R S G B

NOVEMBER, 1957

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 33, NO. 5

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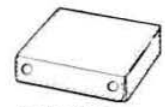
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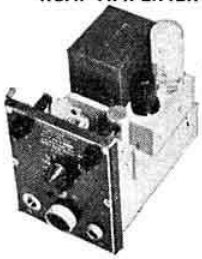

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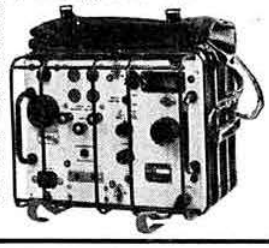

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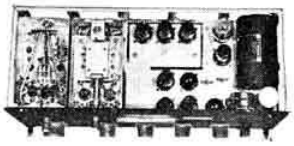

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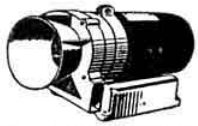

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R.S.G.B. BULLETIN

Devoted to the Science and Advancement of Amateur Radio

Vol. 33 No. 5 NOVEMBER 1957

CONTENTS

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Current Comment

" The Toast is 'The R.S.G.B.' "

NOW it was winter, and time for the Lambdaville Town Group to address themselves to the " indoor season " in general and their Annual Dinner in particular.

Behind them was a reasonably successful " outdoor season " in which National Field Day had run its accustomed course, Two Metre Field Day was essayed for the first time and a summer outing to a nearby broadcasting station organized.

Such alfresco occasions were not by any means the Group's sole activities during The Great Damp that is the British summer—or a large part of it. Operating activities on nearly all bands had been well sustained. Weekly, the Top Band net could pursue its even tenor without interruption from the uneven soprano from Holland whose golden voice came across the North Sea on 1·9 Mc/s when the nights and the skip were long. In summer they weren't, and the weekly meetings on The Net happily supplemented the monthly meetings in the flesh.

Sustained summer activity, thought The Old Hand, was in sharp contradistinction to the way things were when *he* was a boy. A quarter of a century ago the pursuit of Amateur Radio suffered a sharp deceleration during the year's mid-months. It was in the fall of the year that the bands began to be loaded again, and autumn leaves became synonymous with Morse keys. Not that summer was wholly moribund from the activity point of view in those dear dead days; paragraphs in the BULLETIN in the now long defunct District Notes would disclose that Old So-and-So was " rebuilding." But he always *was* rebuilding, and almost identical paragraphs had appeared at the same time the previous year—and the year before that. And that seemed to be about the total of summer activity in the years before N.F.D. and similar outdoor rigours had been invented.

Radio was indeed much more seasonal then than now, mused The Old Hand. All the same, coming to the present day, there was something rather special about that time of the year when people would look at the sky and utter the unique observation that the nights were drawing in (or was it the days?); and deep-down feelings of atavistic regret at the dying of a year—for a part of a man dies with every summer—were tempered by the thought that for radio men at least there were compensations.

One such so far as the Lambdaville Town Group were concerned was the approach of their Annual Dinner. Over the years several attempts had been made to find the right formula for this event. The first attempt, which envisaged a dinner followed by a film show, took no account of the fact that any somnolence occasioned by the former would be worked off in the dark during the latter. It was.

Next year the Group thought they would " make it a bit of a party," with a few inconsequential games and other *divertissements* to entertain the ladies and keep the minds of everyone off radio. The evening remained resolutely ground-borne, and its failure to take flight convinced the Town Representative that this particular formula, too, was to be kept well corked in future.

It was not surprising, then, that Lambdaville's third attempt should be much more formal. Hopes were high that an extended sit-down dinner followed by speeches would meet the bill. It *would* have done had not two calamities befallen. First of all, the food at the newly opened Flash Hotel, where the Group's dinner was held in a private room, was poor, and the service even worse. Then when the dishes were ultimately—oh so ultimately—cleared and the speeches began, an adjoining door opened and from a long cadaverous face tolled the tidings that a chess tournament was going on in the next room and would the Group kindly be quiet?

If the Flash Hotel had no more tact than to place a roomful of mute chessmen next to a roomful of far-from-mute radio men—whose *raison d'etre* after all is making noises of one sort or another that can be heard in different places—then there was only one thing to do next year and that was to try somewhere else.

No wonder the Town Representative's postage bill mounted during the ensuing months from letters sent to this and that local hostelry in an attempt to find a good venue for the next dinner. The Group thought the expenditure justified (it was a point of honour with them, small though they were, to be self-supporting financially and not to " charge it up ").

And so they came to a large, rambling hotel which a couple of hundred years ago was a staging post on a main coaching route, and to this day maintained a high reputation for knowing how to look after its guests.

To Lambdaville members after their previous experiences, the proof of the pudding would be almost literally in the eating, even though it happened to be a fruit salad. The verdict after their first Annual Dinner in the new environment proved to be " S9 plus—and let's go there next year."

They did. The formula had been discovered at last. Invite a Very Important Member as guest of honour, arrange for several toasts and responses to be made, and organize a draw for prizes for the ladies only. If possible, put on a surprise item at the end.

Thus it turned out. The first tentative venture at The Old Hotel was followed by a repeat the next year,

and by a third the year after that. Any initial doubts that members would be prepared to find thirty shillings each for a double ticket were set at rest by the enthusiasm with which the event was received as it came round every year.

" Quite Regimental " murmured The Major as he surveyed the cosy upper room, the glittering tables, and the animated scene of the crowd of radio amateurs and their ladies greeting each other over the pre-prandial aperitif—and when he said " Regimental " he meant it in the best sense (you could hear the capital " R ").

Dinner over; then, after " The Queen," the speeches, introduced informally by The Ancient Mariner from Ireland (G1AM) who had been in Amateur Radio so long that he could remember receiving a QSL from The Old Hand when the latter was still a listener.

First toast appropriately was the Lambdaville Town Group, replied to by the Town Representative, who gave his report on the State of the Nation.

" The Ladies " were toasted, again appropriately, by The Electronic Bachelor—a B.R.S. who was so professionally technical that it seemed unlikely he would ever get himself a call-sign. Emphasis was rightly laid on the indispensable part played by those whose status is abbreviated to " YL " or " XYL " or " YF," and without whose tolerance the Amateur Radio movement could hardly continue.

Wittily, The Major's wife in replying described how it all looked from a woman's point of view.

And then it was the turn of the guest-of-honour, The Very Important Member (let him be called G4VIM), now introduced by The Man with the Lowest B.R.S.

" The Toast is ' The R.S.G.B.' " declared The Man with the Lowest B.R.S. It was drunk with what the small town newspaper would call " acclaim." And here the company reached the moment of the evening for which they had been waiting: the response by '4VIM which all hoped would give them an insight into the inner workings of The Society. They were not disappointed. For 20 minutes they learned how the wheels of the R.S.G.B. went round, and how their subscriptions were spent.

Nor were they disappointed in the final Surprise Item which had been planned beforehand by the Town Representative and The Major. Into that room from The Major's tape recorder (" It nearly killed me carrying it up those stairs ") issued forth the voice of a man 6,000 miles away sending greetings to all his old friends in the Lambdaville Group whom he had known and talked with on The Net before he emigrated four years ago.

Some of those listening recalled a statement once made by The Old Hand that the real essence of Amateur Radio is friendship. As The Emigrant's voice came to their ears across the years and the seas that remark seemed to gain added truth. And while it does not do (apparently) to be sentimental in this unsentimental age, most of the diners as they rose eventually to their feet to amble down the stairs and grope for their cars in the fog outside, could not help feeling that if there were a few more movements like the one of which Lambdaville Town Group represented a microcosm, the world would be a very much better place to live in.—J. H.

The W3FIU Single Sideband Exciter

A Straightforward Basic Design

By F. C. B. JORDAN, M.Sc, (W3FIU)*

GETTING on the air with a stable, high quality single sideband signal is neither difficult nor expensive. This article shows how this can be done by describing the construction of a simple but effective s.s.b. exciter.

There are several ways of generating an s.s.b. signal. The writer chose to use the balanced modulator-filter system as being the most straightforward to operate. In this system, a stable carrier is first produced. The carrier frequency f_c and the voice frequency f_v are then mixed in a balanced modulator resulting in $f_c + f_v$ and $f_c - f_v$, upper and lower sidebands respectively, the two original frequencies f_c and f_v being eliminated in the process. The unwanted sideband is rejected by a sharp filter and the remaining sideband, constituting a s.s.b. signal, is translated to the 80 metre band by heterodyning, then amplified to a useful power level.

Circuit Arrangements

Valve V1 and its associated components connected as a Clapp oscillator (Fig. 1) produce the carrier frequency of about 450 kc/s. The carrier voltage is coupled to a balanced modulator by transformer T2. The output of the audio driver valve V2 is coupled into the modulator by transformer T5. Crystal diodes CR1 and CR2 constitute a balanced modulator in which the carrier and voice frequencies are mixed to produce an amplitude modulated signal. Although an unbalanced and therefore slightly simpler modulator could have been used here, the balanced circuit is particularly useful in that it accomplishes the removal of the carrier frequency by means of a bridge circuit of which balancing elements R1 and C7 are part.

The crystal bandpass filter (Fig. 2), using average quality components, will give a measured attenuation as shown in Fig. 3. If the carrier frequency is fixed at, say, 449·2 kc/s, we see that the carrier, which has already been attenuated about 20db by the first balanced modulator, is further attenuated 25db; the unwanted sideband is attenuated at least 40db, and a s.s.b. signal results which has a voice frequency range of about 300 to 3000 c/s. (40db represents a power ratio of 1/10,000, so there is not much left of the unwanted sideband and still less remaining of the carrier).

The s.s.b. signal which is at about 450 kc/s is applied to the grids of the second balanced modulator valve V3, simultaneously with about 5 or 6 volts at, say 3300 kc/s. This gives an output s.s.b. signal at 3750 kc/s, the unwanted difference frequency of 2850 kc/s being eliminated by the tuned circuits. The 3300 kc/s signal can most conveniently be furnished by the station v.f.o. but any available stable oscillator will do. Of course, it would be possible to heterodyne directly to one of the higher frequency bands but this procedure would introduce a new difficulty, that of images, and it is therefore preferable to design the exciter to produce an 80 metre signal. Further heterodyning to a higher frequency will then permit operation on bands higher in frequency if desired.

The speech amplifier for a carbon microphone is shown in Fig. 4.

Increasing the power output

The output of the second balanced modulator is only of the order of a few milliwatts which is of no communication value except to the most rabid of QRP enthusiasts. It is therefore amplified to a two or three watts level which is sufficient to excite a couple of 807 valves or their equivalent to a peak power output of 150 watts. The 6AG7 was chosen as the r.f. amplifier, V4, because of its high power sensitivity. Its operation is class A which obviates the necessity for anode voltage regulation for distortionless amplification.

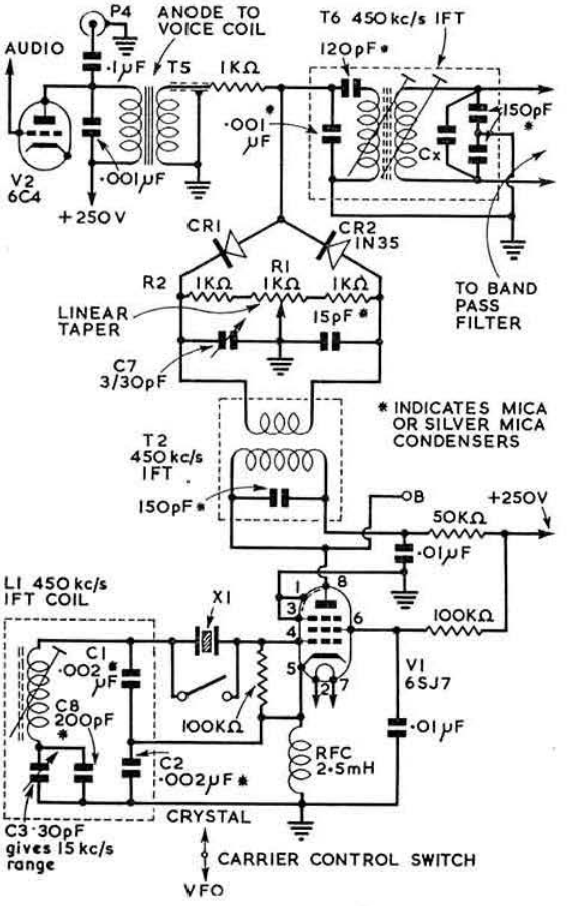


Fig. 1. The carrier frequency oscillator and the first balanced modulator. The 1N35 specified for CR1 and CR2 is a dual matched pair of diodes, each similar to the 1N34. A pair of Brimar GD4 diodes would be suitable provided their forward resistances were reasonably equal.

Additional refinements

It will be apparent from the photograph that the unit contains eight valves while only four have so far been mentioned. The exciter was originally built and operated using four valves but space was purposely left and holes punched in the chassis *prior* to wiring in order to permit future additions. The additional four miniature valves and their functions are:

* *Captain, U.S.N.*

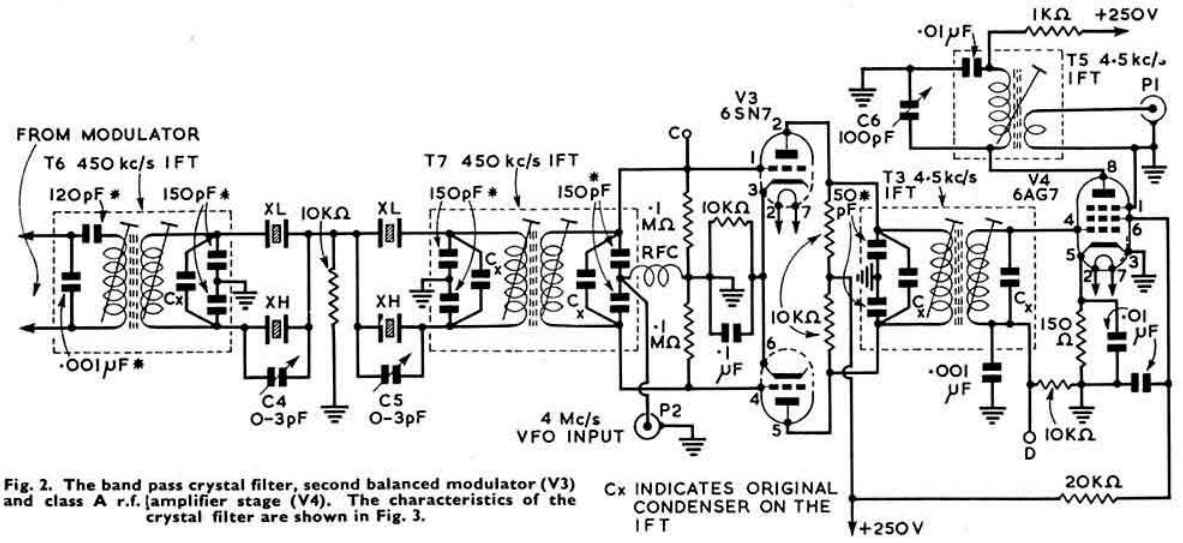


Fig. 2. The band pass crystal filter, second balanced modulator (V3) and class A r.f. amplifier stage (V4). The characteristics of the crystal filter are shown in Fig. 3.

6C4 Carrier reinsertion amplifier (V5).
12AX7 Speech amplifier (V6).
6C4 Heterodyne crystal oscillator (V8).
12AU7 Voice control amplifier (V7).

They add only to the *convenience* of operation of the exciter, not to its *performance*, and may be added at any time that their particular function is desired.

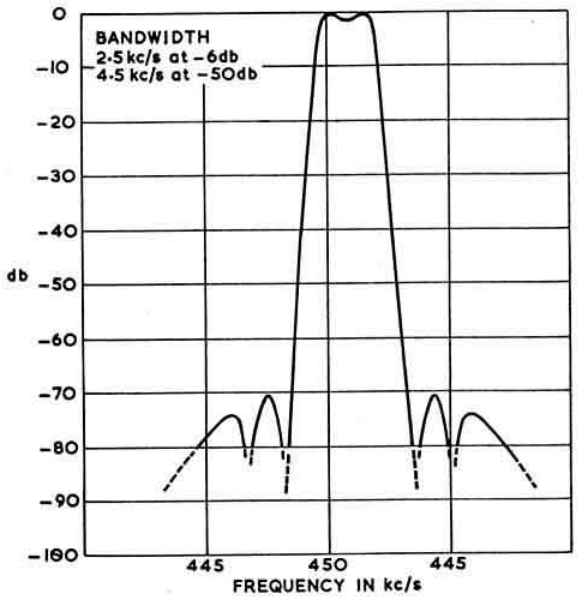


Fig. 3. Bandpass characteristics of the crystal filter in which XL is 450 kc/s (channel 43), XH is 451·85 kc/s (channel 44) and the slug tuned i.f. transformers are tuned to the centre of the pass-band. Crystals anywhere in the range 400 to 500 kc/s may be used as long as XH and XL differ by about 2 kc/s. L1, T2, T6 and T7 should of course be tunable to the filter frequency chosen. The steepness of the sides of the curve and the height of the side lobes are governed by the adjustment of C4 and C5 in Fig. 2.

Construction

Now let us briefly discuss the construction. The photograph and Fig. 5 show the physical layout. Strict copying is not necessary but the general arrangement should be followed; particular precautions should be taken to prevent r.f. leakage around the crystal filter. This is accomplished principally by placing the filter components in a straight line with the maximum distance between input and output, plus a little shielding. The cabinet used measures 12½ in. × 7½ in. × 7½ in., but, of course, any size which will hold the chassis will do.

Good quality components and solid construction are of prime importance in the carrier oscillator circuit because signal stability depends on it. L1 can be the primary of a 465 kc/s i.f. transformer (the secondary being removed.) C1, C2 and C8 should be good quality silver mica condensers and C3, an air di-electric variable condenser with well fitted bearings at each end. T2 is a 465 kc/s i.f.t. with half its secondary turns removed and the coupling increased by placing the two coils on the same axis and ¼ in. apart. Its secondary tuning condenser must be removed.

Crystal diodes CR1 and CR2 constitute the first balanced modulator. A balanced pair should be used here if available, otherwise get ten or so single diodes, such as the 1N34, test them with an ohmmeter which does not apply over 3 volts to the crystal and utilize the two whose characteristic resistances

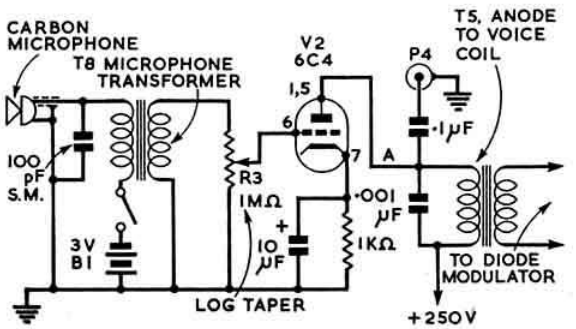


Fig. 4. Speech amplifier for use with a carbon microphone.

are most nearly alike. (Good average values are 800 ohms forward, 2 Megohms back resistance.) Be sure not to overheat the diodes during the process of soldering.

The filter is the heart of the circuit and should be given a little extra care in construction. Utilize slug tuned rather than condenser tuned i.f.t.'s (since this allows better balance of the circuit) and only *good* mica condensers in these transformers. (Use ceramic condensers in these tuned circuits only if you anticipate enjoying the job of retuning the fiter every time the temperature changes 5°.) In the writer's exciter, crystal XL is 450 kc/s and XH 451·85 kc/s. It is only necessary, however, that the crystals be in the range of about 400-500 kc/s and that XL be about 2 kc/s lower in frequency than XH. This frequency separation governs the pass band width. C4 and C5 are "gadget" condensers made by twisting together short lengths of 26 s.w.g. insulated wire, one about ½ in. the other about ¼ in. Their purpose is to give steep sides to the filter curve and to stagger the rejection notches.

T3 is in the output circuit of the second balanced modulator. It should require no internal doctoring unless it does not tune to the desired output frequency in the 80 metre band, in which case the value of the built-in condensers should be adjusted until the slugs allow tuning at the centre of their range of movement.

T4 in the output circuit of the 6AG7 r.f. amplifier (V4) should have all internal condensers removed as well as the original secondary, which should be replaced with about eight turns closewound with 26 s.w.g. d.c.c. wire, diameter ½ in., closely coupled to the cold end of the primary.

Alignment

The tune-up procedure will be facilitated by borrowing a grid dip oscillator and checking all tuned circuits to ensure that they cover the required frequency range. After checking the wiring and installing the valves, apply 6·3 volts to the heaters and 250 volts h.t.

Check the carrier oscillator for the correct frequency and for stable oscillation by listening to a harmonic on a receiver, then adjust the slug in L1 so that, with C3 set at mid-range, the carrier frequency is approximately in the centre of the filter pass-band for the crystals utilized. Now calibrate the C3 dial in kilocycles as accurately as possible, remembering that this size condenser will give about a 15 kilocycle spread.

Next, using a sensitive r.f. indicator (Fig. 6) connected from the mid connection of CR1 and CR2 to ground, adjust R1 and C7 for a null. Failure to get a null would indicate

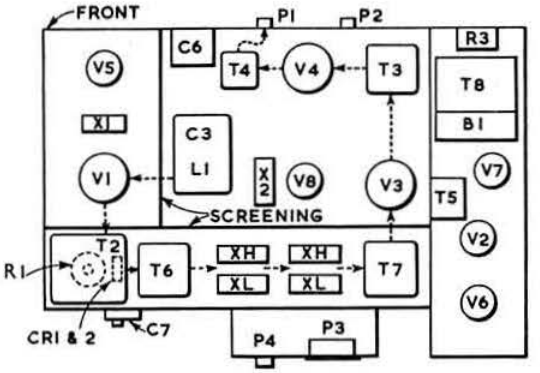
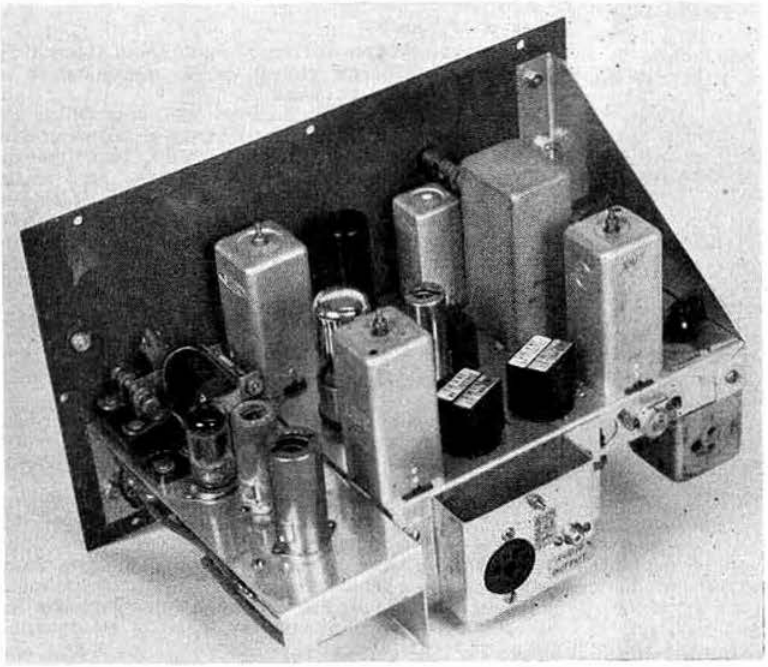


Fig. 5. Bottom view of the chassis showing the relative placement of the principal components. The larger of the two rectangular chassis holds the r.f. components, the smaller the a.f. components. Most of the parts shown (with the exception of R1, R3, T2, T5, T8, C6, P1, P2, P3, P4 and B1) are located on top of the chassis but are shown in this bottom view to facilitate understanding of the layout. The dotted lines with arrows indicate the line of flow of r.f. from the carrier oscillator circuit (V1, L1, C3) to the output terminal P1. P3 and P4 are mounted on a small angle piece which fits flush against a hole in the back of the cabinet to facilitate external connections, P3 being the power terminal and P4 the a.f. output for monitoring. Components not specifically described in this article but for which holes should be drilled in advance if it is desired to include them eventually are V5, 6C4 carrier reinsertion amplifier; V6, 12AX7 speech amplifier; V7, 12AU7 voice control amplifier and V8, 6C4 internal first heterodyne oscillator and its crystal X2.



Top view of the chassis. The components may be identified by referring to Fig. 5. V5, 6, 7 and 8 and the voice-operated relay are components which may be added later. Note the bracing to ensure rigidity.

that the components or layout of the modulator circuit are not symmetrical, as they should be.

With the carrier oscillator tuned to the midpoint frequency of the filter pass band, R2 temporarily shorted out, the filter crystals removed from their sockets and the r.f. indicator connected to one of the grids of V3, adjust the slugs of T6 and T7 for a maximum reading. Should the meter reading be insufficient, increase the coupling by temporarily connecting a condenser of 10 to 15pF across each XH socket.

Replace the four crystals in their correct sockets and tune the carrier frequency slowly over its range, observing the r.f. indicator meter. The bandpass characteristics shown in Fig. 3 should become evident and minor re-adjustments of the slugs and of C4 and C5 should be made to increase the r.f. reading, flatten the top of the curve and reduce the side lobes, if any, to greater than 50db down.

At this point, apply about 3 volts of

r.f. to the v.f.o. input socket P2. Connect the r.f. indicator to the anode of V4 and adjust the T3 slugs for a maximum reading. Now connect the r.f. indicator across the output connector P1 and adjust the T4 slug and C6 for a maximum reading with C6 at about mid capacity. Touch up the tuning of bandpass filter, T3 and C6. Remove the temporary short from around R2.

While talking in a normal tone of voice into the microphone, adjust the audio volume control R3, until an average peak audio voltage of about 4 volts appears across the secondary of T5. Adjust the carrier frequency by means of C3, to a point corresponding to about 25 db down the low frequency side slope of the filter characteristic curve (449·2 kc/s in the case of the crystals chosen) for the upper sideband. If the lower sideband is desired, set the carrier frequency 25 db down on the high frequency slope (452·5 kc/s in our case).

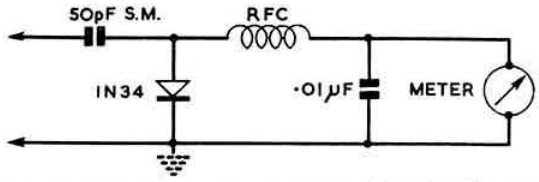


Fig. 6. The r.f. indicator. Meter M can be a 0-1 mA. milliammeter or a multimeter switched to its most sensitive range. A valve voltmeter would of course be ideal as an indicator.

The tune-up procedure is now completed. Normal "loudness" speech into the microphone should produce corresponding r.f. voltage peaks at the output terminals, but with no speech input there should be no measurable output voltage.

Loud speaking or a little too much audio gain will not degrade the signal because the crystal filter will not pass the spurious sidebands caused by overmodulation of the carrier.

After the optimum carrier frequency setting has been established by monitoring the s.s.b. signal on a receiver or by means of reports during reliable QSOs, additional signal stability may be attained by edge-grinding a crystal to that *exact* frequency and inserting it as X1. This however is a refinement which is not at all necessary if the carrier oscillator has been constructed with reasonable care.

* * *

Later articles will describe a heterodyne frequency converter for s.s.b. operation on other bands and the improvements to the basic exciter mentioned earlier.

B.B.C. U.H.F. Transmissions

EARLY in November the B.B.C. began a series of test transmissions on 654·25 Mc/s to collect propagation data relating to the u.h.f. bands (Bands IV and V) which were allocated to television at the International Radio Conference at Atlantic City, 1947, but are not so far used for this purpose. The pictures are the same as those radiated by the Band I transmitter installed in the same building. Later on, the pictures on 625 lines will be produced at Lime Grove from flying spot telecine equipment supplied by Cinema-Television Ltd., and sent over a specially equipped co-axial cable to the Crystal Palace.

At the request of the Television Advisory Committee the B.B.C. decided early this year to embark on a more ambitious series of experiments using a high power transmitter and radiating full television signals, initially on 405 lines and later on 625 lines (C.C.I.R. standards). These tests have been planned in co-operation with the Committee and the Radio Industry.

Technical Details

The B.B.C. has installed at the Crystal Palace a 10 kW peak-white u.h.f. vision transmitter and a 2½ kW carrier power sound transmitter manufactured by E.M.I. Electronics Ltd., the vision frequency being 654·25 Mc/s. The equipment is low-power modulated on both sound and vision channels and employs Eimac 3K50000LF klystrons in both audio and video final stages. These klystrons use three external cavity resonators and operate as linear amplifiers with a power gain of approximately 100. They are driven by a modulated amplifier stage operating with a cathode modulated circuit. The output of the transmitters is combined in a circuit of the filter bridge type constructed in rectangular section waveguide. The combined output is then conveyed to the aerial by an elliptical waveguide having dimensions of 12 in. × 6 in. The elliptical waveguide is made of 99·5 per cent aluminium in 12 ft. lengths. At the top of the television mast the waveguide is transformed into a 5 in. concentric feeder to take power to the four driving points of the helical aerial, the pole supporting the aerial being arranged to form the outer of the concentric feeder.

The helical aerial made of ½ in. diameter copper rod comprises four bays, mounted one above the other on the same vertical axis, each having a linear height of five wavelengths. Each bay is fed at the centre, the helix being wound from the centre point of the bay in opposing directions to cancel the vertical component of radiation. In the four bays there is a total of 48 turns, each turn being approximately two wavelengths long. The aerial is mounted at the summit of the Crystal Palace tower, the top of the 6½ in. diameter pole supporting the aerial being 707 ft. above the ground, while the centre line of the aerial is 691 ft. above the ground. The aerial has a power gain of 20 and after allowing for losses in the feeder and waveguide system, the effective radiated power of the vision signal is of the order of 125 kW peak-white in the horizontal plane. Provision is made for de-icing the aerial by electrical heating.

Duration of Tests

The tests on 405 lines will continue until about March 1958, when there will be an interval for the transmitter to be adjusted to radiate on 625 lines.

The B.B.C., the Radio Industry, the Post Office, the D.S.I.R. and the I.T.A. are organising comprehensive studies of the received pictures. The B.B.C. hopes that the information which will be gained will throw light on the problems which would be encountered were it decided to provide television services in the u.h.f. bands and the effects of a change of U.K. television standards for those bands to conform with those used on the Continent. There is of course no intention of making any change in the 405-line standard used for B.B.C. television in Band I.

"Fun with Radio"

GILBERT DAVEY, whose talks during B.B.C. Children's Television are well known to the younger generation, is the author of a new Edward Ward publication entitled *Fun with Radio*.

Written in straightforward, simple language for the modern, practically minded boy it describes the construction of a variety of radio receivers including a crystal set, 3-valve mains portable and 5-valve superhet, in addition to short-wave receivers, a simple hi-fi amplifier, and a bicycle radio.

Bound in a stiff board cover with an attractive jacket *Fun with Radio* can be obtained from R.S.G.B. Headquarters price 10/6 (postage 9d.).

SPUTNIK I

The Russian Earth Satellite

By G. M. C. STONE (G3FZL)*

R.S.G.B. I.G.Y. Co-ordinator

WITHOUT doubt the most spectacular event of the International Geophysical Year has been the release of the U.S.S.R. Earth Satellite, known as *Sputnik I*. It is a major scientific achievement which will be remembered long after the I.G.Y. has been forgotten.

In the past month very intensive work has been undertaken in connection with tracking, orbit prediction, visual observations (of the rocket vehicle only) and ionospheric propagation. The mere existence of a radio transmitter which is outside the ionosphere produces a tool of immense value in radio propagation study.

The Satellite Orbit

The satellite was launched by a rocket which reached an altitude of several hundred kilometres. The projecting of the rocket was so arranged that the satellite could be released horizontally at a velocity of about 8,000m per second. The satellite then commenced to orbit the Earth and this orbit has been studied by scientific groups all over the world. The work in this country is being co-ordinated by the Royal Society and is being carried out at several Government Research Establishments, Cambridge University (Mullard Laboratory), Jodrell Bank and by amateur groups organized by the British Astronomical Association and the Radio Society of Great Britain.

According to the Royal Aircraft Establishment, the satellite's height over the British Isles varies between 125 nautical miles (evening transits) and 245 nautical miles (morning transits). The difference is due to the satellite's elliptical orbit; the perigee of the ellipse occurs at a latitude of 44° N., where the height is only 120 nautical miles. The maximum height reached (at the apogee) is about 520 nautical miles at latitude 44° S. and the orbit is inclined at approximately 64½° to the equator.

The time taken to complete one orbit is slowly decreasing by about 2 seconds per day because of atmospheric drag; on Sunday, October 13, the orbit was 95 minutes 54 seconds while by the following Tuesday it had decreased to 95 minutes 50 seconds. (Note that as the satellite falls towards the Earth the path length is reduced and hence the time to cover that path is also reduced.)

The reduction in the orbital time indicates that the mean height of the satellite is decreasing. At present this will have little effect on the minimum height, but it means that the maximum height must be decreasing by about 2 miles per day. This rate of contraction of the orbit is rather slower than would have been predicted on the basis of currently accepted estimates of air density at these great heights. It would appear to agree with statements made by the Russian scientists that the air density must be lower than had been thought. This uncertainty about atmospheric density prevents any reliable estimate being made of the likely future of the satellite.

Because the earth is flattened at the poles, the plane of the orbit rotates about the earth's axis. The estimated rate of recession of the nodes is 3·2° per day to the west.

These results have been obtained by a large number of radio doppler observations and also by the use of radio interferometers. The precise calculation of the satellite's path from such observations is complex since the curvature and rotation of the Earth must be taken into account.

The weight of the satellite has been reported by the Russians as about 184 lb. and this figure is considered to be correct.

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Radio Equipment in the Satellite

Much information regarding the radio equipment in *Sputnik I* was published in the Russian magazine *Radio* in June 1957. Two transmitters are carried which radiate on 20·005 and 40·01 Mc/s respectively. Estimates based on field strength measurements made in this country suggest that the radiated power is of the order of 1-5 watts on 20 Mc/s and 100 mW on 40 Mc/s. A harmonic signal can also be detected on 80·02 Mc/s.

The rotation of the satellite itself appears to be about seven revolutions per minute. It was intended that the radio aerials should be circularly polarised so that little fading should be experienced on the ground. In spite of this fading can still occur when the plane of attachment of the aerials to the satellite is directed at the receiving point and perpendicular to the plane of polarization of the receiving aerial. The satellite transmitter should operate from its batteries for an estimated three to four weeks.

Telemetering information is contained in transmitter coding which consists of impulses of duration from 0·05 to 0·7 seconds. The transmitters radiate alternately, the mark time of one corresponding to the space time of the other. It is believed that the only information transmitted has been concerning temperature. The switching apparatus developed a fault soon after launching and for the majority of the time the satellite has been radiating on both 20 and 40 Mc/s simultaneously. Although this means the loss of telemetering data, nevertheless a c.w. signal is in fact more useful for the doppler and interferometer results mentioned below.

Radio Doppler Measurements

Doppler effect is the apparent shift in frequency of a transmission made from a moving body. The shift is dependent upon the frequency and also on the velocity of the body compared with, in the case of radio waves, that of light. Doppler effect is known to all when applied to sound waves. It is particularly noticeable when an express train passes an observer. As the train approaches, the frequency of the whistle is higher and as it passes changes to a lower frequency. The *rate of change* of frequency depends upon the distance of the observer from the track.

With reference to Fig. 1; assume a body containing a radio transmitter is travelling at velocity v and radiating on a frequency f. The curves show how the doppler shift will vary with respect to time according to the distance from the observer to the track d. Thus, by measuring the rate of change of frequency about the point O it is possible to determine the distance d.

In the case of the satellite this distance d is the slant range and if this is measured for a number of orbits, the resulting slant ranges may be plotted against orbit number and the minimum determined. From this it is possible to estimate the altitude. Fig. 1 assumes a body moving over a flat plane. In fact the satellite has an elliptical orbit over a curved earth and thus altitude and track calculations are very complicated. Typical measured values of doppler shift have been 978 c/s on 20 Mc/s and 1860 c/s on 40 Mc/s.

Radio Interferometer Measurements

A radio interferometer aerial is the type used for radio astronomy observations. Such an aerial has a radiation pattern of several lobes directed vertically from the earth which may be likened to the pages of an opened book. As

the lobes are sharp, it is possible to time the satellite transverse accurately and thus determine the total orbit time. By use of two sets of aerials at right angles, accurate positional data can be obtained. The Cambridge array is made up from two separate 40 Mc/s aerials spaced four wavelengths apart in an east/west direction.

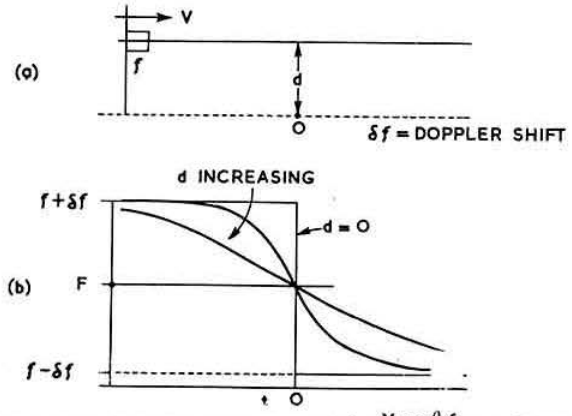

Fig. 1. Derivation of doppler shift curves. $\delta f = \frac{V \cos \theta . f}{C}$ where δf is the Doppler shift in c/s, V is the satellite velocity, C the velocity of light and θ is the angle of elevation from the point O to the satellite, i.e., $\theta = 0$ when $d = 0$

Purpose of Orbit Measurements

To obtain data on ionospheric radio propagation and air density it is essential to know the track accurately. The most accurate methods of doing this are visual. However, as the satellite is extremely small, being about 23 in. in diameter, it is necessary to use powerful telescopes for observation. Such telescopes must be accurately positioned as their field of vision is very limited and the time when the satellite will be in view must be known since such telescopes are cumbersome to move.

Thus on the release of a satellite the drill is firstly to obtain orbit data by doppler means, to make extremely accurate orbit transit time measurements using interferometer methods, to calculate the orbit so accurately that predictions can be made and finally to use visual sighting methods using telescopes. Extremely accurate visual measurements are possible if the satellite position is noted at a particular time compared with known constellations and stars. Such visual observations are only possible at twilight when the satellite is illuminated by the sun's rays and the surface of the earth is in darkness.

Radar Measurements

The satellite is such a small object that it is not possible for normal radar equipment to plot its position. However the large radio telescope reflector at Jodrell Bank can be used in conjunction with a suitable aerial and radar equipment to obtain echoes from the satellite and its companion rocket. Mr. S. A. C. Howell (G5FN) was fortunate enough to attend the Press Conference given by Prof. Bernard Lovell at Jodrell Bank on October 12. He was one of the many that witnessed the display of the radar echoes from both the rocket and the satellite.

Ionospheric Measurements

It is possible to compare signals received on 20 Mc/s and 40 Mc/s and also to note the rates of fading, polarization and other phenomena. Such data can be used to give information on the nature of layers in the ionosphere and total electron density between the satellite and an observer. Such measurements have never before been possible.

Certain peculiar characteristics have been observed. The 20 Mc/s signals have been received well beyond the horizon and there have been unexpected precursive signals associated with each orbit. A possible explanation of these signals is shown in Fig. 2. Extreme range signals have also been received on 40 Mc/s when the satellite has been over India. These signals have been received around 3 to 3.30 in the afternoon and may be due to trans-equatorial scatter or other modes of propagation well known to amateurs who operate in the 50 Mc/s band.

What Can the Amateur Do?

This brief description of data measuring methods shows the means by which our knowledge may be bettered by satellite experiments. It is important to know how the amateur can assist scientific bodies by supplementing their data. Unfortunately it is essential to use pen recording apparatus to determine fading rates and field strength variations whilst the satellite is within the horizon. Doppler measurements are not difficult provided that the satellite signal is heterodyned against a stable source through a sensitive communications receiver and the resulting beat frequency measured using an accurately calibrated audio oscillator and oscilloscope.

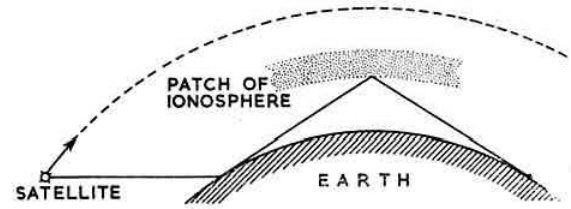

Fig. 2. Beyond-the-horizon propagation on 20.005 Mc/s.

However, it is not necessary to obtain such doppler readings from a large number of different places. It is sufficient to have say several centres in the U.K. concentrating on this aspect. As indicated above, such measurements are only necessary in the early stages of a satellite release to enable more accurate methods to be employed. The R.S.G.B. is collaborating with the British Astronomical Association (Radio) Group and has established a number of doppler groups for this purpose.

However, there is an extremely valuable observation that even an isolated amateur can make regarding the reception of signals from beyond the horizon. Such signals are seldom above noise level and therefore pen recording apparatus is ineffective. The human ear, especially one accustomed to hearing weak signals, provides the only effective way of receiving such signals. Therefore an I.G.Y. study group who will concentrate on this work has been formed.

It is essential to use equipment of the utmost stability and minimum band width and a suitable approach may be to modify surplus R.F. Units 24 or 25 to receive on 20·005 and 40·01 Mc/s respectively. Such modifications are described in this issue (see page 223). Observations should be intensified at the times of Regular World Days and Special World Intervals when all other I.G.Y. observations are intensified.

Readers interested in joining in this weak satellite signal reception project (including those overseas) are asked to write to R.S.G.B. Headquarters and arrangements will be made accordingly. Observers already registered need not write and will receive a data sheet in due course. The information will be collected and passed on to a suitably situated centre which is being used for the collection of satellite data supplied by amateur groups of the British Astronomical Association and the R.S.G.B.

It is important to emphasize that overhead reception reports are of little value unless accurate measurements of

field strength can be made. For this work it is necessary to know orbit predictions and these have so far been published in the *Daily Telegraph*. GB3IGY will also be used as far as possible for this purpose.

Flash—Sputnik II

The above preparations were in course of implementation when the news of the release of Sputnik II arrived on Sunday, November 3. R.S.G.B. and B.A.A. Doppler groups were alerted at about 10.30 a.m. and a control centre established at the home of G3FZL. Successful Doppler results were obtained from G3ENY at Bridgnorth, the R.A.F. Amateur Radio Society at Locking and G3GDR at Watford. The Wirral Amateur Radio Society under G2HOF organized a communications centre in Liverpool in preparation for receiving results from the north but groups in Penrith, Glasgow and Dunfermline were not quite ready. The London communications were handled by G2FKZ, G3IIR and G3FZL. Full story next month.

Other I.G.Y. News

The first full month of regular reporting has now been completed and co-ordinated returns have been received from most Area Activity Co-ordinators. The general standard of reporting has been extremely high. This is most gratifying as a very considerable amount of work was put into the preparation of the data sheets which have been distributed to all regular and casual observers.

The final task before the distribution of the data sheets was the assembly of all the individual data sheets together into covers, their sealing into envelopes with covering letter and the addressing and posting. This task was carried out by G2AHL and his wife, G2FKZ, G3FZL and YU1KG who happened to call in at Headquarters on the morning of Saturday, September 21, for some information on television interference problems. He assisted all day with the big job, returned to the QTH of G3FZL for a 2m session and supper and finally stayed the night with G2FKZ!

New Projects

Apart from the satellite tracking observations it is hoped to add a regular programme of reception reports of WWV on 20 Mc/s. It has been found that the signals from WWV vary greatly with solar activity and provide a useful comparison to determine the extent of solar outbursts. Details will be circulated to all holders of the Data Sheets.

New Observers

Still more observers are required especially in Scotland, Wales, South-West England and Northern Ireland. Offers of assistance from listeners and transmitters alike would be welcomed and should be sent to R.S.G.B. Headquarters marked " For the attention of the I.G.Y. Co-ordinators."

Crystal Controlled Converter for 10 and 15 Metres

Simple Modification of the RF24 Unit

By E. W. YEOMANSON (G3IIR)*

MANY communications receivers in use by amateurs, particularly those of ex-service origin, do not cover the popular 21 and 28 Mc/s bands, while the performance of those which do generally compares unfavourably with that on the lower frequencies. The most satisfactory solution is to use a crystal controlled converter with the main station receiver as a tunable first i.f. In this way, the tuning mechanism, calibration, selectivity and other facilities of the main receiver can be combined with the excellent stability and signal-to-noise ratio of the converter to provide reception of a high order.

The converter described in this article is based on a suggestion made by G. M. C. Stone (G3FZL) and is a simple modification of the RF24 Unit, available quite cheaply from BULLETIN advertisers. The oscillator section is re-wired for crystal control and the r.f. and mixer stages aligned for optimum performance.

First, all the oscillator components mounted above the chassis are stripped out and an extra switch wafer fitted to select the correct crystal (8 Mc/s for 10m reception and 8·5 Mc/s for 15m). The oscillator section is then re-wired as shown in Fig. 1. Four turns should be removed from the primary of the injection transformer mounted on the screen below the chassis between the oscillator and mixer stages.

All r.f. and mixer fixed padders and damping resistors should be removed with the exception of the padders on position 1, and 20 more turns wound on to the i.f. output coil in the anode circuit of the mixer valve. Care should be taken to wind the additional turns in the same direction as the original coil. The damping resistor should be left in position. The coil is then peaked at 4·5 Mc/s by means of its iron dust core which can be reached through a hole in the side of the chassis. The coil should be connected by co-ax to a co-axial socket mounted on the front panel.

The appearance of the converter can be improved by fitting a new panel and giving the whole unit a coat of grey paint.

Alignment

The trimmers across the oscillator anode coil should be adjusted so that 24 Mc/s output is obtained with the 8 Mc/s crystal in use, and 17 Mc/s with the 8·5 Mc/s crystal. These oscillator frequencies make the tunable first i.f. 4 to 4·45 Mc/s for the 21 Mc/s band and 4 to 6 Mc/s for the 28 Mc/s band.

The mixer and r.f. stages are aligned as follows:

Switch Position 1 (21 to 21·45 Mc/s): adjust trimmer 1 in each section at 21·2 Mc/s.

Switch Position 2 (28 to 28·5 Mc/s): adjust trimmer 2 in each section at 28·5 Mc/s.

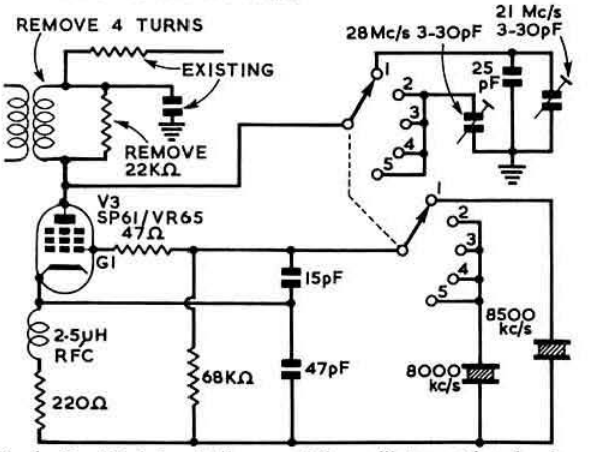

Fig. 1. Simplified circuit diagram of the oscillator section showing the alterations to be made to provide crystal control. The third harmonic of the 8 Mc/s crystal is used for 10m reception and the second harmonic of the 8·5 Mc/s crystal for 15m. If the converter is to be used for receiving satellite signals on 20·005 Mc/s, position 5 should be wired as described in the text.

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Switch Position 3 (28·5 to 29 Mc/s): adjust trimmer 3 in each section at 28·75 Mc/s.

Switch Position 4 (29 to 29·5 Mc/s): adjust trimmer 4 in each section at 29·25 Mc/s.

Switch Position 5 (29·5 to 30 Mc/s): adjust trimmer 5 in each section at 29·7 Mc/s.

A 20pF variable condenser can be wired across the wiper of the switch in the r.f. section and earth and used as an aerial trimmer. However, it may then be necessary to remove two turns from the r.f. coil.

Satellite Tracking

Members who wish to employ the converter for tracking the Russian satellites should use position 5 of the switch, as the range 29·5 to 30 Mc/s is least likely to be used for communications purposes. Position 4 will, in any case, provide reception over this range, though with somewhat reduced efficiency.

For reception on 20·005 Mc/s, position 5 should be wired so that the 8 Mc/s crystal is in use and sufficient capacity switched in to enable the second harmonic (16 Mc/s) to be employed as injection to the mixer. The r.f. and mixer stages should of course be peaked on 20·005 Mc/s.

Performance

The unit should be connected to the main receiver with a short length of co-axial cable. As with all converters, this is essential to prevent break-through.

In use, it will be found that the r.f. stage is fairly broad but switching to the correct r.f. position will considerably improve the gain.

The writer's converter was used for 10m and 15m reception at GB3RS/A throughout the Radio Hobbies Exhibition and gave excellent results.

G.P.O. Radio Amateurs' Examination

CANDIDATES who sat for the G.P.O. Radio Amateurs' Examination on Saturday, October 5, 1957 were required to answer all four questions in Part 1 and four of the six questions in Part 2 of the paper. A copy of the paper is set out below. The maximum number of marks possible is shown against each question. Of the 88 candidates who sat for the examination, 67 (76%) passed.

Part 1.

1. Licensing conditions:
   (*a*) State what kinds of transmission are prohibited,
   (*b*) State the requirements in respect of the use of crystals for frequency control and/or measurement. When should the transmitter frequency be checked?
   (*c*) Say what precautions you would observe when operating within the following bands and why; 7-7·3 Mc/s.* 144-144·5 Mc/s and 1·8-2·0 Mc/s. (*15 marks*)

2. Draw a diagram of a simple valve oscillator incorporating inductive anode-grid feedback, with provision for microphone modulation. Explain its action and say what modification would be advisable for actual operation. (*15 marks*)

3. What is meant by " over modulation " and " harmonics "? Describe how these could arise and how they may be minimized in practice. (*15 marks*)

4. Describe a satisfactory method of ensuring frequency stability in a transmitter, and, Sketch and describe a wavementer which would be capable of verifying that your transmitter is operating within the required tolerance. (*15 marks*)

Part 2.

5. Sketch and describe the construction of an electrolytic capacitor. Why should this type not be used on a.c. supplies? What factors determine the capacity of a capacitor? (*10 marks*)

6. (*a*) Calculate the reactance of a coil of two Henries inductance at the frequencies of $\frac{100}{\pi}$ c/s and $\frac{100}{\pi}$ kc/s

   (*b*) How would the reactance be affected in each case if the resistance of the coil is 300 ohms? (*10 marks*)

7. Describe the propagation of radio waves of *Medium* and *High* frequency. Say why reception may vary with the time of day and night over a given distance. (*10 marks*)

8. Draw a circuit diagram incorporating a double-diode-triode valve and explain its action fully. (*10 marks*)

9. Differentiate between the mixer stage and the b.f.o. stage of a superheterodyne receiver by describing how each stage functions. (*10 marks*)

10. Describe the construction of a simple directional transmitting aerial for transmitting in the 70 Mc/s band and show by sketches and component values how such an aerial should be matched to the transmitter output stage. (*10 marks*)

** Members are reminded that the 7 Mc/s Amateur Band is now from 7,000 kc/s to 7,150 kc/s with the first 100 kc/s exclusively assigned to the Amateur Service.—Editor.*

Bulletin Advertisers

MEMBERS are advised that the Society's Advertisement Manager can only intercede on their behalf if complaints of poor service, etc. are brought promptly to his notice.

Recently Mr. Freeman was asked to intercede on behalf of a member who had accepted delivery of a component in September 1956 but did not test it until March 1957. On test the component proved to be defective.

Trade Winds

Mr. J. Elliott (G3IIU) has joined the Sales Dept. and Mr. J. Loader (G3HVO) the Technical Dept. of **Panda Radio Co. Ltd.**

Slow Morse Practice Transmissions

B.S.T.	Call	kc/s	Town
Sundays			
09.00	G3GYV	1900	Hartford, near Northwich
09.30	G3BKE	1900	Newcastle-on-Tyne
10.15	G3FBA	1910	Bath
10.30	G3GZB	1930	North London
11.00	G2FXA	1900	Stockton-on-Tees
12.00	G3LP	1850	Cheltenham
12.00	G3KAN	1850	Northampton
12.00	GI5UR	1860	Belfast
15.00	G3LGK	1850	Ilkeston, Derby
20.30	G3HTA	1850	Exeter
21.00	G2FIX	1812	near Salisbury
Mondays			
18.30	G3NC	1825	Swindon
19.00	G3KTP	1850	Heanor, Derby
19.00	G3LMT	1850	Exeter
20.30	G3LSF	1900	Southport
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tee
20.00	G2FCI	1850	Exeter
21.00	G3EFA	1855	Southport
21.45 †	G3ETP	1875	Lowestoft
Wednesdays			
18.30	G3GCY	1830	R.A.F., Dishfort
19.00	G3HUB/A	1902	Chelmsford
19.00	G3RQ	1850	Chesterfield
21.00	G3HWI	1987	Blackburn, Lancs
21.00	G3LNS	1900	Birmingham
Thursdays			
18.30	G3NC	1825	Swindon
20.00 †...	G2ABR, G3FCY, G3GWT, G3KTO	1919	Hull, Yorks
21.00			
20.30	G3GDZ	1910	Kingsbury, N.W.9
20.30	G3JQM	1878	Barwick, Yeovil
21.30	G3HMY	1850	Exeter
Fridays			
19.30	G3FUA	1850	Kilburn, Derby
20.00 †	G2FNI, G3EGX, G3ERB	1875	Wirral
20.30	G3ICX	1915	Sutton Coldfield
21.30 †	G3KLZ	1860	Bradford
	G3INW (or G3KSS)		Bradford
	G3KEP		Bingley
22.00	G3KYU	1859	Bournemouth
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
21.00	G3HWI	1987	Blackburn, Lancs

† *Alternately.*

Annual Report of the Council

THE Report which follows deals with the work of the Society during the year ended June 30, 1957, and covers major activities only. A Supplementary Report covering the period from July 1, 1956, to the early part of December 1956, was submitted to the Annual General Meeting held on December 14, 1956. A further Supplementary Report covering a similar period for the current year will be presented to the Annual General Meeting on December 13, 1957.

Membership

For the first time since 1948 an increase in membership over the year can be recorded. The nett gain amounted to 393, compared with losses of 57 in 1956, 1,576 in 1955, 1,455 in 1954, 435 in 1953, 509 in 1952, 889 in 1951, 1,015 in 1950 and 401 in 1949.

As at June 30, 1957, the total membership was 8,495 compared with 8,102 a year earlier.

The following table compares the number of members in each grade over the past two years:

	1956	1957	*Gain or Loss*
Corporate Members			
Licensed	5,141	5,490	+349
Not Licensed	2,714	2,710	— 4
Associates	247	295	+ 48
	8,102	8,495	+393

Once again an analysis has been made to ascertain the number of members who are licensed to operate an Amateur Radio station. This shows that 64.6 per cent of Corporate members are licensed amateurs and 32 per cent do not hold a licence. The percentages last year were 63.4 and 33.6 respectively.

Details of the analysis compared with 1956 follows:

	1957		1956	
Corporate Members (Licensed)				
Country	3,429		3,324	
London	1,149		1,139	
Overseas	912		678	
		5,490		5,141
Corporate Members (Not Licensed)				
Country	1,764		1,817	
London	764		719	
Overseas	182		178	
		2,710		2,714
Associates				
Country, London and Overseas		295		247
		8,495		8,102

The Council records special thanks to Mr. J. D. Kay (G3AAE) for his efforts in connection with the drive for new overseas members. During the year Mr. Kay wrote to 431 overseas amateurs who had been contacted from his station and during that time 80 of them applied for membership. It will thus be seen that Mr. Kay alone was responsible for one-third of the nett increase in the number of overseas members who hold a transmitting licence.

As at June 30, 1957, 7,546 United Kingdom Amateur Radio licences were in force compared with 7,402 a year earlier, 7,384 in 1955, 7,624 in 1954 and 7,718 in 1953. At the same date 395 mobile licences were in force.

At the end of the year under review approximately 60 per cent of all U.K. licence holders were members of the Society, a similar percentage to that recorded a year earlier.

The task must now be to build up still further the membership of the Society. The example shown by Mr. Kay should serve as an inspiration to other members to help forward the membership drive.

R.S.G.B. Bulletin

Volume 32 of the Society's Journal ran to 580 pages, an average of just over 48 pages per issue compared with the 544 pages that comprised Volume 31. Volume 31 was, however, affected by a dispute in the printing industry.

The technical standard was again reasonably well maintained with contributions covering a wide range of subjects. Unfortunately the number of outstanding technical articles was smaller than in recent years, with the result that the Council decided, on the advice of the Technical Committee, not to award the Norman Keith Adams Prize or the Louis Varney Trophy for the year 1957. The Bevan Swift Memorial Prize was awarded to Mr. B. J. Rogers (G3ILI) for his description of a 144 Mc/s Single Sideband Exciter.

Monthly commentaries were contributed by Mr. F. G. Lambeth (G2AIW) (" Four Metres and Down "), and Mr. S. A. Herbert (G3ATU) (" The Month on the Air "). Mr. J. D. Kay (G3AAE) continued his monthly Frequency Predictions to which he added DX Television Predictions.

Mr. M. W. S. Barlow, M.A. (G3CVO), Mr. H. F. Knott (G3CU), and the Deputy General Secretary (Mr. J. A. Rouse, G2AHL) contributed occasional commentaries on Amateur Television, Single Sideband Operation and Mobile Operation respectively.

Bulletin Advertisers

Increased production costs necessitated an increase in advertising rates and the Council records its thanks to all who supported the Society's publications by taking advertising space.

The 70 Mc/s Band

The G.P.O. announced in November 1956 that United Kingdom amateurs, other than those living within a radius of 50 miles of Jodrell Bank Observatory, Cheshire, were to be allowed to use the band 70·2-70·4 Mc/s up to December 31, 1958. This concession came after many months of negotiations between the Society and the G.P.O.

As a result of the lead given by the R.S.G.B. a number of other European National Societies succeeded in obtaining permission for the amateurs of their respective countries to operate on frequencies in the 70 Mc/s Band.

Already long distances have been worked on this band—the present record standing to the credit of Mr. K. E. S. Ellis, G5KW (Well Hill, Kent) and FA3JR (Oran, Algeria).

TVI Policy

The G.P.O. announced in November 1956 that it had modified its policy in respect of television interference. The new policy means that an amateur may, after a period of one month has elapsed from the time a complaint of TVI has been investigated by the G.P.O., carry on his activities during television hours if it can be shown that the interference is capable of being cleared by means of a simple high pass filter in the complainant's receiver.

Intruders

The presence of broadcasting and commercial stations in bands assigned exclusively to the Amateur Service has again created difficulties.

The Council gratefully accepted an offer made by Major D. W. J. Haylock (G3ADZ) to organize an " Intruder Watch." The members of the Watch regularly monitor the amateur bands and their reports on persistent intruders are sent to the G.P.O.

Radio Amateur Emergency Network

Following discussions between representatives of the Radio Society of Great Britain, the British Red Cross Society and the G.P.O., the Postmaster General announced in August 1956 that members of the Radio Amateur Emergency Network would, in future, be permitted to handle third party messages in conditions of emergency or during officially sponsored exercises. Later in the year the permission was extended to allow members of the Radio Amateur Emergency Network to co-operate in a similar way with the St. John Ambulance Brigade.

The Council records its thanks to the Chairman (Lt. Col. A. C. Dunn, G2ACD), the Vice-Chairman (Dr. A. C. Gee, G2UK), the Honorary Secretary (Mr. C. L. Fenton, G3ABB) and other members of the R.A.E.N. Committee for their work in connection with the Network. The Council also records its thanks to the ordinary members of the Network for the part they have played in helping to build up an important Emergency Communications organization. Fortunately no serious emergency has arisen to test the resources and skill of the Network, but the Council is confident that should an emergency arise members will not be found wanting.

News Bulletin Service

The News Bulletin Service, introduced in September 1955, has been continued without a break notwithstanding the fact that on some occasions there has been a dearth of topical news contributed by the membership. Responsibility for the transmission has been undertaken in the main by three members of the Council, namely, Mr. F. Hicks-Arnold (G6MB) and Mr. A. O. Milne (G2MI), in the London area, and Mr. W. R. Metcalfe (G3DQ), in Yorkshire. Others who have helped to maintain the service are Mr. Leslie Cooper (G5LC), in London, and Messrs. Hargreaves (G5VO) and J. W. Swinnerton (G2YS) in Yorkshire.

During the period covered by this Report the bulletins were transmitted on 3·6 Mc/s but recently the service was extended by transmissions in the 7 and 144 Mc/s bands.

V.H.F./U.H.F. Activities

V.H.F./U.H.F. activities reached a high level during the year when many long distance contacts were established. An outstanding performance stands to the credit of Mr. R. Rew, G3HAZ (Birmingham) who, on June 19, 1957, worked Mr. F. Herbst, DL3YBA (near Hanover) for a new world record on 70cm.

As the result of discussions between the Society and the G.P.O. the P.M.G. agreed during the year to extend the 1215-1300 Mc/s band up to 1325 Mc/s. The concession allows amateurs to operate on harmonically related frequencies in the 144, 420 and 1250 Mc/s bands.

The success of the U.H.F. Dinner in January 1956, and of the V.H.F./U.H.F. Convention in May 1956 encouraged the Council and the London U.H.F. Group to arrange similar functions during 1957. Both events were well supported, the latter attracting v.h.f. enthusiasts from several European countries.

During April 1957 the Society's V.H.F. Manager (Mr. F. G. Lambeth, G2AIW), attended a meeting in Paris of Region I V.H.F. Managers. An account of their deliberations was published in the Society's Journal.

The Council records its thanks to Mr. Lambeth for his most valued services to the Society both as V.H.F. Manager and as contributor of the v.h.f. column to the Society's Journal.

Frequency Measuring Tests

During the winter months Mr. W. N. Craig, B.Sc. (G6JJ) organized, with the approval of the Council, a short series of frequency measuring tests. Although support was not as great as had been anticipated the standard of measuring reached a high order of accuracy. It is hoped to revive the tests at a later date.

Mr. Craig is thanked for his interest in this important aspect of Amateur Radio work.

Exhibitions

The Society was represented at the 1956 National Radio Show, Earls Court. Features of the stand included a demonstration of receiver construction by an Associate member of the Society, and a film of Amateur Radio activities prepared by the Society's Hon. Film Curator (Mr. L. S. Gillham). About 60 members joined the Society during the period of the Exhibition. The organisation of the stand was undertaken by the Exhibition Committee (Chairman, Mr. C. H. L. Edwards, G8TL), while Mr. F. F. Ruth (G2BRH) acted as Stand Manager.

In January 1957 the Society took space at the Schoolboy's Own Exhibition at the Horticultural Halls, London, but the success of the venture was limited by the fact that the vast majority of the young people who visited the exhibition did not appear to be interested in scientific hobbies. Mr. Ruth again acted as Stand Manager.

Three provincial centres were invited to undertake the organisation of a National Amateur Radio Exhibition during 1956, but declined for various reasons. Subsequently the Council accepted an offer made by Mr. P. A. Thorogood (G4KD) to organize a Radio Hobbies Exhibition at the Royal Horticultural Hall, Westminster, during October 1957.

Mobile Rallies

As reported earlier nearly 400 licensed amateurs have taken advantage of the facility offered by the Post Office to operate transmitting equipment from a moving vehicle. To cater for the interests of mobile operators rallies have been held in different parts of England. It is anticipated that the number of such rallies will increase as time goes on.

London Lecture Meetings

During the period from October 1956 to March 1957 five lectures were given to Society members at the Institution of Electrical Engineers, London. A list of speakers and their subjects follows:

October 26, 1956	" More about the Antennamatch," by F. Hicks-Arnold (G6MB).
November 30, 1956	" 1250 Mc/s Operation," by Members of the London U.H.F. Group.
January 25, 1957	Presidential Address by D. A. Findlay, D.F.C. (G3BZG), followed by a lecture and demonstration on " Miniature Aerials " by F. J. H. Charman, B.E.M. (G6CJ).
March 1, 1957	" Modern Amateur Communication Receiver Design " by R. G. Lane (G2BYA).
March 29, 1957	" Mobile Operation " by F. W. Crabtree (G3BK) and R. G. Shears (G8KW).

Regional and County Meetings

Regional meetings were held in Cambridge (July 1, 1956), York (July 8, 1956), Aberdeen (September 29, 1956), Torquay (October 7, 1956), and Liverpool (November 11, 1956). Attendances were poor in Aberdeen (35) and Torquay (22) and good in Cambridge (70), York (150) and Liverpool (105).

Hamfests or County Meetings were held in Spilsby, Lincolnshire (September 23, 1956), Prestatyn, Flintshire (September 30, 1956), Sandbanks, Dorset (November 4, 1956) and Bath, Somerset (January 12, 1957).

The Council records its thanks to those who organized Regional, County and Town activities.

Affiliated Societies

The Council granted affiliation to a number of societies and clubs including several which have been long established. The number of societies and clubs affiliated to the R.S.G.B. as at June 30, 1957, was 118.

It was agreed during the year that any affiliated society or club which can show that at least 75 per cent of its members are members of the R.S.G.B. shall pay an annual affiliation fee of 5/- instead of the normal fee of 10/6.

Affiliated Society Representatives

In order to broaden the present scheme of representation the Council decided during the year to accord T.R. status to the elected representative of any society or club affiliated to the R.S.G.B.

As from next year any affiliated society or club which has an elected A.S.R. will be permitted to enter for the R.S.G.B. N.F.D. event provided the election or the A.S.R. has taken place prior to April 1.

New Publications

Two new Society publications appeared during the year. The first, *Certificates and Awards*, was compiled by Mr. Ron Perks (G4CP) from information provided by overseas societies. The second, *The Morse Code for Radio Amateurs*, was produced by Mrs. Margaret Mills (G3ACC).

The Council records its thanks to Mr. Perks and Mrs. Mills for placing their knowledge and experience at the disposal of the Society.

During the year steps were taken to produce a new edition of *The Amateur Radio Handbook*. It had been hoped to publish the new edition towards the end of 1957 but the task of preparing the material presented more difficulties than had originally been anticipated.

The Council records its thanks to the Handbook Sub-Committee, and in particular to Mr. S. K. Lewer, B.Sc. (G6LJ) who agreed to act as the General Editor. The Council also thanks those members who have contributed technical material to the *Handbook*.

Work also began during the year on the preparation of a new edition of the *R.S.G.B. Amateur Radio Call Book*. The Council was pleased to accept an offer made by Mr. W. J. H. Kempton (G8LN) to act as Call Book Registrar.

Technical Committee

The Technical Committee, under the Chairmanship of Mr. H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT), again rendered valuable service to the Society by giving advice on technical matters. Individual members of the Committee have checked and advised on technical manuscripts and have assisted the Editorial staff in many ways.

Contests Committee

The work of the Contests Committee, under the Chairmanship of Mr. W. H. Matthews (G2CD) continued to increase. During the year the Committee organized the Annual B.E.R.U. Contest, National Field Day, the first 21/28 Mc/s Telephony Contest, Direction Finding Contests, Top Band Contests and a number of v.h.f. and u.h.f. events.

The task of preparing the rules and judging the various contests called for a great deal of sustained effort over the year on the part of the Committee, which met at least once a month.

The preparation of reports for publication in the Society's Journal was undertaken by members of the Committee, all of whom are thanked for their assistance.

V.H.F. Committee and I.G.Y.

In order to co-ordinate the interests of members especially interested in v.h.f. and u.h.f. work the Council set up during 1956 a new Committee, known as the V.H.F. Committee.

The most important work undertaken by the Committee was to initiate a project in preparation for the International Geophysical Year which began on July 1, 1957. As an outcome of suggestions put forward by the Committee, the Council appointed I.G.Y. co-ordinators.

The Council records its thanks to Dr. R. L. Smith-Rose for suggesting to the Committee subjects for investigation during the I.G.Y. by members of the Society. The Council also thanks the members of the V.H.F. Committee, and in particular the I.G.Y. Co-ordinators (Messrs. G. M. C. Stone, G3FZL, D. W. Furby, G3EOH, and C. E. Newton, G2FKZ) for their assistance in bringing to fruition at short notice a comprehensive I.G.Y. Programme.

Film and Recorded Lectures Libraries

Once again the Council records its thanks to Messrs. L. S. Gillham, and E. S. G. Fish (G2HCZ) for their help in supervizing the Society's Film and Recorded Lectures libraries respectively. No new Society films were produced during the year but several additions were made to the library of Recorded Lectures. Society films and tapes were in considerable demand.

In order to increase still further the usefulness of the Recorded Lecture library a tape recorder was purchased during the year. This enables Mr. Fish to check all tapes before they are issued, as well as providing the means whereby new lectures can be recorded and added to the library.

Certificates and Awards

During the year a new R.S.G.B. certificate—known as the DX Listener's Century Award—was introduced for the benefit of non-transmitting amateurs.

The thanks of the Council are recorded to Mr. C. R. Perks (G4CP), who has continued his work as Hon. Certificates Manager. During the year Mr. Perks dealt with a very large number of claims from members and non-members alike. The popularity of Society certificates increases each year.

Slow Morse Transmissions

The Council records its appreciation to all members who have assisted with the Slow Morse Practice transmissions. This service has been of great value to those preparing for the Radio Amateurs' Examination. The programme of transmissions was again supervized by Mr. C. H. L. Edwards, A.M.I.E.E. (G8TL).

Radio Amateurs' Examination

Two examinations were conducted during the year. The first, by the G.P.O. in October 1956, resulted in 50 passes and 23 failures. The second, by the City and Guilds of London Institute in May 1957, resulted in 377 (66 per cent) passes and 185 (34 per cent) failures. The examiner for the latter examination stated in his Report that the standard of work was somewhat lower than in recent years. In the 1956 examination set by the City and Guilds of London Institute 458 (88·4 per cent) candidates passed and 60 (11·6 per cent) failed.

Courses of instruction for the Radio Amateurs' Examination were arranged in many parts of the country but there are still some cities and towns where prospective amateurs must depend either upon instruction given by the local R.S.G.B. Group or Club or on correspondence courses.

Local groups and clubs have done much good work in connection with the examination and those responsible are thanked for their services.

QSL Bureau

Quietly and efficiently the work of the R.S.G.B. QSL Bureau has been continued. The QSL Manager (Mr. A. O. Milne, G2MI), has been greatly assisted by the Sub-Managers, all of whom have given yeoman service. The

number of cards handled during the year was greater than in the preceding year but lower than in the peak years just after the war.

The thanks of the Council are recorded to the QSL Manager and to his team of workers.

Talking Book Service

The Council is pleased to report that a number of public-spirited members have continued to render valuable service to the Royal National Institute for the Blind by maintaining in good electrical condition the talking book equipment used by blind persons.

Silent Keys

The Council records with deep regret the passing of a number of members including Mr. E. Dawson Ostermeyer, G5AR (Past President and Honorary Member), Mr. A. M. H. Fergus, G2ZC (formerly Experimental Section Manager), Mr. L. J. Fuller, G6LB (formerly East London D.R.), Mr. J. E. Catt, G5PS, Mr. J. F. Stanley, G6SY, Mr. W. Jones, GW6OK, and Mr. J. G. McIntosh, VU2LJ.

Council Meeting Attendances

The following is a list of attendances by Members of the Council for the period covered by this Report.

Name	*Possible Attendances*	*Actual Attendances*
Allen, W. H.	12	9
Bartlett, H. A.	12	9
Edwards, C. H. L.	12	12
Ellis, K. E. S.	12	12
Findlay, D. A.	12	12
Hammans, R. H.	12	6
Hicks-Arnold, F.	12	10
Hum, J. H.	12	12
Lane, R. G.	9	5*
Matthews, W. H.	12	11
Metcalfe, W. R.	12	11
Milne, A. O.	12	12
Mitchell, H. W.	12	4
Newnham, L. E.	12	11
Scarr, W. A.	12	8
Taylor, J.	11	8†

* Resigned April 1957. † Resigned May 1957

For and on behalf of the Council.
(signed) DOUGLAS A. FINDLAY
(President)

Useful Gifts

"COLLINS Radio Diary" (5/3) and "Collins Television and Televiewers Diary" (6/-) make useful Christmas and New Year gifts. The reference section runs to 143 pages in the former and to 128 pages in the latter publication. Photographs of television celebrities are included in a 12 page art paper supplement to the Television Diary. The diary sections cover a week to the opening.

Both diaries can be purchased through Headquarters. Add 6d. for postage to the above prices.

Wireless World Diary 1958 contains 80 pages of useful reference material, plus the usual diary pages of a week to the opening. A rexine bound version is available from Headquarters price 5/- post free. A leather bound version can be obtained from the publishers (T. J. & J. Smith Ltd., 12 Hanover Square, London W.1) or from booksellers price 6/3 (postage extra).

Can You Help?

● F. D. Cook, 7 Goshen Street, Tillsonburg, Ontario, Canada, who requires information on the conversion to 120 volts 60 c/s use of the Indicator type 10Q/13000?

Contests Diary

1957

November 16-17	-	Second 70 Mc/s Contest[3]
November 23-24	-	21-28 Mc/s Telephony Contest[5]
November 30 to December 2	-	CQ World Wide DX Contest (c.w.)[1]

1958

January 25-26	-	B.E.R.U. Contest[4]
February 8-9	-	Affiliated Societies' Contest
March 1-2	-	First 1·8 Mc/s Contest
March 2	-	144 Mc/s Open Contest
May 4	-	D/F Qualifying Event
May 4	-	First 144 Mc/s Field Day
May 18	-	420 Mc/s Open Contest
June 1	-	D/F Qualifying Event
June 7-8	-	National Field Day[2]
June 21-22	-	First 70 Mc/s Contest
June 22	-	D/F Qualifying Event
July 6	-	Second 144 Mc/s Field Day
July 14	-	D/F Qualifying Event
September 6-7	-	European V.H.F. Contest and National V.H.F. Contest (both under Region I I.A.R.U. Rules)
September 6-7	-	420 Mc/s Contest
September 6-7	-	1,250 Mc/s Tests
September 7	-	D/F National Final
September 14	-	Low Power Field Day
September 28	-	R.A.E.N. Rally
October 4-5	-	Low Power Contest
November 8-9	-	Second 1·8 Mc/s Contest
November 15-16	-	Second 70 Mc/s Contest
November 22-23	-	21-28 Mc/s Telephony Contest

[1] See page 145, R.S.G.B. Bulletin, September 1957.
[2] To be published in the December 1957 issue.
[3] See page 145, R.S.G.B. Bulletin, September 1957.
[4] See page 27, R.S.G.B. Bulletin, July 1957.
[5] See page 516, R.S.G.B. Bulletin, May 1957.

Second 144 Mc/s Field Day 1957

THE leading stations in the portable section of the Second 144 Mc/s Field Day held on August 18, 1957, were G3ERD/P, G6XM/P and G5PP/P. In the mobile section, the leaders were G3AYT/M, G3HZK/M and G6SN/M.

A full report and complete results will be published next month.

National Field Day 1958

THE rules for National Field Day 1958 will be published in the December 1957 issue of the R.S.G.B. BULLETIN.

Silent Key

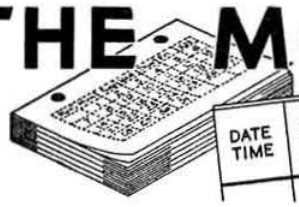
HAROLD JOHN ROWE (ZL3JA)

Death came with great suddenness on July 22 last to Harold John Rowe (ZL3JA) of Christchurch, New Zealand. A few moments before his death he and Mrs. Rowe had been planning a tour of the North Island of New Zealand in their new car.

Harold was well known on the DX bands and for his support for B.E.R.U. Contests. He had been a member of the R.S.G.B. since 1952. Only 42 years of age he died from thrombosis as a result of war service.

To Christine Rowe, whose address is now c/o Federal Hotel, Christchurch, we offer our heartfelt sympathies in her tragic loss.

THE MONTH ON THE AIR



By S. A. HERBERT (G3ATU) *

ONCE again the bands have been full of activity, with the three higher frequency allocations bearing heavy traffic. Twenty especially has been the scene of sundry sharp exchanges as stations all over the world have battled to contact JT1AA, CR8AC, ZK2AD, ZC5RF, FK8AH and other desirable items. In Europe, the noise which greets the appearance of any such rarity is positively frightening, but the effect which must be experienced at the other end beggars description. Being just one of a crowd has its compensations after all! So while the CR8s and JTs battle on, we turn to the quieter topics of this month's overseas mail.

News from Far and Wide

W6GBK (Los Angeles) passes on news of welcome activity from American Samoa, where YL operator **KS6AF** is to be heard on 14, 21 and 28 Mc/s phone. She expects to be there until the end of November and QSLs should be sent to her home call—W6NZP.

Trinidad Is. News which arrived too late for inclusion in last month's *M.O.T.A.* is of activity from the Brazilian island of Trinidad (approximate position 20° S-30° W). PY0CV was due to operate from there from mid-October for a month, on frequencies of 14180, '315, '320 kc/s—phone—and 14005, '020, '052, '055—c.w. Replies should be made some 20 kc/s either side of the frequency. Up to October 20, nothing had been heard of him, but perhaps by now he will have appeared. Thanks are due to **G5DV** and to **B.R.S. 21279** for the above.

Goa. Last month's reference to **CR8AC** can now be expanded with the heartening news that he is, in fact, perfectly genuine and the terrific signal heard regularly around 14048 kc/s does emanate from Goa. **B.R.S. 20104** and **B.R.S. 20317** both have cards from him and it turns out that he is Raul Fernandes, ex-CR4AL. He tells '20104 that he needs a " decent " receiver, which probably accounts for the somewhat laborious rate of his QSOs. Incidentally, he was heard to say that all QSLs sent to him direct should be in a sealed envelope with no reference whatever to his call-sign. Address simply to Raul Fernandes, P.O. Box 32, Vasco da Gama, Portuguese India.

Yasme II. **G3CHM** (Eastleigh) sends an up to the minute report on the activities of Danny Weil, latterly VP2VB, to say nothing of his other varied and exotic calls. Weil returned home last September and straight away went to Scotland where he bought a new boat. But misfortune continued to dog him and while sailing the craft South, a petrol tank exploded and the unlucky occupant was blown into the water. Fortunately, he escaped injury and was landed at Holyhead, but the boat was a total loss. Nothing daunted, he found another one, which will be fitted out at Southampton if a survey proves satisfactory. *Yasme II* is an all-teak craft of 50 ft., compared with the 38 ft. of *Yasme I* and she will carry an impressive array of gear, including an automatic pilot, a D/F loop, a depth-sounder and a deep-freeze, while radio equipment will comprise three 1 kW transmitters, four receivers, a high gain beam and a 3 kW diesel generator. *Yasme I* carried seven transmitters, five receivers and two 1½ kW generators, which will doubtless shake VS1HU/G3JFF! Target date for sailing is November. G3CHM is helping Weil, by doing all the paper work and handling publicity and he is in constant touch with KV4AA, who is the expedition's chief organizer. He promises to keep us informed when final plans are confirmed. He remarks that this new trip is *not commercially sponsored* but is, in fact, financed by donation from radio amateurs in 32 different countries.

Iraq. **G3JFT** (ex-YI3AA), who is handling incoming YI2AM QSLs, finds himself with cards on hand for sixteen ex-YI stations. The calls are YI1AA, 'DF, 'DH, '2BM, 'NM, 'OC, 'OT, 'YM, '3AB, 'AC, 'BC, 'WH, 'WW, '4HX, '5LB and B.E.R.S. 909, who can claim the cards by sending a S.A.E. to Cpl. Dare, Habbaniya Broadcasting Service, Habbaniya, B.F.P.O. 61. Having got that off his chest, Brian discourses on the currently uncertain licence situation and forecasts that with any luck a crop of brand-new HN calls may take the place of the former YIs. If indeed this happens, HN3AA should make his mark on the very same bands that are available to U.K. amateurs. Top Band seems attractive out Iraq way. Brian finds it beautifully quiet, with no suspicion of " fish-fone " QRM, and hopes to give it a try, but he imagines he will have little time for the 50 to 72 Mc/s region which is expected to be available there for crystal-controlled transmissions of an experimental nature!

Monaco. Norman Fitch (**G3FPK**) had a terrific six days operating his specially built rig from his DX location as **3A2BT** and he intends to write an article on the trip for inclusion in a later BULLETIN. For the record, Norman worked 52 countries in some 24 Zones, making 260 QSOs in 40 hours, using 7, 14 and 21 Mc/s. Among the DX worked were VK0AB, VS1FJ and ZS7C on 21 Mc/s and DU, JA, VE8, VQ3 on 14 Mc/s, while 48 U.K. stations had a 3A2 QSO. All contacts will, of course be acknowledged.

Spitzbergen. **SP5HS** remarks that the operator attached to the Polish Spitzbergen Expedition is Ryszard Bajer, SP5LM. He is using a crystal-controlled transmitter for commercial traffic, but he has no crystals for the amateur bands. However, a v.f.o. is being built and **SP5LM/LA/P** should soon be active. In Poland, says SP5HS, there are now 350 licences issued, but only a few are actively in use. There are four YL operators and SP5YL is on 3·5 and 7 Mc/s c.w. in the evenings. YLCC seekers n.b.

Gibraltar: " Wally " Walker until recently ZB2R is now back in England with a new call G3LXU; QTH, 91 Swiss Avenue, Chelmsford. According to " Wally " there are at the present time only five stations operating from The Rock, namely ZB2A, ZB2I (who is the QSL Manager), ZB2J, ZB2P and ZB2U. Ex-ZB2Q is now G3LQI.

DX Briefs

Ted Ross, G3LWS and well known as **ZC4FB** has left the U.K. and is bound for VP8-land, from where his excellent fist will undoubtedly be heard ere long. **G3III** (ex-ZC4II) corrects the reference to 4W2RP. He was on c.w. and not phone, as reported. Ex-G3LCS is now **VS1HQ** and is looking for Gs (mostly) on 14 Mc/s. He hopes to be on 21 and 28 also before long. **G3HTK** passes news from **ZC4BE** that current Cyprus licencees are ZC4s 'MH, 'IP, 'CK, 'WR, 'PW, 'CH, 'NS, 'ND, 'FX, 'AM, 'GT, 'BN, 'CA, 'BE, 'JX, 'JU, 'OP, 'IK, 'QK, 'CB, 'CN, 'DT, 'TH, 'AG, 'BL, 'BA and 'WV.

* *Roker House, St. George's Terrace, Roker, Sunderland.*

G3KVI is now **VS6DX** and he says that 14 Mc/s is open regularly to the U.K. from 14.00-20.00 G.M.T. Signals are strongest from 17.00 onwards. Fifteen metres can be very good, but is erratic. '6DX, '6DO, '6DP and '6DV (the R.A.F. Club station) are all delighted to QSO Great Britain and promise to sort U.K. callers from the usual pile-up.

G8ML (Cheltenham) asks if there is an amateur station on Campbell Is., south of New Zealand, as a friend is there with an I.G.Y. meteorological station. **G2MI** heard KL7FLA on s.s.b. (14300, 08.15). He is 200 miles from the Pole and his QTH is Project Ice Skate, Station Alpha, A.P.O. 731, Seattle, Wash. TI2BX is now QRT and will soon be a W3. **VE2AKQ** (ex-G3DHF, ZB1DHF, VS9AR) is now at Apt., 303, Laurentian Manor, 555, Laurentian Blvd., Ville St. Laurent, Montreal, P.Q. **Emmet G. Riggle** (Ohio) finds 21 Mc/s wide open and has heard VS2DO, VS6CO and VQ6ST at " recording " level. **VK9AJ** is now in the U.K. as Les Lerpiniere, 7, Greenstead Road, Scarborough.

Twenty Metres

The twenty metre mixture remains the same, with long, medium and short skip or a combination of them all and as ever, it is the band favoured most by the really rare ones. **G3IFB** (Kenton, Middx.) worked LA2JE/P (15.30), UH8BA (19.30) and UI8 for new ones on the key. He has a QSL from UA0OM (Buryat-Mongolian U.S.S.R.) and says " If he is in Zone 23, why all the fuss about JT1AA?" Apparently lots of people are under the impression that Buryat-Mongolia is the same as the Mongolian Republic, but this is not the case. Buryat is in Zone 18 and although, in point of fact, UA0OM is only a few miles from Mongolia proper, he is still firmly planted in Zone 18, as are Chita and Irkutsk. Sorry! **G8KS** (Petts Wood) QSO'd FB8XX, CR8AC, FO8AC and ZK2AD on c.w. and worked HS1WR on phone. He has QSLs from them all except the ZK2; indeed FB8XX obliged in only seven days! **G3ESP** (Pontefract) worked W4FCB/KS4 (06.30) and DL4GF/TA and says you never know what's behind those innocent call-signs. The sting is in the tail!

B.R.S. 20104 (South Harrow) has heard JT1AA at least ten times, always on 14062 kc/s, from 10.30 to as late as 23.30. Signals around RST34/59 and he uses " BK " rather frequently (which can be confusing). Goff says CR8AC must be keen—he is on for hours at a time. True enough.

DX Television Predictions for December 1957

Prepared by J. Douglas Kay (G3AAE)

Barbados	1200/1400	Cyprus	0830/1130
Bermuda	1400/1700	Teheran	0730/1300
New York	1500/1700	Tel Aviv	0800/1100
Trinidad	1200/1400	Accra	0900/1100
Lima	1200/1600	Cairo	0800/1100
Aden	0800/0900	Dakar	0930/1130
Baghdad	0700/1300	Nairobi	0800/0930
Bahrein	0730/1100		

These predictions are based on the B.B.C. Channel I sound transmission on 41·5 Mc/s. The vision signal is on 45 Mc/s.

A QSL to UA0KTO/Franz Josef has bounced from Box 88, but a card from FO8AC makes up for that. Again, a plea is for times and frequencies of the rarer DX calls. **B.R.S. 20317** (Bromley) has been at 39Z this year for long enough, so he was delighted to hear JT1AA for No. 40 with 218C in 1957 (204 on c.w.), Bill says this is the best year ever and throws the gauntlet down to a better scorer. Recent c.w. DX logged includes HL9KT(17.30, 016,) KC4USK (19.30), DU1RTI, FB8XX, '8ZZ, UA0KAR (Dickson Is., Kara Sea, 18.00), UA0IG (Zone 19), VK9XK, VK0ZM, '0PK, ZC5RF, ZK2AD (19.00, '045(and ZL5AC (09.25), plus a VR9AA about whom enough said! **B.R.S. 20106** (Petts Wood) also keeps turning up the good ones and he heard JT1AA in the midst of the pack (17.00 onwards). Also on c.w., Norman heard ZM6AS (06.15, working G6NU), VK0AS (09.15), FO8AG, CR8AC, FP8AS, FB8BC, 'BX, 'XX, KR6AC, W9NTJ/KG6, ZK1AU (07.30), ZK2AD and SV0WQ (Crete) **B.R.S. 21279** (Oldbury) still chases JT1, but he heard CR8AC and ZC5AB (19.00) on the key. On phone, a good one was KS6AF (08.00), while 3A2BF and SV0WQ were new also. Martin got a QSL from CR5SP confirming reception on February *31*, 1957, and is muttering dark things about " Thirty days hath September" ! He (and others) hear that the VS1HJ Maldive trip has been postponed owing to damage to the Maldivian air-strip. G3ATU had something of a month, having caught ZK2AD, for once mercifully free of local QRM, and JT1AA who was audible in spasms long enough for the necessary exchanges to be

Frequency Predictions for December, 1957

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA	ANT-ARCTICA
M.U.F.	42 Mc/s 1530	22 Mc/s 1745	43 Mc/s 1300	37 Mc/s 1230	34 Mc/s 1400	44 Mc/s 0945	41 Mc/s 0800	40·5 Mc/s 0830	30 Mc/s 1400 SP	25 Mc/s 1100
28 Mc/s	1230/2030	1745	1100/2000	0945/2100	0800/1830	0730/1700	0730/1615	0730/1615	0800/1200 SP	1100
21 Mc/s	1130/2200	1700/1900	1000/2300	0830/1200 1800/2330	0700/0900 1330/2300	0630/1930	0630/1800	0900/1730	0800/1730 SP 0900/1200 LP	0730/1300
14 Mc/s	1000/2400	0800/1100 1400/2300	1800/1100	2100/0900	1600/0300	0530/0130	1330/2000	1430/1900	0700/0900 LP 1400/1900 SP	2000/0930
7 Mc/s	1900/0900	0730	0700/0830	2300/0830	1800/0100	1530/1100	1730/0130	1900/2030	1600/1900 SP	2200/0400
3·5 Mc/s	2300/0800	0730	0000/0700	0000/0600	0000	2100/0500	2000/0200	2000	1700 SP	0000

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. All times are G.M.T.

made. That makes 250 solo efforts—the next ten will be really tough! TF5/3AD was also worked and despite the call he seems genuinely in Reykjavik.

Fifteen Metres

There is no lack of activity here, though solar happenings understandably wreak occasional havoc thereon. **B.R.S. 20135** (Newport, I.o.W.), now recovered from 'flu, found VK/ZLs very strong at times and he logged phone from CT3AN, ZD4CP, VQ6ST, EL1I, ET3XY, FE8AK (17.30), SV0WQ, KH6, KR6 and DU7SV (09.20). Bert reflects that present band conditions are preferable on the whole to a band full of nothing but DX all the time. If that ever happened, the novelty would soon wear off. **B.R.S. 20487** (N. Finchley) logged ZS6, 4X4, ZL and UC2 on phone, while new ones on c.w. for **B.R.S. 20317** were ET2US, VE3AHU/SU *and* FU8AA (09.00-10.00, '010), with VP8AX, PJ2ME and OA4IGY for good measure. On phone, **B.R.S. 20106** mentions VS2FD, VP5CM, 4S7YL (19.00), while on c.w. he pulled in FK8AT (09.45), '8AC, VR2AS, XE1PJ, FY7YC (09.45), ZS7C (17.00), VK9XK and 3A2BT. New ones on phone for **B.R.S. 21279** were FE8AK, VP2GE (Grenada-19.55). On c.w., Martin heard HV1SP whom he regards as no good at all, but he hears that W2IOP may have permission to operate from the Vatican during the *CQ* World Wide DX Contest. The score during his first year of listening stands at a very creditable 38Z and 170C. One piece of super DX was the *Sputnik I* on 20 Mc/s. Surely that should count as a new Zone! **G8KS** worked KW6CE, ZC5AL, FK8AS on c.w. and KW6, KX6BQ, KP6AL, ZK1BS and VK9KA on A3 and already has QSLs from KX6 and the ZK1.

Ten Metres

Activity is now at a high level, although W and VE signals dominate the band from mid-day. **B.R.S. 20106** found KW6CA on c.w. with a loud signal, calling " CQ " at 11.55, with nobody taking much notice; he also found VS9AG, ZD2DCP, ZS3AG, JA3AD, VU2EJ (11.00), UJ8AG and UN1AH down there, while on phone he listened to MP4BBL, VP5BL, VK6RU, ZD6JL, SV0WQ and ZLs. **B.R.S. 20135** found things varying between good and absolutely awful, with the good spots yielding SV0WE (Rhodes), VQ6ST, MP4KAS, VE5LM, VP9DM, ZD3BFC, '4BV, '6RM, ZL and VK, all on A3, which **B.R.S. 20487** used to collect 4S7YL, HK7LX, W5CQB/VE8, VQ2, '4 and ZL. New ones for **B.R.S. 20317** were CO2DB, FE8AH (11.50, '035), FF8GP, SV0WQ, UN1AA, VS1FJ, YV5DE and ZS3AG, plus XE1RY (19.00), KG6AGW (12.00), KH6AYG (18.20) and UA0GF, all on c.w. **B.R.S. 21279** pines for a CR7, but he logged VP5CN (ex-GW3CMK in Jamaica), VQ2MJ and YN1MF. **G3IFB** worked SV0WQ and FE8AH for new ones on c.w., while ZD2FNX, CT2AH (14.30) and MP4KAS were new ones on phone.

VK4DL of Rockhampton, Queensland, is anxious to contact amateurs in the Newcastle-upon-Tyne and Sunderland areas. He is active on 21 and 28 Mc/s.

Other Bands

The lower frequencies still claim small attention, but pickings are there as usual for the enthusiast and **B.R.S. 20106** pulled in SV0 (Crete) ZC4IP, W9UA (23.45), UH8, UI8, UA0AB, '0AG on forty c.w. and K4CBM, W8VKK on phone. **B.R.S. 20317** found KZ5RF, ZL1MQ, UL7FA and ZA1KB (Rakip, Box 42, Tirana!!) on forty, then checked eighty c.w. and logged CN8DI (19.20), plus UA1, '3, UB5, UR2AO and UP2AL (all between 19.00-21.00, 3530/3500 kc/s). Bill even listened on Top Band where he heard HB9T at 19.50. **G3COJ** reports that **W3PHL** is looking for DX contacts on 40m on Sundays from 06.00 G.M.T. He operates between 7200 kc/s and 7300 kc/s and uses a *rotary beam* and 500 watts! He tunes around 7100 kc/s for replies.

Don't forget the **21/28 Mc/s Telephony Contest** on November 23-24.

And that terminates this month's proceedings. Thanks from your commentator for your news and keep it going for next month by posting contributions to arrive by November 18, please. Meantime, good hunting and, as usual, 73.

The Manicaland Branch of the Radio Society of Southern Rhodesia operated ZE1JUM from the Manicaland Agricultural Show during August 1956 and August 1957. ZE2JC's 40 watt transmitter and a dipole were used on c.w. and ZE2KP's 100 watt transmitter and a G4ZU beam on phone. The operators were ZE2JC, ZE2KP, ZE1JN, ZE2JK, ZE2KJ and ZE4JH.

S.A.R.L. Certificates

BECAUSE of increases in handling and postage charges the price of the W.B.C.N. and A.A.A. awards issued by the South African Radio League has been increased to 2/6 South African currency for the W.B.C.N. and to 5/- for the A.A.A. There is no charge for these certificates to members of S.A.R.L.

London Lecture Meeting

ABOUT 40 members were present at the Institution of Electrical Engineers on Friday, November 1, 1957, when Mr. S. Korytko of the Transmission Division of Standard Telephones and Cables Ltd. lectured on " Microwave Link Equipment."

The chair was taken by Mr. A. D. Gay, G6NF (Past President) who had the support of Messrs. D. N. Corfield, G5CD, and J. W. Mathews, G6LL (Vice-Presidents) and Messrs. W. H. Allen, G2UJ and W. H. Matthews, G2CD (Members of Council).

A vote of thanks to the lecturer was proposed by Mr. Mathews.

London Lecture Meeting
Friday, November 29, 1957
"Some Aspects of Atmospheric Radio Noise"
by F. Horner, M.Sc., A.M.I.E.E.
(D.S.I.R. Radio Research Station)
at the
Institution of Electrical Engineers
Savoy Place, Victoria Embankment
Buffet Tea 6 p.m. **Lecture 6.30 p.m.**

Radio Hobbies Exhibition

A Report on a Highly Successful Show

General view of the Exhibition before the official opening by Sir Harold Bishop.

OPENING the R.S.G.B. Radio Hobbies Exhibition at the Royal Horticultural Society's Old Hall, Vincent Square, London, on October 23, 1957, Sir Harold Bishop, C.B.E., Director of Engineering Services, B.B.C., recalled that " the Society sponsored the first All British Wireless Exhibition which, oddly enough, took place in this very hall in 1922, and I have just been looking at a press cutting describing that exhibition. The organizer was Horace Freeman, who is still the Society's Advertisement Manager." Sir Harold went on to say that radio amateurs had done a great deal for radio and short wave communication and more recently for sound broadcasting and hi-fi. Because of the pace of scientific progress, particularly in Russia, he believed it was necessary to do more to persuade " school leavers " to take up science. " One way," he said, " is to encourage (an interest in) radio as a hobby which is after all an important part of science and technology . . . that is why I welcome this exhibition, organized by Mr. Thorogood, as a very important one . . . and wish it every success."

Success indeed was the keynote of the Exhibition. Not only was it the largest and most successful Amateur Radio show ever held in this country but also the best supported by the radio industry whose representatives exhibited a very wide range of products many of which had never been shown before. The attendance—a record—was well over 7,000, a fact, it is understood, reflected in the order books of the exhibitors.

Sir Harold Bishop, C.B.E., Director of Engineering, B.B.C. speaking at the opening ceremony. C. H. L. Edwards, G8TL (Chairman, Exhibition Committee), John Clarricoats, O.B.E., G6CL (General Secretary), Dr. R. L. Smith-Rose, C.B.E. (Director of Radio Research, D.S.I.R.), Air Marshal Sir Raymond Hart, K.B.E., C.B., M.C. (Air Ministry), Horace Freeman (Advertising Manager) and Phil Thorogood, G4KD (Exhibition Organizer) are in the front row. R.S.G.B. President (Douglas Findlay D.F.C., G3BZG) is behind the speaker.

The outstanding impression of the commercial stands was that there are kits available for the construction of an astonishing range of electronic equipment, from f.m. tuners and baby alarms to hi-fi amplifiers and table top transmitters. One firm alone makes 300 kits a week.

Cossor's, who started producing kits in 1927—their most famous was the " Melody Maker " receiver of which thousands were sold before World War II—were demonstrating how easily their Model 1044K valve voltmeter can be put together. Construction of this kit, and the other two on show—one for a single beam (Model 1045K) and one for a double beam (Model 1071K) oscilloscope—is greatly simplified by use of printed circuits.

Each includes an illustrated step-by-step instruction manual.

Clyne Radio had a wide range of build-it-yourself kits on show including the new Jason " Mercury " switched f.m. tuner which uses five valves and a.f.c. The front end is supplied ready wired. The Jason Short Wave Converter, covering 1·8 to 30 Mc/s in five switched bands, should prove popular with those who require coverage of the h.f. bands with plenty of bandspread but do not feel justified in purchasing a specialized communications receiver. The dial is the popular slide rule type. Other kits on this company's stand included the " Rambler " four-valve all dry superhet, a transistor and crystal diode medium wave receiver and a 6 or 12 volt 2 amp. battery charger. Hi-fi equipment included the new Collaro four speed record player, the Acos Hi-g pick-up and the Wharfedale RJ enclosure with Super 8 loudspeaker.

EMI Institutes primarily produce kits in connection with their home study courses, those on show at this exhibition including a hi-fi radiogram, multi-range test-meter, 24 in. multi-channel television receiver, miniature oscilloscope and tape recorder.

A Geloso transmitter caught the attention of Sir Harold Bishop, C.B.E. and Captain R. F. T. Stanndard, O.B.E., D.S.C., Director of Signal Division, Admiralty, during their tour of the Exhibition with the President (Douglas Findlay, D.F.C., G3BZG). Council Member Ken Ellis, G5KW, is on the right.

KW Electronics introduced the Vanguard transmitter kit which incorporates the Geloso v.f.o. driving a 6146 in the p.a. which is anode and screen modulated by a pair of 6L6s. The p.a., rated at 50 watts input, uses a pi-network circuit. The audio system is " tailored " to provide a narrow-band highly intelligible signal. The complete transmitter is housed in a robust grey cabinet and is TVI filtered. Other kits on show included a grid dip oscillator, and a portable record player available in battery, transistor and mains operated versions.

Labgear, another firm entering the kit market, had three interesting items to show. The type E.5115 a.f. power meter is capable of reading 25 mW to 10 watts in two switched ranges, full scale deflections being 1 watt and 10 watts. The instrument is suitable for input impedances of 3, 15 and 600 ohms unbalanced and its frequency range 20 c/s to 25 kc/s. The type E.5113 signal generator has a frequency range of 80 kc/s to 110 Mc/s in seven switched ranges, all on fundamentals. Both amplitude and frequency modulation is provided. The third, an oscilloscope type E.5112, uses a 6 in. c.r.t. with a medium persistance blue trace, and has a sweep frequency range of 20 c/s to 500 kc/s in five ranges. All these kits incorporate printed circuits, so simplifying construction.

A particularly interesting kit for a transistor amplifier using a printed circuit and designed to work over the frequency range 100 to 7000 c/s with an output of 300 milliwatts was shown by Whiteley Electrical. Four transistors are employed but no output transformer—the signal is fed direct to a special Stentorian loudspeaker with a 30 ohm speech coil. Only two 4½ volt batteries are required. Kits of a rather different nature on the same stand comprised the " Prelude " range of high fidelity cabinets finished in sapele veneer.

Jason Motor and Electronic Co. exhibited their range of popular kits for f.m. tuners and the " Argonaut " a.m./f.m. medium wave/v.h.f. tuner. Jason kits were also exhibited on retailers' stands.

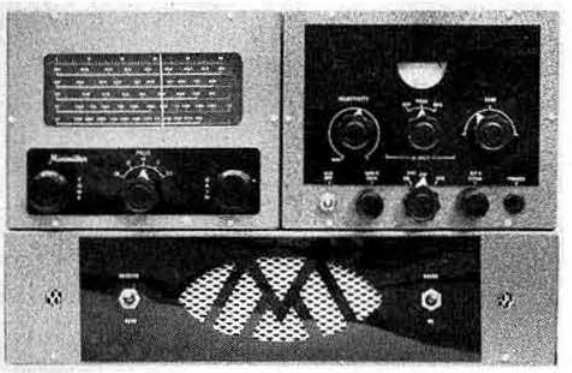
New Receiver and Transmitters

One of the most interesting new products was the Minimitter MR37 receiver, an unusual and unorthodox design which aroused a great deal of interest. It consists of three parts—the r.f., mixer and oscillator section (the well-known Minimitter Amateur Bands Converter), an i.f./a.f. section incorporating a Q multiplier and automatic squelch, and a plinth on which the other two sections are mounted. The power supply and loudspeaker are contained within the plinth, the appearance of the complete assembly being shown in the accompanying photograph. The converter and i.f./a.f. section can be easily removed from the plinth for mobile operation. The three sections may be purchased separately. A most convincing demonstration on this stand showed the operation of the Multi-Q Q multiplier which provides a high degree of selectivity and some gain without the disadvantages of a crystal filter. The " Mercury," the latest Minimitter transmitter, also attracted much attention. Seventeen valves are used, the p.a. being a pair of " gold-plated " 807s capable of a full 150 watts on all bands. A.m., and n.b.f.m. modulators are built in. The slide rule v.f.o. dial is directly calibrated for the 3·5, 7, 14, 21 and 28 Mc/s bands.

Another new transmitter on show for the first time at a public exhibition was the Panda " Explorer " which uses a pair of 6146s in the final and covers 3·5 to 28 Mc/s. The v.f.o. and multiplier circuits are tuned by a four gang condenser coupled to a directly calibrated dial. The transmitter is rated at 150 watts. The new Panda Cub (with press-to-net switch) and PR120V transmitters, the redesigned three band Minibeam using plastic insulators, and a new directly calibrated S.W.R. Bridge were also exhibited. The latter is unusual in that it can be arranged for use with any line impedance by simply changing an external resistor.

Industrial closed circuit television for use in industry, commerce, research and education was shown on the Pye stand. One of the items in operation was an unusually small camera unit.

Geloso equipment exhibited by KW Electronics included the G210/TR transmitter, G207/DR double conversion



A front view of the new Minimitter MR37 receiver. The r.f. section is at the left of the picture with the i.f./a.f. section on the right. Below is the plinth containing the power supply and loudspeaker.

receiver and of course the signal shifter/v.f.o. for 3·5, 7, 14, 21 and 28 Mc/s. Amongst the equipment of their own manufacture on display was the new tunable 2m converter, a pi-network coil and switch for use with a pair of 807s or similar valves, high- and low-pass filters, and a sub-standard racking system. Of particular interest were their two new aerials, the G8KW Multiband Dipole for 10 to 80m and a vertical ground plane with traps for 10, 15 and 20m, the guy wires for which act as radials.

New products on the Labgear stand included Bi-square aerials for 4 and 10m, a 5-over-5 stacked Yagi for 2m and the type E.5039A five way switching unit for use with 50 to 80 ohm co-axial cables in the range 1·8 to 30 Mc/s. The unit provides for the selection of any one of five aerials by means of a heavy duty ceramic switch and includes a relay for the change-over from receiver to transmitter. Two extra pairs of contacts are available to switch external circuits. Other equipment for the amateur on show included the LG.300 Mk. II transmitter and its companion power supply/modulator unit, high- and low-pass filters and the type E.5029 S.W.R. Meter.

Philpotts Metalworks displayed a wide range of instrument cases, equipment racks and speaker cabinets, all of which are available in a variety of finishes and colours. New designs included a small table top cabinet (which, for want of a better phrase, may be described as the LG.300 type) and assemblies for audio amplifiers. A portable instrument case complete with leather carrying handle and measuring 9 in. by 6½ in. by 4¼ in. should prove useful for items of test gear and similar equipment.

Home Radio of Mitcham exhibited Eddystone receivers, including the 888 Amateur Bands Receiver and the new 870 covering 150 kc/s to 18 Mc/s in four bands. The latter is designed for both home and shipboard use. In addition to Jason kits, books for the home constructor, Repanco miniature transistor components, Repanco and Teletron coils, Gilson transformers and Eddystone components, this firm was showing a set of new " Universal " chassis, each of which comprise a pair of drilled aluminium channel sections, thus enabling the user to construct a variety of special purpose chassis. Almost any size and shape of assembly can be made. Top and bottom plates can be fitted as desired. Other exhibits included the TSL high stability amplifier and v.h.f. f.m. tuner and a kit of parts for the receiver described on B.B.C. Children's Television in the series " Make your own Radio."

A new range of valves for mobile car radio requiring only 12 volts h.t. and l.t. was one of the exhibits on the Brimar Valves stand. The types available are the 12AC6 r.f pentode, 12AD6 frequency changer, 12AE6 double diode triode and 12K5 low level a.f. driver for a transistor output stage. Electrostatically focused TV 17 and 21 in. tubes with 70° and 90° deflection, transistors and other semiconductors were also on show. Equipment displayed included the type 20P1 25 watt high fidelity amplifier and examples of amateur equipment built by G. C. Fox (G3AEX): a 144 Mc/s crystal controlled transmitter running 120 watts on c.w., 100 watts on phone; an audio frequency oscillator with an output of 25 volts in 500 ohms from 20—2000 c/s in three ranges, and a grid dip oscillator using eight coils to cover the range 400 kc/s to 200 Mc/s. The unit has an internal power supply and provision for use as a monitor and with external modulation.

New valves displayed by Mullard included the QQV02-6 v.h.f. double tetrode and the E88CC double triode which has gold plated pins, small interelectrode capacities and a mutual conductance of 12·5 mA/V. An interesting transistor on show was the OC16 *p-n-p* junction type for use in audio output stages. One will give 6 watts while two in push-pull produce an output of 15 watts. Components on the stand included concentric trimmers, ferrite rods and beads, the latter being particularly useful in the suppression of parasitics. Equipment on show, for which descriptive constructional leaflets are available, included a four channel audio mixer using three valves, a type C amplifier for use with three popular tape decks, a two valve pre-amplifier with six inputs, for use with the Mullard 5-10 and 20 watt amplifiers, and a three valve three watt high quality amplifier.

Whiteley Electrical displayed the WB Stentorian v.h.f. f.m. tuner, high fidelity loudspeakers, the " Portland " range of vacuum impregnated mains and audio transformers, and a low loss valveholder with built-in bypass condensers for 832/829 type valves.

Squadron Leader Dan Lockyer, M.B.E., describes the Air Ministry exhibit to members of the official party. From left to right: Douglas Findlay (President, R.S.G.B.), Air Marshal Sir Raymond Hart, John Gilbert, Wing Commander Alec Gilding (Vice-President, R.A.F. Amateur Radio Society), Sir Harold Bishop, Dr. R. L. Smith-Rose, John Clarricoats (General Secretary, R.S.G.B.).

The Service Stands

Equipment displayed on the Royal Navy stand comprised the Pye low power h.f. transmitter-receiver (40 watts input) used in Naval ships, the type B40 h.f. receiver, the Racal RA17 receiver covering 0·64 to 30 Mc/s without switching, the v.h.f. receiver type CUH covering 277-283 Mc/s and its companion transmitter, the type 691, with which the type AJC wideband omnidirectional aerial, also shown, is used.

Amateur construction was the theme of the R.A.F. stand which had a complete portable 2m station on the air comprising an Eddystone 358X receiver with crystal controlled cascode converter, preamplifier, and transmitter, the valve line-up of the latter being 6AQ5, 6AQ5, 5763 and QV04/7 modulated by push-pull 6AQ5s. R.A.F. apprentices of No. 2 Radio School were demonstrating the building of the 50 watt transmitter kits made available to the R.A.F. Amateur Radio Society by the Nuffield Trust. Amateur Television equipment displayed by the R.A.F. Amateur Television Society included a pulse generator which will eventually be used at the Society's station at Locking.

Test Equipment

Test equipment exhibited by Measuring Instruments (Pullin) included the new Series 90 multi-range test set, a 19 range instrument for a.c. and d.c. voltage, d.c. resistance and current. The sensitivity on voltage ranges is 5,000 ohms per volt. Other items on the stand were the well-known Series 100 test set and the new Contemporary range of panel instruments. Particularly pleasing in appearance was the Series 35 rectangular 3½ in. meter with diakon cover.

Taylor Instruments had their usual wide range of test equipment on show. The Model 68A Signal Generator covers 100 kc/s to 220 Mc/s all on fundamentals and has provision for monitoring the output level. R.f. leakage has been minimized by careful screening and mains lead leakage reduced to negligible proportions by a multi-section filter.

Soldering Aluminium

Enthoven Solders had an excellent demonstration of aluminium soldering which members of the public were invited to try. Apart from the use of the special cored solder, a really hot clean iron seems to be the secret of successful use; Superspeed irons were being used on the stand for soldering leads, etc., to aluminium. The aluminium solder costs 21/- per lb. but special group rates are quoted for radio societies. A useful tool for the home constructor was the Vibroscope etching instrument. Other items displayed included the wide range of Enthoven solders and fluxes.

Radio Publications

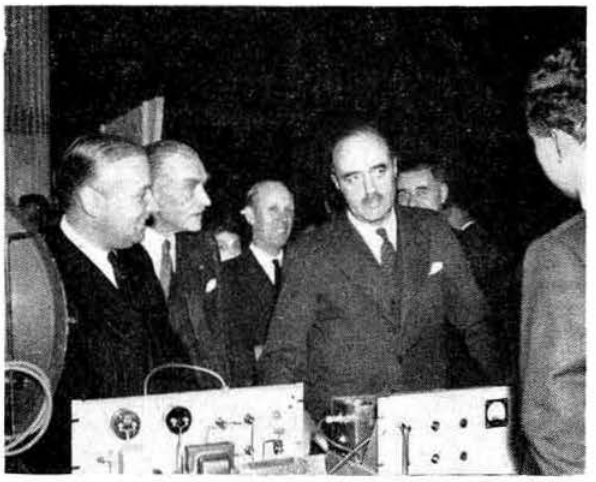
The radio press was represented by the Short Wave Magazine, Iliffe Press and Data Publications. Among the books displayed on the Short Wave Magazine stand were *Ham Register* (Amateur Radio's Who's Who), *Command Sets*, the *Coyne Technical Dictionary*, *Scatter Propagation* and the *Novice and Technician Handbook*. The latest issues of the *Wireless World* and *Electronic and Radio Engineer* were on sale on the Iliffe stand together with a wide range of technical publications and *Wireless World* reprints. An interesting piece of equipment on this stand was the G.E.C. " 88-50 " 50 watt amplifier using KT88 valves designed by W. Ian Heath and G. R. Woodville. Exhibits on the Data Publications (*Radio Constructor*) stand included the Contessa Six Transistor Portable Superhet, the Cooper-Smith Hi-Fi Amplifier and many technical publications.

The Amateur Stands

The standard of the equipment exhibited on the R.S.G.B. stand was of a high order and had been loaned for exhibition by members from all over the country. The Silver Plaque presented by Phil Thorogood (G4KD) was won by S. A. Denney (G3CIM) of Romford with his very fine mobile transmitter and receiver, illustrated on page 183 of the October 1957 issue of the BULLETIN. The cash prizes offered by members of the Exhibition Committee were won by C. Kenny (G3LKJ) of Hove with his excellent table topper using parallel 6146s in the p.a., E. G. Hubbard (G5OX) of Chatham with his 72 Mc/s v.f.o. for 144 Mc/s operation and by G. B. Neale (G8NN) of Sheffield with a miniature three-gang 15pF tuning condenser beautifully made from concentric trimmers. Other notable equipment amongst an excellent selection included a stabilized power supply giving 25-250 volts at 120 mA and 70-280 volts at 20 mA negative bias (G3BTM), an s.s.b./a.m./c.w. transmitter for 10m to 80m (G3HRO), a g.d.o. with d.c. amplifier (G2UJ), a double conversion superhet for 10m and 15m (G3XC), an r.f. noise generator (G3KUH), an all band h.f. transmitter using a Geloso v.f.o. and parallel 807s in the p.a. with built in modulator (G3HRC), a radio controlled model boat (R. Gorman) and a field strength meter with OC72 transistor audio stage (G3COJ). A chassis bending jig (G8TL) was a useful accessory. An aerial patching unit and a Z match won for Eric Yeomanson (G3IIR) the voucher presented by Clyne Radio Ltd. The stand was under the management of F. F. Ruth (G2BRH) who had the assistance of many members who volunteered for duty.

Throughout the exhibition GB3RS/A was in operation from the hall, using equipment loaned by G3AAZ (all-band transmitter), G3IIR (receiver and crystal controlled converter) and KW Electronics Ltd. (multiband dipole aerial system). The aerial masts were erected by the members of the Norwood and South London Group and QSL cards were supplied by Mullard Ltd.

V.h.f. and u.h.f. equipment of all types was displayed on the London U.H.F. Group's stand from which a station was active during the exhibition on 144 Mc/s using various call-signs. The aerial was loaned by J-Beam Aerials Ltd. Among the items on show were a complete 70cm receiver (G6LL), a 4m transmitter (G3FZL), a 23cm helical beam



Sir Harold Bishop discusses some of the latest u.h.f. equipment exhibited by the London U.H.F. Group with I.G.Y. Co-ordinator Geoff Stone, G3FZL. The President, Air Marshal Sir Raymond Hart, Phil Thorogood and Wing Commander Alec Gilding listen with interest to the discussion.

with a gain of 13db (G5CD), a 2m " Wonder Box " pre-amplifier using a CV53 disc seal valve (G2FKZ), a similar pre-amplifier of somewhat different mechanical design (B.R.S. 20533) and a 430 Mc/s exciter with the crystal in a thermostatically controlled oven and producing 25 watts r.f on 434·650 Mc/s from p.p. DET24s (G3HBW). A 1300 Mc/s converter built by G3HBW comprised a CV2154 co-axial line crystal mixer with tuned probe local oscillator injection, the local oscillator chain consisting of an ECF80 as a Butler fifth overtone oscillator on 35·25 Mc/s, tripling to 105·75 Mc/s, followed by a 6J6 push-pull amplifier, 6J6 push-pull tripler to 317·25 Mc/s and a 446A quadrupler to 1269 Mc/s. The i.f. head amplifier uses a triode connected 6AK5, followed by two EC91 stages. G3HBW also showed a 1300 Mc/s transmitter giving 10 watts r.f. output.

An unusual aerial, due to W. A. Cummings of the National Research Council of Canada, constructed and exhibited by K. W. Cranfield, was a 500 Mc/s wideband end fire array with a gain of 6db to 10db over a dipole over a frequency range of 50 per cent centred on the design frequency.

Amateur TV

Without any doubt the outstanding live exhibit was the Amateur Television studio operated by members of the British Amateur Television Club. The equipment was built by five members and comprised a Pye photicon camera (Jeremy Royle of G2WJ/T), an image orthicon camera (G3KOK/T) and a TV Telephone (Ivan Howard), using a Pye staticon about 6 in. long. Throughout the exhibition, shows to demonstrate the versatility of the equipment were produced and distributed by co-axial cable to television receivers around the hall loaned by Cossor. The pictures were of an exceptionally high standard and equal to those put out by professional stations. Those involved in the tremendous task of keeping such a demonstration going worked extremely hard and with unflagging enthusiasm.

* * *

The exhibition was indeed a success and thanks are recorded to Phil Thorogood (G4KD) for his work as Organizer and to all those visitors, exhibitors and stand workers who in one way or another contributed to making it so. The winner of the Eddystone receiver offered by G4KD was Mr. J. H. Smith (G2DUG).

FOUR METRES AND DOWN

By F. G. LAMBETH (G2AIW)*

NEARLY all the entries are in for the European DX contest. They cannot be dealt with immediately owing to the delay in forwarding the Dutch logs—PA0BL was suddenly whisked off to Norway on business at the crucial moment and we shall accordingly have to wait a while. There are logs from the following countries:

Austraia	13	Italy	45
Czechoslovakia ..	82	Jugoslavia ..	2
England	2	Luxemburg ..	1
France	24	Poland	22
(including 1 from Algeria)		Spain	3
Germany	57	Sweden	11
Hungary	1	Switzerland ..	8

The scarcity of British entries was remarked upon last month.

We hope to be able to publish the overall and national results shortly. In the meantime, our thanks to all those who took part—however lowly their score. Thanks also for 17 check logs from Czechoslovakia.

Contest Comment

On the question of I.A.R.U. and other v.h.f. contests, there has been some reaction. **G5MR** hopes they will be continued and thinks the apathy is due to the increasing laziness of the age in which we live. G5MR has participated in almost every 2m contest for fixed stations for several years, and on 5m before 2m started—a very fine record.

G2XV (Cambridge) blames " lack of publicity " as also does **G3GOZ** (Enfield). We would say, however, that the rules were printed *in extenso* in the BULLETIN and the advance notice of the European V.H.F. Contest was printed in a special box in the August BULLETIN under *Tests and Contests*. If people do not read these, one finds it difficult to understand why they should blame anyone on a question of publicity. The contest was also mentioned in the *Short Wave Magazine V.H.F. Column* and on GB2RS. G2XV thinks another reason is " complicated office work " required to prepare an entry, and says scoring should be made easy, " bearing in mind that hams enter for *pleasure!!* " G3GOZ blames a fine weekend which may have tempted people out of doors (but apparently not portable!). G3GOZ also mentions the necessity of good sites for success in these contests, a point which is generally agreed, but if everyone shunned contests because of poor sites the events would soon disappear, as the mountain top boys would soon get tired of working one another! G3GOZ suggests handicapping to allow for differences in site values and finally suggests that the majority of v.h.f. operators only have a chance if the '5KWs, '6NBs, '3KEQs, on their local " mountains " do not participate. However pleasant this prospect might be from some people's point of view, it would be difficult to enforce and quite undesirable.

G5UM (Knebworth) thinks the international contest suffered because conditions were not good enough to promise long range contacts; that if European DX is not audible in a European Contest there seems little reason for going in for it. G5UM suggests holding a National R.S.G.B. V.H.F. Contest to run concurrently with the International one—but this was actually done this year!!! Another suggestion from G5UM is that we might hold two v.h.f. field day events, as now, and make one of these a 2m N.F.D. Any comments? Anyway one thing stands out a mile. None of these correspondents want the contests to stop, and we suppose that most of those who haven't written would feel the same about it.

Signals from Iceland

On September 29 at a time of visible aurora, PA0FB reports having received signals from TF2GD (Iceland), an event which should open up great possibilities of working countries and distances, otherwise thought impossible, during an aurora.

We shall be very glad to have reports of any other such surprises which will be of interest to all. These auroral manifestations have generally enlivened the period under review, many strange and apparently wondrous happenings being reported. It is only surprising that these phenomena have hardly been recognised and certainly very little reported, before the I.G.Y. commenced.

Two Metre Station Reports

B.R.S.19162 (Dewsbury) experienced the aurora on September 29, from 16.00 clock time until 18.30. The countries logged were GM, OZ, PA, DL, ON and F. Remember, this is from a poor location. Rare G stations heard were G3CZZ and G3JGJ. G3AYT, who was also heard, is only 20 miles away *but* on the other side of the hills and never audible under even good conditions. All stations appeared to be affected and G6XX at 25 miles was inaudible in the usual direction. Midland stations were the weakest, while those from the south were steady and several " S " points better than usual. **B.R.S. 20162** (Selsdon) missed all but one of the openings but was amply compensated by that of October 6 when 70 stations were logged, with others (inaudible to '20162) being called. Conditions were most certainly above average but '20162 wonders whether conditions caused such an increase in activity " or whether the red moon had something to do with it." It was noted that on the following day, still with quite good conditions, activity was low, in spite of activity night.

B.R.S. 20133 (Melton Mowbray) has had a good month. During the aurora on September 29 stations like G2HCG (Northants), G2NY (Lancs), G2YB (Berks), G4DC (Essex) and G5MA (Surrey) were all heard with the beam northwards. During the period September 12 to October 13 there were 175 log entries which underlines good average conditions. A 6-over-6 slot aerial is going up on October 26 and improvements are confidently expected, including possible reception of continental DX. It is hoped to have G8CZ's transmitter working /A on the new aerial soon, so please look out for some new Leicestershire c.w.! **B.R.S. 16075** (Southampton) found activity very low locally in spite of tropospheric and auroral openings. G3IBI and G3FAN are usually the only locals. G3IBI's first experience of aurora was marred by the thought that all the activity at the low end was due to converter break-through!

G3EMY (Birmingham 20) has just returned to 2m, and hopes to be on 70cm soon. On October 6, activity was noted as good, with 50 stations heard ranging from G3BW (Whitehaven) to G6XX (Goole), G3GFG (Portsmouth)

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

and G5DW (nr. Bridgwater) and G5MA (Bookham). All this with the transmitter at the /A location, Felixstowe!

G3JGJ (Plympton) experienced his first aurora on September 29 (17.00 to 18.43) and would probably have missed it but for G5ZT's call in the afternoon to try a mobile 2m rig. Many of the stations had never previously been heard at G3JGJ. No signals were above S8 and all had a T2 note. The beam was n.n.e. the whole time, the stations heard were chiefly calling CQ, everyone was answered, with occasional CQs in between—but not a single one was raised. GC2FZC was later worked on sked as usual at RS55/0 each way. On the following evening G2FZC's signals were all " chopped up and unreadable," but G3JGJ worked G3CZZ (Camborne, Cornwall) and called GW5SA/P (5 7/4 9). A sked has been commenced with G3KHA (Bristol) at 19.00. **G5ZT** is going /P or /M on Sunday afternoons at around 16.00 on some good local high spots until further notice.

G3KHA (Bristol 4), dealing first with tropospheric propagation, found conditions generally pretty fair, with several openings, including one to the Midlands during the evening of October 2. On October 9 and 15 continentals were good signals while October 7 was excellent to the south and south-west, with G3JGJ raised on phone and G3CZZ on the key.

Auroral conditions were noted on September 22 from 15.40 to 16.20 G.M.T., with nothing out of the ordinary after that until 21.58 when G5YV was heard calling CQ north-west with a very " rusty " note. On September 29 G3KHA came on the band at 15.40 G.M.T. and found everything in full swing, with GM, DL and all the Gs normally inaudible—all coming in from the north-east. G3KHA was after GMs and they were after somebody else, so none was raised. After a quick QSO with G5YV, an attempt was made to raise G6XM, never before worked. This phase of the aurora finished at 17.40 G.M.T., in the middle of the QSO with G6XM. There was then a lull until 22.15 G.M.T. when " aurora normal " was resumed, with EI6A and GI3GXP in attendance. Conditions were going out again by 23.30. GM3EGW was raised at 23.45 but the contact was not completed. G3KHA comments on the contest apathy and is in favour of retaining the contests, as they are more likely to do good to activity than otherwise, especially if conditions happen to coincide!

G5YV (Leeds) had some exceptional experiences during the aurora of September 29. From 16.30 B.S.T. onward the band was already full of Gs and continentals at strength between S5 and S9+, all notes of course being about T4, until about 19.30 B.S.T. During this time numerous stations were worked and heard. G5YV heard many Gs, and worked three Bristol stations and G2ADZ (Woolacombe). The outstanding contacts were with HB9BZ and HB9RG. Harold was particularly pleased to work the HB9s as they had previously only been worked portable from mountain tops. HB9RG told G5YV, in a letter later, that the only other G heard was G5MA. HB9BZ had heard and called G2NY and G5MA with no result. Signals were again coming through by aurora later the same night, from about 23.45 until 00.45, but most people were probably in bed by then, as there were not so many signals audible. All continentals were best on the beam heading n.n.w. and all British Isles stations bearing due north. During the week ending October 13 tropospheric conditions were well above average, the 9th being the best day when G5YV worked several continentals, the best being DJ1VA (Dueren).

G3JR (Barnes) had his first experience of aurora during the second phase on September 29. Many DX stations in G, GW, GI, GM, PA and DL were heard but not raised. G3JR has been working some rather exotic counties like Worcester, Hereford and Gloucester on phone which is rather remarkable in view of his position. During the aurora the beam was occasionally turned n.n.w. and n.w. in the hope of a stray TF or W! Nothing happened, but the better placed stations might think of it. There is always the possibility!

G3FZL (Forest Hill, London) worked GM3EGW on October 9 by the old-fashioned tropospheric method for the first time. This was also G3FZL's first GM by that means.

G8VZ (Princes Risboro') managed to work F8MX/A on September 9 for a new country, whilst on September 22 GM6XW was heard at 21.50 G.M.T. at 563, but although called three times failed to respond. Conditions on October 6 were good, stations to the north and west being strong. **G5MA** (Great Bookham) had one of his usual months, having worked GM6KH, OZ3M, OZ9AC, PA0BZH, 0UHF and 0YZ during the aurora of September 29. German stations, GM and G stations were also heard in the afternoon session. In the later period GI3GXP and GM2FHH were heard. During the month some excellent " ordinary " G-DX QSOs have been made, including G2FO (Durham), G3BW (Cumberland), G3IOE (Northumberland), GI3GXP (Co. Down), GM3EGW (Fife), GW5SA/P (Carmarthen), GW6AG/M (Brecknock and Pembroke). G3CZZ (Camborne) was heard and F8ME (St. Brieuc) and PA0FB worked.

G5YV worked HB9RG, HB9BZ, two SMs, two OZs, two ON4s, several DLs, two PAs and a French station, not to mention Gs, GMs and GIs, during the auroral opening on September 29. **G5BD** worked 10 countries, his best contact being SM5BRT in Stockholm.

G2ABD (Kenton) is coming back on 2m with a 6 over 6 slot and is looking forward to renewing old friendships on the band. **G5MR** (Hythe, Kent) had a good night on October 15/16 when there were S9 phone contacts with G3BA (Sutton Coldfield) and GC3EBK. Activity was not apparently very high although some Gs were heard working PA stations. **G2HDR** (Bristol 9) worked seven new stations in six new counties. GW6AG/M gave two of these (Brecon and Pembroke), and an interesting feature was to hear stations from the east which hitherto had been a singularly quiet sector. This is partly explained by autumnal leaf-fall which seems to have unscreened the east and south-east. A single slot with two reflectors is going up and SWL reports will be gratefully acknowledged. **G3GOZ** (Enfield) worked GM6XW during the aurora of September 22 and October 7 in very good conditions worked G3HA (Bradford) and G6XM (Tollerton).

G5BM (Highnam) found conditions good on the whole between October 1/14. On October 1, G3BW and G5YV were heard, and on the 2nd a good path to the east opened with signals from Essex and Cambridgeshire all steady S9. On October 9 a QSO was made with DL3VJ—the first DL, which shows how difficult it can be from the West Country. On October 13 the south-west was good with G2BMZ as a nice QSO. On the 14th the south was even better, and with Paris TV sound blotting out B.B.C. Channel 1, great things were expected and eventually F8ME and GC3EBK were raised. G5BM thinks French activity must have been at a low ebb, otherwise many more QSOs would have resulted.

A complaint comes from **G5DW** (Ashcott, Bridgwater) who bemoans the fact that during openings, the band becomes very lively except for those whom habitation of the West Country condemns to " sit and wait " above 145.5 Mc/s. This is *not* the fault of the band plan, but of those operators who rarely tune the band fully. This also applies to many continental stations who have been repeatedly asked to tune 145/146 Mc/s as well as the lower end. The cure is not to invade other sections of the band—remember that even the top end of the London zone is sometimes a dead loss when continentals are on as they appear to start at 144 and work the first new station they hear, going back to 144 every time! The only answer appears to be (1)

patience and (2) publicity. Tell all your lower end QSOs to tell the others to look above 145.5 Mc/s. Sooner or later it must have a result. Please *don't* destroy the Band Plan.

G5DW, in spite of all the above managed to work 14 new stations in one day, none of these really new to the Band, but reactivated—probably the result of the September 29 Aurora " excitement." '5DW would also vote for European v.h.f. contests even if they aroused only limited enthusiasm under poor conditions. They *do* advertize occupancy of the band.

Two Metre News from Scotland

GM6WL reports a great working and hearing of stations by himself and GM6KH during the aurora of September 29. GM6WL's QSOs are all DX, Gs or GW, whilst GM6KH has PA, F and DL stations in the list. Tropospheric propagation has not shown many results, but a few nights showed signs of improvement, notably September 29 when G3BW was worked on c.w. by GM6WL. On September 30 GM3NG contacted G3BW on 2m phone, good strong signals both ways. GM6ZV also worked G3BW. October 8 saw a QSO between GM3DIQ and G2NY on phone. October 14 was a good night for G2NY who, after his sked with GM3EGW was contacted by GM3DIQ, '3NG and '3INK. As a tailpiece to the aurora on September 29 GM3INK was out until midnight, came home, pressed the key six times to call PA0GER. Raised him immediately (555) and went to bed!

Polish Two Metre Stations

According to *DL-QTC*, the following are known to be active on 2m in Poland:

SP5AU (Warsaw, 145·92 Mc/s), SP5EL (Warsaw, 145·32 Mc/s), SP5FM (Warsaw, 145·66 Mc/s), SP2CO (Danzig, 145·92 Mc/s), SP5FW, and SP2EQ (Danzig).

Portugal

We learn from CT1CO (Lisbon) that no CT station was on 2m on August 31. For one reason or another the only three CTs active on 2m (CT1AB, CT1ST and CT1CO) were not on the band at that time. CT1AO has never worked on 2m. Never mind, it will surely happen some day!

Two Metre News from Germany

Most DL4s seem to ignore v.h.f.s, and it is therefore a great pleasure to record that **DL4CK** (Ramstein, W3YHI) hopes to be on soon with 500 watts s.s.b. DL4CK was on 2m in 1949/52 and has since been back to the States. As he now expects to be in Germany for three years, we certainly hope to hear something of him, and with 500 watts we no doubt will! The call may be changed from DL4CK if this has been re-issued meantime; further information later. DL4CK has been on 2m s.s.b. for some time in U.S.A. His normal frequency is 144·018 Mc/s. Ramstein is nine miles west of Kaiserslautern (70 miles south-west of Frankfurt). We are indebted to G3DIV for the above news.

Two Metre News from Holland

PA0FB (The Hague) was active during both parts of the aurora reflections on September 29, the times being 14.15/16.35 and 22.55/23.30 G.M.T. The band was full of stations. During session 1, PA0FB worked GM3DIQ, GM6KH, G2XV, G2NY, OZ3A, OZ9EA, OZ9AC, OZ2BB, G6XM and G2AHP. During the second, G5YV, OZ7BB, SM7BZX and SM6BTT were worked. At 21.40 B.S.T. TF2GD was heard at RST555 on an otherwise quiet band. According to Hilversum broadcast station there was a visible aurora at the time. Many British stations were heard, including GW8SU and GI3GXP. GI3GXP, incidentally, was worked by PA0GER at about 23.20. Many other overseas stations were heard during the period including OZ7IGY and other OZs, DL1RX, some PA0s and ON4DW. On September 23, also by aurora, PA0FB worked GM3DIQ (RST575) at 13.55 G.M.T., whilst ON4DW (575) was heard. DL3VJ is reported to have heard an SM4 (Northern Sweden) station while PA0RK heard SM5MN, both on September 29 during the auroral period.

Seventy Centimetre News

G5UM reports that increasing numbers of 70cm operators are regarding Saturday evenings as unofficial activity nights. Some have urged the concept of an official " Saturday Night is 70cm Activity Night," remembering the great popularity which " Monday Night on 2 " has achieved. Others don't like too much parcelling up of the week into separate activity nights. The fact remains that between 6.30 and 8 p.m. most Saturday evenings at least half a dozen London area stations are active, and it is suggested that this is a good time for south-east u.h.f. operators to add their strength to the band.

G8AL (Chingford) has worked many stations on 70cm since September 18 and thinks conditions have been as good on 70cm as on 2m. Has anyone monitored 70cm during an aurora?

G5KG (Danbury) is active on 70 cm (frequency 435·18 Mc/s) with a QQV03/20 tripler followed by another as p.a. The receiver uses a coax line r.f. amplifier. The aerial is 8 voltage-fed half-waves. The elements are fed in phase, with mesh reflectors at eighth-wave spacing. G5KG is on most evenings looking for contacts on phone or c.w. G2XV says that his frequency is 435·17 Mc/s. The sked with G2OI which was reported as " except Saturdays and Sundays " should be " except Saturdays and Mondays."

B.R.S. 16075 (Southampton) would like information on the best feeder for 70cm. He and G3IBI are preparing to shatter distance records on Amateur TV and hope to get transmission going by Christmas.

Four Metres

The only report is from **G5MR**, who sends a short list of stations heard over a longer period than that under review, although most of them were heard also recently. **G6NB** has been a very good signal, but no QSO has resulted. On October 2, conditions were good and **F3GX** and **F8MW** (the latter at 178 miles) were logged for the first time. As they were working other F stations on 72 Mc/s they were not called, as they were apparently not checking the British frequencies.

G3EUQ (Southampton) is on 4m and is carrying out tests with G3GOP.

Six Metre DX News

The first contact on 50 Mc/s between Eire and the U.S.A. took place on October 27 when **EI2W** on 50.016 Mc/s worked W2JTE at RS59 both ways. EI2W, who has a special temporary permit from the Eireann P.O., also contacted W2UTH and W8CMS on the same day using an input of 40 watts and a ground plane. On November 1, he had 14 QSOs in various W districts.

SM5CHH is another European operating on the band.

G3COJ (Maidenhead) reports that conditions on October 27 were excellent, with the 50 Mc/s band open from 12.00 to 16.00. On November 4, G3COJ heard W6NLZ and W7RUX at S9 on phone and has thus heard all W districts this autumn as well as several Canadian. W1DEI said during a cross-band contact that he is able to receive on 70·2 Mc/s.

I.G.Y. Forms

Some of the remarks in our last issue were a trifle misleading. If you already fill in the standard black forms do not use the *red* ones, which are for reports sent in via G2AIW. When the red ones are used, please employ them for full reporting, tropospheric as well as auroral; the difference can be noted on the sheet.

Thanks for your co-operation—the deadline for next month is November 18. Goodbye for now.

Woburn Abbey Mobile Rally

By J. DOUGLAS KAY (G3AAE)*

THE largest ever U.K. gathering of mobile operators took place on Sunday, September 29, when approximately 250 carloads of amateurs—mostly equipped for two-way mobile working—gathered in the grounds of Woburn Abbey, Bedfordshire, ancestral home for centuries past of the Dukes of Bedford. The attendance is estimated to have been between 500 and 600 people.

It started to rain during the night and by dawn the downpour was torrential: it looked as if the rally was going to be rather a moist affair. Providentially, however, the weather changed in mid-morning, and for the rest of the day was dry and sunny, but with a bracing northerly wind.

The hardcore of organizers and helpers arrived early, and by mid-morning G3BZG/P, G3FZL/P, G3IIR/P and G4OL/P were operating on 1·8, 3·5, 7 and 144 Mc/s guiding arriving mobiles to the venue. Early in the afternoon the specially arranged parking enclosure was so full that later arrivals had to park their cars on an adjacent site.

It really was a wonderful sight: all sizes, shapes and ages of cars sprouting the most amazing variety of aerial systems from full sized three element 144 Mc/s Yagis to what surely must be the longest 1·8 Mc/s loading coil in the world (G3ERN/P). Activity was at a high peak all afternoon with many old friendships being renewed and much useful information being exchanged between mobileers explaining their special bits of pet gadgetry. Everyone was peering into everyone else's car—one of the most charming sights being a view of three trouser seats in a row, the owners of which were taking a very close look at the mobile equipment situated in a car boot!

Throughout all this hubbub of activity G2UJ and G6LL worked their way through the assembled cars, notebooks in hand, judging the equipment. The winner was G3ATL/M (with a 1·8 Mc/s station), and at approximately 4 p.m. His Grace The Duke of Bedford, arrived to inspect his installation and to present a silver miniature. His Grace was most interested in everything he saw, and visited a number of other cars, getting into each and examining the mobile equipment at close quarters. By the time he reached the control station operating on 144 Mc/s a major aurora was taking place and Scottish and Dutch signals were being received.

* *18, Fairfield Way, Barnet, Herts.*

G3CIM (left) and G3BZG discuss mobile equipment with the Duke of Bedford.

His Grace The Duke of Bedford examining G3ATL's equipment after presenting a silver miniature to him.

It was very pleasant to see so many XYLs, YLs and junior ops. accompanying the OMs, and for them especially no better venue than Woburn Abbey, with all its historic contents and beautiful surroundings, could have been found.

The raffle—hundreds of tickets for which had been sold by Mrs. G2AHL and G2BRH—was drawn at about 5 p.m., and shortly after that some of the more distant visitors started their homeward journeys.

It was unfortunate that some of the arrangements did not work out quite as well as planned. Nevertheless, the rally was an undoubted success and this was largely due to the untiring efforts of G3BZG, G2AHL, members of the Crystal Palace and District Radio Society and other helpers who arrived first, left last and worked without ceasing during the intervening period.

Next year it is hoped to hold another mobile rally at Woburn Abbey, probably in the early summer, when the warmer weather and longer hours of daylight will enable many more activities to be arranged.

This year, the extremely large numbers attending the rally rather took the organizers by surprise, and plans are therefore being made to cater for this large number with a p.a. system for the dissemination of information, special parking arrangements for mobile stations entering the concours d'elegance, and more organized activities for those who want them. This was a great rally, but next year's will be even better.

"U" or "non-U"

MEMBERS of the R.S.G.B. "Intruder Watch" continue to monitor non-amateur transmissions in the "exclusive" amateur bands. From time to time, however, the Group find it very difficult to identify "intruders," even with official help.

A special problem at the moment is to try and identify a station which works at the l.f. end of 14 Mc/s. The frequency has been measured as 14003·5 kc/s but the transmissions are not stable enough to be used for frequency measuring purposes. The station may be employed for frequency propagation observations but it is difficult to identify because it sends only the letter "U" on A1. Band spread has been measured up to ± 10 kc/s.

Members who regularly use the 14 Mc/s band are asked to help in establishing the identity of this station. Reports should be sent to Major D. W. J. Haylock (G3ADZ), 3 Norris Gardens, Grange Estate, Havant, Hants.

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, September 23, 1957, at 6 p.m.

Present: The President (Mr. D. A. Findlay in the Chair), Messrs. W. H. Allen, C. H. L. Edwards, K. E. S. Ellis, W. J. Green, J. H. Hum, E. G. Ingram, W. H. Matthews, W. R. Metcalfe, A. O. Milne, L. E. Newnham, W. A. Scarr, John Clarricoats (General Secretary) and John A. Rouse, (Deputy General Secretary).

Apologies: Apologies for absence were submitted on behalf of Messrs. H. A. Bartlett and F. Hicks-Arnold.

Absent: Messrs. R. H. Hammans and H. W. Mitchell.

* * *

Contests Committee

Resolved to receive as a Report the Minutes of a meeting of the Committee held on August 22, 1957, and to adopt the Recommendations contained therein.

The Recommendations dealt with National Field Day and other Contests organized and judged by the Committee.

Finance and Staff

Resolved to receive as a Report the Minutes of a meeting of the Committee held on September 6, 1957, and to adopt the Recommendation contained therein.

The Recommendation dealt with a proposal to set up an *ad hoc* Committee, with wide terms of reference, to examine all aspects of BULLETIN preparation and production.

Messrs. W. H. Allen, J. P. Hawker and J. H. Hum were invited to serve on the Committee and given power to co-opt.

Accident Insurance

Resolved to accept a quotation from Union Assurance Society Ltd. to cover members of Council, Committees and staff against accidents which may occur whilst travelling on Society business. (The previous policy covered members of Council and two members of the staff only—EDITOR).

Exhibition Committee

Resolved to receive as a Report the Minutes of a meeting of the Committee held on September 13, 1957.

It was reported that the sum of £445 had been taken on the Society's stand at the National Radio Show, Earls Court, and that during the period of the Exhibition 59 persons had applied for membership.

A recommendation outlining a scale of expenses which may be claimed by members undertaking stand duty at the Radio Hobbies Exhibition was accepted. Other matters connected with the Radio Hobbies Exhibition were also dealt with during consideration of the Committee's Report.

I.G.Y.

The I.G.Y. Co-ordinator's Report of a meeting of the I.G.Y. Group held on August 17, 1957, was submitted for information.

Membership

(*a*) *Resolved* (i) to elect 143 Corporate Members and 26 Associates; (ii) to grant Corporate Membership to two Associates who had applied for transfer.

(*b*) It was reported that 78 of the 672 members whose subscriptions became due on June 1, 1957, became three months overdue on August 31, 1957, and that 13 of the 78 members concerned had written to resign.

Applications for Affiliation

Resolved to grant affiliation to the Derby Short Wave Experimental Society.

Christmas Cards

Resolved (i) to place an order with W. R. Royle & Son Ltd. for printing 2,000 Society Christmas Cards to the design submitted; (ii) to offer the cards for sale to members at a price of 9/- per dozen (10/- per dozen post free) complete with envelopes.

Society Trophies

Resolved to award the Rotab Trophy to Mr. H. J. Gratton (G6GN), the Courtenay Price Trophy to Mr. S. C. Tucker (G5DT), the Founder's Trophy to Mr. J. D. Kay (G3AAE), and the Calcutta Key to Mr. A. F. Dennis (G3CNV). (A statement dealing with the award of these four trophies appeared in the October 1957 issue of the BULLETIN.—EDITOR.)

Benevolent Fund

Consideration was given to a proposal, first put forward in 1948 by Mr. C. H. L. Edwards, that the Society should inaugurate a Benevolent Fund based on the Rules used by the Institution of Electrical Engineers. After discussion it was

Resolved (i) to take no action on the proposals submitted by Mr. Edwards to set up a Benevolent Fund; (ii) to place on record the thanks of the Council to Mr. Edwards for submitting details of a Benevolent Fund scheme; (iii) to refer to the Finance and Staff Committee a suggestion put forward by Mr. Milne that the Society should inaugurate a fund for paying the subscriptions of needy members.

News Bulletins

It was suggested to the Council that as the weekly News Bulletin would in future be transmitted twice on 3·6 Mc/s. twice on 7·1 Mc/s and five times on frequencies around 145·5 Mc/s, the need for a Morse résumé had largely disappeared.

After a full discussion it was resolved to discontinue the Morse résumé forthwith.

An amendment to the effect that the membership should be consulted before dropping the Morse résumé was not carried.

(A statement dealing with this matter appeared in the October 1957 issue of the BULLETIN.—EDITOR.)

Subscription Rates

Resolved to hold an Extraordinary General Meeting immediately after the Annual General Meeting on December 13, 1957, for the purpose of considering an amendment to Article 19 (see *Council Proceedings* for August 1957 as published in the October 1957 issue of the BULLETIN.—EDITOR.)

I.T.U. Conference Geneva 1959

It was agreed to suggest to the G.P.O. that the figure of 1000 Mc/s referred to in Clause 3 of Article 42 of the Radio Regulations Atlantic City 1947, should be reduced to 400 Mc/s.

(Article 42, Clause 3 states that " Any person operating the apparatus in an amateur station must have proved that he is able to transmit, and to receive by ear, texts in Morse code signals. Administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 1000 (one thousand) Mc/s.")

South Wales O.R.M.

The President reported briefly on the successful Region 10 Meeting held on September 21, 1957, in Cardiff when an attendance of 120 was recorded.

The meeting terminated at 9.15 p.m.

INCREASED POSTAGE RATES
When writing to headquarters for information please enclose 3d. stamp for reply.

Society News

Annual General Meeting

THE 31st Annual General Meeting of the Society will be held in the Kingsway Hall, Kingsway, London, W.C.2 at 6.30 p.m. on Friday, December 13, 1957. The Annual General Meeting will be followed by an Extraordinary General Meeting, after which Society trophies and awards will be presented.

No facilities exist in the Kingsway Hall for the provision of buffet refreshments but there are several excellent tea shops in the near vicinity of the Hall.

A copy of the Society's Audited Accounts for the year ended June 30, 1957, is enclosed with each copy of this issue of the BULLETIN posted to members. In addition Corporate Members resident in the United Kingdom will receive with this issue Notices convening the Annual and Extraordinary General Meetings, a Ballot Paper and Ballot Envelope.

R.S.G.B. Amateur Radio Call Book

THE 1957-58 edition of the *R.S.G.B. Amateur Radio Call Book* is expected to be on sale by the middle of November 1957.

This is the most comprehensive list of United Kingdom call-signs ever published as it includes practically every call issued up to about the middle of October 1957. The exceptions are the few amateurs who, for personal reasons, do not wish details of their call-signs to be published.

The new edition runs to 72 pages—16 more than the previous edition—and contains in addition to the call-sign material, lists of International prefixes in prefix and country order, the R.S.G.B. QSL Bureau rules, information about the R.S.G.B. and an application form for membership.

The work of preparing the material for this edition was undertaken by Mr. W. J. H. Kempton (G8LN) of 24 Edison Grove, Plumstead, London, S.E.18, to whom details of changes of address should be sent. Council Member Jack Hum (G5UM) read the proofs.

The price of the new edition has been fixed at 3/6 (by post 4/-).

T.R.s and Club Secretaries will assist Headquarters and local members by placing bulk orders at the rate of 3/6 a copy, plus the cost of postage and packing (2/6 in the case of lots of one dozen).

Society Christmas Card

SUPPLIES of the Society's Christmas card are now available from Headquarters, price 10/- per dozen post free, including envelopes. The card, which is of distinctive design and printed in red, has been produced by W. R. Royle & Son Ltd., the well-known London firm of printers.

Receipts

IN order to reduce expenditure, receipts for subscriptions paid by cheque, banker's order or postal order will, in future, not be sent unless especially requested. Receipts will be drawn as usual and kept on file at Headquarters for at least six months.

An estimated annual saving of £60 on postage charges will be achieved if members are willing to forego receipts.

Votes for the Region 4 Representative must not be included in Council Ballot envelopes. Closing date for the voting cards in connection with the Region 4 election is

SATURDAY, NOVEMBER 30th, 1957.

GB2RS Schedule

THE R.S.G.B. News Bulletin is now being radiated on frequencies in the 3·5, 7 and 145 Mc/s bands. The schedule is as follows:

3600 kc/s	Sundays	10 a.m.	(London)
		12 noon	(Yorkshire)
7100 kc/s	Sundays	10.30 a.m.	(London)
		12.30 p.m.	(Yorkshire)
145·55 Mc/s	Sundays	11.15 a.m.	(beaming South-East from Leeds)
		11.30 a.m.	(beaming South-West from Leeds)
		11.45 a.m.	(beaming North from Leeds)
145·5 Mc/s	Sundays	12 noon	(beaming North from Well Hill, Kent)
		12.15 p.m.	(beaming West from Well Hill)

Certificate Claims

MEMBERS who forward claims for R.S.G.B. operating certificates and awards are asked to enclose sufficient stamps or a remittance to cover the cost of the return of the cards. Cards will not be returned by registered post unless a special request has been made and sufficient stamps enclosed.

Claims should in all cases be sent direct to the R.S.G.B. Honorary Certificates' Manager (Mr. C. R. Perks), 74 Long Lane, Newtown, near Walsall, Staffs, England and not to R.S.G.B. Headquarters.

Cards from overseas will be returned, after checking, as commercial papers, and will be registered only if sufficient postage has been sent with the claim.

Representation 1958-59

A COMPLETE list of Corporate Members who have been nominated without opposition to serve as Regional or Town Representatives will appear in the December issue of the BULLETIN.

Ballot

It will be necessary to conduct a Ballot for the election of a Regional Representative in Region 4.

The names of the nominees for the office are set out below:

Dr. E. S. G. K. Vance (G8SA)*
Mr. A. Walmsley (G2HIO)
Mr. W. A. Mead (G5YY)

**Present R.R.*

Voting

Corporate Members resident in the Region concerned are invited to record their vote in favour of one of the above candidates and to forward same on a *postcard* addressed to the General Secretary, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, *to arrive not later than November 30, 1957.*

Prescribed Form of Voting Card

Election of Representatives 1958-59

I ..... being a fully paid-up Corporate Member of the R.S.G.B. wish to record my vote in favour of ..... as Region 4 Representative.

Signed .....

Call-sign or B.R.S. .....

Address .....

.....

HOW DOES IT WORK?

A symposium on a popular type of Multi-Band Aerial

FEW items in the BULLETIN have raised so much interest and controversy in recent years as a small paragraph in the June issue headed "How does it work?" Many members wrote to explain how the aerial illustrated worked. A selection from their letters follows.

G3HPY, who is a lecturer at the Marconi College, Chelmsford, wrote:

"1. The 34 ft. length of 300 ohm feeder on 14 and 28 Mc/s is $\lambda/2$ and λ in length respectively, and on 7 and 21 Mc/s is $\lambda/4$ and $3\lambda/4$ long. Thus on 14 and 28 Mc/s there would be no change if the 300 ohm section were omitted, since a length of transmission line of length $n\lambda/2$ shows an impedance at the feed end equal to that of the load.

On 7 Mc/s and 21 Mc/s, however, the 300 ohm section acts as a quarter wave transformer, a property of which is that of inverting impedances, i.e. $Zin = Z_o^2/Z_l$ where Z_o is the characteristic impedance of the line. Thus the correct load impedance Z_l required for correct termination of the 70 ohm cable is

$$Z_l = \frac{300^2}{70} = 1300 \text{ ohms approx.}$$

Hence, to provide a correct match the aerial must have at its feed point an impedance of 70 ohms at 14 and 28 Mc/s and 1300 ohms at 7 and 21 Mc/s and must be purely resistive.

(*a*) **At 14 Mc/s** (required load 70 ohms)

The aerial top is $3\lambda/2$ long and provides a good match since the feed point is at a current maximum and will be around 70 ohms, and resistive.

(*b*) **28 Mc/s** (required load 70 ohms)

The 101 ft. top is 3λ long, the feed point is at a current minimum where the impedance is high. The effect of feeding two $3\lambda/2$ elements in phase will lower the radiation resistance somewhat, but certainly not much below 1000 ohms referred to the feed point, and so the mis-match is considerable. Being electrically fairly long at this frequency the impedance will change rapidly with frequency at this feed point.

(*c*) **7 Mc/s** (required load 1300 ohms)

The aerial top is $3\lambda/4$ long at this frequency. The feed point will be $3\lambda/8$ from a current maximum. At this point the radiation resistance (referred) may be of this order but there will be a high reactance giving a moderate s.w.r. however well the resistive portion is chosen.

(*d*) **21 Mc/s** (required load 1300 ohms)

The aerial is $9\lambda/4$ in length and conditions are similar to those at 7 Mc/s. In both the 7 Mc/s and 21 Mc/s cases, however, the match will be much better with the inclusion of the quarter wave transformer; on the other bands of course it can be ignored.

2. Concerning G2WI's explanation in the July issue, I would point out the danger of regarding the 300 ohm line as part of a folded aerial length. As long as there is no radiation from it (!) it merely acts as an impedance transformer, as does the 70 ohm line if not correctly terminated.

His statement that 158 ft. at 14, 21 and 28 Mc/s is 5, 7 and 9 half-wavelengths is best illustrated by noting that $2 \times 5 = 9$!

A better approximation would be $4\frac{1}{2}$, $6\frac{1}{2}$ and 9 respectively (note $4\frac{1}{2} \times 2 = 9$) which upsets the current feed explanation by about $\lambda/8$ at the feed points."

* * *

G3KXT of Shirley, Croydon, offered no explanation as to how the aerial worked in theory, but said:

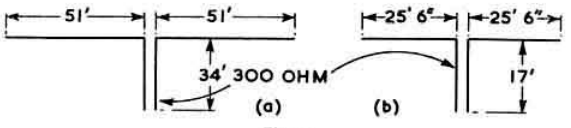


Fig. 1

"The aerial is obviously a version of the G5RV. Two versions have been published as shown in Fig. 1.

I have been using the shortened version at this QTH since last Christmas with great success on 20, 15 and 10 . . . and will be interested in other members' comments."

* * *

G3LHO (ex-VQ4EG, ex-MI3TM), after saying that the aerial gives good results on all the h.f. amateur bands and appears directional only on 15m and 10m and then not too markedly, bluntly remarked:

"I can see no reason for any efficiency at all on 10m, as the feed point impedance would appear to be totally mismatched to the feeder. If my memory serves me well, VQ4FI had flash-over troubles on 10m, and had to reduce power input. This could easily be caused by the high s.w.r. resulting from such a mismatch.

I have access only to a small graph and therefore the figures for feed-point impedance are only approximate. The graph used is Fig. 3-7, p. 137, *Antennae Manual*, Editors and Engineers Ltd.

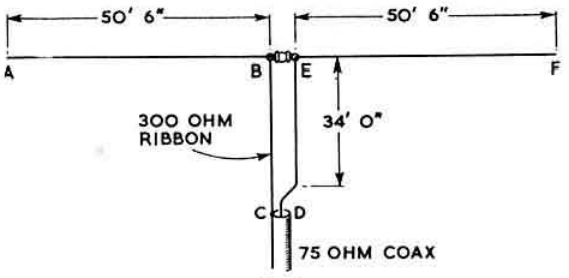


Fig. 2

1. **80m.** $\lambda = 85{\cdot}7\text{m} = 281$ ft.
The length ABCDEF = 169 ft. = $0{\cdot}62\lambda$
The feed-point resistance $\simeq$ 100-120Ω.
$\therefore$ The aerial behaves as a $0{\cdot}6\lambda$ dipole fed with 75Ω coax, and a small amount of mis-match is present.

(2) **40m.** $\lambda = 42{\cdot}85\text{m} \simeq 140$ft.
The length ABEF = 101 ft. $\simeq 0{\cdot}7\lambda$.
The feed-point impedance $\simeq$ 400-500Ω.
Thus the 34 ft. ribbon being $\lambda/4$, acts as an impedance transformer, giving a fair match to the $0{\cdot}7\lambda$ dipole. (75$\rightarrow$400Ω.)

(3) **20m.** $\lambda = 21{\cdot}4\text{m} \simeq 70$ ft.
The length ABEF = 169 ft. $\simeq 1{\cdot}5\lambda$ (1·43).
The feed-point impedance $\simeq$ 80-100Ω.
The ribbon, now $\lambda/2$, has no effect on the impedance, and the coax is matched into the aerial, with a slight amount of error.

(4) **15m.** $\lambda = 14{\cdot}28\text{m} \simeq 47$ ft.
The length ABCDEF = 169 ft. $\simeq 3{\cdot}4\lambda$.
The feed-point impedance $\simeq$ 80-100Ω.
The aerial including ribbon behaves as a $3{\cdot}5\lambda$ dipole, and the coax is matched nominally to the aerial.

(5) **10m.** $\lambda = 10\text{m} = 34$ ft.
(*a*) The length ABEF = 101 ft. = $2{\cdot}94\lambda$.
The feed-point impedance is high >1000Ω.
The ribbon acts 'straight-through,' and the coax is not matched.
(*b*) The length ABCDEF = 169 ft. = $4{\cdot}92\lambda$.
The feed-point impedance is high >1000Ω.
Once again the ribbon has no effect, being λ long, and the coax is not matched.

It would seem that the main object of the aerial was to provide a reasonable means of multiband working, based on 20m as the main band, as can be seen from the calculations.

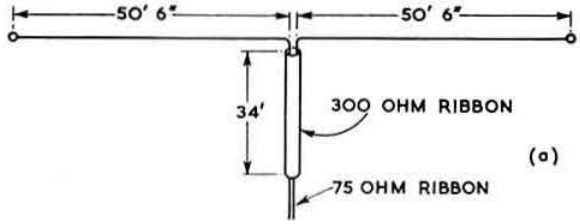
Alternatively, making 20m and 15m the main bands, you will see that the aerial length closely approximates odd multiples of a half-wave; the originator may have been satisfied with some mismatch for 40m and 80m working. (Reducing the length to provide a better match for 40m and 80m would upset the impedance at 20m and 15m.) "

* * *

G3IVH of Norwich got out his slide rule before writing that " it indeed seems an extraordinary system." However, it aroused his interest sufficiently to try to provide an explanation:

" The attempt that follows does not come from any practical experience of the aerial concerned, but is merely the result of using the well-known formulae and a slide rule on the dimensions given, and remembering that if standing waves appear on 300 ohm ribbon feeder, in order to calculate the distance these require, the velocity factor of the feeder must be taken into account, and has been assumed as 0·82.

In all cases the points XX are the actual point of 75 ohm feeder attachment.



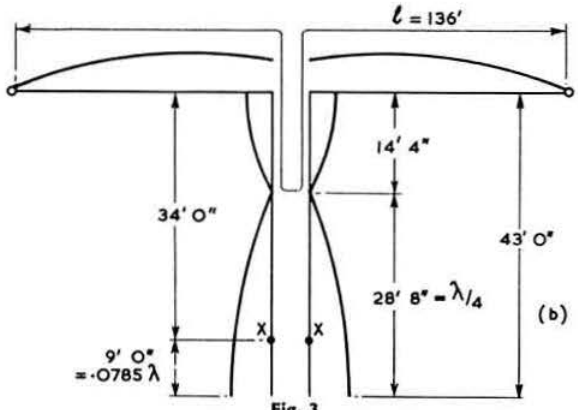


Fig. 3

7·05 Mc/s—Fig. 3

The system acts as two half-waves centre fed, part of the 300 ohm feeder making up the top to 136 ft. The remainder of the 300 ohm feeder acts as a quarter wave transformer. The best ribbon length would appear to be 43 ft., but this is shortened by 0·0785λ so that some mismatch will occur to the 75 ohm section.

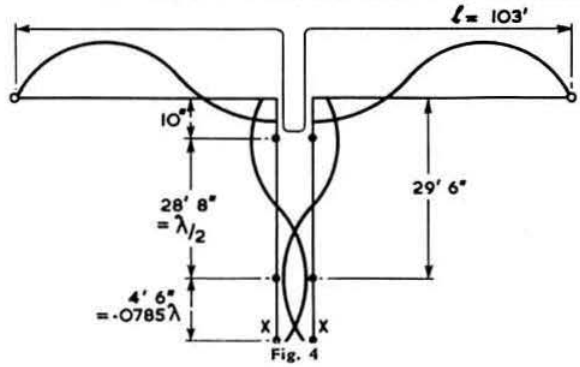


Fig. 4

14·1 Mc/s—Fig. 4

The system acts as three half-waves centre fed, part of the ribbon making up the centre half-wave so that the overall electrical top length is 103 ft. The remainder of the ribbon is λ/2 long and the same impedance will appear at each end. Best feeder length is 29 ft. 6 in., but this time the feeder is 0·0785λ too long so that again some mismatch will occur to the 75 ohm feeder. (Fig. 4).

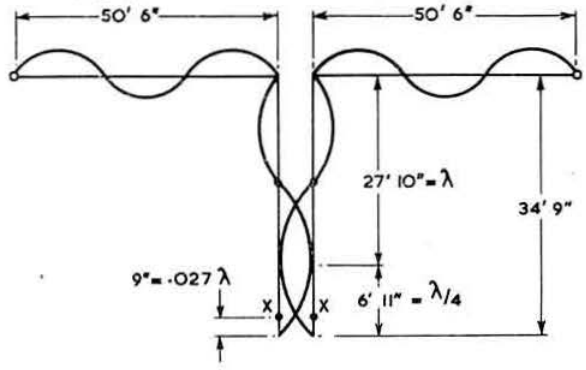


Fig. 5

29·0 Mc/s—Fig. 5

The system acts as six half-waves centre fed, the top being 101 ft. The ribbon acts as four half-waves plus a quarter-wave matching transformer so that low impedance feeder may be attached. Best feeder length 34 ft. 9 in.; the feeder is actually 9 in. too short, i.e. 0·027λ, which should not cause appreciable mismatch to the 75 ohm feeder. (Fig. 5).

The mismatch with a multi-band system which is inevitably a compromise must be accepted, and it can be seen that the 300 ohm section is a bit too short on 7 Mc/s, a bit too long on 14 Mc/s, and just about right on 28 Mc/s.

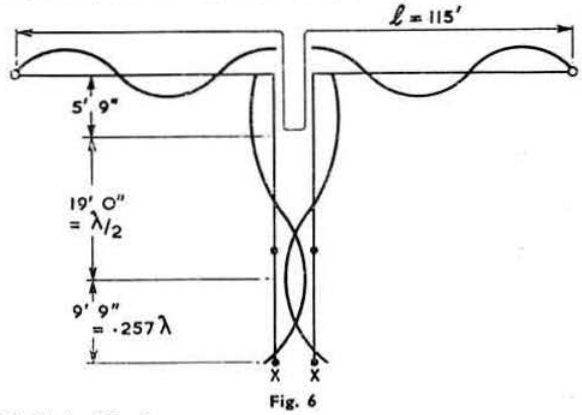


Fig. 6

21 Mc/s—Fig. 6

The case of 21 Mc/s is however more complicated and one is inclined to wonder whether it will work at all without trying it for one's self. The original mention merely stated that the system performed well on the DX bands, but it was not stated whether this included 21 Mc/s.

The system appears to work as five half-waves centre fed, but the ribbon length of 34 ft. will be incorrect for matching to 75 ohm feeder, since it is a little over 3λ/4 long which if considered as a half-wave section, with consequent equality of impedance at its ends, followed by a quarter-wave section will give a complete mis-match to 75 ohm feeder. It would apparently work if the ribbon length was any multiple of 19 ft., plus 5 ft. 9 in. (Fig. 6).

Whether or not the system will accept power on 21 Mc/s is, of course, known to any user of the design and perhaps this point may be cleared up in the correspondence columns. If it does, the problem of how it does so on this band at present eludes the writer, who would be pleased to be told where he has slipped up! "

Radio Amateur Emergency Network

By C. L. FENTON (G3ABB)*

THIS month's column is not a long one. The lack of reports from Area and County Controllers is still causing considerable concern, and restricting this feature. Without reports from officers, news of the various groups cannot be published. This point is emphasized because we are sometimes accused of not publishing full details of exercises held, together with calls of participating stations, when the real reason is the submission of only meagre details.

Humanity in Action

The British Red Cross Society have completed a film called *Humanity in Action*, a section of which deals with co-operation with R.A.E.N. The sequences concerned were filmed in co-operation with East Kent members. The writer has seen this film and considers it is a very fine effort by all concerned.

Reports from the Groups

Lancashire. More members are needed in all parts of the county. Area Controllers are also required in many areas, and offers of assistance would be appreciated by the County Controller. Pauses will be made in the Preston Top Band net which commences at 11.00 on Sundays, for interested parties to call in.

Cheshire are preparing to organize a B.R.C.S. demonstration in the Wirral, probably early in November.

Leicester and Rutland held an exercise on September 22, to test communications from an emergency location to B.R.C.S. H.Q. With no advance warning of actual zero hour, two cars arrived at the emergency location, Belvoir Castle, within 85 minutes of the alarm, and were in touch with a mobile station in Leicester. The B.R.C.S. County Director accompanied the party to Belvoir Castle, and originated all messages in an exercise which lasted 2½ hours overall. Local members who took part in the exercise were grieved to learn of the death of the B.R.C.S. Director, Mr. O. J. B. Coles, a few days later.

Norfolk. On October 12 a further Snetterton exercise was held, in conjunction with St. John Ambulance Brigade. A shortage of operators was relieved by G2OR/M, who motored from Chelmsford to assist. G3LFU/A and G2YU of Norwich, operated as Control, G2OR/M was stationed on the "Esses," G3JMU/P and G3KOH, of Lowestoft, were at "Seat Corner," and G3HRK/M, with G3JNR of Holt, were at the "Hairpin." Although the last two hours of racing were in darkness, no difficulties were encountered. G2OR/M is thanked for making such a long journey to assist.

Appointments and Resignations

E. A. Matthews (G3FZW), 1 Shortbutts Lane, Lichfield, Staffs, has agreed to undertake the duties of Deputy Honorary Secretary. Mr. Matthews is the present Staffordshire County Controller.

The following have been appointed County Controllers: G. Lancefield (G3DWQ), 35 Brixton Road, Frenchwood, Preston, Lancs; A. F. Dennis (G3CNV), 35 Eastern Road, Wylde Green, Sutton Coldfield (for Birmingham R.S.G.B. area).

D. E. Nunn (G3JMJ) has resigned from the position of Area Controller for Central South Sussex.

Reports for inclusion in the December issue of the BULLETIN should reach the writer not later than November 18, 1957.

* "*Niarbyl*," *Gay Bowers, Danbury, Chelmsford, Essex.* (*Danbury 518*).

R.A.E.N. Rally 1957

FROM the log it is apparent that over 60 stations were engaged in the R.A.E.N. Rally on September 8, 1957.

The standard of accuracy and operating was excellent, and those who took part are to be congratulated on their efforts. The leading stations in the Fixed and Receiving station sections are the same as last year.

In the letters from the entrants there was no item of adverse criticism so that it would appear that the rules are satisfactory.

It is noticed with regret that no GW, GI or GM stations seem to have taken part.

Check Logs are gratefully acknowledged from G2BCX/M, G3FZW, G3HRK/M, G3ELZ/M and G6NU.

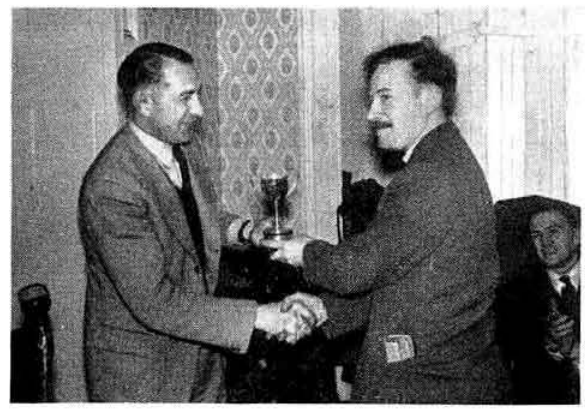
Results—R.A.E.N. Rally 1957

Leading Fixed Station ..... **J. Browne, G4XC**
Leading Outstation ..... **J. W. Marlow, G2FT/M**
Leading Receiving Station ..... **Mrs. M. Jackson**

Position	Call-sign	Points	Position	Call-sign	Points
1.	G4XC	92	17.	G3LNN, G3GBH, G3AVE, G3JOU	30
2.	G3ABG	89	18.	G3ICX	27
3.	G2FT/M	79	19.	G3CGD	24
4.	G3BMY	76	20.	G3INQ, G3JNR	23
5.	G3GZE, G3LBU/M	72	21.	G3KEP, G3IIH	22
6.	G3ESW, G3DWQ	58	22.	G3GXZ, G3EGX/M	21
7.	G3ASJ	57	23.	G4KO	19
8.	G3GUV	55	24.	G3JFH	18
9.	G3JYH/M	53	25.	G3MC, G3BMD/M, G4IV	16
10.	G2ATS	52	26.	G3AWL, G3GYV, G2HNA	11
11.	G3ERB	51			
12.	G3KNB, G3JYG, G2AO	50			
13.	G3LDA	48			
14.	G3LNS	47			
15.	G8QX, G3GVM	38			
16.	G3AWM/M	36			

Receiving Section

Operator's Name	Points	Operator's Name	Points
Mrs. M. Jackson	441	J. R. Tootill	45
K. L. B. Dalby	324	R. Shaw	15
J. H. Scott	48		



G3HII (right), T.R. for Liverpool accepting from G2AMV, on behalf of his Group, the Trophy for the highest placed Region I station in N.F.D.

Regional and Club News

Brighton & District Radio Club—At the A.G.M. the following officers were elected: *Chairman:* C. Fairchild (G3YY); *Hon. Treasurer:* R. Langdridge; *Hon. Secretary:* R. Purdy, 37 Bond Street, Brighton 1. Meetings are held on Tuesday evenings at 8 p.m. at the " Eagle Inn," Gloucester Road, Brighton. Visitors and prospective members are always welcome.

Bristol—Fifty-five members attended the October meeting when J. A. Thomas (Avo Ltd.) gave an illustrated lecture on the " Development of the AvoMeter and its Manufacturing Techniques." On November 15 H. J. Gratton (G6GN) will be speaking about " Design Features of Modern Amateur Transmitters " and on December 6 a talk on " Receiver Alignment " will be given by D. V. Newport (G3CHW). Slow Morse practice classes take place at 7 Oldbury Court Road, Fishponds, on Mondays at 7.30 p.m. by kindness of Cliff Baldwin (B.R.S. 18165). The Group has been challenged to a Skittle Match on November 26 by the local branch of the Television Society. Details may be obtained from the *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

Coventry Amateur Radio Society—At the A.G.M., G2FTK and G3LNO were elected to the Committee. J. Swinnerton (G2YS) was guest of honour at the society's 25th annual dinner. Meetings have been arranged for November 18 (Lecture by G5GR), December 2 (Recorded lecture) and December 16 (Junk Sale). A New Year's party will be held on December 30. Further details may be obtained from the *Hon. Assistant Secretary:* P. H. Hawkes (G3LNO), 62 Stonebury Avenue, Broad Lane, Coventry.

Crystal Palace & District Radio Club—At the meeting on November 16 (7.30 p.m.), at Windemere House, Westow Street, Crystal Palace, S.E. 19, P. Coe of Cossor Instruments Ltd. will lecture on " Cossor Instrument Design." *Hon. Secretary:* G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E. 23.

Flintshire Radio Society—Mr. Colin Gardner of Mullard Ltd. was the guest speaker at a recent meeting of the society. His talk on " The History and Development of the Cathode Ray Tube " was followed by a film showing the methods used and plant employed in the manufacture of television tubes in the Mullard factories. Later Mr. Gardner discussed " Television Tubes in the Field." A screening of *Mirror in the Sky* concluded the programme.

Grafton Radio Society—Recent events have included a Quiz, Junk Sale and an illustrated lecture by Avo Ltd. G3AFT, the club station, will be in operation from the Handicrafts Exhibition at Islington Town Hall from November 18 to 23. The society's headquarters are now at Isledon School, Upper Hornsey Road, Holloway, N.7. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

Kingston & District Amateur Radio Society—At the A.G.M., J. Hatton was elected *Chairman* and R. G. Timms (G3JUC) *Hon. Treasurer*. S. Babbs (B.R.S. 19981), 28 Grove Lane, Kingston, was re-elected *Hon. Secretary*. Radio theory and Morse classes are held each week. Meetings take place on alternate Thursdays at 5 Penrhyn Road, Kingston.

Leicester Radio Society—The Society meets on Monday evenings from 7.30 p.m. at Old Hall Farm, Braunston Lane, Leicester. There will be a demonstration of 2m and X band equipment by G3KKV and G3FFC on November 18 and a talk entitled " Electronics in Medicine " by G3LMR on November 25. Prospective members will be warmly welcomed at all meetings. *Hon. Secretary:* R. Parry (G3HDG), 71 Braunstone Avenue, Leicester.

Liverpool—Meetings of the Liverpool and District Amateur Radio Society are held at Wavertree Community Centre, Penny Lane, Liverpool, 1, on Tuesday evenings. On November 26 the Construction Contest for the Kenyon Trophy and other prizes will be judged.

London Members' Luncheon Club—The October meeting was attended by 24 members and friends, with K2USG and W9JDF —now practically club members—as the only two overseas visitors. G3ERB of Bebington was another visitor. The December meeting will be on the day of the A.G.M., December 13, at the Bedford Corner Hotel, W.1, at 12.30 for 1 p.m. Members intending to be present, particularly those from outside the London area, are cordially invited to attend, but are asked to notify G2FUX (Ruislip 2763) or Headquarters (HOLborn 7373) before midday on the Thursday so that proper arrangements can be made for the seating.

Newbury & District Amateur Radio Society—About 70 members and friends attended the society's Annual Hamfest at Elliott's Canteen, Newbury, on October 13. The gathering included a good number of XYLs and Junior Ops, visitors from Reading, Oxford, Salisbury, Bath and Ilford. The programme included a demonstration by Panda Radio, films, competitions, a meal and a draw. The President (Dr. Fenn) provided a surprise item with a personal appearance of Johnny Morris, the radio and television personality, who gave some of his well-known character studies. Those present included Ed. Fish G2HCZ (R.S.G.B. Recorded Lecture Librarian), G3IVP from Salisbury, G3BHK (Hon. Secretary, Reading Amateur Radio Club), G3FBA (R.S.G.B. Zonal Representative) and G5GK (Panda Radio). The arrangements were in the capable hands of the *Hon. Secretary*, " Gus " Gale (G3LLK).

North Kent Radio Society—A highly successful lecture on " Filters made Easy " was given recently by Eric Hasted (G3BHF) who dealt with constant-k circuits and simple t- and pi-sections, together with m-derived end sections and their uses. On November 28 there will be a talk on " Electronic Organs " by the Jennings Organ Co. of Dartford. A Junk Sale will be held on December 12. Members have been sorry to hear that the *Hon. Treasurer*, L. E. J. Clinch, who has served the society for so long, is leaving the district. *Hon. Secretary:* D. W. Wooderson (G3HKX), 39 Woolwich Road, Bexleyheath, Kent.

Nottingham & District Amateur Radio Society—At the October meeting, somewhat depleted by Asian 'flu, members heard G3BTM's recorded lecture " TVI-proof Transmitter Design." Commencing on November 15, meetings will be held in Room No. 2, Albert Hall Institute, Nottingham. *Hon. Secretary:* H. H. Pickering (G3DUL), 43 Plains Road, Mapperley, Nottingham.

Shefford & District Amateur Radio Society—Forthcoming lectures include " The Monitoring of Radioactive Fallout " on November 15, " Transmitter Fault Finding " by G2DPQ on November 22 and a lecture-demonstration on Precision Engineering by G. R. Johnson on November 29. Meetings are held on Fridays at 8 p.m. in Digswell House. Visitors and friends are always welcome. *Hon. Secretary:* G. R. Cobb (G3IXG), Western House, Ampthill Road, Shefford, Bedfordshire.

J. Thornton Lawrence, GW3JGA, C.R. for Flintshire took this group photograph at the Region 11 meeting held at the Nant Hall Hotel, Prestatyn, on September 29, 1957. The Council Representatives G6MB, G6NZ and G6CL are seated in the centre of the front row. G2AMV (Region 1 Representative) is second from left. Others present included G2AUC, 3HZ, 3AEF, 3BOC, 3CSZ, 3DDO, 3EGX, 3ERB, 3FOO, 3JJH, 6DN, GW2BMN, 2FVZ, 3YR, 3DCY, 3ELM, 3FPF, 3HEU, 4OH, 5SL, 5YB, B.R.S.20284, 21234, 21326.

South Manchester Radio Club—Meetings at Ladybarn House, 17 Mauldeth Road, Fallowfield, have been arranged for November 29 ("World Wide Commercial Communication," recorded lecture by Les Parnell, G8PP) and December 13 ("The Oscilloscope and its Uses" by P. J. MacDonald). At the A.G.M. the following members were elected to serve on the Committee for 1957-58: *Chairman*—D. S. Provan (G3LQQ); *Vice-Chairman:* C. M. Denny (G6DN); *Hon. Treasurer:* N. Ashton (G3DQU); *Hon. Secretary:* M. Barnsley (G3HZM), "Greenways," 11 Cemetery Road, Denton; *Committee Members:* J. R. Knight (G3JRK), J. Rathbone (G3KZY), C. Charlton (G3KKG) and J. H. B. White.

South Shields & District Amateur Radio Club—At the A.G.M. the following were elected: *President:* Capt. E. Clarke, M.B.E. (G8AO); *Vice-President:* M. E. Glenwright; *Chairman:* W. Smith (G5WZ); *Hon. Treasurer:* J. R. Tyzack (G3ELP); *Hon. Secretary:* K. Sketheway (B.R.S. 20185), 51 Baret Road, Walkergate, Newcastle-on-Tyne 6; *Committee Members:* D. Forster (G3KZZ), O. Jackson (G3LKZ), H. Martin (G3JDO) and E. Smith (G3JMT). Classes for R.A.E. and the Morse test are being conducted by G2BCY and G3KZZ respectively. The club bulletin, *The Spectrum*, is edited by G3KZZ. The club places on record its thanks to W. Dennell (G3ATA) who has retired from the position of Hon. Secretary after 11 years.

Spen Valley & District Radio & Television Society—At a joint meeting with Bradford Radio Society on November 26 at Bradford Technical College E. M. Price, M.Sc., will lecture on "Some Experiments with Microwaves." A joint meeting has also been arranged for December 5, this time with Leeds University Union Radio Society at the University Union, when there will be a lecture on communications receivers by a representative of Stratton & Co. Ltd.

Stamford & District—The Group took part in the Rotary Club of Stamford's Hobbies Exhibition and operated GB3SHE on all bands from 1·8 to 28 Mc/s. The band most in use was 10m for which a Labgear Bi-square Aerial was used. All continents were worked each day and 210 contacts in 47 countries made in the four days. Souvenir QSL cards have been sent to all stations worked. A television set tuned to the "local" station on Channel Four 70 miles away was in operation all the time the exhibition was on. The manufacturer's name was covered by a caption in "dayglo" lettering pointing out that correctly designed transmitters do not interfere with correctly designed television receivers! In addition to the live station, there were working and static displays of members' equipment.

Tees-Side Amateur Radio Club—The Club is holding a dinner on December 14 at 7 p.m. at its headquarters, 132 Newport Road, Middlesbrough, and an invitation is extended to non-members to attend. For the benefit of mobiles, G3LXG/A will be in operation on Top Band. Tickets, price 10/6 each, and further details may be obtained on request from the *Hon. Secretary:* Brian B. Wilson (G3LXG), 18 Holdenby Drive, Park End, Middlesbrough.

Torbay Amateur Radio Society—W. Baker (G3JD) has had to resign and F. D. Cawley (G2GM) is now acting as Chairman. At the November meeting, W. B. Sydenham (G5SY) was due to judge the entries for the Construction Cup. *Hon. Secretary:* G. Western (G3LFL), 118 Salisbury Avenue, Barton, Torquay.

Wirral Amateur Radio Society—The society at present meets at the Y.M.C.A., Birkenhead, on the first and third Wednesdays in each month but a new venue is to be brought into use this month when meetings will be held on the first and third Fridays. An R.A.E. course is to be started and details can be obtained from the *A.R.*, F. N. Kendrick (G3CSG), 25 Cook Road, Leasowe, Wirral.

Worthing & District Amateur Radio Club—A lecture on electronic flight simulation by F. G. Miles Ltd. was a feature of the October meeting. The club's receiving contest will be held on November 24. Morse classes are being held and details can be obtained from the *Hon. Secretary:* J. R. Tootill (B.R.S. 20543), 113 Kings Road, Lancing, Sussex. Visitors and prospective members are invited to attend meetings as guests of the T.R., R. F. Forge (G3FRG).

Can You Help?

● F. Hoefield (B.R.S. 21588), 26 Rosemary Hill Road, Streetly, Sutton Coldfield, who wishes to obtain the circuit diagram of the Type 145 Oscillator?

● D. J. Reid (B.R.S. 21326), 112 Prince of Wales Avenue, Flint, North Wales, who requires the circuit diagram of the Command Set Modulator Type MD-7/ARC-5?

● J. R. Tootill (B.R.S. 20543), 113 Kings Road, Lancing, Sussex, who requires any information concerning the ZC8931?

Worked and Heard on V.H.F.

Two Metres

B.R.S. 16075 (Shirley, Southampton) September 16—October 18
Heard: G2AHP, 2ANT, 2CIW, 2DDD, 2DSP, 2DVD, 2HCG, 2NM, 2YB, 3BA, 3CBU, 3FIH, 3GHO, 3HBW, 3HHY, 3HQS, 3IIT, 3IRS, 3KEQ, 3KHA, 3KQZ, 3LIM, 4DC, 4KD, 5DW, 5HN, 5MA, 5TZ, 5UF, 5WW, 6NB, 8DA, 8RW, 8VZ, GB2RS, 3IGY, GC3EBK, GI3GXP, GW8UH.

B.R.S. 20133 (Melton Mowbray) September 12—October 13.
Heard: G2BVW, 2CDB, 2CIW, 2FMO, 2FNW, 2HCG, 2NY, 2YB, 3ALC, 3BA, 3BOC, 3BU, 3EKX, 3FUW, 3GHO, 3GSO, 3HBW, 3HZK/M, 3HXS, 3IWJ, 3IIT, 3IOO, 3JWQ, 3JZK, 3JXN, 3JZN, 3KQF, 3KUH, 3LHA, 3LKA, 3LKA/P, 4DC, 4MK, 5CP/A, 5HB, 5KG, 5MA, 5YV, 6NB, 6XM, 6XX, 6YU, 8CZ, 8VZ, GB2RS.

B.R.S. 20162 (Selsdon, Surrey) September 14—October 13.
Heard: G2AHL, 2AHP, 2AHY, 2ANT, 2ATK/M, 2BDP, 2BVW, 2BZ, 2CD, 2CIW, 2DD, 2DVD, 2FKZ, 2FM, 2FMJ, 2FNW, 2HCG, 2HDJ, 2MV, 2QY, 2RD, 2WJ, 2XV, 2YB, 3AAZ, 3AFN, 3AJS, 3ANB, 3ARX, 3AYT, 3BA, 3BEX, 3BII, 3CBU, 3CNF, 3CO, 3DF, 3DKF, 3DOR, 3EJO, 3EVV, 3EYV, 3FAN, 3FCQ, 3FD, 3FIH, 3FIJ, 3FJ/A, 3FMO, 3FNL, 3FQS, 3FUH, 3FUW, 3FZL, 3GDR, 3GFD, 3GGJ, 3GHI, 3GHO, 3GOZ, 3GZM, 3HAZ, 3HBW, 3HHY/A, 3HIQ, 3HRH, 3HXS, 3HZJ, 3IBI, 3IEA, 3IIT, 3ION, 3IOO, 3IRA, 3IRS, 3IUL, 3JHM, 3JQN, 3JR, 3JTQ, 3JWQ, 3JZG, 3KEQ, 3KHA, 3KQC, 3KQR, 3LEV/A, 3LIM, 3LLF, 3LOA, 3LOK, 3LTF, 3LVO, 3LYD, 3PV, 3WW, 3XC/M, 4DC, 4FB, 4HQ, 4KD, 4MK, 4PS, 5BD, 5CP/A, 5DW, 5KG, 5KW, 5LL, 5MA, 5PP, 5UM, 5WW, 5YV, 6AG, 6JI, 6LL, 6LL/A, 6NB, 6NW, 6OX/M, 6SC, 6SN, 6WF, 6XM, 6XX, 6YP, 8AL, 8LN, 8RW, 8SC, 8SC/M, 8SK, 8UG/A, 8VZ, GB3IGY, GM3DIQ, GW8SU, 8UH.

G2HDR (Bristol 9) September 18—October 14.
Worked: G2ADZ, 3BA, 3DKF, 3DLU/P (Mon), 3EHY, 3FIH, 3FKO, 3IER, 3IRS, 3JWQ, 3JZG, 3KHA, 5DW, 5MA, GW6AG/M (Brecon), GW6AG/M (Pembroke).
Heard: G2BVW, 2FNY, 2FQP, 2HCG, 3EJO, 3HHY, 3IWJ, 3JZN, 5BM, 5PP/A, 5YV, 6NB, 6WF, 6XM, GC3EBK, GW8SU.

G3JGJ (Plympton).
Worked: GC2FZC. *Heard:* G2NY, 3GOZ, 3JQN, 3JWX, 3KEQ, 3KHA, 4DC, 5MA, 5YV, 6NB, 6XM, ON4DW, PA0FX.

G3JR (Barnes) September 16—October 16.
Heard: DL1RX, G3AYT, 3IUD, 3KUH, 3PY, 5YV, GI2GXP, GM2FHH, 3EGW, GW8SU, PA0FB, 0TP.

G3KHA (Bristol) September 12—October 15.
Worked: G2ADZ, 2AHP, 2ANT, 2AUD, 2BZ, 2CIW, 2DVD, 2FM, 2FQP, 2HDR, 3BA, 3CBU, 3CGQ, 3CZZ, 3DKF, 3DLU/P (Mon), 3EHY, 3EYV, 3FAN, 3FCQ, 3FIH, 3FKO, 3FQS, 3GHO, 3HBW, 3HHY, 3IER, 3IRA, 3IRS, 3JGJ, 3JZW, 3JTQ, 3KEQ, 3KQC, 3LOA, 3LOK, 3LTF, 4AP, 4DC, 5DW, 5KG, 5MA, 5PP, 5UF, 5WW, 5YV, 6NB, 6NW, 8AL, 8KW/M, 8VZ, GC3EBK, GI3GXP, GW2AHL/M, 3HAW, GW5SA/P (Carms), 8KW/M, PA0FB.
Heard: DJ1XX, DL3VJ, DL3YBA, EI6A, G2AHY, 2BVW, 2FNW, 2HCG, 2JM, 2NM, 2NY, 2UJ, 2WJ, 2XV, 3ALC, 3AYT, 3BOC, 3CO, 3DF, 3DLU, 3FZL, 3GHI, 3HAZ, 3HRH, 3HWS, 3IBI, 3IIT, 3IJB, 3IUL, 3IWJ, 3JWQ, 3JZN, 3KUH, 3LIM, 3PY, 3SM, 4KD, 4PS, 5BD, 5BM, 5DF, 5KW, 6AG, 6FO, 6SC, 6XM, 6XX, 6YP, 8DA, GM2FHH, 3DIQ, 3EGW, 6KH, 6XW, GW8UH, ON4CP, 4DW, 4ZH, PA0EZ, 0FB, 0GER, 0NO, 0UHF, GB3IGY.

G8VZ (Princes Risboro') October 1—October 15.
Worked: G2FQP, 3DLU, 3EJO, 3GZM, 3IIT, 3IWJ, 3JWQ, 3JXN, 3JZN, 3KHA, 3LKA, 4MK, 5BM, 5CP/A, 5DW, 5LL, 5YV, GW5SA/P, 8UH.

REGIONAL REPRESENTATIVES

Region 1.—North Western. B. O'Brien (G2AMV), 1 Waterpark Road, Prenton, Birkenhead, Cheshire.

Region 2.—North Eastern. J. R. Petty (G4JW), 580 Redmires Road, Sheffield, 10, Yorkshire.

Region 3.—West Midlands. W. A. Higgins (G8GF), 28 Kingsley Road, Kingswinford, nr. Brierley Hill, Staffs.

Region 4.—East Midland. E. S. G. K. Vance, M.B. (G8SA), 43 Blackwell Road, Huthwaite, Sutton-in-Ashfield, Notts.

Region 5.—Eastern. T. A. T. Davies (G2ALL), Meadow Side, Comberton, Cambridge.

Region 6.—South Central. N. F. O'Brien, F.B.I., A.C.C.S. (G3LP), 143 Brunswick Street, Cheltenham, Gloucestershire.

Region 7.—London. F. G. Lambeth (G2AIW), 21 Bridge Way, Whitton, Twickenham, Middlesex.

Region 8.—South Eastern. Office Vacant.

Region 9.—South Western. W. J. Green (G3FBA), 82 Bloomfield Avenue, Bath, Somerset.

Region 10.—South Wales. C. Parsons (GW8NP), 90 Maesycoed Road, Heath, Cardiff, Glam.

Region 11.—North Wales. F. G. Southworth (GW2CCU), Samlesbury, Bagillt Road, Holywell, Flintshire.

Region 12.—East Scotland. L. Hardie (GM2FHH), 91 Inchbrae Drive, Garthdee, Aberdeen.

Region 13.—South-East Scotland. Office Vacant.

Region 14.—West Scotland. D. R. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.

Region 15.—Northern Ireland. J. W. Douglas (GI3IWD), 54 Kingsway Park, Cherry Valley, Belfast.

R.S.G.B. QSL BUREAU: G2MI, BROMLEY, KENT

Forthcoming Events

REGION 1

Blackpool (B. & F.A.R.S.). — Wednesdays, Gadsby Street Hall, off Nelson Road.
Bury (B.R.S.).—December 10, 8 p.m., George Hotel, Kay Gardens.
Chester (C. & D.A.R.S.).—Tuesdays, 7.45 p.m., Tarran Hut, Y.M.C.A.
Crosby.—Tuesdays, 8 p.m. over Gordons' Sweet-shop, St. John's Road, Waterloo.
Isle of Man (I.o.M.A.R.S.).—November 20, December 4, 18, 7.30 p.m., Manor Guest House, 48 Victoria Road, Douglas.
Lancaster (L. & D.A.R.S.).—December 4, 7.30 p.m., George Hotel, Torrisholme.
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Room "A," Wavertree Community Centre, Penny Lane, Liverpool, 18.
Manchester (M.R.S.).—December 2, 7.30 p.m., Brunswick Hotel, Piccadilly.
Manchester (S.M.R.C.).—Fridays, 7.45 p.m., Ladybarn House, Mauldeth Road, Manchester, 20.
Preston (P.A.R.S.).—Wednesdays, 7.45 p.m., 48 High Street, off Lancaster Road.
Southport.—Thursdays, 8 p.m., Sea Cadets Camp, Esplanade.
Stockport (S.R.S.).—November 20, December 4, 18, 8 p.m., The Blossoms Hotel, Buxton Road.
Warrington (W. & D.R.S.).—November 21, December 5, 19, 7.30 p.m., Royal Oak Hotel, Bridge Street
Wirral (W.A.R.S.).—November 22, December 6, 20, 7.45 p.m., 4 Hamilton Square, Birkenhead.

REGION 2

Barnsley (B. & D.A.R.C.).—November 22, King George Hotel, Peel Street.
Bradford.—November 26, 7.30 p.m., 66 Little Horton Lane.
Hull.—Second and last Tuesdays, 7.30 p.m., "Royal Oak" (Tony's).
Leeds.—Wednesdays, 7.30 p.m., 4 Woodhouse Square.
Pontefract.—November 21, December 5, 8 p.m., Queen's Hotel, Tanshelf.
Rotherham.—Wednesdays, 7 p.m., Cutler's Arms, Westgate.
Sheffield (S.A.R.C.).—November 27, Blue Boar, Westbar. December 11, Albreda Works, 8 p.m.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
South Shields (S.S. & D.R.C.).—November 27, 7.30 p.m., Trinity House Social Centre, Laygate.
Spen Valley.—November 20, December 4, 7.30 p.m., Temperance Hall, Cleckheaton.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.
Scarborough (S.A.R.S.).—Thursdays, 7.30 p.m., Chapman's Yard, North Street.

REGION 3

Birmingham (M.A.R.S.).—November 19, 7 p.m., "Modern Electronic Instruments," Midland Institute, Paradise Street. **(Slade).**—November 22, 7.45 p.m., A.G.M. December 6, 7.45 p.m., "Air Traffic Control," The Church House, High Street, Erdington. **(South and Bournville).**—Tuesdays, 7.30 p.m., No. 4 Committee Room, Cadbury Bros., Bournville.
Coventry.—November 22, 7.30 p.m., Vine Street School, Coventry. **(C.A.R.S.).**—November 18, 7.30 p.m., December 2, 7.30 p.m., 9 Queens Road, Coventry. **(Solihull).**—November 18, 7.30 p.m., December 2, 7.30 p.m., Civil Defence H.Q., Sutton Lodge, Blossomfield Road.
Stourbridge & District.—November 22, 8 p.m., Informal, "White Horse," Amblecote. December 3, 8 p.m., "Beam Aerials," (H. W. Mitchell, G2AMG,) Brotherhood Hall, Scotts Road, Stourbridge.
Wolverhampton.—Mondays, 8 p.m., Nechells Cottage, Stockwell Road, Tettenhall.

REGION 4

Alvaston (D.S.W.E.C.).—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Derbys.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Wednesdays, 7.30 p.m., Room 4, 119 Green Lane, Derby.
Ilkeston (I. & D.A.R.S.).—Thursdays to December 12, 7 p.m., Room 5, Ilkeston College of Further Education, Field Road.
Leicester (L.R.S.).—Mondays until December 16, 7.30 p.m., Old Hall Farm, Braunstone Lane, Leicester.
Lincoln (L.S.W.C.).—December 4, 7.30 p.m., Technical College, Cathedral Street.
Newark (N. & D.A.R.S.).—December 1, 7 p.m., North Gate House, North Gate, Newark.
Northampton (N.S.W.C.).—Fridays, 7 p.m., Club Rooms, Allen's Pram Works, 8 Duke Street, Northampton.
Nottingham.—November 15, December 20, 7.30 p.m., Basford Hall, Miners' Welfare, Nuthall Road, Cinderhill.
Peterborough.—December 4, 7.30 p.m., 21 Hankey Street.
Retford & Worksop.—November 18, 7.45 p.m. King Edward VII Hotel, Ryton Street, Worksop.
Scunthorpe.—November 19, December 5, 7.30 p.m., Talbot House, Earl Street.

REGION 5

Cambridge (C. & D.A.R.C.).—November 15, December 13, 7.30 p.m., "The Jolly Waterman," Chesterton Road, Cambridge.
Chelmsford (C.A.R.C.).—December 3, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
Norwich.—Fridays, 7.30 p.m., The Golden Lion, St. John's, Maddermarket.

REGION 6

Cheltenham.—December 5, 8 p.m., Great Western Hotel, Clarence Street.
Cheltenham (A.R.S.).—Wednesdays, 8 p.m., Club Room, St. Mark's Community Centre, Brooklyn Road.
Gloucester (G.R.C.).—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road.
High Wycombe.—November 27, 7.30 p.m., G3FAS, 51 Tyzack Road, Totteridge, High Wycombe.
Newbury (N. & D.A.R.S.).—November 29, 7.30 p.m., The Canteen, Elliotts of Newbury, West Street ("Some Aspects of Receiver Design" by W. H. Allen, G2UJ).
Oxford (O. & D.A.R.S.).—November 27, December 11, 7.30 p.m., Club Room, Cherwell Hotel, Water Eaton Road, Oxford.
Portsmouth.—Tuesdays, 8 p.m., 191 Albert Road, Southsea.
Southampton.—December 7, 7 p.m., 1 Prospect Place, Above Bar, Southampton.
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms.

REGION 7

London.—November 29, 6.30 p.m. ("Some Aspects of Atmospheric Radio Noise,") I.E.E., Victoria Embankment; December 13, 6.30 p.m., (A.G.M.), Kingsway Hall, Kingsway, W.C.2.
London (L.M.L.C.).—November 15, December 13, 12.30 p.m., Bedford Corner Hotel, Bayley Street, Tottenham Court Road.
London (U.H.F. Group).—December 5, 7.30 p.m., Bedford Corner Hotel.
London (S.M.R.S.).—December 10, 6 p.m., Science Museum Lecture Theatre ("Application of Low Power Ultrasonics," R. Webb of Mullard Ltd.).
East London District.—November 17, December 15, 2.30 p.m., Lambourn Room, Town Hall, Ilford. ("An Introduction to Transistorized Receiving Equipment.")
Acton, Brentford & Chiswick.—November 19, December 17, 7.30 p.m., A.E.U. Rooms, 66 High Road, Chiswick, W.4.
Bexleyheath (N.K.R.S.).—Second and fourth Thursday, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Chingford.—For date and venue 'phone: Wanstead 2321 or Silverthorne 1740.
Croydon (S.R.C.C.).—December 10, 7.30 p.m., "Blacksmith Arms," 1 South End, Croydon.
Ealing.—Sundays, 11 a.m., ABC Restaurant, Ealing Broadway, W.5.
East Molesey (T.V.A.R.T.S.).—December 4, 8 p.m., Carnarvon Castle Hotel, Hampton Court. (Lecture by J. H. Hill, B.Sc., G3JIP.)
Guildford & Woking.—November 22, 7 p.m., "Prince of Wales", Guildford. (Junk Sale).
Harlow & District.—Tuesdays, 7.30 p.m., rear of G. E. Read (G3ERN), 6 High Street, Harlow, Essex.
Holloway (G.R.S.).—Mondays and Wednesdays (RAE & Morse), Fridays (Club), 7 p.m., Isledon School, Upper Hornsey Road, N.7.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.
Kingston.—R.A.E. & Morse classes, Thursdays, lectures alternate Thursdays, 8 p.m., 5 Penrhyn Road.
Norwood & South London.—November 15, Windermere House, Westow Street, Crystal Palace.
Slough.—December 3, QTH from G2HOX, 13 Quaves Road or G3GYD, 5 Parklands Avenue, Slough.
Welwyn Garden City.—December 12, 8 p.m., I.C.I. Recreation Club, Blackfan Road, Welwyn Garden City.

REGION 8

Worthing (W. & D.A.R.C.).—November 28, December 12, 8 p.m., Beach House; December 9, January 13, 8 p.m., Adult Education Centre.

REGION 9

Bath.—November 18, 7.30 p.m., 12 James Street West.
Bristol.—November 15, December 6, 7.15 p.m., Carwardine's Restaurant, Baldwin Street.
Exeter.—December 12, 7.30 p.m., G3HTA, 12 Clevedon Close, Pennsylvania.
Falmouth.—First Wednesday in each month, 7.30 p.m., Y.M.C.A., Bar Road, Falmouth.
North Devon (Bideford).—December 5, 7.30 p.m., G3BO, Rosebank, Westcombe, Bideford.
Plymouth.—Alternate Thursdays, 7.30 p.m., Virginia House Settlement, Barbican.
Torquay.—Second Saturday in each month, 7.30 p.m., Y.M.C.A., Castle Road.
Weston-super-Mare.—Second Wednesday in each month, 7.30 p.m., Albert Hotel, Sea Front.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road, Yeovil.

REGION 10

Cardiff.—December 9, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff. (Talk on remotely tuned v.f.o. by GW3GHC).
Port Talbot.—November 19, December 3, 7 p.m., GW5VX, 14 Holland Street, Port Talbot.
Pontypool.—Tuesdays, 7 p.m., The Educational Settlement, Rockhill Road.

REGION 14

Falkirk and District.—November 22, December 20, 7.30 p.m., Temperance Café, Falkirk.
Glasgow.—November 29, 7.15 p.m., Christian Institute, 70 Bothwell Street, Glasgow, C.2. ("Ancillary Equipment," GM3HOM.)

Representation

THE following are additions to the list of County Representatives published in the December 1956 issue:—

Region 5—Essex (outside London)
G. C. Cutting (G3GNQ), Lamorna, Well Lane, Galleywood, Chelmsford.

Region 8—Kent (outside London)
R. C. Fagg (G3FVV), 14 Westover Road, Broadstairs.

Region 13—Midlothian, West Lothian and East Lothian.
Rev'd. Walter McG. Ferrier, B.D. (GM3BDA), Manse of St. Andrew, North Berwick.

Change of Address

The address of Capt. G. C. Price, T.D. (GW2OP), County Representative for Pembrokeshire, Cardiganshire and Carmarthenshire, is now "Hilcourt," Freshwater East, Pembroke.

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1566·5	1680·5	1835	2087·5	2430	10,511	10,856	11,851
1566·75	1700	1870	2089	10,166	10,534	10,878	11,876
1572·5	1727	1875	2090	10,189	10,545	11,437	12,600
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ATTENTION, see page 95 August.—Must clear remainder at bargain prices. List on application.—Robertson, 533 King Street, Stenhousemuir, Stirlingshire. (504

A V.H.F. transmitter for 7/6, includes strong rigid telescopic aluminium aerial 7 ft. 3 in. extended with dipole, CV93 All-dry v.h.f. triode. Battery case ideal mobile loaded whip aerial suitable for beam elements as adjustable.—G3BRA, 37 Mansfield Road, Tweedmouth, Northumberland. (500

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BC348, £10. R208, £8. 12 Transmitter, £12. R103A, £6. B2 complete, £10. B2 Transmitter, £3. B2 Receiver, £3. QST 1948 to 51, £3. RF26, 25/-. " C " Wavemeter, 30/-. 4-band 1154, £2. 35T (2), 15/-. CQ 1948 to 52, £4. Want: LP filter.—C. Verrinder, Inverne, Dorset. (512

CASH offers wanted for following: Taylor Model 60 signal generator, requires attention; Taylor Multimeter 81C, 20,000 ohms/volt; crystal wavemeter 1191 with calibration charts and three spare valves; Portable 3 in. oscilloscope Type II with handbook; Transmitter 1403A less valves; 6 ft. G.P.O. rack. Carriage extra on each.—Moore, Prince's Road, Windermere. (494

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EDDYSTONE 740 for sale.—Little used and well kept, o.n.o. £30.—Yazgi, 83 Ladbroke Grove, London, W.8. (506

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(Continued on page 256)

FOR SALE. Minibeam with 25 ft. metal mast, guys, etc. in mint condition £15. Receiver R107. Excellent condition: 1·5-18 Mc/s: Set valves: Manual £10. 160m transmitter p/p: a.t.u.: £5. —Box 516, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. (516

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G3CGD QSLs. Fixed and mobile samples on request. Printing inquiries welcomed.—30 St. Luke's Road, Cheltenham. (443

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