JULY, 1963

RSGB BULLETIN

VOL. 39, No. 1

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

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Volume 39 No. 1

July 1963

3/- Monthly

R.S.G.B. BULLETIN

CONTENTS

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John A. Rouse, G2AHL

EDITORIAL OFFICE:

R.S.G.B. Headquarters, 28 Little Russell Street, London, W.C.1.

Telephones: HOLborn 7373 HOLborn 2444

ADVERTISEMENT MANAGERS:

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The RSGB Bulletin is published on the first Wednesday in each month by the Radio Society of Great Britain as its official Journal and sent to all members.

Extract from Wireless World, November 1913

tools that are ...
As I have no lathe or drills ...
I had to design the apparatus to suit the tools available.

AMONG THE AMATEURS

Association Topics

THE Wireless Society of London has just come into existence with the determination to carry out a very ambitious programme, upon the success of which the amateur wireless world should reap considerable benefit. The Society has received the blessing of Sir Alexander King, the secretary to the Post Office, who, on behalf of the Postmaster-General, wrote "welcoming the formation of such a society, and indicating that certificates of its advisory committee would be accepted by him ... qualifications for the ...

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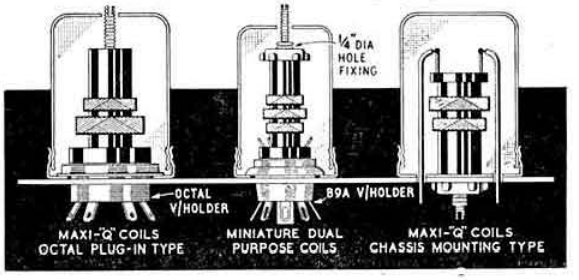

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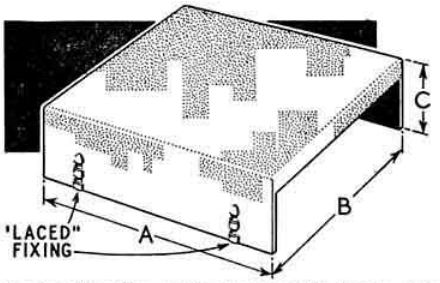

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13	14in.	9in.	2½in.	10/6
14	16in.	8in.	2½in.	11/-
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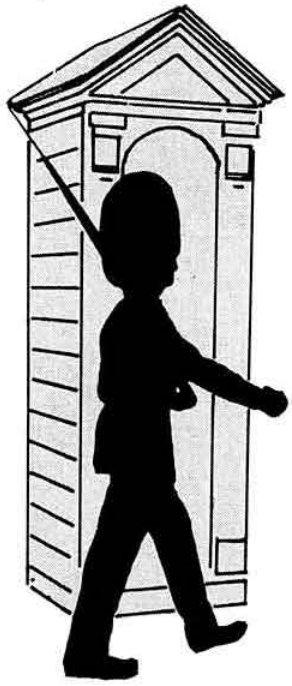

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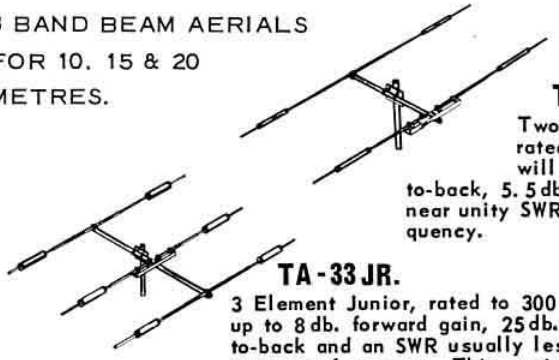

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The Advancement of Amateur Radio

IN this year of office as your President I have already travelled many hundreds of miles both at home and abroad as the representative of the Society. As I write I am at Malmo in Sweden as one of the RSGB delegates to the IARU Region I Conference. Here, as everywhere I go, I am conscious of the honour and respect that is shown to me as President, but I am even more conscious of the bond of friendship between amateurs of all countries.

Mr. Norman Caws, F.C.A., G3BVG, President, 1963

In this Golden Jubilee year I am endeavouring to strengthen this bond of friendship by all the means at my disposal. As I have said at several meetings of amateurs, a year is not long enough to do all that I would have wished but I am sure that with the help and co-operation of all members a great deal can be achieved.

I should like you to remember at all times that the Society is held in great esteem: let us do all we can to maintain that opinion wherever we may be, particularly when we are on the air; let us never forget that others, not necessarily amateurs, are listening to us. Remember also that whilst, obviously, our Society is of paramount importance to us, it is Amateur Radio that must be put before the world as something which is worth while. At the present time there are many calls for further frequencies by both government and commercial undertakings. Unless we can show that we are worthy to retain what we have we may find the increasing pressure on our bands results in further losses.

There are two ways in which we can demonstrate the value of Amateur Radio; first, we should always be sure that the operation of our equipment is of the highest order, both technically and verbally; second, we can put all our skill and ability into our experimentation so that it is clear we have sound technical knowledge to add to the sum total of scientific progress.

Some may think that there is little that can be done in this field but I am sure that a review of the technical achievements of the past fifty years would show that radio amateurs have always made a tremendous contribution to the advancement of radio knowledge. I believe that radio amateurs will go on making such contributions.

With the recent exploits in space there is a whole new field of opportunity for experiments opening up: for example, in the design of aerials for space communication and in the development of low noise amplification, to give only two examples.

My final words are to ask you to use the gift of Amateur Radio to the full; let us show the world we are worthy of the name "radio amateur" and let us all be able to say at the end of this Jubilee Year—I have helped to advance the cause of Amateur Radio to the best of my endeavours.

NORMAN CAWS, President.

RADIO SOCIETY OF GREAT BRITAIN
GOLDEN JUBILEE CELEBRATIONS

1913 1963

Programme of Events

Monday, July 1, 1963

1 p.m. Coaches leave Allsop Place, adjoining the London Planetarium, for visit to Radio Research Station.
2 p.m. Tour of Radio Research Station begins.
5 p.m. Coaches leave R.R.S. for return journey.
2.30 p.m. Technical visit to the BBC Television Centre.
6 p.m. Open House at Mullard Ltd., Torrington Place, Tottenham Court Road, London, W.C.1.

Tuesday, July 2, 1963

1 p.m. Coaches leave Allsop Place, adjoining the London Planetarium, for visit to Radio Research Station.
2 p.m. Tour of Radio Research Station begins.
5 p.m. Coaches leave R.R.S. for return journey.
2.30 p.m. Technical visit to the BBC Television Centre.
3 p.m. Open House at Mullard Ltd., Torrington Place, Tottenham Court Road, London, W.C.1.

Wednesday, July 3, 1963

12 noon London Members' Luncheon Club at Bedford Corner Hotel, Bayley Street, Tottenham Court Road, London, W.C.1.
6.30 p.m. Official Reception at the London Planetarium, Marylebone Road, London, N.W.1 (adjoining Madame Tussaud's). During the course of the evening there will be a Special Programme in the Planetarium conducted by Dr. H. King.

Thursday, July 4, 1963

10 a.m. Private launch leaves Westminster Bridge Pier for Hampton Court.
8 p.m. London U.H.F. Group Social Evening at White Hall Hotel, Bloomsbury Square, London, W.C.1.

Friday, July 5, 1963

6.30 p.m. Golden Jubilee Dinner at the Connaught Rooms, Great Queen's Street, Kingsway, London, W.C.1. *Bookings cannot be guaranteed if received after June 20.*

Celebrations Rendezvous

From Wednesday, July 3, to Friday, July 5, there will be a Celebrations Rendezvous for members and visitors at the Kingsley Hotel, Bloomsbury Way, London, W.C.1. No tickets required.

Golden Jubilee Celebrations Information Centre

For the benefit of provincial and overseas members visiting London for the Society's Golden Jubilee Celebrations from July 1 to 5, 1963, an Information Centre is being established in the Council Room at Headquarters. The Centre will be staffed by Frank Fletcher, G2FUX, Honorary Business Manager for the Celebrations, members of the Council and members of the Headquarters staff.

Information and advice may be obtained by calling at Headquarters or by telephoning HOLborn 7373.

Fifty Years
for the advancement of Amateur Radio

A Survey of Amateur Radio over the years and of the part played by the RSGB

FEW amateurs could claim to be conversant with every phase of the 50 years of activity of our Society. Many of those whose foresight and sheer hard work have contributed to its establishment and growth are either no longer with us or have not maintained an unbroken interest in the hobby. This potted history therefore draws freely upon contemporary accounts (many from the early volumes of *Wireless World*) and later reflections of those concerned, and upon information gathered together by Pat Hawker, G3VA.

We cannot claim that any condensed account could do justice to the long history of the Society so closely entwined with the fascinating story of Amateur Radio. But we hope that this necessarily brief account—with emphasis on events and technical developments rather than on personalities—will evoke memories for old-timers and provide information of interest also to " young squirts," a term popular in the 'thirties and carrying no disrespect.

THE BEGINNINGS OF AMATEUR RADIO

Wireless experimenting by amateurs was already of respectable age before that fateful day when the late Rene Klein posted the letters to the press which were to bring our Society into existence.

Amateur Radio had indeed begun with the first faltering investigations into wireless telegraphy. The earliest experimenters included many who were neither professional scientists nor seekers after commercial benefit.

With justice, amateur experimenters were later able to claim that " Wireless telegraphy was in the first instance originated, and has since been largely developed by men who, at any rate to begin with, were not even electrical engineers, and still less qualified telegraphists."

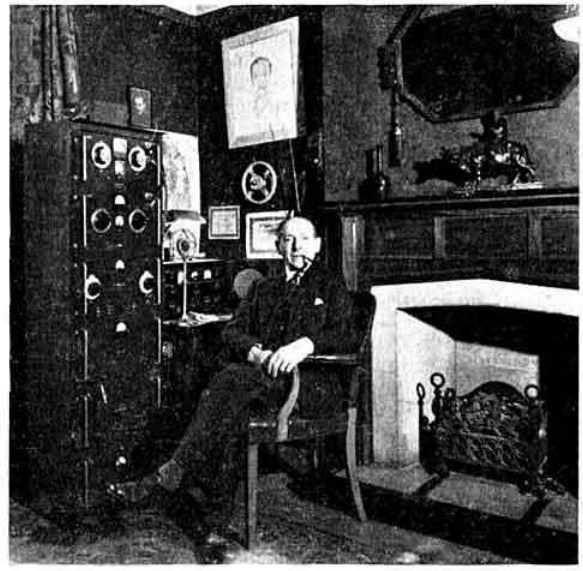
Amateur stations in fact began to spring up in the last few years of the nineteenth century (certainly by 1898) and gathered strength in the early years of the present century. Many of these stations were for reception only, for listening to the coast stations then being set up, but others included spark coils and Wimshurst machines for transmission over distances which gradually lengthened into miles.

In the United Kingdom Amateur Radio moved a step closer to modern ideas with the coming into force of the Wireless Telegraphy Act of 1904. This for the first time made necessary the registration of all wireless telegraphy apparatus. As a result of the Act permits " to use Wireless Telegraphy for Experimental Purposes " were issued. It was not difficult to obtain one.

At first, it was necessary only to advise the GPO of the intention to build a station and to fill in a form giving details of the proposed equipment. A Post Office inspector would then call to see the equipment and a permit would be handed to the owner. There was not even a fee.

Call-signs to begin with were self-allocated but later the PMG notified all permit holders that " stations should have a distinctive call signal and that each station, when signalling, should begin each transmission with the call signal of the station with which it is desired to communicate and end with its own call signal." In 1912 the Q-code came into existence though few of the original meanings have survived. Terms like CQ, 73 and even " ham" date back at least to this period, though some did not cross the Atlantic until later.

By 1913, then, the outlines of Amateur Radio as a scientific hobby with official licences were already clearly drawn. Those were the days of the " jigger," the "two slide tuning coil," Bungay's book; early crystal detectors; high-speed rotary gaps; articles in *The English Mechanic* and the *Marconigraph* which became *Wireless World*, Maurice Child's high power (1 kW) station at the London Telegraph



The late Rene Klein, KXJ, 2HT, in the room at his home in Hampstead, North-West London, where the first meeting of the Society was held on July 5, 1913. At the time this photograph was taken, Mr. Klein held the call-sign G8NK.

The Society's first president was A. A. Campbell Swinton, F.R.S., M.Inst.C.E., M.I.E.E., 2HK, who was in office from 1913 to 1920.

Training College, long and high aerials with up to 2,700 ft. of wire.

The transmitting permits by now specified a power and a wavelength (not that there was any chance of confining a spark transmission to a definite frequency) and three letter call-signs, one letter of which was always X to indicate an " experimental " station.

Between 500 and 1,000 or so of these licences were issued. Stores such as Gamages began stocking parts. Out-of-London signals began to filter through to the Capital, and the stage was set for the next move forward.

THE COMING OF THE CLUBS

As the hobby of experimental wireless spread, it was natural for clubs to come into existence where those who were interested could meet and exchange views. Often these were sections of the many local " scientific " societies which flourished in that era. Indeed radio communication also formed part of the activities of such organisations as the Boy Scouts (whose groups used the call XBS), the Cadet Corps and similar bodies.

Soon clubs devoted exclusively to radio experimenting were being formed—for example at Derby in 1911 and in Liverpool, Birmingham and Northampton. In 1910 the first national society in the British Commonwealth was formed—the Wireless Institute of Australia. But Britain, and London, remained without one. Then in the early summer of 1913, Rene Klein (KXJ, 2HT and later G8NK), who died only recently, decided that something must be done.

He wrote to the press deploring that there was no association in London where amateur wireless experimenters could meet and discuss their problems. This letter evoked an immediate—if rather limited—response and several amateurs got in touch with Klein.

A preliminary meeting took place on Saturday, July 5, 1913 at Klein's home in West Hampstead; five prospective members turned up. They decided to form the " London Wireless Club " having for its object " the bringing together of all amateurs interested in wireless telegraphy and telephony."

Rene Klein was elected honorary secretary, pro tem, and founder members included Leslie McMichael (MXA, 2FG), L. F. Fogarty and others. Annual subscriptions were 10s. 6d. for Town members and 5s. for country members—showing the intention, from the very beginning, of expanding beyond London.

The formation of the club was reported in several of the popular technical publications of the day including *English Mechanic and World* (July 11) and *Wireless World* (August) and it thus came to the notice of other London amateurs. Permission was also obtained to display a notice about the club in the wireless department of Gamages—a popular centre for the purchase of equipment.

Almost immediately after the formation of what after all might have become just one of a number of similar clubs, an event occurred which showed the need for an organisation with much wider horizons and aims. The GPO announced that, for the first time, it intended to introduce a charge (one guinea) for issuing transmitting and receiving permits—though it was stated that this would be an initial fee only and that there would be no annual charge.

Amateurs felt this contravened the spirit of the 1904 Act which specifically safeguarded the rights of " experimenters " (a point which was to come up many times in the next 35 years or so). Mr. Klein asked the GPO to receive a deputation to discuss the new regulations and a meeting took place on July 25, 1913—a meeting which began the history of official liaison between the Society and the licensing authorities which has continued ever since.

The initial licensing fee remained, but the GPO accepted the view that licences should in future be restricted mainly to bona fide experimenters and invited the Club to put forward names of suitable applicants.

This incident encouraged an early member, Mr. F. Hope-Jones, to propose an altogether more ambitious future for the new club. This was that it should obtain from the authorities " a charter of freedom for the wireless amateur." To do this he felt that members should secure the confidence of the authorities by undertaking " to keep within the limits of their licences "—an undertaking which is still required of all RSGB members. For, it was well known that even then many amateurs were tempted to exceed their power limits and to radiate broad signals.

Hope-Jones put these views forward at the first General Meeting of the Club on September 13, 1913, at Westminster School. At the meeting it was decided to change the name to the " Wireless Society of London." Hope-Jones became the first chairman. The first object of the Society was " to

guard the interests of all their fellow-workers in wireless telegraphy. . . . "

Some eyebrows were raised at the notion that amateurs themselves should propose additional restrictions. Indeed not all supported the tendency towards greater control of the hobby. Amateur Radio has always produced an independent, highly individualistic outlook. Even in 1913, *Wireless World* was commenting " Recriminations seem to be rather popular in amateur wireless circles". But Hope-Jones foresaw the danger that the British amateur, like the Americans of the same period, might suffer from the actions of an irresponsible minority. Already, for instance, the amateurs had been banned from using the Royal Parks without special permission.

He was thus anxious that the Society should enlist the help of persons of influence, whether they were amateur experimenters or men of science. While this policy did not endure in the changed conditions of the 'twenties, it succeeded brilliantly in transforming what might have been little more than a local club into a National Society.

As a result of his efforts, the famous scientist and engineer A. A. Campbell-Swinton (still honoured as the man who showed how cathode-ray tubes could be used for high-definition television—on record in addresses to the Röntgen Society (1911) and the RSGB (1924)) became the first President of the newly-formed Society, and many other well-known figures agreed to serve as Vice-presidents.

Campbell-Swinton's interest in and support for Amateur Experimental Radio was not just a passing phase of one of the country's most eminent consulting engineers—after the war he held the call-sign 2HK and set up one of the first two-way radio telephony links between his offices in Victoria Street and his home in Chester Square. It has been said of this famous Scotsman, who died in 1930: " he thought more deeply, clearly and disinterestedly about television than any other of his time."

Campbell-Swinton's presidential address on January 21, 1914, at the Institution of Electrical Engineers was a notable occasion. A special message of greeting from General Ferrie, a famous French pioneer, was received by radio direct from the Eiffel Tower transmitter. This message was heard by all present by means of an " organ pipe " loudspeaker and also made visible by projecting the message as received on a siphon recorder on to a screen by an epidiascope.

Campbell-Swinton helped the Society establish an office in Victoria Street where his own consulting engineering offices were. He also helped establish good relations with the I.E.E. which, for almost 50 years, has provided facilities for lecture meetings of the Society.

After some hesitation, the Society accepted an offer from Mr. A. W. Gamage for two rooms at 107 Hatton Gardens to form a meeting place and club room, and a ½ kW station was set up there.

By 1914 the number of stations active in London created a major interference problem (who said QRM was a new problem?). The Society drew up a code of good operating practice for all amateurs, which could equally have been formulated this year. Some points included:

"Receivers to be as selective as possible. Listen carefully before calling a station. Refrain from answering a station that is calling some other station. Never carry out testing work with the aerial on. Always use minimum power. Keep conversations short and sign every message. Listen in for a minute after finishing a conversation to see whether anyone is waiting to call you."

Amateur Radio, you will gather, has changed less than many of us think!

THE FIRST WORLD WAR

So as the sun-baked summer shone across the fateful year of 1914, amateur experimenters nightly whispered to the world of space. An expanding hobby, surprisingly akin in its operation—if not its equipment—to our own times.

But suddenly in Britain silence . . . a silence which was to last six long years.

On August 3, 1914, as a measure of safety the Government decreed " remove at once your aerial wires and dismantle your apparatus." Amateur apparatus was sealed up and mostly removed. There was even a prohibition upon the publication of any magazine articles which might encourage the construction of wireless equipment. " No person shall buy, sell, or have in his possession or under his control any apparatus for the sending or receiving of messages by wireless telegraphy, or any apparatus intended to be used as a component part of such apparatus."

Receiving as well as transmitting apparatus thus came under the ban. The spy scare that swept Britain was to have unfortunate results for several amateurs. Suspicious neighbours denounced the erstwhile experimenters as members of the German Secret Service which was supposed to have a network of spy stations along the East Coast. In the police

RADIO OR WIRELESS?

There is a widespread belief that whereas " wireless " is of European origin, " radio " is a distinctively American term. There is little justification for this belief. One of the earliest published uses of the word as a prefix in its modern sense has been traced to the London magazine *Tit-Bits* which in May, 1898, referred to a " radioconductor or coherer used by Marconi in his wireless telegraphy." The word "radiotelegraphic " appeared in the British magazine *Nature* in September 1902, and then crossed the Atlantic. When on November 22, 1922—to meet the wishes of provincial amateurs—the new title of Radio Society of Great Britain was adopted, the Society was following sound tradition!

Q CODE

Introduced in 1912 after the International Radiotelegraphic Convention in London.

Some original meanings were:

QSA	Your signals are strong	QSB	Your tone is bad
QRK	I am receiving well	QRL	I am receiving badly
QRZ	Your signals are weak	QSD	The time is . . .

QST—General call to all stations (adapted by the newly formed ARRL for its journal in 1915).

The RST code was suggested by Arthur Braaten, W2BSR, in 1934 to replace the use of QSA and R codes.

searches some small forgotten piece of equipment would be uncovered and prosecutions followed.

In such an atmosphere of suspicion, little official attention seems to have been given to a letter which Klein, as honorary secretary of the Wireless Society of London, wrote to *The Times* suggesting that the authorities should enrol members to keep watch for illicit wireless transmissions. This letter, however, shows clearly that though most official activities of the Society had perforce been suspended the Society did not consider itself as dissolved.

Meanwhile in America amateur activity continued until 1917 some stations working over 500 miles and even the odd 1,000 mile contacts.

THE STRUGGLE FOR LICENCES

Licences did not return automatically with the Armistice in November, 1918; indeed for long months the future existence of amateur transmitting lay desperately in the balance. Why this should have been so is by no means clear. In the UK, the USA and elsewhere the amateurs had proved during the war a most useful source of recruits for the radio services. But Governments having obtained complete power over the ether were often reluctant to relinquish their monopoly.

Fortunately in the UK, the Marconi Company came down on the side of the amateur experimenter. Marconi, Eccles and Fleming all led the demand for the reissue of experimental licences.

But as late as July, 1919, a fine of £25 was imposed on one luckless amateur " for having in his possession an apparatus for the reception of messages by wireless telegraphy." The Government, moved slowly, taking its time over such steps as the removal of the ban on the sale of buzzers!

So the months dragged on. The Wireless Society of London, again fully active after circulating all pre-war members, made contact with the authorities. At a general meeting of the Society on October 28, 1919 attended by 200 members, it was announced that the P.M.G. had authorized the Advisory Committee of the Society to consider and recommend suitable applicants for transmitting licences. The following month it was announced that permits for *reception* would be granted to persons supplying proof of British nationality, two written references and an undertaking to observe the secrecy of messages—" thermionic valves shall not be used without special authority".

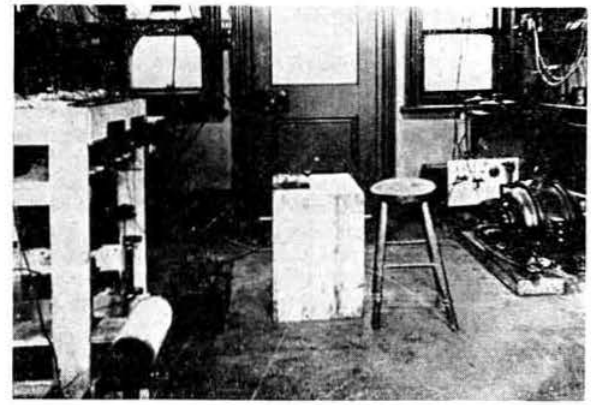
The new transmitting licences were hedged round with many restrictions including one that stated " communication will be authorized only with specified stations not exceeding five in number." Power input was limited to 10 watts except with special permission, artificial aerial licences would be issued for experiments not requiring the use of a radiating licence; some definite object of scientific value or general public utility must be shown; restrictions were placed on wavelengths and hours of working. Bands were 1000 and 180m.

British amateurs were to labour for many years under such restrictions. As a result of specific proposals put forward by the Society some of the worst features gradually disappeared but there were few major concessions until after the Second World War.

More months were to pass before the coveted licences were issued. But as the autumn of 1920 approached, approved applicants began to receive their permits; each was allotted a call-sign comprising a number (at first " 2 " but soon also " 5 " or " 6 ") followed by two letters; the pre-war three letter calls had been silenced for ever. Many of the new calls were at first formed from initials or names.

THE TRANSATLANTIC TESTS

During the summer of 1920 when the brand new British calls began to be issued, reports began to trickle across the Atlantic of long distances being covered by American amateurs. Five hundred . . . one thousand . . . two thousand



For the 1922 Transatlantic Tests the RSGB built a special 1 kW station which operated under the call-sign 5WS.

THE SOCIETY'S PRESIDENTS

A. A. Campbell Swinton, 2HK	1913–20
Major J. Erskine Murray	1921
Admiral Sir Henry Jackson	1922
Prof. W. H. Eccles	1923–24
Sir Oliver Lodge	1925
Brig.-Gen. Sir Capel Holden	1926–27
Lord Fraser of Lonsdale (Capt. Ian Fraser, G5SU)	1928
Gerald Marcuse, G2NM	1929–30
H. Bevan Swift, G2TI	1931–33
Arthur Watts, G6UN	1934–36 and 1938–40
E. D. Ostermeyer, G5AR	1937
A. D. Gay, G6NF	1941–43
E. L. Gardiner, G6GR	1944–46
S. K. Lewer, G6LJ	1947
V. M. Desmond, G5VM	1948–49
W. A. Scarr, G2WS	1950–51
F. J. Charman, G6CJ	1952
Leslie Cooper, G5LC	1953
A. O. Milne, G2MI	1954
H. A. Bartlett, G5QA	1955
R. H. Hammans, G2IG	1956
D. A. Findlay, G3BZG	1957
L. E. Newnham, G6NZ	1958
Dr. R. L. Smith-Rose	1959
W. R. Metcalfe, G3DQ	1960
Major-Gen. E. S. Cole, G2EC	1961
E. G. Ingram, GM6IZ	1962
Norman Caws, G3BVG	1963

miles. Soon there was increasing speculation on whether amateurs could bridge even " the Pond." The pundits shook their heads at the idea of American 1 kW stations on " 200 metres and below " —limitations imposed in 1912—ever being heard in Britain. As for two-way working. . . . At that time all the experts, with the notable exception of Marconi—who incidentally became an honorary member of the Society—dismissed short-waves below about 300 metres as useless for working over appreciable distances.

Undeterred by the cynics and experts, plans for the first Transatlantic Tests began to take shape. The UK end of the organizational work was put into the hands of a prominent member of the Society, the late Philip Coursey, 2JK, then research editor of *Wireless World*. Tests were planned for February 1921.

A good augury was the final lifting on September 1, 1920 of all restrictions on the sale of wireless apparatus.

Some 250 British listeners announced their intention to take part—some 30 logs were eventually received . . . but no entrant had received a single word or signal which could be definitely attributed to an American station.

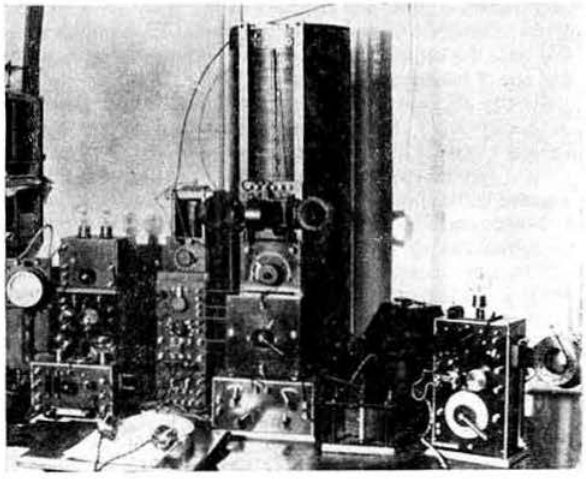
In the States, there was a tendency to put the blame on to British receivers. Ken Warner, editor of *QST* bet " a new spring hat " that a good US amateur with a modern receiver could hear American signals and it was from this that the visit of Paul Godley, 2ZE, eventually emerged.

New tests for late 1921 were organized. The controversy between spark and c.w. (valve) transmitters was now raging furiously in the United States.

Paul Godley with his receiver arrived on November 22, 1921. He told the Wireless Society of London of the progress of Amateur Radio in the US. But the most significant passage of his lecture was his suggestion that the answer to longer ranges might be found " on shorter wavelengths."

" One has far greater hopes," he said, " of being able to travel greater distances on shorter wavelengths."

Godley erected his station near London but found conditions so bad that he immediately went to Scotland and set up his station in a tent at Ardrossan—850 ft. of aerial wire, a regenerative receiver and a ten-valve Armstrong " supersonic heterodyne " receiver.



Some of the receiving and frequency measuring equipment at E. J. Simmonds' pioneer station, 2OD, in 1921.

CQ, 73 AND HAM

" CQ " is generally believed to have originated in the British railway signalling system.

" 73 " is usually ascribed to a list of commonly used expressions drawn up by the US telegraph concerns in 1859 to save transmission time. There were 92 expressions—number 73 meant " my compliments."

" HAM ": this controversial term was in common use for amateur radio operators in the US before World War I but does not appear to have crossed the Atlantic until the early 'twenties.

The tests took place between December 8-17, 1921 and the remarkable results have been described many times. Godley, despite a heavy cold, positively identified 27 American and one Canadian station. British amateurs identified with code groups five stations and logged another five or six calls. The first positive identification was almost certainly made by the British station 2KW of Sale (Messrs W. R. Burne and Co.).

On December 11, 1921, the special Radio Club of America station 1BCG sent the first complete message ever transmitted by Amateur Radio across the Atlantic. One of the signatures was that of the famous radio pioneer—and keen amateur—E. H. Armstrong.

So ended the second tests—an enormous success for American and British amateurs. Among other things, they showed clearly the advantages of c.w. transmitters over spark.

The following year, special British high power (1 kW) stations were erected by the RSGB (as it had by then become) 5WS and by the Manchester Society 5MS—there was acute rivalry between London and Manchester. Both of these stations were heard in the States but no two-way contact was established. *Wireless World* reported a total of 507 different American stations heard in all call districts. They included three telephony stations!

Shortly before the fourth Transatlantic Tests in December 1923, there took place on November 28 the long-awaited two-way contact. The honour fell to the famous French amateur Leon Deloy (F) 8AB who had reduced wavelength to about 100 metres, and to the ARRL station of Fred Schnell, 1MO. Jack Partridge, 2KF, was the first British Amateur to know the thrill of two-way transatlantic working on December 8, 1923.

There followed a rush to reduce wavelength to about 100-110 metres. American and Canadian stations were heard in large numbers—the era of the short waves was opening.

GROWING PAINS

The early twenties form a vital chapter in the development of organized Amateur Radio and of the Radio Society of Great Britain. But the story is by no means a smooth one; several of the storms which blew up during this period threatened to submerge the Society.

These rough passages were inevitable in the changing circumstances of the period. When the Society had been formed in 1913, it was concerned with the experimental

aspects of a science and not an industry. The coming of broadcast entertainment radically changed the situation.

Some members were concerned with pure science, and wished to create a learned society for the exchange of views; others were by now engaged in industrial development, and saw in the Society the embryo of a professional body; then there were those who thought there would be a need for a society to look after the non-technical body of radio listeners (akin to the AA motoring organization); while finally there were those who, through thick and thin, held to the original conception of the Society as being primarily for the advancement of Amateur Radio transmission and reception.

With members so divided in their basic interests it says much for the good sense of all concerned that by and large the debates were conducted without personal animosities.

Immediately after the war, the Society's activities covered almost all phases of radio other than commercial, marine and similar well-established communication applications. In October, 1919, it was agreed to permit local societies to enter into affiliation with the Wireless Society—a decision which was to play an important role during the next few years. The first of an important series of Annual Conferences of Amateur Wireless Societies was held in February 1920. Of the 20 known clubs in the country, 15 were affiliated. The number soon grew.

By the end of the year, membership of the parent society had risen to 316 and there was £118 17s. in the kitty. In December, Dr. Erskine Murray became the second President, and Mr. Leslie McMichael became honorary secretary.

At the second annual conference (March 1, 1921) the cool winds of provincial discontent began to chill the atmosphere. This discontent was directed primarily at the restrictions imposed on amateurs by the Post Office, and a general feeling that London should somehow be able to wave a wand and make them vanish.

When the third annual conference came round in January 1922 it was proposed that the name of the parent body should be changed to cover all of Britain. At this time some 286 transmitting licences and 6,986 receiving licences had been issued.

Then came an incident which led to trouble. Early in 1922 both the authorities and the Society became concerned at the interference caused by amateurs to the Croydon air traffic control station on 1000 metres. It was common knowledge that the 10-watt power limit was not being strictly kept.

The committee of the Society drew up a list of recommendations and these were largely accepted by the authorities. These included the withdrawal of the 1000 metre amateur band and the substitution of a 440 metre band on which spark would be prohibited; activity would be limited to two hours in any twenty-four but the limitation on working only five different stations would be withdrawn.

Although we can see today that these proposals were eminently reasonable, they were of course not popular with those using 1000 metres and spark.

Thoughtful amateurs realised that the Society was being drawn into a difficult position; not only was it becoming identified with unpopular, if necessary, decisions which should have been made by the authorities, but it was also leaving itself open to the charge that interests other than those of the transmitting amateur weighed heavily on some members of the London committee.

One event of 1922 was destined to have a lasting effect upon British radio—though at the time did nothing to still the murmurs against broadcasting. This was the successful holding of the very first National " Wireless Exhibition and Convention " under the auspices of the Society. It was the direct forerunner of our modern National Radio Shows. At this time the experimental receiving licence was replaced by the new " broadcast licence."

Shortly afterwards the Prince of Wales became Patron of the Society and in the following month the new title of Radio Society of Great Britain was officially adopted.

This greater emphasis on national rather than London interests came none too soon. Already there had been formed in Manchester the British Wireless Relay League, supported by a number of leading transmitting amateurs. Nor was the Society's position too secure in other ways. Although 160 local societies were in affiliation representing some 30,000 enthusiasts (mostly interested only in receiving), the membership of the parent body remained low, and a £38 loss was reported in 1922.

The extremely rapid spread of broadcasting during 1923 brought to a climax the impossibility of trying to represent both the active amateur and the broadcast listener. In many ways the two bodies were coming into active opposition.

By July, Mr. Hugh Pocock, active amateur and then editor of *Wireless World*, published a strong warning on

BRITISH AMATEUR CALL-SIGNS

1904 to about 1912		none officially allocated	
1912 to 1914		three letters (one of them X)	
G2 two letter	1920–39	G5	1921–39
G3 two letter	1937–38	G6	1921–39
G4	1938–39	G8	1936–37

G2 three letter—prewar " artificial aerial " permits reissued with G prefix from 1946 onwards.

G3A – –	1946	G3J – –	1952
G3D – –	1947	G3M – –	1957
G3G – –	1950	G3P – –	1961
	G3S – –	1963	

Before 1939 it was common practice to re-issue the same call-sign when it was relinquished.

The G prefix was not officially used until 1928.

THE ORIGINAL SYSTEM OF INTERNATIONAL WORKING

Before the introduction of International Prefixes in 1928, a system of " intermediates " was generally used.

Example: IMO IMO UG 2OD 2OD meant that IMO in the United States (U) was being called by 2OD in Britain (G). The American station would reply: 2OD 2OD GU IMO IMO.

Some of the other " intermediates " were:

A	Australia	N	Holland
GC	Scotland	T	Poland
GW	Eire	X	Any portable station
K	Germany	Z	New Zealand

" far too much petty rivalry . . . between individuals and between one amateur society and another. Amateurs are drifting farther apart instead of strengthening the bonds of unity . . . to describe the situation as serious is in fact a mild expression."

This bringing into the open of the difficulties did much good, but only just in time. For more and more broadcast listeners—who earlier had depended upon amateurs for their programmes—now complained of interference from amateurs using 440 metres. The national press took up cudgels on behalf of the listeners. Demands were made for the suppression of amateur transmission. In the face of these threats, unity was no longer a desirable luxury, it was a necessity.

On July 21, 1923, the British Wireless Relay League formally suggested to the Society that it should " take over the management by the appointment of a Committee to be selected by holders of transmitting licences." This led directly to the formation of the " Transmitter and Relay Section " of the RSGB. While in many ways the new section was empowered to function independently of the parent Society, the RSGB was responsible for any excess expenditure. Thus the T & R Section was quite clearly part of the Society, even though an autonomous part.

Even then, at the last moment, divisions again arose. During September 1923 a new " Radio Transmitters Society " was set up which included many of the most active amateurs.

But in February 1924 all concerned had the good sense to see that in face of outside threats, two societies would be fatal. A " fusion " was arranged between the R.T.S. and the T and R Section of the RSGB. British amateurs were united at last.

From that day to this, there could be no doubt as to the true National Society for radio amateurs in the United Kingdom.

AMATEURS AND BROADCASTING

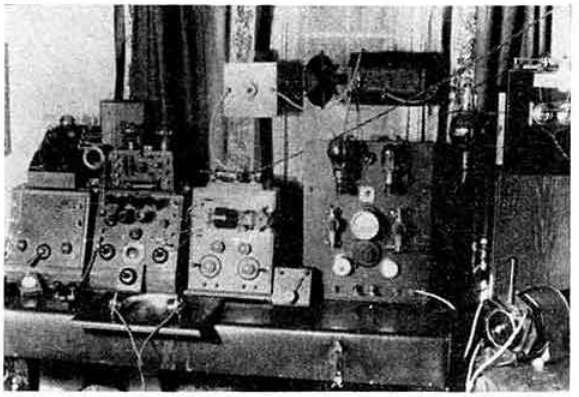
" Regular broadcasting in this country was initiated, not only at the request of, but through the insistence of the experimental amateur "—so commented *Wireless World* in 1923. Unfortunately space does not permit us now to show fully how justified was this statement.

Early in 1920 the Marconi Company had erected a 15 kW telephony station for testing at Chelmsford and occasionally broadcast musical items to the listening amateurs. In June they even obtained the services of the famous singer Melba. but the Government took fright and banned all further entertainment programmes, except with special permission granted solely for individual programmes.

Soon the newly-licensed amateur stations stepped in to fill the breach on 1000 metres and later 440 metres. Gramophone records and even live entertainment began to go out every evening, sometimes with, sometimes without, official blessing. This continued throughout 1921, with official broadcasting still banned.

Then the Wireless Society of London acted. It organized a petition from the " amateur radiotelegraphists of Great Britain " and signed on their behalf by the presidents of no less than 63 local clubs and societies, representing 30,000 enthusiasts.

Representatives of the GPO were also informed that it was the intention of the amateurs to " urge their plea with all force of which they were capable, consistent with constitutional methods."



The first contact with Canada on 115 metres was made by 2OD on December 16, 1923. This picture shows the equipment used.

Perhaps it was the petition or maybe the thought of massed amateurs marching on Whitehall, but within a fortnight the Government gave permission for a weekly programme of entertainment, including music, to be transmitted from the Marconi station 2MT at Writtle. The news of these broadcasts—which led directly to the formation of the original British Broadcasting Company—was announced at the third Conference of Amateur Wireless Societies on January 25, 1922.

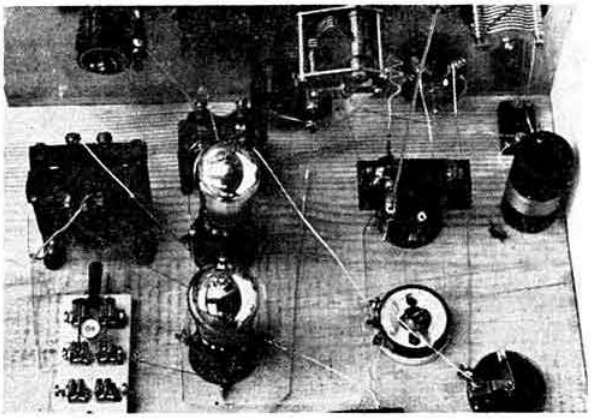
The subsequent famous broadcasts were run by the late Capt. P. P. Eckersley, a former amateur and an active member of the Radio Transmitters Society and the Wireless Society of London.

But, as we have already seen, the part played by the amateurs in broadcasting was soon conveniently forgotten, although it is worth recalling that members of the Society were invited to give a regular series of BBC talks on Amateur Radio subjects and later to join an Advisory Committee. By the end of 1923, *Wireless World* was already warning amateur transmitters that broadcasting, which they had done so much to initiate, might easily become the amateurs' Frankenstein.

Two other ways in which amateurs have left a permanent mark on British broadcasting should be recalled:

Early in 1923, Mr. R. J. Hibberd, a prominent member of the RSGB, organized a special section of the parent society known as the Schools Radio Society to encourage greater use of radio in schools. The introduction on April 4, 1924 of the first educational broadcast specially intended for reception in schools was directly due to the initiative of this section.

Even the round-the-clock short-wave broadcasts of the BBC can be traced back directly to an amateur—the late Gerald Marcuse, 2NM, the first Honorary Secretary of the T and R Section of the RSGB. About 1927–28, 2NM was being heard regularly all over the world on 32·5 metres. An amateur in Bermuda began picking him up and rebroadcasting his voice in the West Indies. Letters showed how much this meant to the listeners and encouraged 2NM to apply to the Post Office for official permission to transmit programmes to Commonwealth countries, entirely at his own expense. The GPO agreed to his doing so for a limited



A receiver of the 1920s described as an "electronic oscillation receiver." It used a type DEQ valve.

number of hours each week. Keenly interested in music, Marcuse invited many well known artistes to his 1½ kW station with a 100 ft. mast at Caterham, Surrey. Sometimes he simply relayed the BBC medium wave programme —particularly Big Ben. Almost from the start the scheme was an enormous success and soon the BBC were forced to take notice and started its own service on about 19 metres —though for a time few people could hear these transmissions compared with those listening to 2NM. But, as is always the way, after two years the Empire broadcasting service of 2NM was officially closed down and the BBC took over.

DAYLIGHT DX

Earlier we have noted how amateurs first spanned the Atlantic on about 200 metres and then made two-way contact on 100 metres. As Mr. E. J. Simmonds, 2OD, wrote in 1926; " There is every reason to believe that these were the first of their kind, and that it is from their publication that widespread attention was directed to the immense value of the short waves."

It was not long before amateur stations in all parts of the United States were being heard and worked from Europe. Marcuse, 2NM, worked the West Coast on February 23, 1924 and by May South America had provided a new continent. In January 1924, 2OD made contact with the States while running only 35 mA at 900 volts—this type of QSO really woke up the commercial communication companies.

But these early contacts took place with the entire propagation path in darkness.

Soon thoughts were turning towards even longer distances. A new official RSGB station 6XX under Philip Coursey had been erected at Shepherd's Bush (not an ideal QTH). Transmissions were made to Australia on 197 metres but without success.

Some amateurs were thinking along other lines. If 200 metres could cross the Atlantic and 110 metres result in two-way contacts, what would happen if wavelengths were reduced still further? With the valves then available and the constructional techniques then in vogue, this was no easy matter, but soon 80 metres and 95 metres were being used. The autumn of 1924 produced the great breakthrough. In October 1924, 2OD heard a New Zealand station. Next day a transmission was heard in the opposite direction. Then on October 19, a sixteen-year-old schoolboy, Cecil Goyder, operating the Mill Hill School station, 2SZ, made contact with Frank Bell, Z4AA, and other contacts followed in quick succession. Amateurs had truly girdled the world.

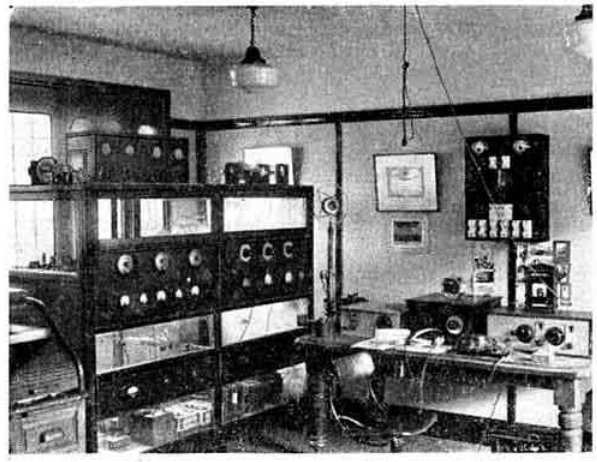
Soon wavelengths became shorter still; 45 metres, 30 metres, 20 metres all responded to amateur—and by now official—experimental stations.

In October, 1928, Mr. J. W. Mathews, G6LL, worked W2JN for the first 10-metre trans-Atlantic contact and G2FN got across on 8 watts, but soon the band went dead and stayed that way until 1934, when Miss Nell Corry, G2YL made the world's first WAC on the band.

As early as about 1926 a few amateurs had managed to coax primitive equipment to work down to around 5 metres, looking for DX openings. They were to continue looking for many years to come. In the thirties occasional sporadic *E* openings brought contacts on 56 Mc/s with Italy (G5MQ was the first), and the station operated by the Eddystone company—whose record of interest in Amateur Radio is of extremely long standing—was reported heard in the United States.

The importance of the work of the amateurs in the 'twenties was not only that they opened up the short waves —but did so on low power and without beam aerials.

This is not to deny credit to the pioneer work of Marconi and his colleagues and that of Dr. Frank Conrad of Westinghouse (KDKA). But a study of published literature of the period suggests strongly that while it is perfectly true that Marconi experimented on short waves during the early 'twenties, and even before, this was primarily on account of the prospects—which were later fully justified—of commercial " beam signalling." It was not until after the pioneer low power amateur efforts that he came to accept—rather reluctantly it seems—that long ranges could be achieved without the help of the beam arrays patented some years earlier by Franklin of the Marconi Company; in other words we can find no evidence that he appreciated that long



The only British amateur to win the BERU Contest before 1939 was F. W. Miles, G5ML, then at Kenilworth.[G5ML now lives in Coventry.

ranges were a feature *per se* of shortwave propagation. Yet, as early as 1921, amateurs were beginning to feel their way towards this concept (note for example the talk given by Paul Godley to the Wireless Society of London). We recognize that this is to some extent a controversial subject, but can only report that nothing in our researches makes it necessary to withdraw the proud claim that " amateurs discovered the short waves."

THAT VINTAGE GEAR

If the amateur of the 'sixties were suddenly confronted with the need to make all his own coils, fixed and variable capacitors, high wattage resistors, valveholders, a.f. transformers, mains transformers, electrolytic rectifiers, and almost all other components . . . and if low power triode valves cost £2 10s. each . . . then he would know something of the problems of the amateurs in the early and mid-'twenties. And if the resulting gear could be made to work on the " ultra short wavelengths " of 45 and 23 metres only by such dodges as raising the receiver off the table on valve boxes, and if finally he succeeded in working the States in daylight on 45 metres with an input of two-thirds of a watt, he would only be repeating some of the exploits of the vintage amateurs.

How to keep decapped R-type bright emitter valves supplied with 0·7 amp at 4 volts until the arrival of the lower consumption D.E. and D.E.R. valves; how to obtain smooth reaction with the popular Reinartz 0-v-1 and 0-v-2 receivers; how to key the transmitter while cranking the handle of a surplus hand generator; how to make a Goyder lock or grind a pebble lens into a useful quartz crystal—these were the type of problems which occupied the amateurs in the 'twenties.

At first short-wave transmitters were usually single-stage self-excited oscillators. The late Capt. P. P. Eckersley was one of the first to advise British amateurs to use power amplification stages. Mr. E. J. Simmonds, G2OD, did much to help British amateurs understand superhet principles, but for some time these were used mainly for semi-local telephony. The transmitter grid leak often consisted of two wires passing through the cork of a medicine bottle into acidulated water—which regularly required topping up. Neon bulbs instead of valves were sometimes used—in fact complete telephony stations using 3s. 6d. neons throughout were not unknown—a technique which has long vanished.

But the outstanding difference from to-day was that it was really an age of " do-it-yourself "—the commercially-built receiver and transmitter, except for rare exceptions, were to arrive with the 'thirties, along with such revolutionary ideas as the class B modulator. But with the pink string and sealing wax rigs of the 'twenties the short waves were well and truly pioneered, even if the days were fast coming to an end when amateurs could claim " all wavelengths below 200 metres " or later " all wavelengths that do not interfere with commercials." One of the secrets of successful DX working consisted of knowing where to look for particular countries: 23, 33, 37, 43, 80, 110 and 150-220 metres were the popular, but by no means the only, spots around which those self-excited rigs wobbled. Amateur bands were finally established at the Washington Conference of 1927 at which, for a time, the whole future of amateur transmitting remained in doubt.

The late Arthur Simons, G5BD was one of those who used a pedal-operated generator during the 1920s. At the time of his death in 1958 G5BD was a prominent v.h.f. worker.

YEARS OF DECISIONS

The year 1925 was a notable one for Amateur Radio. Not only was the key finally turned which unlocked the secrets of 40 and 20 metre international working, but the International Amateur Radio Union was formed in Paris, and July saw the first 12-page *T and R Bulletin* (now the RSGB BULLETIN). During the year the RSGB also played an important part in defeating an attempt in Parliament to amend the original Wireless Telegraphy Act of 1904—a change that would have seriously restricted the rights of the genuine experimenters.

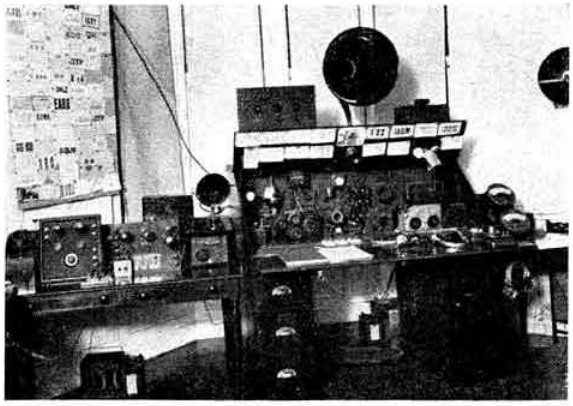
But first one must go back to a major row which blew up in 1924, with the issue of a new form of transmitting licence which contained nothing less than a total ban on all international working by British amateurs except by special authorization. Working was limited to stations in Great Britain and Northern Ireland.

Fortunately neither the RSGB (now under the presidency of Professor W. H. Eccles) nor the British technical press were prepared to accept this without a struggle. Both *Wireless World* and *Wireless Weekly* offered immediately to place the sums of £500 at the disposal of the Society, to allow a test case to be argued in the Courts. It is an open secret that the action of *Wireless World* in supporting the amateurs led directly to its sale!

To support the amateurs' case, Professor Eccles and the Society were able to point to various passages in the Wireless Telegraphy Act. In the outcome, these legal points were never put to the test. Surprised at the strength and unity of the amateurs, the authorities wavered.

The Post Office granted a block permit for the 1924 Trans-Ocean tests, and afterwards this procedure became automatic—and international working continued unabated. Finally the only outward sign of these disputed regulations was the denial to the British amateur of the right to send " CQ," instead he used " TEST "—a curious but hardly important restriction which remained in force right up to the wartime close down in 1939.

Until 1925, *Wireless World* had been the official journal of the Society, a task then taken over for a short time by *Experimental Wireless*. But this change brought home to many amateurs the need for a publication of their own.



A typical amateur station of the early 1930s, G5BA. Note the similarity to the present-day table top arrangement and the display of QSL cards on the wall.

The story of how the BULLETIN came into existence has been told on other occasions—it was conceived over a cup of coffee in a Lyons teashop by Marcuse and Mr. H. Bevan Swift, 2TI who was then Chairman of the T and R Section. The first issue of 12 pages under the editorship of Mr. J. A. J. Cooper included five pages of advertisements and the description of a single stage 23-metre transmitter by Mr. Ralph Royle, 2WJ.

From the start, it was a great success—some clamoured for twice the size and an issue every week!

One of the direct results was a large increase in the membership of the T and R Section which soon outgrew the membership of the parent body of the Society. By now in fact the parent body was in a difficult position despite its incorporation as a company limited by guarantee in 1926, and the holding of the first of a long series of successful Annual Conventions that year. It had organized such schemes as the " approved dealer " list, but the withering away of technical interest among the bulk of broadcast listeners left the idea without any real purpose. A drastic reorganization was undertaken, and on January 1, 1927 the T and R Section became the controlling factor in the Society and all section members automatically became corporate members of the Radio Society.

From then onwards there was no doubt where the RSGB stood; its path was that of the amateur transmitting movement.

THE THIRTIES

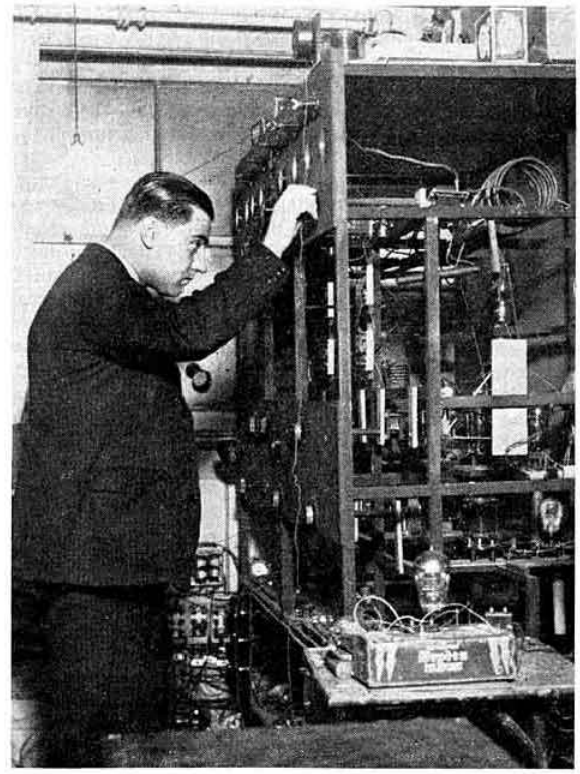
After the hectic and almost continuous alarums and discoveries of the 'twenties, the following decade seems by comparison a period of gradual and relatively unexciting expansion. Licence facilities and procedure in the UK remained basically the same; few fundamental technical breakthroughs occurred—yet the average station of 1939 was very different from that of 1930. DX-wise the early 'thirties were in the doldrums of a sunspot minimum but later peaked up to previously unknown heights—with British amateurs prominent in the field.

But despite the absence of great events, the period for many was a pleasant and satisfying one. There was in Britain no longer the constant threat of complete close down or—as one delegation suggested at the 1927 Washington Conference—the confining of amateurs to artificial aerial experiments.

Quietly the foundation stones of the now imposing structure of national and international liaison with the various licensing and regulatory authorities were laid—from then onwards the Society was to be represented at every major ITU Conference (at first by Mr. Arthur Watts, G6UN); co-operation with the Services and civilian organizations was established; the dream of a permanent, amateur-staffed headquarters of the Society became a reality when in 1932 the dynamic Mr. John Clarricoats, G6CL (the " G " prefix became official in 1928) was appointed full-time secretary at the Victoria Street headquarters and later took over the editorship of the Society's publications. This was the first time an active amateur had been employed by the Society, although Miss May Gadsden had taken up duties as Assistant Secretary in December, 1929, and there had been a full-time clerk as early as 1923.

This opened the way for a steady expansion of the activities and organization of the RSGB, particularly on the publishing side. Also, by attending meetings up and down the country, the new Secretary was able to provide a most valuable link between London and the country members.

During the 'thirties it must be frankly admitted that most of the major technical developments tended to come from across the Atlantic. This is hardly surprising: by the mid-



The first transatlantic contact on 28 Mc/s was made by James W. Matthews, G6LL, in October 1928. In this photograph he is seen adjusting the transmitter he used in the early thirties. Mr. Matthews has been a member of the Society's Technical Committee for many years and is also a member of the Scientific Studies Committee. He is an active v.h.f. man, particularly on 144 and 430 Mc/s.

'thirties there were already 50,000 amateurs in the US compared with under 3,000 in the United Kingdom. RSGB membership increased from around 1,000 to almost 4,000 by 1939.

Society publications grew. *What is Amateur Radio?* appeared in 1932 and paved the way for the first edition of *A Guide to Amateur Radio* in the following year—an annual event until 1937 when the fifth edition ran to 160 pages.

This encouraged the Society to launch its own *Handbook* in 1938—a worthy predecessor to the current edition—and destined to contribute greatly to building up the Society's funds.

The modern craze for proficiency certificates was in its infancy. The doyen of them all—Worked All Continents—arose out of the Paris Congress of 1925 at which the IARU was set up. In 1930 the first RSGB certificate, the Worked the British Empire was inaugurated.

Contests too were beginning. The " British Empire Radio Week "—from which was to emerge the BERU contest—started in 1931. This was launched in connection with the British Empire Radio Union which flourished for some years but was never altogether popular with the overseas Commonwealth societies, and has since lapsed. Another activity was the Empire Link stations. The first National Field Day was held in June, 1933, under very much the same basic conditions as today. Top Band, QRP and v.h.f. (56 Mc/s) events were all popular in the 'thirties.

The RSGB QSL Bureau—the most comprehensive and largest bureau of its kind in the world—flourished in the 'thirties, though it was then conducted from Society headquarters. This continued until the outbreak of war when Mr. A. O. Milne, G2MI began his long stint as QSL Manager.

Gradually the ubiquitous 0-v-1 receivers were giving way to superhets, and the flood of factory-built communications receivers began. In the early 'thirties, transmitting valves were a major problem for British amateurs and it was not uncommon to find the old LS5 bright emitters still in use. Then came American valves such as the " 210 " soon followed by the 6L6, T20, T40 and 35T. The 807 also appeared though for a time was little used. A British valve was the RFP15, and another was the ESW20 (equivalent of the T20). The first few cases of TVI were reported, and the late H. A. M. Clark, G6OT, began to be concerned about the problem.

The larger British telephony stations were no puny affairs, since special permits up to about a kilowatt were still available to the fortunate few. Aerials also had sometimes reached an advanced stage. Even today few stations can boast of a nine-element 10-metre rotary beam 48ft. up and so sturdily constructed that the elements could be adjusted from a gangway under the main boom—yet such a monster was described in the BULLETIN by the late Mr. Brian Groom, GM6RG, in 1938. The late Mr John Hunter, G2ZQ and the Rev. H. A. M. Whyte, G6WY (now VE3BMY) were among the brightest stars of the DX firmament of the period, and passed on their ideas by writing *The Month on the Air*. G6CJ, " the aerial wizard," G6DH with his patient and valuable 28 Mc/s observations and many, many others followed the traditions of the DX " kings " of the vintage 'twenties, such as Simmonds, Goyer, Marcuse, Partridge, Alford, Ryan and Hogg.

So the 'thirties came to an end. But gradually the atmosphere changed. Talk among amateurs turned increasingly to ARP, the Civilian Wireless Reserve and the Royal Navy Amateur Wireless Reserve.

QUOTES

" *I consider that the existence of a body of independent and often enthusiastic amateurs constitutes a valuable asset towards the further development of wireless telegraphy.*"—GUGLIELMO MARCONI.

" *The radio amateur has been subjected to a varied career. He has been lionized, he has been pillorized, he has been acclaimed as a man of standing, he has been castigated in the Press, and yet throughout it all he has, to his credit, kept an even keel.*"—LESLIE MCMICHAEL, MXA, G2FG.

" *Waves of less than 200 metres were given to amateurs as one may give a toy to a child . . . such waves were considered useless for practical telegraphy . . . amateurs soon discovered that although they did not travel far along the earth's surface, yet when shot up at the sky they could give good signals a thousand or two thousand miles away . . . with power of a fraction of a kilowatt . . . experts realized that a new field of research had been opened.*"—SIR AMBROSE FLEMING.

" *Radio amateurs are a valuable asset to this country; they are the breeding ground for our operators of the future.*"—LORD SANDHURST.

" *You know I have always considered myself an amateur.*"—GUGLIELMO MARCONI.

" *My life since 1919 has been radio and the biggest kick I get out of my old age is talking to my old friends up and down the country . . . we did it all with home-made gear . . . the post office wrote me a letter and said I could have all the wavelengths below 200 metres, which were no use commercially* "—GERRY MARCUSE, G2NM *shortly before his death.*

The blow when it came was sudden, but not unexpected. A notice in the *London Gazette* of Thursday, August 31, 1939 and broadcast in the nine o'clock news bulletin of the BBC stated that " all licences for the establishment of wireless telegraph sending and receiving stations for experimental purposes are hereby withdrawn."

Some stations closed immediately, others spun out a few last contacts until midnight.

Then we were into that fateful September. This time the QRX lasted more than six years . . . for too many, an ever silent key.

THE SECOND WORLD WAR

When war broke out in 1939, the Council decided that the RSGB should continue—as far as was possible—its activities. The wisdom of that courageous decision can never be questioned. For six years the RSGB BULLETIN (its name was officially changed from *T. & R. Bulletin* in 1942) provided amateurs scattered over the face of the globe and those at home with a friendly link with their erstwhile hobby. The Victoria Street headquarters were however vacated and for more than three years the work was carried

on from the North London home of the General Secretary. In 1943, however, a move was made back to Central London, to the top floor of New Ruskin House where the Society has—under increasingly cramped conditions—remained ever since.

After a slight initial fall in membership (to about 3,800) on the outbreak of war a remarkable phenomenon, which few could have foreseen, occurred. The Service amateurs and the RSGB *Amateur Radio Handbook*, which had by now become a textbook for many branches of the Services, proselytized many thousands of recruits to a hobby that no longer existed! By the end of the war the membership stood at the record figure of 9,646!

Many of the wartime activities of the Society and of its members must still remain unrecorded. Suffice it to say that very few amateurs did not make use of their technical or operating skills in some way or another in the service of the country.

So while the war passed in its diverse ways, the amateurs kept alive the spirit of their hobby, and chewed over such recollections as the remarkable series of Conventions held in London from 1926–38. Wartime meetings were generally on a less ambitious scale, at least until the arrival in the United Kingdom of a respectable number of American amateurs.

Quite early on in the war, the Council began discussing and making plans for the future (stirred on by articles appearing in *Wireless World* early in 1941). While some of the schemes, such as the experimental workshops, still await fruition, many of the plans then made played a useful role in the discussions with the Post Office on the new 150-watt Amateur Radio (note the change from Experimental Radio) licence issued after the war, and also helped to eliminate the lengthy delays which had occurred in getting the amateurs back on the air after World War I.

MODERN TIMES

So in January, 1946, remarkably quickly after the end of the war in Japan, the UK amateurs came flooding back on the air, at first on 28 Mc/s and then gradually on all the other bands. For new licencees a technical examination was introduced, and for a time first-year licences were restricted to telegraphy.

Since then we have seen 18 years of unbroken activity come and go—almost the longest continuous spell in the history of our hobby.

The Society has prospered, faltered and then gradually but triumphantly regained its strength in numbers and financially. The Society again came under Royal Patronage in 1952, when H.R.H. The Prince Philip, Duke of Edinburgh became patron. New ideas and new bands have come along; for a time TVI presented a serious threat to Amateur Radio —and certainly caused many to close down altogether as BCI had done in the 'twenties; The Amateur Radio and later Radio Hobbies and Radio Communications Exhibitions; Conventions at Manchester, London, Bristol and Cambridge have been held; mobile licences and highly successful mobile rallies have been introduced; the scientific studies of the IGY and the IQSY to come; the participation in space satellite communications; the opening of the u.h.f. bands; the swing to s.s.b.; radio teleprinters and 70 cm. television; the News Bulletins and the v.h.f. beacons; band-planning; the setting up of the Region I IARU Bureau; the difficult problems of the new Articles of Association and the change of subscription rates; the dangers of Atlantic City and Geneva staved off only by the concerted action of the National Societies and—particularly for a time in 1947—the almost lone stand of the RSGB: each one of us could add many items to the growing list of notable post-war events and changes. And yet, as we have tried to emphasize throughout this brief survey, Amateur Radio has survived the years in a remarkably consistent and similar form.

Those early experimenters, who joined the Society when it was first formed in 1913, may have used spark gaps or tapped their microphones across the large aerial coils to get some sort of modulation, but they knew many of the same excitements and problems that the latest G3S – – experiences today. Admittedly distances were less, anything over five or 10 miles was real DX, but the general pattern has remained much the same (at least since the introduction of the QSL card in the early 1920s). How to work a little farther? How to copy through QRM? How to get the aerial up just a few feet higher? How to avoid causing annoyance to non-sympathetic neighbours? How to pass the 12-w.p.m. Morse Test (enforced since 1920)? How to squeeze a few more watts of r.f. out of a reluctant transmitter?

And always the long progress of equipment development has gone on. From spark to valve, and now gradually from valve to transistor. Long wooden breadboards with bright emitter valves to racks and panels and then fully-screened table-toppers. From master oscillator to quartz crystal to v.f.o. and now perhaps to crystal synthesizers. From long wires and AOGs (" Acts of God ") to Zepps and dipoles (the sensation of the mid-twenties) and on to rotary beams. From 1000 metres to 440 metres to 180 metres to . . . well you take your choice.

From official restrictions and the suspicious attitude of the authorities to a licensing system which, if not perfect, is at least run smoothly and lets everyone know where they stand, with unquestioned fairness to all comers.

And always in the forefront is a Society which, though fallible like every other collection of individuals, at least strives diligently and, upon the whole, successfully for the advancement of Amateur Radio in all its forms. And to which countless thousands of amateurs—transmitting and receiving—have contributed their support and work, whether as Officers, Council or Committee members, local representatives, contributors to the BULLETIN or other publications, or by just being members. The 50 years it has taken to build up our Society is a small price to pay for the strong and confident manner in which Amateur Radio can face the next half-century.

The text of this account of the Society and the development of Amateur Radio has been condensed from a much longer manuscript prepared some years ago by Pat Hawker, G3VA. It is recognized that many worthy names and events have had to be sacrificed in this account from considerations of space. Nevertheless it is hoped that this outline, with its deliberate emphasis on the earlier days of our history, will be of interest to many whose knowledge of Amateur Radio and Society history extends back only a few years.

An Amateur Bands Communications Receiver

Easily Constructed Design with Good Performance

By A. J. SHEPHERD, G3RKK*

ABOUT two years ago, the writer required a new receiver with a better performance than that obtainable from ex-government equipment of comparable cost, but the financial outlay could not exceed £30.

Practically no test equipment and only a very limited selection of tools were available. On consulting magazines and handbooks, it was found that most of the designs described were either simple t.r.f.'s and superhets or very elaborate multi-conversion superhets which could not possibly be built successfully with the time, money, and test equipment available. It thus appeared that a little experiment would be required to produce a suitable design.

The result of this was the receiver described in this article. It has been the sole receiver in use at G3RKK for the past nine months, and has given extremely satisfactory service. It was built using far fewer tools than are available in the hypothetical " average amateur's workshop," and the alignment was carried out without the use of any test equipment.

General Considerations of Design

Modern practice tends to favour the use of a crystal controlled front-end with tunable first i.f. for maximum stability. However, in this case it was felt that, quite apart from the cost, it would be foolish to attempt the alignment of such an arrangement without test equipment being available.

The solution was to use a commercial front-end. As a suitable crystal controlled type was not available, a unit produced by Electroniques (Felixstowe) Ltd. using a tunable h.f. oscillator was chosen. This provides about 170° of bandspread coverage of each of the amateur bands from 10 to 160 metres as follows:

Band 1 (160m)	1·8–2 Mc/s
Band 2 (80m)	3·5–4 Mc/s
Band 3 (40m)	7–7·3 Mc/s
Band 4 (20m)	14–14·4 Mc/s
Band 5 (15m)	21–21·5 Mc/s
Band 6 (10m)	28–30 Mc/s

In conjunction with a good dial system, excellent bandspread is obtained on all bands except 10 metres, which is covered in one section, inevitably resulting in a faster tuning rate. Ease of tuning is assured, however, by the use of a dial with a reduction ratio of 110:1. On all bands except 10 metres, where it is 40 kc/s per revolution, the tuning rate is better than 10 kc/s per revolution.

The front-end is supplied accurately aligned to an intermediate frequency of 1620 kc/s, thus greatly simplifying the alignment problem.

High sensitivity is obtained by the use of a frame grid valve in the r.f. stage, in conjunction with high Q coils. The stability depends to a large extent upon the construction. With rigid bracing and suitable ventilation it can be made of a very high order. The i.f. output of 1620 kc/s enables a good image rejection ratio to be obtained.

Undoubtedly the best way of obtaining high selectivity is to use a chain of half-lattice crystal filters. Apart from being rather expensive, however, these are difficult to set up. Crystal grinding or plating is usually called for, and the use of a BC221 frequency meter and valve voltmeter are almost obligatory. In this receiver, therefore, high selectivity is obtained by the use of a second i.f. of 85 kc/s. This gives a —20db bandwidth of about 3 kc/s and is adequate for phone use. For c.w., an external Q multiplier, connected across the first (1620 kc/s) i.f. transformer, provides a controllable amount of increased selectivity or a sharp rejection notch as required.

A product detector is fitted for good c.w. and s.s.b. performance, and a noise limiter, a.g.c. system, S meter and 100 kc/s crystal calibrator are included.

A large number of changes were made before the design described was arrived at, and a few improvements have taken place since the photographs were taken—these are described in this article. A rather more elaborate version is now under construction, but it was felt that the simpler one would be of interest to those who wish to build their own receiver, but do not have the facilities to attempt one of the more ambitious designs.

The Circuit

The r.f. stage (Fig. 1) uses an EF183 frame grid variable-mu pentode. This valve has a high mutual conductance and low noise construction, thus giving plenty of gain, and a good signal-to-noise ratio. The aerial input circuits are arranged so that 75 ohm balanced, unbalanced or single ended connections can be accommodated.

In the prototype these circuits were lined up on a 75 ohm dummy load and an aerial tuning unit (a.t.u.) used. This is

* 3 Cearn Way, Coulsdon, Surrey.

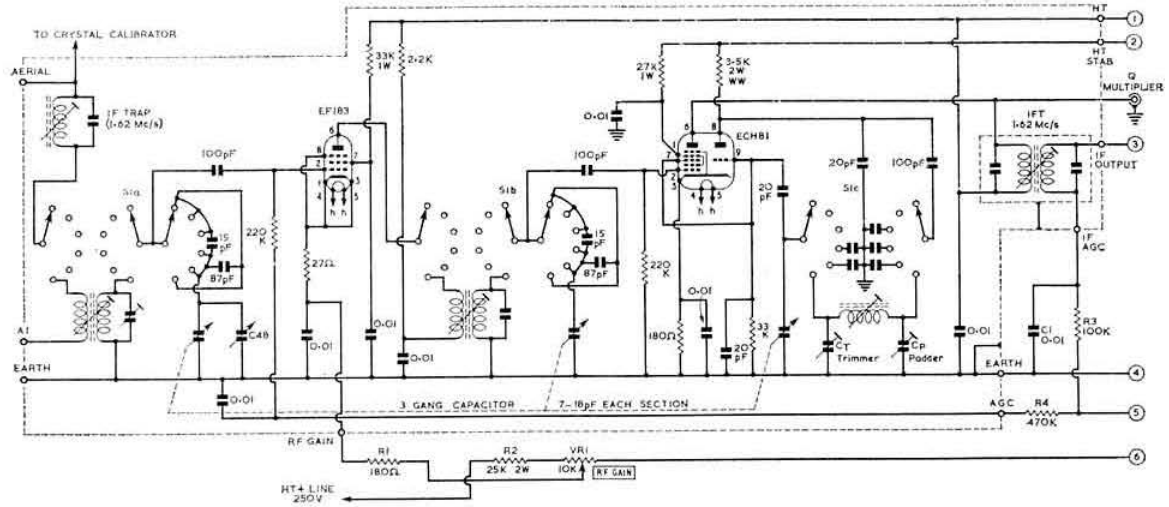


Fig. 1. The front-end of the receiver (Electroniques type QP166). The bandswitch is shown in the 160 metre position. Only the coils and trimmers for 10 metres are shown; the others occupy corresponding positions on the other bandswitch contacts. The oscillator switch section S1C is fitted with shorting contacts.

strongly advised for any aerial other than a dipole, and can give an improvement of over 20db. The transmitter a.t.u. will probably be suitable but, if it is preferred to use a separate one for the receiver, the design shown later will give excellent results. An aerial trimmer is not then required. However, if an a.t.u. is not used, an aerial trimmer may be needed and is in fact shown on the circuit diagram as C48 in Fig. 1.

The trimmers on the r.f. coils should be peaked at mid-band, with the aerial trimmer (if fitted) set at half mesh.

R.f. gain control is obtained by varying, by means of VR1,

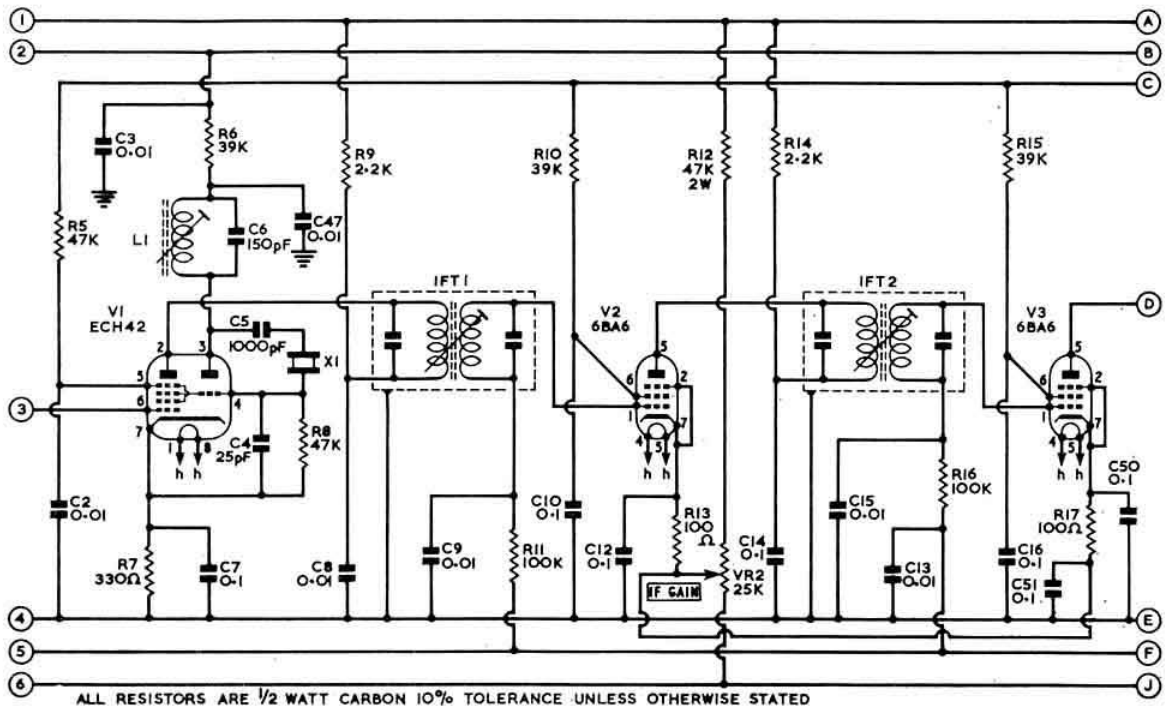


Fig. 2. The second frequency changer and 85 kc/s i.f. strip.

the cathode bias which should never fall below +2·5V on the cathode of the EF183. Standby switching is achieved by the same means, the standby sensitivity being varied by VR5. A.g.c. is applied to this stage via R4 and the 220K ohms resistor fitted by the manufacturers.

The first mixer uses the heptode section of an ECH81, the anode of which is fixed tuned to 1620 kc/s. The grid circuit is tuned to signal frequency. A.g.c. is not applied to this stage, as it might result in oscillator pulling. The triode section is used as the tunable first conversion oscillator, a separate coil being selected on each range by the main bandswitch. All oscillator coils not in use are shorted out to prevent interaction, and each coil is provided with its own negative temperature coefficient trimmer and padder. Only the 10 metre coils are shown in Fig. 1. As this oscillator is the primary frequency determining stage in the receiver, great care must be paid to its mounting and ventilation.

Following the mixer, a stage of amplification at 1620 kc/s was tried, and is included in the receiver shown in the photographs. However it was found to offer no advantage over an extra stage of amplification at 85 kc/s which considerably improved the selectivity, and has therefore replaced it. The output from the first mixer is thus taken directly to the grid circuit of the second mixer (V1 in Fig. 2) via the 1620 kc/s i.f. transformer. This circuit contributes little to the overall selectivity, but by virtue of the high frequency to which it is tuned, enables the r.f. stage to reject the images of both mixing processes, and itself rejects the image of the second.

A *Q* multiplier is connected to the 1620 kc/s circuit, and gives improved selectivity for c.w. reception. Its bandwidth is variable, so that it is also useful on a.m. and s.s.b. if trouble is experienced from cross-modulation occurring at the second mixer. For this reason it is connected here rather than to one of the later stages. It may also be used in the series

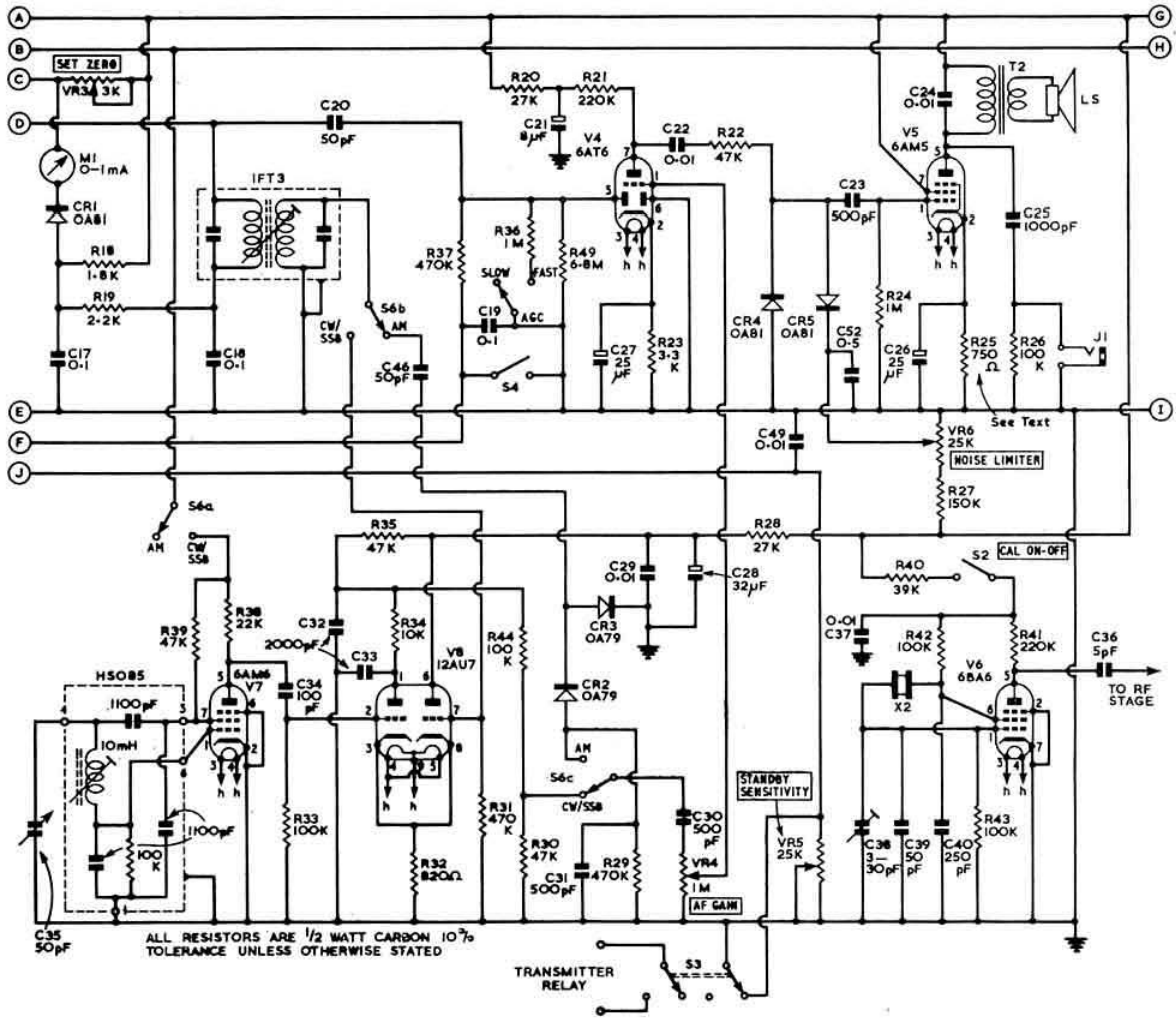
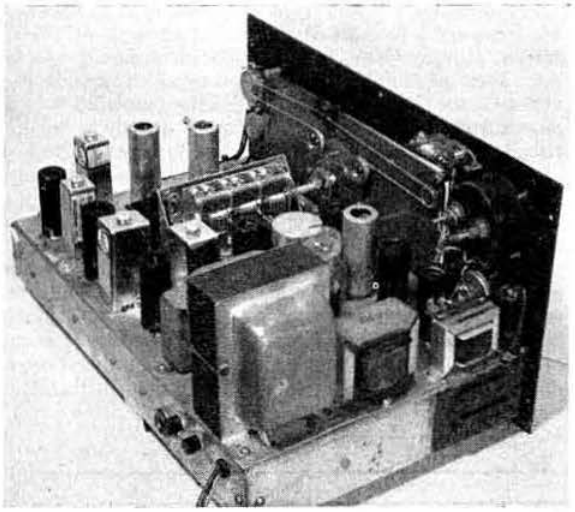


Fig. 3. The S meter, crystal calibrator, a.g.c., detectors and a.f. sections. C35 is the b.f.o. pitch control.



The chassis removed from the cabinet. The terminals on the rear drop of the chassis are for the loudspeaker and transmitter relay.

resonant mode to provide a tunable rejection notch. In the writer's case it is built as a separate unit due to shortage of space, but could doubtless be accommodated on the main chassis with a suitable change of layout. The circuit is not given, as it is very similar to the one on page 113 of the RSGB *Amateur Radio Handbook*.

The second mixer is the hexode section of an ECH42 triode hexode (V1). Its anode circuit is tuned to 85 kc/s by i.f.t.1, and a.g.c. is applied via R3, decoupled by C1.

The triode section is used as a crystal controlled second conversion oscillator. The anode circuit is tuned by L1, C6 to the crystal frequency to reduce harmonic output and hence spurious responses. The h.t. supply for the oscillator is dropped by R6, to produce the r.f. output voltage that will provide maximum conversion gain consistent with minimum spurious responses. Its value depends to some extent upon the activity of the crystal. This will have some effect on the regulation of the h.t. supply, but is not important as the oscillator is crystal controlled.

It can be seen that the frequency of this oscillator should be nominally 1620 $\pm$85 kc/s. In fact the i.f. transformers i.f.t. 1, 2 and 3 are tunable from 80–90 kc/s, so that frequencies in the range 1700–1710 or 1530–1540 kc/s can be used without retuning the first i.f. of 1620 kc/s, to which the front-end is set. A frequency of 1537 kc/s was used in the prototype, as crystals of this frequency are readily obtainable on the surplus market. The use of frequencies in the range 1700-1710 kc/s might result in image response troubles on Top Band.

Two stages of amplification are provided at 85 kc/s, coupled by high Q double tuned i.f. transformers i.f.t.1, 2 and 3. The main selectivity of the receiver is produced in these stages (V2 and V3). The bandwidth at —6db is 2 kc/s (Q multiplier switched out), but the shape factor cannot be expected to compare with that from a properly adjusted chain of crystal filters.

The i.f. gain control VR2 is included in the cathodes of V2 and V3, and on "standby" the cathode bias is increased to permit monitoring through the receiver. A.g.c. is applied to both i.f. stages.

The S meter (Fig. 3) is connected in a bridge circuit including the screens of the a.g.c. controlled i.f. stages. The linearity of the readings could have been improved by feeding the screens from potential dividers, but this would increase the susceptability of the i.f. stages to cross-modulation under the action of the a.g.c. VR3 is used to zero the meter on the noise level. CR1 protects the movement from the flow of reverse current.

All the 85 kc/s i.f. transformers used in the original design are of the same type. However, a more tightly coupled version designed for diode detector work is now available and is specified for i.f.t.3.

The output from the i.f. strip may be switched by S6 to either an a.m. detector using a pair of OA79s, or a product (more correctly, heterodyne) detector, V8, using a 12AU7. The latter gives better s.s.b. and c.w. performance than an envelope detector, and is not unduly elaborate, whilst the former offers some advantages over the conventional type at low signal levels.

The b.f.o. (V7) uses a 6AM6 in a very stable Colpitts circuit connected between the control and screen grids, output being taken from the anode. The values shown give a tuning range of $\pm$2 kc/s.

The triode section of a 6AT6 (V4) is used as the first a.f. amplifier, the gain control being fitted in the grid circuit.

If the transmitter is badly screened and VR5 will not prevent feedback when using a loudspeaker, complete muting may be obtained by earthing R23 via the muting line.

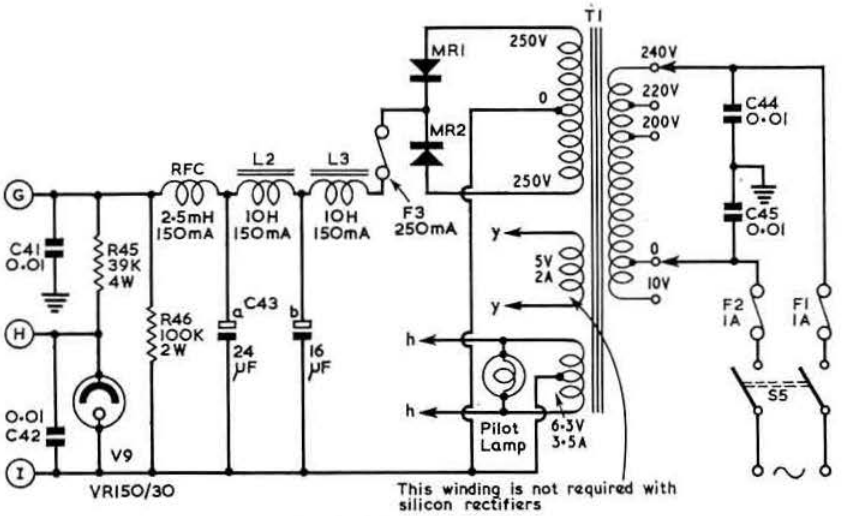


Fig. 4. The power supply.

COMPONENTS LIST

B.F.O. Unit, HSO85 (Electroniques (Felixstowe) Ltd.).
C1, 2, 3, 8, 9, 13, 15, 22, 24, 29, 37, 41, 42, 44, 45, 47, 49, 0·01μF, 500 volt wkg., disc ceramic.
C4, 25pF silver mica.
C5, 1000pF silver mica.
C6, 150pF ceramic.
C7, 10, 12, 19, 50, 51, 0·1μF paper.
C11, 14, 16, 17, 18, 0·1μF 400 volt wkg., paper.
C20, 39, 46, 50pF silver mica.
C21, 8μF, 400 volt wkg. electrolytic.
C23, 30, 31, 500pF ceramic.
C25, 1000pF ceramic.
C26, 27, 25μF 25 volt wkg. electrolytic.
C28, 32μF 400 volt wkg. electrolytic.
C32, 33, 2000pF ceramic.
C34, 100pF silver mica.
C35, 50pF variable (J.B. type C804)
C36, 5pF silver mica.
C38, 30pF trimmer.
C40, 250pF ceramic.
C43, 24 + 16μF 450 volt wkg. electrolytic.
C48, 4-13pF (Eddystone type 588), aerial trimmer if required.
C52, 0·5μF.
CR1, 4, 5, OA81.
CR2, 3, OA79.
Cabinet, 16 in. × 10½ in. × 8 in. (Philpotts' Metalworks).
Chassis, 15 in. × 10 in. × 2½ in., 16 s.w.g. aluminium.
Dial and Drive, Eddystone type 898
Front End, QP166 Amateur Bands Bandspread Qoilpax (Electroniques (Felixstowe) Ltd.).
F1, 2, 1 amp fuses.
F3, 250mA fuse.
IFT1, 2, 85 kc/s type DIF1 Series II (Electroniques (Felixstowe) Ltd.).
IFT3, 85 kc/s type DIF1/D Series II (Electroniques (Felixstowe) Ltd.).
L1, 50-75μH type DLM14 (Electroniques (Felixstowe) Ltd.).
L2, 3, 10H 150 mA.
M1, 0-1mA moving coil meter.
MR1, 2, 1000 p.i.v., 500mA silicon diodes (see text).
R1, 180 ohms.
R2, 25K ohms 2 watts.
R3, 11, 16, 26, 33, 42, 43, 44, 100K ohms.
R4, 29, 31, 37, 470K ohms.
R5, 8, 22, 30, 35, 39, 47K ohms.
R6, 10, 15, 40, 39K ohms.
R7, 330 ohms.
R9, 14, 19, 2·2K ohms.
R12, 47K ohms 2 watts.
R13, 100 ohms.
R17, 100 ohms.
R18, 1·8K ohms.
R20, 28, 27K ohms.
R21, 41, 220K ohms.
R23, 3·3K ohms.
R24, 36, 1 Megohm.
R25, 750 ohms (see text).
R27, 150K ohms.
R32, 820 ohms.
R34, 10K ohms.
R38, 22K ohms.
R45, 3·9K ohms 4 watts.
R46, 100K ohms 2 watts.
R47, 48, 50 ohms 2 watts.
R49, 6·8 Megohms.
All resistors are ½ watt carbon unless otherwise stated
RFC, 2·5 mH 150mA.
S1, bandswitch incorporated in coil pack.
S2, s.p.s.t. toggle (calibrator on/off).
S3, d.p.d.t. toggle (transmit/receive).
S4, s.p.s.t. toggle (a.g.c. on/off).
S5, d.p.d.t. heavy duty toggle (mains on/off).
S6, 3 way 3 pole Yaxley, only 2 positions used (a.m./s.s.b./c.w.).
S7, s.p.s.t. toggle (a.g.c. time constant—slow/fast).
T1, 250-0-250 volts, 150mA; 6·3 volts, 3·5 amps.
T2, output transformer to suit valve (For EL91, 6000 ohms/3 ohms, 2 watt type).
V1, ECH42.
V2, 3, 6, 6BA6 (EF93).
V4, 6AT6, EBC90.
V5, 6AM5, EL91 (see text).
V7, 6AM6, EF91.
V8, 12AU7, ECC82.
V9, VR150/30 (OD3).
VR1, 10K ohms (r.f. gain).
VR2, 25K ohms (i.f. gain).
VR3, 3K ohms (Radiospares pre-set for S meter set zero).
VR4, 1 Megohm (a.f. gain).
VR5, 25K ohms (Radiospares pre-set for adjusting standby sensitivity).
VR6, 25K ohms (noise limiter).
X1, (see text).
X2, 100 kc/s crystal.
Other components required are fuseholders, knobs, pilot lamp, plug, sockets, tag board, tag-strips, valveholders, screening cans, flexible coupler, and grommets.

One of the diode sections of V4 is used as a.g.c. rectifier, the cathode bias providing a delay voltage. The a.g.c. signal is taken from the anode of V3 before the b.f.o. injection to enable the system to be used on s.s.b. and c.w. The discharge time constant can be increased for c.w. and s.s.b. reception by opening S7. The a.g.c. characteristics are acceptable although not very good, and experiments are being carried out with more elaborate systems to be used in the Mk II version of the receiver.

The first a.f. stage is *R-C* coupled via the noise limiter (which uses two OA81s, CR4 and CR5, in a variable clipping level circuit) into the output stage (V5). Almost any output valve may be used here with suitable values of T2 and R25. Those shown are for an 6AM5 which gives about 0·5 watt output. For higher power a 6BW6 or EL84 is suggested.

The response of the a.f. stages is limited by careful choice of component values to about 400–3000 c/s. The low frequency cut has been made relatively drastic in view of the bassy effect given to telephony signals by the highly selective i.f. stages.

The power supply (Fig. 4) originally employed a 5Z4G rectifier, but this was recently replaced by a pair of silicon rectifiers to reduce operating temperature. A two-section inductance input filter is used to provide good smoothing of the h.t. supply, and a VR150/30 voltage regulator tube stabilizes the supply for the oscillators.

R.f. decoupling is reasonably thorough but a more elaborate mains filter might be found desirable in removing any mains-borne interference. Both the mains and h.t. lines are provided with fuses.

In the prototype, it was found to be worthwhile to balance the heater supply about earth, rather than earthing one side, as this gave an appreciable reduction of hum. This will probably depend upon the layout and earthing arrangements and the best plan is to use twisted pair for the heater wiring, and experiment with the front-end disconnected. If balanced wiring is found to be desirable then the heater pins on the front-end (pin 5 on the EF183 and pin 5 on the ECH81) should be disconnected from earth, decoupled using 0·01μF disc ceramic capacitors, and wired into the balanced heater chain. The writer has recently been informed by Electroniques (Felixstowe) Ltd. that the QP166 front-end can now be supplied with balanced heater wiring if required, thus making it unnecessary to modify newly purchased units.

The crystal calibrator uses a 6BA6 (V6) in an arrangement using the screen grid as the oscillator anode. The second harmonic of the 100 kc/s crystal may be zeroed on the BBC Light programme (200 kc/s) using C38, and with a good crystal, harmonics should be detectable up to 30 Mc/s. Output is via a small capacitor to the aerial input.

Construction

The layout adopted is shown in Fig. 5. This differs slightly from that in the photographs which show a little earlier stage in the development of the receiver. It is recommended that 16 s.w.g. aluminium is used for the chassis work, which should be well braced.

Throughout the construction, care should be taken to ensure that everything is mounted as rigidly as possible, especially the frequency determining components. Ventilation should be arranged to keep the operating temperatures as low as possible, without allowing erratic air currents to

pass near the oscillators. Although the front-end is constructed of 16 s.w.g. aluminium, the 6 $\frac{1}{16}$ in. square cutout in which it is mounted should be well braced if maximum stability is to be achieved.

A good dial system with a high reduction ratio, a large clear scale and, even more important, smooth action and freedom from backlash, is desirable in making full use of the bandspread made possible by the restricted frequency coverage. The Eddystone 898 dial used has been found ideal in fulfilling these requirements.

It may be found advantageous to fit a screen over the oscillator section of the front-end. The i.f. transformers are designed so that cores may be adjusted from either end. Any long wires carrying i.f. or a.f. should be screened, and decoupling carried out thoroughly. All the earth returns for each stage are taken to a single point on the chassis.

The crystal controlled conversion oscillator should be well screened—a point initially sadly neglected—if spurious responses are to be minimized. The layout of the i.f. stages is in a logical straight-through fashion, the anode and grid circuits being kept as far apart as possible. It has not been found necessary to fit screens across the valveholders. All a.g.c. and h.t. line connections are made via a long tagstrip mounted along the rear of the i.f. strip.

The remainder of the construction is quite conventional and calls for little comment. The b.f.o. should be constructed using 16 s.w.g. tinned copper wire for maximum stability and should preferably be screened. Screening cans should be fitted to all valves and painted black to assist heat radiation. Low loss skirted valveholders of either the ceramic or nylon loaded types should be used.

Tag board construction was found to be useful for the power pack, as the mains transformer used had flying leads. A B7G valveholder is fitted to the rear of the chassis and supplies power for a *Q* multiplier.*

The components used in the prototype were almost all new. Some saving could possibly be made by using surplus parts, but if this is done all components should be tested to ensure that they are thoroughly reliable. "New surplus" valves have been used successfully except in the first two stages where low noise is especially important.

Disc ceramic 0·01μF capacitors are used extensively

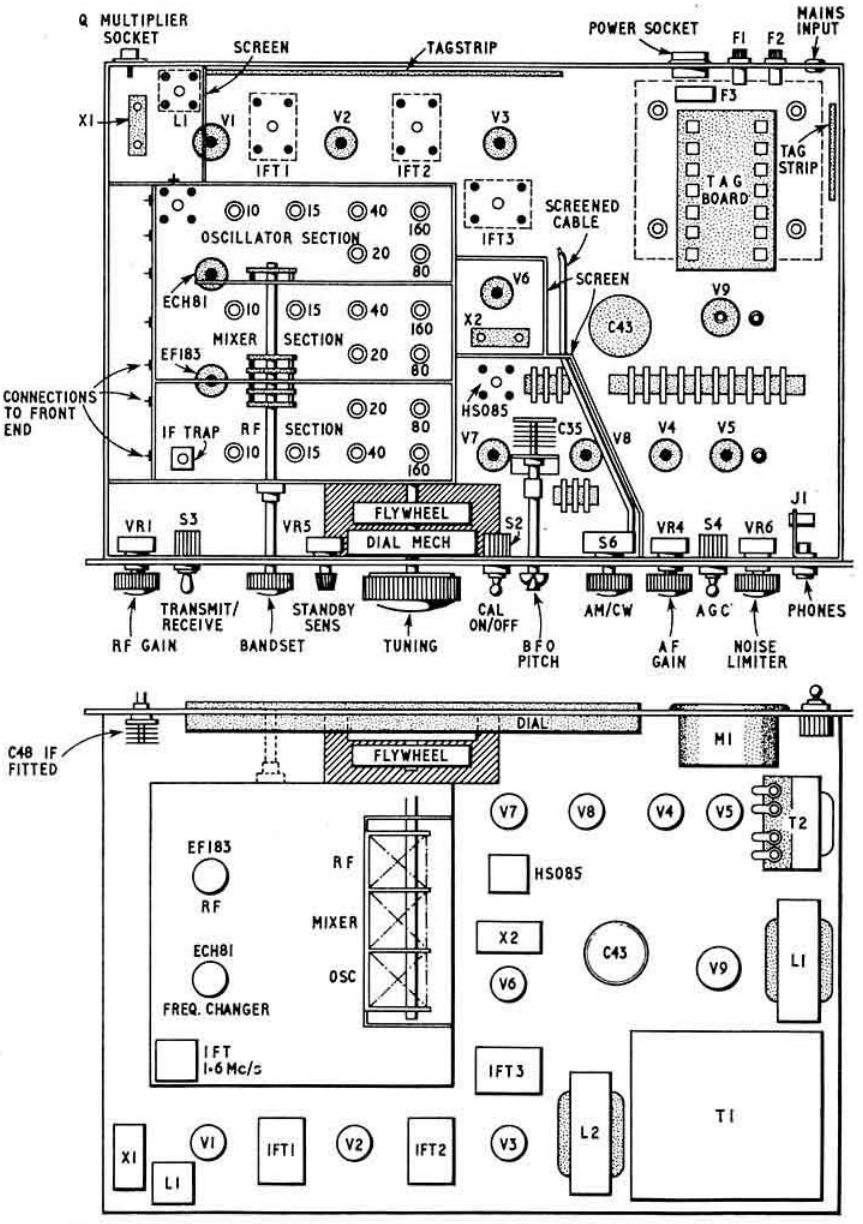


Fig. 5. The layout of the receiver showing the positions of the major components.

* When a *Q* multiplier is connected to the receiver, it may be necessary to make a small adjustment to the alignment of the 1620 kc/s i.f. transformer in the anode circuit of the ECH81 first mixer. Coils for use in a 1620 kc/s *Q* multiplier are available from Electroniques (Felixstowe) Ltd. under the type numbers QL2 and QL3 for L1 and L2 in the circuit on page 113 of the RSGB *Amateur Radio Handbook*. C3 and C4 in the same circuit should be 250pF and 750pF respectively for 1620 kc/s.

because of their small size, low inductance and relatively high working voltages. For larger capacities paper or electrolytic types must be used. The plastic case type of paper capacitor is generally to be preferred to the waxed type.

When the wiring was completed, a careful check was made for errors or any lack of rigidity. The receiver was also given a good shake to dislodge loose pieces of wire and solder that could give trouble later on.

Alignment

As the front-end is supplied as a pre-aligned unit, the alignment of the receiver can be made very simple. Several methods could be used, but that described here was used for the prototype and gave excellent results quite easily.

The normal method is to start at the detector and work towards the front, peaking each circuit in turn. If use is to be made of the fact that the front-end is prealigned to a frequency of 1620 kc/s, however, it will be necessary to start at the first i.f. stage and work towards the detector. All that is required for the alignment is a signal known to be within 5 kc/s of 1620 kc/s. Unless a crystal checked signal generator is available, this is best obtained by replacing the 100 kc/s crystal in the calibration oscillator by one of 1620 kc/s, or a sub-harmonic of that frequency. A readily obtainable surplus type is the FT241A 54th harmonic type marked 29·1 Mc/s (Channel 19). This has a fundamental of 405·5 kc/s and the fourth harmonic is 1622 kc/s. In practice these crystals are not always exactly on frequency, but they should be well within an acceptable tolerance for this purpose.

The output from the crystal calibrator is temporarily removed from the aerial socket, and taken to the "i.f. out" lead-through on the front-end, via a 1000pF capacitor. At this point it is advisable to calculate what the second i.f. will be. This is 1622 kc/s minus the conversion crystal frequency.

The receiver is now switched on and allowed to warm up. The crystal calibrator is switched on, i.f. gain turned to maximum, a.g.c. switched on and the zero control turned to give quarter scale deflection on the S meter. If a small audio oscillator is available it may be used to modulate the crystal calibrator to provide an audible indication of progress, in which case the a.f. gain is initially set to give a hiss in the loudspeaker. It is advisable to remove the two valves from the front-end.

The i.f. transformers are preset to 85 kc/s on the outer resonance. Thus if the calculated second i.f. is less than

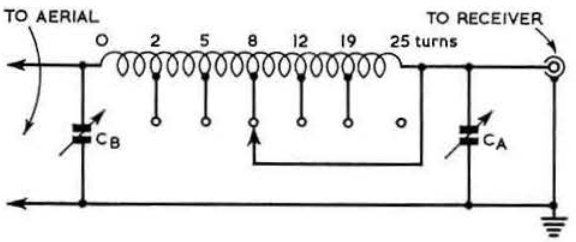


Fig. 6. An aerial tuning unit. C_A should be 500pF, C_B will depend upon the type of aerial in use, but 300pF is a good basis for experiment. The coil consists of 25 turns on a 1 in. diameter former, tapped at 2, 5, 8, 12, and 19 turns and occupying a space of 1 in. 28 s.w.g. wire is suitable.

The receiver in its cabinet showing the arrangement of the controls.

85 kc/s the cores must be screwed in; if it is greater they must be unscrewed. Each core should be adjusted by half a turn, starting with i.f.t.1 and working towards the detector. Each core may then be adjusted by a further half turn, and so on until the S meter reading begins to rise. Each core may then be peaked for maximum reading, readjusting the gain controls and set zero control as the alignment proceeds. An exception is the top (diode winding) core on i.f.t.3, which is adjusted for a dip in the S meter reading.

The crystal calibrator is then reconnected to its normal position, the bandswitch set to 160 metres (maximum clockwise position), and the front-end valves replaced, the aerial still being disconnected. With the gain at maximum, a kick in the S meter reading should be observed as the receiver is tuned over the centre of the band. This is the 19th harmonic of the 100 kc/s crystal, and should be carefully tuned in for maximum S meter reading. All the i.f. circuits should then be finally peaked up, the b.f.o. switched on and, with the pitch control set at mid-scale, adjusted for zero beat.

An aerial may then be connected and the trimmers on the r.f. coils (front compartment) peaked at the centre of each band with the aerial trimmer (if fitted) set to mid-scale. Either received signals or a signal from the transmitter v.f.o. for example, may be used for this purpose. This completes the alignment.

The aerial connections will depend upon the type used, and should be as follows:

75 ohm balanced: Terminals A and A1.

75 ohm unbalanced: Terminals A and E. Strap A1 to E.

Single ended: Terminal A. Strap A1 to E.

The circuit of a suitable aerial tuning unit is shown in Fig. 6.

Stability

Undoubtedly the greatest problem is that of obtaining high stability. The mechanical side has largely been dealt with already. If trouble is experienced from sudden changes of frequency, the oscillators in the receiver should be carefully inspected. If the shift is of the same magnitude on all bands, the trouble is probably in the crystal conversion oscillator or b.f.o. If the shift is greatest on the h.f. bands then the trouble is probably in, or around, the rear section of the front-end.

Turning now to the question of thermal stability, the front-end is provided with negative temperature coefficient

compensation in the form of ceramic trimmers and padders fitted to the oscillator and other coils. If maximum stability is to be achieved, the ventilation must be arranged to suit this degree of compensation. To test this, after allowing about half an hour's warm-up time with the b.f.o. switched on and set to its central position, a stable signal should be tuned in on 21, or 28 Mc/s. A suitable broadcast station can usually be found around 21·5 Mc/s; otherwise a crystal oscillator may be used.

It will probably be found that the station will not remain at zero beat, but that a beat note of gradually increasing frequency is produced. The tuning control should then be used to restore zero beat. If the tuning control capacity consistently has to be increased (plates further in mesh) the oscillator has been drifting higher in frequency, so there is probably too much ventilation for the degree of temperature compensation fitted, and vice versa. It was found that best results were obtained with the lid of the cabinet open, and a few suitably placed ventilation holes drilled in the chassis. On 30 Mc/s, where the position is worst, the warm-up time should not exceed 30 minutes, and thereafter the receiver should not drift further than 500 c/s from the frequency to which it is set in any period of an hour. These figures are in fact bettered on the prototype, and the stability is of course greatly improved on the lower frequency bands.

Operation

Finally a few words might be said about the operation of the receiver. In order to realize the best possible signal-to-noise ratio, the r.f. gain control should be set at maximum. The a.f. gain control is then set at about half travel and the volume adjusted using the i.f. gain control. If trouble is experienced from cross-modulation, the r.f. gain is decreased and the i.f. and a.f. gain correspondingly increased. Careful use of the gain controls can considerably improve the attainable performance.

When receiving s.s.b. the b.f.o. pitch control should be set to a point near the extremity of its travel, corresponding to u.s.b. or l.s.b. reception. The main tuning control is then rotated until the speech becomes intelligible, final adjustments being made using the b.f.o. control. It is not necessary to switch off the a.g.c. except on very weak signals as the b.f.o. has very little effect upon the a.g.c. voltage. The a.g.c. speed switch should be open to give a slow discharge constant. Ample b.f.o. injection voltage is normally available but on very strong signals it may be necessary to reduce the i.f. gain slightly to avoid distortion.

In conclusion, whilst the performance of this receiver cannot be expected to equal that of very elaborate designs, it is nevertheless extremely good. Almost any amateur should be able to construct and align it successfully.

Special Activity Stations

On July 6 and 7, **GB3SSS** will be active on 10, 15, 20, 40 and 80m during a " meet " called " Operation Touchdown," organized by the Surrey Senior Scouts. The chief Scout, Sir Charles Maclean, will be visiting the camp, which will be located near Reigate, Surrey. Operation will probably begin during the evening of July 5 and will be mainly on a.m.

The Basingstoke Amateur Radio Society will be operating **GB3BCW** from the Memorial Park, Basingstoke, on July 6 and 13 as part of the Basingstoke Carnival Week. Operation will be on Top Band, the h.f. bands, and on 2m.

G3HS and G2HIF will be representing the A.E.R.E. (Harwell) Amateur Radio Club at the Scout and Guide Enterprise, a weekend camp, which is being held at Wallingford Castle, Berkshire. S.s.b. on the h.f. bands and a.m. on v.h.f. will be the modes used under the call-sign **GB3SAG**, on July 20.

A number of events will be taking place in the Halifax area in the near future at which the Northern Heights Amateur Radio Society will be operating demonstration stations under the call-sign **G3MDW/A**: August 3—Warley Gala; August 10—Halifax Agricultural Show; August 17—Forset Cottage Community Centre Gala, near Halifax. Special QSLs will be sent to all contacts on the h.f. bands.

At the Kent Summer School in Folkestone from July 25 to August 9, **GB3KEC** will be active on phone and c.w. on all bands from 160 to 10m and on 2m. Contacts will be most welcome, especially with teachers and pupils. QSL cards from UK and near-European stations may be sent direct to the Kent Summer School, Folkestone, or via the RSGB QSL Bureau. Further information may be obtained from D. J. Bradford (G3LCK), 42 Mount Road, Canterbury, Kent, who will be pleased to arrange skeds.

The Southampton RSGB Group will be operating **GB3SS** on all the h.f. bands and on 2m at the Great Southampton Show on July 12 and 13. Mobiles visiting the area will be most welcome on the latter day, when talk-in stations will be active on 160m and 2m. The show will have a wide scope, and should have attractions to interest everyone, including horticultural and animal exhibits, show jumping, arts and crafts and fashion shows.

At the Annual Liverpool Show, **GB2LS** will be looking for contacts during the period Wednesday evening, July 17, to Saturday evening, July 20. The station will be active on the bands 1·8 to 28 Mc/s, and the Liverpool and District Radio Society would appreciate the prompt despatch of QSL cards for contacts with the show station in order that they can be displayed on the stand. Cards should be sent to H. James, G3MCN, 448 East Prescot Road, Knotty Ash, Liverpool 14.

The Silverthorn Radio Club will be operating on Top Band under the call-sign **G3ICY/A** at Ridgeway Park, Chingford, on July 13 in connection with the annual Chingford Day celebrations. The club will also be using the call-sign **GB3SRC** at its Annual Field Day during the period August 3 to 6. Transmissions will be on 2 and 160m. at a location near Sewardstonebury, Chingford. QSLs will be handled by E. Johnson, G2HR, 35a Woodland Road, Chingford, London, E.4.

The South Shields and District Amateur Radio Club will be operating a station at this year's South Shields Annual Flower Show in Bents Park, South Shields, under the call-sign **GB3SFS** on all bands from 10 to 80m, from August 9 to 11. RTTY equipment will also be demonstrated at the stand, and it is hoped to make skeds with other teleprinter stations in the UK.

The KW77 Communication Receiver

Reviewed by R. F. STEVENS, G2BVN * and G. C. FOX, A.M.I.E.E., G3AEX †

WITH the ever increasing number of stations now active on the h.f. amateur bands it is essential that the stability of both transmitting and receiving equipment should be of a high order. Whilst there have been a considerable number of communication receivers designed for radio amateur use and manufactured in the UK, the KW77 is the first receiver to incorporate triple conversion with a crystal controlled first oscillator providing that high degree of stability required for present day operation. With the shift in popularity from a.m. to s.s.b., the selectivity characteristics of a suitable receiver are more demanding, and the four bandwidths offered by the KW77 represent a successful attempt to cater for the reception of c.w., s.s.b. and a.m. signals.

* Chairman, Technical Committee. † Member, Technical Committee.

The receiver covers all amateur bands from 1·8 to 30 Mc/s in segments of not greater than 600 kc/s. The r.f. stage uses an EF183 frame grid pentode, the input circuit being designed for 50 to 80 ohm coaxial cable. The grid circuit is peaked by a panel control independent of the main tuning.

The first oscillator is the triode section of an ECF82 which uses seven crystals to provide appropriate frequencies for the pentode mixer section to convert incoming r.f. signals to the first tunable i.f. of 3·5 to 4·1 Mc/s which is covered by a stable 6BE6 mixer-oscillator working 455 kc/s above the first i.f. signal. Between the second and third mixers there is a slot filter designed to reduce heterodyne interference, the control for which moves a notch of some 40db across the passband of the receiver.

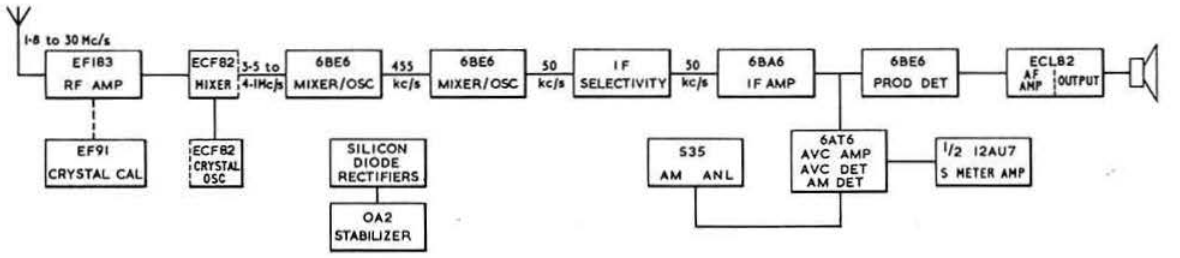
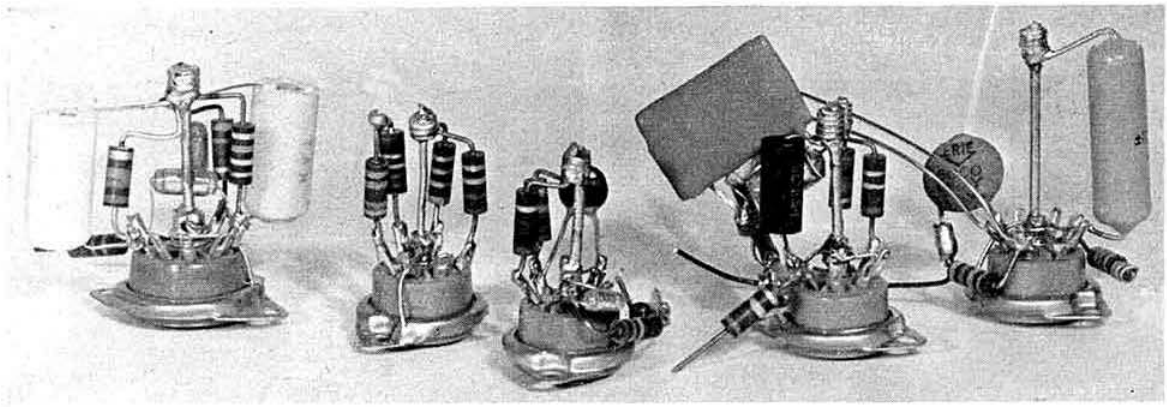


Fig. 1. Block diagram of the KW77 amateur bands communications receiver.



Extensive use is made in the KW77 receiver of sub-assemblies mounted on the valveholders.

The third mixer/oscillator, another 6BE6, converts the 455 kc/s i.f. to 50 kc/s and introduces sideband selection and four degrees of i.f. selectivity: 0·5 kc/s, 1 kc/s, 2·1 kc/s and 3·8 kc/s at — 6db, all provided by an L/C filter. After amplification by a 6BA6 the 50 kc/s i.f. signal is fed to a product detector (for c.w. and s.s.b.) and to a diode detector (for a.m.), the function switch selecting the output for audio amplification.

The product detector circuitry (Fig. 2) incorporates an audio filter designed to cut off sharply at 3,000 c/s and is followed by the two sections of an ECL82 as the audio amplifier. The loudspeaker is automatically muted when headphones are plugged in and the use of a low impedance type headset is recommended.

Amplified a.g.c. with fast attack and either fast or slow decay is applied to the r.f. amplifier, first mixer and i.f. amplifier. Comparative S meter readings based on 6db per S point are obtainable on all modes, an input of 50 μV being equal to S9. A diode automatic noise limiter may be used, when receiving a.m., to reduce impulse noise interference.

The power supply can accommodate inputs of between 110 and 250 volts a.c. and uses four silicon diodes as the rectifier elements together with an OA2 stabilizer providing a 150 volt h.t. line, and eliminating the peak voltage surge at switch on which would otherwise occur with indirectly heated valves and instantaneous units such as silicon diodes.

As a result of the use of a crystal controlled first oscillator and common tunable i.f. the dial calibration is linear on all bands. Minor correction may be necessary when switching bands and this may be accomplished with the aid of a panel mounted calibration adjustment which uses the variable capacity effect of a diode (introduced by potentiometer variation of the applied h.t. voltage) applied to the 3·5 to 4·1 Mc/s tuned circuit through a 5 pF fixed capacitor. A built-in crystal calibrator (Fig. 3) supplies 100 kc/s marker points throughout the tuning range of the receiver and provision is also made for the reception of the 15 Mc/s signal from WWV. Muting terminals, intended to be connected to an external relay, are provided on the rear apron of the chassis and muting is effected by removing h.t. voltage from the first mixer/oscillator, and the screen grids of the r.f. stage and i.f. amplifier.

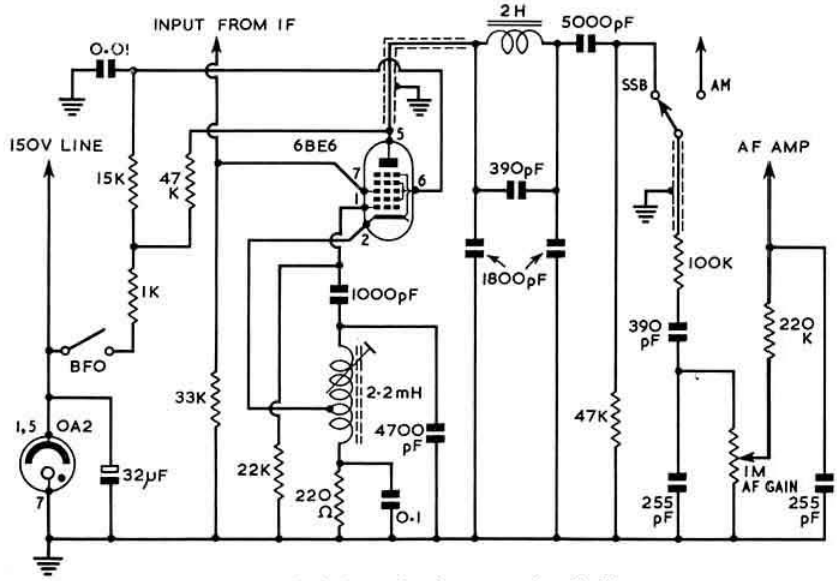


Fig. 2. Circuit of the product detector and audio filter.

Mechanical Features

The overall size of the receiver is 16 in. × 6¾ in. × 12 in. and the net weight is 30 lb. The cabinet, which is of the hooded type adopted by the manufacturer, is finished in grey hammertone and a front support is provided which gives a small backward tilt to the

front panel. A modified Eddystone type 898 dial is employed and the virtues of this geared drive do not require further amplification. A 9 in. scale, directly calibrated in frequency, is available for each band together with a logging scale for resetting to any spot within a band. The panel marking of white on grey or black background are clear and unambiguous.

Operation

The eight frequency bands covered are: 1·8 to 2·0, 3·5 to 4·1, 7·0 to 7·5, 14·0 to 14·5, 21·0 to 21·5, 28·0 to 28·5, 28·5 to 29·1 and 29·1 to 29·7 Mc/s. A check on the signal-to-noise ratio and image response on the various bands was made with the bandwidth control set at 3·8 kc/s, a.g.c. " on ' and r.f. gain at " maximum." Amongst the figures obtained were the following:—

Frequency	*Input for 10db Signal-to-Noise Ratio*	*Image Ratio*
1·8 Mc/s	0·7 μV	84db
3·5 Mc/s	1·0 μV	72db
7.0 Mc/s	1.6 μV	83db
14·0 Mc/s	1·4 μV	79db
21·0 Mc/s	1·4 μV	84db
28·0 Mc/s	1·0 μV	61db
29·1 Mc/s	1·0 μV	81db

The sensitivity figures for the l.f. edge of the bands as shown above indicate a high degree of consistency over the

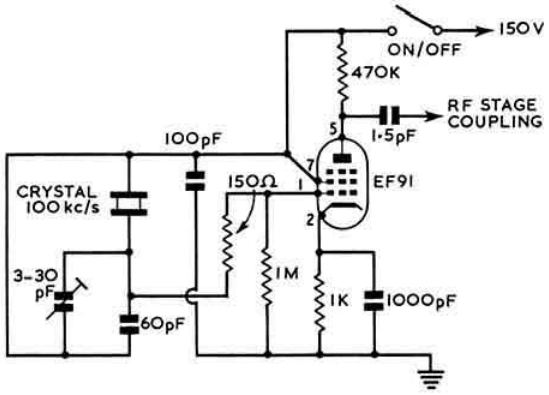


Fig. 3. The crystal calibrator used in the KW77 to provide marker signals every 100 kc/s.

complete coverage of the receiver, the results obtained in the 28 to 30 Mc/s band being particularly good. This range is now often used as the tunable i.f. for 144 Mc/s converters, and one of the latter, using Nuvistor stages, working in conjunction with the KW77 would result in a high performance unit. The manufacturer claims that image responses are better then 65db down, and, with the exception of measurements made at 28·0 and 28·5 Mc/s, it was found that this claim was more than justified.

The drift of the second oscillator when switched on from cold amounted to approximately 500 c/s during a period of 30 minutes. After this the change did not exceed 150 c/s in a further period of one hour. The r.f. gain control, which applies additional negative bias to the a.g.c. line, varied the second oscillator frequency by only 50 c/s when adjusted from maximum to minimum. The calibration of the tuning dial was accurate on all bands after setting up with the aid of the 100 kc/s calibration oscillator.

Evaluation of the selectivity characteristics produced the following figures with the a.g.c. switched off:

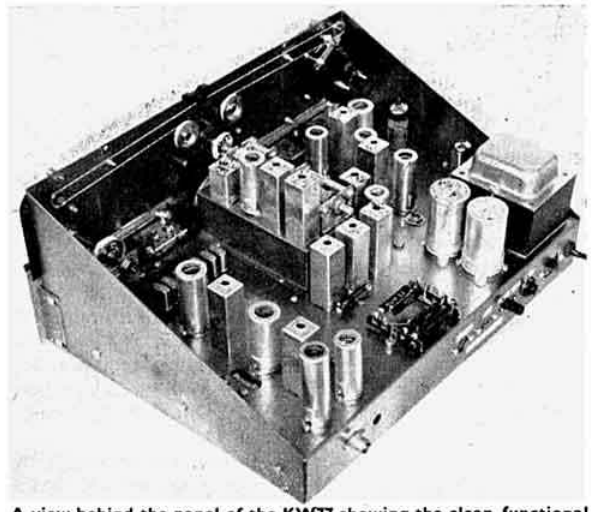
Selectivity Setting	*Bandwidth at —6db Point*	*Bandwidth at —60db Point*
0·5 kc/s	0·5 kc/s	$\pm$2·0 kc/s
1·0 kc/s	1·0 kc/s	$\pm$2·4 kc/s
2·1 kc/s	1·8 kc/s	$\pm$6·0 kc/s
3·8 kc/s	2·7 kc/s	$\pm$7·5 kc/s

Only two spurious responses (other than image) were observed, one at 14,075 kc/s and the other at 21,360 kc/s. The level of these was equivalent to an input signal of 2 μV.

To determine the a.g.c. characteristic the input signal at 3·5 Mc/s was varied from 10 μV to 10 mV and it was found that the a.f. output of the receiver varied by 6db. The maximum a.f. output for approximately 10 per cent distortion in a 3 ohm load was 1 watt at 1,000 c/s, whilst the frequency of cut-off of the audio filter was 2·5 kc/s, the rate of cut-off being 33db per octave. The tuned insertion loss of the slot filter was 34db when measured as the attenuation of 400 c/s modulation on a carrier as indicated on an a.f. output meter.

In actual use in a station the feel and general operability of the receiver were good, and the only slight difficulty experienced was with the adjustment of the concentric controls due to their proximity to the panel edge. Contacts were made on c.w. and s.s.b. using the KW77 and in conditions of severe interference the steep sided *L/C* filter characteristic was found to be a considerable asset, With very heavy interference the 1·0 kc/s bandwidth position could be used when receiving s.s.b. without the loss of vital intelligibility. The stability was beyond reproach and enabled c.w. signals to be held without difficulty over long periods using the 0·5 kc/s bandwidth setting.

The reviewer has had the opportunity of operating a wide selection of modern receivers of both UK and US origin, many commanding much higher prices, and, in his opinion, the KW77 leaves nothing to be desired by comparison. The KW77 is manufactured by K.W. Electronics Ltd., Vanguard Works, 1 Heath Street, Dartford, Kent.



A view behind the panel of the KW77 showing the clean, functional layout.

A Multiband Ground Plane

By R. HILL, G2ATD*

ALTHOUGH somewhat unconventional, the multiband ground plane aerial to be described has proved itself by results, and is not noticeably inferior to the standard construction. It differs from the normal arrangement in that it is situated at ground level, the radials and co-axial feeder being below the level of the actual ground surface. In this article, details will be given of a design suitable for use on 80, 40 and 20m, although if a reduction in overall height is required the 80m band could easily be omitted.

The aerial is based on details supplied by an American amateur, who had had considerable success with it. An advantage of the system is that good results can be realized in a restricted environment, and for those who could not anticipate a friendly reaction from neighbours if a dipole or beam aerial were to be erected, this relatively inconspicuous ground plane is likely to be more suitable. No guy wires are necessary in normal locations, and there are no other wires which cannot be effectively hidden.

Electrically (see Fig. 1) the aerial consists of a 38 ft. whip, with a loading coil to tune out the capacitive reactance on 20 and 80m, and a capacitor/inductor combination to tune

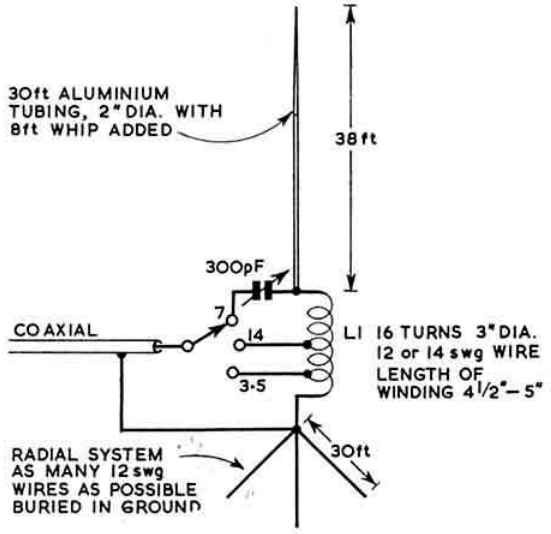


Fig. 1. Theoretical layout of the ground plane aerial.

out either inductive or capacitive reactance on 40m, depending on minor differences in the construction. The adjustment of the aerial is achieved by setting the capacitor for minimum s.w.r. on 40m, and by changing the position of the clips on the coil for the other two bands, starting approximately 3 turns from each end. When the correct positions have been located, it is advisable to make permanent soldered connections to the coil.

The best place for the tuning box was found to be at the bottom of the mast (Fig. 2), but care should be exercised to

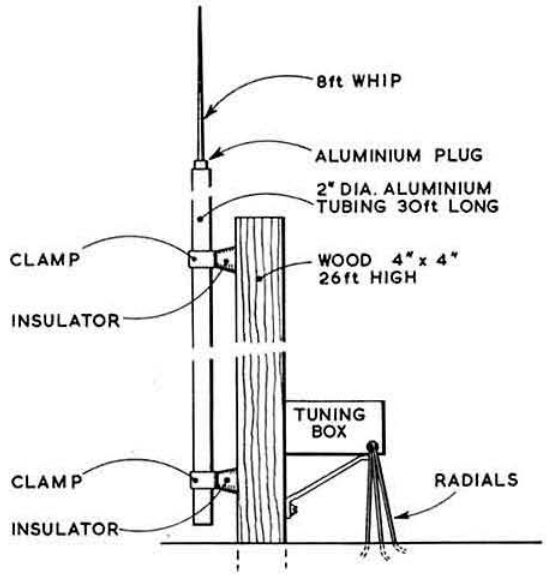


Fig. 2. The construction used in the prototype. The use of three telescoped mast tubes with a larger diameter base section would allow the height of the wooden support to be reduced.

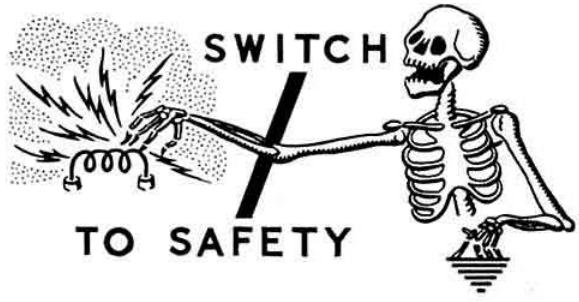
ensure that it is waterproof. There is no theoretical limit to the number of radials employed, although a minimum of four is advisable.

A fair amount of digging is involved in burying the radials but the effort is compensated by the improvement in performance when compared with a simple dipole.

Institution of Electronics Exhibition

The Eighteenth Annual Electronics, Instruments and Components Exhibition, organized by the Institution of Electronics, will be held this year at the Manchester College of Science and Technology, during the periods July 11-13 and July 15-17 inclusive. This will be the first time that the exhibition and convention will have been held in the new Renold Building.

Admission will be by ticket only, available free of charge by sending a stamped addressed envelope to W. Birtwistle, General Secretary, Institution of Electronics, Pennine House, 78 Shaw Road, Rochdale, Lancashire. A preview leaflet summarizing the exhibits and giving details of the programme of lectures is also available, price 5½d. post paid. A general catalogue, price 3s. (4s. post paid) is also available.



* 5 Sussex Road, North Heath, Erith, Kent.

Single Sideband

By G. R. B. THORNLEY, G2DAF *

WITH the exception of the special cases of equipment used either for mobile or field day activity incorporating transistors throughout, the usual transmitting equipment in a home station is operated from the a.c. mains using suitable power supplies. There has in the past been adequate literature on this subject and additionally the relevant design considerations are given in detail in the RSGB *Amateur Radio Handbook*.

Usually the information given is for power supplies suitable for the standard 150 watt c.w. or a.m. transmitter. There are however important differences in the requirements for a s.s.b. exciter and power amplifier. Most amateurs are aware that a conventional linear amplifier requires a stiff bias supply and a regulated screen-grid supply, and that the demand on the main h.t. power pack feeding the p.a. anode is at syllabic rate. Members will also have heard sideband workers discussing high voltage supplies—in some cases giving outputs of 2·5 or even 3·0 kV—with a large bank of capacitors directly across the rectifier output, and without either the customary swinging or smoothing choke. This procedure is in direct contradiction to the normal recommendation of both the mains transformer and the rectifier valve manufacturers. It is therefore understandable that the newcomer to single sideband is somewhat confused by all this.

The writer has not in the past given detailed power supply circuitry for either the G2DAF s.s.b. transmitter, the G2DAF linear amplifier or commented on this subject in *Single Sideband* for the following reasons: (*a*) most amateurs desire to make use of transformers and rectifier valves or semi-conductor rectifiers already in the shack—therefore no two pieces of equipment will be the same; (*b*) the power

* 5 Janice Drive, Fulwood, Preston, Lancs.

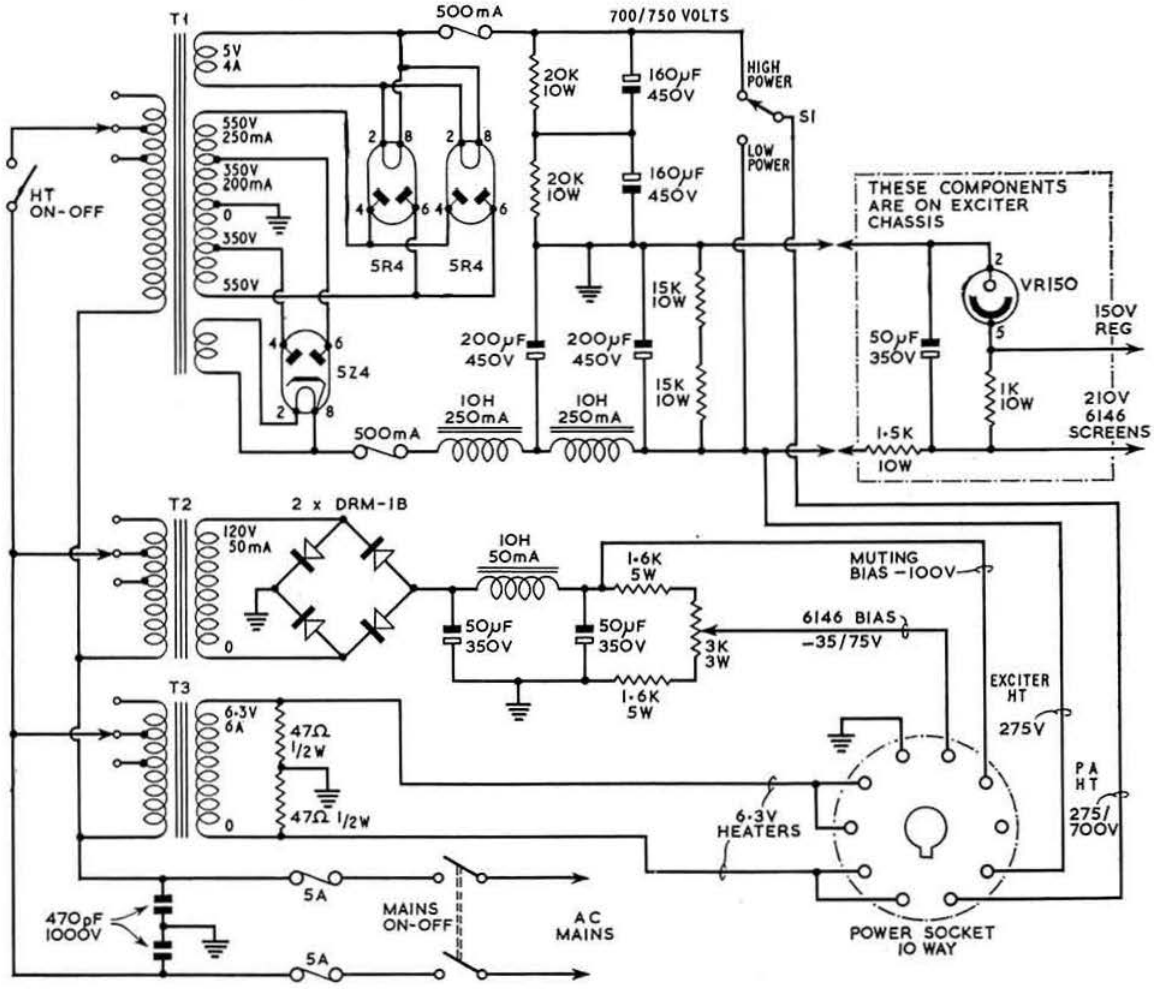


Fig. 1. Exciter power supply at G2DAF. Chassis size 14 in. × 10 in. × 3 in. deep.

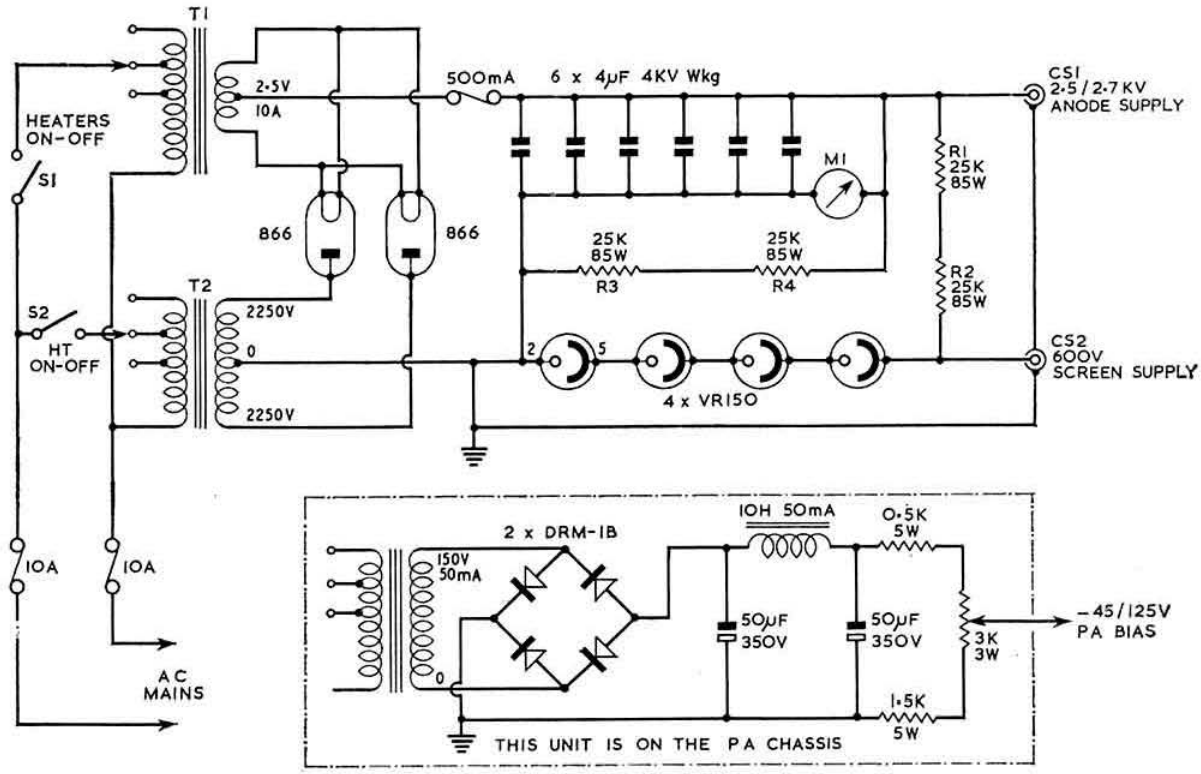


Fig. 2. P.A. power supply at G2DAF. (R1 and R2 and VR150 stabilizers may be on p.a. chassis).

supply requirements will depend on the choice of p.a. valves (the individual choice here varies very considerably); (*c*) it was considered that all relevant design and constructional practice would be known and appreciated, and that building a power supply for the exciter and a further higher voltage supply for the p.a. would not present any problem.

It would now appear—particularly since the April issue of the BULLETIN—that a number of single sideband workers would appreciate detailed information and the circuitry of the power supply equipment in use at G2DAF. This is given on the understanding that it does not profess to be the only method of doing the job, neither does it imply that the methods used are approved by the rectifier valve makers or would be used by the professional engineer.

Power Supplies at G2DAF

The exciter is in fact a self-contained transmitter with two 6146 valves in the output, and the supply requirements are 6·3 volts at 6 amps; 270-300 volts h.t; 150 volts stabilized; 200 to 210 volts with very good regulation for the screens of the 6146s; 700 to 750 volts for the anodes of the 6146s; and approximately 100 volts negative for muting and an adjustable output of negative 35 to 75 volts for the grids of the 6146s.

The power amplifier normally uses a pair of Eimac 4-125A or Mullard QY3-125 valves with 2·5 kV on the anodes and 5 volts at 13 amps for the heaters and 6·3 volts at 2·4 amps for the screen rectifiers. When used in conventional class AB1 operation there is 600 volts regulated also required for the screens and approximately 100 volts negative for the control grids. These two additional supplies will be described.

Fig. 1 shows the circuit of the exciter power supply. Points to note are:

(*a*) The heater voltage of 6·3 volts a.c. is balanced and " floating " above earth. This prevents hum being inductively induced into the bias and h.t. lines in the cable harness between the power pack and the transmitter, and also ensures that the heavy heater current is not superimposing 50 c/s ripple on the h.t. negative return connection.

(*b*) The bias supply is stiff and also provides a wide range of adjustment.

(*c*) The 50 μF capacitor between the 210 volt rail and earth ensures, together with the bleed through the series resistors and stabilizer valve, a stiff screen supply with a low impedance to the demand that will vary at audio rate.

(*d*) The high value of effective capacity of 80 μF across the 5R4 rectifier valves gives an output voltage of 700-750 from a secondary winding of 550 volts and ensures excellent dynamic regulation.

S1 is provided so that the anode h.t. can be reduced to permit operation on the 160m band without exceeding the licensed power limit. This switch must never be used for tuning and loading purposes on the other bands. A 6146 valve fully driven with a low voltage on the anode and normal voltage on the screen will take excessive screen current, the rated screen dissipation will be exceeded and the valve may be destroyed.

(*Continued on page 44*)

RTTY

By ARTHUR C. GEE, G2UK*

OF the various aspects of RTTY which catch the imagination of the enthusiast, the ability to prepare messages for transmission prior to actually sending them, or to record incoming messages for subsequent re-transmission, ranks high.

So far in this series, the only mechanical gear we have mentioned is the teleprinter itself. As we have seen, this transmits the teleprinter code when the keys are depressed and converts the received code impulses into typed copy. There is another line of equipment to be found in use in any complete RTTY station, by means of which paper tape can be perforated with a series of holes, the number and position of these holes representing the teleprinter code. This tape can then be run through a mechanical " reader," as it might rather loosely be termed, in which the perforations actuate a switching mechanism, which reproduces the code again in the form of electrical impulses, that can then be used to key the transmitter or operate a teleprinter directly.

The " reader " is known professionally as a Teleprinter Automatic Transmitter, one type of which is shown in one of the photographs illustrating this article. The model

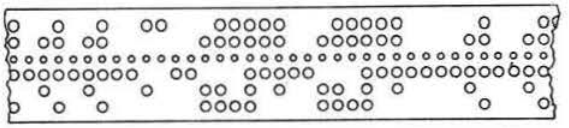


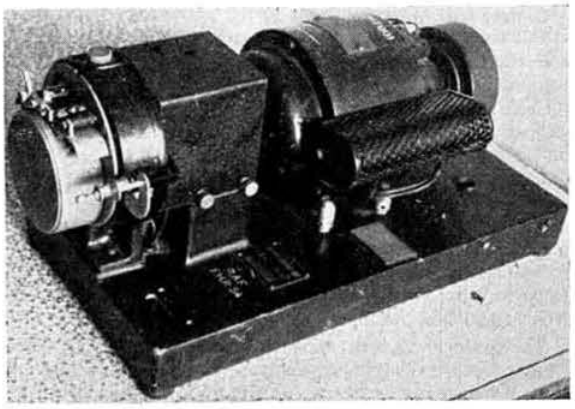
Fig. 1. An example of the perforated tape used with an automatic transmitter. The illustration is approximately life size.

shown was the standard machine used for many years by the GPO. Manufactured by Creeds, it was designated the Automatic Transmitter No. 1B. Creeds reference number for it is the Model 6S. A number of these have recently appeared on the surplus market and have been rapidly acquired by the RTTY fraternity!

The perforations in the paper tape are " read " by means of a row of five " peckers ", small rods which are pushed up against the tape, which is moved across them intermittently. When one of the peckers " feels " a perforation it moves upwards through it sufficiently far to actuate the switching mechanism to which it is coupled. In this way, the teleprinter code is reproduced again in the form of electrical impulses. An example of the tape is shown in Fig. 1.

The paper tape for running through the automatic transmitter is somewhat wider than that used in tape printing teleprinters and is of parchment. It can be perforated in several ways. The Teleprinter Perforator No. 44 shown is an instrument with a normal teleprinter keyboard, operation of which actuates the punch mechanism, so that when the keys are pressed, the appropriate grouping of punches works, thus perforating the tape with holes in the correct teleprinter code sequence. The machine is worked not by a motor, but by a powerful electromagnet. When a key is depressed, the sequence of punches for that letter are selected, and the electromagnet circuit is completed. This drives the

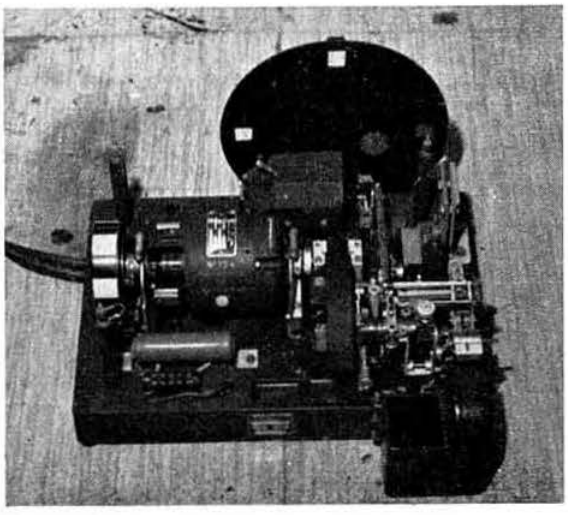
* "East Keal," Romany Road, Oulton Broad, Lowestoft, Suffolk.



Automatic Teleprinter Transmitter No. 1B.

punches through the tape. On releasing the key, the electromagnet circuit is broken and the movement back of its armature is used to move the tape on for the next symbol to be punched. The No. 44 Perforator was standard equipment for many years in the GPO but has now been replaced by a much more modern machine, the Type 45, which is driven by a motor in more usual teleprinter equipment style. The No. 44 machine is as a consequence frequently found available at reasonable prices in surplus stores, and a considerable number became available for RTTY enthusiasts in this country recently. From the amateur's point of view this type of keyboard perforator is primarily of interest for punching calling tapes, such as CQ DX calls, for making tapes with one's station description on and so on.

The Teleprinter Reperforator is a piece of equipment which also has some amateur applications. This will perforate tape directly from signals from a teleprinter or incoming radio RTTY signal. That is, instead of reproducing the RTTY signal as a typed message, it reproduces



The Teleprinter Reperforator No. 2, the Creed reference for which is Model No. 7TR.

it in the form of perforations in the paper tape. The tape can then be run through the teleprinter automatic transmitter and thus used to retransmit the message. This piece of equipment is useful to the amateur for " playing-back " RTTY signals to the original transmitting station as an indication of the excellence or otherwise of his transmission or for taking a tape of an RTTY News Bulletin for subsequent retransmission to a station who has not been able to receive it at the time of its transmission. These instruments too have appeared on the surplus market at very reasonable prices and several RTTY stations amongst the amateur fraternity use them regularly. The model shown is the Reperforator No. 2, made by Creeds whose reference for it is Model No. 7 TR.

There are a number of other machines which perform similar functions to those mentioned above which turn up from time to time on the surplus market and which can be pressed into amateur use, but those mentioned above are the most useful from the amateur point of view, and those most likely to be found in the surplus stores at the present time. Many modern professional teleprinters in current use have facilities for all the functions mentioned above incorporated in them, which gives great convenience, but such gear is far beyond the means of most amateurs. As has been indicated, the amateur RTTY enthusiast can have all the fun he desires in the way of the mechanical reception and transmission of messages, without having to dip too deeply into his pocket.

The Teleprinter Perforator No. 44 used by the GPO for many years. Machines of this type are frequently available on the surplus market.

RTTY Activity starts in Switzerland

RTTY activity has now begun in Switzerland. So far HB9FM and HB9KU are the only two active, but both have worked the United States for successful RTTY QSO's. HB9FM's signals have also been successfully printed by G2UK on 3600 kc/s and GM8FM has had a very fine QSO with HB9KU.

Single Sideband **(Continued from page 42)**

The transformer T1 is a standard item purchased on the surplus market, believed to have been made originally by Parmeko. An alternative for T2 is a centre tapped secondary winding of 125-0-125 volts at 50 mA with one DRM-1B rectifier in the usual full wave circuit. A suitable type may be obtained from BULLETIN advertisers or from RadioSpares Ltd.

Fig. 2 shows the circuit of the power amplifier power supply. T1 is a transformer specially made for 866s with 5000 volt insulation, and the high voltage transformer T2 used by the writer was manufactured by Woden. The absence of smoothing chokes together with a total of 24 μF capacity gives good dynamic regulation. Resistors R3 and R4 provide a steady 50 mA bleed current and also ensure that the reservoir capacitors are discharged when the h.t. transformer is off. Normal practice at G2DAF is to make switch S1 and allow the 866 heaters to warm up for a few minutes—when ready to transmit S2 is closed. As shown in the circuit there is no provision of any kind to limit the initial surge current and theoretically this should strip the rectifier valves. However this power pack has been in use for at least four years and the 866s are still going strong!

The bleed current through R1 and R2 in series is the full 40 mA rating of the VR150s—this ensures that should the p.a. screen current exceed 40 mA the regulators will go out and the potential on the screen rail will fall and protect the amplifier valves.

The G2DAF Linear Amplifier

In the article " The G2DAF Linear Amplifier " in the April issue of the BULLETIN there were three errors. The coil (L1 in Fig. 9) is six turns of 12 s.w.g. copper wire wound round a 1 in. diameter mandrel—spacing is adjusted to obtain resonance on 10m with C1 almost fully out of mesh. The bottom of the pi-tank coil L2 and the junction of the 80m contact of S2 should be strapped to the switch pole in the usual manner. The reference to TVI in the last paragraph of the section " Operation," should read " . . . measurement of harmonic output using the identical amplifier under (i) conventional class AB2 conditions, and (ii) the G2DAF method of operation, indicate clearly that there is not in fact any appreciable difference between the two methods."

Prospective constructors of any high power linear amplifier should realize that higher power may bring increased TVI problems. All reasonable precautions should therefore be observed. These include thorough screening, with v.h.f. r.f. chokes and non-inductive bypass capacitors on all outgoing supply cables, a single earthing point for all return paths for C1, C2, the screen bypass capacitors and the heaters of the p.a. valves. All connections carrying r.f. should be made with copper strap at least $\frac{1}{2}$ in. wide and 10 thou. thick and not more than 3 in. long—every endeavour should be made to keep these connections as short as possible and in fact the amplifier should be built as if operation is intended on 60 Mc/s. If the amplifier is using one valve with the heater winding floating and the transformer centre tap earthed, both heater pins of the valveholder must be effectively bypassed for r.f. with mica or ceramic capacitors taken to the common earthing point. On the higher frequency bands the transmitter output should be fed into the aerial via an efficient low-pass filter giving at least 60db suppression at television frequencies in Band 1. Finally, TVI can be caused by sheer weight of r.f. at the *fundamental* operating frequency. An increase in power of four or five times may be sufficient to cause overload or cross-modulation in nearby TV receivers that were previously unaffected.

Mobile Column

By C. R. PLANT (G5CP)*

THE RSGB Golden Jubilee Mobile Rally at Wethersfield in Essex on June 2 was the principal event of the past month and was attended by some 1,130 people, according to a rough count made at 3.45 p.m. Even after this, cars continued to arrive, finally raising the number of visitors to about 2,000, allowing for local supporters and USAF personnel with their families. The weather was kind, for a cooling breeze, combined with continuous sun predominated.

Chelmsford amateurs, notably G3PMX and G2HNF manned the talk-in stations. All of the Top Band apparatus was lent by G3PMX, while Withers Electronics provided gear for 2m. In addition to operating a talk-in station, G2HNF also arranged the installation of equipment, of which he provided the 2m aerial rotator.

On arrival, everyone signed in, and this facility was kindly provided by wives of Committee members. Other members' wives must not, of course, be forgotten, for they provided valuable assistance in the running of other projects.

During the course of the day, exhibition stations were transmitting on a.m. and s.s.b. Cliff Waterman, G3NKX, and Norman Miller, G3MVV, respectively provided the gear, which was set up ready for use the previous day. Another demonstration related to radio was an interesting teleprinter display, under the control of USAF MARS members.

The Ilford Gymnasts provided an extremely good demonstration, as did the USAF Precision Drill Team. A fire-fighting display took place at 3 p.m., and as it proved exceptionally popular, was repeated at 6 p.m. Go-Karts received much attention, but unfortunately the model railway was not at all well patronized. As is usually expected of such sideshows, there was no lack of enthusiasm for the raffle, balloon race, and the lucky dip. A performance by the 70 strong Romford Borough Drum and Bugle Corps was also well received but a dance, scheduled for the evening, had to be abandoned through lack of interest.

Several awards for the quality of mobile installations were presented, and the winners were as follows:

Class	H.F.	V.H.F.
Best Home Constructed	G3OGB	G3FUR
Best Commercial	G3POP	G4QU
Safest (either band)	G3HCK (H.F.)	

Rally Reports

One of the greatest pleasures that can be experienced when operating mobile is, after having travelled an appreciable distance to a mobile rally, and contacted a station *en route*, to complete the QSO by a personal meeting at the venue. This is surely one of the main attractions of mobile operating: the " getting together " in pleasant surroundings at regular intervals. It may well be that this feature alone is responsible for keeping the interest in mobile operating at such a high level, and the fact that the distaff side of the family and junior operators can join in must also be an aid to this end.

The writer had the opportunity of attending for the first time the Northern Amateur Radio Mobile Society's Mobile Rally, held in the grounds of Harewood House, Yorkshire, on May 26. The weather was perfect, for it was bright and sunny, with a light breeze which kept the temperature at an ideal level. The front of Harewood House was surrounded by trees, with views across the estate to the north that could not have been improved. The reception arrangements were excellent, and the organizing committee led by Mr. Crisp, G3LHQ, the Honorary Secretary, and Mr. Binns, the publicity manager, gave everyone a hearty welcome immediately after signing in. The RAIBC was well represented, G3MUM and family and G3KNA being the best known. There was also a large contingent from Durham and Lancashire, and a somewhat lesser number from Derbyshire. Numerous competitions were run, and the grand raffle attracted much interest.

Approximately 1,100 people attended, and this proved to be an increase of 500 over the last year. There was no deficiency of radio equipped vehicles, for 225 were counted in the car parks. An assessment showed that Top Band was the most popular; no fewer than 216 cars operating in this band. Two metres only accounted for 4, and other bands five. The talk-in station was on Top Band, G3OGV/A, who contacted 95 mobile stations *en route* to the rally. The transmitting contest was won by G3QV (Bury) on Top Band, and by G3AMM (Scunthorpe) on 144 Mc/s. The BBC TV sent a

At the Northern Mobile Rally (left to right), G3OMM, G3FQH and XYL, and Mrs. G5CP

(Photo by G5CP)

Members of the Spen Valley Amateur Radio Society at Harewood House: G3MMK, President, G3PFA, G3RIG and guide dog " Jet," and G3PXF.

(Photo by G5CP)

* " *Lynton*," *12 Nottingham Drive, Wingerworth, Chesterfield, Derbyshire.*

cameraman and reporter to cover the event, and subsequently a five minute report appeared on the Monday evening in *North at Six*. The Army Apprentice School, Harrogate, sent two vehicles, and the RAC was represented by radio vans. N.W. Electrics of Manchester had a trade stand. The organizers are very pleased with the measure of support received, and are already planning the rally for 1964, which should also be well worth attending.

A mobile picnic under the auspices of the Northern Amateur Radio Society took place on April 28, at Easby, near Catterick Bridge, Yorkshire. Over 50 licensed amateurs attended, many of whom were accompanied by their families and friends. Those responsible for the organization included G3CKC, G3NQV, and G2HNL, who provided the tents and refreshments; and also to G2CKN who operated the talk-in station. Easby is an ideal place for a picnic, as it is situated close to Richmond, and can thus be easily reached from the Great North Road. The venue was a large field adjacent to a trout stream, and near to the historic Easby Abbey. The meeting was voted a great success, and similar future meetings are being planned. This kind of function performs a useful service, and as the organization and preparation is relatively simple, the friendly atmosphere is ideal for an amateur "get together."

The Thanet Mobile Rally, held at Ramsgate on May 5, was the fourth to be arranged by the society. The weather was sunny and breezy, and fortunately no rain fell during the rally, even though the mainland experienced showers. Although Thanet is still an island, it is close to becoming a peninsula, according to G3BAC, the Area Representative. More than 60 cars were present, with 40 equipped for mobile operation. Of these, 35 were contacted by the base station on Top Band, and the remaining five on 144 Mc/s; the talk-in stations were G3DOE/A and G3BAC/A. The amateur who had travelled the longest distance was G3IEX (Beds.), and the winner of the contest for the best home-built transmitter was G3LCB. The owner of the best receiver was the possessor of the car bearing the registration SXO266. The best mobile contact was with G3JEQ, who also won a fire extinguisher for having, in the judges' opinion, the safest installation; it's even safer now! This was a very successful and well attended rally. The Committee wishes to express its appreciation to all who were present, particularly for the support received from local societies.

The Grimsby Amateur Radio Society Mobile Rally, held on May 12, was rather a disappointment to the organizers, owing to the bad weather and poor attendance, despite intensive publicity through radio magazines and local club secretaries. Only 50 people turned up to hear Dr Roger Jennison of Jodrell Bank give an interesting lecture on "Space and Satellite Research" followed by the taking of a group photograph, and later, tea. The major raffle prize was an Avometer, won by a schoolboy who had just joined the club. Many other prizes were drawn, the ladies having special prizes. A junk sale presided over by G3ELZ followed. We wish them better luck with the weather next year.

The Reading Amateur Radio Club held its third annual picnic at the Childe Beale Trust, Pangbourne, Berkshire, on June 2. The weather was good, and with such pleasant surroundings the success of the meeting was assured. Of the 42 cars that went, it was noted that 32 were fitted for Top Band, and three for 144 Mc/s; whilst there were also several SWLs listening on various bands. In all, 140 people met on this occasion. Some visitors came from as far afield as Coventry, Cambridge, South Wales, Reigate, Kingston and London.

Forthcoming Rallies

The Chiltern Amateur Radio Club is holding its annual "Hell Fire" Mobile Rally on July 14, in the grounds of West Wycombe Park, Buckinghamshire, the home of Sir John Dashwood. This stately home is an interesting place,

G3LHQ, Honorary Secretary of the Northern Amateur Radio Mobile Society with G3MGI, Publicity Manager for the Northern Mobile Rally at Harewood House on May 26, 1963.
(Photo by G5CP)

and will be open to visitors. The church with its famous tower, together with the Hell Fire Caves, are other local attractions. The rally is always very popular, and will repay the effort in travelling to the district. A talk-in station, G6IF/A, will be operating on 1900 kc/s from 10 a.m. to 4 p.m. Tea will be available.

The RAF Stradishall Mobile Rally will take place on July 28. The location is 10 miles south-east of Newmarket, Suffolk, on the A143, the Bury St. Edmunds to Haverhill road. Admission will be free, and adequate parking space will be available. Two refreshment stands have been arranged. There will be various awards and presentations associated with mobile rallies and there will be a prize draw—prizes for all the competitions amount to a total of 80. Special attractions will include a static aircraft display, where visitors will be allowed to enter the aircraft, radio navigation equipment for operation by visitors, an air navigation feature, air-sea rescue equipment, a flight instruments display, fire-fighting equipment, a civil defence presentation, live closed-circuit Amateur Television, a police demonstration and a cinema show. For the ladies, a beauty demonstration will be held, and for all, if available, a "Bloodhound" guided missile will be there, as will a Meteorogical Office demonstration. An exhibition station signing GB3RAF will, of course, be active. All bands will be used, and special QSL cards for contacts with any of the three rally stations will be issued. In the event of bad weather, there is no lack of indoor accommodation. This rally promises to be of much interest to all, and should attract considerable support.

The Torbay Amateur Radio Society, in conjunction with the Naval College Radio Club, is holding a mobile rally on August 11, at the Britannia Royal Naval College, Dartmouth, Devon. The organizer is G3NRB, to whom all enquiries should be addressed. This is a new rally, with an attractive venue amid superb Devonshire scenery, and given good weather this alone should ensure success. Talk-in stations, which will open at 10 a.m. and close at 2 p.m., will be G6VJ on 1880 kc/s and G5ZT/P on 144·1 Mc/s. A mobile treasure hunt leading through about five miles of country lanes and giving views of the sea coast should prove to be very attractive. Prizes or certificates will be awarded for the longest

distance travelled, the farthest contact with the base stations, the best home-built station, which includes safety factors, and the neatest overall installation. Prizes will be given for the various games for ladies and children, which include a separate treasure hunt for the children. There will be a demonstration of emergency feeding by Civil Defence Units (this will provide free tea and snacks from noon to 4 p.m.); liaison and message handling by CD Signals, and an exhibition of local crafts. Fuller catering facilities will be available, including a licensed bar in the College. The Naval College will be open for inspection, and visitors will be conducted on tours of the building by Naval Cadets. Room for 200 cars will be provided, and alternative arrangements and accommodation will be available if the weather is poor. The town of Dartmouth is of interest to all, and river trips will add to the variety of the day. This is an ideal opportunity for mobile amateurs to spend a pleasant weekend in one of the most beautiful areas of Britain.

The Derby and District Mobile Rally is to be held on August 18 at the usual venue, and arrangements have already been made for a field display by the local fire brigade, a police stand demonstrating "anti-theft" devices, hi-fi demonstrations, a treasure hunt for the juniors, radio controlled model aircraft, a brass band, and Judo displays. The premier prize in the grand raffle will be an electric dishwasher, which should be an overwhelming incentive for all married, male mobiles. There is something to interest everyone, so book the date now!

Brussels Mobile Rally

From G3BID comes news that the Belgian society, U.B.A., is to hold a rally in Brussels on September 22, 1963, to mark the centenary of the Red Cross.

Applications from foreign visitors for mobile licences for the period September 14-29 should be sent to M. Rene Vanmuysen, 81 rue Joseph Baus, Wezembeek-Oppem, BT., Belgium, before September 1. Applicants should enclose photocopies of their home station licences and the registration number of the car in which the mobile equipment is installed. British amateurs who obtained Belgian licences for the Verviers Rally need not submit further photocopies of their licences. The fee will be 100 Belgian francs which will include the necessary insurance.

GM3EYO/M was safely talked into the home QTH of GM3NXA at Bridge of Earn, Perthshire, at Whitsun, 1963. Left to right, G3CTE, G3EYO, his XYL and junior operator, Mrs GM3NXA and children, GM3NXA and GM3CHX.

(Photo by GM3CHX)

Operating Notes

GI3PLL, who is a regular contributor, reports more success with his KW Valiant and Mohican receiver. He has had contacts with CT1, EA3, M1B, OE, UA2, UB5, UR2, SP, and eight Is, all on 14 Mc/s phone whilst mobile. His outstanding mobile-to-mobile contact was with G8CK in Staffordshire, while he was in motion near Ballykilly Aerodrome. He uses helically wound whips, consisting of glass fibre fishing rods, with wire filling the whole length of the rods. The aerial is fed direct from the pi-tank with 80 ohm co-axial cable.

G3IKR (Solihull, Warks.) runs a 10 watt station from his car, with the following valve line-up: 12AT7 oscillator and cathode follower, EL91 buffer/doubler, and an EL91 p.a. on 3·5 Mc/s and Top Band. A power supply using an Aveley toroidal transformer and transistors provides the high tension supply, giving 300 volts at 60 watts for both the receiver and transmitter. Automatic base loading inductance variation for the whip aerial comes into effect through the operation of a phase detector device when the transmitter frequency is changed. On Top Band, many contacts within a radius of 28 to 30 miles have been made. G3NDI (Shirley, War.) collaborates with G3IKR in many of his tests.

G3AOO (Denton, Cheshire) reports that he has had many successful contacts on 7 Mc/s with VK mobile stations around 06.30 G.M.T. These stations include VK2ACU/M, VK2ALR/M, VK2TX/M, VK3AC/M, VK3AJH/M and VK5QR/M. They have been experimenting with transmissions in various parts of the country, and have found that best results are to be realized when there is a hill rising immediately behind the transmitter, the hill apparently acting as a reflector. They chiefly appear to be using American equipment, and the Swan transceiver s.s.b. mobile unit is very popular.

G3OCB (Truro, Cornwall) is tackling the formidable task of building a completely transistorized 144 Mc/s mobile receiver and power pack. The major parts have already been completed and tested. By the time that this appears in print, it is possible that it will be installed as a complete, finished unit. The transmitter will run at about 25 watts with a QQV03/20A in the final stage. The whole assembly, excluding power pack, will be fitted into a cabinet measuring 14 in. × 6 in. × 7 in. A further report in due course will certainly be appreciated.

MOBILE RALLIES 1963

July 7	Harlow and District Radio Society Mobile Rally at Magdalen Laver.
July 7	South Shields and District Mobile Rally, South Shields, Co. Durham.
July 14	Chiltern Amateur Radio Society Mobile Rally, West Wycombe Park, Bucks.
July 28	R.A.F. Stradishall Mobile Rally, near Newmarket, Suffolk.
August 11	Torbay A.R.S. Mobile Rally, Naval College, Dartmouth.
August 18	Derby Radio Societies Mobile Rally, Rykneld School, Derby.
August 25	Reading A.R.C. Mobile Rally, Pangbourne, Berks.
September 8	Thames Valley Amateur Radio Transmitters' Society Mobile Rally.
September 15	Lincoln Hamfest and Mobile Rally, Kesteven Grammar School, North Hykeham, Lincoln.
September 22	R.S.G.B. Woburn Abbey Mobile Rally.

The U.B.A. Rally at Verviers

By E. M. Wagner, G3BID *

THE U.B.A. Rally at Verviers, which took place on April 28, differed, from the British point of view, from the other mobile rallies, in that it was first necessary to obtain licences before British stations were able to participate. This not only meant much additional work for the Rally organizers, but provided an added attraction for the British entrants.

In the event this Rally provided not only an opportunity for British amateurs to operate in Belgium but also in Holland.

The idea originated in a visit I paid to ON4PL in May, 1962, when he discussed the possibility of organizing a Rally at Verviers, close to the Dutch and German frontiers. Leon felt that an International Mobile Rally could take place there and asked me if I thought British amateurs would come. I had to point out that as Britain did not grant licences to foreign radio amateurs, I felt we would not get Belgian licences and that I saw no fun in going to a Rally and not operating.

Leon undertook to look into the matter.

In the autumn of 1962 I received a letter from ON4PL saying he thought he would be able to obtain temporary licences for British visitors to operate on the day of the Rally. I disappointed Leon badly when I replied that I did not think anyone would come over from England for one day's operation. I explained that with the expense of bringing the car over, a week's operation was the minimum which could make it worth while.

ON4PL, co-operating closely with Rene Vanmuysen, ON4VY, then got to work on the problem and during the winter I was informed that licences valid from April 26 to May 3 would be made available to all amateurs attending the Rally, which would take place on April 28.

This good news I immediately passed on to the *Mobile Column* in RSGB BULLETIN, to *Mobile News* of Amateur Radio Mobile Society, *Short Wave Magazine*, and *QST*.

Encouraged by this success of getting Belgian licences, I wrote to the Austrian authorities and to the Secretary-General of R.E.F. (the French society). Both replied very politely that as Britain did not grant licences to their nationals they could not grant them to British nationals. Both indicated that they felt sure they would be able to do so if Britain were prepared to grant similar facilities.

Others applied to Germany and received similar replies.

In Holland, however, the situation was different. G3FPK had made contact with Hans Ten Herkel, PA0ZD, who suggested that a block application should be made by ARMS for all British amateurs who wished to obtain temporary Dutch mobile licences, enclosing photostatic copies of their British licences and other relevant particulars. This was done, with the result that the Dutch Government very generously granted temporary mobile licences with PA9 calls followed by the letters of the amateur's home call valid from April 20 to May 5 inclusive. This was the preliminary to the journey to the Verviers Rally.

There was no organized party. The various amateurs from G-land left in their own cars by various cross-Channel services, at various times, travelled by different routes, and converged on Verviers on April 28. I went on April 20, all ready to take full advantage of the licences, and operated as PA9BID/M to begin with. I arrived in Verviers on April 26, and stayed at the Hotel Charmille at Tiege-lez-Spa, a few miles from Verviers.

Saturday, April 27, was a beautifully sunny day, and I visited many of the local amateurs and SWLs. The weather forecast promised the same weather for the day of the Rally, after clearance of early morning mist. Only the "early morning mist" proved correct. The mist did *not* clear—it became rain. This was most unfortunate.

A typical 2m mobile with Yagi array seen at the Verviers Rally.

The contest for the Rally began at 08.00 and lasted till 11.00 on 80m and 2m, the point being to contact as many of the Verviers fixed stations as possible every 25 km, the "numbers" exchanged consisting of the RS report followed by the last three figures of the speedometer kilometre or mileage reading, and also to contact as many other mobiles as possible.

At 11.00 all mobiles rallied at the Tourelle Park in Verviers. Here, some very remarkable 2m aerials were seen, including three element and four element beams mounted on the roofs of the cars. On 80m, the variety and size of the capacity hats were a notable feature.

It had been proposed to picnic in La Tourelle Park to give better opportunity for examining each other's installations, but the rain—which by now was very heavy—ruled this out.

The organizers had prepared an itinerary in the form of a contest to spot various items of interest varying from beams to village pumps, which was designed to show us the more interesting spots of this attractive part of Belgium. However, the weather again prevented many of us from completing this part of the tour. After getting hopelessly lost myself, by bad map reading and poor visibility, I decided to drive straight to the finishing point at the restaurant at the Barrage of Eupen. Here a mammoth prize giving had been arranged with so many prizes that everyone present must have received at least one prize.

I cannot give a list of all those I met there, but they included G3MSS, G3OSS, G2FUX, G3NUY, G3NMR, G3FPK, G3KZI, G3BXI, G3KVF, DL9RE, DL1KN, DL2OX, DL4HU, an F, PA0s and, of course, innumerable ON4s and Belgian SWLs.

Though the Rally was over the fun was not yet ended, and our licences were valid in Belgium until May 3 and in Holland until May 5.

One of the most important features of the trip was the opportunity which the licences afforded to meet—first on the air and then personally—so many of our colleagues abroad. PA0CS talked me in to his QTH from Lisse to The

(*Continued on page 59*)

* 5 Ferncroft Avenue, London, N.W.3.

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS (G2BVN)*

THE Golden Jubilee celebrations of the Society will undoubtedly cause reflection by readers as to the manner in which the past years have seen the development of a particular phase of Amateur Radio. This particular feature concentrates upon items which it is hoped will be of assistance to those whose main interest lies in contacting stations in all parts of the world, and it is natural that these enthusiasts will have memories of the halycon days of the last two sunspot peaks when DX was there for the calling and the wide open spaces of the 28 Mc/s band held many interesting signals. However, the development of superior equipment and aerial systems unheard of in earlier days has made the working of DX a not very difficult matter even in the trough of a sunspot cycle. A.m. is gradually giving way to s.s.b., and it appears that c.w. is losing some of its devotees to the carrierless mode, a drift which it is hoped will soon be arrested. However, coincident with the improvement in equipment there has unfortunately been a corresponding deterioration in the operating habits of some of the inhabitants of our h.f. bands. This is in all probability partly caused by the publication of competitive tables and lists in the various journals around the world pandering to the built-in desire of a number of operators to be boss of the farmyard. However, stopping for a moment, is it really going to be recorded in the annals of Amateur Radio in 50 years' time that the failure of any one of us to work a DXotic station precipitated a major crisis in the hobby? On the contrary it could not matter less. One of the contributions of all DX'ers to the years ahead should be the practice of exemplary operating habits. With good example and encouragement this phase of our hobby may yet avoid the pit towards which it seems at present destined. Your hand is on the switch.

News From Overseas

The last **160m Bulletin** from **W1BB** to appear before next autumn gives details of the events on this band during preceding months. There are records of many unusual QSOs and reports, including one from **ZL3RB** who mentions that on several occasions he was hearing both UK and North American signals simultaneously with W6KIP causing QRM to G3OQT! The stations who were fortunate to work ZL3RB include G3s ERN, FGT, OQT, PQA, PU and RBP. The peak periods were at the March and September equinoxes, March 10 and October 7 appeared to be the best days, around 06.00 to 07.00. It is only during these periods that a full darkness path exists between the UK and New Zealand, and then only for a few minutes. **ZS2FM** has also been very active on this band and confirms his QSO with W6ML. There are many stations now operating on this band from ZS2, ZS4, ZS5 and ZS6, who will undoubtedly be heard later in the year. W1BB announces the dates of the next series of **160m Tests** as being December 1 and 15; January 5 and 19, and February 2 and 16, 1964. W1BB deserves all possible credit for his continuing efforts to co-ordinate and stimulate efforts on 1·8 Mc/s.

5N2JKO now back in Zaria after ten weeks' leave in the UK provides news for **Top Band** enthusiasts in that Nigerian licensees are now permitted to use the entire 200 kc/s segment with a maximum power of 50 watts. 'JKO is modifying his KW Vanguard and will be erecting a 530 ft. long wire. At present the static level is very high but marine service shore stations have been heard, and regular activity on this band will commence in October. 5N2JKO finds that 14 Mc/s remains the most productive band for DX but that 21 Mc/s and also 28 Mc/s have been worth while.

5H3JI is the present call-sign of G3JTK who has recently obtained his licence after several months of waiting, and is now active on all bands but will be looking for UK contacts on 14 Mc/s and 21 Mc/s c.w. and a.m. The address for QSLs will be found in *QTH Corner*.

The practice of licensing authorities in reissuing call-signs causes considerable confusion and another instance has come to light with the return to G2PL of a card sent to **VP2SY**. The original holder of this call is now apparently obtainable through International Aeradio (Caribbean) Ltd., Bridgetown, Barbados, whilst the present activity under this call emanates as **VP2SH/FP**, the operators being Rudy and Linda Nelson, Dept. of Agriculture, St. Vincent.

The current crop of rumours includes speculation on the possibility of operation from the **South Sandwich Islands**. According to **VP8GQ**, who is in a position to speak with authority on the subject, the British Antarctic Survey do not plan to land on the group for at least another year. Last year a big eruption occurred and lava was spread around in the sea over a large area. Apart from this danger and that from the sulphur laden air, landing is virtually impossible except under the calmest conditions. To complete the picture the group is surrounded by pack ice for much of the year, and during some years this does not entirely clear. It therefore appears that South Sandwich will continue to appear on the wanted lists for some time to come.

VK4SS, DX Editor of *Amateur Radio*, passes information that **ZL4JF** (Campbell Is.) is active on 7 Mc/s and 14 Mc/s c.w. often around 09.00, although he has been working from UK on 7 Mc/s between 06.30 and 07.00. **VK9RK** is active from Norfolk Island and uses a.m. on 14,100 kc/s after 04.00. **VK9DR** will be heard from Christmas Island and details of his operating times are awaited. It is possible that ZS6LM on his proposed visit to Christmas Island may use the call of VK9DR.

The first newsletter produced by the **YL International SSB'ers Inc.** is now available to members. Included with the newsletter is a list of the 717 operators who are members of this organization which is dedicated to building of friendship among all peoples through Amateur Radio. With few exceptions, W/K members are YL operators,

* Please send all news items to RSGB Headquarters to arrive not later than **July 12** for the **August** issue and **August 9** for the **September** issue.

whilst the DX members include YL and OM operators from six continents and 135 countries. At present net meetings are on Tuesdays, Wednesdays and Thursdays at 18.00 on 14,333 kc/s and additional nets are being set up to cope with time differential and skip conditions. The driving force behind this organisation is V. Mayree Tallman, K4ICA, who puts a consistently good signal into the UK.

The two operators on **Willis Island,** the weather station far from the Australian mainland, avoided making an appearance on the DX bands for a long time, but for the last few weeks of his duty on the island and before leaving on the relief boat on June 13, **VK4HG** was heard and worked on 14,100 kc/s a.m. The remaining operator on the island, **VK4WV**, has not so far been heard, and listening to the ferocity of the pile-ups that develop on 14 Mc/s these days, who can blame him.

The recent American expedition to Mount Everest has been the means of renewing amateur activity from **Nepal** which has been heard only infrequently during recent months. **9N1DD, 9N1ME** and **9N1MM** are now active, with 'MM and 'DD worked by a number of UK stations. A rescue operation involved HL9KH who maintained communication between 9N1MM and the expedition station, 9N1ME, when skip conditions rendered direct working impossible.

There have been a number of comments recently by QSL managers that incoming cards are often not accompanied by return postage, and that voices of complaint are raised when the QSLs are returned through the bureaux. If an operator is desirous of receiving a card by the speediest means then surely it is only courtesy to enclose a self-addressed envelope and reply postage either in mint stamps of the country concerned, or in IRC appropriate to the mode of delivery. In the latter connection air mail reply calls for at least three IRC, unless the card is sent in an unsealed envelope superscribed " second class, printed paper " when a lower rate of postage is usually applicable.

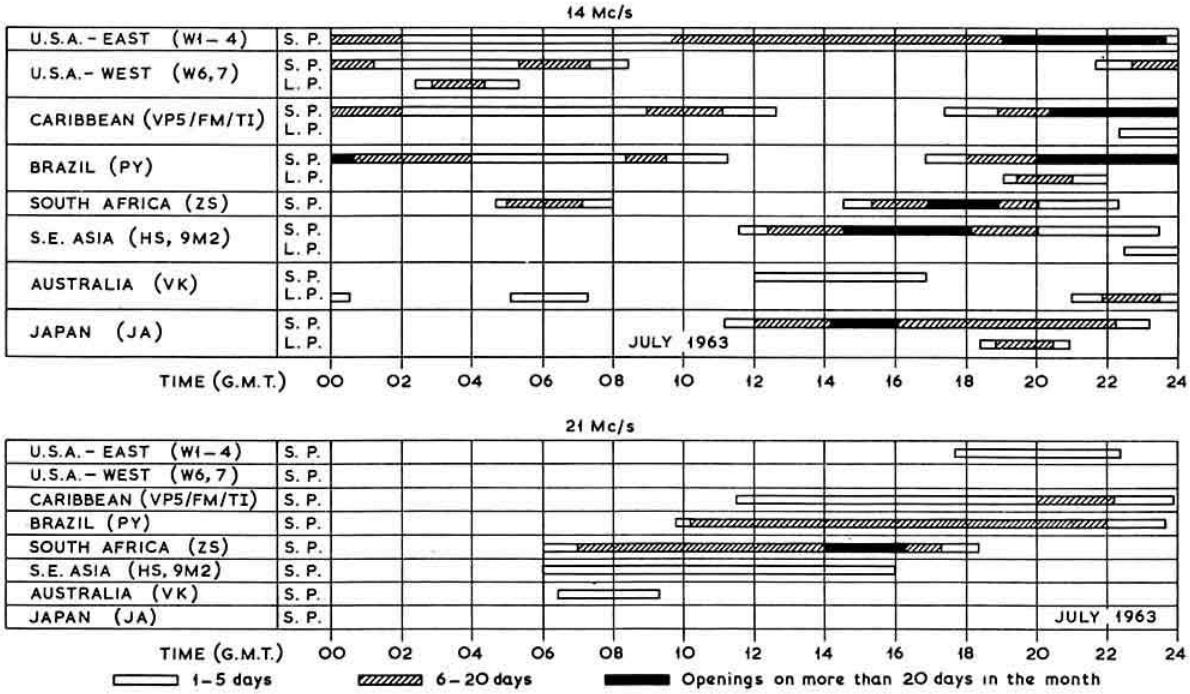
DXpeditions

TI9RC was the call used by W0MLY who commenced operation from **Cocos Island** on May 20. TI2HP, who intended to accompany Dick McKercher on this trip, was unfortunately prevented from so doing by the illness of his daughter. Permission was sought by W0MLY to operate from Swan Island, but for security reasons this was denied,

PROPAGATION PREDICTIONS

Propagation characteristics for July will be very similar to the conditions experienced during the preceding month, with 14 Mc/s carrying almost the whole of the DX traffic. There should be openings on 28 and 21 Mc/s to Africa and South America and the path to North America on the latter band may open infrequently. There will of course be the semi-local contacts made possible by sporadic-*E*. Users of the charts will undoubtedly have noticed that signals are not always to be heard from those areas indicated by the charts as favourable. This will have been especially noticeable when the times of peak activity from the area in question did not coincide with periods when the propagation forecast is favourable. It will be appreciated that in many areas of the world the density of amateur operators is very low.

The provisional sunspot number for May, provided by the Zurich Observatory, is 44, with the period of greatest activity lying between May 6 and 22. The predicted numbers for August and September are 21 and 20 respectively.



VK3 QSL Managers
VK3XB (left) and his XYL, VK3KS, with VK3TL. Kneeling is the very well-known listener B.E.R.S. 195.
(Photo by Mrs. B.E.R.S. 195).

despite the recent activity of W3ZQ/KS4 from this spot. QSLs and contributions should be sent to W4ECI.

As anticipated, the operation from **Willis Island** by ZS6LM did not materialize, but it is hoped that there will have been more success with the plans to commence activity from Christmas Island under the call VK6ZS/VK9. The starting date was scheduled to have been June 15 with operation continuing for two to three weeks. Further plans envisage a trip to the **Saudi Arabia-Kuwait Neutral Zone** during November. QSLs should go to KV4AA (G2HFD).

The " mystery " island of HL9KH to which he plans to travel at short notice during a forthcoming weekend has been pinpointed as **Parece Vela,** located South of Japan and some 400 miles from the Volcano Group. The call has been issued and is said to be KG61D, but whether this is an administrative error for KG6*L*D remains to be seen. Equipment and operating tactics will probably be the same as prevailed during the W9WNV/KG6R trip. Whether this trip will be affected by the new DXCC ruling regarding separation of countries has not yet been made clear, but if separate country status is not available Parece Vela will count with Iwo Jima. QSLs should go via W9VZP, who is doing an excellent job with the cards for the activities of HL9KH. W9VZP will be on vacation during July but his duties will be handled for this period by Jack Kurtz, K9HOL.

As reported in *MOTA* last month it seems unlikely that W4BPD will be granted permission to operate from the various VQ8 islands, a number of which are separate " countries " for DXCC. The refusal of temporary permission in the face of a number of precedents is to be deplored. An attempt to launch an operator, already licensed in this area, is being made by a group of interested amateurs headed by G8KS. The proposal is that **VQ9HB** should make a trip to the Agelegas and other dx-attractive spots possibly during the coming November. As VQ9HB is dependent for his livelihood upon income derived from the hire of his boat, it is being suggested that a sum should be paid to him to cover the expenses of this period spent in dx'ing. Also, efforts are being made to obtain the loan of equipment and possibly the services of a second operator, skilled in DX working. Offers of assistance and suggestions should be sent to **G8KS.**

From **EA7ID** comes news of preparations for a DX-pedition to Spanish territories in Africa, including Rio de Oro, Ifni, Spanish Guinea, Fernando Po and Annonbon. **EA2CA** has agreed to lead the trip with the help of EA4CR and EA7GF. The accumulation of the necessary equipment is expected to take some time so that no possible starting date has yet been contemplated.

The first **Mongolian** station to operate on s.s.b., **JT1CA,** commenced activity on June 8 and was worked by a number of UK stations although the signals were not above S5 at around 15.30 on a frequency of 14,110 kc/s, which is believed to be crystal controlled.

Once again the Gus Watching Society is on full alert following activity from French Somaliland, **FL5A,** and imminent operation from Kamaran Island. Following this appetite stimulator **W4BPD** intends to make tracks for the Trucial States, the Yemen and the Neutral Zones before making for AC3 and AC5. In this game the only safe thing is to monitor 14,035 kc/s and 14,108 kc/s on which frequencies the battle usually commences. During the past year Gus has handed out close to 20,000 QSOs under 28 different calls, and it is said that a complete new station will be made available to him in the near future.

Following the refusal of the authorities to give W4BPD permission to operate from the VQ8 islands, **VQ8BFA** was heard (and worked by a small number of keen eared operators) from the **Agelaga Islands,** this call-sign being that allocated to VQ9HB. It is the opinion of the writer that, with the best will in the world, neither the operator nor the equipment was suitable for the pile-up that was bound to develop. A QSO rate of three per hour may well cause dangerous blood pressure in widely spread parts of the world, and will certainly satisfy few people.

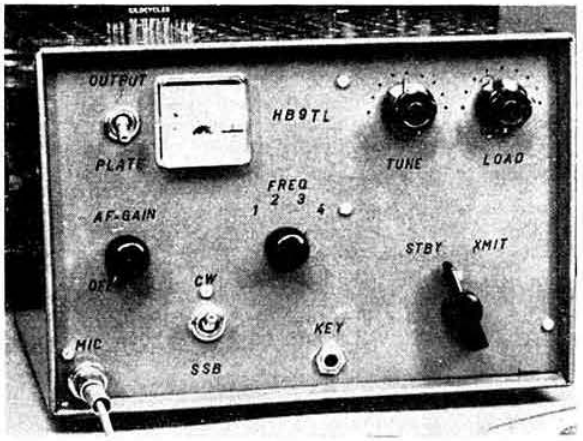
The latest news on the trip to **Trindade Island** is that operation will commence on June 26 lasting for up to four weeks using the call **PY4AS/0.** It is understood that s.s.b. will be the modus operandi.

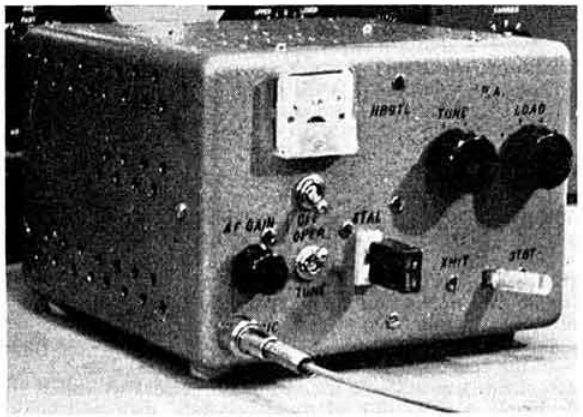
Hammarlund Manufacturing Co. and K.W. Electronics Ltd., are arranging a DXpedition to **Corsica,** during the period July 4 to July 18. C.w. and s.s.b. will be in use simultaneously, the former on 3510, 7002, 14,002 and 21,100 kc/s, listening 10 kc/s off these frequencies. On s.s.b. the expedition will transmit on 14,125 and 21,400 kc/s and listen between 14,320-14,350 kc/s and 21,420-21,450 kc/s. The operators will be MP4BBW, DL9PF, HB9TL, W2BIB, W2BBV, and W9IOP. The s.s.b. frequencies in the 3·5 and 7 Mc/s bands unfortunately preclude contacts with amateurs in Region I.

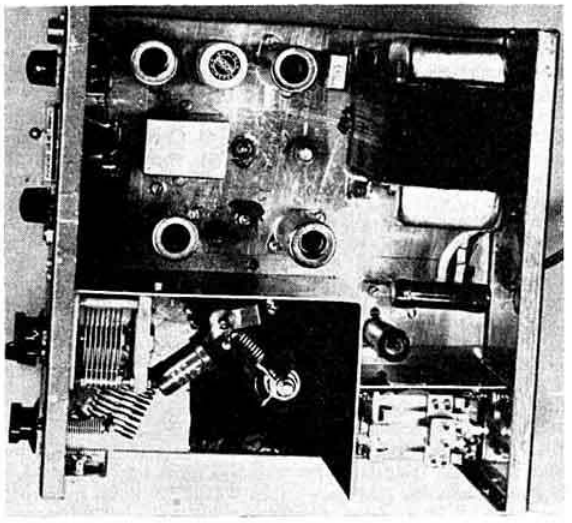
DXCC News

The ARRL announces one addition and five deletions to the Countries List. The deletions, effective as of May 1, 1963, are JZ0 Netherlands New Guinea, PK1, 2 and 3 Java, PK4 Sumatra, PK5 Netherlands Borneo and PK6 Celebes and Molucca Islands. The addition to the Countries List is **PK, Indonesia,** and this listing will encompass the entire territory of Indonesia. Confirmations for creditable contacts with Indonesian stations made May 1, 1963, or later may be submitted for DXCC credit starting September 1, 1963. ARRL draws attention to the fact that at the present time Indonesia is on the (US) banned list.

In correspondence appearing in *The DX'er* and the







The HB9TL s.s.b. transmitters. With the co-operation of amateurs in the Caribbean area, particularly PJ2AA, the first rig was used in FY7, VP3 and FM7. It measures 8 in. × 8 in. × 6½ in. and weighs 13 lb. The second transmitter is similar in size and weight but uses a modified circuit with a 6DQ5 p.a. It is crystal controlled on 14,127, 14,121 and 14,098 kc/s and is at present at VP2SY.

Long Island DX Association *Bulletin*, **W1WPO** makes the following point in connection with DXCC—" Inasmuch as the DX Century Club Award is a function of the ARRL and since activities such as Awards and Contests sponsored by the ARRL come within the organizational framework of the League's Communications Department, the responsibility for maintenance of the DXCC is a function of the Communications Manager of the ARRL. The Communications Manager calls upon a group of HQ staff members all of whom are holders of the DXCC Award to pass an opinion on special matters relative to DXCC. . . . " The members of the DXCC Committee are at the present time: John Huntoon, W1LVQ, L. A. Morrow, W1VG, R L. Baldwin, W1IKE, L. G. McCoy, W1ICP, Ellen White W1YYM, F. E. Handy, W1BDI and R. L. White, W1WPO. Readers wishing to become familiar with the criteria of the DXCC Award are referred to *QST* July 1959 (page 84), April 1960 (page 80) and August 1962 (page 88). In this connection it is said that the 225 mile separation referred to will shortly be amended to 500 miles, and an ARRL pronouncement is expected shortly.

A new prefix has been allocated to **South Korea** in the combination **6N5**, and HL9KH may shortly also sign 6N5XA.

Contests

The results of the **Eighth WAE DX Contest 1962** show that **DJ3KR** made the highest scores in Europe on c.w. and phone, and also achieved world highest on the latter mode. His scores of 80,520 points (c.w.) and 22,860 points (phone) compare with the world high of **UA9DN** who amassed 101,700 points on c.w. Participating UK stations were:

G2DC	41,328 pts.	272 QSOs	217 QTCs	82 multiplier
G3EYN	12,299	154	96	49
G2AJB	1,035	45	—	23
G3LNS*	17,640	261	131	45

* multi operator station.

The phone section of this contest attracted more participants than the c.w. section, and this bias was particularly noticeable in the case of North America. The 1963 Contests will take place over the weekends of August 10-11 (c.w.) and August 17-18 (phone). Copies of the rules are obtainable by sending a s.a.e. to G2BVN.

The results of the **Third All Asian DX Contest** organized by the JARL give 4X4NJ as world highest scorer with 64,688 points. From England the participants were: G2DC, 2,590 pts., G3EYN, 912 pts. and G2AJB, 242 pts. The Fourth All Asian DX Contest will take place from 10.00 August 24 to 16.00 August 25, 1963. All logs must be postmarked not later than September 30.

The **Scandinavian Activity Contest** for 1963 is being arranged by the Finnish national society, SRAL, the dates being:

c.w. 15.00 September 14, 1963 to 18.00 September 15.
phone 15.00 September 21, 1963 to 18.00 September 22.

A summary of the rules will appear in the September BULLETIN.

Awards

The **Senegal Award** may be claimed by operators who are able to produce evidence of contacts with five different 6W8 stations after December 31, 1962. QSOs may have been conducted on any mode and a minimum report of RS33 or RST338 is required. Claimants must send the QSLs, together with a list showing details of the QSOs to Diplome Senegal, BP 971, Dakar, Republique du Senegal. If it not desired to send the QSLs to Senegal, these, together with the list, may be sent to F2GM for certification. If this is done then a self-addressed envelope and five IRC should be enclosed. This award is also available to short wave listeners, and the details must include the calls of both of the stations engaged in QSO and the reports exchanged.

The distinctive certificate offered by the **YL International SSB'ers Inc.** is available to stations outside the USA who can produce proof of contact with 10 W/K members and five DX members, a total of 15 QSOs. The certificate is free to members and is available to non-members for seven IRC. A certified list of contacts should be sent to **K4ICA,** V. Mayree Tallman, 428 S.W. 28th Road, Miami 36, Florida, USA. All contacts, after February 9, 1963, either on or off nets and on any mode, count towards the certificate, which is also available to short wave listeners.

Around the Bands†

With the better weather, outdoor pursuits and holidays doubtless account for the reduced number of reports this month. It is a pleasure however to have received information from a number of new reporters and a warm welcome is extended to them all.

Last month's trends continue—activity on the l.f. bands still declining, the h.f. bands yielding interesting DX and 28 Mc/s beginning to figure more often in the returns from our correspondents.

The **1·8 Mc/s band** appears to be taken over entirely by the locals now and no DX is reported. Regular listener **B.R.S.-20317** (Bromley) says listening is almost a waste of time on the l.f. bands and this is confirmed by other stations. On **3·5 Mc/s** B.R.S.20317 heard VE1ZZ (23.25) early in May at S7 and KP4AXU (23.50) at S4 but otherwise activity seems negligible.

A fair amount of DX is still workable on **7 Mc/s** mainly during the small hours. **G3JAG** (Rochdale) lists c.w. contacts with CM2VQ (04.40), CM2WS (05.10), KV4DB (23.25), FP8CA (05.10), UA0BN (22.30), 3IS, 3OR, 4JP and VK3GU, 3AZY, 5KD, all between 04.45 and 06.30 and with W6WII (05.15), 9Q5TJ (21.50), 9G1EI (23.25). **G3POI** (London) worked c.w. with PY4AP (22.19), CT2BO (22.54), EA6AF (23.45), SU1KG (13.05), PY7ACS (23.12), OH1AD/0 (00.42), LU6FA (23.31), YV1AB (02.03), KZ5FC (02.25), VP5XG (00.18), HK7AJP (05.24), OY1F, OY1R, OY2H (18.00-21.00), EP2RH (19.40) with near misses CR7BJ (20.28) and CM2QN (23.24). **B.R.S.20317** (Bromley) reports good signals from the U.S.A./Canada in the late evening and many stations in South America giving S5 to S7. Listings include PY5ATL (22.30), PY6OL (22.55), LU6FA (23.20), CE4BS (23.27). From Africa came 9Q5AB (23.15) and ZE1BF (22.34 but very weak). VK5KO was logged as late as 22.15.

The **14 Mc/s** band is its usual interesting self, staying open often as late as midnight some evenings. Conditions vary to some extent but the DX is there for those who seek. **G3AAE** (Loughton) reports BV1USA (17.00), TN8AF (18.30), 6O1MT (18.40), ZL1ABZ (07.05), VR2DK (08.50), DU0DM (16.30), TI9RC (22.00), 6YAMJ (21.40), and VQ8BFA (16.15) all on c.w. **G3YF** (Chingford) has worked c.w. with KG6QV/KS6 (09.10), KB6CP (09.40), VS1LP (14.00), CR9AH (13.15), VP7NS (13.15), TI9RC (00.15), FL5A (18.25), VP5LG (11.42), KH6DUV (07.15), whilst c.w. accounted for VS4RS (13.40), JT1AD (16.15), BV1USA (18.10), LA9RG/P (15.10), KR6LD (14.50), VR2DK (16.00), VQ8AI (16.25), 9M2GJ (17.55), ZL1ABZ (18.05), VS1FZ (13.15), KA7TB (16.15), 9U5AS (22.00), ZK1BV (07.15), BY1PK (15.55), VR1N (06.50), FO8AA (06.15), UA1KED (FJ) (07.20), FL5A (19.00), VQ8BFA (16.15), VR1A (08.30), VR2DK (08.45), KH6EDY (08.55), HS1A (14.25), KG6ID (09.56).

G3PTO (Wolverhampton) reports successful operation using a ground plane and has keyed with TI2WD, 9Q5AB, M1VU, SM6UL/MM off the Brazilian coast, LU1BA, UJ8AC and many others. **G3OKP** (West Drayton) currently limited to transmission on 80 and 160m submits an interesting list of stations heard on 14 Mc/s including HC1FG (07.05), HR1SO (12.25), MP4BJJ, and VK3AWO (07.10), all on s.s.b. **B.R.S.24821** (Barkingside) has logged VE8MQ (21.05), VS1LQ (14.15), UA9KTE (09.53), VQ4AR (20.50). **A.3699** (Renfrewshire) has heard good signals from ZP5OG (20.15), 7X2ZH (19.21), LU4DMQ (20.09), UD6BR s.s.b. (13.08), ZS6HY s.s.b. (20.05), HZ1AB s.s.b. (18.50), UF6FB s.s.b. (15.30), KR6PY, JA3BOA both at 16.10 on s.s.b., JA1ANG s.s.b. (16.20), LU5AH s.s.b. (20.42), ZK1BS s.s.b. (06.30), HI8AKU s.s.b. (20.45), VS1LP s.s.b. (15.10), PY7SA (22.15), KR6OF (17.22) whilst A.2114 (Richmond) gives a comprehensive list as follows (all s.s.b.): VK0VK (06.05), HC2JT (06.28), VP5LG (06.35), K6CQV/KS6 (07.10), KC4USX (07.15), ZK1BS (07.18), OH1AD/0 (07.22), KJ6BZ (07.25), UW9CC (07.26), UN1AZ (07.40), ET3MEN (09.56), VR1N (14.02) LZ1JW (14.35), K9IOZ/KG6 (14.52), HB1JZ (15.26), 4S7IW (17.00), EP2AW (17.05), FL5A (17.06), SM1AS (17.08), PX1OAC (17.15), 9N1DD (17.17), ZS7R (17.40), 6O1WF (18.45), 5X5IU (19.25), PY5AQ (19.40), UF6FB (19.43), ZP5CF (19.45), EL6A (20.00), FG7XT (20.08), CX3AAV (20.37), UL7FA (20.45), PZ1AG (20.48), CE3WN (20.52).

DX is still to be found on **21 Mc/s** although considerable short skip is now in evidence particularly late in the day. **B.R.S.24821** (Barkingside) lists VQ2AX (14.32), VS1GC (14.45), CR6CY (14.56), YV4BAW (20.00), ZS6SB (11.50) and VS4RS (14.20). **G3PVS** (Woking) found TF3SK, 6O1ND, ZS6BEJ and 9Q5CA at 09.50. G3PVS also reports hearing 15 countries on this band within a 15 minute period. **G3OKP** (West Drayton) is only active on 80 and 160m but supplies a list of stations heard on 21 Mc/s including HC1CD (22.05), HC1KV (21.35), CX4BI (17.30), KZ5HR (20.45), KP4USA (20.40), PY2CSV (20.30), PZ1AQ (20.45), VP9DL (22.00), VP9FD (22.30), XE3AF (21.30), YN6HH (21.30), ZS1AB (13.00), 5A5TE (18.30), 9G1DM (17.30), 9G1EE (14.00). **G3PMR,** back after a period of absence from these columns, lists CR6FN, 9G1DM, HC2RM amongst others, heard at good strength on a transistor portable set. Finally, **G3AAE** (Loughton) gives 9U5BH (09.00), 9U5IB (13.00), VS1LX (16.00), XW8AL (11.10), VS9MB (17.30), all on

(Continued on page 66)

† Compiled by J. G. Cottrell, G3PSY.

QTH Corner

AP2AR	via AP5CP.
DU0DM	via DU1CE.
FG7XE	via K5AWR.
FL5A	via W4ECI.
FP8CA	via K2OJD.
FP8CB	via WA2WBH.
G3OHM, G3RSR, GB3SB	J. K. Harvey, 22 Elm Grove, Norton, Bromsgrove, Worcestershire
HL9KO	via W2LSX.
HS1P	via W4CKB.
KA7TB/CR9	via K4SCT, 1340 NW, 190th St., Miami 69, Fla., USA.
KG6ID	via W9VZP, RFD1, Delavan, Wisconsin, USA.
KJ6BZ	via KH6EGO, APO 915, Postmaster, San Francisco, Calif., USA.
KX6AE	J. Troe, Box 472, Navy 824, FPO, San Francisco, Calif., USA.
PX1OX	via DL2OX.
TA1AH	via ZS6UR.
TI9RC	via W4ECI.
VK6ZS/VK9 (or VK9DR)	via KV4AA.
VQ8BFA	via G8KS.
VR1N	Hammarlund Dxpedition, General Post Office, P.O. Box 7388, New York 1, NY, USA.
YA1AK	via K5YYP.
5H3JI	G. T. Allen, Box 20597, E.A.P. & T., Dar es Salaam, Tanganyika.
5R8CK	C. Daubier, B.P. 93, Antsirabe, Madagascar.
6O1ND	N. R. Duxbury, Box 397, Mogadiscio, Rep. of Somalia.
9N1MM	via E. Blaszczyk, W3KVQ/2, 2308 Branch Pike, Riverton, New Jersey, USA.

* * *

RSGB QSL Bureau: G2MI, Bromley, Kent.

Repairing FT-241A Crystals

By T. HOLBERT, GM3DXJ*

FOR use in an s.s.b. exciter, the writer obtained a number of FT241A crystals in the 54th and 72nd harmonic series. Unfortunately two of the filter set were dropped during construction of the exciter, causing the fine connecting wires to part from the centre of the crystal plate. Subsequently the carrier oscillator crystal suffered the same fate. These crystals are far from robust and a little misuse will render them unserviceable.

Those who have used this series of crystals will appreciate the difficulty if repair is attempted. Direct application of heat is usually enough to shatter the crystal, and it is practically impossible to resolder the original connecting wires to the centre of the plate.

If no attempt at repair is made, the crystals are worthless. Using the method to be described, it is possible to repair a proportion of the crystals without any great difficulty, but it should be stressed that to achieve a moderate failure rate, care must be exercised throughout the repair operation.

After removing the crystal assembly from its holder, proceed as follows:

(i) It will usually be found that the fine connecting wires

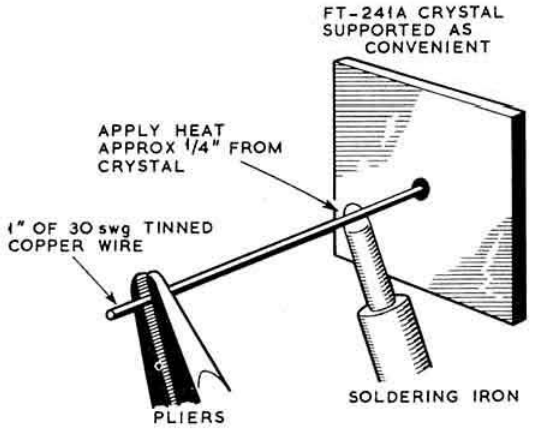


Fig. 1. Soldering a new lead to the centre of a crystal plate.

have parted from the solder blob in the centre of the plate. If, however, the wires remain in the blob do not attempt to unsolder them, but clip them off as close as possible to the crystal. If the wires are on the spring connecting wires unsolder and discard them.

(ii) With pliers, bend approximately $\frac{1}{8}$ in. of the ends of the spring connecting wires through 90° and tin this portion.

(iii) Clean and tin about 1 in. of 30 s.w.g. copper wire.

(iv) Hold this wire with pliers and place the end on the solder blob in the centre of the crystal. Apply a soldering iron to the wire about $\frac{1}{4}$ in. up and allow the wire to solder itself into the blob. Do not apply heat any longer than absolutely necessary (Fig. 1).

(v) Repeat steps (i) to (iv) for the reverse face of the crystal.

(vi) Carefully clip off all but $\frac{1}{8}$ in. of the upper wire and then solder it to the spring connecting wires. Again, there must be no prolonged application of heat (Fig. 2).

The crystal should now be replaced in the holder and

* *19 Thompson Drive, Currie, Midlothian.*

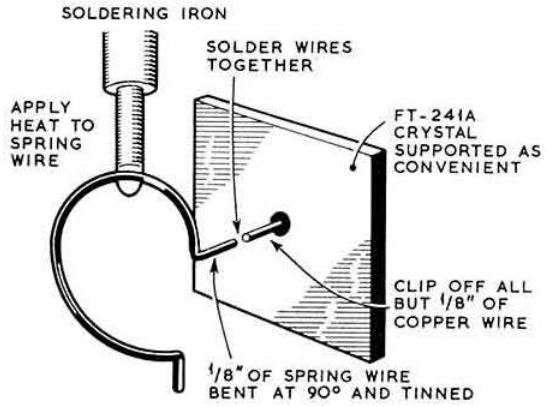
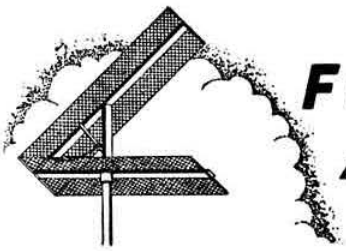


Fig. 2. Connecting the spring wire to the lead from the crystal plate.

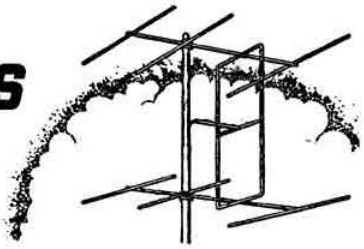
checked for activity, The easiest way of doing this is to connect it in a simple Pierce oscillator circuit and check that it will oscillate. If it does not oscillate, it will be necessary to use one of the regenerative type crystal oscillator circuits.

There appears to be a slight fall in activity but the repaired crystals are as good as many, and certainly better than a number of the originals, since activity seems to be extremely variable in this series.

One of the most persistent and successful Top Band Dx'ers is G3PU seen here in his roof-space shack. He has worked 41 countries in all continents. His equipment includes two CR100 receivers, a v.f.o., and an electronic keyer. The Top Band transmitter employs an 807 running 8·5 watts input and feeds a 265 ft. long wire 70 ft. above ground running north-west—south-east.



FOUR METRES AND DOWN



By F. G. LAMBETH (G2AIW)*

IN spite of the recent improvement in weather conditions, nothing very startling appears to have been happening. These sad circumstances are also evidenced by the scarcity of reports. Nevertheless, skeds seem to be possible, proving the old axiom that if you try them, you can usually work them, even on v.h.f.

G3OCB (near Truro) reports little of general interest owing to the cold windy weather recently experienced in Cornwall. The only DX stations heard for a month or two have been G3GYO, G3MPS and, of course, G2JF. Bristol area stations have been fairly consistent whenever conditions have been reasonable, the best being G3MVA with G3MTG, G6GN quite good on occasions. At G3OCB the five element Yagi has been replaced by a 6-over-6 J-Beam with some apparent improvement. The third harmonic of Hessary Tor TV station appears to be about one S point higher than the noise! The five element Yagi will now be available for portable work from high ground nearby. Portable operation will be frequent, especially on Sunday mornings, looking for DX QSOs. Local activity has been variable, with G3OJY, G3XC, G3CZZ and G5ZT in the picture from time to time.

G3IGV (St. Austell) and **G3KEU** (Plymouth) are welcome newcomers on the band. **G3NVJ** (Redruth) has a converter and four element Yagi, and hopes to be on soon.

G3OHC (Birmingham 18) is active, when not mobile, from G3OXD/A, the Albright and Wilson Society of which he is chairman. They have worked 306 stations in 52 counties and eight countries. The usual input is 90 watts to a QQV06/40; and a 6CW4 crystal controlled converter feeds into a CR100. The /A location is rather better than the home QTH, being 876 ft. a.s.l. with a fairly good take-off in most directions. Unfortunately it is not possible to operate regularly from there, but there are plans for a regular Wednesday night transmitting session. Most of the activity is and will continue to be in the various contests. G3OHC operated as ON5ZT and PA9OHC during April but conditions at that time were not very good, and only ON4 contacts were made, no Gs being heard despite skeds. Nevertheless, a wonderful time was had and future events of a similar nature are eagerly awaited.

G2DHV/P is now operating with an 8-over-8 slot from the North Downs (Surrey) at 840 ft. a.s.l. During contests in the last two years, George has operated solo, apart from help from A.2455, and finds talking for long periods tiring. Accordingly he is always ready for c.w. calls! SWL reports are welcomed from anyone further away than 70 miles, and also on past contests for propagation studies.

G2DHV/P will be operating from Lincolnshire on 145·25 Mc/s from August 17-24.

One of the Society's v.h.f. minded past presidents, and incidentally, an earlier writer of this column, is Bill Scarr, **G2WS**, who is now in Coventry and hoping soon to return to 144 Mc/s, operating from his shooting brake. He adds one qualification to this, however, for he will be contemplating /P activity, not /M. Bill is interested in finding a solution to the transmit/receive change-over switching problem for 75 ohm co-ax or 300 ohm flat cable such as are in general use for 144 Mc/s and above. No manufactured article appears to be available at a reasonable price and yet there must be many hundreds of v.h.f./u.h.f. stations employing some form of aerial switching. G2WS is asking for a really efficient low-loss design.

G3CCH reports that the Russian/Polish/Czechoslovakian V.H.F. Field Day takes place on July 6-7. OK1DE, who passed on the news, states that they are expecting a record number of participants, so it should be worthwhile listening for contacts during those two days. G3CCH also mentions that there appear to be very few DX operators in Czechoslovakia, and most of them still use SEO gear!

G3CCH's recent MS tests with SP5ADZ were rather disappointing, as was the sked with UA1DZ. OK1DE, however, reported hearing G3CCH in fb fashion whilst calling SP5ADZ.

CT1CO (Lisbon) has written to report on the DX position, which in spite of skeds with G2JF, G3LTF and G3OJY have shown negative results so far. Manuel recently had a very enjoyable personal QSO with G3FUR. He thinks that G3OJY (and others in Cornwall) probably have the most advantageous positions for QSO's with Portugal, as the great circle distance Cornwall/Lisbon is around 800 miles. CT1CO will be very happy to arrange skeds with any amateurs seriously interested in 2m QSOs and suggests that c.w. should be used between 23.00/01.00 GMT. He would also be prepared to try MS on Sunday mornings from say 05.00/07.00 GMT. CT1CO uses pushpull 4X150As and a 10 element Yagi.

G3IUL will be going to Barnsley during the first week in July, and will be portable on 2m and 4m on the Field Day, from a road site near Carlton, Yorks.

G3LHA (Coventry) finds 2m a bit of a rat race at present with more stations appearing from high QTHs with high power and in many cases with commercial gear, and he finds more pleasure in /P and /M when he can compete with them!

A late report from **G3LTF** (Galleywood) shows a welcome upsurge of activity from the weekend of June 8 onwards. During this period he worked PA0EZ and G3KXA/P (S9+) (Northumberland). On June 10, OZ7TW, OZ5J and OZ5DE were worked with many other OZs heard; also worked were PA0BM, PA0FB, on s.s.b. both ways. On June 11 the opening appeared to move away slightly. Many OZs were about but PAs were mainly worked. However OZ7WA, OZ5HF and DJ5HG (Hamburg) were raised. It was very disappointing that few of the Continentals could take s.s.b., the main reason a startling one—was that some of them had no b.f.o.!

G3LTF has heard several sporadic *E* openings in the 70 Mc/s area, but none have so far reached 144 Mc/s when he

* *21 Bridge Way, Whitton, Twickenham, Middlesex.*

has been listening. During the mornings of June 8-9 Dresden was checked because there was an intense meteor shower and it was coming through at quite a high level continuously with bursts and pings making it much stronger, but the "background "signal was well up on the usual level which is barely detectable. Presumably the residual density in the *E* layer is increased by continual meteor bombardment in these intense showers, and the upper frequency limit (normally about 70 Mc/s) for ionospheric scatter is raised to at least 146 Mc/s. A pair of well-sited stations at over 600 miles might be able to exploit this ionospheric scatter, G3LTF thinks.

The following Luxembourg stations are known to be active on 2m: LX1AL, LX1AS, LX1BO, LX1CW, LX1DU, LX1MS, LX1SI, LX1SM. **LX1CW** is probably the most active, with 100 watts to a 10 element Yagi on 144·644 Mc/s. He is looking for Gs most evenings after 21.30 GMT.

Several OZ stations in the Greater Copenhagen area are now equipped with f.m. in order to be able to stay on the air during TV hours.

The following is a summary of active stations in Denmark:

Call-sign	*Location*	*Frequency*
OZ7LX	Copenhagen	145·21 Mc/s
OZ4AU	Thisted	144·71 Mc/s
OZ8CP	Helsinger	144·89 Mc/s
OZ7II	Allerod	144·60 Mc/s
OZ7JQ	Thisted	144·15 Mc/s
OZ3DK	Hammel	145·46 Mc/s
OZ7OU	Hoblak	145·27 Mc/s
OZ5BK	Silkebourg	144·40 Mc/s
OZ7WA	Silkebourg	145·44 Mc/s
OZ2VG	Virum	144·70 Mc/s
OZ7WZ	Sonderborg	145·355 Mc/s
OZ5BS	Streur	145·44 Mc/s

In Norway, v.h.f./u.h.f. activity is generally concentrated around Oslo and the western part of the country. The best known and most active stations are as follows:

Call-sign	*Frequency (Mc/s)*	*Power*	*Aerial*
LA2F	144·025 and 432·010	50W	6 element Yagi
LA3AA	144·780	80W	6 element Yagi
LA4VC	144·395	50W	12 element Yagi
LA4RD	144·700 and 434·100	50W	6 element Yagi
LA4YG	144·600 and 433·800	50W	5 element Quad and 6 element Yagi
LA8WF	144·720	20W	6 element Yagi
LA8RB	144·900	50W	6 element Yagi
LA9T	V.F.O. 432·250	50W	5 element Yagi

S.s.b. on Two Metres

A letter from **G2PL** (Wallington) points out the growing interest in 2m s.s.b., and requests interested stations to arrange skeds on this mode, G2PL's interest was largely fostered by G3BA (Sutton Coldfield), whose encouragement has been greatly appreciated. A recent QSO with G8SB (Sale, Cheshire) demonstrated the effectiveness of s.s.b. when deep fading is experienced. An a.m. signal would almost certainly not have been copied under such conditions. Other stations worked on two way s.s.b. have been G3GKF (Purley) and, of course, G3BA. The G2PL equipment comprises a QQV06/40A delivering 30 watts p.e.p. output, and uses the 21 kc/s output from a third method exciter. The aerial can either be a folded dipole at 35 ft. or a four element beam in the roof space. G2PL would also like to know that more stations on a.m. are listening for "us Donald Ducks." We observe that s.s.b. operation is growing on 2m, and would appreciate other operators' news as to their activities. There is obviously a great deal of interest amongst those who would like to use s.s.b., but need either encouragement or technical assistance. Please let us hear from you.

At the Ninth International V.H.F./U.H.F. Convention in London on May 18, 1963: (left to right), Mr. R. C. Hills, G3HRH (V.H.F. Manager), Mr. C. W. Sowton, O.B.E. (P.O. Engineering Dept.), Mr. Norman Caws, G3BVG (President), Dr. R. L. Smith-Rose (Past President), and Mr. D. N. Biltcliffe, G6NB (Member, V.H.F. Committee).
(Photo by courtesy of Electronics Weekly)

Second 144 Mc/s Portable Contest

A reminder that the Second 144 Mc/s Portable Contest will take place on July 7. Plenty of activity is wanted, to help those who are enthusiastic enough to venture out, and also to provide a finalé for the Golden Jubilee week. The only other requirements are good conditions.

Seventy Centimetres

G3OHC (Birmingham) reports that G3OXD/A is active on the 70cm band, and that 27 stations in 12 counties have already been worked with 20 watts to a DET24, and a G2DCI converter into an S750 receiver.

G2XV (Great Shelford, Cambs.) confirms that GM3FYB has heard his signals on sked on three occasions, but there has, regrettably, been no luck in the reverse direction. They are undaunted, hoping for conditions to satisfy requirements for two-way communication.

G3LHA (Coventry) was active in the 420 Mc/s Contest on June 15-16 both fixed and /P and made a total of 36 contacts (25 different call-signs). Conditions were poor and

V.H.F./U.H.F. BEACON STATIONS

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3CTC	Redruth, Cornwall	144.10 Mc/s	A1	North East
GB3VHF	Shooters Hill, London	144.50 Mc/s	A1	North West
GB3GEC	Hammersmith, London	431.5 Mc/s	A1	East

R.S.G.B. V.H.F. BEACON STATION GB3VHF

The frequency of the Society's stand-by v.h.f. beacon transmitter at Shooters Hill, South East London, when measured by the B.B.C. Frequency Checking Station, was as follows (nominal frequency 144.50 Mc/s).

Date	Time	Error
May 7, 1963	17.17 GMT	380 c/s low
May 14, 1963	19.15 GMT	400 c/s low
May 21, 1963	19.10 GMT	320 c/s low
May 28, 1963	11.00 GMT	310 c/s low
June 4, 1963	11.00 GMT	340 c/s low
June 11, 1963	11.14 GMT	340 c/s low

it was a terrible struggle to work into the London area from the home QTH but G3LHA did manage to work G3KEQ, G3LTF and G3JMA after midnight on the Saturday. Home operation generally has brought no new counties recently; G3KZU (Oxfordshire) is still being sought and GW3ATM (Monmouth) would be a rare one to catch! With the onset of better weather and conditions GB3GEC has at last been heard but only S4/5 under good conditions, and only audible with the A.2521 r.f. stage in use, but it is a great help in judging conditions to the S.E. Local activity is on the increase: G3NBQ, G3KEF and G3RYB/T are all now active after 22.00. We are asked to look for G3KEF/P and G3LHA/P in rare counties on 430 Mc/s this summer. Operation will be in Oxfordshire, Northants, Rutland, Hunts, Hereford and Glos., with the possibility of a combined GW visit in August or September.

G3LTF (Galleywood) found contest activity well down on last year, not only due to the absence of TV stations. There were many " regulars " who failed to turn up. In all 38 stations were worked, the best QSOs being with: G2CIW (114 miles), PA0COB (168), G3EGV/P (122), G3OXD/A (116), G3JWQ/P (141), ON4HN (150), PA0KT (168), PA0KPD (168), PA0OMS (180), and PA0TR (176).

Four Metres

G3IUL (Feltham, Middx.) has his 4m four element Yagi aloft again, after having had it blown down since the Christmas gales, and is now fully operational with 15 watts input. He is looking for morning skeds from 05.00 to 06.40 GMT. Night skeds are difficult owing to TVI in reverse, this being due to too much oscillator pick-up. Concentrating on 4m from his home QTH, 70 stations have been worked in 13 counties so far, but it is understood that a few of the stalwarts are around the 100 mark of stations worked. G3IUL met GW3MDY on 80m and has arranged a tentative sked for 4m at 06.30 GMT. Listener reports are welcome; such reports are in fact, more useful than a local report for Top Band.

North West V.H.F. Convention

Arrangements have now been made by the North West V.H.F. Group to hold this year's North West V.H.F. Convention at the Queen's Hotel, Piccadilly, Manchester, on October 5, 1963.

The Dinner in the evening will be limited to 120, so early application for tickets is advisable. Tickets, price 25s. each, may be obtained from Tom Davidson, G3AGS, 101 Grange Drive, Blackley, Manchester 9. Mr. Davidson will, on request, also arrange hotel accommodation for visitors. Bedrooms have been reserved at the hotel at the reduced charge of 37s. 6d. for bed and breakfast. Alternative hotel accommodation outside the city can be arranged if required. Tickets may also be obtained from Fred Nichols, G3MAX, 52 Great Ancoats Street, Manchester 4 (telephone: CEN 6276). All other correspondence will be dealt with by Geoff Barnes, G3AOS, 5 Prospect Drive, Hale Barns, Cheshire. Support from manufacturers for the trade display will be welcome—there will ne no charge for stand space.

A 144 Mc/s talk-in station will operate under the call-sign G3OHF/A while a portable on high ground on the Cheshire-Derbyshire border will act as a link for those travelling north to Manchester.

Scottish V.H.F. Convention 1963

From Geoff Stone, G3FZL, comes a report of the Eleventh Scottish V.H.F. Convention which was held in Edinburgh on Saturday, June 15. The total attendance was 33, with G3CCH and G3FZL the GDX visitors. In the morning a visit was made to the GPO Microwave Relay station at Kirk O'Shotts followed by a visit to the BBC TV transmitter which is only a few hundred yards away. The Convention proper was held in the afternoon.

The proceedings, apart from general discussions, were two lectures, one given by Harry Mackie, GM3FYB, on the receiving side of 70cm, and by E. Murphy, GM3SBC, who lectured on transistorized equipment for 2m. GM3FYB described the various receiving systems and converters which he had used. He said he had found the Nuvistor converter described by G2DCI in the March 1962 BULLETIN the most useful and managed to get it going with very little difficulty. He found that a series tuned circuit from the anode of the final multiplier (coil two turns 16 s.w.g. $\frac{3}{4}$ in. outside diameter and tubular ceramic trimmer) to earth with a one turn link preferable to the arrangement suggested by G2DCI. The link is coupled to the link in the high Q local oscillator tuned line. GM3SBC described a very interesting all-transistor crystal controlled transmitter, with an output of 0·75 watt; the line-up is transistor TR1, 8 Mc/s oscillator, TR2 nine times multiplier, TR3 doubler to 144 Mc/s, TR4 Fairchild QN2386 (price quoted was 36s.). The receiver consisted of four transistors commencing with a very low power super regenerative detector followed by an audio amplifier. To date QSOs have been made with GM3EGW and GM3FYB at 13 miles.

GM3SBC has agreed to write some notes on this equipment for the BULLETIN when his present experiments are finished. One point that he made was that the level of the super regenerative detector was so low as to result in negligible radiation, unlike valve type super regenerative devices. G3FZL invited the GMs present to indicate their level of activity on the 4m, 2m and 70cm bands; nine are active on 4m, 28 on 2m and six on 70cm. GM3FYB is active on 23cm also. This shows the high level of interest in Scotland but actual activity is often very low and few G stations are worked, mainly of course due to the topographical conditions.

For the record the following were present: GM2DPW, GM2DRD, GM2FHH, GM3NG, GM3UM, GM3DDE, GM3DIQ, GM3EGW, GM3ENJ, GM3FGJ, GM3FJP, GM3FYB, GM3GUI, GM3IQL, GM3KPD, GM3KRQ, GM3LAV, GM3LTB, GM3MOR, GM3OCV, GM3PHB, GM3PMB, GM3POK, GM3SAN, GM3SBC, GM6KH, GM6SR, GM6XW, GM6ZV, RCSO27 (Radio Club of Scotland receiving station), G3CCH and G3FZL.

During the dinner GM3DIQ, the Chairman, announced that a trophy to perpetuate the memory of Jock Kyle, GM6WL, would be awarded annually to the Scottish station obtaining the highest combined total score in his entries for RSGB v.h.f./u.h.f. contests each year. The first award will be made during 1964 to cover the activity of this year. This will give a big incentive for Scottish participation in contests which has been discouraged in the past by the sheer difficulty with other UK stations working in areas of high activity.

In all it was a very successful convention which is to be repeated next year, probably in the last week of April.

QRA Locator Maps

Copies of the British Isles QRA Locator Maps are now available from Headquarters, price 2/6 post paid.

Region 1 Field Day

The Region 1 Field Day will take place this year on September 22, from 09.00 to 17.00 GMT. Individual groups, however small, may compete provided the transmitters are operated by members residing in Region 1. Competing stations will be looking for contacts with portable stations outside the Region.

Copies of the rules are available from the Regional Representative, B. O'Brien (G2AMV), 1 Waterpark Road, Prenton, Birkenhead.

Malmo IARU Region I Conference

THE International Amateur Radio Union Conference was opened in Hotel Arkaden, Malmö, Sweden, on June 10, by Mr. Erik Esping, Technical Director of the Radio Division of the Royal Swedish Board of Telecommunications.

Present at the opening ceremony were Mr. Herbert Hoover, Jnr., W6ZH, President of the American Radio Relay League and of the IARU, Mr. Norman Caws, G3BVG, President of the Radio Society of Great Britain, Mr. W. J. L. Dalmijn, PA0DD, President of the Netherlands Amateur Radio Society (VERON), Mr. Per Gunderson, LA5LG, President of the Norwegian Amateur Radio Society (NRRL), Mr. Mr. E. Krenkel, RAEM, President of the Radio Sports Federation of the USSR (RSF), Major Carl-Erik Tottie, SM5AZO, President of the Swedish Amateur Radio Society (SSA), Mr. Osmo Wiio, OH2TK, President of the Finnish Amateur Radio Society (SRAL), Mr. John Huntoon, W1LVQ, General Manager of ARRL, Mr. Noel Eaton, VE3CJ, Canadian General Manager of the ARRL, Mr. H. A. Laett, HB9GA (Chairman), Lt. Col. Per-Anders Kinnman, SM5ZD (Vice-Chairman), Mr. John Clarricoats, G6CL (Secretary), Dr. Jacques Simonnet, F9DW (Treasurer), Mr. A. Schädlich, DL1XJ (Member of the Executive Committee).

There were also present delegates from ARI (Italy), DARC (Germany), NRRL (Norway), OeVSV (Austria), PZK (Poland), REF (France), RL (Luxembourg), RSF (USSR), RSGB (Great Britain), SRAL (Finland), SSA (Sweden), UBA (Belgium), USKA (Switzerland), VERON (Netherlands) together with a number of ladies and accredited observers. In addition to the President (Mr. Caws), the RSGB was represented by Messrs. R. C. Hills, G3HRH (Chairman, V.H.F. Committee), L. E. Newnham, G6NZ (Chairman, GPO Liaison Committee) and R. F. Stevens, G2BVN (Chairman, Technical Committee). Dr. A. C. Gee, G2UK, was present as an observer. The SRJ (Yugoslavia) delegates were delayed *en route* and arrived later in the day.

In his speech to the assembled delegates, Mr. Esping referred to the important work done by amateurs in many fields and especially in connection with the v.h.f. and u.h.f. ranges. He also made reference to the *OSCAR* satellite programme (an exact model of the original *OSCAR I* was on show in the vestibule of the Hotel Arkaden throughout the Conference).

At the first Plenary Meeting, Major Carl-Erik Tottie, SM5AZO, was elected Honorary President of the Conference, Lt. Col. Per-Anders Kinnman, SM5ZD, Dr. Karl Lickfeld, DL3FM, and Mr. W. J. L. Dalmijn, PA0DD, were elected Chairmen of the Administrative and Operational, V.H.F., and Credentials and Finance Committees respectively. Mr. R. F. Stevens, G2BVN, and Mr. C. van Dijk, PA0QC, were elected Secretaries of the two first-mentioned Committees and the Conference Secretary acted as Secretary of the Credentials and Finance Committee.

Financial Recommendations

The Conference decided that the basis of computation for financial contributions for the years 1964, 65, 66 shall continue at the rate of 50 Swiss centimes (about 10d.) per licensed member per annum. (There were 31,000 licensed

IARU Region I Division Conference
First Plenary Meeting,
Arkaden Hotel, Malmo, June 10, 1963

Front row left to right: Alfred Schädlich, DL1XJ (Committee Member), John Clarricoats, G6CL (Conference Secretary and Secretary of the Division), Harry A. Laett, HB9GA (Chairman), Erik Esping (Royal Swedish Board of Telecommunications), Jacques Simonnet (Treasurer), Per-Anders Kinnman, SM5ZD (Vice-Chairman), Ernst Krenkel, RAEM (President, RSF of USSR), Herbert Hoover, Jnr., W6ZH (President, ARRL and IARU), John Huntoon, W1LVQ (General Manager, ARRL, Secretary, IARU). RSGB delegates Leon E. Newnham, G6NZ, Norman Caws, G3BVG, and R. F. Stevens, G2BVN, are in the back row. Ray Hills, G3HRH, is in the centre row, centre.

members among Region I societies as at January 1, 1963. The RSGB annual contribution per annum will be approximately £240).

In future, Region I funds may be used to contribute towards the cost of paying for the attendance at Region I Conferences of the single delegate from any Region I Subscribing Member Society that is unable to meet the full cost from its own funds; the Executive Committee to have full power to decide each application on its merits.

Administrative, Operational and V.H.F. Recommendations

A detailed report on the recommendations adopted by the Conference will appear in an early issue of the RSGB BULLETIN.

The recommendations dealt with a very wide range of subjects including one that invited the RSF of the USSR to prepare, during the first three months of 1964, draft basic rules for International Contests.

Rules for Fox-Hunting were approved for use at the third European Championships to be held in Wilno, Lithuania, during August, 1963. An offer by the Polish Society (PZK) to organize the 1965 Championships was accepted as was an offer by the Yugoslav Society (SRJ) to organize the next Region I Conference in 1966.

At the final Plenary Meeting all members of the Executive Committee were unanimously re-elected to office.

The Conference agreed to support a recommendation originally put forward by the Executive Committee that the Region I Division should be represented at the Radio Conference on Space Communications in Geneva during October, 1963. (The Secretary of the Committee, Mr. John Clarricoats, G6CL, who led the IARU Region I team at the 1959 Geneva Radio Conference, has been invited to attend the Space Conference on behalf of the Division, provided his RSGB duties and private affairs permit.)

On Thursday, June 14, 1963, Conference delegates and their ladies visited the university town of Lund and later Björnstrops Castle, the lovely home of Baron Thure-Gabriel Gyllenkrok, SM7HZ, and the Baroness Gyllenkrok, where the whole party was entertained to tea.

SM7IARU

Throughout the Conference an Amateur Radio station was operated from the Arkaden Hotel, using the special call SM7IARU. About 1,000 stations in about 70 countries were worked.

The Conference was organized in Sweden by Lt. Col. Per-Anders Kinnman, SM5ZD, and Mrs. Britta Kinnman. The station was in charge of Mr. Olle Ekblom, SM5KV, who had the full support of local Malmo amateurs, notably Mr. Gunnar Stenvall, SM7ABC.

Miss May Gadsden was in charge of the Secretariat where she was greatly assisted by Mr. Per Bergström, SM7CKJ, his mother, Mrs. Vera Bergström, and Mrs. Margaret Bergström from SSA Headquarters.

Insurance on Amateur Radio Equipment

From time to time enquiries are received at Headquarters regarding insurance cover for radio equipment and aerials. Members may like to know that some companies regard Amateur Radio equipment as covered by the terms of the normal Householder's Comprehensive Policy but members are advised to check this with their own particular company. Cover for aerials can generally be arranged for a small extra premium.

In those cases where a company does not consider Amateur Radio equipment covered by the Householder's Comprehensive Policy, it is generally willing to extend the cover at a nominal extra cost.

U.B.A. Rally (Continued from page 48)

Hague on 80m: we visited his home, met his family, and went to lunch with him at Scheveningen, and we also had the pleasure of meeting PA0ZD who had obtained the Dutch licences for us.

Locally in North Holland, I met PA0JKO and PA0UX. The latter I heard on 21 Mc/s first.

In Belgium we met ON4VY and XYL and ON4PL and XYL, already mentioned, as well as ON4UU, ON4SN, ON4JN, and many others all of whose shacks we visited.

Before leaving Belgium again for Holland we were wondering where to eat, when we heard ON4CL on 21 Mc/s with a very strong signal, and so were talked into his QTH, and he sent us to a magnificent restaurant.

Everywhere we went we had a wonderful reception and were entertained magnificently. Having a rig with one in the car enables one to contact the locals on the air and be talked into their homes, many of which would have been very difficult to find otherwise.

Meeting the local amateurs in this way not only greatly improves the pleasure of the trip but enables one to become much more closely acquainted with the people of the other country, to everyone's benefit.

We also had our bit of DX. Contacts were made on 80, 40, 20 and 15m with many stations including 5N2, 4X4, UA3, KP4, W, PY7 (Fernando Noronho) and VK, K1 Aeronautical Mobile, 5B4, 5A3, CN8, as well as G, F, DL, OE, I, OH, EA, and most of the usual Europeans.

SOUTH WALES GOLDEN JUBILEE CONVENTION

NATURAL HISTORY WING,
UNIVERSITY COLLEGE,
PARK PLACE,
CARDIFF

Saturday, September 14, 1963

Programme

11.00 a.m.	Lectures and Demonstrations of Equipment
2.30 p.m.	Business Meeting and Official Opening
5.0 p.m.	High Tea
6.0 p.m.	Raffle and Official Lecture

In addition to the formal programme, there will be competitions for home-constructed equipment and various prizes for mobile entries.

A free car park for up to approximately 100 vehicles will be within the College grounds. Lunch in the College will be available, the cost of which is not included in the ticket price below. Full details will be circulated within the Region as soon as they are available.

Tickets, price 13/6d. each including high tea, are available from Mr. D. J. C. Green, GW3MRI, 36 St. Augustine Road, Heath, Cardiff. No applications can be accepted after September 7, 1963.

The Council will be represented by the President, Mr. Norman Caws, G3BVG, Mr. J. W. Swinnerton, G2YS, the Zonal Representative, Mr. A. C. Williams, GW5VX, and the General Secretary, Mr. John Clarricoats, O.B.E., G6CL.

Society News

Birthday Honours

Old friends of Charles Ian Orr-Ewing, O.B.E., M.P., until recently Civil Lord of the Admiralty, will have been pleased to notice from the Birthday Honours' List that Her Majesty, The Queen, had conferred upon him a Baronetcy in recognition of his public services. Mr. Orr-Ewing holds the call G5OG and has represented Hendon (North) in Parliament for more than 12 years.

The same Honours' List announced that the Engineer-in-Chief of the GPO, Mr. Albert H. Mumford, O.B.E. had been made a Knight Commander of that Order. Mr. Mumford has for long been interested in the work of the Society and last year opened the International Radio Communications Exhibition. He is President-Elect of the Institution of Electrical Engineers.

Congratulations are offered to Mr. Orr-Ewing and Mr. A. Mumford on the high honours Her Majesty has conferred upon them.

Mr. L. N. Goldsbrough to tour USA and Canada

Mr L. N. Goldsbrough, G3ERB, Zone A Representative on the Society's Council, accompanied by his wife, is to make a three-month tour of the USA and Canada, commencing July 15.

Mr and Mrs Goldsbrough expect to arrive in Quebec on July 21 and will visit VE2-1, W1, 6, 3, 2 and 1 in that order. They hope to see all the National and State parks west of the Rockies and to visit relatives and friends in the East. They expect to call at ARRL Headquarters soon after September 30 before returning home on October 9.

G3ERB looks forward to meeting local amateurs whenever possible.

Mobile Committee

Mr. M. McBrayne, G3KGU, has accepted an invitation from the Council to serve on the Society's Mobile Committee.

Hints and Tips

Copies of Society Publications are offered as prizes for the best ideas submitted by members for use in a new series of *Hints and Tips for Radio Amateurs* to be published in the new volume of the BULLETIN. Contributions should be sent to the Editor at RSGB Headquarters.

Radio Amateurs' Examination Course

Classes in preparation for the City and Guilds Radio Amateurs' Examination and for the GPO Morse test will be held at the Brentford Evening Institute, Clifden Road, Brentford, Middlesex, during the coming session. Enrolment for the Examination course on Wednesday evenings and the Morse classes on Thursday evenings will take place during the week beginning Monday, September 16.

The RAE course, the fee for which will be £1 10s, will last for three terms. The Morse classes will last for two terms and the fee will be £1. The combined fee for both courses will be £1 15s. For applicants under 18 years of age all charges will be half those stated. Upon completion of the courses, the City and Guilds examination and the GPO Morse test can be taken at the Institute.

If enough applications are received, a Radio and Electronics Mathematics Class will be run especially for those who have difficulty in reaching the necessary standard of mathematics for the City and Guilds examination. A Radio and Television Servicing Class will also be held on Tuesday evenings during the coming session.

Requests for further information should be addressed to the Evening Institute Department, Education Offices, Town Hall, Chiswick, London, W.4.

Radio Amateurs' Examination

Details of courses in preparation for the City and Guilds of London Institute Radio Amateurs' Examination to be held in May, 1964, should be sent to Headquarters as soon as possible.

RSGB International Radio Communications Exhibition

The dates will be October 30, 1963 to November 2, 1963.

The *place* will be Seymour Hall, London, W.1, but *now* is the time to consider what *you* can do to help make the Golden Jubilee Exhibition an event to remember.

The Exhibitions Committee needs:

(i) Home-constructed equipment for display.

(ii) Offers of help to man the Society's stands.

Please contact the Exhibition Committee (Honorary Secretary: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley, Sussex) immediately.

Silent Keys

STANLEY VANSTONE (G2AYC)

The news of the death, suddenly on May 23, 1963, of Stanley Vanstone, G2AYC, came as a great shock to the members of the London Members' Luncheon Club and to members of many local radio societies. Stanley Vanstone was a founder member of the L.M.L.C. and had been its Chairman for the past ten years. He was President of the Sutton and Cheam Radio Society and closely associated with a number of other societies in Surrey and the Thames Valley. His work on behalf of the Luncheon Club had earned for him the warm thanks of many hundreds of visiting amateurs who had enjoyed his personal hospitality.

As President of the Sutton and Cheam Radio Society he was a splendid leader. He will be especially remembered for the topical cabaret shows which he and five others "put on" at the Annual Dinner-Dance of the society. It was quality entertainment.

Mr. Vanstone was Managing Director of a firm of builders and exhibition contractors and it was through his good offices that the Society was able, frequently, to obtain very special facilities and terms in connection with exhibitions.

Mr. Vanstone was a prominent Freemason and a Past Master of Lapis Magnus Lodge which has close connections with the electrical and radio industry.

Quite recently he had purchased a range of 2m gear which he was planning to use during the coming summer.

His passing at the age of 62 years, will be greatly mourned by all who knew him.

To his widow, Olive, and to his daughter, June, deep sympathies are extended. They may take comfort in the thought that few men had a greater circle of loyal friends.

J. C.

H. E. SKELLY (B.R.S. 16771)

It is with deep sorrow that we record the death of H. E. Skelly on May 6, 1963, at the age of 67 years.

Harold had been a keen member of the Society and regularly attended meetings of the Bristol Group for many years. He was an active civil defence worker, and a member of the Somerset group at Weston-super-Mare.

His cheery personality will be sadly missed by Bristol members, who wish to extend their deepest sympathy to his widow, son and two daughters.

C. L. P.

FRED STAMP

It is with much regret that we report the sudden death of Frederick Stamp, aged 35, of Rackheath, Norwich.

Freddy, a much loved member of the Norfolk Amateur Radio Club, had just taken the R.A.E., and was looking forward to receiving his licence so that he could join in activity over the air as well as at meetings of the Norfolk ARC. His wit and hearty laugh will be missed by all who knew him.

To his widow, we express our condolences.

J. D. S.

Region 11 Official Regional Meeting

Attendance at the Region 11 ORM held at Colwyn Bay on May 12, 1963, was, unfortunately, very poor, only 20 members being present. The Council was represented at the meeting by Mr. L. E. Newnham, G6NZ, Mr. R. C. Hills, G3HRH, and the General Secretary, Mr. John Clarricoats, O.B.E., G6CL. Visitors from other Regions included Mr. D. O'Connor, G3GIO, Mr. N. Kendrick, G3CSG, Mr. L. Roberts, G3EGK, Mr. A. Seed, G3FOO, Mr. B. O'Brien G2AMV and Mr. L. N. Goldsbrough, G3ERB.

The members, visitors and Council representatives were welcomed by the R.R., Mr. R. Jones, GW3JI, who expressed disappointment at the absence of Mr. A. C. Williams, GW5VX, the Zonal Representative, due to ill health.

During the meeting, Mr. Newnham, Mr. Hills and Mr. Clarricoats addressed the meeting, giving an interesting review of RSGB activities, after which time was allowed for questions. During the lively discussion which followed the Council representatives dealt with the various points raised.

The meeting proper concluded at 5 p.m. but owing to a local problem concerning representation which came to notice later, it was reconvened after tea to permit the matter to be discussed.

A Region 11 ORM was held at Colwyn Bay on May 12, 1963. Front row (left to right), Basil O'Brien, G2AMV (Region I Representative), R. C. Hills, G3HRH (Council Member), R. Jones, GW3JI(Regional Representative), L.E. Newnham, G6NZ (Council Member), John Clarricoats, O.B.E., G6CL (General Secretary); standing, J. E. Lawrence, GW3JGA, K. Schofield, GW3KYT, N. Kendrick, G3CSG, A. Antley, B.R.S.25409, A. Seed G3FOO, L. Roberts, G3EGX, Peter Jones, GW3FPF, M. Williams, GW3LCQ, J. S. Owen, GW3QN, S. Watson, GW3CW, L. Goldsbrough, G3ERB, R. Jones, GW3MDK, L. Barnes, GW3PCZ/T, W. Davies, GW3PKH/T, S. Jones, GW3HHF. *(Photo by GW3JGA)*

Enquiries Regarding Bulletin Articles

Members who write to the authors of BULLETIN articles are asked to enclose stamped addressed envelopes if they require replies.

GPO Morse Tests

Morse Tests will be held at the Head Post Offices in Birmingham, Cambridge, Derby, Leeds and Manchester during the week commencing September 9, 1963, provided there are sufficient candidates. Application forms may be obtained from the Radio Services Dept., Radio Branch, GPO Headquarters Building, St. Martin's-le-Grand, London, E.C.1. Completed application forms, to which the entrance fee of 10s. must be affixed in stamps, must be posted to the Wireless Telegraphy Section, Union House, St. Martin's-le-Grand. London, E.C.1, **to arrive not later than August 20, 1963.**

DL4/SL5 Hamfest

American, British and Canadian amateurs in the area are invited to attend a DL4/SL5 Hamfest to be held on August 3 and 4 in the Community Centre at Patrick Henry Village, Heidelberg. The arrangements will include a "swap shop," equipment display, transmitter hunt and tours of Heidelberg. Further information may be obtained from Postfach 3049, 6100 Darmstadt, or from TSGT Russ Lawson, DL4BS, Box 614, 6910TH RGM, APO 175, New York.

The American Amateur Radio Market

According to a report in *Electronics* for January 4, 1963, expenditure on Amateur Radio equipment now totals $38,000,000 per annum in USA. Based on a total of 240,000 amateurs this amounts to $155 each. It would be interesting to know how these figures compare with the expenditure of British radio amateurs.

Bulletin Contributors

Members who are prepared to contribute articles to the Society's Journal are reminded that some notes are available to help them prepare manuscripts in a form that will assist in securing uniformity of presentation, simplify the work of the Society's printers and draughtsmen and help ensure that their instructions are easily understood. A copy of *Hints to Contributors* can be obtained on application to the Editor.

All contributions to the Society's Journal including those for the *Clubroom* and *Forthcoming Events* features should be typed with double spacing between lines using one side of the paper only. Information for the RSGB BULLETIN should not be included on the same sheet of paper as material for news bulletins.

Photographs should be clear and sharply focused. Prints should preferably be glossy and should contain information of general interest to members. Captions should be written on a separate sheet of paper.

The amount of the copyright fee paid to contributors to the RSGB BULLETIN ranges from £2 2s. to £5 5s. per 1,000 words.

Radio Microphone Licence

The GPO has recently made available a radio-microphone licence which costs £2 and is valid for five years. The licence authorizes operation in the band 174·6-175 Mc/s and the applicant is required to advise the Post Office of the approximate distance in yards over which the equipment is required to work.

No operating qualifications are required but if interference to other wireless telegraphy is caused the equipment must not be used until the trouble has been eliminated.

It is understood that radio-microphones made by Lustraphone Ltd. (range around 300 yards) are the only ones that have so far been approved by the GPO.

Radio-microphones can be used for a variety of purposes and in particular for outdoor events.

Uncle's Southend Party

The annual outing to Southend, organized by W. E. Nutton, G6NU, will take place this year on August 11. The first rendezvous will be at 12 noon, whilst another meeting will start at 3.30 p.m., both at the top entrance of the land end of the pier. Invitations are extended to all; those who will be attending are encouraged to accompany their families.

International Red Cross Tests

On Monday, July 8, Wednesday, July 10, and Friday, July 12, 1963, the Red Cross will be conducting tests on 7210 kc/s, at 07.30, 13.00, 16.30 and 22.30 BST. Reports on reception of the signals will be welcome and should be sent to G. A. Allcock, G3ION, 71 Bassett Green Close, Bassett, Southampton. All reports will be acknowledged by the Red Cross.

Volunteers for future tests are asked to send details to Mr. Allcock as soon as possible.

RSGB QSL Bureau

Members with call-signs in the G3S series are asked to note that their QSL Bureau Sub-Manager is Mr. E. G. Allen, G3DRN, 65A Melbury Gardens, London, S.W.20.

Television and Broadcast Interference

Members with television or broadcast interference problems are invited to write to Headquarters for a copy of the TVI/BCI Committee's interference questionnaire. This form is designed to give the Committee a comprehensive picture on which to base their advice to a member.

Left to right, F8MX, G2BLA, PA0FB and G3MED at the V.H.F./U.H.F. Convention in London in May.
(Photo by G5UM)

Bulletin Contributors and the Copyright Position

The Finance and Staff Committee wish it to be known generally that there has been a long standing arrangement between the Member Societies of the International Amateur Radio Union that material published in the Journal of one society may be reproduced in the Journal of any other society provided acknowledgment to source is given. It is not often that articles which have appeared in the RSGB BULLETIN are reproduced in the Journal of another IARU Member Society but when that happens the Society is normally approached beforehand by the Editor of the Journal in question and permission sought.

The Society purchases the copyright of all articles published in the RSGB BULLETIN and other publications unless the author specifically asks for the copyright to be reserved.

GB2RS SCHEDULE

RSGB News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency	Time	Location of Station
3600 kc/s	9.30 a.m.	South East England
	10 a.m.	Severn Area
	10.15 a.m.	Belfast
	10.30 a.m.	North Midlands
	11 a.m.	North East England
	11.30 a.m.	South West Scotland
	12 noon	North East Scotland
145·30 Mc/s	10.30 a.m.	Beaming north west from Sutton Coldfield
	10.45 a.m.	Beaming south west from Sutton Coldfield
145·50 Mc/s	11.00 a.m.	Beaming north from Leeds
	11.15 a.m.	Beaming east from Leeds
145·8 Mc/s	11.30 a.m.	Beaming west from Belfast
	11.45 a.m.	Beaming north east from Belfast
145·10 Mc/s	12 noon	Beaming north from London area
	12.15 p.m.	Beaming west from London area

News items for inclusion in the bulletins should reach Headquarters not later than first post on the Thursday preceding transmission. Reports from Affiliated Societies and from non-affiliated societies in process of formation will be welcome.

Society Affairs

A digest of the business discussed at the April, 1963, meeting of the Council.

THE April meeting of the Society's Council was held in two sessions: the first, on April 27, 1963, was attended by Messrs Norman Caws (President), H. A. Bartlett, D. A. Findlay (Honorary Treasurer), J. C. Graham, R. C. Hills, E. G. Ingram, J. Douglas Kay, L. E. Newnham, R. F. Stevens, G. M. C. Stone (Executive Vice-President), J. W. Swinnerton and E. W. Yeomanson, John Clarricoats (General Secretary) and John A. Rouse (Editor). The second session, held on May 8, 1963, was attended by Messrs Norman Caws (President), J. C. Graham, R. C. Hills, E. G. Ingram, J. Douglas Kay, A. O. Milne, L. E. Newnham, F. K. Parker, R. F. Stevens, G. M. C. Stone (Executive Vice-President), J. W. Swinnerton and E. W. Yeomanson, John Clarricoats (General Secretary) and John A. Rouse (Editor).

* * *

The President opened the proceedings by welcoming Mr. J. C. Graham (G3TR) who had been elected to fill the casual vacancy on the Council.

After the Minutes of the meeting held on March 25, 1963, had been approved, a number of matters arising were considered. These included an extension of the Society's Group Accident Policy to cover flying risks. This policy covers members of the Council and Committees and the Headquarters Staff when on Society business.

Staff Matters

During a private session lasting more than an hour (the General Secretary and the Editor were absent from the meeting for this time) the Council gave consideration to various recommendations put forward by the Finance and Staff Committee which had met earlier in the day. The proposals related to increases of salary for two of the younger members of the staff, the retirement of a member of the staff, and to the engagement of additional staff to fill editorial and administrative posts advertised recently in the RSGB BULLETIN.

Publications

At this meeting, the Council decided that advertising on the front cover of the RSGB BULLETIN should cease when present contracts expire.

The Council approved the design of a new membership publicity brochure and accepted the lowest of three tenders for printing.

Membership

The Council approved 124 applications for membership (78 Corporate and 46 Associate) of the Society. In addition 14 applications for transfer from Associate to Corporate membership were accepted. The subscriptions of three members who suffer from blindness were waived for a period of 12 months.

The Council was pleased to accept applications for affiliation from the London U.H.F. Group, Maidstone YMCA Amateur Radio Society, RAF Sealand Amateur Radio Club, and RAF Stradishall Amateur Radio Club.

Kent Summer School

Mr. Newnham was appointed to visit the Kent Education Committee Summer School at Folkestone and to give a talk on the Society to those attending the course in electronics.

Zone A Election

The President reported that an error had occurred in the notice published in the May issue of the RSGB BULLETIN, regarding the election of a Zone A Representative. The effect of the error was to make it uncertain whether or not ballot papers should be signed. Acting under the provisions of Article 59 of the Society's Articles of Association the Council resolved to accept voting papers whether signed or unsigned.

RSGB News Bulletin

Arising out of a letter from the GPO it was decided to ask the Membership and Representation Committee to give detailed consideration to the operation of the News Bulletin Service with particular reference to the total transmission time each Sunday.

Reports of Committees

The Scientific Studies Committee met on March 11, 1963, and discussed the preparation of articles in the *V.H.F. Weather* series, auroral and tropospheric propagation, and a proposal to set up an experimental amateur v.h.f. station in Lerwick. The Committee also discussed problems associated with moon bounce communication, satellite reflection communications (Echo A12) and active satellite repeater communication (Oscar III).

The V.H.F. Committee at its meeting on March 18, 1963, discussed the arrangements for the International V.H.F./U.H.F. Convention in London on May 18, 1963, matters for consideration at the Region I IARU meeting in June, 1963, and administrative and technical matters relating to the various beacon stations. The Committee also gave consideration to a letter from a member on the subject of frequencies for s.s.b. stations operating in the 144 Mc/s band.

The TVI/BCI Committee met on March 20, 1963, to discuss individual members' problems in connection with interference and planning permission for aerial masts. The Committee also approved a revised draft of some planning notes on aerials and masts.

At its meeting on March 22, 1963, the Technical Committee reconstituted the Technical Development Sub-Committee, discussed the technical articles programme and considered the draft of a new publication tentatively referred to as the "Gen Book." The Committee also discussed an instruction from the Council that it should at its meetings scrutinize advertisements in Society publications.

The Contests Committee met on March 28, 1963, to deal with correspondence from members, the rules for the 1963 RSGB 7 Mc/s DX Contest, arrangements for checking the entries for the B.E.R.U. Contest, the results of the Affiliated Societies' Contest, D/F Qualifying Events and the contests programme for the first half of 1964.

Details of the arrangements for the Golden Jubilee Rally at Wethersfield were discussed by the Mobile Committee when it met on April 5, 1963.

At the meeting of the RAEN Committee on April 6, 1963, liaison with the British Red Cross, and arrangements to hold an official RAEN meeting at Lincoln on September 15, 1963, were discussed, in addition to a number of administrative matters.

The Golden Jubilee Celebrations Committee which had met on March 26, 1963 and on May 7, 1963, reported on the progress of arrangements. The Council agreed that an Information Centre for the benefit of provincial and overseas members should be in operation at Headquarters during the period July 1-5, 1963, and a Celebrations Rendezvous at the Kingsley Hotel.

The Exhibition Committee's report on its meeting held on April 19, 1963, dealt with arrangements for the Society's stand at the 1963 RSGB International Radio Communications Exhibition, the appointment of a stand manager and various other details connected with the Exhibition.

* * *

The Council was in session for a total of eight hours.

HEADQUARTERS TELEPHONE NUMBERS

HOLborn 7373 and 2444

CONTEST NEWS

RESULTS — REPORTS — RULES

RSGB 144 Mc/s Open Contest 1963

Members will remember that last year the leader in this event was G2JF but as the licensee had an assistant the award went to the next in line. This year J. C. Foster, G2JF, operated solo throughout the event on March 2-3 and the resulting score shows that he is well able to win this event on his own. He will receive the Mitchell Milling Trophy.

The fight for second place is the closest that has ever occurred in a RSGB v.h.f. event, four stations having scores ranging from 2,350 to 2,358; this is tantamount to a tie. A. D. Naylor, G3GHI, as leader of this group will receive the certificate for second place but F. J. Hill, G3EVV, A. M. Smith, G3IAS, and F. A. Ridgeway, G3PXZ (operator of the Albright and Wilson Amateur Radio Station, G3OXD/A) will each receive a certificate of merit suitably enscribed.

Conditions over the eastern half of the country were slightly above average for the time of year but stations in the west and north had a very thin time with great difficulty in making themselves heard in the more populous areas. Often this was because of QRM due to stations operating outside the frequencies allocated to their zone but it appears that this is due largely to the practice of tuning from one end of the band only. One station in the West Country beaming on the Home Counties was heard to say "tuning from low end up" during 14 successive calls. This report was received from a London station operating near 145 Mc/s who had to move to 144·25 Mc/s to get the contact. There are many more stations between 144·5 and 145·5 Mc/s than are outside those limits and many of these are moving to the band edges to get contacts which they cannot get on their correct frequencies. The solution is for operators to vary their tuning methods and to indicate how they are tuning. On c.w. the codes QLH, QHL are much used; the codes QML, QMH, QLM, QHM, are also well known but little used.

The scoring system came under criticism again from stations in East Anglia who find a points-per-mile system more to their liking. Unfortunately all the fixed station contests put on in September have been poorly supported; last year there were 48 entries in the C.W. Contest and 44 entries in the March Open (both points per contact scoring) and only 31 entries to the September Open (scored on points per kilometre) and of these 17 were portables leaving only 16 fixed stations interested. Both the winter events occur at a bad time for v.h.f. conditions and are restricted to certain classes of entrant. The September event occurs often in excellent conditions, has no restrictions on classes of entrant and coincides with the main IARU Region I event.

The next 2m fixed station event open to RSGB members will be organized by O.E.S.V., the Austrian Society, for IARU Region I on September 7-8. The RSGB V.H.F. National Field Day will coincide assuring plenty of activity and the scoring will be on a points per kilometre basis.*

* See RSGB BULLETIN, June 1962, page 606 for rules.

144 MC/S OPEN CONTEST 1963

Posn.	Call	QSO's at 10 pts.	QSO's at 25 pts.	Counties	Points
1	G2JF *	138	48	23	3089
2	G3GHI *	162	3	27	2358
3	G3EVV *	145	11	26	2353
4	G3IAS *	160	2	28	2350
	G3OXD/A *	134	10	32	2350
5	G3EDD	134	3	32	2213
6	G3KKK	130	1	23	1890
7	G3HRH	113	2	27	1845
8	G2XV	108	1	25	1724
9	G3KMT	74	9	28	1690
†	G5YC	114	—	21	1690
10	G6GN	81	5	26	1640
11	GW4LU/A	12	42	16	1630
12	G4DC	102	3	19	1570
13	G3COJ/P	85	1	25	1487
†	G3OSC/A	101	1	18	1485
14	G2HOP	81	1	24	1429
15	G4CM	91	—	20	1410
16	G3RND	68	3	25	1380
17	G2AXI	84	—	20	1340
18	G3MNQ	72	1	24	1335
19	G3CO	80	—	20	1300
20	G3JXN	86	—	17	1275
	G3MNR/A	93	—	14	1275
21	G2BJY	58	3	23	1210
22	G3LDY	52	6	21	1195
23	G5DS	70	—	15	1075
24	G3PTM	57	1	18	1045
25	G3ODY	64	—	15	1015
26	G3PTO	43	5	17	970
27	G3MTG	38	4	18	930
28	G3HWR	55	—	14	900
29	G3FVG	67	—	9	895
30	G3LWM	61	—	11	885
31	GW3MFY	5	25	7	875
32	G2CVV	43	1	16	855
33	G3AGN	47	1	12	795
34	G3ROM	38	1	15	780
35	G3PTB	43	—	12	730
36	G5UM	37	—	14	720
37	G3JR	46	—	10	710
38	G2BHN	30	3	13	700
39	G2CDX	39	—	12	650
40	G3PIY	24	4	12	640
	G3GVV	38	—	10	640
41	G8VN	31	—	12	625
42	G3PZF	35	—	9	570
43	G3LAS/A	28	—	10	530
44	G3JKY	37	—	6	520
45	G3JDM	14	6	9	510
46	G2BLA	33	—	7	505
47	G3KWH	25	—	7	420
48	G6TS	20	—	9	415
49	G3JFY	9	1	4	215

* Award winners. † Multi operator station.

NUMBER OF ENTRANTS IN 2 METRE CONTESTS

Year	C.W.	Open	1st Portable	2nd Portable	National	IARU
1957	—	30	41	41	—	2
1958	—	28	44	37	9	10
1959	29	33	13	38	23	16
1960	38	26	39	40	26	9
1961	41	49	37	40	—	26
1962	48	44	46	39 *	31	14
1963	53	54	52			

* Under V.H.F. N.F.D. Rules.

Further Comments on the First 1·8 Mc/s Contest 1963

From time to time contestants ask for more information to be given in results tables. They have asked for details of transmitters and receivers, best DX by stations and how long a station was on the air. To gather such facts from the logs would take an enormous amount of time and would be difficult to show in the tables. The Contests Committee feel that, even if the time could be found and the difficulties overcome, the information would not be of general interest.

For example, 20 per cent of entrants in the First 1·8 Mc/s Contest 1963 gave descriptions of transmitters as "home-brew" or "three valve" and those of receivers varied

between HRO's to home-made and a detailed list of the function of each valve in a triple conversion receiver.

As a new scoring system was being used the Contests Committee naturally wanted to know how much the scoring had helped stations in sparsely populated areas. With this point in view, all the logs were re-scored on a one point per contact basis.

It soon became clear that stations in counties with a high population had been handicapped as intended while those in outlying areas had benefited. As a point of interest, the new system did not affect the positions of the winner or runner-up.

It is very difficult to draw any firm conclusions from the entries because there are so many unknown quantities, operating ability in contests being one of the most important. This could account for the fact that the winner, G3MXJ, logged 65 three-point contacts, the highest number of all contestants. G3IGW, the runner-up, made 112 five-point contacts out of a total of 141. This total of non-adjacent counties was exceeded only by G3KLH with 114 contacts.

Taking counties as a whole, it was found that all 13 entrants from Surrey finished, on an average, six places lower under the new scoring system. Of the Essex stations, seven of the nine were four places lower as were eight of the nine entries from Kent. On the other hand four of Yorkshire's half dozen contestants gained an average of five places, the same average shown by entries from Lancashire. Of the contestants from the other counties, Sussex, Middlesex and Bedford finished lower and all the remainder were placed higher.

The greatest gain in placing was achieved by GM6RI (Angus) with 10 places followed by G3OHX in Northumberland. The most handicapped stations were G3LAS/A (London), G3OVL (Surrey) and G3YF (London) who were all 14 places lower in the final table.

When the ratio of three-point to five-point contacts was related to the aerial system in use one fact stood out very clearly, and the Contests Committee do not think it was entirely influenced by location. Ignoring, for the moment, stations in Scotland, Wales and Northern Ireland, contestants using aerials over 150 ft. long obtained ratios of three-point/five-point contacts of 1 to 10 and even higher. Out of 37 stations using half-wave aerials only four (three in Surrey and one in Middlesex) logged more three-pointers than five-pointers while the 150 ft. to 249 ft. group had three (two in Kent and one in Surrey) out of 10 in use.

However, the stations with quarter-wave aerials (100 ft. to 149 ft.) the position was reversed. There were 36 contestants shown as using quarter-waves or thereabouts; of these 14 stations, all in outlying counties, had ratios of less than one (i.e. they had more fives than threes). In these cases location was a more important factor, as there were few stations active in their own and adjoining counties. Those contestants in the Home Counties, however, using this group of aerials had an average ratio of 2½ to 1 with one station as high as 10½ to 1. G3YF (London) for example, used about 100 ft. of aerial and had 47 " local " contacts, which was exceeded by only 12 other stations. Group D aerials (under 100 ft.) followed the same pattern as Group C.

In the case of the stations in Scotland and Wales, location plays a much more important part, and one would expect them to obtain many more five-point contacts than three-point ones whatever type of aerial was used.

The Contests Committee hope that this report will interest competitors and others and give them material for ideas to overcome the " handicap." When the rules for the next contest are considered by the Committee other points raised by competitors will also be discussed and any further comments or suggestions from prospective contestants will be appreciated.

Rugby D/F Qualifying Event

More than 50 people attended the first D/F qualifying event of the season, run by the Amateur Radio Section of the A.E.I. Rugby Recreation Club. The starters, Mr. and Mrs. E. E. Meachen, distributed the entry forms and Mr. D. A. Findlay, G3BZG, representing the Contests Committee, was there to see fair play. The event took place on May 12, 1963.

On arrival at the start the competitors became aware of the first hazard which the organizer, Mr. G. Taylor, G3MDC, had arranged. This took the shape of a network of high and medium voltage power lines surrounding the starting point. In spite of this, the first bearings were later found to be fairly accurate.

The stations, which could be found in either order, were operated by Mr. R. T. Craxton, G3IKL, assisted by Mr. I. A. Jackson and by Mr. B. J. Mahony, G3NDM, assisted by Mr. G. Meachen.

The " A " transmitter, located in some bushes by a canal about 6½ miles from the start, used a conventional long wire aerial and was found by all competitors. The finding of the " B " transmitter presented more difficulty. Because it was only 1 mile south of the starting point it was possible to use a low power signal into a frame aerial with its major lobe beamed on to the start. Competitors then had the puzzling effect of an almost complete loss of signal when they were east or west of the transmitter. Even when in the immediate vicinity their troubles were not over because at distances less than 100 yards, the two frames, transmitter and receiver, appeared to couple magnetically, giving indeterminate or false readings. In spite of this, Mr. M. P. Hawkins was able to find both transmitters in 78 minutes, ten minutes ahead of last year's National Final winner, Mr. Mollart.

After tea, held at the A.E.I. Recreation Club, Miss Valerie Grant, daughter of the club's chairman, Mr. J. J. Grant, presented the Rugby D/F Cup to Mr. Hawkins and prizes to the runners-up.

The results, subject to the Contests Committee's confirmation, are as follows:

	Name	Club	Time of arrival at Station A	Station B
1.	M. P. Hawkins	Oxford & District	14·48	14·29
2.	E. L. Mollart (B.R.S.19777)	Oxford & District	14.20	14.58
3.	F. Allsopp	Derby	15·19½	14·28
4.	G. T. Peck (B.R.S.15402)	High Wycombe	15·26	14·57
6.	E. W. Bristow	Oxford & District	14·41	15·30
6.	O. L. Harding	Rugby	14·55½	15·41
7.	A. Hitchcock	Derby	15·19	15·42
8.	J. H. Andrews	Rugby	15·52	14·45
9.	J. J. Grant (B.R.S.6395)	Rugby	14·55	15·53
10.	D. R. H. Coller	Slade Radio Society	15·25	16·17
11.	T. C. Reynolds	Rugby	15·27	16·18
12.	P. M. Williams	Slade Radio Society	14·20½	—
13.	Mr. Rout	Rugby	15·16	—
14.	Mr. Smart	Slade Radio Society	15·51	—
15.	Mr. Jones	Rugby	16·10	—

Wessex " Hare and Hounds " Rally

A " Hare and Hounds Rally " is being organized by the Wessex Group for Sunday, July 28. Two fixed stations, both using directional aerials, will be continuously in operation at a location within 25 miles of Bournemouth. At 2 p.m., the mobile " hounds " will start from either the Bournemouth boundary or from Lyndhurst, and thereupon attempt to locate the " hares " before the official close at 4 p.m. The " hares " will be G3OBD/P and G3NOH/P, transmitting on 2m and Top Band respectively.

At the start, each mobile transmitting station will automatically be awarded with 25 points, and the first mobile to contact the " hare " on each band, at a distance of over 5 miles, will receive a bonus of five points, but no contacts

may be made from the home QTH before the start. Each mobile must contact a " hare " at least twice during the search, and failure to accomplish this will mean a penalty of five points for each contact not made. Any mobile may contact a " hare " as often as he wishes, and may also ask for a bearing, but this will result in a deduction of five points. The first mobile transmitting station to reach the hares will be deemed the winner, but the contest will not close until 4 p.m., whereupon homing instructions will be transmitted to amateurs still mobile. Short wave listeners may also take part, and the winner of this section will simply be the first to reach the " hares."

Low Power Field Day 1963

The rules for this year's Low Power Field Day are as follows:

1. **Duration:** 10.00 GMT to 17.00 GMT on **September 22, 1963.**
2. **Eligible Entrants:** All fully paid-up Corporate members of the RSGB resident in G, GC, GD, GI, GM and GW. Multiple-operator entries will be accepted provided only one call-sign is used (see General Rule 7).
3. **Contacts:** May be made on c.w. (A1) in the 3·5 Mc/s band only. Each transmission must include the letters LFD.
4. **Scoring:** Five points may be claimed for each contact with a portable or mobile station, and *one* point for each contact with a fixed station.
5. **Contest Exchanges:** RST reports followed by the contact number starting at 001 and the location, e.g. RST559001 Bradford.
6. **Logs:** (*a*) Must be tabulated in columns headed (in this order): " Date and Time (GMT)," " Call-sign of Station Contacted," " My Report on His Signals and Serial Number Sent," " His Report on My Signal and Serial Number Received," " Location of Station Contacted as Received," " Points Claimed."

   (*b*) The cover sheet must be made out in accordance with RSGB Contests General Rule 5 and must include the weight of the equipment used. The declaration must be signed and the location as transmitted given.

   (*c*) Entries must be postmarked not later than **October 8, 1963.**
7. **Equipment:** The total weight of all the radio and electrical equipment taken to the site must not exceed 20 lb.
8. The General Rules relating to RSGB Contests, published in the January 1963 issue of the RSGB BULLETIN, will apply except as superseded by the rules of this Contest.
9. **Awards:** At the discretion of the Council, the ***Houston Fergus Trophy*** will be awarded to the winning station and ***certificates of merit*** to the runner-up and to the non-transmitting member submitting the best check log in the opinion of the Contests Committee.

The General Rules for the RSGB Contests apply to this contest. Printed log forms and cover sheets are available from Headquarters on request.

Can You Help?

● N. R. Taylor (G3RLX), Three Firs, Bridge Hill, Belper, Derbyshire, who requires information on apparatus for wave-winding coils?

● J. F. Batten (B.R.S.24871), 36 Collingwood Road, Hillingdon Heath, Middlesex, who requires the circuit diagram and information relating to the ZC1 Mk.1 Wireless Set?

CONTESTS DIARY

July 6-7	- Second 144 Mc/s Portable Contest.* (see page 682, June 1963.)
July 21	- D/F Qualifying Event (Wirral). (see page 682, June 1963.)
August 10-11	- WAE DX (c.w.).
August 11	- D/F Qualifying Event (Newbury).
August 17-18	- WAE DX (phone.)
September 7-8	- V.H.F. National Field Day (For rules, see page 373, January 1963).
September 7-8	- Region IARU V.H.F. Contest.
September 15	- D/F National Final.
September 22	- Low Power Field Day. (see page 66, July, 1963.)
October 6	— RAEN Rally.
October 19-20	— 7 Mc/s DX Contest (phone).
October 27	— Second 420 Mc/s Contest.
November 2-3	— 7 Mc/s DX Contest (c.w.).
November 9-10	— Second 1·8 Mc/s Contest.
November 16-17	RSGB 21/28 Mc/s Telephony Contests.

* *To coincide with Region 1 IARU Contest dates.*

a.m. whilst c.w. gave contacts with VS4RS (15.15), 9M2UF (15.30), KR6NAE (12.05) and 4U1ITU (10.30).

Increased reports for **28 Mc/s** show that contacts can be made and even worth while DX appears from time to time. Openings due to sporadic-*E* effect are occurring and altogether the band is in an interesting state. **G3OKP** (West Drayton) has put in some listening and reports the following all on A3 and at strengths between 7 to 9: CT1JEG (19.10), CT1HE (19.15), CT1LE (18.45), CT1TX (19.15), DJ7ZZ (19.55), DJ8IB (19.55), DL3RM (19.55), DL7BA (15.40), I1BAT (19.15), I1LCF (19.00), I1TAR (19.00), OE1WG (18.30), OE5BY (19.10), OZ1I (15.40), SL5AB (16.40), PY2CEN (19.20), UR2FZ (16.40), 5H3IW (17.15), 9G1DM (17.30). **G3PUF** (Wolverhampton) found an opening on May 26 and numerous German stations were heard during the afternoon and also OE5ND worked on c.w. Strong signals (S9+) but with considerable fading were present. **G3PTO** (Wolverhampton) reports hearing UA2KBA at S8 and I1ZIT at S9. More reports for this band would be welcomed and listeners should note that the best times appear to be from 15.00 to 20.00 GMT.

DX Briefs

The countries scores of the leading **USSR** s.s.b. stations are: UA3CR 227/220; UR2AR 217/211; UA3FG 209/193; UA3DR 172/152; UA1CK 182/143, and UA3CG 150/142.

DL0AR, a beacon station established by the DARC is operating on 29 Mc/s using a beam aerial directed towards the North. Reception reports of this station by **auroral reflection** would be appreciated and may be sent to G2BVN. Auroral reception may be distinguished by the roughness imparted to c.w. transmissions, and should not be confused with reception by the sporadic-*E* layer, when the tonal qualities of signals heard are not affected.

FO8AA is active on the low end of the 14 Mc/s band, usually around 14,030 kc/s, and is looking for European contacts between 05.30 and 08.00.

6O1ND disclaims all knowledge of a QSL manager and cards should be sent to the address in *QTH Corner*.

Reception of the VOA Radio Amateur's Programme is apparently very satisfactory on 7200 kc/s when this 15 minute item is radiated from Tangier at 07.30. Our correspondent also mentions **Easter Island** activity from **CE0AB** on 14,040 kc/s between 01.00 and 02.00 and from **CE0AC** on 14,053 kc/s between 02.00 and 03.00. (P. Baker).

JA1EEB/KG6 on Marcus Island is still active and was worked by VK4SS on 14,070 kc/s at 09.00 on c.w.

VK9DR, the station of the Christmas Island Radio Club, will be looking for DX contacts on Saturdays between 04.00 and 07.00 on 14 and 7 Mc/s. It is hoped to have the loan of a Hammarlund s.s.b. transmitter and receiver for two months commencing in August. (VK4SS).

HS1P (W4LCY) in Bangkok reports that conditions have not been suitable for working into the UK of late but he will keep on looking for G stations. QSLs should go via W4CKB.

KB6CP on **Canton Is.** has been reported active around 10.00 to 11.00 on s.s.b. on the high end of 14 Mc/s.

* * *

The assistance of numerous correspondents is gratefully acknowledged and also information from the *DX'press* (PA0FX), the West Gulf DX Club *Bulletin* (W5IGJ), the LIDXA *Bulletin* (W2MES) and *DX* (W4KVX). Please send all items to RSGB Headquarters to arrive not later than **July 12** for the August issue and **August 9** for the September issue.

Rules for the RSGB 7 Mc/s DX Contest 1963

Radio amateurs throughout the world are invited to take part in the second RSGB 7 Mc/s DX Contest to be held on October 19-20 and November 2-3, 1963.

Rules

1. **Duration:** Each section of the contest will take place between 00.01 GMT on the Saturday and 23.59 GMT on the Sunday as follows:

Phone: October 19-20, 1963. **C.W.:** November 2-3, 1963.

2. The entrant shall submit a log covering the whole of his operation on the 7 Mc/s band between the above times and shall select any **continuous 24-hour period** from this log for scoring purposes.

3. **Eligible Entrants:** The contest is open to licensed amateurs in all parts of the world.

4. **Licence Conditions:** Entrants must operate in accordance with the terms of their licences.

5. **Contacts:** Contacts must be made in that portion of the 7 Mc/s band for which the entrant is licensed. In the Phone Section, stations must not operate below 7050 kc/s. Contacts with unlicensed stations will not count for points. Proof of contact may be required. Only one contact may be made with a specific station, whether fixed, portable, mobile or alternative address in each section. Duplicate contacts must be logged and clearly marked as duplicate without claim for points.

6. **Contest Exchanges:** An exchange of RST (or RS) reports followed by a three figure serial number starting with 001 for the first contact and increasing by one for each successive contact and for each separate section (for example, 58002, etc.) must be made before points can be claimed.

7. **Operators:** Only the entrant will be permitted to operate his station for the duration of the contest.

8. **Entries:** Entries (*a*) should be clearly typed or written on one side only of foolscap or International A4 size paper; (*b*) must be ruled in columns headed (in this order): (i) Date/Time (GMT); (ii) Call-sign of station worked; (iii) I sent him; (iv) He sent me; (v) Bonus points; (vi) Points claimed; (c) must be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England,** the name of the contest being clearly shown on the top left hand corner of the envelope which must be **postmarked not later than November 25, 1963.** Log sheets are available from RSGB Headquarters.

SAMPLE COVER SHEET

RSGB 7 Mc/s DX Contest 1963 **Claimed Score** .....

Section ..... **Call-sign** .....

Name .....

Address .....

Transmitter ..... Aerial(s) .....

Receiver .....

DECLARATION: I declare that this station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was watts.

Date ..... Signed .....

Failure to sign the declaration may involve disqualification of the entry.

9. **Scoring:** British Isles stations may not work each other for points. Overseas stations may only claim points for contacts with British Isles stations (G, GB, GC, GD, GI, GM and GW). Scoring will be as follows:

British Isles Stations: Each completed contact will score 5 points. In addition, a bonus of 20 points may be claimed for the first contact with each new country. For the purposes of scoring, the RSGB countries list will apply, with the exception that UA, VE, VK, W/K, ZL and VS call areas will each count as a separate country.

Overseas Stations: Each completed contact with a British Isles station will score 5 points. In addition, a bonus of 50 points may be claimed for the first contact with each British Isles country-numeral prefix, i.e. G2, G3, G4, G5, G6, G8, GB, GC2, GC3, GC4, GC5, GC6, GC8, GD2, GD3, GD4, GD5, GD6, GD8, GI2, GI3, GI4, GI5, GI6, GI8, GM2, GM3, GM4, GM5, GM6, GM8, GW2, GW3, GW4, GW5, GW6, GW8. A ***further*** 50 bonus points will be scored for every ten stations worked in each of the above call-sign series.

10. **Awards:** Certificates of merit will be awarded to the overall leaders and runners-up in each section and to the leading station in each of the other five British Isles countries. Certificates will also be awarded to the leading station in each overseas country, UA, VE, VK, W/K, ZL and ZS call areas counting separately as in Rule 9.

Listeners' Section

1. **Duration:** Each section of the contest will take place between 00.01 GMT on the Saturday and 23.59 GMT on the Sunday as follows:
Phone: October 19-20, 1963. **C.W.:** November 2-3, 1963.

2. The entrant shall submit a log covering the whole of his operation on the 7 Mc/s band between the above times and shall select any continuous 24-hour period from this log for scoring purposes.

3. **Eligible Entrants:** The contest is open to short-wave listeners throughout the world. All entrants agree to be bound by these rules. Only the entrant may operate his receiving station for the duration of the event. Holders of amateur transmitting licences are not eligible to take part.

4. **Entries:** (*a*) To count for points, logs must show, in columns: (i) Date/Time GMT; (ii) Call-sign of station heard: (iii) Report and serial number sent by station heard; (iv) Call-sign of the station being worked; (v) Bonus points claimed; (vi) Points claimed. *CQ or test calls will not count for points.*

(*b*) Entries must be set out on foolscap or International A4 size paper, must be postmarked not later than November 25, 1963, and must be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England.** Log sheets are available from RSGB Headquarters.

(c) All entries must contain the following declaration:
I declare that this receiving station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I do not hold an amateur transmitting licence.

Date ..... Signed .....

5. **Scoring:** British Isles entrants may only log *overseas stations working UK stations in the contest.* Overseas entrants may only log *British Isles stations in contact with overseas stations in the contest.* A station whether fixed, portable, mobile or alternative address may be logged only for the purposes of scoring. *CQ or test calls will not count for points.*

British Isles Entrants: Each complete log entry will score **5 points.** In addition a bonus of **20 points** may be claimed for the first station logged in each new country. For the purposes of scoring the RSGB countries list will be used, with the addition that UA, VE, VK, W/K, ZL and ZS call areas will each count as separate countries.

Overseas Entrants: Each complete log entry relating to a British Isles station heard will score **5 points.** In addition a bonus of **20 points** may be claimed for the first station heard in each British Isles country-numeral prefix, i.e. G2, G3, GM4, etc., as listed in Rule 9 for the transmitting contest. A further bonus of **50 points** will be scored for each additional ten British Isles stations (in each of the categories in Rule 9 of the Transmitting Event) logged.

6. **Awards:** At the discretion of the Council **certificates** will be awarded to the British Isles leading entrant and runner-up and to the leading entrant in each overseas country.

The closing date for posting entries is November 25, 1963.

CLUBROOM

A Monthly Survey of Group and Club Activities

THIS month we present *Regional and Club News* in a different format and with a change of emphasis. While there will be a certain amount of regrouping of material submitted, it is hoped to develop the feature into a forum for the exchange of ideas between groups for their mutual benefit as well as providing a handy guide for intending visitors. Lists of call-signs and " dead " reports will give place to what is believed to be useful information, and club and group secretaries are asked to submit material in conformity with the general outline of the feature. Outstanding past events will continue to be reported, and information about meeting dates and change of venue or Secretary will be given, but it is intended that " readability " should encourage the ordinary member to take an interest in the good work that is being done by local clubs and groups up and down the country, and should encourage him to join. Once the feature has " settled down," comments and criticisms will be welcomed, and readers should not hesitate to ask for a return to the old layout if they prefer it.

And so to our first group of reports—this month on a geographical basis:

NORTH: G3AOS reports hospitality to Ed Tilton W1HDQ by members of the **North West V.H.F. Group,** which included a three counties tour with 2m mobile working, a visit to Jodrell Bank and a Group dinner party at Wilmslow. A U.H.F./V.H.F. Convention in Manchester is planned for October—more news later. **Bradford** joined with the **Spen Valley** society on May 16 to hear a lecture on Guided Missiles. G3OGV will lecture on Tape Recorder Amplifiers on July 9, and on July 23 the society visits the Ferranti works at Oldham. Morse Instruction precedes each meeting. The **Derby** society is planning for the Mobile Rally on August 18—for details see *Mobile Column.* Other *MIDLAND* clubs reporting include **Coventry,** who have no meetings on July 15 and 22 because of local holiday plans.

Fred Ward, G2CVV, Region 4 Representative, tries artificial respiration on Brian Speakman, B.R.S. 23256, the society's A.S.R., at a recent lecture on first aid to the Derby and District Radio Society. *(Photo by A.1706)*

Wolverhampton report a feature on the society in the local *Wolverhampton Chronicle*: publicity of this kind can be helpful, if you make sure the reporter has got his facts right! **Mid-Warwickshire** hope to run a further R.A.E. Course at the Mid-Warwickshire College of Further Education beginning in September.

Moving *SOUTH-WEST:* the **Plymouth** club advises us that *QST* is available monthly in the local Public Library, and members are asked to ensure its continuance by demanding it. This is an idea—and a precedent—for clubs in most big cities and towns. They might like to use similar methods to ensure the RSGB *Amateur Radio Handbook* and *Radio Data Reference Book* are in their local library. Club newsletter *QUA* reminds us that the Dartmouth Mobile Rally will be held on August 11. A party from **Torbay** ARS recently visited a Plymouth meeting, and the club also heard a tape recording from member VS1LH/G3BBF. **Bristol** Group heard G3PFC talk on and demonstrate " Hi-Fi Stereo " on May 24, when 55 members and visitors were present.

Groups and Clubs in the *SOUTH* of England report in force this month. The **Wessex** Group, which recently visited the GPO radio station at Dorchester, is holding a " Hare and Hounds Rally " for mobile stations on July 28, when the fun of locating a hidden transmitter will be combined with mobile working; there is also a section for mobile SWL members. For details, ideas and comments on the success of this venture, the Group Secretary may be able to help other groups wishing to try out the idea.

G2UJ has been talking about Project Oscar to the **Enfield and District** Group. The Southern Hampshire *QUA* mentions that the **Southampton** Group will be demonstrating Amateur Radio at the Great Southampton Show on July 12-13 when special QSL cards will confirm contacts with GB3SS. Mobiles are especially invited on July 13 to sample the delights of the Show. **Mitcham and District** meet on July 10 and August 7. The **Grafton** society's recent " G3KGC Cup " Constructors' Contest attracted 17 entries and was judged by Phil Thorogood G4KD and Bob Newland G3VW of **Edgware** club. **Verulam** club will be running an Exhibition station GB3VER on July 6: QSLs are promised for all contacts—160, 80 and 20m.

Reading have a treat in store on August 31, when " Dud " Charman G6CJ gives his well-known " Aerials " lecture. A Mobile Picnic is planned for August 25. **Dorking and District** society meet on July 9 and 25 for informal ragchews—the former date at the Wheatsheaf, Dorking, and the latter at the Black Horse, Gomshall. Such " various venues " are an idea for summer meetings or for clubs which cover a large area. G3CZU, the club station, will be active at an Exhibition to be held in October.

The July meeting of the **Surrey Radio Contact Club** (date not given) is a very special informal evening—the 250th in the club's history—when a reunion will be followed by a talk on Amateur Radio in Australia by VK3ADW/G3RYW.

Sole representative from the *EAST COAST* this month is **Norfolk Amateur Radio Club,** which reports its first A.G.M. on April 29, when, before more than 50 members and friends, G3PNR was elected Chairman, and a film of club activities was shown.

Newsletters

A number of clubs provide an additional service to members in the form of a Newsletter. These range from duplicated " occasional " sheets to ambitious publications with technical articles, and all provide a useful service in keeping up enthusiasm and attendances. This month Coventry's *CQ CARS* includes an article on a 2m converter by G3NBQ, while Wolverhampton's *Newsletter* concentrates on DX news and a wide range of

members' activities. The *Lea Valley Reflector* is the vehicle by which the A.R. keeps in touch with his members: Hampshire's *QUA*, already mentioned, not only does this but also prints an article on a simple slow-motion dial by G3GOP. Mitcham, Southgate and Crystal Palace Groups keep members up to date with duplicated sheets and also provide " sales and wants " facilities. From overseas comes the *Malayan Amateur Newsletter*, from which we gather that the latest product of a noted British electronics firm is—beermats! Finally we have news of the Ex-G Radio Club, forwarded by W3CTR, who reminds prospective members that to have been born in the UK and to be domiciled abroad is the only requirement for membership—to have held a " G " call is not essential.

A final thought: " Our usual participation in the RSGB National Field Day had to be abandoned due to lack of RSGB membership allied with club membership " (Plymouth Radio Club). What about it, Plymouth? If you want to come in next year, *now's* the time to rake in those members for the Society!

Last Roundup

News received shortly before this edition closed for press: **Halifax and District**—G3IGW, prominent on the band during the winter season, gave a talk on his 160m transmitter on Whit Tuesday. **Crystal Palace** weigh in with another *News Letter* giving NFD comments (fast work!) and advise an Informal Meeting on July 20, followed by a talk on " Electronic Colour Operation " by G3GWD on August 17. **Barnet** attendance at their May meeting exceeded 80 to hear 5N2AMS give a talk and film show on his African adventures. Next meeting is on July 30 at the Red Lion Hotel. From **Southgate** G3PKZ reports curing brake static on his A35 by making earthing brushes from phosphor bronze draught excluder. A note on the **Royal Naval** ARS reminds present and past members of the RN and Commonwealth navies that they are eligible to join. Write to the Honorary Secretary at HMS *Mercury*, Leydene, Petersfield, Hants, for details—and don't forget to listen to the society's Code Proficiency test runs and to claim the Code Speed Certificate. From Region 8 comes news of **West Kent** society (July 12 and 26 at Kent C.C. Adult Centre) and **Folkestone** who meet on the first Tuesday every month at Sea Cadets HQ, Sandgate. Another reminder from **Surrey Radio Contact Club** who want former members not to miss their 250th meeting on July 9.

A last word to *all* our contributors—don't miss the closing date for copy for the August issue—it is **July 11.**

Southgate and District will be operating a Top Band phone station under the call-sign G3PKZ/A at Trent Park, Cockfosters, from 11 a.m. until dusk on July 14. Visitors, mobiles and members of other groups and clubs will be most welcome. At **South Dorset's** June meeting members' home-built and factory-made equipment was displayed and arrangements for NFD agreed. **Reading** will meet at the Palmer Hall, West Street, on July 27 for a talk by G5TP on " Safety in the Shack " and a Red Cross demonstration of the kiss-of-life method of artificial respiration. **Northern Heights** have a ragchew arranged for July 17 and treasure hunt organized by G8CB on July 31.

Club of the Month

HASTINGS AND DISTRICT AMATEUR RADIO CLUB

This club was founded about 30 years ago, and the call-sign G6HH was first issued on April 9, 1934. At that time the title was Hastings and St. Leonards and District Radio Society. Activity was revived after the war and under its present title the club has flourished in recent years.

The President, L. H. Thomas, M.B.E., G6QB, has held office since the revival. He is well known not only as a technical writer but also as a first-rate organist and broadcaster. The present Chairman, Dr. T. H. Parkman, G3MGQ, has held office since 1958. The Honorary Secretary, W. E. Thompson G3MQT edits and produces the Club newsletter, *Natter-Net Notes*, and has contributed technical articles to the RSGB BULLETIN, *Short Wave Magazine* and *Radio Constructor*. Honorary Treasurer J. D. Heys, G3BDQ, has had several technical articles published, and is noted for his forward-thinking designs. He is perhaps best known for his " Natterbox " design, a simple s.s.b. transmitter for 160m and 80m, and more recently for the " Mini-mus " pre-amplifier described in the June issue of the BULLETIN.

The club meets fortnightly on Tuesdays from 7.30 to 10 p.m. at 33 Cambridge Road, Hastings, and visitors are always welcome. The annual subscription, which consists of a composite fixed sum and a meeting fee, includes a copy of the monthly club newsletter posted to each member.

All smiles at G6 " Happy Hastings "
G3MQT, Honorary Secretary (right) keeps an eye on G3BDQ (Honorary Treasurer) operating the Hastings and District Amateur Radio Club's station, G6HH, while G3HRI and G3FXA look on.
(Photo by G3MVX)

The club does not specialize in a particular aspect of Amateur Radio: it encourages activities in as wide a field as possible. Most transmitting members use the h.f. bands, with a growing interest at present in s.s.b. Several members hold mobile licences and are active. Current membership is more than 70 with members in New Zealand, Poland, Switzerland, Germany, Canada and Ceylon. Several members reside in various parts of England and Wales.

As G6HH/A the club operated a station for seven years in the annual Hobbies Exhibition during Hastings Carnival Week.

It is believed the club has introduced several " firsts " into club activity. In 1958 it staged the first Club DX-pedition to " rare " counties, toured 1,000 miles in two vehicles operating /M *en route*, and setting up one-night stands on 160m in Rutland, Merioneth, Montgomery, Radnor and Brecon. In 1960 the Club had its " Exhibition " QSL card actually printed at the exhibition from which the station was operating. In 1961 a coach-load of club members went to the Beaulieu Mobile Rally, complete with mobile station G6HH/M operating from the coach.

Club members have participated in a number of pioneering ventures. G3PEH/T became the first /T station in Hastings while still at grammar school, and had a technical article published in *Practical Wireless*. G3LXQ set up a /A station on 160m in the Isle of Alderney for one week-end, and is thought to be the first G station to do so. SP5PO was the first s.s.b. station in Poland. G3BDQ bounced a signal off the " Echo " satellite into France a few days after it went into orbit and had a short QSO with a station near Paris. He was also the first station in Hastings to work 100 European stations on 2m. G3KMP won the RSGB 144 Mc/s Contest at the first time of entry. He is also the only Hastings station on 70cm. G3MTX, a blind operator, passed his RAE and Morse test within six months—prior to that he had no interest or knowledge! G3MQT set up the maddest " record " of all time in 1960, as yet not beaten—he motored /M from Hastings to South Shields Mobile Rally and back within 24 hours, clocked up 719 miles in the process, stayed about five hours at the Rally, and collected the " longest distance " prize! As the only RSGB member travelling from England to be at the DARC Deutschlandtreffen at Dortmund, Western Germany, in 1961, he was presented with a DARC Club pennant by the President, and allocated the call-sign DJ0FE for the duration of the Convention as a special concession.

Closing date for August issue
July 11

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the first of the month preceding publication. A.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out the copy, preferably typed double spaced, in the style used below. Standing instructions for more than three months ahead cannot be accepted.

LOOKING AHEAD

July 1-5.—RSGB Golden Jubilee Celebrations. See page 16.
July 5.—RSGB Golden Jubilee Dinner.
September 8.—G6UT's Ham Party.
September 15.—Region 10 Regional Meeting, Cardiff.
September 22.—Region 1 Field Day.
September 22.—Woburn Abbey National Mobile Rally.
September 22.—Surrey Radio Contact Club 144 Mc/s D/F Hunt.
October 30-November 2—RSGB Radio Communications Exhibition.
December 20.—RSGB Annual General Meeting.
The dates of mobile rallies are given in *Mobile Column*.

REGION 1

Ainsdale (A.R.S.).—July 10, 24, Russell Road, Methodist Church Hall, Southport.
Blackburn.—Fridays, 8 p.m., West View Hotel, Revidge Road.
Blackpool (B. & F.A.R.S.).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate.
Bury (B.R.S.).—July 9 (Discussion Night), August 13 (" Brains Trust"), 8 p.m., Knowsley Hotel, Kay Gardens.
Chester.—Tuesdays, 8 p.m., Y.M.C.A.
Eccles (E. & D.R.C.).—Tuesdays, 8 p.m., The Congregational Mission Church, King Street.
Liverpool (L. & D.A.R.S.).—July 9 (Debate), July 16 (Discussion on " Liverpool Show "), July 23, 30, August 6, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.
Macclesfield.—July 9, 23, August 6, 42 Jordongate.
Manchester (M. & D.A.R.S.).—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester 10. **(S.M.R.C.).**—Fridays, 7.45 p.m., Rackhouse Community Centre, " Rackhouse," Daine Avenue, Northenden.
Morecambe.—August 7, 125 Regent Road.
Preston.—July 9, 23, St. Paul's School, Pole Street. (All meetings start with a morse practice at 7.30 p.m.)
Southport (S.R.S.).—Wednesdays, 8.30 p.m., Sea Cadets' Camp, The Esplanade.
Stockport.—July 17, 31, 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral.—July 17, 7.45 p.m., Harding House, Park Road West, Claughton.

REGION 2

Barnsley.—July 12 (YLs and XYLs Dinner) Details from Hon. Secretary, P. Carbutt, G2AFV, 19 Warner Road, Barnsley, Yorks.
Catterick.—Tuesdays and Thursdays, 7.30 p.m., Club Room, Vimy Road.
Halifax.—July 2 (" My First Six Months on the Air " by Mr. Ingham, G3RMQ), 7.30 p.m., Beehive and Crosskeys Inn. **Northern Heights.**—July 3 (Visit to C.E.G.B. Power Station, Elland), July 17 (Informal meeting), Sportsman Inn, Ogden, July 31 (Treasure Hunt, organized by H. Crewe).
Scarborough.—Thursdays, 7.30 p.m. Chapman's Yard, North Street.
Sheffield.—July 12 (" Transistors," A demonstration of their application to Amateur Radio, by R. V. Moore, G3LWB), 8 p.m., 8 Sandbeck Place.
Spen Valley.—July 11 (A.G.M.) 7.15 p.m., Grammar School, Heckmondwike.

REGION 3

Birmingham (M.A.R.S.).—July 16, August 20, 7.30 p.m., Birmingham and Midland Institute, Paradise Street. **Midland Radio Contest Club (M.R.C.C.).**—July 5, 7.30 p.m., Windmill House, Weatheroak, Birmingham. **(Slade).**—July 12, July 26, 7.45 p.m., The Church House, High Street, Erdington.
Cannock (C.C.A.R.S.).—July 4, August 8, 7.30 p.m., The Tavern, Bridgetown.
Coventry (C.A.R.S.).—Every Monday, 8 p.m., Willenhall Scout H.Q., Little Farm Buildings, Littlethorpe, St. James's Lane, Willenhall, Coventry.
Lichfield (A.R.S.).—July 1, 7.30 p.m., Swann Inn, Lichfield. An interesting series of talks on " Transistor Applications " are being given.
Stourbridge (S.T.A.R.S.).—July 2 ("Mobile " by G3BMN), 7.45 p.m., Foley College, Stourbridge. No meeting in August.
Sutton Coldfield (A.R.S.).—July 12, 26, 7.30 p.m., 92 The Parade, Sutton Coldfield.
Wolverhampton (A.R.S.).—July 15, 8 p.m., Neachells Cottage, Stockwell End, Tettenhall.

REGION 4

Burton-on-Trent (A.R.S.).—Wednesdays, 7.30 p.m., Club Rooms, Stapenhill Institute, Burton-on-Trent.
Chesterfield (C. & D.A.R.S.).—July 10, August 14, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.
Derby (D. & D.A.R.S.).—July 3 (Surplus Sale), July 10 (Visit to Airport), July 17 (Informal Meeting), July 24 (D/F Practice Run), July 31 (Visit TV Station), August 7 (Surplus Sale), 7.30 p.m., Room No. 4, 119 Green Lane, Derby. **(S.W. Exp. Soc.).**—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Rooms, Nunsfield House, Boulton Lane, Alvaston, Derby.
Grantham (G. & D.A.R.S.).—Mondays, 7.30 p.m., Club Rooms, rear of Manners Arms Hotel, London Road, Grantham.
Grimsby (A.R.S.).—July 7 (Discussion on Direction Finding), 8 p.m., Club Rooms, Grimsby Model Engineers, Fletchers Yard, Wellowgate, Grimsby.
Leicester (L.R.S.).—Mondays, 7.30 p.m., Club Rooms, Old Hall Farm, Braunstone, Leicester.
Loughborough (R.C.L.).—Fridays, 7.30 p.m., Corporation Hotel, Wharncliffe Road, Loughborough.
Lincoln (L.S.W.C.).—First Wednesday in each month, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.
Mansfield (M.R.C.).—Fridays, 7.30 p.m., Hope & Anchor, Union Street, Mansfield.
Nottingham (A.R.C.N.).—Tuesdays and Thursdays, Room No. 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Sherwood.
Northampton (N.S.W.C.).—Thursdays, 7 p.m., Allen's Pram Works, 8 Duke Street, Northampton.
Peterborough (P. & D.A.R.S.).—July 5, August 2, Room No. 14, Electronics Laboratory, Peterborough Technical College.
Worksop (N.N.A.R.S.).—Tuesdays (Beginners), Thursdays (Informal), 7.30 p.m., Club Rooms, Victoria Institute, Eastgate, Worksop, Notts.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.
High Wycombe (C.A.R.C.).—July 25 ("Radio Astronomy "), 7.30 p.m., British Legion, St. Mary Street, High Wycombe.

REGION 7

Acton, Brentford & Chiswick (A.B.C.R.C.).—July 23 (" Questions and Answers "), 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick.
Bexleyheath (N.K.R.S.).—July 11, 25 (Informal Meetings), 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Barnet (B.R.C.).—July 23, 8 p.m., Red Lion Hotel, Barnet.
Croydon (S.R.C.C.).—July 12, 7.30 p.m., Blacksmiths Arms, South End, Croydon.
Dorking (D. & D.R.S.).—July 9 (Informal Meeting), 8 p.m., Wheatsheaf, Dorking. July 23 (Informal Meeting,) 8 p.m., Black Horse, Gomshall
East Ham.—Tuesdays fortnightly, 8 p.m., 12 Leigh Road, East Ham.
East London.—July 5, 6, 7 (Dagenham Town Show with GB3DTS on a.m., s.s.b., v.h.f.).
East Molesley (T.V.A.R.T.S.).—July 3 (Talk and demonstration on " Transistor Transmitter of Adequate Power for 160 Metres " by J. Hill, B.Sc., Grad I. Brit.R.E., G3JIP, and D. W. White, G3JKA), Carnarvon Castle Hotel, Hampton Court.
Edgware & Hendon (E.A.D.R.S.).—July 8, 22, 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.
Enfield.—July 16 (Talk on s.s.b.), George Spicer School, Southberry Road, Enfield.
Gravesend (G.R.S.).—July 17, 7.30 p.m., RAFA Club, 17 Overcliffe, Gravesend.
Guildford (G. & D.R.S.).—Second and Fourth Fridays in each month, 8 p.m., City Cafe, Onslow Street, Guildford.
Harlow.—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow.
Harlow (S.R.C.).—Wednesdays, 7 p.m., Edinburgh Way, Harlow.
Harrow (R.S.H.).—Fridays, 8 p.m., Roxeth Manor County School, Eastcote Lane, Harrow.
Holloway (G.R.S.).—Mondays and Wednesdays (RAE and Morse), 7 p.m., Fridays (Club), 7.30 p.m., Montem School, Hornsey Road, N.7.
Hounslow (H.A.D.R.C.).—Mondays, 7.30 p.m., Isleworth Town Hall, Twickenham Road, Hounslow.
Ilford.—Thursdays, 8 p.m., 579 High Road, Ilford (Nr. Seven Kings Station).
Kingston.—Alternate Thursdays (Lectures), 8 p.m., Y.M.C.A., Eden Street, Kingston. Morse Classes weekly at 2 Sunray Avenue, Tolworth.

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Loughton.—July 12, 7.30 p.m., Loughton Hall, Nr. Debden Station.
Mitcham (M. & D.R.S.).—July 19, 7 p.m., " The Canons," Madeira Road, Mitcham.
New Cross (C.A.R.S.).—Every Friday, 8 p.m., 225 New Cross Road, S.E.14.
Norwood & South London (C.P. & D.R.C.).—July 20 (Technical Discussion), C.D. Training Centre, Bromley Road, Catford.
Paddington (P. & D.A.R.S.).—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2 Warwick Crescent, W.2.
Purley (P. & D.R.C.).—July 12, 8 p.m., Railwaymen's Hall (Side Entrance), Whytecliffe Road, Purley.
Reigate (R.A.T.S.).—July 20, (" Clubnight ") 7.30 p.m., The Tower, High Street, Reigate.
Romford (R. & D.R.S.).—Tuesdays, 8.15 p.m., RAFA House, 18 Carlton Road, Romford.
Science Museum (C.S.R.S.).—July 1, August 19 (Informal Meetings), Science Museum, South Kensington.
Sidcup (C.V.R.S.).—July 4, (Lecture on Racal receivers) 7.30 p.m., Congregational Church Hall, Court Road, Eltham.
Slough (S.A.R.S.).—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street, Slough.
Southgate & District.—July 11, 8 p.m., Amos School, Wilmer Way, N.14.
St. Albans (Verulam A.R.C.).—July 17, 7.30 p.m., Headley Road, St. Albans.

Sutton & Cheam (S.C.R.S.).—July 16 (Film Show on Mullard Transistors), 8 p.m., The Harrow, High Street, Cheam.

Uxbridge (U.D.R.S.).—July 8 (Construction Practice and Tools), 7.30 p.m., St. Andrews Church Scout Hut, Uxbridge Road.

Welwyn Garden City.—July 11 (Annual Sausage Supper), 8 p.m., Club Cottage, Burnham Green. No meeting in August.

REGION 8

Tunbridge Wells (W.K.A.R.S.).—July 12 (Exchange and Mart), July 26 ("Gadgets Galore," members' apparatus on show), 7.30 p.m., K.C.C. Adult Centre, Culverden House, Culverden Park Road, St. John's, Tunbridge Wells. August 25, afternoon picnic in Sheffield Park.

REGION 9

Bath.—No meeting in July.

Bristol.—July 26, 7.15 p.m., Royal Fort, Bristol University, Woodland Road, Bristol 8.

Burnham-on-Sea.—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.

Camborne (C.R. & T.C.).—First Thursday in each month, Staff Recreation Hall, S.W.E.B. Headquarters, Pool, near Camborne.

Exeter.—First Tuesday in each month, 7.30 p.m., Y.M.C.A., St. David's Hill, Exeter.

Plymouth (P.R.C.).—First Tuesday in each month, 7.30 p.m., Guild of Social Service Building, Plymouth. Other Tuesdays, Virginia House Settlement, St. Andrews Cross, Plymouth.

South Dorset (S.D.R.S.).—First Friday in each month, 7.30 p.m., alternately at Waverley Hotel, Westham, Weymouth, and Labour Rooms, West Walks, Dorchester. July meeting at Dorchester.

Torquay (T.A.R.S.).—July 13 (Lecture by a BBC Engineer), Club H.Q., Belgrave Road, Torquay.

Weston-super-Mare.—First Tuesday in each month, 7.15 p.m., Technical College, Lower Church Road.

Yeovil (Y.A.R.C.).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10

Port Talbot.—August 27, 8 p.m., Trefelin Workmen's Club and Institute, 8-10 Jersey Street, Port Talbot.

REGION 11

Prestatyn (F.R.S.).—No meeting in July.

REGION 14

Glasgow.—No meetings during July. August 9, 23, September 6, 20, 7.30 p.m., The Christian Institute, 70 Bothwell Street, Glasgow.

Motherwell.—Third Friday in each month, 7.30 p.m., Carfin Hall, Motherwell.

REGION 17

Southampton.—August 10, 7.30 p.m., Lanchester Building, Southampton University, University Road, Southampton.

BOOK REVIEWS

THE RADIO AMATEUR'S HANDBOOK (Fortieth Edition, 1963) by the H.Q. staff of the American Radio Relay League. 640 pages and over 1,300 illustrations; *QST* format. Obtainable from RSGB Publications, 28 Little Russell Street, London, W.C.1. Price 38s. 6d. including postage.

When a technical handbook has been published continuously for 37 years, and more than 3½ million copies have brought guidance and pleasure to radio amateurs and engineers all over the world, it needs no introduction: one asks only, "What is new in this edition?" Of course there are the usual minor improvements and changes: e.g. conelrad arrangements have disappeared, and some diagrams have been redrawn. Many sections have had no substantial changes. The writer noticed that the very attractive 2 × 4 + 1 superheterodyne has lost the final 1 because it has been modified to receive WWV on 5 Mc/s, and no longer has a transistor 100 kc/s frequency standard. Those who like to "roll their own," and do not consider an expensive receiver a prestige symbol, should take a look at this well-designed two-band (80 and 40m) receiver and the crystal-controlled converters on page 127.

In the high-frequency transmitter section, the all-purpose 813 amplifier and the 1 kW grounded-grid amplifier, using a PL6580, have been dropped. A new 811-A 200 watt grounded-grid amplifier is described, and also a new high-power one using a 3-1000Z triode to handle a p.e.p. input of 2 kW on peaks.

Another section with substantial changes is "V.H.F. Receivers," which now includes transceivers. The pre-amplifier for 220 Mc/s, and the discussion on receivers for 420 Mc/s are missing: added is a simple 420 Mc/s transceiver design. The v.h.f. transmitters now comprise mainly a complete 50 to 432 Mc/s transmitter employing separate plug-in units for 50, 144 and 220 Mc/s bands, and getting 11½ pages of description. Another transmitter described in 13 pages is a high-power one with a 1 kW p.a. on 50 Mc/s, and a separate 800 watt p.a. on 144 Mc/s; though the text explains that power can be dropped as low as 150 watts, and that most operation on 144 Mc/s can be carried on satisfactorily with low power. The simple 50 and 144 Mc/s rigs of the last *Handbook* and the 40 watt transmitter for 220 Mc/s are absent, though the 50-432 Mc/s transmitter to some extent adequately takes their place.

These are the main changes noticed by the writer. The increasing complexity of the technique is inevitable, but it makes the *Handbook* more necessary than ever for the radio amateur. The present edition will be welcomed and appreciated just as much as its predecessors have been, and rightly so. T. P. A.

UNDERSTANDING AMATEUR RADIO (First Edition, 1963) by George Grammer, Technical Director, ARRL. 320 pages of *QST* format, and about 400 illustrations. Published by the American Radio Relay League. Obtainable from RSGB Publications, 28 Little Russell Street, London, W.C.1., price 18s. 0d., postage paid.

Here indeed is a welcome new book, particularly for the radio amateur who has had a limited scientific training. He has often, one feels sure, needed something more fundamental and leisurely than the *Handbook* can supply. But something was needed which would be more than a mere treatment of fundamentals; it should deal with the amateur's apparatus, transmitters, receivers, aerials, in terms which not only could be understood by the non-technical reader, but which could immediately be related to experience by simple though useful and adequate design and construction information. This is it; here is a book which has time to talk it over with you, dealing also with setting up an amateur station, power supplies, aerials, modulators, operating, workshop practice, measurements, etc. It is a production on which Mr. Grammer and the ARRL must be congratulated. Its price makes it an excellent investment, and it is confidently recommended to all who want to understand their fundamentals better and learn a lot of "practice" on the way. T. P. A.

Deputy Regional Representative

The following is an addition to the list of Deputy Regional Representatives, published in the December, 1962 issue.

REGION 2

R. S. EMMERSON, G3NOG, 8 Harsley Grove, Hartburn, Stockton on Tees, Co. Durham.

Affiliated Society Representatives

The following are additions to the list of Affiliated Society Representatives published in the December, 1962 issue.

AINSDALE RADIO CLUB

G. W. A. ILLINGWORTH, G8QC, 77 Clifton Road, Southport, Lancs.

BRADFORD RADIO SOCIETY

F. J. DAVIES, G3KSS, 39 Pullan Avenue, Eccleshill, Bradford 2, Yorks.

CHELTENHAM AMATEUR RADIO SOCIETY

C. WORTHING, G3PME, 48 Ismay Road, Cheltenham, Glos.

STOKE ON TRENT AMATEUR RADIO SOCIETY

V. J. REYNOLDS, G3COY, 90 Princes Road, Hartshill, Stoke on Trent, Staffs.

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RADIO AMATEURS' EXAMINATION MANUAL. Covers the syllabus of the City and Guilds of London Institute examination. Chapters on licence requirements and conditions, interference, receivers, circuits, calculations, semiconductors, aerials and propagation. Essential reading for those wishing to obtain the Amateur (Sound) Licence. More than 50 line diagrams. 56 pages. **Price 5s. 6d. post paid.**

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