Director A. C. Millingen announces the advent of United Capacitor Co. Pty. Ltd. with Tecnico holding the majority interest. Subscribing companies include British Insulated Callenders Cable Ltd., and Telegraph Condenser Co. Ltd., with which are associated United Insulator Co. Ltd. of England.

The Australian radio trade and public in general have benefited for some years now by the high grade of capacitors made under

the Tecnico name, and the establishment of U.C.C. means considerable expansion in production and manufacturing techniques. One function of U.C.C. is the facility to import special overseas condensers for application where demand may be limited. There are among such types, those designed especially for television purposes; a point of vital importance in the near future for Australia. At the helm of technical operations of U.C.C. is Chief Engineer Graham Hall, who recently studied the latest capacitor developments overseas.



### NEW RADIOTRONS

Of considerable interest is the power output pentode type KT61 now available from A.W. Valve Co., 47 York Street, Sydney. This is a high slope power amplifier for use in the output stage of an audio amplifier. Sensitivity is high, and the valve should not therefore be used normally in amplifiers where a high order of audio gain is provided, if microphony is to be avoided. KT61 is a 6.3 volt octal based type with standard connections as in the 6V6G. Self-bias must always be used because of the high mutual conductance and a screen stopper resistance is recommended. Plate and grid circuits must be isolated from each other. Another addition to the Radiotron range is the 6AR7-GT, which is a self-shielded multi-unit valve containing two diodes and a remote cut-off pentode in the one envelope. It provides high stage gain as an RF, IF, or AF amplifier and can be used satisfactorily in reflex applications with low distortion. This valve is intended to supersede the 6G8G. In conjunction with such valves as the X61M and KT61, the 6AR7-GT forms the basis of a high performance "straight" 3/4 valve receiver.

### NEW TECNICO RELEASE

#### Radio Gramophone Combination Model 952C

The Tecnico Model 952C is a radio gramophone combination, the details of which are as follows:—

1. **CABINET:**  
Length 35 inches, Height 30 inches, Depth 17½ inches.
2. **RECEIVER:**  
The Receiver is a 5 V. dual wave super-heterodyne for operation on a 210-260 volts 50 cycle AC supply.  
Frequency Range:  
535 Kc/s to 1600 Kc/s on Broadcast Band.  
6.0 Mc/s to 18 Mc/s on Short Wave Band.  
Valve Complement:  
6J8GA Frequency Converter.  
6U7G I.F. Amplifier.  
6G8G Detector AVC and Audio Amplifier.  
6V6G Output.  
5Y3G Rectifier.  
Controls: There are four controls, viz. tone, volume, tuning and phono radio wave change switch.
3. **RECORD CHANGER:**  
Garrard Model RC70 Automatic record changer is used, which will play any number of records up to ten 10 inch or ten 12 inch not mixed. This changer operates on a 210-260 volt 50 cycle AC supply.
4. **SPEAKER:**  
12 inch Rola type 12M.

**FEATURES:** The cabinet is highly polished veneer finished with the top hinged, and when closed forms a perfectly plain surface. The hinged top is in two sections, one for access to the radio receiver controls and the other for the record changer.

With a compensated feed back circuit on the output stage and a 12 inch speaker, excellent tonal qualities are achieved. A continuously variable tone control enables the desired response easy to obtain.

A high gain aerial coil is employed in the receiver to give good sensitivity with a high signal to noise ratio.

The selectivity is such as to eliminate all adjacent channel interference and still enable really good tonal reproduction to be obtained.



### TRIMAX TRANSFORMERS NEW FACTORY

As from 19th September, 1949, the factory and registered address of Trimax Transformers (Cliff & Bunting Pty. Ltd.), is at Charles Street, North Coburg, Victoria. Postal address for all mail is Box 2, Coburg Post Office, and telephone number FL1203. The Company will continue deliveries to Melbourne City as at present and all rail consignments should be addressed to Trimax Transformers, Spencer Street, excepting passenger consignments from Gippsland, which should be forwarded to Flinders Street.



**KEMPSEY (N.S.W.) RELIEF FUND**  
Organised by the BREIF Club of Sydney, and supported by the major radio and electrical associations, this relief fund is designed to alleviate the damage sustained by traders in Kempsey, as a result of the recent disastrous floods. Objective has been set at a figure of £10,000, to be devoted to special concessions to meet cases of extreme hardship and to meet costs of re-wiring, drying-out, etc. You are asked to donate toward the fund generously and speedily. Make cheques payable to the BREIF Club of Sydney, and address them to the Secretary, 44 Margaret Street, Sydney.



### "MIRACLE BOX" SURVIVES FIRST CRACK-UP

The midjet radio transceiver recently perfected and demonstrated at Mascot by A.W.A. after 2 years research, has survived its first crack-up.

A Moth aircraft, fitted with the Air-Mite, got into difficulties during take-off, and finished up in the reservoir on Essendon drome. The Air-Mite was recovered by A.W.A. technicians after three hours immersion, and their report reads: "The crystal holder let in some water, one valve was broken (probably due to sudden cooling), one broken due to impact.

The Air-Mite, which occupies a space of approximately 4 inches cube, has aroused the keen interest of aviation circles everywhere, and A.W.A. have reported enquiries from Aviation authorities and Radio Organisations from London, New Zealand, South Africa, France, Morocco, Malaya and India.

The development of so compact a unit capable of transmitting and receiving voice up to horizon distance, and small enough to fit in the glove box of even a light car, may open up new radio uses for the man on the land.

The Air-Mite operates on ultra-high frequency and in this frequency the radiations have fine of sight characteristics therefore height above the surrounding terrain is a big factor in the range of the unit.

In aircraft, no difficulty has been experienced in two-way conversations at 50 miles owing to the increased horizon distance.

(Continued on next page)





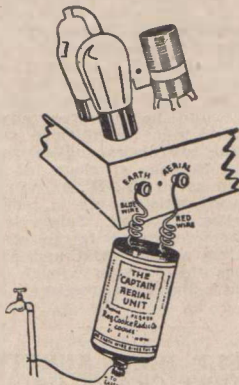
## TRADE SECTION

(Continued from page 35)

### "CAPTAIN" AERIAL UNIT

SO sensitive is the modern receiver that there is often a tendency to treat with contempt any suggestion that a good aerial should be used. Often one finds that a few feet of wire may be left dangling behind a cabinet or left coiled inside to the detriment of performance, and the user comes to accept a general signal and noise level as being normal. With proper aerial consideration, freedom from unwanted noise background can be the case, and where external installation of wire is not feasible, an efficient aerial substitute may be worthwhile.

For many years now, there has been available on the Australian radio market a handy little device known as the "Captain" unit. It has stood the test of time, and, if directions are correctly followed regarding usage, will provide a fully effective outdoor aerial substitute. It is a resonant filter unit designed for use with receivers covering the broadcast band and comes to the purchaser post free for 5/9, from the maker, Reg Cooke, P.O. Box 9, Gerringong, N.S.W. Installation is simple and is shown pictorially here. Of primary importance for full effectiveness is the earth connection, which must be carefully made and not haphazard. A bad earth connection may give poor results. Preferably, use should be made of a water-pipe for the purpose, and if the wire thereto is on the lengthy side, this is helpful rather than detrimental. The wire for the purpose should be of heavy solid or stranded copper.



Testing the unit on a suitable receiver, we encountered results reminiscent of tests some years ago with a buried aerial of special design. The stations were all there with plenty of signal level, but a normally heavy background of noise was gone. The unit discriminates against man-made and natural static. We also tested the little unit against a fair-sized outside aerial, and whilst results were not quite comparable with that system, the results warranted use where it is necessary to stick to an indoor installation. With a dual-wave receiver on test, the "Captain" unit proved equal also to the provision of plenty of signal from the BBC transmitters in the 30 and 19 metre bands. Letters of praise from satisfied users include remarks thus—

"It proved so effective on my own little one valve that Pop got jealous and now wants one. . . . T. J. Moxham, Mulbenudgery, N.S.W."

"I want this for a friend of mine; the one I purchased is giving 100 per cent satisfaction. . . . H. Retbus, via Wodonga, Victoria."

"My friend, Mr. Watts, received tonight the one he ordered and it certainly has made a world of difference to reception. . . . I am getting excellent results with mine on my Stromberg receiver. J. A. Burke, Lower Bogong, Victoria."

"The proximity of power stations and 66,000 HT lines creates a great deal of interference, and it appears that the unit is doing a very good job up here. A. R. Gordon, Junction, Victoria."

"I did have one of your aerial eliminators some years ago, and it is now doing yeoman service in England, where I left it when visiting. . . . Reg Dracup, State Electricity Commission, Mt. Beauty, Victoria."

"I was fortunate to see and hear the results obtained here. Static is normally bad owing to tropical conditions. . . . P. M. Laren, Dept. of Works, Darwin, N.T."

We have seen a sheaf of similar letters covering territory all over Australia, including Katoomba, N.S.W., Ferntree Gully, Victoria, Mt. Isa, Queensland, Goolwa, S.A., and New Guinea.

### BREVILLE NEWS ITEMS

Breville Radio Pty. Ltd. announces the promotion of MR. B. J. O'CONNOR from Accountant to Secretary of the Company.

MR. JAMES HAMILTON has joined the staff as Accountant.

MR. L. FILEWOOD has joined the Company as Store Manager/Buyer, and brings with him a wealth of trade experience.

PETER KURTS, Breville Northern Traveller, has just returned from a most extensive trip extending over eight weeks, and reports good business in all areas.

BUK INTERSTATE DISTRIBUTORS CONFERENCE. A Conference of the "BUK" Shaver Interstate Distributors was held in Melbourne recently. Bert Prior of Vealls was Chairman, and others present were Les Badge of Vealls, Jack Entwisle of Healings, Bill O'Brien of Breville, Sydney, Ossie Thomas of Breville, Brisbane, and Bill Governlock of Newton McLaren, Adelaide.

A busy day was rounded off when the Victorian distributors acted as hosts at a dinner at the Australia and later at the Tivoli, and a good time was had by all.

### ADVERTISING

Constant dripping water wears away the hardest stone,  
Constant gnawing canine chews away the toughest bone,  
The constant wooing Romeo takes away the willing maid,  
And the constant Advertiser is the one who gets the Trade.

### PERSONAL PARAGRAPHS

Adding something of his own originality to the H.M.V. "Little Nipper" campaign, Mr. R. T. Waters, well-known Cronulla retailer, recently had a handout of ice creams to all the local small-fry who brought along their fox-terriers to his store. A photographer took pictures of the pups entering the competition and each tall-wagger received a free ration of biscuit. For his enthusiasm, we suggest that Waters Radio takes the cake!

The Gramophone Company enjoyed seeing Miss Molly Lockwood when she called in recently. After the rush of the city's business life she was happy to be returning to her domain at Maples in Wagga, where she manages the radio, domestic appliances and music departments.

J. N. Briton, General Manager of Works at The Gramophone Company Limited, has been elected to the office of Senior Vice-President of The Institution of Radio Engineers Australia for the current year, 1949-1950.

### H.M.V. RADIOGRAM D43B

A 5-valve A/c Dual Wave De Luxe Console Radiogram.

Cabinet Dimensions — Width 36 inches, Depth 18 inches, Height 31 inches.

Tuning Range — 540-1600 Kc/s. 16.5-51 Metres.

Flywheel tuning control giving exceptionally smooth tuning.

Large edge-illuminated dial with station names printed in specially selected type to facilitate ease of reading.

Short Wave band calibrated in metres and megacycles.

Recessed volume control at side of cabinet permits volume adjustment with cabinet lid closed.

Pick-up operation controlled by Wave-Change Switch.

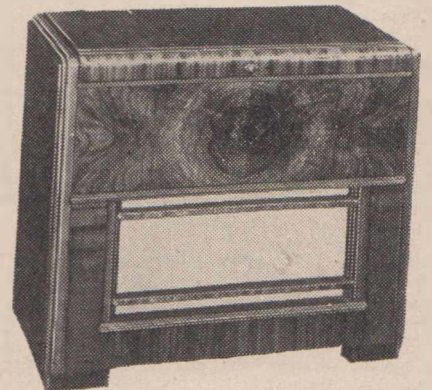
Tone Monitor incorporates special "Speech" position.

Exclusive H.M.V. Elliptical Speaker. Provision for extension speaker.

Specially developed delayed automatic volume control circuit minimises fading.

Inverse feedback applied over the entire audio system ensures a high standard of tonal quality.

Stability of performance ensured by the use of permeability tuning and dust proof air trimmer condensers.



Light-weight H.M.V. Pick-up gives faithful reproduction of gramophone recordings with exceptionally low record wear.

Self-starting constant speed motor fitted with automatic stop.

Indicator lamp, built into cabinet lid, indicates when instrument is switched on.

Controls include separate On-Off power switch.

Patented "Drop-Back" cabinet lid gives full access to receiver and gramophone controls.

A special feature is the Acoustic Range Selector, a calibrated system of tone control, which functions on radio as well as records. Adjustment of the bass and treble controls enables the best possible results to be obtained from older-type recordings, and complete response from modern discs. Reproduction may be adjusted to the acoustics of any particular room, and the listener is able to exercise personal control and adjust music to his own taste.

Price £94/10/-. Available now.

At a general meeting of the International Federation of the Phonographic Industry, recently concluded in Holland, Sir Ernest Fisk, Managing Director of E.M.I., was unanimously re-elected President of the Federation.

Representatives of twelve different countries participated in the meetings as members. In addition to members, the meetings were attended and addressed by official representatives of U.N.E.S.C.O., the International Broadcasting Organisation, the International Federation of Musicians, and representatives of the Netherlands Government.



## FM SERVICE

Radio telephone equipment giving connection between Head Office of Melbourne Harbour Trust in Market Street and nine units of its fleet in Port Phillip Bay, and between the Geelong Harbour Trust and eight units of its fleet, has now been formally handed over to the Melbourne Harbour Trust and the Geelong Harbour Trust respectively, by the makers, Electronic Industries Limited.

In both cases a 24 hour service is now being operated. A feature of the equipment is the incorporation of a selective calling system new to Australia and designed by the engineers of Electronic Industries. The units of the fleet are called up by dialing the appropriate numbers on an ordinary telephone dial and during the conversation, all other units are "locked out." If they ring headquarters, or the unit talking to headquarters, while a conversation is in progress, they receive an "engaged" signal.

Calls to units from the base stations are notified by sirens on the larger vessels and bells on smaller units. To answer, a telephone-type handset is lifted and the conversation carried on in the normal manner. To originate a call, a press-to-talk key is depressed.

Both the Melbourne and Geelong systems operate on F.M. in the 70-87 megacycles band. The Melbourne system covers the whole of Port Phillip Bay down to the Heads, and the Head Office transmitter is housed in the basement of the Harbour Trust Building. It is connected with an elaborate di-pole aerial on the roof of the building which feeds forward over the Bay. It is also connected by landline with the Harbour Trust Office at Williamstown Pier and can be remotely controlled from there after normal office hours in the city. Melbourne Harbour Trust units connected with the system include three tugs, five barges and a motor launch. A unit is to be installed in the car of the Chairman of the Trust, Mr. A. D. Mackenzie, so that he can maintain constant touch with his office and can, if necessary, be switched through from his car to the units of the Trust fleet.

The Geelong system is fed from a transmitter in Yarra Street, but can also be remotely controlled by landline from Point Henry Signal Station some miles away. It gives coverage of Corio Bay and a radius of about 20 miles. Although its control is the responsibility of the Chief Engineer, it is in fact, so simple to operate that it is housed alongside the ordinary telephone switchboard in the Yarra Street building and is operated by a girl telephonist.

## MARINE RADAR

The adage of history repeating itself was borne out with a scientific twist when the "Manunda" berthed recently in Sydney Harbour.

On board were A.W.A. Engineers who reported the satisfactory operation of the first Navigational Radar Equipment ever fitted in a ship of the Australian register. The equipment was manufactured by Kelvin Hughes of England. Thirty-seven years ago, A.W.A. Engineers fitted the first ships of the Australian register with Wireless.

The development of this Mercantile Marine Radar Equipment is a result of intensified wartime radar research, and is another illustration of science's moulding of swords into ploughshares.

The unit fitted in the "Manunda" is so sensitive that it can pick up and trace heavy cloud on its screen. The operation of these equipments is extremely ingenious. The aerial rotates at 30 revolutions per minute, and its action is not unlike that of a giant garden spray completely covering a radius of 27 miles with a fine spray of electrons. Each particle is capable of mirroring back a reflection of any object, no matter how small or large, breaking the horizon. These reflections are traced in plan on a screen usually placed in the chart room, giving the navigators a 27 mile all round visibility when outside conditions have reduced visibility to nil, penetrating fog, mist or rain as if it did not exist, and almost completely wiping out the dangers once associated with those conditions.

This equipment carries the approved recognition of the United Kingdom Ministry of Transport.

## NOTES OF GENERAL INTEREST

Set contains 61 valves. Total power consumption 2.0 K.W.

Frequency of operation 9425-9525 Mc/s Bond. Display is presented on a 9 inch Plan Position Indicator.

Ranges of 1 to 5, 9, and 27 miles can be displayed.

Minimum Range better than 50 yards.

Range accuracy plus 2½ per cent of the maximum range in use.

Range discrimination—2 objects on the same bearing will be distinguished separately if more than 100 yards apart.

Bearing discrimination—2 objects at same range but different bearings will be seen separately if more than 200 feet apart and subtend an angle not less than 3 degrees.

Picture is un-impaired with rolling up to plus 20 degrees.

Scanning continuous, 30 R.P.M.

Set transmits a peak power of 30 K.W. for .2 micro-seconds, 1000 times a second.

Storms with heavy cloud can be detected at near ranges, giving warning of approaching squalls, etc.



## WONDER TUBE OF TELEVISION AIDS STUDY OF SURGERY

In the operating theatre of the St. Thomas' Hospital, London, surgeons and students followed in more detail than ever before, the intricacies of a minute and delicate operation—the detachment of the retina of the human eye.

Marconi engineers, using the image orthicon camera tube, were able to provide the observers with an even better observation than the operating surgeon himself. This was possible as the human eye, which approximates only 1½ inches across, was magnified by the image orthicon camera to 9 inches without loss of definition and, using a mix \* from two cameras strategically placed, no section of the operation was obscured by the surgeon's movements.

The new image orthicon camera tube that televised this operation is so sensitive that it can pick up its picture from the light of a single candle, or the brilliance of the noon-day sun, and is the type of camera tube recently demonstrated by Amalgamated Wireless (Australasia) Limited.

The televising of this eye operation followed the successful televising of operations to 400 delegates of the Gynaecological Congress at the University College Hospital early this month.

\* Camera Mix. This term illustrates the use of two or more television cameras surveying the one scene from different views, and pictures are displayed alternatively to retain an all round view of the scene. For trick shots, the two different views can be merged by the mixer, and unusual effects obtained.

## SUBSCRIBE NOW

For 12/- a year you get  
"RADIO and TELEVISION"  
MAILED DIRECT.

## LATEST WATCH TIMING DEVICE FOR AUSTRALIA

A new instrument, designed to diagnose the ills of Time, has just arrived in Sydney.

This Time Beat Recorder will be released to the watch and clock industry through S. Smith & Sons (Australia) Pty. Ltd.

This new apparatus will revolutionize clock and watch repairs cutting the work of timing from days to minutes.

Evolution of the Electronic Time Beat Recorder is an extremely interesting one. It has been known that skilled craftsmen, after years of experience, could diagnose certain faults in a watch by listening to the tick—just as the skilled physician diagnoses certain illnesses in the human body by means of a stethoscope. The Time Beat Recorder is just that—a most intricate stethoscope.

The instrument comprises a frequency generator, a synchronous motor and a graph recording device which enables a trace of the recording of the sound to be burnt into the paper by a visible spark.

If the graph so traced runs in a straight line, the clock or watch is accurate; if it deviates to the right or left, the unit under test is gaining or losing, and can be immediately observed and regulated accordingly. Thus, a process that has always required days to carry out properly, is completed in a few minutes. Many other patterns are traced by the recorder, and each one is an immediate diagnosis of the defects of the unit under test. A weak main spring, for instance, produces a pattern that looks like the track of a cart hauled up a hill by a weary horse.

With the regulation of watches now requiring no longer than it takes to buy a box of matches (under normal conditions), it looks as if many of us will be seeking new alibis for missed appointments.

S. Smith & Sons (England) are one of the largest clock and instrument manufacturers in the world, and their link in Australia with Amalgamated Wireless by the joint establishment of Smiths (Australia) may well provide Australia with a complete new industry.

# R-C-S

455 K.C. NEW I.F. TRANSFORMERS

New I.F.170-171-172 series. I.F. transformers are of revolutionary design using silver mica condenser moulded in the trolitul base, making them absolutely moisture proof.

Buy R.C.S. —and get the best! 13/- Ea.

If your local dealer cannot supply, write direct to

**R.C.S. RADIO** PTY. LTD.  
174 CANTERBURY RD.  
CANTERBURY, N.S.W.





# AMATEUR RADIO SECTION



## An Index of American War Surplus Equipment Indicating the Functions and Types of Tubes Used.

The Australian amateur interested in the purchase of ex-Service gear may at times come across some unfamiliar item of American origin. By the courtesy of one of our readers, VK2ZQ, we are giving here the complete list and hope that at some time or other it will prove to be of utility to the individual amateur.

### GUIDE TO EX-SERVICE EQUIPMENT

ADF—Navy receiver, 15 to 1750 kc. in 6 bands, 8 tubes - (3) 6D6, (2) 76, (2) 6C6, (1) 41.

AM-26/21C—Interphone Amplifier containing (2) 12J5, (2) 12A6 tubes, designed for use from 28-volt DC dynamotor.

APA-10—Pan-Oscillo Receiver: 1s 115vAC operated and contains panoramic adapter with IF of 405-505 kc., 4.75 to 5.75 Mc., and 29 to 31 Mc.

APN-1—Altimeter: 418-462 Mc. Transmitter and Receiver which measures 3 to 4000 feet altitude, weighs 25 lbs. and is 18" x 9" x 7". Designed to operate from 28 volts DC and contains the following tubes: (4) 12SH7, (3) 12SJ7, (2) 12H6, (1) VR 150, (2) 955, (2) 9004.

APN-4—Radar Oscilloscope containing 25 tubes, 18" x 9" x 12", and weighs 50 lbs.

R65/APN-9—Loran Indicator and Receiver containing 35 tubes and 3" scope, 110 volts, 400 cycles.

APQ-9—VHF Radar.

RT34/APS-13—Transmitter and Receiver containing following tubes: (5) 6J6, (9) 6AG5, (1) VR 150, (2) 2D21. 410-420 Mc. 30 Mc. IF Freq.

APS-15—Radar set, 45 tubes, 3 meters, four 115 volt 400 cycle supplies, multivibrators, 5" and 2" scopes.

APT-5—Transmitter-1506 Mc., uses 115VAC filaments, no plate supply included. (2) 6AC7, (1) 6L6, (2) 829, (1) 931A, (1) 522, (1) 6AG7.

ARB—Navy 4-band receiver, 195 to 9 Mc., uses (1) 12SA7, (4) 12SF7, (1) 12A6, weighs 28 lbs., and is 6" x 7" x 15".

ARC-4—Transmitter and Receiver using 4 crystal channels, in 140 Mc. range for 24 or 12 volt DC operation. Transmitter has 7 tubes.

ARC-5—Navy aircraft equipment—Receivers: 190 to 550 kc.; 1.5 to 3 Mc.; 3 to 6 Mc.; 6 to 9.1 Mc. Transmitters: 500 to 800 kc.; 800 Receiver has 13 tubes.

to 1300 kc.; 1.3 to 2.1 Mc.; 3 to 4 Mc.; 4 to 5.3 Mc.; 5.3 to 7 Mc.; 7 to 9.1 Mc.; 100 to 156 Mc. Modulator is MD-7/ARC5 2-1625's.

ARC-429—2 band receiver, 201 to 400 Kcs and 2500 to 4700 Kcs (aircraft).

ARC-429A—2 band receiver, 201 to 400 Kcs and 4150 to 7700 Kcs (aircraft).

R-89/ARN-5A—Glide Path Receiver; 11 tube superhet on 332 to 335 Mcs.; fixed tuning; Glide path receiver: (7) 6AG5; (1) 12SR7; (2) 12SN7; (1) 28D7. Crystal frequencies are: 332.6 Mcs.; 333.8 Mcs.; 335.0 Mcs. Weighs 12 lbs.; size 13" x 5" x 6".

R-5/ARN-7—Radio Compass Receiver—covers 200 to 1750 Kcs in 3 bands with 17 tubes.

ART-13, or ATC—Collins Auto tune transmitter: 2 to 18.1 Mcs in 11 channels, weighing 70 lbs. and is 23" x 13" x 11". 150 watts voice, cw or mcw. Uses 813 in final and 811's in PP modulator. v.f.o. and crystal calibrator.

ASB—Radar equipment, 515 Mc.

ATL—Aircraft transmitter - 540 to 9050 Kcs CW or Phone, requires 380 volts and 1000 volts DC. RF osc - 6L6, RF amp - 814, 6SL7 speech, 6L6 driver, PP 6L6 mod. Designed for dynamotor operation. Weight 75 lbs. Size 11" x 12" x 21".

AVT-112A—Aircraft transmitter: 2500 to 6500 Kcs Phone, operates from 6, 12, or 24 volt source. Has 6 tubes and weighs 6 lbs.

B-19—Mark II Transmitter and receiver covering 40 to 80 meter bands.

RC-191—Same as 375E transmitter except operates on 12 or 14 volts.

BC-221—Frequency meter: Up to 125th harmonic. Basic frequency is 125 to 250 Kcs and 2000 to 4000 Kcs. Better than .005% accurate.

BC-222—Receiver/Transmitter. 28-38 Mcs and quencies. Uses 801 Osc, 801 Pa (2) 46 Mod, (1) 46 SP amp. 10 to 30 watts output on tone, voice or CW 4 crystal frequencies and master oscillator on switch. 3 coils—TU 17A 2000 to 38-52 Mcs. Similar to BC-322.

BC-223AX—Transmitter, covering medium frequency 3000 Kcs; TU 18 3000 to 4500 Kcs; TU 25 3500 to 5250 Kcs. Black wrinkle case with 2 separate cases for spare coils.

BC-224—Receiver, 200 to 500 Kcs and 1500 to 18,000 Kcs. Operates from 14 volt dynamotor (identical with BC-348 except for input voltage).

BC-306A—Antenna tuning unit for BC-375 transmitter. Operates from 150 to 800 Kcs.

BC-312—Receiver: 1500 to 18,000 Kcs. Uses 9 tubes with 2 RF stages. (4) 6K7, (1) 6L7, (2) 6C5, (1) 5R7, (1) 6F6.

BC-314—Same as BC-312 except covers 150-1500 Kcs.

BC-322—Receiver/Transmitter 52-65 Mcs.

BC-342—Same as BC-312 except will operate on 115 VAC.

BC-344—Similar to BC-312 except covers 150 to 1500 Kcs and is 115 VAC operated.

BC-348—Receiver: 1500 to 18,000 Kcs and 200 to 500 Kcs. Automatic noise compensator (neon). Output 300 or 4000 ohms. Crystal filter, AVC-MVC-BFO. 1st RF 6K7, 2nd RF 6K7, RF Osc 6C5, 1st Det 6J7, 1st IF 6K7, 2nd IF and CW Osc 6F7, 3rd IF and 2nd Det 6B8, Audio 4L. Operates from 28 volts DC.

BC-357J—Beacon Receiver for 75 Mcs.

BC-375—Transmitter: 150 watts output, 200 to 12,000 Kcs (less BC), 211 Osc, 211 RF amp, 10 Speech amp, (2) 211 PP modulators, 5 tuning units as follows—TU 5B 1500 to 3000 Kcs, TU 6B 3000 to 4500 Kcs, TU 7B 4500 to 6200 Kcs, TU 8B 6200 to 7700 Kcs, TU 10B 10,000 to 12,500 Kcs.

BC-403—Radar oscilloscope, 5" scope 115 volt 60 cycles operation, component of SCR-270 and 271.

BC-404—Radar receiver for SCR-270 and 271, 102 to 110 Mcs, 12 tubes, operates from 115 volts 60 cycles.

BC-406—Receiver from SCR-268 unit covering 201 to 210 Mcs, with 15 tubes and 115 VAC operated.

BC-412—Oscilloscope from SCR-268 radar.

BC-450A—Control box for 453A type receivers.

BC-453A—Army aircraft receiver: This is merely one of a group in this series. The receivers are of all aluminium construction weighing about 6 lbs. and are approximately 5" x 8" x 12". Power required is 250 volts at 50 ma and 25.2 volts at 45 A. Receivers have hi and low impedance output (300 or 4000 ohms) and are for voice, mcw or cw. Tubes contained are (3) 12SK7, (1) 12SR7, (1) 12A6, (1) 12K8. BC-453A covers 190 to 550 Kcs, 454A covers 3 to 6 Mcs, 455A covers 6 to 9.1 Mcs.

The 274N command set consists of 3 receivers, 2 transmitters, 4 dynamotors, 1 modulator, 2 control boxes, and ant coupling and total of 26 tubes. Receivers cover 190 to 550 Kcs, 3 to 6 Mcs and 6 to 9.1 Mcs. Transmitters cover 3-4 Mcs and 4 to 5.3 Mcs.

BC-454A—See data on BC-453A.

BC-455A—See data on BC-453A.

BC-456A—Is modulator unit for BC-457A Series transmitters.

BC-457A—Series Transmitters are designed for use with BC-453A Series receivers in Army aircraft and are similar in appearance but slightly larger. Rated output is 30-40 watts.

Have directly calibrated vernier dial and contain the following tubes: (2) 1625 PA, (1) 1626 Osc, (1) 1629 Tuning Indicator.

All units have crystal for check on calibration. BC-457A, 4 to 5.3 Mcs (Crystal 4600 Kcs); BC-458A, 5.3 to 7 Mcs (Crystal 6200 Kcs); BC-459A, 7 to 9.1 Mcs (Crystal 8000 Kcs); BC-696, 3 to 4 Mcs (Crystal 3500 Kcs).

BC-458A—See BC-457A.

BC-459A—See BC-457A.

BC-603—10 channel FM receiver using push buttons or manual 20 to 30 Mcs, Superhet, BFO, 12 volt operation. 10 tube.

BC-604—10 channel FM transmitter push button or manual 20 to 30 Mcs using 1625 final with 20 watts output for 12 volt operation. 8 tubes.

BC-620A—Transmitter and Receiver covering 20 to 27.9 Mcs Crystal controlled FM with 13 tubes. (4) 1LN5, (1) 1LC6, (1) 1LH4, (2) 1291, (4) 1299, (1) 1294. Weighs 38 lbs.

BC-624—Receiver component of SCR-522, 10 tube superhet.

BC-645—Transmitter and Receiver (IFF). 435 to 500 Mcs with 15 tubes. 400 volts at 135 ma required plus 9 volts at 1.2 Amp AC. (4) 7F7, (4) 7H7, (2) 7E6, (2) 6F6, (2) 955, (1) 316A. Weighs 25 lbs.

BC-653A—Transmitter: 100 watts CW, 22 watts phone. 2 to 4.5 Mcs, 807 buffer, (2) 1613 MO and Mod, (2) 814 Final.

BC-654A—Transmitter and Receiver. 3800 to 5800 Kcs, Calibration every 10 Kcs, 200 Kcs crystal for check points, Power output is 12 watts voice or 25 watts CW, 7 tube superhet receiver using (3) 1N5, (1) 1A7, (2) 3Q5, (1) 1H5; 6 tube transmitter uses (2) 307A in final. Requires 1.5 volts, 45 volts, 90 volts for receiver. Requires 1.5 volts, 6 volts, 51 volts, 84 volts, and 500 volts for transmitter. Operates from PE 103A dynamotor.

BC-659—Transmitter and Receiver. FM voice only. 27 to 38.9 Mcs, Crystal controlled, 2 watt output, battery operated.

BC-684/683—Transmitter and Receiver. FM units, receiver uses 9 tubes in 10 channels (push buttons), transmitter uses 8 tubes in 10 channels (push buttons), 35 watt output, 27 to 38.9 Mcs.

BC-696—See BC-457A.

BC-701—VHF receiver, 170 to 180 Mcs. IF freq. is 30.5 Mcs, 11 tubes, self contained power supply.



BC-704A—Radar indicator unit, part of SCR-521. (4) 6AC7, (3) 6H6, (1) 5BP1.  
 BC-728—Push button receiver. 2-5 Mcs. 2 or 6 volts. 6 tubes.  
 BC-733D—Localiser Receiver. Blind landing equipment with 6 Crystal frequencies. 108 to 120 Mcs with 10 tubes. (3) 717A, 12SQ7, 12A6, (2) 12SG7, 12AH7, (2) 12SR7.  
 BC-788—Receiver. 420 to 450 Mc. 6 IF stages using 6AG5's, 30 Mcs broad band width.  
 BC-929—Army radar oscilloscope, 110 volts, 400 cycle.  
 BC-939—Antenna tuning unit for BC-610 transmitter.  
 BC-946B—See BC-453A receivers—covers 520 to 1500 Kcs.  
 BC-947A—UHF transmitter. 3000 Mcs, 115 volt AC operation, with blower.  
 BC-966A—IFF, approximately 2 meters, 14 tubes, 350 volt dynamotor with 12 volt input.  
 BC-1023A—Marker Beacon Receiver. 75 Mcs using 6SQ7, 6U6G, 6SC7, 12SH7; 12 to 24 volt DC operation.  
 BC-1068A—Receiver (see BC-1161A).  
 BC-1072A—Transmitter: 115 volt AC operation, 150 to 200 Mcs, 11 tubes.  
 BC-1161A—Receiver used with 1072A transmitter. 115 volt AC operation with 14 tubes, 10" x 16" x 15", 1- 6SN7 Cathode follower, 1- 6H6 2nd Det., 2- 6SH7 1st and 2nd RF, 1- 6SH7 Video amp, 3- 6AC7 1st, 2nd and 3rd IF, 2- 6AB7 4th, 5th IF, 1- 9006 Mod., 1- 6J5 Osc., 1- 5U4G Rect., 1- 6E5 tuning ind., Component of RC 150 IFF, Same as BC-1068A, IF Band Pass is 4 Mc.  
 BC-1206C—Setchell Carlson Beacon Receiver: (2) 25L6, 6SK7, 6SF7, 6SA7, 6K7; 195 or 420 Kcs. Weighs 4 lbs., 4" x 4" x 6-5/8".  
 BC-1267—Transmitter and receiver, 154 to 186 Mcs. 1 KW pulse oscillator, superhet circuit, 2 RF stages, and 5 stagger tuned IF's.  
 BD-77Km—Dynamotor, input 14 volts DC, output 1000 volts at 350 ma. Used with BC-191.  
 C-1—Auto Pilot Amplifier. For radio controlled models etc. (3) 7F7 Amps., (3) 7N7 Signal discriminators, (1) 7Y4 Rectifier.  
 CCT-46077—Transmitter: 2-20 Mcs, 12 Volt Input. 30 lbs. Unit of RBM-2 Equipment.  
 CRV-46151—Aircraft receiver. 4 bands covering 195 to 9,050 Kcs. 6 tube superhet.  
 DAG-33A—Dynamotor, input 18 volts DC, output 450 volts DC at 60 ma.  
 DM-21—Dynamotor, input 14 volts DC, output 235 volts at 90 ma.  
 DM-33A—Dynamotor, input 28 volts DC, output 540 volts DC at 250 ma. (Power supply for modulator of SCR-274N series).  
 EE-8—Field telephone.  
 GF-11—Equipment consists of: CW 52063A Transmitter, CW 52014 Transmitter base, CW 23097 Transmitter control box, CW 23098 Extension control box, CW 23049 Relay unit, CW 47092 Coil set.  
 GO-9—Transmitter with power supply, 200 to 18,100 Kcs, 115 volt, 800 cycles. 803 final, v.f.o., 150 watt.  
 GP-7—Navy transmitter, 125 watts, 350 to 9050 Kcs with plug-in tuning units.  
 PC-77—Dynamotor, input 12 volts DC, output 175 volts at 100 ma and 500 volts at 50 ma.  
 PE-73CM—Dynamotor, input 28 volts, output 1000 volts at 350 ma, used with BC-375.  
 PE-86—Dynamotor, input 28 volts DC, output 250 volts DC at 60 ma.  
 PE-101C—Dynamotor, input 12 or 24 volts, output 800 volts at 20 ma and 400 volts at 135 ma, plus 9 volts at 1.1 amps. Used with BC-645.  
 PE-103A—Dynamotor, 500 volts at 160 ma from either 6 or 12 volts DC.  
 PE-104—Dynamotor, 90 volts at 50 ma from 6 or 12 volts DV input.  
 PE-109—Direct current power plant. Gasoline engine driven generator, has 32 volt output at 2000 watts.  
 PRS-1—Mine detector.  
 RAK-7—Navy Receiver. 9 tubes, 115 volt AC operation, 6 bands 15 Kc to 600 Kc.  
 RA-20—115 v. 60 cycle power supply for BC-312, BC-342.  
 RA-38—Rectifier, 15 KVA, output is 15 KV at 500 ma, variable, weight 2040 lbs., 63" x 54" x 57".  
 RA-58A—Hi voltage supply. 500 to 15,000 volt continuously variable at 35 ma for breakdown tests, 115 volt AC operation.

RA-63A—Rectifier, input 115 volts at 60 cycles, output 12 volts at 8 amps.  
 RA-105—Rectifier, 117 volt, 60 cycles input, output is 2000 volts, 610 v, 415 v, 300 v, 200 v. all DC plus 6.3 volts AC. Weighs 119 lbs. and is 10" x 24" x 19".  
 RAX-1—Receiver combination. No. 1- 4 bands from 200 to 1500 Kcs. No. 2- 4 bands from 1500 to 9000, No. 3- 5 Bands from 7 to 27 Mcs. Operates from 24 volt dynamotor.  
 RC-150—IFF equipment, used with SCR-270 and 271.  
 RC-188A—IFF equipment, 157 to 185 Mcs, Transmitter/Receiver indicator, 62 tubes, operates from 110 volts, 60 cycles.  
 RL-9—Interphone amplifier from 24 volt DC dynamotor.  
 RT-1248—GE transmitter and receiver. 435 to 500 Mcs, 20 watts out, 5 tubes using WE 316A final. Receiver uses 10 tubes 955 1st Det, 955 Osc, (3); 7H7 IFs, 7E6, 7H7, 12 volts required.  
 RU-16/GF-11—Transmitter-Receiver. 3000 to 4525 and 6000 to 9050 Kcs Transmitter, 195 to 13,575 KC receiver, 12 watt voice or CW, 100 lbs. and 13" x 31".  
 SCR-195—Transceiver Walkie-Talkie. 52.8 to 65.8 Mcs, 27 lbs. with knapsack, 25 mile range, handset and spare parts plus antenna (telescope).  
 SCR-269F—Radio compass. 17 tube superhet receiver, 200 to 1750 Kcs in 3 bands.  
 SCR-274N—Command set composed of 453A series receivers and 457A transmitters (see those listings).  
 SCR-474—Portable transmitter and receiver, covering 40 and 80 meter bands, 1 volt tubes in receiver. Has 6V6 v.f.o., 6V6 power amp., and 6V6 modulator.  
 SCR-522—Transmitter and Receiver: 100 to 156 Mcs, 12 watts output on voice, 4 crystal frequencies, antenna is AN-104-B 1/4 wave. Transmitter alone is BC-625. Receiver is BC-624. Tubes used: (2) 832, (3) 12A6, (1) 6G6, (2) 6SS7, (1) 12J5, (1) 12C8, (1) 9002, (3) 9003, (1) 12AH7, (3) 12SG7.  
 SCR-536—Walkie Talkie. 1- 1R5, 1- 1T4, 1- 1S5, 2- 3S4.  
 SCR-578—Gibson girl transmitter. Automatic SOS for sea rescue.  
 SCR-625—Mine detector. Balanced inductance bridge with 1000 cycle osc. 2 tube amplifier 1G6 and 1N5, 2 flashlight batteries plus 100 volts B battery weighs 15 lbs.  
 SPR-2A—Receiver. Superhet 1000 to 3100 Mcs, 2C40 UHF osc. 115 VAC operation, 15 tubes. Weighs 15 lbs. and is 8" x 10" x 23".  
 T-17B—Carbon hand mike, 200 ohms single button press to talk.  
 TA-12—Bendix 100 watt transmitter; v.f.o., par 807 final.  
 TBW—Transmitter, similar to GO-9. 3-18,100 kc., 150 watts.  
 TBY—Transmitter/Receiver 28-30 Mcs, Voice and MCW. Output 1/2 watt. Portable.  
 TCS-9—Transmitter and Receiver, 25 watt output. 1500 to 12,000 Kcs, 115 Volts AC, Crystals or VFO.  
 TU-5B, 6B, etc.—Tuning units for BC-375 Transmitter (see listing of BC-375).  
 1-152AM—Radio Altimeter indicator. 3 each 6AG5, 2X2, 3DP1, operates from 110 volts, 400 cycles.  
 1-122A—Signal generator, self contained, 115 volts 60 cycle supply, with crystal calibrator, 8-15 Mcs and 150-230 Mcs, with harmonics covers 8 to 308 Mcs.  
 1-233—Range calibrator. (2) 6SN7, (2) 6L6, (2) 6V6, (1) 6SJ7, (1) 5Y3.  
 602A-41—Amplifier 2 stage RF amp for UHF.

## AMATEUR NOTES FROM BERS195

Well-known radio enthusiast Eric Trebilcock, at present located in Victoria, sends along some gen:

"There are now at least four licensed amateurs on Norfolk Island, and three are known to be active. They are VK9NR (Noel Roberts), VK9GM (George Meaton) and VK9RH (Reg Hoare). The last named is a technician and the other operators with Dept. of Civil Aviation on the island. That well-known amateur, VQ8CB (Lenny Mazery), at present located in the CHAGOS archipelago, plans to migrate to Australia at a later date, if some family difficulties can be overcome.

"Entrants in the last VK/ZL World Wide DX Contest held a year ago, are wondering how much longer they have to wait before seeing the results published. VK1AJT, 2nd operator to the Government inspired occupation party on Macquarie Island, has been active on 14 Mc. CW, and his home address is John Totten, 56 Leonora Street, South Perth, W.A. Does any 'R. & TV' reader know the QTH or QRA or VK1RA heard with a nice signal on 14 Mc. CW? It is rumoured that Doug. Anderson (VK3ZW) is leaving for Europe shortly on a mission for the Government in connection with radio.

"W1XM/MM on 'SS Flying Scud' and VK2XS/MM on 'SS Suva,' were both heard recently with nice CW sigs on 7 Mc. The former was off Sumatra, bound Singapore, and the latter en route for Sydney; was 400 miles east of that Capital. Has anybody received a QSL card from VK4SI/VR1, who claimed to be in the Gilbert Islands, but who is believed to have been located elsewhere?"



An interesting receiver design is noted in a New Zealand publication, using dual I.F. channels from 455 to 100 Kc/s. One amplifier valve only is applied in each stage. The tuner specified is of interest, being an attractive band-spread switched assembly made by S.O.S. Radio Ltd. of Auckland. It is appropriately named the "Rainbow" tuner—the calibration scales being arranged in various identification colours.

★ "There he goes again calling CHARLIE QUEEN DOG X-RAY."



## HOME CONSTRUCTION AND GADGETRY

MUCH has been written in the past, and a great deal has been said, about the home radio constructor. Some wiseacres dismiss the very idea with a shrug of the shoulders as being a completely dead one, the genus supposedly having been killed off by the mass-production way of life in this rather dubious post-war world. As humble remnants of this allegedly extinct race, we would not normally presume to argue the point with these Moguls, but we aver that a modicum of consideration might place the facts in their true light. Firstly, there is the question of the 'teen-ager with a liking for tinkering and gadgetry.

There will always be youngsters in our world and they will always exhibit hobby tendencies. What more attractive than radio—and now of course with it peering over the horizon—television? Secondly, if home construction be a dead elephant, how explain the rush since 1945 for "disposals gear," particularly of the radio kind? Those dealers who "bought up big" at the many government sales knew what they were doing, and they did very nicely too, thank you. They can tell you what manner of person went to make up their vast stream of clients; mostly younger folk of course. On the other hand, it isn't all doldrums either for far-seeing people catering for brand new components, kits of parts and accessories. One of Australia's most progressive radio concerns, located in the city of Melbourne,

flourishes mainly on home-constructor products mainly because the wise head at the helm has the clarity of vision to realise that the day of the home-constructor is as virile as ever. We believe that too, and for that reason this journal will always keep well in mind the likes and dislikes of our younger readers.

### ABOUT VHF EQUIPMENT

Some time ago, we received from Ken McTaggart, VK3NW, an amount of information about Victorian VHF activities. Owing to the general dislocation of the industrial conditions immediately following on our June, 1949 issue, we were not able to publish the information. It is now given here and will be of considerable interest to VHF readers.

580 mc/s. For 3 or 4 months the fellows have been getting more and more interested and contacts have been made with VK's 3RR and 3XA—over ¼ mile, and 3QO and 3IM over one mile. At least, things are moving. I went to Mount Dandenong and had splendid two-way contacts with VK's 3IM, 3ABA, and 3XA. Signals between the mountain and the first two mentioned were S9+. I was heard also by 3QO at S8. Next, from high ground near Mont Albert I heard S7 signals from VK3RR—a distance of 45 miles. The gear varies, but since RL18's are the only tubes readily available that work decently

at 580 mc/s everybody seems to be using them. (The ZL's seem to have been luckier, with 8012's available.—Ed.)

Favourite rig is grounded-grid PP with ¼ wave plate and filament lines and powers run between 3 and 6 watts. Receivers run from PP RL18's as squegger transceivers, single jobs, and in my case a 2C40 "lighthouse" tube squegger—to superhets. There are one or two very good ASB receivers. VK3XA uses a home built super with 6J6 osc: on 530 mc/s and similar mixer into an ASV. VK3RR uses an "Acom" oscillator and an RL/8 mixer with the concentric grid line having high Q and tuning sharply. I have done a lot with antennas, equipped with a IN34 Field meter and have used a corner reflector—right up to its theoretical gain of 10db and now a 24 element stacked array. There is a regrettable tendency to go off half cocked, with too great a reliance on dipoles—when beams are so easy to build. I seldom use 50 mc/s now except as a checking band for 580 mc/s and do not often appear on 2 metres.

### 6 METRE DX

At 1140 hrs. E.A.T. on October 9, VK's 2AH and 2ARG worked cross-band with JAZZ on 10 and 6 metres. VK2RU also heard the JA station on 6 metres.

### Best Neutralization Indicator Is the Grid Meter

Hold a neon glow lamp to one end of the plate coil, and the glow will disappear when the point of neutralization seems to have been found. Now move the lamp to the other end of the plate coil—and it will glow again. The neutralizing condenser must be slightly readjusted in order to find the new point of complete neutralization. But move the lamp back again to the other end of the coil, and the lamp will glow again. You see-saw back and forth, and one end of the plate coil will always light the lamp, even though the lamp will not glow when held against the other end of the coil. This phenomenon is caused by a slight unbalance of the neutralizing circuit due to the capacity of the neon lamp and hand-capacity to ground. The correct setting of the neutralizing condenser will therefore be midway between the two settings, proving that the lamp is not an accurate indicator of complete neutralization. The answer lies in the use of a meter in the grid circuit to denote complete neutralization. The needle of the meter will not flicker when the stage is neutralized, as determined by swinging the plate tuning condenser over its entire arc of rotation. It is essential that RF stages be

completely neutralized, especially when phone is used.

\* \* \*  
"JAKRIS." Lordly Mr. Final Authority is a type noticed in the ebb and flow of verbal parrying via amateur mikes. He may dilate at length upon his expensive equipment and sneeringly dub some lad struggling to get going with simple gear as a "screwball" with a regenerative receiver." Consideration for the fledgling minus a heritage of munificence to provide a string of 640's, HRO's etc., is lacking. The boy has as much right to make up and use his simple "blooper" as Mr. F.A. has to air his pompous views, and after all, this IS supposed to be a fraternity.  
\* \* \*

"Bloxon": An interesting sidelight on Australian accent is gathered from amateur radio-telephony conversations. Several Americans on 20 metres reply to Australians thus: "W6XYZ standing by for VEE KYE so-and-so." The "K" of the prefix "VK" would not thus be emphasized if Americans hadn't noticed it with many Australians. As for the Americans, when one of them talks about "beatin' it to wolk foist thing in the moining," the hearer this end knows he's in touch with a Noo Yoiker.

### SUBSCRIBE NOW!

For 12/- a year you get  
"RADIO and TELEVISION"  
MAILED DIRECT.

## Radio Components of Quality...



Capital "A" is appropriate for Aegis Components, for their quality is second to none! Exacting Standards in design and manufacture are your guarantee. If it's Aegis... it's dependable!

Agents in Every State.

AEGIS MANUFACTURING CO. PTY. LTD.

208 Little Lonsdale Street, MELBOURNE, VICTORIA





### THE BEAM AT VK3BH

Early this year it was possible to observe Charles Whitelaw, VK3BH, of Dandenong, Vic., making frequent reference on "twenty" to the advent of an important day; that of a beam erecting bee. After many months of set-back due to unforeseen circumstances, weather, etc., a large number of fellow amateurs and friends assembled at Harrisfield, ready and willing to hoe into the job.

The day was fine, with temperature around the 100 mark, and the roll-up comprised VK's 3SB, 3EN, 3OZ, 3KE, 3DH, 3FO, 3AGX, 3HK, 3ZW, 3BZ and 3DV.

The job started with the bracing of the tower, which had been constructed some months previously, and VK3BH plied the refreshments, which were disposed of in double-quick time.

An interesting diversion was the use of a 50 Mc/s outfit by VK3HK, used from his car, and a two-way contact was held with VK3RR at Mount Martha. Sigs were S9 both ways. Bert, VK3SB, had acquired the services of a friend with a truck to which was fitted a winch; a mighty useful adjunct to the business of getting a hefty tower and beam from the recumbent to the upright posture. Even so, the tower was in the process of slow raising when at about 20 degrees the rope parted company! Fortunately the boys had ladders and poles in place against such an occurrence, so no damage was done. Finally the tower was winched nicely into position, during which process a movie was taken of the proceedings by VK3FO. Morrie, VK3BZ, climbed the tower to attach the coaxial feed-lines and to check the beam over finally. The first communication tests were made

on the following day, and Charlie had achieved his ambition to sport a rotary for "twenty."

Chas. Whitelaw, VK3BH, was first licensed in 1910, so is fully rated as an Old Timer. He was a foundation member of the Wireless Institute of Australia.

After a few years with King Spark, Chas. moved off with the 1st A.I.F. to the Kaiser's War; survived the fracas, and got back with the urge to get going again in amateur radio. He was well-known on 200 metres in the early 20's, and many people will remember the familiar call "VK3BH Mornington calling." The years have slipped by, and along with other OT's, Charles has grown much older, but retains all the enthusiasm of those early days of radio. "R. and TV News" hopes that VK3BH will long be spared to enjoy the evening of life, and to work plenty of fellow amateurs, both DX and nearby, with the cherished ambition of the beam which now graces the station in the Dandenongs.



★ Popular Charlie Whitelaw, VK3BH, is a doughty fire-fighter. There should be no fears of any conflagration in the final, eh Charles?

"SIXER." During the recent industrial hold-up, several readers of "R & TV" got concerned about it and asked the publishers how come. Popularity of the magazine is emphasised by a particular instance. The Editor received a telephone call on a Saturday afternoon. "Where's the magazine?" said the enquirer. The non-appearance pro tem explained, the Editor asked who was the enquirer. "VK6MS" came the reply. "What are you doing in Sydney at such a time?" ventured the Editor. "I'm not," said Mr. Sanders, "I'm speaking from my home in Perth." That tots up almost a year's sub in a phone call, and it speaks volumes for reader enthusiasm.

## BOOK NEWS FROM TECHNICAL BOOK & MAGAZINE CO.

Keep abreast of the latest developments in RADIO by subscribing to any of the following Magazines.

### AMERICAN

	Per year	
"C.Q." (The Radio Amateur's Journal) . . . . .		} Price on Application.
Audio Engineering . . . . .		
"Q.S.T." . . . . .		
Radio News . . . . .		
Radio Electronics (formerly Radio Craft) . . . . .		

### AUSTRALIAN AND ENGLISH

	Per year
Wireless World . . . . .	1 12 6
Electronic Engineering . . . . .	1 12 6
Wireless Engineer . . . . .	2 0 0
Radio and Hobbies . . . . .	12 0
Australian Radio World . . . . .	16 0
Australian Radio & Television News . . . . .	12 0
Amateur Radio . . . . .	6 0
Radio & Science . . . . .	12 0

SEND YOUR ORDERS TO:—

## TECHNICAL BOOK & MAGAZINE CO.

295, 297, 299 Swanston Street,

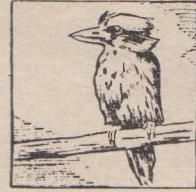
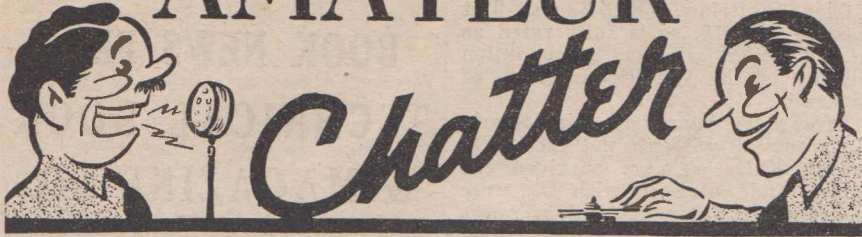
Opp. Old Melbourne Hospital

MELBOURNE, C.I.

Cent. 2041



# AMATEUR



## GEELONG AMATEUR RADIO CLUB (Vic.).

From J. A. Freeman (VK3ALG), Publicity Officer of the Victorian Club, we have selected the following notes:—

Members started their second year with the new President, Ed. Kosseck, VK3AKE, officiating. The programme as prepared for the next year includes lectures, visits to amateur stations, and Field days.

The second meeting was handled by Bill Brownbill, VK3BU, who also delivered an interesting lecture on Narrow Band FM. Secretary Bob Wookey (who can be reached at 158 Kilgour St., Geelong, Vic.) has been advised by the W.I.A. of the acceptance of the club as a member. Officers are: E. Kosseck, VK3AKE, President; W. Brownbill, VK3BU, and A. Bell, VK3ABE, Vice Presidents; R. Wookey, VK3IC, Secretary; Fred Freeman, VK3ALG, Publicity; Committeemen are Messrs. W. Barrett, VK3WT; Dick Steighway, VK3ABK; Peter Cartwright and Jack Mitchell. "R. & TV News" wishes the club the best of success in its second year.

## VICTORIAN NOTES

By VK3MH

Our good friend Mart Chaffer tells us the latest from VK3:—

VK3TW, Hamilton, heads the list with a comeback on 40 and 80, even with the old complaint of arcing over in the final. Open your neut. condenser a bit, George.

VK3RE, Hamilton. Back on the job again after a spell in the Big Smoke. Still putting out a solid phone signal.

VK3GR, Ballarat. Uses a Foldipole on 40 at present with a brand new rack and panel TX nearly finished. Looks swell even now, Bob.

VK3AGE, Colac. How's the antenna position, Gordon? Sounds fine in these parts. Anyone interested in flowers, ask Alma for gen.!

VK3UG, Rye. Norm, why worry about beams when you have such a hefty signal? That tank-stand and mast must be giving you ideas. Norm will be remembered by OT's as VK3DP of 200 metre fame.

VK3EP, Bendigo. Ted has been suffering from wrist injuries, but still can handle that mike FB, even on change-overs. Speedy recovery, OM.

VK3AGD, Dunkeld. Certainly gets around the country; first in Melbourne, then Mt. Gambier, S.A., then on the air at home. When do you PLAY, John, and how's the shack coming along?

VK3AWE, Hampton. Having a spot of bother with elusive hum in modulation. Sounds a lot better now, Wal, seems you have located it?

VK3VA, Ballarat. Hope you are not worrying about that rise in plate current, Bert. Hard listening doesn't reveal a fault in the transmission OM.



SWINGING SIGNAL?

## GLADESVILLE RADIO CLUB, VK2ADY

5 Elston Avenue, West Ryde, N.S.W.

Current activities are listed as including:—

G. Miles, VK2KI.—Gliding and Radio Control.

E. Noller.—Electronic Water Softening.

J. Read, VK2JD.—Ionosphere Predictions and Rotary Antennas.

Field Day.—144 mcs.—Direction finding—co-operation with other clubs.

Social Outing.—Picnic to Eden Park.

The name of the club has been shortened and is now known as shown.

Some incapacitated amateurs, namely, VKS, 2AQQ, 2ANF and 2RR, have been granted honorary membership—entitling them to all members' right without financial obligation.

The club's transmitter is used every Tuesday evening on 40 metres, and is now well-known on that band.

—Ken Whitmore, Publicity Officer.

## "DO UNTO OTHERS"

When you lose the thrill of a QSO  
With a W—one or two,  
When the fact that you're heard in  
some far distant land  
Just don't mean a thing to you,

When sending a card is a burdensome  
task,  
And a "listener's" card is taboo,  
It's time you pulled switches and  
closed up the shack,  
For there's nothing in this game  
for you.

When you snub a beginner, when a  
"chirp" is a crime,  
And a "send slow" plea you abhor,  
Better quit Amateur Radio, friend,  
For there's no fun for you any  
more.

I just love to be told, "You're my  
first, VK,"  
If he only lives over the way.  
The pleasure of working a Chirpy DC  
Is a thrill to me boy, any day.

I like to "pipe down," send slow to a  
kid,  
Sure—and tell him his keying is  
fine.  
And when he comes out with that  
"Pse QSL"  
Believe me, the pleasure's all mine.

If you would enjoy this old Radio  
Game,  
Just pause and hark back o'er the  
years,  
When if you hooked a G you thought  
you'd done fine,  
And to lose him just almost  
brought tears.

You've got to think back to your kid  
days again,  
And remember that this is quite  
true:

You must do unto others in this  
Amateur World  
As you'd have them do unto you.

—"Uncle Ike."

"Amgen." That smiling countenance of the chappie holding the AWA "Air-Mite" on page 18 of our Vol. 1, No. 3, is Ron Blades, known to DX and VHF men as VK2VP. His pet outfit at the moment runs NFM on 51.6 Mc/s with a "Halo" type radiator.



## QRR FLOODS

We've heard our share of emergency traffic and areas, but in recent days we have heard the most intensive; whilst Kempsey, N.S.W., was ravaged by flood waters. The amateur was up against the toughest proposition he has so far taken upon his shoulders in Australia, and he did a fine job.

A handful of men, known to the public as "those amateurs," were handling reams of emergency traffic for the stricken community. Many of "those amateurs" did not see bed for days; many of "those amateurs" conked out at the key or the mike. These are the boys who want to know how their modulation is; these are the boys who continually seek RST reports, and the public should be very glad that they do keep their stations up to snuff.

We listened to strained and husky voices, and tired fists. We heard remarkable team work: flood area stations protected on the air by others either side of the flood area station frequency, all set to flash a warning at the first sign of jamming. And we followed the fortitude of amateurs who persevered with a patience beyond belief, simply, in certain cases, to get back some sort of report to a mother or a wife fraught with worry.

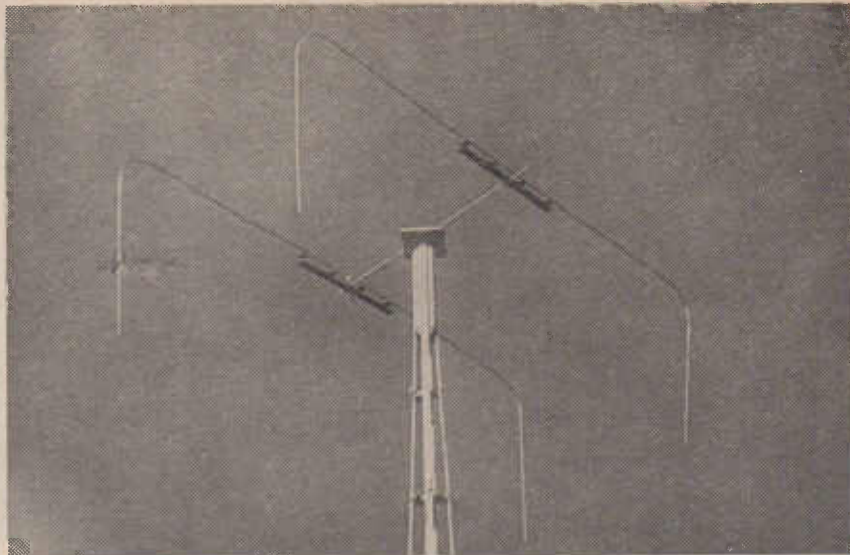
Our opinion of this emergency work done by amateurs is that it was excellent to a high degree. The public can bet that whenever the need arises in a community isolated by disaster of the flood or other kind, Australian Amateur Radio will be on the job.

—"R. & TV."

### METER MODULATION

"... and when you speak into the microphone the meter in the modulated class C stage should remain steady." The usual pious and hopeful remark in many phone articles.

The frequent wobbling which does occur, particularly in the downward direction, is excused by highly technical remarks such as "We can't be worried," "It always does that," "A little movement doesn't matter." That downward kick is caused by the non-linearity of the class C stage; on positive peaks of modulation the current does not rise as much as it falls on negative peaks. A phone transmitter is not a code adjusted transmitter with a modulator connected in. If excitation is sufficient, bias obtained from leak and fixed supply and modulation of suitable power then the downward kick is due to the impedance of the final tank circuit being too low to permit the class C stage to be linear.



● The efficiency of a beam array is not impaired by bending the ends down as shown here. Compactness is the immediate advantage. The 2 element 20 metre array is used by Bert Brand, VK2AIO, at The Entrance, N.S.W.

### Cures

(a) More inductance and less capacity in final tank circuit—hard to get on 28 Mc., isn't it?

(b) Higher Q coil—more suitable conductor or coil shape.

(c) In most cases (a) and (b) are reasonably well satisfied but either the antenna coupling is left as for code or the usual directions, to couple the antenna until the correct match to the modulators is obtained, have been followed. Reduce the antenna coupling until the plate meter can be made just to kick upwards on peaks. Now increase the plate voltage until the correct power input to match the modulator is obtained. Lastly alter the matching of the modulation transformer to suit the load offered by the class C stage under the new conditions. The only kick obtainable should be upwards on peak modulations. Try it and cut out side-band splatter and B.C.I.

"Noglow." Amateurs who try out frequency modulation transmitters and have been accustomed to pea-lamp methods of checking A.M. output will need to consider the difference. With A.M. output a pea-lamp, loop-coupled to the modulated output, will show increase and variation of filament brilliance. With a properly functioning F.M. transmitter, nothing happens visibly when helling into the mike. The lamp stays at a constant degree of light. The reason? Elementary, my dear Watson.

"STRUTH." Latest phonetic outburst. A bloke said he was using an "X-Ray Sixty One Michael" as a Converter valve in his receiver. A.W. Valve Co. surely wouldn't recognise their X61M under such an appellation.

This publication received a detailed account from Harold Whyte, VK2AHA, of the emergency traffic communication during the Maitland (N.S.W.) floods. Unfortunately it arrived during the coal strike, when we couldn't print. By the time we could, there had been the Kempsey flood experience, but the time factor was against us to run a story, much as we would like to have done so. We have therefore had to be content with an expression of congratulations to all concerned, and they were very numerous.

\* \* \*

Jack Pike, VK2JP, who appears to have survived a barrage of correspondence, finds amateur radio quite full of friends, as well as other people. His married daughter seriously ill, Jack mentioned about a certain drug to a W2 in the New York area. The American had the stuff in the air on the way to Sydney without being asked... and then told Jack about it afterwards. That is real co-operation and fine friendship, and "R. & TV" thinks, along with VK2JP, that W2PPS is a mighty good Scout. It was all amateur radio at its best.

\* \* \*

"Delay." Those who in a discordant minority air views that the "G8PO is no good... I've tried it" should have a talk to friend Johnnie at OH2QM in Helsinki, Finland. He says that he never even heard an Australian, let alone work one... until he put in one of Ironmonger's pets. Then the whole picture changed. His sig is often around the S9 plus mark now in Sydney, anyway.



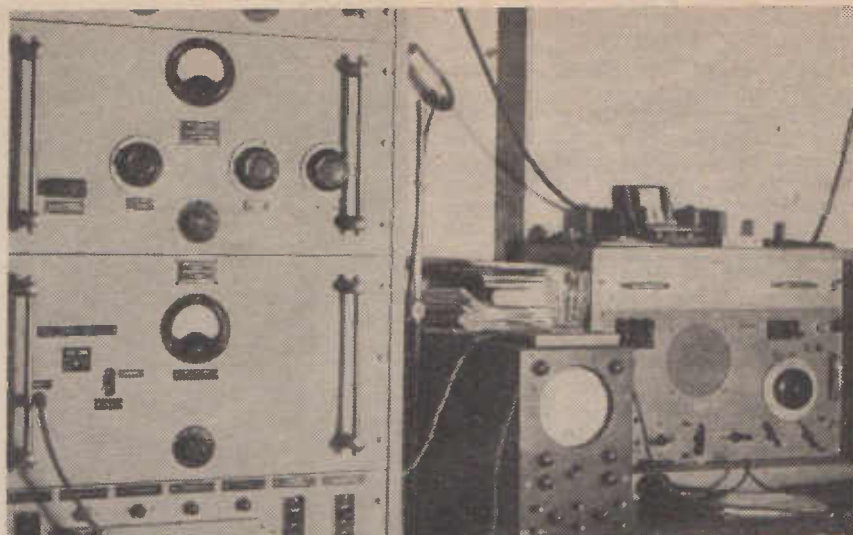
## MARINE BCI

**S**EA-GOING Op Jim Wetherill, ex-G5UB, recently made some interesting observations on a problem of ships transmitter operation causing BCI in the "Owner's" receiver. He says . . . "Five wavetraps covering the marine channels of 16, 12, 8, 6 and 500 Kc/s were connected in series with the antenna and a coupling coil used to the receiver chassis and earth. First step was to reduce the value of gridleak to the 6SQ7 2nd detector from 10 to 12 megohms, and to by-pass with a .001 mfd paper condenser the sides of the heater to chassis. Before these precautions complete blanketing of the receiver occurred when the receiver was used two decks below. With a changed gridleak value, etc., the receiver could be tuned to broadcast stations in the transmitter room and not be affected in any way by keying. Each section of the combined trap was tuned to resonance near the transmitter, with a bulb inserted as indicator. Tests on the receiver resulted in the bulb lighting to full brilliance on 16 Mc/s and the antenna was then arranged until pick-up was reduced, and no glow noticeable. No interference was experienced on HF from the 450 watt output from the transmitter, using 813's in parallel, and the receiving antenna for the broadcast receiver was about 50 feet away." Jim makes a few remarks about operation thus, ". . . the long calling amateurs could easily take a tip from the commercials. Instead of calling 3 calls de 3 calls plus; many ships now call VIS VIS and the coast station replies with 'de.' The ship then breaks in with the call-sign. Russian Pacific stations seem to like this procedure and sometimes the coast station sends de three or four times. Somehow the Russians seem to be always calling in the silence period and it is a great pleasure to say QRT or AS Joe!"

We are all for instituting a course of training for the 'phone-amateurs-who-have-nothing-to-say . . . and say it. As a matter of fact, we are all pepped up over the idea, and have as an object the training of at least one amateur in each State who will read us a story at that critical moment between consciousness and peaceful slumber. Then we can go to bed with the headphones on.

A Radio Expert from Bristol  
In error once swallowed a crystal.  
This caused oscillation,  
So, in desperation,  
He "earthed" himself—using a pistol.

"STAN." This business of quoting a time as being "Two Thousand" hours when what is really implied is "Twenty" hours and nil minutes. . . . It arises from a tendency to accept in the mind something that LOOKS like something else. There are but 24 hours to the day, so there can't be thousands.



● The 50 megacycle (6 metre) transmitter of VK2RU, Major Collett, of Gosford, N.S.W.

"Hombre." It's easy to tell the old CW hand of long standing from the recent product. Heard Ray Carter, VK2HC, sending the word MUCH as: (M) dash dash; (U) dot dot dash; (CH) dash dash dash dash, the latter part being the old Continental practice of four dashes for "CH".

"Limey." One must be a really keen amateur to hold sky-borne vigil in a "Lank" or a "Connie" for bumpy hours on end, and then plant the tootsies on terra firma and take up amateur activities pronto. We know of one or two such, who at one moment are thrashing the air over Arabian deserts, or prodding around the war surplus in Tottenham Court Road, and the next . . . on the air from the home station. About the most indefatigable lives at Wiley Park (N.S.W.), and he's known as Phil.

Settled in Australia, after a brief spell in New Zealand—Ben Wallich, well-known for many years in pre-war days as G6BW of Somerset, England. Another settler in the Southern Hemisphere is Dave Mitchell, formerly GW6AA of Colwyn Bay, North Wales, and now heard on 20 metre phone as ZL1MP. Judging by a Collins advertisement in a current issue of "CQ" (U.S.A.) Dave has obtained some ultra-modern gear recently.

This magazine offers congratulations to Les Taylor, VK2CL, recently appointed to the position of advertising manager of a large Sydney business establishment.

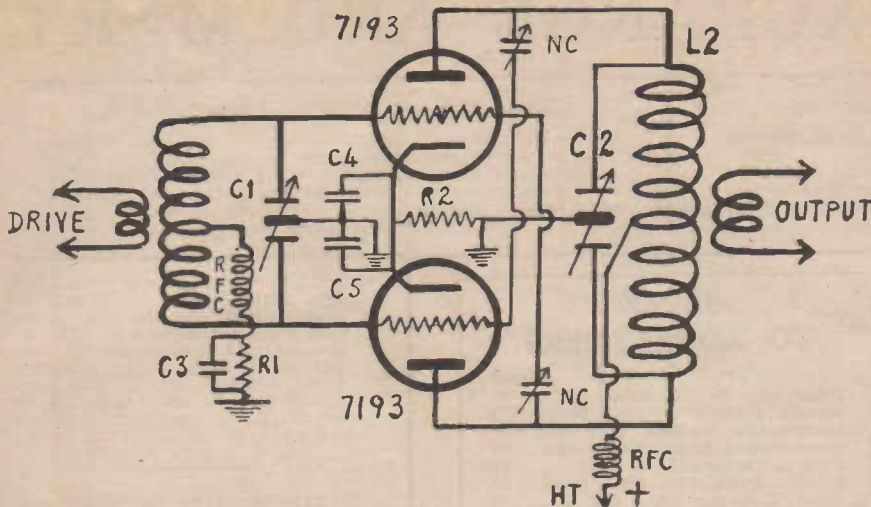
"Gizmo." The uncertainty of television reception on the fringe of the service area can be annoying. During a yarn with G3BK (March, Cambridgeshire, U.K.) on 20m phone, we got to discussing TV. His location is 75 miles north of Alexandra Palace, London, and 85 miles from the new Sutton Coldfield station in the Midlands. London TV is receivable with a dipole-reflector aerial in the clear, but with occasional fading periods. Doug. said that it is most annoying to the family to be absorbed in a thrilling play when a fade occurs. By the time the picture is back on the screen somebody might have been murdered and buried in the interim. Extra-high-gain beams with several elements are not the best for TV, either . . . broad band acceptance is essential, otherwise there is obvious clipping.

"Barber's Feline." The dangers of keeping the mike circuit open whilst running an amateur phone station are real. Ran across a station on 20 one Sunday morn at which the Op's spouse was doing a spot of tongue-lashing in forceful terms . . . culminating in "have you got that damn thing there on the air?" Whereupon the carrier was removed suddenly. Be on the safe side OM, and when she looms in the offing, pull the Big switch.

In recognition of valuable work done by amateurs in emergencies, Florida State (U.S.A.) Senator Lloyd F. Boyle has made available call letter registration plates for automobile owning W4's. Yes, he is an amateur himself.



# Push Pull 7193 Triode Amplifier for 2 Metres



We have been asked for technical articles dealing with equipment for the amateur 144 Mc/s (2 metre) band, and present in reply this description of a medium powered output stage for a transmitter, using the readily available type 7193 valves. Other similar ex-Service triodes can be applied, and the types CV6 and 2C22 will be equally suitable.

7193 and similar valves are to be had from Capital City Disposals suppliers, such as Waltham (Melbourne) and Paragon (Sydney) at the reasonable price of 7/6 each, and for the 2 metre enthusiast, such valves are a particular attraction. Normally they find their way into long-line oscillators and "squegger" receivers, but a little consideration will show that they can be used for excellent RF output purposes as cross-neutralised triode amplifiers. The valve types mentioned all have similar structure, with two top caps, one for the grid, and the other for anode. Cathode and heater connections are brought out to the usual pins on the International octal base.

## VHF CHARACTERISTICS

Some idea of the useful VHF features of the 7193 can be obtained by studying the inter-electrode capacities. They are . . . Grid to Anode 3.6 mmfd; Grid to Cathode 2.2 mmfd; Anode to Cathode 0.7 mmfd. These figures indicate clearly that one can go ahead and build up a low capacity high efficiency output circuit around such valves.

The efficiency can be high also for the reason that these valve types have been used in Service applications around 200 Mc/s, but usually in a push-pull oscillator arrangement, with lecher lines for tuning grid, anode, and cathode circuits. Such self-excited oscillator assemblies have been sold as a complete unit for something in the vicinity of £3. The actual Service job the valves had to do in the set-up was that of the variable sweep oscillator in IFF (Identification Friend or Foe) equipment. When used thus they

will give an output of 5 to 6 watts with efficiency around 45 p.c. In super-regenerative receivers the valves are as effective as "acorns" and similar valves at 200 Mc/s and somewhat higher.

## THE AMPLIFIER CIRCUIT

The circuit diagram gives the necessary electrical arrangement of a push-pull output stage for a small 2 metre transmitter, whereby two of the valves are put to good use. The various parts indicated are as follows: C1 and C2 20 mmfd split stator midget variable condensers, C3, C4 and C5 are 500 mmfd mica condensers, NC are neutralising condensers as referred to in the text, RFC . . . RF chokes as described, R1 2500 ohms, R2 200 ohms, L1 3 turns 16 gauge copper wire 5/8-inch diameter, spaced over 3/4-inch, L2 2 turns 16 gauge copper wire 3/4-inch diameter, spaced over 3/4-inch. The coils should preferably be silver-plated. Construction should be such that the lay-out favours the shortest possible leads; this being important from the viewpoint of efficiency, and heavy gauge wire should be used for the connections to tuned circuits. Adjustment of the coils detailed can be effected by compressing or expanding them in the usual way, but the inductance should be such that the tuned circuits resonate with minimum capacity of the tuning condensers. The two RF chokes, for grid and anode circuits, respectively, are made up of 30 gauge insulated wire wound along the length of a high value 1 watt resistor, or of course, a short length of glass or other good insulation tubing will suffice. Some of the 3/4-inch outside diameter PVC insulation

sleeving of the hard walled variety is handy for making such VHF chokes. The neutralising condensers are made up from thin sheet metal, brass, aluminium, or even tin-plate, with an area of about 1/8 square inch. The spacing between the plates will average about 1/8 inch, but this must be determined by experiment. Correct neutralisation setting is obtained when rotation of the anode tank condenser through resonance will produce no change in grid current. It is a rather critical adjustment but can be effected with care, so that no movement at all will be noticed on a grid meter reading 0-10 Ma connected in series with the grid leak to earth.

## DRIVER STAGE

The stage to use ahead of this push-pull amplifier is a matter for the 2 metre user, but in practice it is found that a 6C4 triode will drive it to 8 watts output, with driving power of 1 1/2 watts. With a power supply of 300 volts, the anode current taken by the 7193's and no load off resonance is 65 Ma. With the amplifier tuned to resonance the anode current drops to rather less than 25 ma, and the efficiency is around 45 p.c. These results will depend largely upon the use of variable condensers with good RF insulation material. The amplifier is one well worth consideration by the VHF man who is not fortunate enough to possess 832's or 829's, to say nothing of 8012's. 8 watts of controlled RF at 144 Mc/s can produce a surprising signal level in distant receivers in conjunction with a good antenna array.

"Blitzen." Heard a VK2 phone man ask another if he had "heard of a new arrangement for receivers—it consists of a rotary turret idea instead of a switch for band changing." It is said that there's nothing really new in the world—but coil turrets go a long way back—almost to the mediaeval. Now we await the "discovery" of the variometer—or perhaps the billi-condenser?



# READER'S EXCHANGE AND MART

## Classified Small Trade Advertisements.

5d. per word. Minimum charge 12/6d. No series discounts. Charges payable with order.

This section is available to members of the radio (and other) industry for the insertion of advertisements not normally comprehensive enough for display in the advertising pages of this journal. Only bona fide trade advertisements accepted.

## Classified Small Private Advertisements.

Charge 2½d. per word. Single numerals, groups, and combinations of figures and letters count as one word. Replies to advertisements can be addressed to a Box number c/o this office. In this case allow four words for Box address and remit 6d. extra to cover cost of handling and postage of replies. Please use block letters only.

### PRIVATE:—

**SELL.**—(1) Weldon pickup containing Garrard arm and motor; 3 records; in nicely polished cabinet. Can be attached to any broadcast receiver, new condition. £7/10/-. (2) 4 valve TRF receiver, 2 volt battery valves; B eliminator included, plug-in coils, but not "A" battery. Ideal for short wave listeners, coils cover standard short wave and amateur bands of 20, 40, 80 metres and broadcast. A good bargain, only £6. (3) Ex-army FS6 transmitter-receiver, long distance CW and medium telephony. Complete with Vesta battery, Westinghouse charger, headphones and vibrator power supply. Suit marine craft owner. £26. J. Duncan, (VK2AAD), 70 Dudley St., Geogee, Sydney. FX4876.

**NOTE.** Where a direct reply is requested to a Box Number advertisement, it is advisable for the enquirer to include a stamped and addressed envelope. This will be passed on to the advertiser concerned and will ensure prompt reply.

## INDEX TO ADVERTISERS

	Page
Aegis Mfg. Co., Melbourne	44
Airzone (1931) Pty. Ltd., Sydney	36
Amalgamated Wireless A'sia Ltd.	25
Beard Watson & Co., Sydney	16
Bloch & Gerber Ltd., Sydney	31
Breville Radio Pty. Ltd., Sydney	30
Ducon Condenser Ltd., Sydney	19
EMI Aust. Pty. Ltd., Sydney	29
His Master's Voice Radio, Sydney	51
W. J. McLellan & Co., Sydney	33
Mullard Australia Pty. Ltd., Sydney	2
Philips Electrical Industries, Sydney	10
RCS Radio Pty. Ltd., Sydney	41
Reg Cooke, Gerringong, N.S.W.	28
Reliance Radio, Sydney	6
Rola Co. (Aust.) Pty. Ltd., Melbourne	4
Technical Book & Magazine Co., Melbourne	45
Trimax Transformers, Melbourne	32
United Capacitor Co. Pty. Ltd., Sydney	23
Wentworth Hotel, Sydney	34
Woman's Mirror, Sydney	52

EX R.A.F. phone and CW Transmitter Type T1154 for sale. New and unused, in steel case and with wooden transit case. Requires 6 volt LT supply and 1250 volts at 200 Ma. Two PT15 valves in final stage. Complete with detailed official blue-print. Accept £15. No offers. R.P., c/o "R & TV News," Box 5177, Sydney G.P.O.

**COUNTRY BATTERY SET** users. That replacement valve you need may be here. All 2 volt types, 2 Mullard PM202, 1 Kenrad 1B5, 1 Osram VP21, 2 Phillips KF3 (P base), 1 Mullard PM1DG, 1 Osram B21, 2 RCA 199, 1 Mullard PM2DX, 1 Cossor 220B, 1 RCA 32, 1 Mullard PM22, 1 Osram QP 21 (double pentode), 2 Mullard PM22A, 1 RCA 1M5G, 1 Mullard PM2BA, 2 Kenrad 1C6, 6 Sylvania 15 (2 v ind. heated SG valve). Price 5/- each CWO. Box ARI, c/o "R & TV."

**FOR SALE**—English H.T. Transformer 2000-1500-0-1500-2000 volts at 500 milliamperes (never been used). Can be inspected by appointment. Perfect. £10/10/- (less than cost). Box 407, "R & TV News," P.O. Box 5177, Sydney.

**FOR SALE.** A bargain for the DX man. Amateur band receiver with high efficiency coverage of 10, 15, 20, 40, and 80 metre bands by plug-in coil units. 1900 Kc/s IF channel with crystal filter. RF stage uses EF50, Mixer/oscillator ECH35, EF50 1st IF, EBF35 2nd IF, 6SQ7 det, S meter, Hammarlund type noise limiter with 6H6, and 6V6G audio output. Beat oscillator 2-terminal type with 6N7. This receiver is a real performer on 10 and 20 for the DX Ham. Provision for external power supply by cable connector. Sole reason for selling is surplus to needs. Price, not inclusive of HT unit, £28. Will supply a power unit at extra cost if required. Enquiries to "Advertiser No. 43," Box 5177, G.P.O., Sydney.

**POWER TRANSFORMER** 500-0-500 volts at 500 Ma, 2.5 volts at 3A, 240v primary at 50-60 cps, £3. Have also Phillips B and C eliminators for disposal, £2 each. No. "AR10," Box 5177, G.P.O., Sydney.

26 VOLT filament transformer, suitable for heater supply to Command Series of transmitters used for VFO. 6 amperes. 240v prim., 30/- "AR11," c/o "R & TV News," Box 5177, G.P.O., Sydney.

SEVERAL UX201A, UV202 and similar valves surplus. Can be used as low power rectifiers, etc. 2/- each to clear. J.B.M., c/o "R & TV News," 5177, G.P.O., Sydney.

## Australian RADIO and TELEVISION News

### SUBSCRIBER'S ORDER FORM

To the Publishers,  
"Australian RADIO and TELEVISION News,"  
Box 5177, G.P.O., Sydney, N.S.W., Australia.

Please send me "Australian RADIO and TELEVISION News" every month for twelve months, for which I enclose remittance to the value of .....

NAME .....

ADDRESS .....

(Please write in block letters)

If remitting by cheque, please add exchange.

12/- Sterling to N.Z. and the British Empire in general, excluding Canada.

(A) 12/- Post free to any address within Australia.

Canada and U.S.A. 2 dollars.

SUBSCRIPTION ORDERS MAY BE PLACED WITH YOUR LOCAL NEWSAGENT.  
NOVEMBER, 1949



H.M.V

H.M.V



*By Appointment  
Suppliers of Gramophones, Records,  
Radio and Television Apparatus  
to His Majesty the King.*



*The Hallmark of Quality*

RADIO — RECORDS — TELEVISION



THE GRAMOPHONE COMPANY LTD.

(INCORPORATED IN ENGLAND) HOME BUSH, N.S.W.

H.M.V

H.M.V



*The*  
**AUSTRALIAN**  
**WOMAN'S MIRROR**

IS THE

**FRIENDLY**  
**MAGAZINE**

Written wholly by its readers, it has an intimate, get-together manner as though one woman in her home talked things over with another in hers, with no professional adviser telling either what to do.

ON SALE EVERY WEDNESDAY—PRICE **3D.**

**CONTENTS (every issue):** Serial Novel, Short Story, Between Ourselves, Feature Articles (not fewer than eight), Knitting Design, Crochet Design, Needlecraft Design, Mothercraft Section, Service and Information, Kitchencraft and Readers' Tested Recipes, Patterns, Pictorial Adventure Page, Health and/or Beauty Talk, Garden Section, Children's Section with Pictorial Strips, Household Hints, Smiles Column.

**REGULAR FEATURES:** Vocations of Women, World Affairs, Women in History, Real-life Love Stories, Women in Australasian History, Soft Toys, Kiddie Quips, Printed Linens, Mainly About Men, Real-life Sketch.

**PUBLISHED BY THE BULLETIN NEWSPAPER CO. PTY., LTD.**