SOR

1.45p

The SHORT WAVE Magazine

March 1987

Volume 44 Number 13

G3RJV celebrates 50 years of S.W.M. with the 'SWM-50' all-wave receiver

G4GVO describes three Transmitting Antennas for small gardens

G3RJV celebrates with 'SWM-50' all wave single valve receiver

for the radio amateur and

AMATEUR RADIO

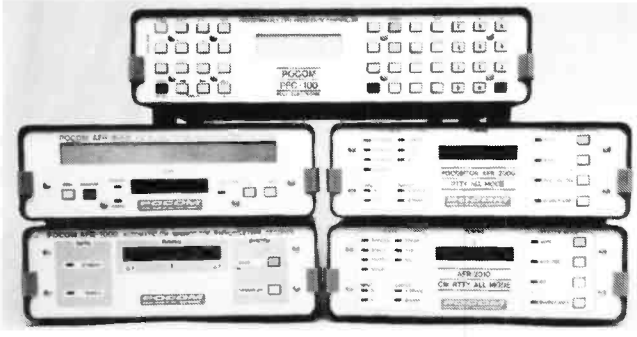
PROBABLY THE BEST DECODER IN THE WORLD

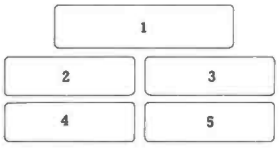
In its standard form the **POCOM 2010** is extremely versatile and capable of decoding most signals, yet it costs just **£781.** However, specialist users may want to be able to decode some of the more unusual transmissions that are around, so for them a range of expansion boards are available. These just plug straight into the **2010** and turn it into what must be the most versatile decoder on the market (the boards marked YES are fitted as standard).

	AFR-2010
RTTY Baudot CCITT No. 1 Standard 45/50/57/75/100/150/200 Baud	OPTION
RTTY Baudot CCITT No. 2 Standard 45/50/57/75/100/150/200 Baud	YES
RTTY Baudot CCITT No. 1 Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Baudot CCITT No. 2 Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Baudot CCITT No. 1 Bit-Inversion, Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Baudot CCITT No. 2 Bit-Inversion, Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY 8 Channel 200 Baud Press Service (SID, KNA, etc.)	YES
NEW RTTY CODE 8 Channel 200 (300 Baud) Press Service (DPA, VWD, etc.)	OPTION
RTTY ASCII CCITT No. 5 Standard 110/150/200/300 Baud	YES
RTTY ASCII CCITT No. 5 Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Baudot Synchron-Printer, Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Baudot Mode 32, Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
RTTY Autospec, Variable 30-250 Baud, Accuracy 1/1000 Baud	OPTION
MORSE (CW) 15-250 Characters Per Minute (CPM)	YES
TOR (SITOR/SPECTOR/AMTOR, ARQ-FEC according to CCIR 476-2), 100 Baud	YES
ARQ Multi Channel (Time Div. Multiplex, Moore) 2 Sub-channels 86, 96, 100 Baud	OPTION
ARQ Multi Channel (Time Div. Multiplex, Moore) 4 Sub-channels 172, 192, 200 Baud	OPTION
ARQ Multi Channel (TDM) Mode PLEX 2 Sub-channels 86, 96, 100 Baud	OPTION
ARQ Multi Channel (TDM) Mode PLEX 4 Sub-channels 172, 192, 200 Baud	OPTION
ARQ One Channel Standard 48, 64, 72, 85, 96 Baud	OPTION
FEC System with 7 BIT Code according to CCITT No. 3, 96, 100, 192, 200 Baud	OPTION
FEC System with 7 BIT Code Self Checking (Convulgenter Code) 30-250 Baud	OPTION
FEC System with 7 BIT Code according to CCITT No. 3, 30-250 Baud	OPTION
BIT ANALYSE (Analysis of received BIT format)	OPTION
AUTO SPEED-CHECK Baud Rate Indication 30-250 Baud with 1/1000 Baud Accuracy	YES

The price of individual expansion units is available on request and a fully expanded AFR 2010, capable of decoding virtually any transmission in any mode, costs about £1500.

INTRODUCING THE REST OF THE POCOM FAMILY





1 — PFC 100
2 — AFR 8000
3 — AFR 2000
4 — AFR 1000
5 — AFR 2010

POCOM decoders are manufactured in Switzerland by the Poly-Electronic company who are known throughout the world for the quality of their products. The **2010** is the flagship of their range and this is the one that we would recommend to professional and commercial users — it covers everything! The **AFR 8000** is similar to the **2010** (it uses the same software) but it has the added feature of a built-in LCD display which makes it ideal for mobile or marine use where a video monitor is not really practicable, although a video option available. The **AFR 2000** is again similar to the **2010** but in its standard form it is supplied without CW capability. A CW expansion board is available as an option. The **AFR 1000** is a budget priced ASCII, ARQ/FEC (SITOR/SPECTOR/AMTOR) and CW decoder which has many of the features of the **2010** but which is not upgradeable. Although it is not a decoder, it is worth mentioning that we can also supply the **POCOM PFC 100,** a versatile frequency controller for radios such as the NRD 515 and the ICOM R70/71.

Whether you are a professional user or a dedicated listener there is a **POCOM** decoder for you and, although the top of the range model costs about **£1500,** prices start from as little as **£395.** They may not be the cheapest on the market, but they are certainly the best! For more details send s.a.e. (at least 8"×6") for a free booklet which gives the full specifications of the entire **POCOM** range of decoders.

This ad cannot really do justice to these marvellous pieces of equipment, so next time you are in the area, come in and try them for yourself – you will be convinced.

FULL RANGE OF TRIO PRODUCTS STOCKED
We are also stockists of DAIWA—MET ANTENNAS—MUTEK—WOOD & DOUGLAS—TASCO TELEREADERS—MICROWAVE MODULES—ICS AMTOR—AEA PRODUCTS—DRAE

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Telex: 337675 TELPES G

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Access

The New SWM

With this issue *Short Wave Magazine* completes 50 years of service to the radio amateur. We celebrate this milestone with a nostalgic look back at some of the more interesting pages from this period.

From next month the size will be increased to full A4, matching *Practical Wireless,* and providing the opportunity for a total re-design to give you a brighter and better magazine. The number of pages will be increased to provide better value for your £1.45, and we hope to be able to hold the cover price at this level for a long time. For subscribers to the new *SWM* the annual rate will be reduced to £17.00. At the same time the editorial will change to cover the needs of the "short wave listener".

There will be a new, regular section, "Seen and Heard" reporting on the many facets of the listening hobby. Brian Oddy G3FEX will be moving his broadcasting columns from *PW* into *SWM* under the combined heading of "Long, Medium & Short" to cover broadcast DXing on these bands. Ron Ham will be covering the Band II broadcast DX scene as well as DX TV of all types, and Mike Richards G4WNC will be looking at the data scene in "Decode". Justin Cooper will keep the s.w.l. informed of what is going on in the world of amateur radio. For the satellite buff Pat Gowan G3IOR will be writing about what can be seen and heard in "Info in orbit".

Undoubtedly this will mean that some *SWM* readers will find that the new magazine is not for them. I hope that they will buy *Practical Wireless* where they will be able to follow many of their favourites from *SWM* — Paul Essery G3KFE, Norman Fitch G3FPK, Rev. G. C. Dobbs G3RJV, Glen Ross G8MWR, alongside those already well established in *PW* such as F. C. Judd G2BCX, Ron Ham, Pat Gowan and many others.

For subscribers to *SWM* who want to change to *PW* there is no problem — the remaining monetary value of your *SWM* sub can be transferred to *PW*. The reverse situation will be covered by a straight transfer of the remainder of your *PW* sub to *SWM*. If you fancy a combined sub to both magazines we can offer a special rate which will save you 10 per cent and ensure that you get your copies through the letterbox early.

Here's to the next fifty years of *"Short Wave Magazine".*

Dick Ganderton G8VFH

COVER DESIGN:
Allan & Co. Ltd., Welwyn

SHORT WAVE MAGAZINE

(GB3SWM)

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CONTENTS

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Fifty Years of

"Short Wave Magazine"

MY first recollection of seeing *Short Wave Magazine* was around 1948 in a hut at the REME training camp at Arborfield, although my interest in radio was aroused during the war. That issue, I recall, contained a box called the "No Cost Five" — an AM transmitter for Top Band from the board of G5UM. I joined RSGB in 1951 (as soon as I could afford it!) and bought my copy of *SWM* every month from then on. Commercial gear was rare indeed in those days: there was the Q-Max B4-40, followed by the arrival of the Panda Radio rigs at the 25 and 150-watt levels (out of the price range of most us, though). On the receive side, the preference had to be for the AR88D, HRO, or SX28 from surplus, or a new receiver from Eddystone or Denco; all were general coverage.

Back in those early years virtually all DX operating was on CW, and the Phone bands were a cacophony of carrier heterodynes; Phone DX-ers such as GM2DBX or G5VT were tough characters!

SSB had been tried in the early thirties, but it was not until the late forties and early fifties that it began to be heard more widely; and articles touting it as the solution to all the ills of the Phone bands proliferated. What a pity that they all seemed determined to show readers how difficult SSB construction and alignment was — an exercise that has put a few million pounds into manufacturers' pockets since!

About this time too, KW Electronics started business, first with kit AM transmitters, then with manufactured ones, AM and then SSB. But things in this country were well nailed down by the problem of TVI, uniquely difficult because of our low TV frequencies, and the universal use of AC/DC TV sets. One could operate Top Band, with care, or maybe Forty if you loved a gamble, but otherwise you went VHF, choosing a multiplication to avoid the TV. That state went on until UHF TV became general; and anyway most people were deterred — as they still are — by the near-impossibility of getting planning permission for an aerial.

Meantime, *SWM* reflected all these trends; G6QB did his "DX Commentary", G6LX ran an SSB column, and G5JU wrote up many an interesting transmitter using Eddystone parts. As long as G6XJ remained in command at Eddystone, they continued to produce receivers of quality, and the parts for transmitters; but by the early sixties the American gear was flooding in. The writing was on the wall, though, even for them as Japan started to invade the amateur radio market, supported by an enormous home market as soon as the JAs could get back on the air.

It seems hard to believe that when I first read *SWM,* polythene was still 'classified' and coaxial cable virtually unknown to civilians; when I first started to write regularly in 1964 the pocket calculator and the integrated circuit were still in the future, and when I took on the editor's chair a decade ago the microprocessor awaited a decent bit of memory — a 256-bit RAM was about the maximum. G4CLX did a series on linear ICs, and by then complete receivers or transmitters were rare — unless they were from the QRP types, of whom the king must surely be G3RJV.

On VHF/UHF the writer is hardly able to comment as a 'professional' in the field; but the main change has to be the advent of the repeater — and my own feeling is that this has been a change for the worse in metropolitan areas, but a godsend in areas like Wales. But — it's all part of an ever-changing hobby; long may it continue to change and hence entertain us all.

E P. Essery, G3KFE

TO celebrate the Golden Anniversary of *Short Wave Magazine* I have selected from the archives pages which I think illustrate the part that *The Magazine,* as it was affectionately known, has played in furthering the cause of amateur radio.

I must emphasise that the selection is entirely my own and is, to a large extent, coloured by my own ideas of what is interesting and important.

The first set of pages shows *The Magazine* in its very early days. Launched in March 1937, its declared policy was "directed to interesting and informing everyone who listens to short wave radio. The family owning or intending to own an 'all-wave' set, will find exclusive programmes of short-wave broadcasts, useful and expert tips . . . The keen amateurs and experimenters will find first-class articles on new apparatus, construction, technique, and news of short-wave clubs and societies."

The first issue cost 6d (2.5p) and was edited by Basil Wardman G5GQ. Austin Forsyth G6FO made his first appearance in the June *Magazine* with an article on amateur transmitter construction. By the October issue he was officially on the staff in a technical capacity, and the start of Vol II saw him firmly in the editor's seat — a position he held with authority until his death in 1977.

September 1939 saw the publication of *The Magazine* as usual, but the October issue failed to appear as virtually all of the staff were by then on active service. Resumption of normal service was in March 1946 with a smaller page size, and paper rationing creating problems. The rationing problems led, in part, to the decision in October 1946 to launch a new magazine called *"The Short Wave Listener".* This released valuable editorial space in *The Magazine* for more transmitting material — how history repeats itself!

Apart from changes in page size over the years, not much altered, and *The Magazine* continued to champion the cause of amateur radio from its jealously guarded independent position.

The next selection is from the mid-fifties. At this time the transistor was just beginning to make itself felt and *The Magazine* ran a regular monthly feature on "Transistory". Articles were published with full practical details on making your own transistors and reports were carried detailing the performance of TTXs and TRXs built by amateurs with their own home-made transistors! *The Magazine* even instituted its own "Transistor Contact Record". This typified the approach of *The Magazine* to matters technical, pushing the limits of amateur radio ever forward and upward.

Advertisements can be described as the life-blood of a magazine on sale to the public. Without the income derived from adverts the cover price has to be set prohibitively high. Again I have selected some of the earlier adverts — I find them irresistible as well as bringing back fond memories.

Dick Ganderton G8VFH

AMATEUR TRANSMITTER CONSTRUCTION

Two Popular Methods of Building Surveyed

By AUSTIN FORSYTH (G6FO)

THE NEWCOMER to amateur transmitting has a wide choice in the form of construction he can adopt for his apparatus; a choice so wide, in fact, that it is sometimes confusing and a little difficult to decide what is going to be the best arrangement.

Setting aside the case where a published design is followed meticulously and in which the form of construction is laid down, there are several methods the beginner can choose.

● "Breadboard" Construction

There is no doubt whatever that for the beginner who has the average amount of space available, breadboard construction is the best method he can adopt; it is also worth mentioning here that any type of transmitter circuit, whether high or low power, can be effectively built up in this form.

In explanation, breadboard construction consists essentially in laying out all the parts on a flat baseboard, such that they are easily accessible for alteration and adjustment and can be kept under constant observation. For beginner and experienced amateur alike, these points are the great advantages of this method of building up the gear, apart from the fact that high R.F. efficiency is more easily obtained with this than with any other arrangement. The disadvantages are the space required—usually about 36 in. by 12 in. for a 3-stage transmitter—while dust is more troublesome than where some sort of closed-in assembly is adopted.

However, both these disadvantages can be minimised to a great extent by raising the baseboard up on runners so that minor components can be mounted underneath, thus saving space, and the dust nuisance can be counteracted by having a wooden or glass cover to go over the whole transmitter when it is not in use.

● Scope for Experiment

As has already been mentioned, breadboard construction is most strongly advised for the be[ginner] because for him there are all sorts of expe[riments] and adjustments which will be necessary b[efore he] can arrive at, say, the best crystal [...] arrangement to suit his own particular pu[rpose] the valves and other components he [has] available. Further, by building the first [stages] on a baseboard, room can be left [for] doubling and amplifying stages, and t[...] can be made quickly and easily.

In adopting breadboard constru[ction the first] thing to do is to decide what spac[e ...]

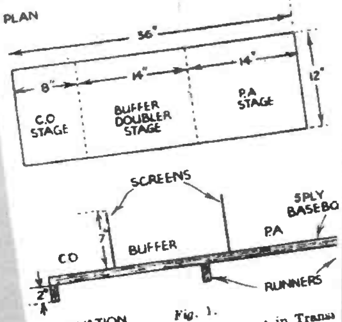
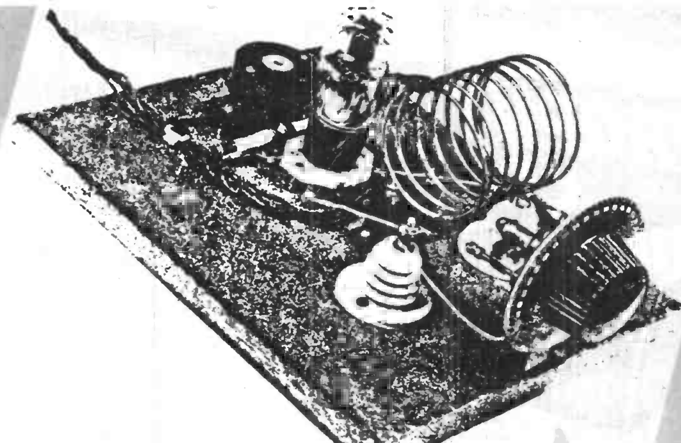


Fig. 1. Showing "Breadboard" arrangement in Trans[mitter] construction. Dimensions given are suggested [...] as they will depend on space available in indi[vidual] cases.



"Built in a Half-Hour"

FACED BY AN EMERGENCY, OUR EDITOR BUILT THIS SIMPLE, EFFICIENT TRANSMITTER IN 30 MINUTES

WHAT STARTED the whole busin[ess ...] "going down." It [...]

[...]sposal, and well within half an hour [...]ir again.

[...]smitter we built is shown in the [...] push-pull crystal oscillator, no [...] one control.

For two reasons; to get more [...]se with high-frequency crystals [...]encies above 7 mc.), the push-[...]ly the easiest and safest to use. [...]en good output as a crystal [...]tals having a fundamental [...]

[...]ponents is not critical—we [...]v. The value of the grid [...] but almost any value up

1937

THE SHORT-WAVE MAGAZIN[E]

Vol. 1 MARCH 1937 No. 1

Editor BASIL WARDMAN

Editorial Asst. S. W. CLARK

About Ourselves

OUR POLICY will be directed to interesting and informing everyone who listens to short-wave radio. The family owning or intending to own an "all-wave" set, will find exclusive programmes of short-wave broadcasts, useful and expert tips on getting best results, news of broadcast "stars," tests of new sets, and many other features. The keen amateurs and experimenters will find first-class articles on new apparatus, construction, technique, and news of short-wave clubs and societies.

Short-wave work, radio's newest, most interesting development demanded and deserved a journal exclusively devoted to it. That want we hope to fill with regular monthly issues of which this is the first.

Our staff and regular contributors include well-known experts, whose authoritative up-to-the-minute articles assure every amateur experimenter of a means of keeping abreast of developments in short-wave radio.

We aim to be unbiassed, independent, viewing all proposed features from the standpoint of value and interest to the increasing number of enthusiasts in short-wave radio.

This is *your* journal. We want you to tell us how we may best serve you, and so co-operate in the development in technique and popularity of short-wave radio. Your problems will be gladly investigated by our technical staff; your suggestions for features you would like to see in succeeding issues will be welcomed and carefully considered by our editor and his colleagues. With your co-operation we hope to make THE SHORT-WAVE MAGAZINE something you will look forward to with keenness and read with interest and pleasure.

Annual Subscription—Inland, 8s.; Abroad, 10s. Post paid. Published on the 1st of each month at 84/86, Tabernacle Street, London, E.C.2. Phone—Clerkenwell 6230.

CONTENTS

Presenting a

One-valve, high efficiency receiver specially designed by our constructional staff

Simplicity, high performance and low cost, combined with ease of construction have been factors borne closely in mind in the planning and building of this entirely new receiver. We present with pride to the constructor making his first acquaintance with short waves, to the amateur needing a receiver to give fine results, and for the owner of a "big" receiving set for use when the family have borrowed the bigger one.

Although the design incorporates only one valve it will bring in American short-wave broadcasters at moderate loud speaker volume; during test the recent broadcast of the Metropolitan Opera "Siegfried," from W2XAF was heard for more than an hour. The set will also give a surprisingly good account of itself on the amateurs, and should be an excellent one for the American Radio Relay League contest which is described on another page of this issue.

● Two Valves in One

A Class B valve is used; the first section is used as a detector and the second as L.F. amplifier. As there is only one filament to light drain on the accumulator is at a minimum, the wiring is of the utmost simplicity and the veriest novice need expect no difficulty in construction.

● [...] Wavelength Gaps

[...] waves between 9 and 80 [...] band-

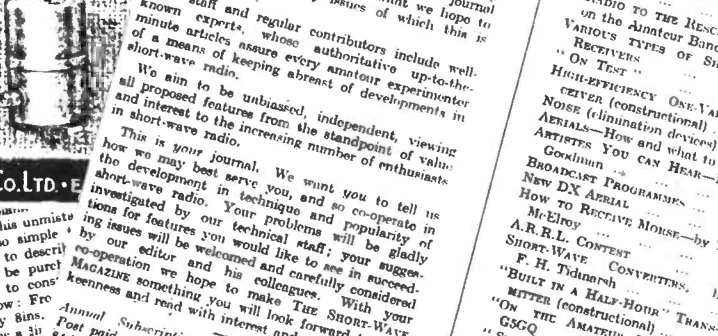
[...] essential that [...] placed in its respective plan[e ...] photographs will make this unmiste[akable ...]

The construction is so simple [...] is easier to make than to describ[e ...] of aluminium and can be purch[ased ...] For those who prefer to cons[truct ...] dimensions are as follow: Fro[nt ...] chassis 8½ins. wide by 8ins. [...] 2ins. These sizes allow a [...] fixing in a cabinet if desire[d ...] of the various holes can [...] the photographs and the [...]

It is advisable to leav[e ...] condensers on the pane[l ...] possible damage while [...]

First fix the coil an[d ...] 6 B.A. bolts (as use[d ...] bolt through the c[...] holding the .001 [...] with the variable [...]

Next, wire to[gether ...] denser, at the same [...] one end of the 25,000 ohm [...] components are placed in pos[ition ...] former is fixed. A short wire from [...] the choke to the nearest filament pin [...] holder also connects a tag of the .001 cond[enser ...] already mentioned. The opposite end of the .5 mfd. [...] condenser is connected to the terminal marked [...] former. Allow ½ inch. clearance from [...] the grid



TROPHY COMMUNICATION RECEIVERS
Invest NOW in a TROPHY—at a great saving—and ensure short-wave results that will please you.
TROPHY 8
12 GNS
A good all-round receiver.—G6FO.
TROPHY 6
9½ GNS
A highly satisfactory instrument—G5ZJ.
NEW 2-STAGE PRESELECTOR
£6 15s
GUARANTEED 12 MONTHS (including Valves)
R.S.G.B. CONVENTION
PETO SCOTT
PERFORMANCE AN
UNEQ
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MAY 1948
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Callers To: 169 FLEET STREET, E.C.4 (Central 2833)
534
THE SHORT WAVE MAGAZINE
December, 1954
NEW low voltage point contact transistor
G.E.C. GET2
This new G.E.C. Transistor, now generally released, has been specially designed for low voltage operation. Similar in dimensions and construction to the GET1, it differs from it in having a higher current gain and a collector dissipation limited to 75mW. The characteristics of the GET2 make it particularly suitable for use with computers, production test limits having been chosen with this application in view.
The GET2 is generally available to all classes of users
List price £1.17.6.
QUALITY COUNTS
When you know that those essential contact components for your apparatus can be relied upon to give perfect and lasting contact, you have real satisfaction with your constructional work.
The success and progress of CLIX is the result of many years devoted to the production of "Quality" contact components. Fit Clix and you will be satisfied.
The Clix perfect contact components illustrated, are listed below. Details of all types in the Clix complete range are given in our 1937-38 Folders "S.-W." Now ready.
Clix perfect contacts are used and specified for THE "IDEAL" RECEIVER, which is fully described in this issue.
SEND AT ONCE FOR OUR TWO ILLUSTRATED FOLDERS "S.W."
STAND 94 RADIOLYMPIA
BRITISH MECHANICAL PRODUCTIONS LIMITED
ROCHESTER ROW LONDON S.W.1
CLIX
THE SHORT WAVE MAGAZINE
November, 1960
456
HOME RADIO OF MITCHAM
DEPT. S, 187 LONDON ROAD MITCHAM, SURREY · MIT 3282
K.W. ELECTRONIC TRANSMITTERS
SIMON CADENZA MICROPHONE
SHORT WAVE KITS
EDDYSTONE RECEIVERS
MOSLEY "WAVETRAP" ANTENNAS
RADIO COMPONENT CATALOGUE
NOW IS THE TIME TO THINK ABOUT AERIALS
AMERICAN "SIGNAL" MORSE KEYS
BAND CHECKER MONITOR
TOUGH POLYTHENE LINE
ABSORPTION WAVEMETERS
HEADPHONES
VARIABLE CONDENSERS
RACK MOUNTING PANELS
Full Range of DENCO, REPANCO AND EDDYSTONE coils and components available
CHAS. H. YOUNG LTD.
Dept. 'S,' 110 Dale End, Birmingham. CENTRAL 1635

DX COMMENTARY

L. H. THOMAS, M.B.E. (G6QB)

Volume XVIII *January, 1961*

VHF BANDS

A. J. DEVON

G3HBW/OH1NL Meteor Reflection Contact—Certificate Award for G3HBW—News, Views and Contest Comment—Beacon Stations—

CALLS HEARD

FOR THE EXPERIMENTER AND THE RADIO ENGINEER

The SHORT-WAVE Magazine

EDITORIAL

SWL *Ever since the beginning, new recruits to Amateur Radio have come mainly from the ranks of short wave listeners — even though the current regulations make possible the obtaining of a transmitting licence by suitably qualified candidates who may never have listened on the amateur bands at all.*

Recruits from the ranks of our SWL's are in quite a different category. They achieve transmitter status after years of listening on the amateur bands ; they are steeped in the traditions of Amateur Radio ; they understand its language ; and they regard themselves as privileged in belonging to its ranks.

There can be no question that among the best amateurs are those who have served a long apprenticeship as SWL's. There can be few who, holding callsigns that mean anything today, did not cut their teeth as SWL's. They were introduced to Amateur Radio either by the chance hearing of some local transmitter (usually on 160 metres) on a home-built receiver or, in later years, by listening round on the bands marked "amateur" on the short-wave ranges of the family BC receiver. Whatever their introduction, they found that progress in the art and science of Amateur Radio depended largely upon their own efforts.

It is this self-dependence that makes the majority of radio amateurs the unique body they are — able to think for themselves, individualistic and self-reliant, but without being absorbed in Amateur Radio to the exclusion of all other interests.

The SWL's of the present generation are exactly the same sort of people as those who, looking for advice and guidance 30 years ago, are the leading lights in the world of Amateur Radio as it is today.

If an SWL— young or old, shy or self-confident, professional or with only an amateur interest in radio — approaches you for advice, it is not only your duty, but also your privilege, to do all you can to help and encourage him and maintain his enthusiasm.

Austin Forsyth G6FO

TWO METRES

COUNTIES WORKED SINCE SEPTEMBER 1, 1960

Starting Figure, 14

From Home QTH Only

Worked	Station
50	G3HBW
42	G3JWQ
40	G2CTW, G6GN, G6XA
35	G3KPT
28	G3MPS, GW3MFY
27	GW3ATM
26	G3KQF
25	G3HS
23	G2CVV, G3NAE, G3OB'
	G5QA

SWL

IDEAL RECEIVERS—GEAR IN USE—MORE ABOUT QSL'ing—COMMENT AND OPINION—"CONVERTERS," Part I

MOBILE ACTIVITY REPORT

NORTH MIDLAND RALLY, APRIL 26—CORNISH MEETING, MAY 3—CHELTENHAM MOBILE RALLY, MAY 10—FORTHCOMING EVENTS

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue: November 13)

MINI-ZL SPECIAL FOR TWENTY METRES

DESIGN AND CONSTRUCTION —STEP-WINDING

F. C. SMITH, GW2DDX

THERE must be many amateurs who, like the writer, have little space in which to put up a full sized beam. As far as 21 MHz goes, the "Easy Quad" described in the September 1976 issue of SHORT WAVE MAGAZINE solved the requirement for a reliable and suitable DX aerial; but to extend it to Twenty was not felt to be practical because of the greater span of the support canes which would be required. Hence a mini-beam for 14 MHz was given some thought.

A "compressed beam" is one in which the elements are considerably shorter than normal, inductance being incorporated to bring the assembly back to resonance. Unfortunately there is a limit to the amount of shortening beyond which the trade-off between length on the one hand and gain and bandwidth on the other becomes less than one wishes to suffer. Bearing this in mind, a study of quarter-wave whips using the continuous, step-wound technique was made, and a bandwidth of 250 kHz at 14 MHz noted. The current distribution is sinusoidal rather than linear, and thus there is a higher centre impedance; a beam made in this manner is easier to tune and exhibits a greater efficiency than a conventional compressed beam. The total width of the elements is twelve feet, which makes this a useful aerial for portable or Field-day activities.

Initially, a dipole was constructed along these lines and erected at thirty-three feet; as it showed promise as a DX aerial, the technique was extended to Mini-ZL Special.

Materials

Four canes, each seventy-five inches long are n... tapering from three-quarters of an inch to three-eig... check that they have no splits and are straight. ... them for weather with a coat of paint. The wire i... SWG enamelled, wound on in accordance with Fig... Take care that the windings are all tight so as to main... their spacing; when the winding is finished, a wrappi... of adhesive tape and varnishing completes the can... Treat each cane similarly. The step winding may be found a little tedious but once started presents no difficulty. An eight-foot boom is also required, say, of 1 inch diameter, and the two coils are eight turns of 12 SWG wound into a length of $1\frac{1}{4}$ inch. (Winding coils of this thick wire is most easily achieved if you possess, or know someone else who has, a lathe.—*Editor*). The final mounting of the canes may be left to the reader's own ideas.

Fig. 1 shows the method used by the writer for the mounting of the beam, which enables the beam to be pulled up or down the mast as required. The coils ... in the centre of each element of the ... to compensate for th... method is favo... to get a near-p...

The velocity... it should be re... degrees of phase... The elements are... the phasing line ... If the elements, ... be not quite where... from the top of th...

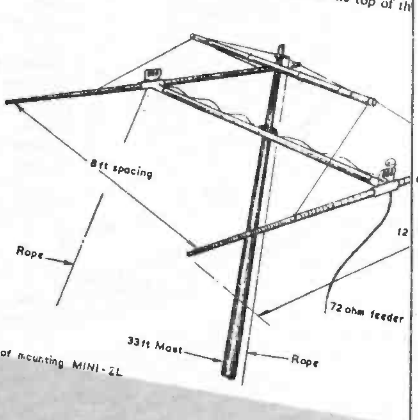


Fig. 1. Method of mounting MINI-ZL

Adaptor for SSB Reception

SUITABLE FOR ANY COMMUNICATIONS RECEIVER

W. H. RILEY (GM3GOC)

This very useful and interesting article discusses the design of an original type of adaptor, or converter, for Sideband reception; it can be incorporated in any existing receiver, as a switchable unit. The author also gives, in an easily digestible form, design data for phase-shift networks at the IF's used in most ... adaptor itself achieves, after the ... entirely satisfac... control.

...gnals is not ...ience when ...rying, with ... generally ...ht how nice ...n SSB signal ..., by pressing a switch or knob, be able to read the signal without any further adjustment.

A lot of thought was given to this and eventually an experimental circuit was evolved which seemed likely to offer a reasonable solution.

This is shown in Fig. 1 and a "mock-up" was constructed and tried out (on an Eddystone receiver). Several snags were soon evident, namely:

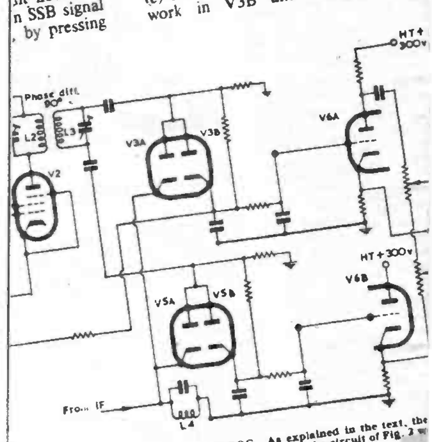
(a) Difficulty in adjusting L2/L3 for equal volts with 90° phase difference. No doubt a transformer could be made (with the proper facilities) to give equal primary and secondary voltages with 90° phase shift, and would be pre-tuned at the required IF.

(b) Distortion on audio signal. This was found to be caused by detection (demodulation) at V5A, as a result of which this "extra" audio signal appeared and was out of phase.

(c) Overloading of receiver when o... ordinary AM, due to lack of AVC.

(d) Slight instability of oscillator, due ... inevitably long leads on the "mock-up" chassis.

These difficulties were solved as fo... (a) re-design of the circuit; (b) putti... secondary of the last IF coil to ground ... a 500k resistor instead of straight to ... (c) using the voltage developed across ... work in V3B anode-cathode circuit...



... GM3GOC. As explained in the text, the ... which the circuit of Fig. 2 w...

TRANSISTOR CONTACT RECORD

TRANSISTOR STATION	Band mc	Phone CW	Input mW	Dist. miles	Station Reporting	RATING m.p.w.	COUNTIES Worked
G3CCA, Leicester	1.8	CW	50	135	G3JES, Canterbury	5,400*	11
G3CCA, Leicester	1.8	CW	50	130	G3GGN, Littlehampton, Sussex	2,600	
G3CCA, Leicester	1.8	Ph.	50	95	G3IQO, Liverpool	1,900	
G6FO, Maids Moreton, Bucks.	1.8	CW	65	112	G3PU, Weymouth, Dorset	1,850	
G3CCA, Leicester	1.8	CW	50	45	G6FO, Maids Moreton, Bucks.	1,800*	
G6FO, Maids Moreton, Bucks.	1.8	CW	65	100	G6QB, Bexhill, Sussex	1,550	3
G3IYX, Bradwell, Bucks.	1.8	CW	80	120	G3JML, Huddersfield, Yorks.	1,500	7
G3IYX, Bradwell, Bucks.	1.8	CW	80	103	G3IDZ, Locking, Som.	1,300	
G3HMO, Buckingham	1.8	CW	40	34	G6XH, Chorleywood, Herts.	850	
G4AP, Swindon, Wilts.	1.8	CW	50	35	? ? ?	700	
G3IYX, Bradwell, Bucks.	1.8	CW	80	45	G3IZS, Leicester	580	
G3IYX, Bradwell, Bucks.	1.8	CW	80	9	†G3HMO, Buckingham	220	
G3HMO, Buckingham	1.8	Ph.	100	15	G5RZ, Leighton Buzzard, Beds.	150	

NOTES:

Making Your Own Transistors

MATERIALS—SELECTION OF CRYSTALS—METHODS OF PROCESSING—MOUNTING—MEASUREMENTS—AND A TRANSISTOR TEST SET

J. M. OSBORNE, M.A. (Oxon.) (G3HMO)

In this second article, our contributor shows how point-type Transistors can be home-constructed on the amateur workbench. The process, while being essentially simple and requiring the minimum of materials, is also of great experimental interest because it involves not only electricity, but a little physics and chemistry as well. This certainly does not mean "formulæ and laboratory facilities," but merely the ability to follow clear instructions and using, for the most part, materials obtainable from the local chemist. The heart of the home-constructed transistor is the germanium diode, which is cheap and readily available. It can truly be said that for the total outlay of a few shillings, transistors can be produced by the average amateur with the usual bench facilities, if he is prepared to be patient, careful and not to be put off by initial failures. The results already obtained by G3HMO with the 160-metre transistor equipment described in the March issue of SHORT WAVE MAGAZINE *were with transistors made by himself at home using exactly the process as set out here. The whole subject of transistors and the techniques surrounding their application on our HF bands opens up an entirely new field of amateur interest — and it is also worth noting that at the present stage of development anything in the way of a transistor-transmitter is necessarily ultra-QRP.—Editor.*

IN the March issue of *Short Wave Magazine* the writer described a simple 160-metre transmitter using a home-made transistor. Now follow details of the method of making the transistor itself, together with some notes on transistor construction and theory.

The materials and tools needed are:

(1). A few inches of Phosphor Bronze Wire, 36 or 38 SWG (*6 to 8 thou.*).
(2). A supply of tinned copper wire about 18 SWG.
(3). 25 gm of caustic potash (KOH) in 150 cc of distilled water. (*see precautionary notes in text*).
(4). A Germanium Diode having a **high reverse resistance** (greater than ½-megohm).
(5). Perspex sheet, about $1\frac{1}{2}$" x $\frac{1}{2}$" x $\frac{1}{8}$".
(6). A strong magnifying glass.
(7). A pair of fine tweezers.
(8). 8 BA drill, tap and grub screws.

The procedure is divided into four sections: Making the whiskers, obtaining the crystal, mounting and adjusting these components, and finally processing and testing.

Making the Whiskers. Two similar whiskers are used, but it is worth making at least half-a-dozen at a time. About half-inch of the phosphor bronze wire is soldered to a six inch length of the tinned copper. The phosphor ... Fig. 1. A pair of fine tweezers is the best tool for the job. The shape is not critical and is solely to enable the whisker to act as a spring and press firmly against the crystal.

The whisker is pointed electrolytically, the process being the reverse of electroplating. The end of the whisker is eaten away as the current passes until only a point is left on the end. The pointing solution is made by dissolving 25 grammes of Caustic Potash (chemical formula KOH) in 150 cubic centimetres of distilled water. Any chemist will make up the solution for about one shilling. Technical or "commercial quality" caustic potash is satisfactory. *Neither the solid caustic potash nor the solution should on any account be allowed to touch the skin.* Always have plenty of water handy to rinse off any solution which may accidentally touch or splash the hands.

Some of the solution is poured into a shallow glass dish to a depth of about ¼ of an inch. A piece of copper gauze or a spiral of bare copper wire (*see photograph*) is laid at the bottom of the dish with a lead coming out. This is then connected up in the circuit shown in Fig. 2 with the potentiometer, battery, meter and whisker to be pointed. The whisker is immersed to a depth of ⅛ of an inch and the current adjusted by the potentiometer to 15 mA. The exact current is not critical and

SSB Topics

HF CRYSTAL FILTERS — FEATURES OF THE HT-32 TRANSMITTER — NOTES AND NEWS

Conducted by J. C. MILLER, DJ0BX (W9NTV)

THE development of new spectrum-saving techniques, especially those which will compress more and more intelligence into narrower bandwidth transmissions, has been stimulated by the ever-increasing number of uses and users of the available communications frequencies. Government and commercial communications services have been hard-pressed in an effort to obtain adequate channels for their requirements. New countries have demanded space in the already overcrowded spectrum. Interference between services has become a major problem. No one familiar with the field of communication can deny that immediate action is necessary to develop systems which will increase the ...ability of the available communications channels. ...ny believe that single-sideband techniques, with ... prime advantage of reduced spectrum occupancy, ... provide an answer.

And how does this affect the radio amateur? Our ...ily is also growing. In fact, the amateur ...ernity has increased by leaps and bounds during ...last ten years, creating unprecedented activity on ...amateur bands. The surging interest in radio-...phone communication has produced interference ... of fantastic proportions. We are not only ...ered with conflicting speech signals, but have the ...ng shrieks of heterodynes added to the general ... of QRM. As if this were not enough of a ...m, we find that we must share certain of our ...encies with other services—not to mention the ...ous intruders who frequently slide into our ... to add to the confusion.

...amateurs must therefore also be interested in ...m which will increase the usability of our ...cies. Let's imagine that a dream condition ...one in which all AM phone transmissions ...duced to half their normal bandwidth and no ...were radiated. We would immediately enjoy ...ommunication, with double the number of ...hannels per band and the complete absence ...odynes! A system is available to all of us ...uld begin to make this dream come true. It ...ce the interference, increase the effective ... our band assignments and increase the ... of our contacts. What is this system? ...eband, *of course!*

...ughts on Switching Sidebands

... U.S. 75-metre phone band — where the ...opulation is extremely heavy — the QRM ...somewhat eased by an interesting method: ... to select either upper or lower sideband ... has become common practice for all ...aged in a net to transmit on the same ... carrier frequency ...

band. As the net becomes overcrowded, or if several of the stations wish to carry on a personal chat without taking the other net operators' time, they switch to the other sideband and continue with their QSO. When they have finished their discussion, they flip back to the original sideband and rejoin the net.

With two nets operating on the same virtual frequency—one on the upper and one on the lower sideband—the unwanted sideband suppression of all transmitters must be quite good. Under these operating conditions, a station with poor suppression receives prompt advice of the fact! Of course, the receiving equipment must also have good sideband rejection and sideband selectability.

Why Not Use Both Sidebands?

When your conductor is not operating on one of the sideband frequencies, he enjoys a second hobby—that of experimenting with a "high-fidelity" audio reproducing system. With the advent of stereophonic recordings, interest and equipment expanded to include two complete audio channels — from the record pickup to the loudspeakers. From time to time it was jokingly mentioned that the next step in these experiments should be to convert the sideband transmitter to permit stereophonic transmission, with one audio channel on each sideband. (No, the writer *does not* advocate stereophony on the amateur bands!)

It seems that others have had the same idea of

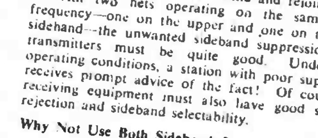


FIG 1A

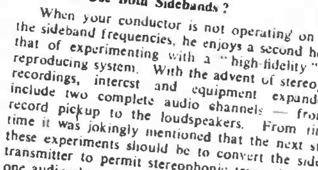


FIG 1B

Fig. 1. At (A) is the equivalent electrical circuit of a crystal. The effective mass and "stiffness" of the crystal is represented by L1 and C1; C0 is the shunt ...

VHF BANDS

NORMAN FITCH, G3FPK

THE letter sent out to regular and occasional contributors has resulted in a large wad of correspondence in spite of the past month not being a very newsworthy one on the VHF bands. It is gratifying to learn that so many *Short Wave Magazine* readers either already do, or now intend to buy *Practical Wireless* and to continue writing to this feature.

The first appearance in *PW* will be in the May issue, due in the bookshops on April 9, under its new title, "VHF Up". The absolutely latest copy deadlines were stated in the letter and are the dates by which letters must be received *QTHR*, so please make sure you put the appropriate reminders in your diaries. From now all, all copy for "VHF Up" must be sent to the Purley address.

As to content, "VHF Up" will follow the same format except that the Packet Radio and Satellite sections will be omitted as there are already established columns for those aspects of the hobby. No doubt the editor will be pleased to receive your constructive comments on what is included in, or left out of, "VHF Up". The aim is to get the balance right throughout the Magazine which has led to a re-appraisal of the lengths of some of the regular features.

Awards News

Congratulations to László Hatala, HG6VV, from Gyöngyös in Hungary, who was issued with 144 MHz QTH Squares Century Club certificate no. 76 on Jan. 26 for operation from his home QTH of JH20c. His confirmed total is 123 made up of 76 tropo, nine *auroral*, 37 *Sporadic E* and one MS QSOs. 49 contacts were on SSB, 72 on CW and a couple of mixed mode. Unfortunately no station, QTH or personal details came with the application.

Gerald Nenner, DL8FBD, from Rodgau in West Germany was issued with the 225 confirmed sticker for his 144 MHz QTHCC certificate on Jan. 23. He is now up to 274 worked on the band. The 23 new squares comprised 18 on CW and five on SSB, modes being two *via Ar*, three *via Es*, 17 by MS and just one on tropo. Gerald is member no. 39.

Keith Hewitt, G3DER, from Barnsley was issued his 150 sticker for his 144 MHz QTHCC certificate on Jan. 30. All contacts were on SSB, 16 on tropo, five by MS, three *via Es* and one by *Ar* mode. He is member no. 42.

As indicated last month, the awards programme will carry on with the same rules but with re-designed certificates. New applicants for the QTHCC or VHFCC should write to the Awards Dept., *Practical Wireless*, Enefco House, The Quay, Poole, Dorset BH15 1PP, however. Thereafter, all required lists, cards, etc., must be sent to the Purley address for processing since all records are kept there. One change is that VHFCC certificates will not be issued for 144 MHz any more. With so much activity on the band now, working one hundred stations can often be achieved in a few hours during major contests, so no longer represents any great achievement.

The 70 MHz and 432 MHz VHFCCs will continue, however, and since the new certificates will be of a standard design, similar clubs could be started for 50 MHz and 1,296 MHz to further encourage activity.

The Tables

This year, the Annual Four Band VHF/UHF Table has got off to a flying start and will be carried over to the VHF Up column, of course, along with the QTH Squares Table, Annual CW Ladder and 13cm All-time Table. All these tables are based on unconfirmed QSOs of the "normal" kind. There is often a question mark about some of those random MS and fleeting Es contacts so, in fairness to others, only include these if you are quite sure a proper QSO was made. Doubtful ones can always be added later on when formally confirmed by QSL or on the VHF net.

Rare Squares

Not many have worked all the QTH squares on the Atlantic coast of Ireland. The reasons are that the land area in the U line is small and there are probably no active VHF stations who live in them. Therefore all will welcome the news that G6GRK, G1SGB and others from the Leeds area plan to operate from them shortly.

The proposed dates are March 22 to April 5, the schedule being Mar. 22-24 in UL; 25-28 in UM; 29-31 in UN, finally in UO from April 1. All operation will be on SSB, the preferred frequency being 144.255 MHz from 0900 to 0100 daily. The equipment will provide 400W to four 19-ele. *Yagis* with a masthead preamp. The callsigns are EI3VVC to EI3VVF and further information can be gleaned from Craig Moore, G6GRK, who is *QTHR*. Hopefully the weather may be reasonable bearing in mind the Atlantic gales that usually occur in this period.

An Auroral Record?

Nick Peckett, G4KUX, has told your scribe that G4VBG, who lives in the Gateshead area, has received a QSL card from UA3IFI (KO76WT) for an *auroral* QSO on Feb. 7, 1986 at 2011 GMT. The distance is 2,350 km. which exceeds the previous record in Britain, held by Roger Thorn, G3CHN, by a substantial margin. Looking through the current Worldwide VHF Top List in *Dubus Magazine*, nobody has claimed such a distance for this mode. Congratulations to both stations.

Contest Notes

The last three legs of the 70 MHz *Cumulatives* are on Mar. 1, 15 and 29 from 1000 to 1200 local time. The 144/432 MHz and SWL Contest is on the weekend Mar. 7/8, 1400-1400, comprising Single-op., Multi-op. and SWL parts. Single band entries for 144 MHz will not be accepted. The 432 MHz CW Contest will be on April 5, Last year the times were 1300-1700 but check with the *RSGB* as no other details are available at the moment. On Apr. 11/12, the *RSGB* list a 70/144 MHz event. A reminder that the *Dubus Magazine's* 144/432 MHz contest coincides with the *RSGB* one on Mar. 7/8; see page 470 last month for full details.

This year's 144 MHz Contest organised by the *Barking R and ES* is on Mar. 29, 1300-1700 and is in three sections; High power (full legal limit), low power (20W *p.e.p.* SSB output) and SWL. Exchanges to comprise RS(T), serial number and county. Each completed contact is worth one point but club stations G3XBF and G8XBF count 10 pts. There is a county multiplier with non-G countries counting as extra counties. Final score is QSO points times multiplier points. Entries go to BRS 31976 at 32 Wellington Road, Rayleigh, Essex SS6 8EZ, postmarked no later than Apr. 13. An *s.a.e.* to this QTH will bring a copy of the rules.

Satellite News

In spite of recent gloomy forecasts of the imminent "death" of *Oscar-10*, this spacecraft has been providing some excellent service. In the latter part of February, it was very favourably situated for the U.K. being visible for up to ten hours. The keen addicts have been making long QSOs with VK stations for example.

The current situation is that the IHU memory has been shut down leaving the Mode B transponder on. Provided the power is carefully used, it could remain on indefinitely. Therefore, so that everyone can enjoy the maximum use of this mode, please keep your *e.i.r.p.* down to 100W or less; *e.g.* 10W to a 10 dBi gain antenna correctly aimed is quite enough. Also, do not use the transponder between *Mean Anomaly* 220 to 020. In practical terms,

taking the latter part of February, this meant only losing the last hour or so of a 9-10 hour pass.

Again, to help extend its life, all users are requested *not* to operate through *O-10* in March and April. This is because of a bad sun angle which will result in decreasing battery voltage but this state of affairs will improve from May on. With common sense and user co-operation, there is no reason why *O-10* should not tide us over till the *Phase 3C* spacecraft is available later this year, hopefully.

A check with *AMSAT-UK* revealed that there is no definite news concerning the very long awaited launch of the two Soviet amateur satellites *RS-9* and *RS-10*. On a recent international satellite net, UA3CR admitted he had no information. On past form, the first news we get about these two satellites will be when they are heard.

AMSAT-UK secretary Ron Broadbent, G3AAJ, passes on the following information. The *FO-12 Handbook* covering the firat Japanese amateur satellite is now published the cost being £3.50 to non-members. The first update is also available for £1.50, both prices including postage and packing for the U.K. Upon receipt of an *s.a.e.* Ron will provide anyone with an *Oscar-10* calendar for 1987 together with useful operating notes.

Concerning satellite calendars, the predictions for *O-10* in the *AMSAT-UK* January to March 8 supplement were a day out for some reason. At G3FPK, the *O-10* program for the *ZX-81* is based on those published in the John Branegan book of 1982 vintage, but for 1987 use it is necessary to make some amendments to some lines in program 3.1.2 for example. If any reader has any queries on these *ZX-81* programs, drop a line to the Purley QTH with an *s.a.e.*

The only reader mentioning *O-10* was Tony Collett, G4NBS, (CBE) who listened to the 2m. downlink on Jan. 25. The satellite rose about 1300 to the east and for the next hour it was well used with many stations S5-7 including JAs and VKs. Fading was evident on all signals and he reports the beacons being weaker than many of the stations using the transponder, one G being over S9, even at 41,000 km. range. 100W *e.i.r.p.?*

"VHF Up" deadlines for the next three issues in Practical Wireless:-

June issue — March 30
July issue — April 28
August issue — May 27

Please be sure to note these dates

Six Metres

Eamonn Gilmartin, EI8EF, (Donegal) obtained permission to operate on 6m. in December last year and uses a *Yaesu* FT-680R and 5-ele. *Yagi* by *Tonna*. He will be seeking skeds as he hears the Anglesey beacon GB3SIX at S1 most of the time. Dublin stations EI2W and EI6AS are easily worked from Bundoran so he imagines he will be able to contact G and GW fairly well. Eamonn is disillusioned with MS operation on 2m. ". . . due to the number of false claims for contacts received". But he will consider proposals for such skeds with genuine stations on the band.

Dave Ackrill, G0DJA, (WMD) reports a major success on Jan. 18 at 1130 when he managed to work G4FXW in Sheffield. Dave was running just 300mW to a full wave loop indoors on a wall. The QSO began on CW but was completed on SSB.

Rod Burman, G4RSN, (BRK) wrote his letter on an *Intercity 125* train and summarised his first year's activity on the band. 165 stations worked with best DX WA1OUB on July 21, 1986. LA6HL/TF was contacted, also CT1LN and CT4KQ *via Es,* plus LA6QBA many times on MS. Rod's tally was 22 squares and nine genuine countries in-band. His station comprises an *Icom* IC-740, *PW* Meon transverter and a home made push-pull PA using a couple of 2N6083s. This provides 35w to a 2-ele. *Quad* in the loft.

He remarks again on the very deep fading experienced in inter-G working with paths across London particularly prone to this effect. He is rather disappointed by the generally poor activity after the initial enthusiasm waned. 50.2 MHz can be monitored, ". . . for several hours without hearing a call". Well, may be everyone is just listening, waiting for the other person to make a call.

On a more encouraging note, John Jennings, G4VOZ, (LEC) reports a bit more activity lately. He can now monitor 50.4 for FM and 50.2 for SSB at the same time and has had FM QSOs with stations in the Midlands and with G0FZD in Rotherham. G0DIY in Leeds has been heard several times at S7 on FM but John had not managed to work him. He asks why so many stations who are very weak on SSB fail to respond to calls on CW, something which does not happen on 4m.

John Baker, GW3MHW, (PWS) also summarised his first twelve months 6m. activity which yielded 239 different stations; 18 G0s, eight G2s, 74 G3s, 85 G4s, 21 GWs, 13 pre-war two letter Gs and 20 stations outside the British Isles. All British Isles countries were worked plus CT, CU, D, EA, LA, W1 and ZB2 though the D and EA were not licensed. John's station consists of a *Yaesu* FT-680R, the antennas being either a 3-ele. or 6-ele. *Yagi* at 30ft. *a.g.l.*

Your scribe was discussing activity with Bill Law, G2ANT, in nearby Croydon and he reckons the Friday night activity is not a very good idea. First it infers that there may not be many stations to work at other times and second, not everyone can come on at this time for a variety of reasons. It would be instructive to learn other operators' views on activity periods.

ANNUAL CW LADDER

Station	4m.	2m.	70cm	μWave	Points
G4XEN	—	32	4	—	36
G4ZVS	—	29	—	—	29
G0DJA	—	24	—	—	24
G4AGQ	2	4	2	—	8

No. of different stations worked since Jan. 1

THIRTEEN CENTIMETRES ALL-TIME TABLE

Station	Counties	Countries	Squares	Points
G3JXN	27	9	36	72
G8TFI	26	7	32	65
G6DER	25	9	26	60
G8PNN	15	7	25	47
G3XDY	15	6	22	43
G1DOX	6	2	6	14
G6YLO	6	1	3	10

Four Metres

G4NBS had not heard much on the band since early December so was looking forward to the *Cumulative* session on Feb. 1. After having 12 QSOs in the first half hour, Tony realised his antenna changeover relay was acting as a very effective attenuator on receive. He hastily stripped the component down, cleaned the contacts, reassembled it then worked EI9FK/P (Co. Dublin). In the interrupted two hours session, he made 33 contacts in 24 counties including G4RDT (IOW), G4SUI (YSW) and the West Midlands.

Jerry Russell, G4SEU, (WKS) lists as new this year G0FEB (LDN), G3WMR (LDN), G0ENR (HWR), G3CCM (HFD) and G4NHO (SRY). He has been operating mobile as well, experimenting with quarter-wave, three-eighths wave and halo antennas. The halo was mounted on a 6ft. pole in the middle of the roof rack, guyed to the corners of it. The local constabulary stopped him and asked if he was from the *B.B.C.* They asked Jerry to find out if it was legal. If they do not know, then who does?

G4VOZ's first 1987 activity was in the *Quadrantids* during which several GM and EI stations were heard. John was unable to contact EI9FK/P but did complete in four minutes with EI2CA/P at 1154 on Jan. 3. He carefully monitored reflections from stations at opposite ends of EI and found those in a NW direction came through best. He has also been out mobile, operating from many Worked All Britain squares and like G4SEU, using a halo antenna with very good results on FM mode.

GW3MHW has been using an old QQV03-20 valve in his PA, working EI2CA and EI9Q in January. EI9BG (Co.

Clare) heard John's signal, while G4CAX (CHS) was a new station worked on the band. Dave Lewis, GW4HBK, (GWT) heard EI9FK/P and EI2CA/P *via* backscatter on Jan. 3 for several hours but could not work either. He called EI2CA next day but he repled to G4WND. Dave worked G4WND in five minutes by MS that day. MS from Gwent to Leicester has to be some kind of record. Others contacted in January included G4EPA (NHM), G4VOZ and G3YZU (LEC). GW4IOI in Swansea is QRV again after equipment problems.

Two Metres

Charles Coughlan, EI5FK, (Co. Cork) reports some *Ar* activity at the end of last November, plus some MS at the beginning of the December *Geminids* which has increased his squares worked to 131. As mentioned in the 6m. section, EI8EF is none too happy when stations claim MS QSOs which he has not properly completed with them. However, he is prepared to consider sked proposals from "genuine" stations needing VO square.

G0DJA has been on CW using 2½W from a *Yaesu* FT-290R and a "Slim Jim" antenna for local working or a 30m. long wire for more distant stations. 24 stations so far including G4PMV in Bolton and G4UHI in Blackpool. Philip Everitt, G1CRH, (CBE) reports a slight inter-G lift on Jan. 18 which brought G4WVI (NLD). Philip suffers from TVI problems even when using just 2½W, so his activity is curtailed somewhat. He has been working towards his WAB Winter Award but is not doing too well due to lack of time with A-level studies.

Bob Nixon, G1KDF, (LNH) says he works GM6TKS (WIL) quite often. GM4DMA/A (AS) was heard on Jan. 20 at 2350 working G4KUX and G1AWP but went QRT before he could call in. In a lift on Jan. 31, numerous near continentals were heard at low strength and ON1BSE was worked with RS55 reports each way. Bob mentions GM type *Ar* events on Jan. 1 and 20. Paul Brockett, G1LSB, (LCN) has started off well with G6MKB (CNL), G0EMS (HWR) and G1WAY (CVE) already in the 1987 log.

Ian Rose, G1PDW, (ESX) is another reader chasing the WAB Winter Award with 670 squares worked up to Feb. 1. Gerry Schoof, G1SWH, (MCH) also worked GM6TKS, on Jan. 22 but like G1KDF, has not been able to work him on 70cm. Bill Hodgson, G3BW, (CBA) had not written for some time. He has been suffering from very strong computer QRM which ruined any idea he had of participating in the January *Quadrantids* shower. He has traced the source to a near neighbour's house but fortunately the fellow seems quite concerned and cooperative and switches it off when he is not using it now, whereas before it was left on for hours on end, idling.

ANNUAL VHF/UHF TABLE

January to December 1987

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	23 CENTIMETRES Counties	23 CENTIMETRES Countries	TOTAL Points
G1KDF	—	—	55	7	30	7	7	2	108
G6HKM	—	—	42	11	26	7	13	4	103
G1SWH	—	—	51	7	20	5	—	—	83
G4NBS	24	2	*2*	*3*	19	9	14	6	74
G1LSB	—	—	43	5	10	3	—	—	61
G3FPK	—	—	49	9	—	—	—	—	58
G4DEZ	—	—	18	6	11	6	6	4	51
GW6VZW	—	—	44	6	—	—	—	—	50
G1PDW	—	—	37	7	—	—	—	—	44
G8XTJ	—	—	36	7	—	—	—	—	43
G6MGL	—	—	22	6	1	2	1	3	35
G1CRH	—	—	31	3	—	—	—	—	34
G4SEU	24	3	—	—	4	2	—	—	33
G4MUT	15	1	10	2	2	2	*3*	*1*	32
G4TGK	—	—	28	4	—	—	—	—	32
G6AJE	—	—	7	3	12	5	—	—	27
G4WND	20	4	—	—	—	—	—	—	24
G1VTR	—	—	4	1	10	2	—	—	17
G6XRK	—	—	8	6	—	—	—	—	14
G4AGQ	5	1	2	1	—	2	—	—	11
G2DHV	2	1	5	1	—	—	—	—	9
GW4HBK	5	2	—	—	—	—	—	—	7

Three bands only count for points. Non-scoring figures in italics.

Pat Billingham, G4AGQ, (SRY) has been working some very QRP stations on CW, including FD1LMW in Paris and FD1JLQ in Calais, both using one watt. G4NBS has only has seven QSOs this year but they provided three new squares; DG2BAW (JO43), DK8OL and DL3LAC (JO44) and OZ1BEF (JO46). This was during a mini opening on Feb. 1 between 1830 and 1930 and all were using low power and small antennas so he asks, "Where were all the big guns?" Tony found the conditions rather odd in the period from Jan. 30 for although 23cm. and 70cm. signals were very strong along the North Sea coast, the 2m. SSB section showed little sign of lift conditions. However, on FM all the repeater frequencies were packed with very strong signals.

John Wimble, G4TGK, (KNT) managed to contact G4IJM (CVE) in the end-of-Jan. lift, the first time he has even heard anyone from Cleveland in over two years. He has just reached 600 WAB areas, GU1WJA and GJWRI giving two all-time new parishes. Bob Ainge G4XEK, (SFD) continues to suffer from very strong power line QRM and only in five days in January did his S-meter not read S9 + 40 dB.

John Palfrey, G4XEN, (NHM) thought the tropo. lift Jan. 30 to Feb. 1 quite good with excellent signals from ON, PA and the nearer German squares. On Jan. 31, around moonset at 1900, he heard W5UN calling CQ and called Dave several times. He replied after a few minutes with "G4XEN? W5UN" before giving up. The interesting thing is that John was only running 90W to a 14-ele. *Parabeam,* so he is writing to W5UN for a sked.

Mike Johnson, G6AJE, (LEC) started his 1987 innings with a few G counties. On Jan. 31 he had a 40 mins. QSO with ON1BSE (CL62c) during which the signal strength stayed perfectly constant. The next day brought country no. 3, DJ9YE (EN14a).

Ela Martyr, G6HKM, (ESX) started her year with GD8EXI on Jan. 3, then GI4GVS and GI4KIS/P (ATM): GJ4ICD on the 11th and GI4OMK/P who ended up with just one watt due to battery run down. GM4VLA (DGL) was contacted on the 28th, then two Northumberland stations, G1AWP and G1LDD. On Feb. 1, the DL0PR beacon (EN) was up to S9 at times but there was not much activity although OZ1QZ was worked and in the evening, LX1JX.

Richard Mason, G6HKS, now lives in Scarborough (YSN) but did do some good MS operating in the *Quadrantids* from his old stomping ground in Norfolk (AM22g). On the 3rd and 4th he completed on SSB with HG7PL (JH), SP3MFI (JL) and EA3LL (AB) in skeds, while on the random QRG of 144.200, he completed with LA2AB (FT), LA9FY (EU), F6DRO (AD) and HG8VF (JG). Richard also used the 144.400 MHz QRG to work OK3LQ (II) and YU3ES (GF). He also heard SM5MIX (HS), SM5BEI (JU), SM2CEW (LZ), IW0AKA (GB), UR1RWX (MT), UP2BFR (LP) and OH1ZAA. He reckons this year's *Quadrantids* have been the best he has heard.

Mike Huggins, G6XRK, (ESX) refers to the brief tropo. opening on Jan. 31/Feb. 1 which brought in lots of PAs, with the DL0PR beacon strong on the 1st and an OZ heard but he wrote, "All in all, not much to get excited about". John Fitzgerald, G8XTJ, (BKS) is yet another reader who has been busy with the WAB Winter Award and did not work much in the way of DX till Jan. 31 when the nearer continentals came in. He remarks that many Dutch amateurs have WAB books now.

Geoff Brown, GJ4ICD, sent along a picture of a *Unaohm* Panoramic TV Field Strength Meter, type EP738B recently acquired and which will be very useful for monitoring *Es* activity this summer since it covers 45-290 MHz as well as bands 4 and 5. He also included details of *CQ Magazine's* Third Annual World-wide VHF WPX Contest which takes place on July 18 from 0000, lasting 48 hours. Details of the rules will be published later in VHF Up.

Several letters have arrived from John Eden, GM0EXN, the most northerly mainland station. He has put up a new *Jaybeam* 10XY antenna so that he can keep in touch with others *via* the FM repeaters in Britain and Norway and this is useful for warning about possible *Ar* events. He uses a Trio TR-9130 with 3SK88 preamp. with the advantage of being in a very low noise area.

John reports a few *Ar* periods the first on Jan. 1 when he worked G4KUX on CW. On the 16th, LA8BO was contacted at 1800 on CW but was the only one heard. The event ended at 1820. GB2LER was RS57A and DL0PR was detected, just. Another *Ar* was in progress at 1640 on the 20th. Beacons SK4MPI (HU), DL0PR (EO) and GB3LER (ZU) were all copied well at QTE 35° and stations worked were GM0BPY, G1AWP and G1GEY. By 1715 the *Ar* was fading and the QTE for the beacons had changed to 20° and he worked G1AWP by tropo.

At 1900, John checked the band again and heard GM3ZHH/A (AU08) on the North Ninian platform. Les runs 25W to a 5-ele. *Yagi* pointing south. There are three platforms in the Ninian Field and there are radio amateurs on each. Other stations heard in the tea-time *Ar* were GM3JIJ, OZ4VV and LA8BO.

On Jan. 22, another *Ar* event from about 1730 with SK4MPI RS32A. At 1800 GB3LER went *auroral* and SM4POB was called at 1808 but contact lost, however LA8BO was worked on CW at 1829. At 1810, SK4MPI was *Ar* at S5 from 340° round to 50° but strongest at 35°. John mentioned that GM4ILS had mentioned yet another brief event at tea-time on the 27th. From 1730 for an hour on the 28th, SK4MPI; DL0PR and GB3LER were once again received *via Ar* at up to S8A but no amateur signals heard on CW or SSB.

John lastly reported on the tropo. opening on Feb. 1 when DL0PR was S8 at 1100. He called CQ for an hour but no takers. During the afternoon, he did work DL8HCZ (FN), PE1DAB (CN), DJ8PB (EO), PA3DTQ (CM), PE1LDX (CN), and PE1KLQ (DL). At 1710, OZ1DAO (FP) on the island of Funen was contacted. The DL0PR beacon was still detectable at 2300. John mentioned that Shetland stations GM0AVR and GM8PNP were very disappointed as they called CQ for ages and got nowhere, even though DL0PR was up to S8.

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G3IMV	—	116	397	513
G3POI	—	—	448	448
G8GXP	13	133	296	442
GJ4ICD	59	117	241	417
G4NQC	63	99	250	412
G3UVR	63	113	217	393
G3XDY	78	131	180	389
GW4LXO	45	100	240	385
G4KUX	—	57	322	379
G3JXN	80	126	172	378
YO2IS	—	37	341	378
GW4TTU	37	87	238	362
G4RGK	35	92	230	357
G6DER	70	104	177	351
G3PBV	41	106	200	347
G8TFI	79	141	126	346
G4DCV	25	71	248	344
DL8FBD	—	69	274	343
G4IJE	—	—	338	338
G4XEN	—	98	232	330
G3BW	15	38	269	322
G3COJ	44	102	175	321
G1EZF	32	86	200	318
G4DEZ	44	27	246	317
G4MCU	25	82	201	308
G8XVJ	—	86	213	299
G4TIF	—	106	178	284
G4FRE	63	136	84	283
G8PNN	58	94	128	280
G4DHF	—	—	280	280
G6MGL	50	89	135	274
G6XVV	16	62	188	266
G6HKM	12	98	152	262
G8HHI	23	96	135	254
G4MUT	24	87	140	251
G6HKS	—	65	186	251
GM4IPK	—	—	245	245
G1KDF	21	85	137	243
G4OAE	—	46	195	241
G4NBS	56	94	85	235
G3FPK	—	—	219	219
G6DZH	—	82	136	218
I4YNO	—	—	214	214
G4SSO	—	54	158	212
GW8UCQ	—	81	128	209
G4SFY	—	—	208	208
G4MJC	—	25	182	207
G6ECM	—	—	200	200
G4IGO	—	—	198	198
G4MEJ	—	—	198	198
G4HGT	—	52	142	194
G8LFB	—	—	194	194
G4YCD	—	35	148	183
G1EGC	—	39	143	182
G0CHE	—	—	181	181
GM0BPY	—	54	123	177
G1LSB	—	101	75	176
G4ZTR	35	57	82	174
GW3CBY	18	46	107	171
G4YUZ	—	—	168	168
G4XEK	—	—	167	167
G8ZDS	—	41	123	164
G4VPM	—	46	117	163
GJ6TMM	—	31	128	159
G8MKD	—	45	113	158
G4DOL	—	—	154	154
GW8VHI	—	48	101	149
G6AJE	3	52	90	145
G6XLL	—	36	109	145
G6YIN	—	58	87	145
EI5FK	—	13	131	144
G4CQM	—	52	87	139
G4RSN	2	34	92	128
G8RWG	—	13	105	118
G6XRK	—	—	117	117
G0FOT	—	54	49	103
G4TGK	—	—	101	101
G8XTJ	—	—	98	98
G6MXL	6	33	57	96
G1DOX	20	27	49	96
G6CSY	16	39	34	89
GM8BDX	13	31	41	85
G4JZF/P	—	80	—	80
G1DWQ	—	—	72	72
G0FBG/PA	—	17	54	71
GW6VZW	—	—	69	69
G1PDW	—	—	55	55
GU4HUY	—	—	54	54
G1CRH	—	—	49	49
GM0GDL	—	7	38	45
G1HGD	—	7	38	45
G2DHV	—	4	27	31
G1VTR	—	19	6	25

Starting date January 1, 1975. No satellite or repeater QSOs.

Paul Baker, GW6VZW, (GWT) has got off to a very good start with 50 table points accumulated in January. He lists his best DX as G1WAY (CVE), G1DXI (HBS), G1SMI (LNH), G1KEF (MCH) and G1NZR (MSY). He reports conditions as having been reasonable to the N and NE but with much deep QSB. He has noticed some MS like bursts at S9 but did not mention any specific dates so it could have been in the *Quadrantids* period?

Seventy Centimetres

DL8FBD (EK) is active on the band and Gerald runs 5W to four 19-ele. *Yagis.* He has 51 squares confirmed out of 70 worked. EI5FK (VL) has 13 squares in the log. Charles runs 10W and his best DX so far is DG1BP (DN). Until the end of January, he was using a home made 15-ele. *Quagi* antenna but now has a 21-ele. *Tonna Yagi.* Preliminary tests with GW3KJW suggest the former gives better results but attempts to use two stacked *Quagis* were unsuccessful, possibly due to the spacing being too little.

It was reported last month that EI8EF might be QRT on the band, but Eamonn has written that, although his antenna is off the mast at present, he will be QRV again by early summer once the gales have gone. G1LSB has not been quite so active on the band so far this year. Paul mentions working G1GPL (LDN), G1KDF (LNH), G1SWH (MCH), G6AGG (CBE), G6AMN (BRK), G6HKM (ESX) and G6YXT (DVN).

G1SWH only runs 2W on the band but nevertheless does quite well. In the lift on Jan. 31/Feb. 1 Gerry worked DL2KBB for country no. 5, G4WCJ (DOR), G1JYB (YSN) and G4DFI (LDN). He asked about those elusive Irish contents and was told there is one provisionally scheduled for Easter Monday, April 20. G4AGQ was on CW on Jan. 31 and worked PA3AEX in Utrecht who was running one watt to an indoor HB9CV antenna, and DJ9RX (EN64a) at 685 km. and who was using 100W.

Welcome now to new contributor Stuart Field, G1VTR, from Barningham in Suffolk. He spent five years as an s.w.l. and took the R.A.E. last May which he passed with no trouble. He acquired his licence last August and first got interested in 70cm. when living in London. His station consists of an *Icom* IC-451E and 17-ele. *M.E.T.* antenna at 21ft. A *Microwave Modules* 50W amplifier was on order. Stuart is rather disappointed at the lack of activity apart from Monday evenings and the odd weekend. He finds it a very friendly band and about the tables, yes you can count your own county and country in your score.

G4NBS sent in a long report on recent activity. Tony has decided to have a go for the Monday Night Award but reckons it is more like Monday Inactivity Night in his area since most of his QSOs have been with

local stations using small stations. Best QSO was G0FKY, who used to be G8AAY, in Corfe Mullen (DOR) on Jan. 19. On the 27th, he managed to work G1DDS (NLD) followed by six more QSOs.

During the end-of-Jan. lift, the band was full of *Syledis* QRM. Tony had an interesting QSO with PE1EWR through PI6ASD, the Amsterdam Linear Relay, as it is called. This is a linear transponder which receives in a band 432.525 to 432.550 MHz and transmits on 1296.625 to 1296.650 MHz. Its locator is CM55g and it runs 10W to an omni-directional horizontal antenna 55m. *a.g.l.* When not transponding, it switches to beacon mode on 1296.647 MHz. Under the lift conditions, one watt from G4NBS was sufficient RF. Similar relays are sited in Eindhoven and Rotterdam but neither were heard so may not yet be operational.

Conventional QSOs were with DG8EAJ (JO31) and DK5WO (JO30) on Jan. 30; FC1LHP (JO10), ON4AAK (JO11) and ON5OF (JO21) on the evening of the 31st and DG2BAW (JO43) in the early hours of Feb. 1. DF8LL (JO44) was contacted at 0930 and after the 4m. *Cumulatives* session, Tony returned to the band and worked HB9AEN/P (DG13b), OZ3ZW (FO), a new square, OZ1QZ, OZ4VW and OZ2OE (EP), SM6ESG (GR), PA3DVE (CN), SM7OEL and SM7FMK (GP) and DD9LW (EO). These afternoon QSOs took place when the band had gone quiet and the *Syledis* QRM was absent. Tony's last contact was with SM6ESG again at 2000 by which time he was very much weaker and they eventually lost each other.

G4SEU caught the lift on Jan. 31 and Jerry worked into DL, ON and PA. For G6AJE, 70cm. is Mike's most used band and he was in on the lift which he describes as, "Not a record breaker, but a step in the right direction." The morning of Jan. 31 brought QSOs with PE1JVH (CM), who was trying some WAB on the band, DG8EAJ (DL), with FC1DRE (AJ), at 1320 and ON4AQQ (BL) in the evening. Around noon on Feb. 1 Mike worked DK4LI (EO).

G6HKM worked a number of counties during January but got most of her DX from Jan. 31. At 0815 when Ela switched on, the band was lively and her first QSO was with DF7VX (EL) who was only running 5W. During the afternoon, she spent two hours working ONs, PAs and DLs up to the "E" line. G4KUX told your scribe he now has two 21-ele. *Yagis* up at 50ft and will doubtless be in demand from Co. Durham on the band.

The Microwaves

EI5FK says he hopes to be on 23cm. in the future. Charles asks us to remind visitors on VHF/UHF that in the Republic, 150W d.c. input is the maximum power allowed, the inference being that some DX-peditionaries have been running much more.

G0DJA reports that the microwave net on 144.575 MHz FM on the first Wednesday of the month seems to be catching on so readers in the Midlands might like to join in. Dave had not made any 24 GHz contacts when he wrote but did work G4RIO/P on Barr Beacon from Lickey Hill, 23km. away on 10 GHz. G1KDF mentions working G8IFT (HRW) on Jan. 31 on 23cm. but that was Bob's only DX from Ormskirk.

John Tye, G4BYV, (NOR) added CH square on 23cm. thanks to F1EZQ. He had two QSOs on 9cm. with PA0WWM (CM) and DF1EQ (DL) while on 13cm. he got G3ZTR (ZO) and G4PMK (ZL). All these during the lift and, although all 13cm. beacons were S9, activity was very low.

G4NBS on 23cm. worked G8XVJ (CHS), G3UVR (MSY) and G0CZD (SPE) on Jan. 8. In the Dutch contest on the 13th Tony worked PE1EWR. In the lift on Jan. 30 he worked DG8EAJ; on the 31st ON5OF, DD3KL (DK), PE1JMZ (CL) and DF7KB (DK) and on Feb. 1 GW3CCF (CWD), OZ1QZ and OZ2OE (EP). The band was full of radar QRM from the Dutch direction in the lift but his longer distance QSOs only took place after the nearer PA on ON stations had disappeared. Tony was disappointed at not finding any LAs though.

G6HKM's first contact on 23cm. was with G8HPD (HFD), followed by QSOs with G4DEZ and G4VIX (ESX), G4NBS, G6DER (YSS) at 233 km., G8DKK (BFD), G3XDY (SFK), G4BYV, G8XVJ at 268 km. and G0FQA (NHM). Ela's first continental came on Jan. 31 and was DL1EBR (DL) followed by a call from PA0EZ (CM). Further contacts were PA0RDY (CM), G3ZTR and PA0WWM after which her husband put up another 20ft. temporary mast with a 23-ele. *Tonna Yagi* and masthead preamp.

PE1EWR was the first station worked with this installation. Succeeding QSOs were to PA0FRE (CL), ON1JO (BL), G8IFT (HFD), PA3EQK (CM), G8OPR (HPH), G8XIR (KNT) and the best DX of the day, DJ6JJ (DL) at 460 km. Things were quieter on Feb. 1 but she did give PE1KKY (CL) his first 23cm. contact outside his own country. Ela and Roy have concluded that the 23-ele. *Tonna Yagi* gives about half an S-point more gain with less polarisation fading than the 25-ele. loop *Yagi*.

VHF Convention

This year's VHF Convention will be at the usual Sandown Park Racecourse venue, but a little later, Sunday, April 26. Details in VHF Up, May issue.

Final Final

It was way back in the November 1975 issue that I made my first contribution to "VHF Bands" as your scribe. It has been a challenging and enjoyable part of my amateur radio life and it has been fascinating to look back and see how the VHF part of the spectrum has developed since then.

There have been many changes and long gone are the days when, for example, the two metre band was divided into zones with different regions of the realm having their own slice of it. Some modern equipment is capable of very high performance and for those with knowledge and enthusiasm to design and build the ultimate in low noise receivers, the components are available.

Who can forecast exactly what the VHF bands will be like by the year 2000? No doubt there will be a few amateur satellites in geostationary orbits by then, and many will be using packet radio to send information to all parts of the world. Home computers are bound to be more "powerful" and easier to use and we should be able to find a way to send circuit diagrams *via* PR and satellites to our friends in distant places.

So it is with a mixture of sadness that this kind of VHF coverage will no longer appear in the title *Short Wave Magazine* any more, and hope that its transfer to *Practical Wireless* will continue to give you, the readers, what you want.

Please note the forthcoming deadlines carefully and send your correspondence to: "VHF Up", 40 Eskdale Gardens, Purley, Surrey, CR2 1EZ. *73 de G3FPK.*

April issue due to appear on Friday, March 27th

The "SWM-50" All-Wave Receiver

a one-valve shortwave radio

REV. G. C. DOBBS, G3RJV

THE *Short Wave Magazine* has been going for 50 years . . . That seems a long time, then thinking about it I realised that I have been reading it for about 30 of them. I do have some magazines that go back a while but a search through the ancient end of my stock shows that I have ousted all my 1950's *Short Wave Mags* and although my small pile of "vintage" radio magazines has got some examples going back to the 1920's sadly my earliest *Short Wave Mag* is October 1947.

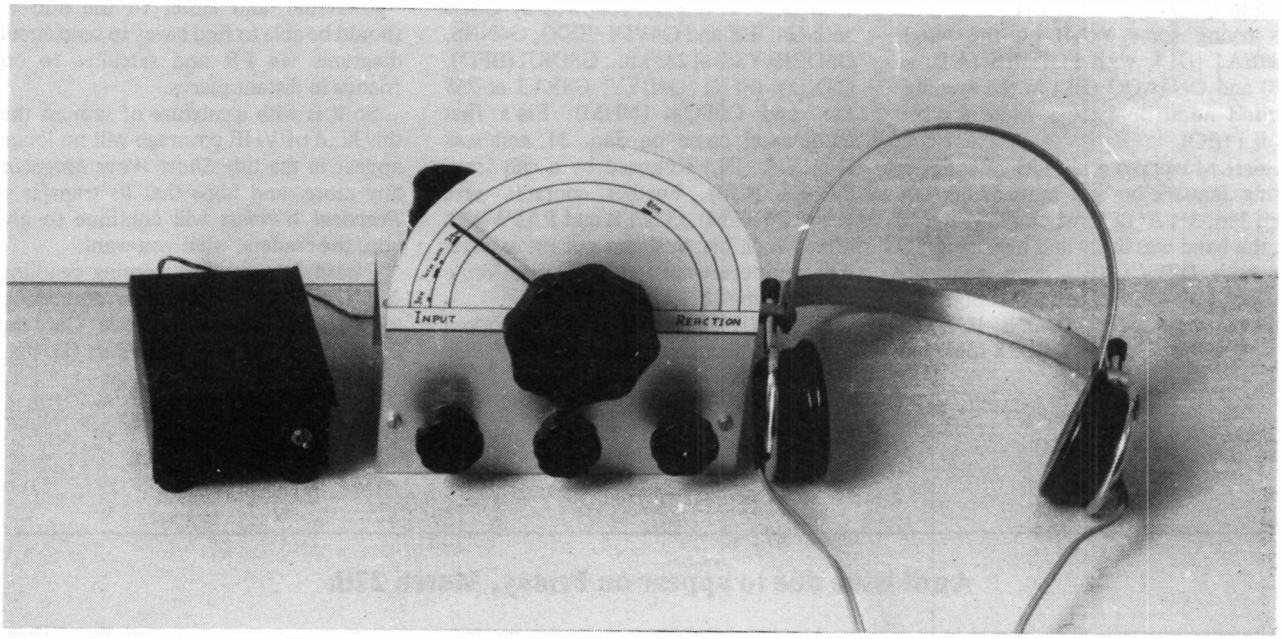
In the 1950's I was playing about with simple short wave receivers using battery valves from the local government surplus shop. Although there were fine sophisticated receivers like the AR88 and the HRO around, the likes of me relied upon the gleanings of World War II and the circuitry of the 1920's. Even in the 1950's, my first short wave receiver used a single HL2 valve and an old pair of leather padded headphones. It picked up some amazing stuff . . . but there again, the snow seemed to last all winter and the sunshine all summer and chocolate tasted better than it does today!

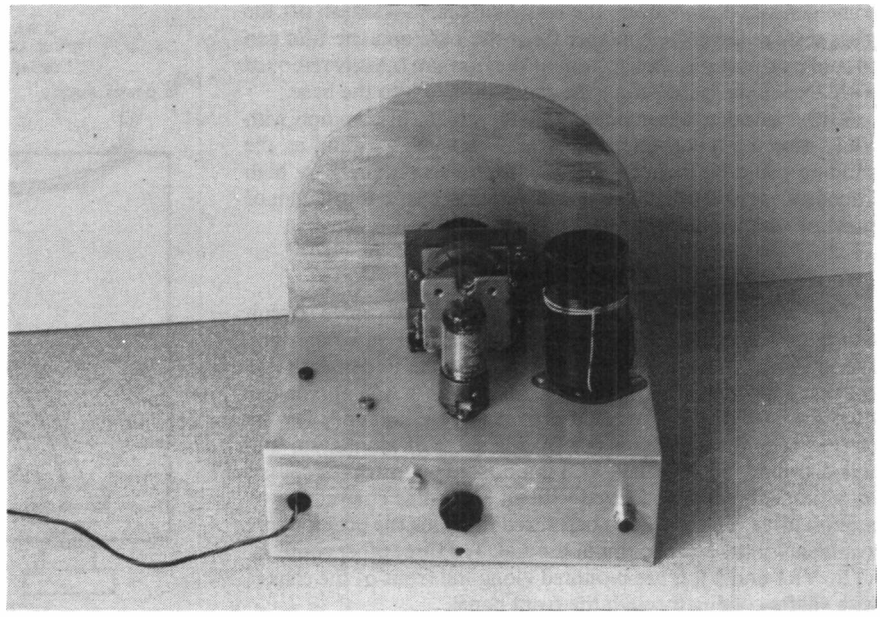
I thought it might be a good idea to submit a single valve short wave receiver for the 50 years of *Short Wave Magazine*. Then all the problems occurred to me. It would have to use an easily obtainable valve. Valves require inconvenient voltages for their heaters and high tension supplies. I could include a mains power supply for the receiver but a suitable transformer would cost too many pounds of a reader's hard earned money. Use a battery valve. Yes — but there seems to be a world dearth of those useful beefy high tension batteries with all the voltage tappings conveniently arranged around their perimeter. Although I am sure that some traders must exist who could supply, at a price, the odd one of those little 90 volt and 1½ volt batteries used in the early '60's valve portables.

Another problem comes from the circuitry of those simple one-valve receivers. They were usually basic regenerative detectors with detached signal from the anode of the valve being fedback *via* an added winding on the input tuning coil. This winding was phased to give positive feedback and would be connected to the receiver earth through a variable capacitor which acted to control the amount of feedback. Nice simple system — the good old reaction control of fond detestation. In those days a "smooth reaction" was not saying "Sorry sir!" when accidently happening upon a lady in the bath: it was hard won with a steady hand on a bakelite knob! Then all the radio surplus stores had that fortunate facility of being able to produce from dusty wooden boxes 0.0003 micro-farad mica dielectric condensers suitable for reaction controls. The question for a modern constructor is, where does one get hold of a cheap 300pF variable capacitor or for that matter the 500pF variables (0.0005 micro-farad condenser) so often used for the main tuning control? I suppose there are those little polycon things that are used in cheap transistor radios but they are often difficult to mount and even worse to get a decent knob on them.

The Circuit

One of the many things that make me innately unsuited for my job is my ability to remember faces but to steadfastly forget their owners' names. One marginally useful byproduct of this facility is that I can remember circuits and often where to find them amongst my random arrangements of papers and books. Some time ago I received some information about a little company in Australia which sold genuine components and oddments from the valve era of amateur radio and even supplied kits to build vintage radios. I attempted to contact them but understand that they went out of business. I recalled a little circuit in their literature which not only used a battery valve on a 9 volt high tension line but also





Rear view of the "SWM-50"

used electron coupled feedback for regeneration, which does away the need for a variable capacitor as a reaction control. I sought and found the circuit and began to play about with versions of it.

The end result was the circuit shown in Fig. 1. The circuit emerges as the good old "leaky grid" detector together with the equally redoubtable electron coupled oscillator. The feedack is taken from the cathode of the directly heated valve and applied *via* a tapping on the tuning coil, L1. The voltage on the suppressor grid (pin 4) of the pentode valve, in conjunction with the ratio of the tapping point to the total winding of L1, allows the valve to be brought into and out of oscillation. A potentiometer, VR2, controls this voltage and acts as a regeneration control.

Table of Values
Fig. 1

R1 = 2M2
VR1 = 1K linear
VR2 = 100K linear
C1 = 100pF
C2, C3 = 0.002μF disc
VC1 = 300pF variable, *see* text
VC2 = 10pF variable, *see* text
RFC = about 100 turns of 28 swg scramble-wound on 1-watt resistor
PH = high-impedance phones
V1 = DL92, N17 or 3S4 1.4v. heater pentode
SW1 = single-pole on/off switch

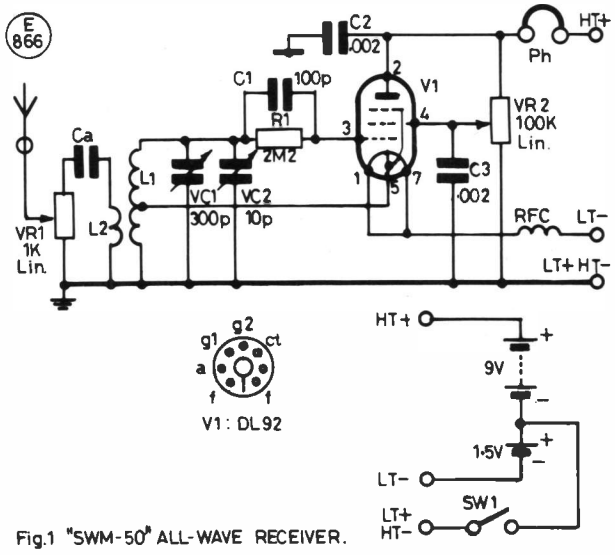


Fig.1 "SWM-50" ALL-WAVE RECEIVER.

The valve used is a DL92 directly heated battery pentode. The alternatives are the 3S4 or N17. The question was — would it work on only 9 volts of high tension supply? After playing around with several examples of it for some time, the answer seems to be — just about! Now perhaps a little word of warning: the circuit is simple but it can be fussy. The valve is being operated in the doldrums of its characteristics and regenerative detectors are far from the modern "you-pressa-da-buttons-I-doha-da-work" receivers so loved of amateur radio retailers these days. That reaction control is a REAL control and has to be set either at the point when oscillation is about to begin or has just begun. You will have to OPERATE this receiver and may even have to adjust the tapping on L1 to suit your own receiver, so you may have to EXPERIMENT. This could be amateur radio!

Following the signal path: the signals picked up by the aerial go to a simple attenuator control VR1 and are fed *via* Ca to the input winding of L1. It may seem odd to attenuate the incoming signals of such a simple receiver but in regenerative receivers, so many factors affect the operation of the circuit. Too great an input signal can swamp the regenerative action. The amount of input signal can be quite critical and VR1 will not only act as a receiver gain control but also allow the optimum amount of signal to reach the detector. To that end, no fixed value of Ca has been given. Its value depends largely upon the aerial to be used with the receiver. An efficient aerial will deliver more signal to VR1 even to the point where VR1 has to be backed off almost completely to obtain reliable operation of the regeneration. The value of Ca should be such that VR1 has to be turned well up to obtain reasonable results. Ca should not be over 100pF but with efficient aerials could be as low as 3 to 8pF. Try it and see . . . I told you this would be fun!

The receiver is tuned with L1 and VC1 and VC2. VC1 is the coarse tuning and VC2 the fine tuning or, as they used to say, the bandset and the bandspread. The two variable capacitors used could be expensive items but thankfully *J. Birkett* of Lincoln has been selling some reasonably priced variable capacitors; one type being a two-gang 200pF plus 100pF and another a single-gang 10pF. VC1 has both gangs of the 200 + 100pF joined in parallel to give 300pF, and VC2 is the single 10pF variable capacitor.

L1 is a homewound plug-in coil. Plug-in coil formers are no longer easy to obtain so these were made from what was to hand. The body of the former is a plastic 35mm. film cassette can. If you are not a 35mm. film user, try your local film processing shop, they usually throw out dozens of these cans everyday. The plug-in base is made from the base of an old valve. The older octal or 4/5 pin valves have a glass top and bakelite base with pins. Old octal valves are not too difficult to find, although I used bases from

some defunct 4 pin valves. It's really butchery — smash off the glass top, remove the contents from the base and the film can should be a push fit. The bottom of the film can is easily removed with a marking knife before the can is pushed into the base.

VR2 is another linear potentiometer which, in common with VR1, must be a carbon track type — not wire wound as the winding could be inductive. The headphones required are high impedance; 1,000 or 2,000 ohms. The heater choke is just a lot of turns of wire wound onto the body of a one watt resistor.

Construction

The receiver uses the classical method of valve circuit construction: a metal chassis which carries the valve and coil holder with the interconnections hard wired underneath the chassis. The chassis is the lid of a *Minffordd's* A48 aluminium box; the base of the box could provide a base and ends for the chassis. The front panel is cut from a sheet of aluminium and styled around the large dial. VC1 is mounted on top of the chassis on a simple bracket and fitted with an 8:1 in-line epicyclic slow-motion drive. The bracket is best fitted first then the positions are available for the centre point of the dial. The three other controls, VC1, VR1 and VR2, are mounted along the front of the chassis with shafts coming through the front panel.

Fig. 2 shows the under-chassis layout. This layout shows a four-pin valve base used for the coil holder, but if an octal base is used the nearest convenient pins may be used. The layout is well spread and wired point to point. Almost any layout could be used but, remember, in a single regenerative single stage a lot of factors govern the point at which oscillation occurs, including the actual layout of the components. In practice the only problem that may appear due to changes in layout is the reaction control range and this can be adjusted by changing the tapping point on L1.

The power supply wires are brought into the back of the chassis and soldered onto a three-way group board, providing HT+, LT−, LT+/HT−. Note that the negative of the high tension is connected to chassis but it is the positive of the low tension supply that goes to chassis. The power supply is a small box which contains a 9 volt PP3 battery and a 1½ volt single cell battery with a switch in the common LT+/HT− line. The choke on the LT− line is a one watt resistor with about 100 turns of 28 or 30 s.w.g. enamelled copper wire wound as best they fit over the body of the resistor and soldered to the leads.

The coils are a little tricky to wind but follow the usual convention of being close-wound in the body of the former. The first coil I wound, and the one which gave the best results, covers roughly the range from 3 to 10 MHz. Fig. 3 shows how the windings are made. Fig. 3(a) shows the positions of the windings; 3(b) identifies the windings by number on the circuit diagram and 3(c) shows how the various windings come off the former to the pins on the base. Ideally these should pass through the centre of

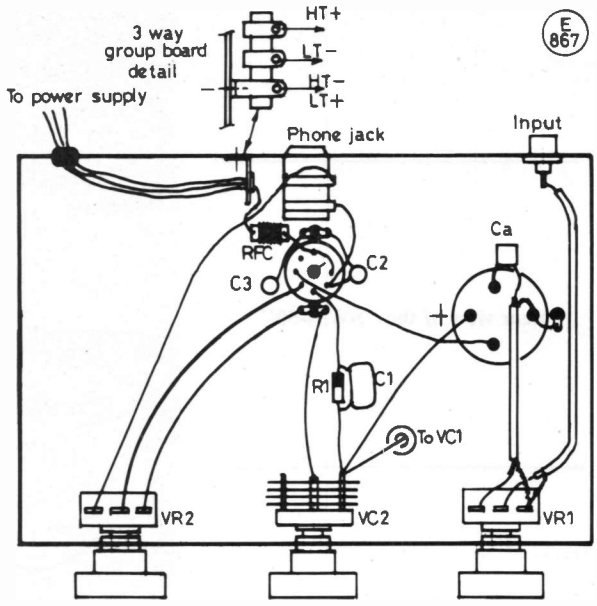


Fig. 2 LAYOUT UNDER CHASSIS

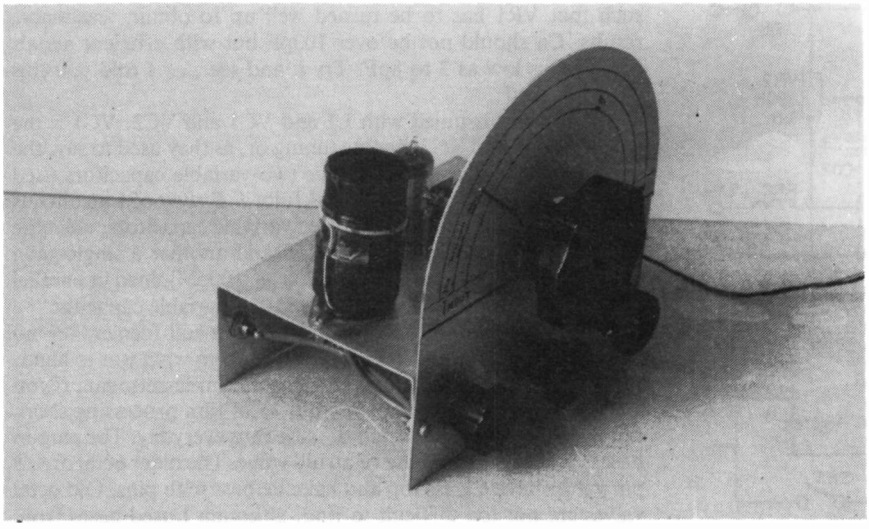
the former and to the pins. In practice I cheated and only the tapping point and the top of the main winding came through the centre of the coil on my prototype. (It would be very difficult to take the ends of the small input coupling winding through the centre.) The wires not taken through the centre run along the outside of the coil and are taken under the base then soldered to the correct pin as near to the base as possible.

My advice is to get the receiver going with the 3 to 10 MHz coil first. This coil gave the least problems in adjustment of the tapping point and covers 3 amateur bands and 3 broadcast bands. The other two coils did take more time to get right but the numbers of turns quoted gave me a reasonable reaction control over the whole range. Do take care to get the right wires from windings to the appropriate pin on the base. That may seem obvious but in my experiments I wired to wrong pins a couple of times . . . it is frustrating!

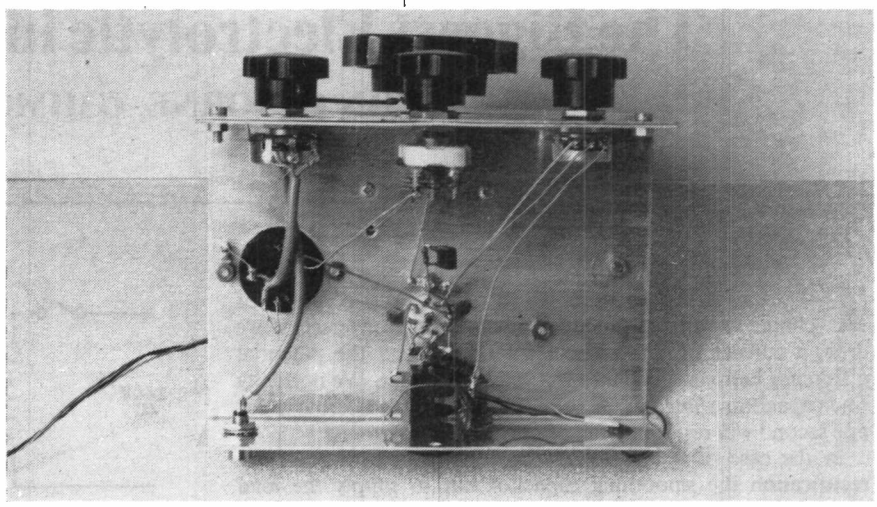
Operation

Now this is when the fun begins! It would be quite possible to test this receiver after construction and assume that it did not work simply because the controls are wrongly set. There is some interdependence between all the controls on this receiver. It works out like this:

THE REACTION CONTROL is the most important control



The "SWM-50"



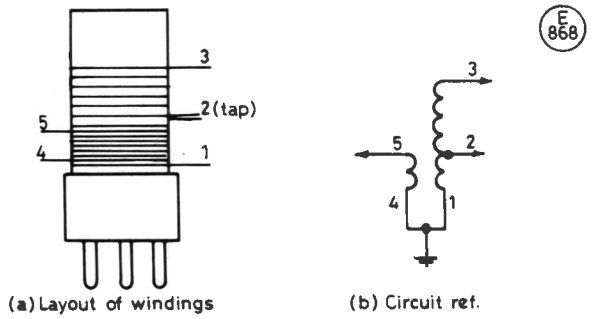
"SWM-50" chassis underside

to get right. As the control is advanced a point will be reached at which the valve goes into oscillation. This is indicated on the headphones by a faint plopping sound following by a low rushing sound. The art is to work either side of that point. Amateur radio signals will probably be either CW telegraphy or single-sideband telephony. For these signals adjust the reaction to just achieve the point of oscillation; at this point the gain will increase and the signals will be readable, the detector self-oscillation inserting a carrier. Broadcast stations on the shortwave bands use AM and these are best received with the reaction set as for the CW and SSB signals and then just backed off a little until the whistle of the added carrier disappears. The use of this control requires a little practice and is dependent upon the input signal level which is controlled by VR1. Large excursions of the main tuning control, VC1, will also affect the reaction settings.

THE INPUT CONTROL adjusts the amount of signal to reach the receiver. It is quie possible to overload such a receiver with too much input signal. The value of Ca also controls the level of input signal. The setting of VR1 and the value of Ca will depend on the type of aerial in use. It becomes fairly obvious in use if the receiver is being overloaded because the reaction control becomes sluggish and the signals received are distorted. It is probably wise to begin tests with the control set well back and increase the signal if the level is too low or, conversely, reduce Ca if the level is too high with VR1 set back.

THE TUNING CONTROLS: The main tuning control, VC1, covers a large frequency range and therefore has a reduction drive. This control is used for coarse tuning or finding the area of the signals required; the bandspread control, VC2, is then used to carefully tune in the required signal. This method of electrical bandspread was common on many receivers. It does have the problem that when the bandspread control is in different positions, the calibration of the main tuning control is altered. One way around this is to make a mark on the bandspread control at the point where it is half-mesh. Use the main tuning control with the bandspread control set at this position and then fine tune either side of the calibrated point. The required setting of the reaction control will vary with the frequency of the receiver.

Using a regenerative receiver is, as they seem to say these days, a "hands on operation". Since most of the controls interact, the operator must learn to readjust all the controls when selecting stations. A good starting point is to get the reaction about right to begin with; that is just over the "plop and hiss" point. The tuning is a matter of the correct combinations of VC1 and VC2. The input control, once a suitable value for Ca has been found, will only require adjustment between strong and weak stations. The best policy is to have it set back as far as possible with the signal still readable.



Range	Coil 1/2/3	Coil 4/5	Wire
3–10 MHz	14½ turns tap at 5¼t	3t	22swg en.cu.
7–15 MHz	6½ turns tap at 3¼t	2t	–"–
Low frequ.	20 turns tap at 8¼t	4t	26swg en.cu.
Coil former: Plastic 35mm film can pushed into valve base (see text).			

Winding data

Fig. 3 COIL DETAILS

Results

This little receiver is not going to be a technological breakthrough, in fact most things are against it! It has only one stage, uses an outmoded principle of reception and a thermionic device teetering on the edge of its operating parameters. But . . .

It can receive signals! I have used mine to listen to 80m. CW and SSB stations. Recently I enjoyed listening to a group of late night U.K. SSB stations in QSO with American stations. The Americans were not easy to copy but they were there and readable. I have also enjoyed listening to the broadcast bands using a real radio. It also has the advantage that, apart from the valve, it can be built without specialist components. For those of you who have never sweated over a valve regenerative receiver, and have only constructed solid state circuits, it could be a lot of fun.

. . . and visitors will talk about it when they see it on your bench!

COMPONENT SOURCES:

The DL92 valve: *Colomor Electronics Ltd.,* 170 Goldhawk Road, London W12 (01-743 0899).

Air-spaced variable capacitors (100pF + 200pF and 10pF): *J. Birkett,* 25 The Strait, Lincoln LN1 1JF (0522-20767).

Type A46 aluminium box: *Minffordd Engineering,* Sun Street, Ffestiniog, Gwynedd (076676-2572).

The Biggest Electrolytic in the World

JOHN OSBORNE, G3HMO

THE farad is that capacity which requires one coulomb of charge to raise its potential by one volt. Conversely if we draw a current of one ampere for one second the potential difference between the plates will fall by one volt. We normally find capacitors valued in microfarads, so that one microamp for one second will result in a fall of one volt.

In the case of a low voltage power supply with full-wave rectification the smoothing capacitor has to supply the load current between peaks for most of one hundredth of a second. Suppose we accept a drop of one volt at a current of ten amps: this requires a capacitor of ten-over-a-hundred farad or one hundred thousand microfarads. To achieve such smoothing several stages using smaller values are used in practice. Nevertheless very large capacitors are needed and values of ten thousand are typical.

The biggest capacitor in the world will supply at least ten amps for ten hours before the potential difference falls by one volt. With such a capacitor smoothing is no longer a problem; indeed the current will continue to flow for an hour or so after the power has been turned off. It might be thought that a capacitor of three hundred and sixty thousand farads would be very expensive, but not so: capacitors using lead plates and sulphuric acid electrolyte can be bought new for twenty or so pounds, and useful second-hand ones are frequently given away. I refer, of course, to the twelve volt car battery.

A Practical Power Supply

The majority of solid-state transceivers operate on a twelve volt supply. This is so that the equipment can be used mobile, one supposes. The 6.3 volt heater came about for much the same reason—American cars have been standardised on 6 volt for many years. Because the battery volts rises on charge modern equipment is rated at a nominal 13.8 volt. Thus no harm comes from using the equipment while the engine is running, when charging rates of 50 amp. or more can occur.

A practical power supply is shown in the diagram (Fig. 1). A heavy duty lead from the battery to the transceiver is made up using new battery clamps to connect to the lead lugs on the battery. These can be obtained quite cheaply from a car accessory shop. This lead is the heart of the system and ensures reliable operation on transmit as well as receive. It is false economy to improvise the battery connection or use old clamps. Once the clamps are tightened up with the appropriate spanner the system can be regarded as safe and permanent. Disastrous consequences of reverse polarity cannot occur; no spikes can occur to damage components or cause QRN. Corrosion does not occur with new dry clean clamps; a trouble free, low resistance, connection is assured as it is designed to pass 200 amp for a car starter. The transceiver switch is used for off/on: any additional switch would be redundant and a possible source of trouble.

A battery charger (Fig. 2) is added to the left hand side of the

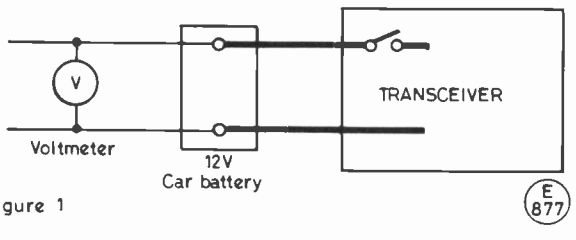


Figure 1

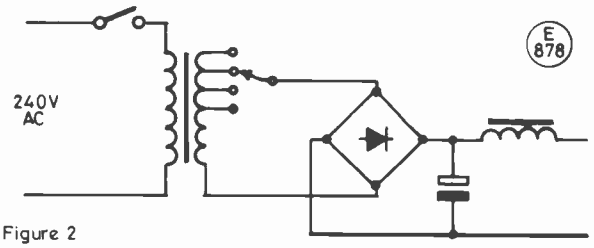


Figure 2

diagram. This is a quite separate unit and is connected by separate leads to the battery terminals. Thus here is no possibility of errors leading to running the rig on a raw, unsmoothed, unregulated supply.

The battery provides very stiff regulation. The exact voltage depends on the state of charge of the battery and, to some extent, the charging current if the charger is on. In practice this lies between 12.5 and 13.5 volts. The stiffness shows up on load. From open circuit to transmit the drop is barely perceptible, perhaps 0.2 volt. A charging current of 2 to 4 amps seems convenient in practice. There would seem no reason why much greater currents could not be used. There is the possibility of hum, though I have never encountered this. As a precaution the full-wave rectified output of the charger uses a 'small' 1000μF electrolytic and a low resistance, heavy duty choke. Being non-critical one can experiment safely with any available components. The peaks of the ripple current on charge should not be so large as to produce a troublesome ripple voltage across the battery. The effective internal resistance of a car battery is so low that, in this application, it is very unlikely to be a problem.

Operation

A voltmeter across the battery gives continuous indication of the supply position. I leave my big Avo permanently in circuit (except for very rare occasions when it is borrowed for a precision measurement elsewhere). This reads the supply voltage to within about 0.1 volt. After a period of no charge it settles at 12.5 volt. Before and during operating I normally have the charger switched on. It is not necessary to monitor the charging current (which has been checked as around 4 amp). However for longer periods on the main rig I usually wind up the charger transformer tapping a couple of volts. In practice long periods of operation are possible without the charger. The maximum transmit power will, of course, be reduced as the supply voltage drops.

Three rigs are in use at this QTH; an FT-77, an FT-290 and a ten-metre FM talk box (an S.M.C. CB conversion). All work happily off the supply to which they are permanently wired.

Maintenance

The system has been in use for over two years. I have twice topped up with distilled water in that time. Very little was needed. I have resisted the temptation to overcharge as this would cause loss of water through gassing. This could also be undesirable in that corrosive fumes would be released into the shack. Watching the voltmeter is the key; never charge unless the volts are down. Bearing in mind the life a car battery normally leads, in this application it is running very light. Not so much a storage battery, more a big electrolytic.

SHORT WAVE MAGAZINE

(GB3SWM)

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SHORT WAVE LISTENER FEATURE

By Justin Cooper

THIS is, sadly, the last time this piece will appear in its present form; however it seems that the new management want to run a similar column in the "new" *SWM,* and your J. C. to write it . . . so keep your fingers crossed that that's what happens! Deadlines will be quoted as usual, but the address for mail to be sent will now be "SWL", *Short Wave Magazine,* **Enefco House, The Quay, Poole, Dorset, BH15 1PP.**

Perhaps this is a good time to look back on the past twenty years to when old J. C. first took over the piece. Already on the HF bands SSB was the prime mode of telephony, despite the early post-war experiments with NBFM as a means of combating TVI; the first SSB transmitters and transceivers were already sweeping the board, although it was not to be for some years that the provision of adequate CW facilities made the tide irresistible. The J. C. station used an HRO and a 'Sphinx' transmitter, the old AM rig having just been disposed of — it was, I recall, a Heathkit DX-100U built from scratch. My personal interest was Top Band, and a full half-wave in the right direction, end-fed, meant that I could hear trans-Atlantic signals whenever they were about — indicated always by the presence of LORAN around 1850 kHz. Hardly anyone was on Two in those days, and the band was divided into segments geographically; you had a crystal controlled transmitter with output in your segment of the band, and after a CQ call you indicated where you were listening for and then tuned the relevant segment, using a receiver made up of a converter using the main receiver as tunable IF. Even today you would be hard put to to find a VHF receiver set-up as sensitive. The Band Plan was known to all, and everyone had 25 watts or more of AM into a good gainy aerial system, and so much good DX was worked; it was all helped by the fact that there were no repeaters and FM boxes to clutter half the band with squeakies and jammers, and if one was found he never had the courage to do it again! In fact the equivalent squeaky invariably haunted Top Band which made it easier to find and suppress him. Receivers generally were already 'ham bands only' and one has happy memories of the KW-77, AR88D, HRO, and Drake 2B; and we could find our way back to a given frequency with at least as good accuracy as we have on the modern rig, using various methods none of which made the QRM nowadays generated by digital techniques.

Great Days!

In terms of HPX, a good score was reckoned to be 1000, and many an SWL would 'retire' at that score. Receivers were often pretty basic; a couple of BC transistor portables, using the oscillator radiation of one to provide 'front-end' injection to the other and adjusting the injection levels by moving the receivers about relative to each other. Another solution was to home-brew a receiver, usually a one-valve TRF. Although the direct-conversion receiver became popular during the latter years no SWL to my memory ever entered HPX with one, it being fashionable by then to go out and buy — but your J. C. himself collected some 2200 CW prefixes with one, buckled to an indoor dipole.

The Mail

My note about the reforming of ISWL last time round had one interesting result in that they got a letter, addressed to *me* at their address, asking for more details of ISWL membership! All's well that ends well, but it points up the need for everyone to pass on to others that ISWL is back in business. We do know that for various sad reasons their mailing list was far from complete and quite a few members will have not been notified of reformation. The address for enquiries is: Jim May, G1GWG, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA.

The final HPX Listing for 1986 from *E. M. Gauci (Sliema, Malta)* shows that he managed some 1206 prefixes during the year as compared with his All-Time Post War level of 3036. It is interesting to note how this compares with, for instance, a good contest score, or the time taken to work 100 countries. The first entry for the 1987 Jubilee Year DXCC listings shows it took less than a week to work 100 countries from the U.S.A.; one would think it would be easier from Europe. And 100 countries is possible in one of the big world-wide contests even at the bottom of the sunspot cycle. Hence, it would seem likely that the 200 prefixes required for a new entry into HPX would be available easily in a weekend, with 500 for an ATPW entry possible in not much longer. Just shows how it gets harder as your score rises!

The list from *M. Ribton (Gillingham)* is this time just that; and to judge by the handwriting, time must have been pretty tight — doubtless we shall hear that Mike was gardening or snowed-in!

E. W. Robinson (Felixstowe) agrees 100% that to spend lots of money on an expensive receiver and then connect it to a poor aerial is nonsense; he has had his receiver for years now, and knows how to service it and keep it up to scratch himself, and he hasn't changed his gear in all the years he has been contributing.

> Will all readers entering the 1987 HPX Ladder please make up their new score and get it to us in good time to meet the deadline, addressed to "SWL", *Short Wave Magazine,* **Enefco House, The Quay, Poole, Dorset BH15 1PP.**

Now we come to *W. J. Prior (Lochcarron)* who comes from that part of the world where people catch tiddlers in the burn at Tullich. But Bill fishes for prefixes and countries and dreams of aerials that stay upright despite all the winds can do. Bill is looking for an aerial that will give him a respite from all this, and is looking at the possibilities of either some 375 feet or wire along the fence of the property, or a 14 MHz dipole fixed to the eaves of the bungalow, about 9 feet above ground. The only answer the writer can see is to try and see what happens! Seriously, that is often the best thing to do at a site where the terrain and natural conditions outweigh all the theories. It'll be interesting to hear what the results are.

We seem to have made a bit of a mess of the lists from *P. Davies (Market Drayton)* as we entered his All-Time total in the Annual Table for which we must hang our head in shame, the more so as the lists are beautifully clearly typed and presented. Sorry, Philip! On a different point, Philip notes the problems with Strong EU signals spreading, due to the lack of selectivity in his old 840A; it might be worth considering seriously whether to add ceramic filters to the IF strip and realign, with maybe a little more audio gain to make up for the insertion loss of the extra filtering.

Two letters and an *s.a.e.* came in from *Mrs. A. Sitton*

(Stevenage) who notes that she made her 200 prefixes in 1987 by January 5, and that is despite the claims of the cooker, the OM and the chores; indeed she was up to nearly 300 by the time she wrote on January 12. By now, she should know whether or not she has passed the RAE — and for that we must all hope.

N. Fox (Wakefield) puts his score down to his varied times and short spells of operating, plus the local terrain, with an unobstructed line of fire in all directions, save possibly N.E., in which direction lies Leeds city—sounds a bit like those old sailors' charts, annotated with words like "Here be Sea-Serpents!" Seriously, Neil has a very valid point; it is always worthwhile to look carefully around the bands at a different time each day, and on occasion to explore the bands at night too. Apart from hearing more stations, you will gain a 'feel' for what is the right time of day at which to look for a particular part of the world on a particular band.

Nice to hear again from *J. Doughty (Cheslyn Hay)* who notes how things picked up for him towards to end of the year, with such things as 7P8 and the first VK of the year logged.

New Chum

A very nice letter comes in from *N. Melville (London N18)* who has run his Trio 9R-59D receiver since he got it upon retirement back in 1970, and now he wonders how he would do without it! No doubt, short-wave listening does get in the blood after practising it on and off since first being, as it were, 'fumed into it' during Hitler's War. The receiver is now getting to the stage when it could do with an overhaul and new valves, but alas Neil hasn't been able to get any so far. On a different matter, Neil has his doubts about the status of JT1KUL, Outer Mongolia, heard back in 1977, but there seems little reason to doubt the validity of the station.

Award

The Oswestry and District ARC have an award called the Border Award, which entails hearing (working) an Oswestry Club member, or the club station G4TTO, or any special-event station run by the club, *plus* ten stations in each of the counties specified for U.K. and Eire entrants, or five for other countries. The Border Counties are defined as: Clwyd, Powys, Gwent, in GW, and Cheshire, Shropshire, Gloucestershire, and Hereford/Worcestershire. Claim by way of a list of the stations logged, certified by two other operators, to give date, callsign, frequency, mode, and county, plus a sum of £1.75 or 10 IRCs, to the Awards Manager, PO Box 6, Oswestry, Shropshire SY11 1ZZ. All stations to have been heard on or after January 1, 1987. There is also a VHF award which started in 1986, and both are open both to transmitters and SWLs; details from the same address.

ANNUAL HPX LADDER
Starting date, January 1, 1986

SWL	*PREFIXES*
L. Marquardt (Hereford)	492
J. Doughty (Cheslyn Hay)	362
B. Musselwhite (Warminster)	338
D. F. McGlone (Limerick)	208

200 Prefixes to have been heard for an entry to be made, in accordance with HPX Rules — see p. 339 November issue. At score 500 transfer to the all-time list is automatic. This is the final listing, and includes those who have entered a separate, all-mode list to find who has heard the most prefixes in 1986. In the next issue, we will show the first listings of the 1987 table, to include all Prefixes heard since January 1, 1987.

E. M. Gauci (Sliema, Malta)	1206
F. Dunn (Chester)	1166
P. Davies (Market Drayton)	858
Mrs. A. Sitton (Stevenage)	814

HPX LADDER
(All Time Post War)

SWL	*PREFIXES*
PHONE ONLY	
B. Hughes (Harvington)	3227
E. M. Gauci (Sliema, Malta)	3083
Mrs. R. Smith (Nuneaton)	2615
E. W. Robinson (Felixstowe)	2506
H. M. Graham (Chesham)	1895
M. Ribton (Gillingham)	1769
M. Rodgers (Harwood)	1755
P. Oliver (Paisley)	1730
F. Dunn (Chester)	1541
N. Henbrey (Northiam)	1513
N. E. Jennings (Rye)	1416
N. Askew (Coventry)	1367
P. Davies (Market Drayton)	1310
R. Fox (Northampton)	1305
G. Shipton (Rye)	1091
J. Routledge (Hartlepool)	1011
B. Patchett (Sheffield)	950
A. P. Lincoln (Aldershot)	888
Mrs. A. Sitton (Stevenage)	878
R. Wooden (Staines)	814
J. J. Sales (Lancaster)	845
R. G. Williams (Borehamwood)	768
S. Field (Barningham)	735
G. Caselton (Orpington)	698
A. Vest (Durham)	605
N. Fox (Wakefield)	595
S. Wilson (St. Andrews)	559
J. Singleton (Withernsea)	506
CW ONLY	
F. Dunn (Chester)	1994
J. Goodrick (I.o.W.)	1763
N. Melville (Edmonton)	999
A. Vest (Durham)	858
J. J. Sales (Lancaster)	400
RTTY ONLY	
N. E. Jennings (Rye)	683
P. Lincoln (Aldershot)	535
W. J. Prior (Lochcarron)	464
J. Routledge (Hartlepool)	354
N. Henbrey (Northiam)	334

Starting score 500 for Phone, 200 for CW or RTTY. Entries in accordance with HPX Rules — *see* p. 339, November issue.

It is always pleasant to hear of an SWL getting his 'ticket' and *L. Marquardt (Hereford)* gets our congratulations this time, for his acquisition of G1VDW. Luciano has thus been able to add to his collection some of the prefixes noted on VHF in the course of his operating.

Next we have another of the long-time contributors, *N. Henbrey (Northaim),* who sent his list off a mite early because of the atrocious weather, and was looking forward to the White Rose SWL Contest for which Norman wanted good conditions!

Ancient Modulation!

How much AM is still to be heard on the bands? So asks *R. W. Williams (Biggleswade).* The answer is "Not a lot!" — but there are a small number of enthusiasts about, and in U.S.A. there is a club devoted to the preservation of AM on the amateur bands. The truth of the matter is that AM will go almost anywhere SSB can, given a clear channel; but old-timers will remember just what a cacophony the 'phone segments of the bands were, simply covered with the various carriers heterodyning each other — which was of course why everyone who wanted to work anywhere out of town used CW and learned to enjoy it. On a different tack, SWL Williams notes some fairly good aerials about, as for instance VK3DPU with an eight-element log-periodic, up at 32m. above ground, or K1JJ who has an eleven-element parasitic beam on a boom 300 feet long and at a height of 60 feet! We could add that we believe the latter has the means of 'tweaking' each parasitic element from the ground. That of course is why amateur radio can never be *really* popular in this country: we are too hemmed in by inconsistent and sometimes fatuous planning regulatons because our hobby isn't as fashionable as, say, car-owning!

F. Dunn (Blacon) agrees with G8PG's remarks about the 'Quiet Sun', and adds that not only has Eighty been good but also Twenty — the latter has shown both surprises and also very rapid changes in conditions.

R. G. Williams (Borehamwood) comments that the SWL columns are vital for the SWLs — they read about other SWLs passing RAE, and it gives the hesitant ones the courage to have a bash. For the future, there is always the thought of a nice new NRD-525 and six-element beam to replace the FRG-7 and Joystick. Such optimism!

A very short note this time from *B. F. Hughes (Harvington)* at the top of the Ladder; apart from recovering from the Christmas and New Year junkets, Bernard drops a hint that he may yet move to another area.

Another one to indulge in a right rave-up over Christmas and New Year was *P. Oliver (Paisley)* who noted with sadness that he would have to go on a diet in order to get another sight of his feet! Don't worry until you find you can't reach the receiver controls.

Vale

Last month we had the sad duty of noting the passing of Norman Jennings in Rye, and this month we were saddened once again to hear that Norman's pal George Shipton, also of Rye, died a week later. Norman served in the Royal Signals and was on the Burma Railway as a prisoner, being wounded in the American raid on the Bridge over the River Kwai. Post-war has was a Stock Exchange clerk, retiring in 1975. George served throughout WW2 in the London Fire Brigade, and went to Rye in 1982 where although disabled he quickly became known as a bowls player and secretary of the local club. Both will be greatly missed, not least by Ian Thomson who got the above details together for us, and permission to use it, from the *Rye Gazette;* Ian is the last of the Rye SWLs to be operational, but is now G1OZR, and finding his time is more spent in operating than SWL. Thanks Ian.

Finally, *S. Field (Barningham)* who is now G1VTR, says his aerials had to come down because his mother as 'station commander' required it, and anyway some horizontal aluminium ware had to go up aloft; so the HF dipoles are no more, and the listening is now sporadic at best. Stuart is another one who found that contributing to SWL was a factor in passing RAE.

The *very* last on the pile is the list from *M. Rodgers (Harwood)* — and as always this lad says nowt but keeps on climbing the Ladder!

Finale

At the start we hinted that the column would continue, and since then that has been confirmed. Perhaps a little less space, but on a monthly basis; so we need all the support you folks out there can give. Send your news, views, and questions, on all bands up to 10 GHz, to: Justin Cooper, "SWL", *Short Wave Magazine,* **Enefco House, The Quay, Poole, Dorset BH15 1PP,** to arrive by **March 18th,** latest, for the May issue.

See you all!

The "Transist-a-Loop" Antenna

a simple MW device

R. Q. MARRIS, G2BZQ

MEDIUM Wave loop antennas do not come any simpler, or cheaper, than this!

In most months, in one of the various electronics magazines, a design appears for a Medium Wave DX receiving loop for connection to a radio with an external antenna requirement. Invariably it is quite correctly pointed out that it cannot be used with a transistor radio with an in-built rod antenna, even if it does have a socket for an external antenna. This is because the nulling of the transistor radio in-built ferrite rod antenna will not coincide with that of the MW loop. Sometimes a rather vague reference is made to the possibility of inductive coupling a transistor radio (with in-built ferrite rod antenna) to a MW loop, *i.e.* no electrical connections.

The "Transist-a-Loop" is such a device, which, by inductive coupling, will greatly extend the operational range of a good transistor radio (and presumably also a "not so good" one!). It uses a 20" x 20" frame configuration which is a convenient size to go onto a table. No electrical construction skills are required.

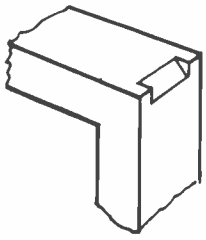
If you can do a simple bit of woodwork, wind a few turns of wire and solder just two connections — then you have the "Transist-a-Loop"! This simple device will greatly extend the operational range of your transistor radio!

Construction is shown in Figure 1. It consists of a simple 20" x 20" wood frame, using ⅞" x ⅝" dry timber, with a platform, at right angles to the frame, located in the middle of the bottom limb. The platform, which is raised by two 1" blocks and located as shown in Figure 1, is used for supporting the transistor radio in the correct attitude. The platform size depends on the size of the radio. A sheet of very fine glass paper is glued to the top of the platform to stop the radio 'slipping off' when the loop is rotated. Incidently, rotation of the writer's various loops is effected by means of a simple turntable.

The four sides of the wood frame are fixed together with *Araldite,* and great care is needed to ensure that the corners are absolutely at right angles. Supporting blocks are screwed to the platform which is fixed, with *Araldite,* to the inside of the bottom frame member as shown. At each corner of the frame a ⅝" wide slot is carefully filed to a depth of about 1/16" — *see* Figure 1(b) — so that the winding does not slip off the frame. The whole wood assembly can be stained with spirit based wood dye.

A good quality 500pF variable capacitor is used to resonate the loop, and is mounted on a small piece of non-metalised circuit board, just above the middle of the left-hand limb of the frame.

Just under 27 metres of stranded 7/0.2mm PVC covered wire (1.2mm o/d) is required for the loop winding. The winding starts, and ends, in the middle of the left-hand frame member, in which



Corner detail - file out slot on each corner - 5/8" wide

Figure 1b

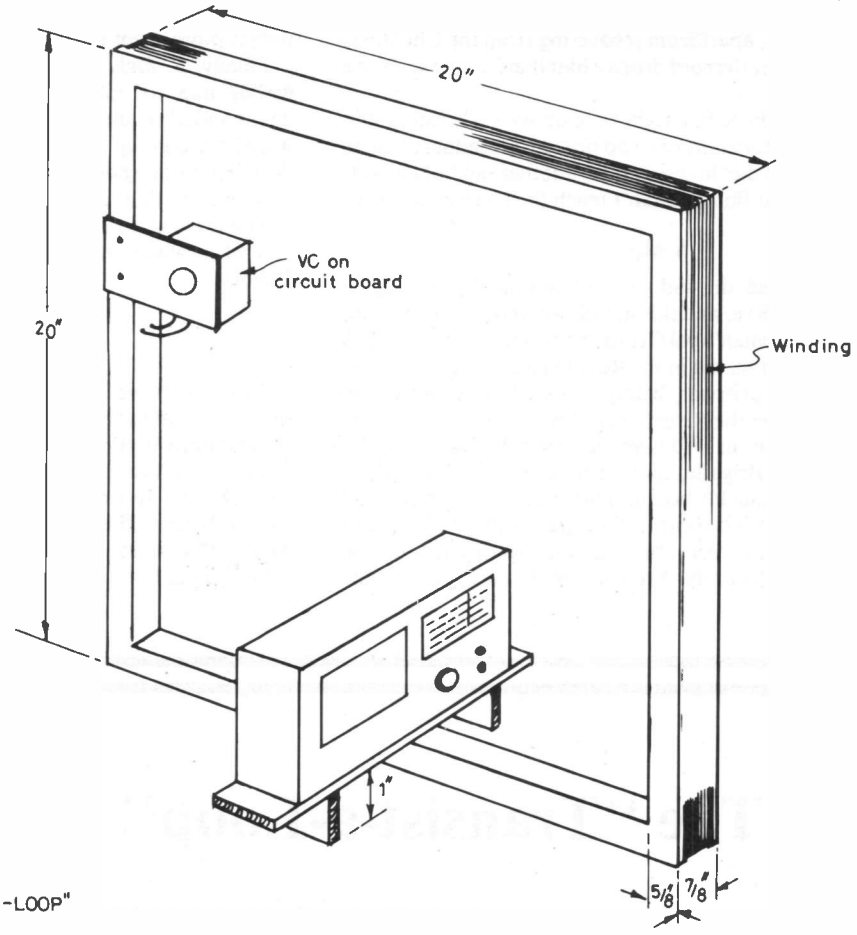


Figure 1a THE "TRANSIST-A-LOOP"

two small holes should be pre-drilled; 13 complete turns of wire are closewound around the outside of the frame starting, and ending, at the two feed holes with 6" lead outs for connections. A couple of strips of masking tape should be wound around each side of the frame, to hold the winding firmly in position. The two 6" lead outs are cut back, as required, and soldered across the variable capacitor. The "Transist-a-Loop" is finished!

Testing the loop is a simple operation. It should be mounted on a wooden surface (*e.g.* a table) and not a metal surface.

Tune the transistor radio to a weak signal at approximately 1600 kHz (187.5 metres) and place on the loop platform. Rotate the loop resonating capacitor for maximum signal and rotate the loop slowly through 90 degrees to increase the signal when the loop is lined-up with the station. When this point is reached the loop should be rotated through 90 degrees; the signal will disappear, or be greatly reduced, at the null. The operation should be repeated with a weak signal at the LF end of the MW band near 550 kHz (545 metres), and when resonated the variable capacitor will be about 75% enmeshed.

If there is interference from another station, the loop should be slightly rotated (with the radio on the platform) and the interference can usually be removed/reduced. Apart from QRM removal/reduction, it will be found that local in-house domestic electrical interference can also be removed/reduced by loop rotation. The polar diagram of the device is shown in Figure 2.

It must be stressed that the transistor radio plus "Transist-a-Loop" combination will do nothing for strong or medium strength signals — that was not the idea! It will, however, effectively greatly increase the signal strength of the weaker signals, which *was* the intention. On occasions it has been possible to hear stations which are not present on the transistor radio on its own. And, of course, it will greatly reduce or eliminate QRM/QRN!

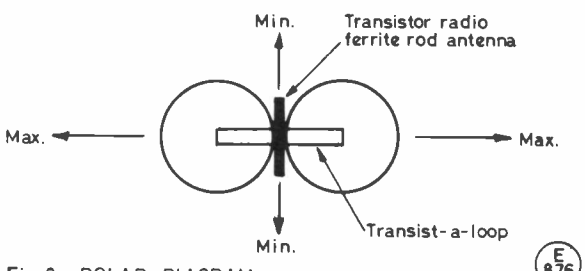
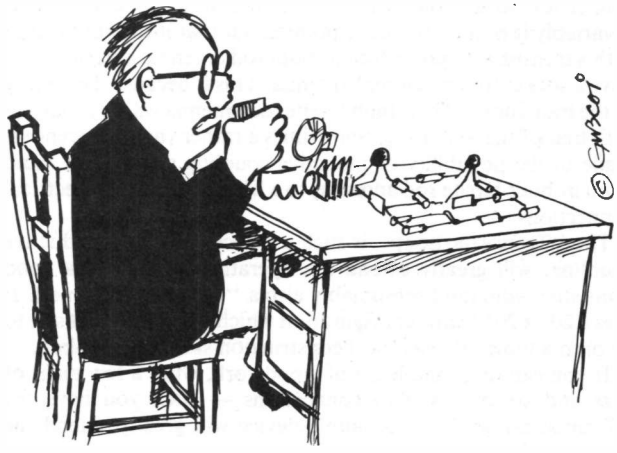


Fig. 2 POLAR DIAGRAM



"This rig is built exactly according to the book . . ."

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

IN many ways this is a sad occasion: my last "CDXN" column, after some 21 years 'in the chair'. However, I will still be writing a DX column, but under a different title "(On the HF Bands)" and in the pages of *Practical Wireless,* and so of course I sincerely hope you will all support this new column with your offerings of DX worked, DX heard, gotaways, tall stories and whatever, which have provided such a fount of interest and amusement for so many years.

The Bands

We seem to be on a 'high' at the moment, and it points up just how small a change in sunspot level or of the negative factors is needed to produce the difference between a dead band and a super one.

As to the question of whether we have indeed passed the bottom and commenced the upward, about all the writer can say is that he would be prepared to take odds on it, but would not be prepared to put on *too* much money — civil servant type words, but the best I can do at the moment! Nonetheless, the week prior to this being written showed no days of zero counts, and there do seem to be a majority of spots at high latitudes. All HF operators, and all Dx-ers should be practising the sun dance, and prodding the sundance kids into doing their thing on our behalf; and if you want to drag in witches and the DHSS to our aid, fine. *SPOTS* are what we want, on the sun's face!

Ten Metres

At this low period in the sunspot cycle, what is needed on Ten is more *activity,* over and above the CB-zapping exercise when they intrude, and beacon-listening. If a beacon is audible but nothing else, *put out a CQ call* and try and rustle something up, even if it's 'only' a European or even a local; it all helps to maintain the activity level, and so the usage. To be fair, there has been far more activity this time round than we recall in the previous two sunspot minima, but more is needed.

Our first reporter on the band is GM4WJA (Elgin) who divides his list up by dates, stations worked, stations heard, and beacons. On Christmas Day he heard DL, but noted beacons DL0IGI, DF0AAB, ZS6PW and Z21ANB, but worked nothing. Perhaps some of us should have foregone the Christmas pud! December 27 showed up F6FIO and ZS3BI worked, D64QL heard weakly and wondered about, and IY4M of the beacons. January 3 seems to have been good, with ZS6BZT, G3WBN, F2YT and PA0DUO worked, plus DL, DJ, SM, DK, OZ, G and GM heard, plus most of the EU beacons. On 4th, IK2FWS went into the log, DL, G, and I stations heard, and beacons in G, I, and Germany noted. For the rest of the month there was activity, and beacons audible on various days, but no more DX, save possibly Z21ANB heard again. The D64QL was very weak, and before GM4WJA could be really certain of his identity, his PSU gave up, putting paid to activity for a day. We also wonder: D68QL of course has been around — Lloyd and Iris Colvin — but we doubt they would have spent much time on 28 MHz; so we must just wonder what it really was.

A negative report on the band from G3NOF (Yeovil), although, to be fair, Don does 'keep his ear to the ground' and says that others have had contacts.

Turning to G4ZZG (Warrington) we have a largely negative report; Charles worked G3EKP on ground-wave on January 5, plus a few EU gotaways. However, the regular CQ calls just didn't turn anything up. One would have thought there might have been something, if only on the basis of pure chance, knowing that there has been propagation on so many days. Charles also notes that in the evenings ZD8CW (Ascension) was working Gs at a rate of knots — but not alas, G4ZZG!

Now we turn to Angela Sitton (Stevenage) who noted a twenty-minute opening to I, YU, HA, LA, and UA, between 1128 and 1148 on December 14, while January 1 at about the same time showed the same sort of stuff plus SV1. Incidentally, Angie will have the RAE pass, all being well, by the time you read this, and will also have taken the Morse test, so let's hope she will soon be reporting from the point of view of the licensed amateur.

New Bands

What a pity we share them! However, one does hope that the low power level will not only be maintained, but spread world-wide where these bands are concerned, to the benefit of all and sundry. A band where *everyone* is on low power and simple aerials would be a delight, and would in addition provide valuable propagation data.

However, for this time we have a shortage of reports. DJ6FO (Sinzig-Bad Bodendorf) seems to have found the period 0800-0830 best, for at these times on 10 MHz he managed to work VK2DUY twice, ZL2AGY, VK3XB, and VK4MJ.

Coming — and Gone

This is the place where we look to see what is coming up, and what is recent history, and what is still in dreamland.

Of course, the 'gone' bit refers to the items which have popped up at short notice, and gone away again between the time this is written and the time you get around to reading it. Probably the best answer to this is to subscribe to RSGB's *DX News Sheet;* it still carries the format originated by its founder, Geoff Watts, although it now runs to more pages of material, and some general-interest paragraphs. Being a weekly, with a tight deadline, it is fair to say that not much of real consequence is unmentioned. After all, anybody with a bit of nous can hook himself 100 countries given a mite of application, but when you get into the more rarefied upper layers, you need to be aware of the goings-on as and when they crop up. It is also a handy thing to have Geoff Watts' *Prefixes* list on the operating table, too.

"On the HF Bands" deadlines for the next three issues of Practical Wireless

June issue — March 27th
July issue — April 24th
August issue — May 22nd

please be sure to note these dates

DXNS reports that the 5A0A expedition documentation has now been approved by the DXCC desk and cards may be submitted for credit, and several people report cards having been received from SP6BZ.

The South Georgia expedition planned by VP8BLQ was cancelled, and in the same quarter the South Shetland one by LU6UO was also cancelled due to family illness. However, 4KIF is QRV from Bellingshausen Base on S. Shetland.

VS5 Brunei activity is to be hoped for, by G3CWI; *ex*-VP8ANT will be there for a couple of months and hopes for a licence.

Montserrat, VP2M will be represented by VP2MSE until April 4; this is W2WSE and QSLs go to his home call.

S79LJ has been doing good business from the Seychelles, and QSLs are to G4LJF. Talking about this part of the world, does any reader know what became of VQ9HB, Harvey Brain, who was in that part of the world for so long?

On a totally different tack, that Golden Jubilee DXCC Award for 100 countries in 1987 has produced a flurry of activity; the first one known to have made the 100 was W6GO. Jay made the last one at 0042z on January 3; just 48 hours for the 100 worked — but we'll take a small bet that he'll have to struggle to get the cards in by the *end* of the year!

The proposal for an August DX-pedition to Mellish Reef seems to be firming up nicely; another one to keep an eye on.

We previously mentioned the failure of the KD7P effort to get to Peter 1 Is., but we hear the LA operation was going well, and hoped to knock up a goodly total of contacts; the main question seems to have been "how do two operators keep at it so long without sleep?" This question worries a trifle, as when people get that tired one must expect the odd slip-up in the logging. Nonetheless if they knock up the 15,000 QSOs they are reported to be after, they will have done a fine job.

Towards the end of this month, but before you will be able to read this unless you are very lucky, will be the St. Peter and St. Paul Rocks expedition by the PYs, using the ZY prefix.

As this was being written, the latest issue of *DXNS* surfaced, and in it we note that a group of VUs will be activating Andaman & Nicobar Is. with some 20 operators in an exercise lasting six to eight weeks from February 20. This one is almost a certainty for fireworks if it in fact comes off.

Another one that didn't give enough notice to enable us to pass on the news in time was the recent Revilla Gigedo operation, XF4DX, with QSLs to K9AJ.

That Spratly Is. proposal of a month or two back was a busted flush; we've heard so many conflicting tales as to why it didn't come off that we just won't comment!

Finally, we have the most interesting question of what's actually going on in the way of A61 activity; about all we can say at the time of writing is WFWL — work first, worry later!

Top Band

Now that quite a few people have made the 100 countries on Top Band, the next target to require cracking is WAZ — all CQ Zones. Now we hear that G3SZA wants only Zone 26 to make the full set; and to make that he'll need some Top Band activity from the Andaman DX-pedition noted elsewhere!

Talking of DX operation on Top Band, *DXNS* carries a request that natter nets should please avoid the segment 1907.5 to 1912.5 kHz, which is the area in which the JAs are confined — and the JAs are struggling to work Europeans. Of course one of the problems here is that the majority of the net-and-natter operations are being done by non-DX stations with very poor aerial systems.

Still with Top Band DX, we hear that 3A2EE is reported to be a pirate, but 8Q7CH will doubtless have eased the pain for some; and we hear that 5H3ZO has operating permission for 1830-1850 kHz.

We must admit to a slight surprise at hearing from G2HKU (Isle of Sheppy) this time, after those horrendous pictures of the island during the snowy period in mid-January. Ted says that the papers got through in three days, but there was no post for nine days, in either direction; and that was a worse performance than during the 1953 floods! On the amateur radio side, Ted was put off the air several times; ice on the aerial fetched the G5RV down, although the vertical ATV5 stayed up and continued to work, once the snow had been dug away from the feedpoint. Operation was maintained by running the Argonaut on a car battery while using oil lamps for lighting during the power cuts. But then of course there was the noise from power lines: when icicles dripped from line to line, there was an arc which persisted for about 15 seconds until the icicle melted and then stopped — until the next one broke over! Perhaps the most comic bit is that British Rail, to clear the snow, had to bring a blower-type snowplough down from *Iverness* to clear a route on to the island! However, as a result there was more activity, and on Top Band Ted mentions SSB with NP4A (Puerto Rico) and CW out to KM1H, VO1MP, GM3PFQ, K5NA, I2UBI, 4X4NJ, ON4UN, GM3IGW, K2EK, HB9DCO, AA1K, W2GD, UP2BRJ, YU2TW, EA6ET, DK0MS, W2ZZ/CT3, UP2BJK/A, HG5A, DL1YD, PA0LOU, and LA2UA with the main station; and QRP at four watts added GM3OXX/A, YU4YA, DK8FD, DL0JU, and DJ3XK.

At the end of March, we hear, VE3FXT and a ZS operator will be activating A22 on Top Band — the first known operation from there.

Eighty

For most people a natter band in the main, in which people can exchange views about this-and-that in the maximum of QRM . . . but there is also DX activity to be found, both on CW and Phone, not to mention lots of other goings-on among the special-interest groups such as the QRP merchants.

G2NJ (Peterborough) notes that G3KPO, the curator of the Wireless Museum in the Isle of Wight, has been off on his travels again, this time to Majorca, where Douglas seems to have found himself at a special event station set up at Palma, thus enabling him to get to know the locals.

Nice to hear again from Dieter, DJ6FO; on Eighty, Dieter managed contacts with JA6YBA, UA9JC, UA9MAC, UW9OP, JF2IWW, JA6HW, JA4CGS, JA5MHD, JF2VVR, VE2EDK, VE3CRG, and a QRP GM3WIG whose one watt was RST 589 to DJ6FO. The interesting thing to the writer about this is that DJ6FO seems to be able to work these JAs from before dinner to almost midnight; times at which we in U.K. can hear them *being* worked but usually can't even hear the JA end.

The G2HKU CW signals made it to K2KTT and K4FU, plus QRP contacts to DL1JT, GM4OSS, OK1DLY, and UP2BFE.

SWL Angela Sitton stuck to listening to the CW on this band in the main, and her HR-10B is clearly giving good practice in the gentle art of copying the stuff under QRM; K7EOS was only 339 to Angie while he was working DL9PR at 0621 one morning, while K2MGR was extracted from the mud around 2358. On a different tack, having had some fun achieving it, Angie has an inverted-V form wire with its apex up a tree, and we are pretty sure she is now in the market for some suitable 'persuader' to make the tree grow much faster — one must admit the idea of a tree as a crank-up mast is interesting!

Forty

Now here's an enigma of a band if you like! Some people swear by it, others at it; and one never knows when it will choose to be in form. The people who work the countries on this band don't normally say much about it, but there are hints of late months, reading between the lines of the DX sheets, that 7 MHz is becoming fashionable — a good place in which to be seen (or, more accurately, heard).

Angela Sitton reckons this is a favourite band for CW with her, and so she listens less to SSB; oddly enough, though, she did better with the latter mode, by way of HV3SJ, knocking off a load of JAs who were mostly inaudible, YX5D, 8P6RE, J87CD, all heard working CT4AT who appeared to be 'having a ball'. The CW from K4FU and JQ9OH was booked in but much was lost under the QRM from YUs, the more so as with the Morse test so near Angie was being extremely fussy about 'solid' copy. ED6VE and IR8CS were noted on SSB later in the period for a couple of special prefixes.

The full-power CW from G2HKU was used to work K0FW/2, W0SF (Iowa), K4FU, PZ1AV, FY4EE, K8CW, VP2MDY, K2SG, W4FHI, UA9FGJ.

DJ6FO found 5T5BX under a pile-up one morning, and a few days later at the same time tripped over and grabbed HK1KXA.

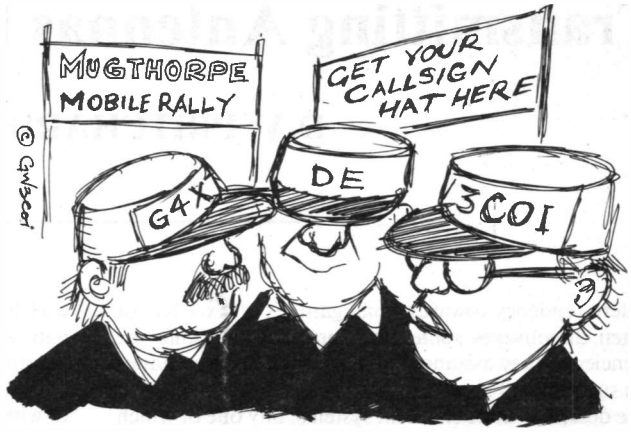
Twenty

Is where most of the action is, at any portion of the sunspot cycle — and certainly at this stage and season. G3NOF (Yeovil) noted long-path Antipodean openings in the mornings, 0800-1000, starting with the JAs, then ZLs who seem to be more regular than the VKs who followed them. The short-path has opened well between 1100-1300, and a few Pacific stations were noted by long path between 0900-1000. West Coast Ws were noted around 1600-1800, while the East Coast was to be heard between 1130 to 1800. Africans appeared between 1630 and 1830, and South Americans between 1000-1200 and again sometimes around 2100; the band was often dead by 1800 but sometimes recovered and would then stay open till very late — for instance 3Y2GV was heard at 0200z. Contacts were made with A71BJ, A92BE, C31YF, C56/G3VLH, CN8LS, CR7CP/OA7, CT3EU, CU3LA, CX1TE, D44BC, EA6SK, EA9PY, F6FVY/TU, FG5CB/FS, FK8BG, FK8FI, FM5DX, FR4DL, FR4ZD, FR5DO, FT8WA (Crozet), H5AQ, HI8RGR, HK5JPS, HV2VO, IS0AEQ, JA4IKD, K5KG/LU, KV4AD, NL7GP, N0RR (Colorado), NN7I (Washington), PYs, PZ2AC, RF0FWW, S79/W6KG, S83H, SU1ER, T12LTA, TL8CK, TR8SA, TU2LB, TU2QQ, TU2QW, TZ6VV, UA9FAR, UD6DZ, UG6GAT, UJ8DX, UM9MWO, UZ9CZI, V44KAX, VE3FXT/ZS1, VE6AKY, VK2BCH, VK2BZA, VK2DZH, VK3AMN, VK3EW, VK4AI, VK5QW, VS6DO, VU2DDT, YI1BGD, YV6PM, ZB2AZ, ZB2GR, ZD7BJ, ZD7CW, ZD7XY, ZSs, 3Y2G (Peter 1 Is.), 5V7WD, 5Z4MR, 5B4SC, 5N8HEM, 5L8E/7, 6W1HM, 7X5DM, 8P9DX, 8R1RPN, 9K2YA/IC5 (Fifth Islamic Conference). Don in conclusion recommends a look at the RF0FWW net, at 1030z on Wednesdays and Fridays at 14.195 MHz plus/minus QRM; if there is a willing DX station the net will meet on other days, so monitor regularly.

In the letter from G2HKU, Ted mentions his regular ZL contacts, this time with ZL3FV on SSB; while CW produced W8AH, N5TP, W6TD, FM5ES, TK5UC, K6LL/7 (Arizona) and VE7FJE.

Angela Sitton noted quite a lot of openings, and so only the pick of the crop receives a mention. SSB accounted for hearing VO1SA, VP8LP, HF6ABH, 5U7IL, 7X2LS, AH6GQ/P2, 4Z7T, V4RP, a couple of ZFs, S79SHW, S79V, 5B4HF, VK4OH, 9L1LA, A4ACY, 3Y2GV, 9K2KW/IC5, while the CW came in from 5T3NC, 5A7SA, ZS1RR, 5A6XF (both finding no takers), and of course the usual crop of smaller fry.

Charles, at G4ZZG, mentions ZS6MIG and ZD7AL both on CW plus ZD8CW, and notes that these should not have been audible in theory, due to the direction his aerial is oriented; he believes the fact that one leg of it has, of necessity, to slope downwards may have accounted for this.



"I think this is our first QSO in the mode, Old Man . . ."

Fifteen

Here the band has not been too good, says G3NOF; the short path to VK/YC/VU was open between 1100-1200, while Africa appeared from noon to 1600. American openings were not good, and were subject to sudden fade-outs, although on one day there was a good opening to W5 between 1600 and 1700. Don used SSB to work EA8BS, J28EM, JR8BUU/5N0, K5UCV, KM5X, S42U, SV1VF, VE3FXT/ZS1, VP8BLZ, a few W4s, W5VX, YC2CTW, ZS6ABP, ZS6BCR, ZS6FE, ZS6TLV, 3Y1EE (Peter 1 Is.) for all-time country number 344, and current country 313, 4Z7T, 5T5NU, 8P9DX, 9J2DX, 9J2HD, and 9L1AR.

Angela Sitton noted plenty of *short* openings, mainly around noon, with the odd W, VE2, FM2, ZS6, a ZX prefix from Brazil, 9J2BO, YC, UA6, and on CW ZS1JW.

Contests and Awards

The invaluable W1WY reflects on the frailty of human life; a few months ago he attended a party for K2GL's 80th birthday, and now reports Buz's sudden death just two days before Christmas — he will be much missed. Frank goes on to mention a slip-up over dates for the RSGB 7 MHz contest, too late to be of interest here, and goes on to the RSGB Commonwealth CW Contest, March 14-15, noon zulu to noon zulu. Rules can be found in the appropriate issue of *RadCom*.

Next there is the Bermuda Contest, over the weekend March 21-22, for 48 hours. The prizes for the top W, VE, G, and DL entrants is to have fares and accommodation paid to collect the prize in person, at the Annual Dinner of the Bermuda Society. Winners in 1982-3-4-5-6 are excepted. You are limited to 36 of the 48 hours, and you may work the same station one on CW, once on Phone, on each of the bands 3.5, 7, 14, 21, 28 MHz, provided there is a separation of at least 30 minutes between contacts on the same band. Exchange RS(T) and QTH, the latter for U.K. being one's county, while the VP9s give parish, Ws give state, VEs province, and DLs give DOC number. Separate log sheet for each band and a dupe sheet if you have 200 or more contacts, plus signed declaration. Entries to Radio Society of Bermuda, P.O. Box 275, Hamilton 5, Bermuda.

Finish

That's the lot: the end of the last "CDXN" column in *Short Wave Magazine*, after 21 years. However, as I mentioned at the start, I'll still be writing a DX column for *Practical Wireless* and would greatly appreciate continued support. Send your letters, addressed to your scribe, c/o Practical Wireless, Enefco House, The Quay, Poole, Dorset BH15 1PP to arrive by **March 27th.** 'Bye now, and thanks for all the fun we've had over the past 21 years — see you again in *PW!*

Transmitting Antennas for Small Gardens

D.V. PRITCHARD, G4GVO

THE modern tendency towards small gardens of sixty feet or less often discourages some amateurs from working the lower frequencies as they assume that effective antennas cannot be erected in such limited spaces.

This article describes three excellent systems, any one of which may be adapted to suit individual requirements. Although the author is fortunate in having a fairly long garden, all the antennas described here have been built within 60 feet and each has worked exceptionally well. No claim is made for originality as some ideas are so old that they are in danger of being forgotten. . .

160m. Half-Wave Dipole for 60 feet

Fig. 1 shows the layout of a half-wave helical dipole for Top Band designed to fit a 60-foot space. This antenna is ideal for the 160m. DX enthusiast as the angles of radiation are about 80 degrees, depending upon height and location. Owing to these characteristics it furnishes very little groundwave signal and under most circumstances a 5-8 instead of a 5-9 report from fairly local stations may be expected. After dark, however, excellent reports are usually received from distant stations, 50 to 250 miles being typical. Even in daylight many of these stations will still be workable when they may not be heard at all with a vertical!

Construction

The antenna is constructed on a single length of "Polyprop" or plastic-covered clothes-line (no metal inside) to reach from the highest point of the house to the mast. No separate insulators are required. One end of the line is fastened to a convenient point at a comfortable working height of about 4 feet and the centre and the ends of the 60-foot span are measured off and marked with a piece of tape.

132 feet of light stranded insulated wire is wound on an open-ended 4-inch diameter former, the windings being temporarily secured with insulating tape. Upon completion, the end of the line is passed through the former and secured to another convenient point. You should now have one "leg" of your dipole supporting the former at a comfortable working position.

With the former near the centre point, a portion of tape is unwound to release a loop of wire. At 1 inch from the centre point the end of the loop is taped firmly to the line, allowing 2 inches for connection to the feeder. Working towards the end of the "leg" each loop is gently released from the former and secured to the line with nylon string, allowing a 3-inch space between each loop. Continue towards the end, but allow approximately 4 feet of wire to drop for trimming purposes. As each loop contains 12½ inches of wire the 4-foot drop represents approximately 4 loops, so when 4 turns remain on the former the "leg" will terminate roughly 1 foot from the original mark.

Fig. 2 shows the constructional details of the antenna and it will be observed that 3-inch light-weight spacers of plastic foam have been included. These are not really essential but may be inserted for additional strength if desired. The foam is easily cut to shape and a thin slit removed to accommodate the wire before fixing it in position with *Superglue* or other suitable adhesive.

A thin strip of light-weight plastic run along the loop bottoms and secured by nylon string will keep the loops in uniform position in windy weather.

The second "leg" is wound in the same way, but it is prudent to have assistance when manoeuvring the line to preserve the windings from possible danger.

The dipole is fed with 75-ohm feeder, and 5-amp "figure-8" section plastic lighting flex is quite suitable for this purpose. A tip worth remembering is to give it a coat of silicon wax furniture polish. This is an excellent water-repellent and a 12-monthly application will maintain the feeder in tip-top condition.

Inverted-L 160-10m. Helical Top

Marconi type antennas have given excellent results for many years and several versions have appeared from time to time. But in all cases it must be remembered that the central portion of the antenna, where the current is highest, does most of the radiating.

When a full-length 130-foot 'L' cannot be erected in the available space, some form of top loading is needed to bring the current maximum into the vertical section, and many useful methods have been used in the past, not least of which is the helical top.

In a restricted space it is mandatory to erect as high a vertical component as possible; 60 feet is a useful height, but most operators may have to be content with something between forty and thirty feet, or even less.

Fig. 3 shows the layout of the inverted-L helical with a vertical element of 30 feet which leaves 100 feet to be accommodated, and

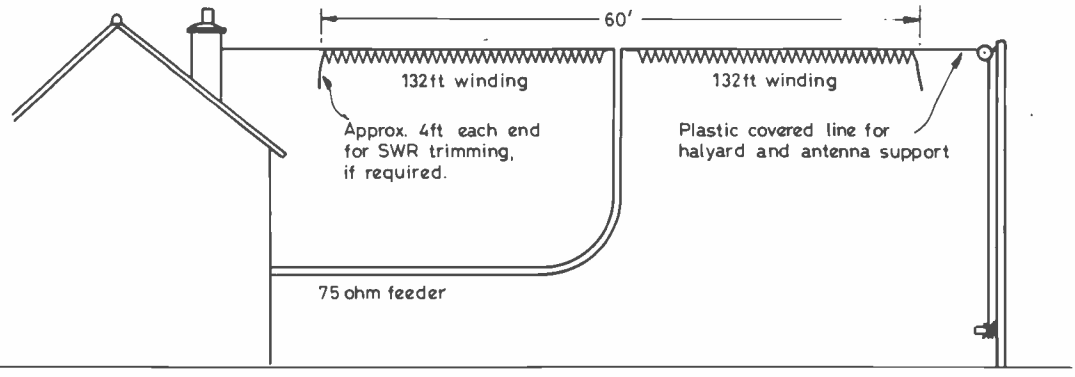


Fig. 1. BASIC LAYOUT OF THE 160m HELICAL HALF WAVE DIPOLE

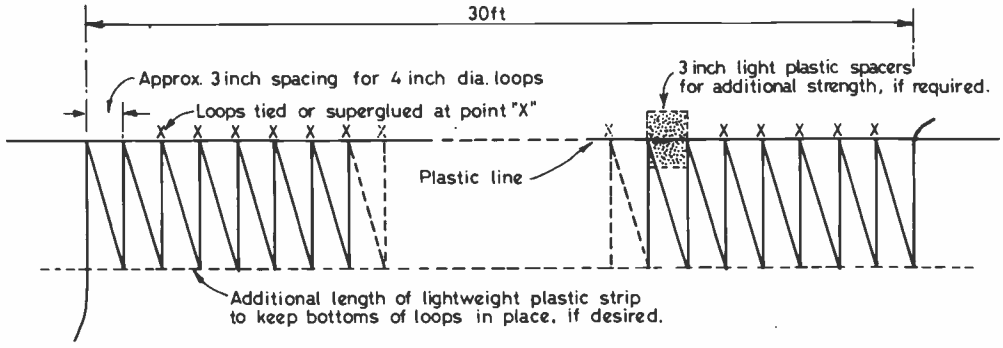


Fig. 2 CONSTRUCTIONAL DETAILS

within a 60-foot span this comprises 96 loops of 4-inch diameter spaced at 7½ inches.

Construction

Plastic covered clothes-line is used for the antenna support and halyards, and again, no separate insulators are needed. In Fig. 3 it will be seen that a 3-foot gap is shown between the vertical section and the wall of the house. This is to keep the wire at a reasonable distance from metal gutters or windows which might have a deleterious effect on performance, and to allow space for a window to be opened should the wire have to pass over one.

An easy method of construction is to acquire sufficient length of line which will allow the top span to be drawn down to about 4 feet off the ground for comfortable working, the line having been erected and passed through the pulleys beforehand. With the span at this level, measurements are easily made and construction can begin.

Measure off 30 feet of wire for the vertical section and wind the remaining 100 feet on a 4-inch diameter former as employed in making the half-wave helical. If the mast can be lowered, so much the better. Remove the line and, passing it through the former, gently release the loops one by one and tie them firmly in place with nylon string every 7½ inches. If it is inconvenient to lower the mast, cut the line at the appropriate place and make a knot later. Plastic line is very accommodating in this matter.

As with the helical half-wave, a length of thin, light-weight plastic fixed to the loop bottoms will ensure a sturdy assembly.

Erect the antenna and dress off the vertical section. A 3-foot length of wood or plastic fixed in a suitable position and at a safe height will secure it quite well, allowing you to run the end into the shack in the usual manner.

Obviously, if a greater height than 30 feet can be achieved, then the number of loops in the top section will be reduced *pro-rata*.

Top-Loaded Inverted-L with Capacity Hat

Top loading of an inverted-L may be achieved in several ways; after all, the principle is merely to extend electrically a 130-foot length of wire, and the simplest way to do this in 60 feet is to fold the remaining 40 feet back on itself at a spacing of a few feet. However, this method may not always be practicable in some locations, and in Fig. 4 the layout is shown of a top-loaded inverted-L employing a loading coil and capacity hat which will put out an excellent signal from 160 to 10 metres.

As always, as much vertical as possible should be erected and the remaining wire extended over the available span, the surplus wire being wound over a 2 or 3-inch former as shown in Fig. 5. Plastic drainpipe material is first-rate for the former. Holes are drilled as shown for the anchoring point of the horizontal section, cords to support the system to the mast insulator, and 4 smaller ones at right-angles to admit the two 24-inch wires of the capacity hat.

IMPORTANT: When winding the coil it is important that the first 3 or 4 turns should begin very gently to avoid a sharp bend. This is to ensure that the standing wave does not begin at the front or middle of the coil, but from its far end. On completion of the winding the end of the wire is soldered to the cross-over point of the capacitor hat wires and the whole assembly given a coat or two of varnish.

The wires for the capacity hat can be 12 s.w.g. enamel or larger and secured in place by any permanent adhesive if desired. Although some authorities advocate a virtual enclosure of the coil by bending the wires back over the winding at a space of about 2 inches, the method shown here is quite adequate and was used by the author for several years with excellent results, particularly on Top Band.

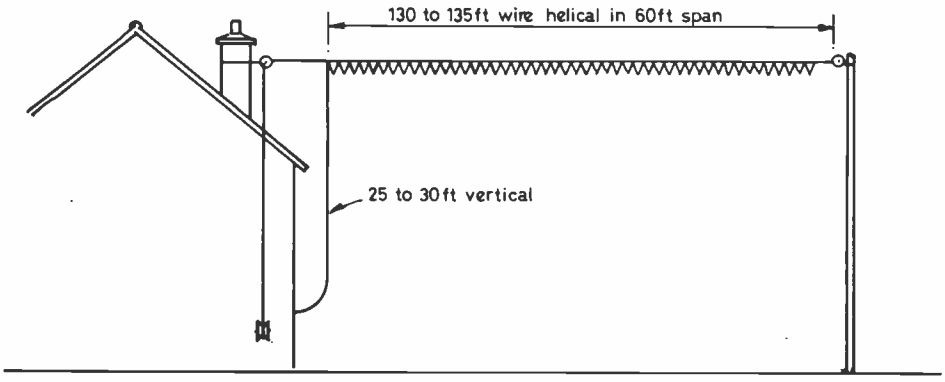


Fig.3. BASIC LAYOUT OF THE INVERTED L HELICAL

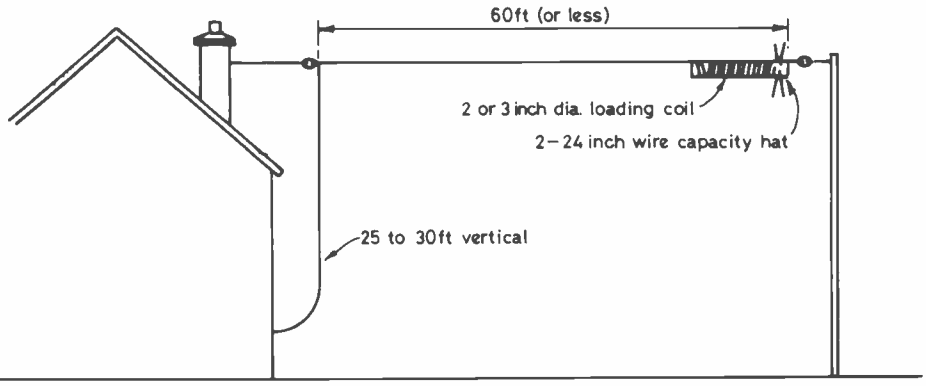


Fig. 4 BASIC LAYOUT OF THE COIL-LOADED INVERTED L

The Need for a Good Earth

Some amateurs tend to overlook the importance of a good earth system, particularly on the lower bands. During the past years the author has heard of stations whose earth systems consisted of the central-heating equipment and in one horrific instance the gas mains! Presumably these stations appreciate the need for radials with a ground-plane antenna, so why not recognise that the same principle is required for the Marconi type antenna?

Successful operation of the inverted-L depends on a good earth to furnish a reflection from the ground which turns the antenna into a half-wave system. To use an indifferent earth is tantamount to robbing the antenna of its effectiveness.

The Radial

It cannot be over-emphasised that for really first-class operation the radial wire, or counter-poise, is of great importance. By connecting it to a good earth, either at the water mains at point of entry (ensure it is a metal pipe!) or a six-foot length of copper tube in the ground, your signals will not only improve, but the risk of TVI will be minimised.

RADIAL LENGTHS

160m.	123 feet
80m.	63 feet
40m.	32 feet 6 inches
20m.	16 feet 6 inches
15m.	11 feet
10m.	8 feet 3 inches

A length of six-core cable cut at the appropriate points and run round the garden a few inches above the ground will perform very well, but ensure that the ends are well insulated and safe from prying fingers, as they have quite sizeable RF voltages on them.

An ATU for the 130-ft. Inverted-L

The ATU shown in Fig. 6 is a simple yet most effective unit for all-band operation into the inverted-L antenna, and most of the components may easily be found in the junk box. But first, a word about 160-metre operation.

If a transmitter such as the AT5, or other equipment with a valve PA into a Pi-tank network is used, then an additional ATU for Top Band is unnecessary. The Pi-tank network *is* an ATU and

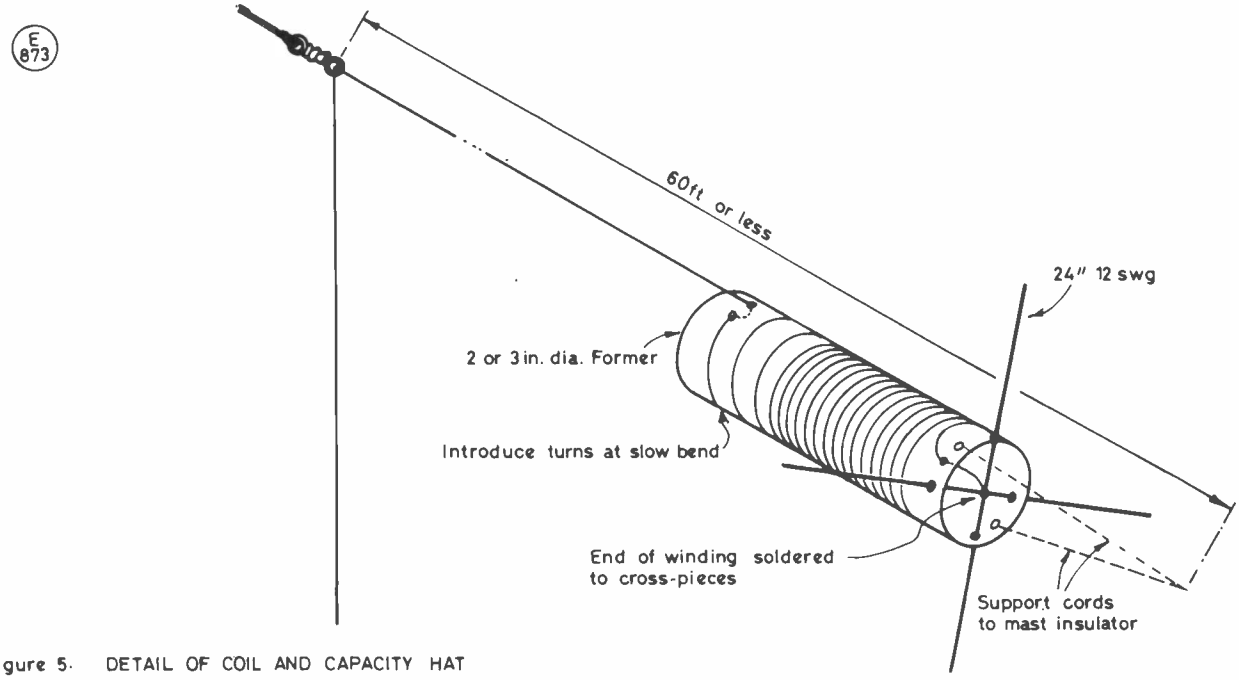


Figure 5. DETAIL OF COIL AND CAPACITY HAT

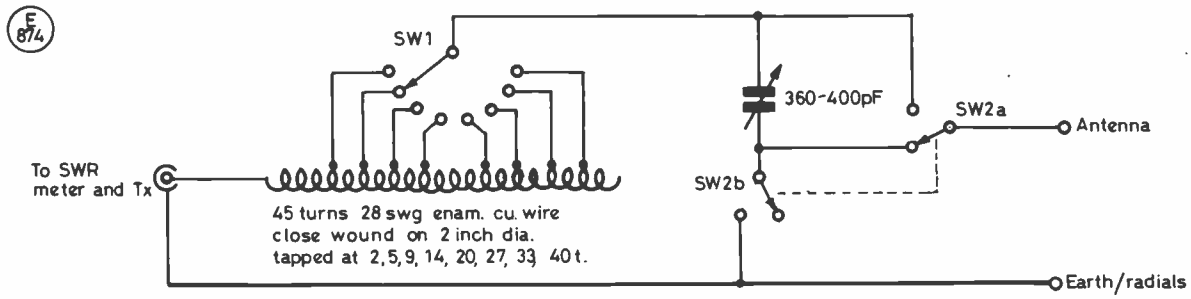


Fig. 6 L-MATCH and SERIES TUNED A.T.U. for END FED ANTENNAE. (SW2 shown in Series fed position).

should load up perfectly well into the antenna. Indeed, another ATU in series may rob you of power!

Operation on the higher frequency bands, however, and especially for transistor PA's which are intolerant of high VSWR, demands the use of an antenna tuning unit, and the one described here is not only excellent for the purpose, but very cheap to build.

Construction

No layout of components is shown as this is not critical. It is suggested, however, that the unit be built in a wooden box as this is not only easier to work with, but metal has often a deleterious effect on the 'Q' of the coil.

40 turns of 28 s.w.g. enamel are close-wound on a 2-inch diameter former. Plastic drain-pipe material is perfectly good, and the coil may be mounted horizontally or vertically. A cabinet 7 inches by 6 inches is preferable as this enables the 360pF — 400pF tuning capacitor to be installed a few inches away from the front panel and connected by an insulated shank to the knob to avoid hand-capacity effects. A wide-spaced receiver type capacitor is perfectly satisfactory, and a three-ply or plastic front panel will take the switches and sockets.

Although an 8-way switch is shown for connection to the coil tappings, a larger one may be utilised and the number of tapping points increased if desired. The tappings shown are not critical as the capacitor provides sufficient "overlap".

In Fig. 6, switch 2a/2b is shown in the series-tuned position which is generally employed for the lower frequencies, whilst the parallel-tuned, or L-match is used for 20-metres and above. However, no concern should be felt if the unit tunes up perfectly well in a different position on a particular band. With an SWR meter between the unit and the transmitter, adjust the tuner with a minimum of power until the lowest SWR is indicated, and tune up the transmitter for normal power in the usual way.

Conclusion

The author hopes that some of the systems described here will prove helpful to the "small plot" amateur. It may be even more helpful at this point to explain that although the systems described here have been shown to fit a 60-foot span, it by no means follows that this length is the minimum possible. The smallest space used (within the author's knowledge) is 25 feet, but he would not be astonished to hear of even smaller configurations. The great thing is to experiment — and these basic systems lend themselves very well to that admirable feature of amateur radio.

• • • *"Practically Yours"* • • •

with GLEN ROSS, G8MWR

TWO rapidly growing areas of amateur radio interest are microwave operating and satellite TV. The former because of its low cost and the latter as a means of getting more entertainment choice. The TV side is due for a boost with the expected launch of the new SSB system. This will provide very much stronger signals which, in turn, will reduce the requirement for large dishes and low noise amplifiers. Both these items are expensive, and you still have the cost of the feed system and the required hardware to mount the dish and point it in the right direction.

Saving Money

The amateur world has always prided itself on the ability to get gear together at a fraction of the normal cost, usually by modifying gear that was originally intended for some other purpose. The point about this sort of activity is that to make it work you have first to understand the basic principles of what you are trying to achieve and also know how far you can move from the ideal specification without serious loss of performance.

Basics

The best way to get a grasp on how a dish aerial works is to think of it in terms of light. The first thing to remember is that the dish is not the aerial, it simply acts as a reflector. An aerial system must be placed at the focal point of the dish. On the lower frequencies this is most usually some form of dipole feed or perhaps a two-element Yagi array firing into the dish. On the higher frequencies the feed may take the form of a waveguide or small horn.

Think of this feed system as though it were the filament of a lamp without any extra fittings. Under these circumstances the filament would radiate light in all directions and we would have the classic isotropic radiator.

Focussing

If we now place the lamp at the focal point of the dish all the light falling on the dish will be focussed and directed in one direction. Examples of this type of operating are a car headlamp and a stage spotlight. Even so a lot of light will not fall on the reflector and will be wasted. What we need, then, is a feed system which just illuminates the dish so that all the light is focussed and sent forward as a tight beam. In this way we get all the light where we want it and we are getting the greatest possible effect from the amount of light produced by the filament. If you now re-read the previous paragraphs substituting 'RF' and 'signal' where appropriate you will have got the basic concept of how a dish array works.

Frequency

It should now be obvious that the bigger the dish you use the higher is the "gain" that you can obtain. The electrical size of the dish depends on the frequency you are using and it is convenient to think of it in terms of wavelength of the signal. From this it can be seen that the apparent size of the same dish will be twice as large if the frequency is doubled (wavelength halved) and therefore the gain will be greater. Although a dish will work down to very low frequencies there comes a point when the size of the dish compared to the frequency being used is so small as to provide no gain and for the size of dish that could be contemplated by the average amateur this point comes at a frequency of about 1 GHz, or 1000 MHz. Below this point it makes far more sense to use conventional Yagi type arrays.

Gain

The information given in Table 1 shows the approximate gain for various size dishes when used on different frequencies. The gain is based on an illuminating efficiency of 50% because a perfect feed is virtually impossible to construct. The data in Table 2 shows approximate beamwidth at the 3dB points for various aerial gains, and from these it can be seen that the supporting and directing of a high gain dish can pose considerable problems.

Table 1

	Dia. in feet				
	1	*2*	*3*	*4*	*5*
1296MHz	9dB	15dB	18dB	21dB	23dB
2.3GHz	14	20	23	26	28
3.4GHz	17	24	27	30	32
5.7GHz	22	28	31	33	36
10 GHz	27	33	37	39	41
24 GHz	35dB	41dB	44dB	47dB	50dB

Dish of the Day

Selecting a dish is usually a straightforward matter; you simply press into service the dish you can get your hands on and hope for the best. In an ideal world you would calculate the size of dish that will give you the gain you need and then go ahead and order one. This approach can be expensive as a well made 4 foot dish could easily cost you £100 and that does not include the feed or mounting equipment.

Table 2

Gain dB	*3dB width (degrees)*
15	30
20	17
25	9
30	5
35	3
40	1.5
45	0.9
50	0.5

Usually amateurs are going to be using the gear for whatever contacts they can get rather than a point-to-point link and this means that gain requirements are very elastic. Here is the point where ingenuity comes in and the amateur presses into service some rather unexpected articles.

I know of installations which use the smooth curved metal tops of dustbins, spun metal lampshades, circular snow sleds, the reflector from a searchlight (taking line of sight ot the extreme?). The one that has caused the most interest is probably the Chinese Wok system as developed by G6EWZ. This has caused him to suffer comments on the lines of "You are producing a wok-crushing signal" and "Are you wok bound on 10 GHz?"

Deviation

It must be obvious that not all the above items are truly parabolic and some loss of gain must be involved in using them, the point of interest is how much is lost in practice.

The first point to bear in mind is that it is better to use a dish of a diameter to produce a nominal 30dB but which, due to not being exactly the right shape, only produces 26dB than not having a dish at all. Another point to consider is the general smoothness of the dish surface and its effect on the gain. Small bumps and such things as rivet and bolt heads can be ignored, as can small holes; they represent such a small percentage of the total surface as to be insignificant. A general ripple on the whole surface of the dish can cause more problems but it does depend on the amount of ripple and the frequency at which the dish is being used. To put it into perspective, if the whole surface of the dish is covered in bumps around 1/15 of a wavelength high the loss would be about 1dB. The surface irregularity would have to increase to around 1/8 wavelength before the gain would drop by 6dB. On 10 GHz this would mean the surface being completely covered with irregularities 3mm. high and on 1296 MHz they would need to be around one inch high. If the surface irregularities are confined to a small area of the dish then the loss of gain will be proportionally lower. To put all that into general terms it means that any dish that has not been attacked with a lump hammer is likely to do a good job and the loss of gain will be insignificant.

Perforations

The effect on gain of holes in the dish surface depends on the size of the holes and the area they cover. Even if the whole dish is covered with holes, as would be the case if a dish for the lower frequencies is constructed from wire netting, the loss is negligible if the diameter of the holes is less than about 1/10 wavelength at the operating frequency. Constructing a dish in this manner does have the advantage of reducing windage and this can be very important if a large dish is being used on 1296 MHz. Using perforated material on, say, 10 GHz is not really useful because the holes would have to be very small to minimise loss of gain, it would be difficult to maintain the surface shape and the reduction in windage is not an important point as it is not usual to use dishes in excess of two feet diameter at this frequency.

CLUBS ROUNDUP

By "Club Secretary"

OUR last *Clubs Roundup* in the present form appears in this issue; watch out for a further announcement on the subject. In the meantime, send in your letters and information as before. *ABOVE ALL,* take note of the changed mailing address: *Short Wave Magazine,* Enefco House, The Quay, Poole, Dorset, BH15 1PP.

Goings-On

Aberdeen start the ball rolling, and here the venue is 35 Thistle Lane, Aberdeen, every Friday evening. A junk sale is the first event every month; On March 13 they have a debate on the vexed question of repeaters, and on 20th there is a talk and demonstration of amateur TV. March 27 is Beginners' Night.

Every Thursday evening the **Abergavenny & Nevill Hall** group foregathers in the room above Male Ward 2 in Pen-y-Fal Hospital, Abergavenny; the Hon. Sec. — *see* Panel — has all the latest details of activities.

The monthly meeting of **Acton, Brentford & Chiswick** is on March 17, at Chiswick Town Hall, High Road, Chiswick, when they have a discussion on CW by computer. Kick-off at 7.30 p.m. and new members or visitors welcomed.

New One

This is **Atherstone** who have their formal sessions in the Physics Lab, Atherstone Upper School, Long Street, Atherstone. March 9 is a talk on 'Ni-Cads, Use and Abuse' by G6YQU, and the informal is at "The Bull" in Witherley starting at 8 p.m. on March 23.

BARTG now; this is the RTTY and Data group, and for details of membership we have to refer you to the Hon. Sec. — *see* Panel. As to the worth of joining, let's just say BARTG is probably the biggest special-interest group in the country.

Another special-interest crowd is **BATC**; their members are all interested in Amateur Television transmission and reception. Details from the Hon. Sec. — *see* Panel. He will also no doubt tell you more about their Rally, on May 3, at the Post House, Rugby, 100 yards away from junction 18 of the M1.

Move!

That's what **Biggin Hill** have done; back to their old Hq. at Biggin Hill Memorial Library, after problems at Downe Village Hall. March 17 is the date for the next session, and for all meetings after that we must refer you to the Hon. Sec. as there is a further move still, somewhere in the pipeline.

Blackmore Vale next; they live in the Old Coach House, at the rear of the "Bell & Crown" inn, Zeals, Wilts. This is on the main A303 trunk road less than a mile from the Somerset/Dorset border. They gather there on second and fourth Tuesdays; March 10 for a talk on cellular radio, and March 24 for a project and on-the-air evening.

For the details of the **Borehamwood & Elstree** activities we must refer you to the Hon. Sec. — *see* Panel.

Now **Braintree**, and here the venue is the Community Centre, Victoria Street, next to the bus station. March 2 is a talk on antenna construction by G4ZPE, and March 16 has G3GRT giving them the ins and outs of QRP, both constructing and operating.

March 5 at **Bredhurst** is all down for G3VTT; Colin will talk about compact disc players, and on 19th there is the AGM. The Hq. is at Parkwood Community Centre, Deanwood Drive, Rainham, Gillingham, Kent.

The **Bristol City RSGB** news is that the programme listing we have has run out! All we can say, then, is that you should try Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, any Wednesday night, checking Rooms 1-5, although the favourite seems to be Room 2.

At **Bristol North** they have Fridays at Self-Help Enterprise, 7 Braemar Crescent, Northville, Bristol.

British Rail members are going to run several special event stations from railway sites in 1987 to celebrate their 21st birthday The first is May 8-9-10 at Ravenglass, and they also hope to be at Crewe, Didcot, and one of the London Transport tube stations. Details from the Hon. Sec. — *see* Panel (and ask him, "what about Swindon?").

Every Tuesday evening is the arrangement adopted at **Bury** where they have a base at the Mosses Centre, Cecil Street, Bury; March 3 is down for a talk by G3LEQ on clandestine radio.

On the second Wednesday in every month, the **Caithness** crowd foregathers in the Loch Watten Hotel, Watten, Caithness, which must make them the most northerly mainland club in the U.K. Details from the Hon. Sec. — *see* Panel.

March in **Cheshunt** shows their usual alternate natter nights — March 4 and 18. March 11 is a junk sale, and on March 25 they have Fred Lyons talking about UHF TV relay systems.

Now to **Chester** for the Chester Rugby Union club in Hare Lane, Vicars Cross. This is home to the Chester radio amateurs, and on March 10 G2FVA talks about his 60 years of radio and electronics. Gordon Rouse will talk about Icom equipment on March 17, and on 24th G1LML will give the second part of his talk on avionics; that leaves G3SES to talk on 31st about his QRP transceiver.

For all the details of **Chichester** activities we must refer you to the Hon. Sec. — *see* Panel for his details.

March 5 is down for a talk on data communication in a changing environment by John Allen, and 19th for a talk by G8CKW on FAX. That's the **Colchester** programme, at Colchester Institute, Sheepen Road.

We haven't got any current information of **Crawley** meetings, so we have to refer you to the Hon. Sec. — *see* panel.

The Hq. of **Crystal Palace** is at All Saints Parish Room, Beulah Hill, London, SE19 (opposite the IBA transmitting Mast); March 21 is a talk on 'Valves and their Problems' by G2FKZ.

The best way to find the **Dartford Heath D/F** crowd is to go to the pre-hunt meeting in the "Horse & Groom" pub, Leyton Cross; try after 9 p.m. while they are discussing where to gather for the following Sunday hunt. If that fails, contact the Hon. Sec. — *see* Panel for his details.

Derby have a junk sale on March 4 and an open evening on 11th. March 18 is the AGM, and on 25th Lee Mansfield talks about aerials. Starting time is 7.30 p.m. and the Hq. is 119 Green Lane, Derby.

The club for **Dover** is maybe better known as SE Kent YMCA, which tells us they are based at the Dover YMCA, Godwynehurst, Leyburne Road, Dover CT16 1SN. March 4 and 18 are natters, and for March 11 the talk was still being finalised when they wrote; which leaves March 25 for construction.

If you live in **Dumfries & Galloway** you will want to be a member of the local club, foregathering in Cargenholm Hotel, New Abbey Road, Dumfries on first and third Mondays.

On to **Edgware** where March 12 is down for a talk on the new 23cm. repeater, and March 26 is a talk on using HF propagation by G3SJE. Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, is the venue.

G3GC will be talking to **Exeter** on March 9, his theme aerial radiation patterns. This is at the Community Centre, St. David's Hill, Exeter, Other meetings are on the first, third and last Monday at the Scout Hut, Emmanuel Road, Exeter.

Every Wednesday evening the **Fareham** group heads for Portchester Community Centre; March 4 and 18 are natter nights, but on 11th they have a junk sale, and on 25th G0GFD talks about equipment reliability.

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YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

Change of Hq.

Felixstowe now have their place at The Scout Hut, Bath Road, Felixstowe. March 19 is a visit to Sainsbury's Superstore at Warren Heath, jointly with the Ipswich CSMA, and March 23 is the AGM.

The **Halifax** members have the third Tuesday in each month at the "Running Man", Pellon Lane, Halifax. On March 17 they entertain the RSGB RR2, G4EJP.

Now we turn to the **Harpenden** meetings at the "Silver Cup" in St. Albans Road. More details from the Hon. Sec. — *see* Panel.

March 27 is AGM-time at **Harrow**; but of course you can find them on any Friday evening at Harrow Arts Centre, High Road, Harrow Weald.

Turning to **Hastings** we see March 18 is the AGM at West Hill Community Centre; but they also have weekly informal sessions on Fridays at Ashdown Farm Community Centre.

Hereford have first and third Fridays booked at the County Control, Civil Defence Hq., Gaol Street, Hereford. What's on we don't know, but they were understood to be cooking up a new listing. Details from the Hon. Sec. — *see* Panel.

If you live in **Ipswich** you are probably a member of the club based on the "Rose and Crown", 77 Norwich Road, Ipswich. They have a separate room detached from the bars and so visitors and juniors can be made welcome. Try second and last Wednesdays, although they note that often there is some activity on the other Wednesdays if you show up 'on spec'.

Over to EI, and **I.R.T.S.** which is the one to be in touch with over all questions relating to amateur radio in Eire, as well as local club activities.

A bit north and over the border to **Lough Erne;** the locals have their Rally on April 26 at Killyhevlin Hotel, Enniskillen; but the normal meetings of the club are on the third Wednesday of the month. We suggest you contact the Hon. Sec. for details.

Loughton Hall, Rectory Lane, is home to **Loughton, Essex,** club; on March 13 G8DZH reminds them of 'Basic AC theory — all you've forgotten since the RAE" and on March 27 they recover with an informal session.

Looking at the **Macclesfield** letter we see they have a place at Fermain Club, Oxford Road, Macclesfield, where they gather weekly. March 3 is construction, March 10 is G0AMU on the

'History of Morse', 17th is a committee meeting, and on 24th they have an open meeting.

Maidstone in March looks like this: a junk sale on March 6, and March 20 a talk on soldering techniques; the intervening evenings are natter sessions plus RAE. The venue is the YMCA Sportcentre, Melrose Close, Maidstone.

Over to **Nene Valley** and the "Prince of Wales" pub in Well Street, Finedon, Northants, every Wednesday evening.

Up around Kings Lynn way the locals have their club at **Norfolk College of Arts and Technology**; Hq. is at the Radio Shack, rear of St. James' Boys School, Hospital Walk, Kings Lynn.

Now to **Pontefract** and this means the ground floor of Carleton Community Centre, Carleton, Pontefract; radio memories of WW2 entertain them on March 12, and on 19th they have the committee meeting. March 26 is informal and on April 2 they meet to make arrangements for the Components Fair.

Every Thursday evening the members of the **Powys** club head for the Cricket Pavilion, Lymore Park, Montgomery, up the private road near the 30 m.p.h. sign as you leave Montgomery towards Chirbury on the B4386 — nearly a mile up the private road in fact. March 12 is down for a talk on home construction by GW3RJY, and on March 22 they have a demonstration station at Maesydre Ground, Welshpool.

The last friday in the month is the one chosen for meetings at **Poole**; March 27 is down for an introduction to 10 GHz. This is at Commanders House, Constitution Hill Road.

Now to **RAIBC**; this is the one for those who are into amateur radio either as transmitters or SWLs but who are blind or invalid; and it is pretty obvious that such a club needs supporters and representatives amongst the able-bodied among us, not to mention the odd donation or special event. Details from the Hon. Sec. — *see* Panel.

Our next stop is at **Reading** where they haven't been in touch for quite a while; the new Hon. Sec. says they are still to be found at the "White Horse" pub, Emmer Green, in the club room. As they meet on alternate Tuesdays from 8 p.m., we have a list of dates for the year; suffice it to say they will be on parade on March 3, 17 and 21.

The **Rhyl** crowd have their meetings on March 2 for films and an activity night, and on 16th for a talk on transverters by GW3RBM. What a pity they forgot to tell us where they meet — we have to refer you to the Hon. Sec. for that bit of 'gen'.

The **South Birmingham** crowd meets at Hamstead House, Fairfax Road, West Heath, Birmingham, on the first Wednesday each month; for March they have a surplus sale, and also a progress report on the microwave beacon.

South Bristol now, and this means every Wednesday at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol; March 4 is a talk on cables and connectors, and on 11th they have a contest planning session. March 18 is a computer activity evening, and on 25th there is a VHF activity evening. Rooms 1 & 2 seem to be always in use, with 3 & 4 also on occasion, so we assume they must have partitioning that is moveable.

Rally

This one is by **South Essex** and is on March 15 at The Paddocks, Canvey Island, Essex, which is also their meeting-place every Wednesday evening. March 4 is an informal evening, and on 11th they have a 'History of Top Band' by G3OA. March 18 is the junk sale, and on 25th G0ASN talks about a 50 MHz transverter.

Try Holy Trinity Church Hall (Upper) for **Southgate**, on March 12 when G4MVF talks about building the *PW* 'Halford' transceiver, and March 26 for the informal natter evening.

Norweb Sports & Social Club building is at the rear of Ormsgill Hotel, Barrow-in-Furness, and is the Hq. of **South Lakeland**, where they gather on first and third Thursdays.

Stockport have moved home to the Blossoms Hotel, at the junction of Bramhall Road and A6. March 11 is open, and March 18 is the natter session in the bar; on March 25 G8UQC will talk about the KISS technique (of construction!).

Surrey have a place at *TS Terra Nova,* 34 The Waldrons, South Croydon, where they use the first floor mess-deck on first and third Mondays; the first one in March is a junk sale and the latter is the usual informal.

Not 1000 miles away from our last entry is **Sutton & Cheam**, where the group has a place at Downs Lawn Tennis Club, Holland Avenue, Cheam. March 2 is the natter night in the Downs Bar, and on March 20 they have the Constructional Contest.

The Public Library, Sainsbury Centre, is home to the **Sutton Coldfield** gang; on March 9 they have a think tank on your project, and on March 23 there is the annual junk sale.

Looking for the **Todmorden** crew? Call in at the Queen Hotel on March 2 for a talk by the RNLI; and on March 16 they have the chat night.

March 1 and April 5 are the next two dates for the **U.K. FM Group (Northern)** at the Royal Hotel, Church Street, Barnsley.

On to **Verulam** where nowadays they are to be found at the R.A.F.A. Hq., New Kent Road, off Marlborough Road, St. Albans; March 10 is an activity evening, and on 24th they have the G3PAO Memorial Lecture, to be given by Don Field, G3XTT. His topic will be 'Antennas for Small Gardens'.

WACRAL is the group for the radio amateurs and SWLs who are practising Christians, of any denomination. Get the details from the Hon. Sec. — *see* Panel.

March 2 is a video evening for the **Welwyn/Hatfield** crew; this one is at Lemsford Hall, Brocket Road, Lemsford, near Welwyn Garden City. Informals, which are on the third Monday of each month, take place at 9th Welwyn Garden City Scout Hq., Knightsfield, Welwyn Garden City.

It's the second and last Friday of each month for **Wimbledon** club, at St. Andrews Church Hall, Herbert Road, Wimbledon. March 13 is down for 'Aircraft Radio Aids' by G0AWQ, and on March 27 G0FDZ will talk about the INMARSAT maritime communications set-up.

Nowadays **Wolverhampton** are based on Wolverhampton Electricity Sports & Social Club, St. Marks Road, Chapel Ash, Wolverhampton; on March 3 they have an evening checking transmitters, and on 10th there is an activity evening followed by a natter. March 17 is an open forum, and on 24th they visit Sandwell ARC. March 31 is a night-on-the-air.

Every Wednesday evening the **Worthing** crowd foregathers at Lancing Parish Hall, South Street, Lancing; March 4 is a ragchew evening, and on 11th they have a Constructional Contest. March 18 is another natter, and on 25th they have a junk sale.

Now we look at **Wythall**; they get together at Wythall House, Silver Street, Wythall, every Tuesday and there seem to be all sorts of things going on. If they'd been around fifty years ago, your old scribe may well have been a junior member!

The **Yeovil** goings-on are at the Recreation Centre, Chilton Grove, Yeovil, every Thursday. March 12 is G3MYM's talk on receiver noise figure, and on 19th G3GC talks about oscilloscopes. March 26 is a natter night, and on April 2 G3MIZ talks about framing QSLs and certificates.

Finally **York**, where the recent AGM put the Hon. Sec. back into his office again, and produced much discussion on how to celebrate their 40 years as a club. Meet the gang on any Friday evening, at the United Services Club, 61 Micklegate, or work them on GB2HWW which they will have operational on those evenings.

Final Finale

That's it for the last *Clubs Roundup.* I have thoroughly enjoyed my donkey's years of sifting through your letters each month, and over that period I have developed a close personal interest in each and every club. Needless to say, then, I feel a little sad at the passing of an era! However, please keep on sending in your club's information, addressed to *Short Wave Magazine,* Enefco House, The Quay, Poole, Dorset BH15 1PP. 'Bye now!

("SITUATIONS" AND "TRADE")

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For Sale: Grundig Satellit 3400 professional global receiver, few hours use only due to illness, cost £450 new, accept £200. — Ring 021-708 0675 after 6 p.m. (not Weds. or Sats.)

Selling: PRO-2003 scanner, over 20,000 frequencies, £175. Philips world receiver, 9 memories, direct entry keypad, 146-29999 kHz, 87.5-108 MHz, battery/mains, £146. — Ring Sandown (0983) 402273, I.o.W.

For Sale: Type C14 (or GR410T) 100-watt military mobile HF SSB transmitter/receiver, 12v. DC direct, or 100-125v. AC or 200-250v. AC by factory-made PSU supplied. Also factory-made remote control unit. Offers? — Ring 0252-837267.

Selling: *RadCom,* complete vols., '73-'78 inclusive, £2.50 per vol. plus postage (or collect). Other magazines also. — Ring Besford, G3NHU, 0493-721173.

Wanted: Trio PS-30 PSU, must be in mint condition. — Hunt, G1VUK, 71 South Hill Park, Hampstead, London NW3. (Tel: 01-230 3532 day, 01-435 0459 evenings).

For Sale: DX-300 synthesised communications receiver, excellent condition, in box, £105 or near offer. Eddystone EB-31 shortwave receiver, £65. — Ring 051-525 4528.

Sale: Cirkit 2m. FM talkbox transceiver, 1-watt output, with circuit and information, as new, £50. Yaesu FT-101/FT-101E series workshop manual, unmarked, £15. — Ring Oxford (0865) 63000.

Wanted: Receiver to cover 2m., air, public services, CB etc. — Collett, 7 Norwich Drive, Cheltenham. (Tel: 0242-524259).

Wanted: Mains transformer type 450-0-450v. at 250mA, or anything near this. Details and price please, no rubbish. — Heslop, 75 Alder Park, Brandon, Durham DH7 8TJ.

Wanted: Early wireless and crystal sets, particularly W.W.I sets or parts, early valves, horn speakers, bound volumes of *Wireless World,* catalogues, pre-war television. Also need good HF transceiver or communications Rx. Good cash offered and will collect. — Taylor, G4ERU, 5 Luther Road, Winton, Bournemouth. (Tel: 0202-510400).

Selling: Satellit 600 receiver, excellent condition, boxed, with manual. Offers? **Wanted:** Pan-Crusader X 12-band receiver. — Ring 061-743 1570.

For Sale: Collins S-Line 32S-3, 75S-3B, 516F-2 PSU/speaker, complete with all manuals, mint condition and in first class working order. Will not separate, demonstration at my QTH only; will deliver reasonable distance. — GW4ZXG, QTHR. (Tel: 0656-3585).

Wanted: KW-204 Tx or similar Tx, plus Codar PR-40 preselector. Cash waiting. — Ring Ian, 0224-636828 after 6 p.m.

For Sale: BC-221 frequency meter, unmodified, with frequency charts. Offers? — Ring Dewhurst, West Hanney 751 (Oxon) after 6 p.m. or weekends.

For Sale: Property of the late G4GYG: Trio TS-820 SSB transceiver, AT-200 tuner, TV-502 transverter, SP-820 speaker, £650. Yaesu FT-7B mobile transceiver with YC-7B display, £275. Trio DM-80 wavemeter, £45. Zetagi ZG SSB/AM converter, S.M.C. CBM-272 Oscar-Two Rx/Tx, £30. — Ring Cuffley (0707) 874245.

Exchange: Pye PC-5 home base with remote mic, and micro headset; Three Pye Reporter mobiles complete with mics., speakers and boosters (suit taxi/doctor/haulage). **Wanted:** Transceiver etc. — Ring 0977-684008 (Leeds).

For Sale: Racal RA-117E, RA-218, RA-37, MA-168B, in racks, with handbooks. Offers invited. — Ring Rupert, Chesham (0494) 783557.

Sale: BC-221AF frequency meter, 1.5 Hz to 20 MHz. Yaesu Musen YC-305 frequency counter, 30 MHz. Also new Tx valves 6146B, 12DQ6B, 6JS6C, KT88, and many various Rx valves. Offers? — Ring Webb, York (0904) 25798.

Wanted: Radio engineer or someone with good knowledge of H.A.C. 1-valve receivers, to look at my piece of this equipment — needs only suitable power source to get it working. Reasonable fee paid. — King, 20 Cambria Road, Coldharbour Lane, Camberwell, London SE5 9AE.

Selling: Eddystone EA-12 amateur band Rx and Eddystone 940 general coverage Rx, both in mint condition, professionally maintained, re-valved, each with Eddystone plinth speaker, instruction manual and spare set of valves, £150 each cash. Buyers to collect. — Ring Robinson, Felixstowe (0394) 276087.

For Sale: J.I.L. scanner with SSB/CW shortwave converter, computer programmable, 100 kHz to 520 MHz continuous, £600. — Ring Ted, Sunderland (0783) 5211926.

Sale: Yaesu FRG-7 communications receiver, 0-30 MHz, with SSB filter and manuals, mint condition, £120 or near offer. — Richardson, 7 Grange Road, Thornaby, Cleveland TS17 6LT.

Wanted: Sony ICF-7600D or Pan-Crusader X 12-band Rx, must be in excellent condition and sensibly priced. Also interested in Trio R-2000 and Icom IC-R70, must be cheap, cash waiting. — Ring 061-743 1570.

Selling: FT-707 with PSU and ATU (complete Yaesu base or mobile station), boxed, perfect condition, £465 or near offer. — Ring 0767-40423.

Technical Books and Manuals

(ENGLISH AND AMERICAN)

AERIAL INFORMATION

Antenna Handbook (Orr and Cowan)	£7.75
Beam Antenna Handbook	£6.50
Cubical Quad Antennae. 3rd Edition	£6.90
Simple Low Cost Wire Antennas, by Orr	£6.20
Aerial Projects (Penfold)	£2.30
Antenna Book (ARRL) *latest 14th Edition*	£8.00
The (ARRL) Antenna Anthology	£4.50
Two-metre Antenna Handbook, F. C. Judd G2BCX	£6.35
HF Antennas for All Locations (RSGB),	£6.65
25 Simple Shortwave Broadcast Band Aerials (E. M. Noll)	£2.25
25 Simple Amateur Band Aerials (E. M. Noll)	£2.25
25 Simple Indoor and Window Aerials	£2.05
25 Simple Tropical and MW Band Aerials	£2.05
The ARRL Antenna Compendium, Vol. 1 *(new title)*	£8.95

BOOKS FOR THE BEGINNER

Amateur Radio *(Lutterworth Press)*	£9.60
Solid State Short Wave Receivers for Beginners (R. A. Penfold)	£2.25
Beginners Guide to Radio (9th Edition)	£5.45
Beginners Guide to Electronics, 4th Edition	£5.45
Beginners Guide to Amateur Radio (Newnes)	£5.45
Beginners Guide to Integrated Circuits, 2nd edn.	£5.00
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Radio Amateur's Examination Manual, *latest 11th edition* (RSGB)	£3.90
How to Pass the Radio Amateurs' Examination (RSGB)	£3.30

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The Complete DX'er, by W9KNI	£8.25
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