around 14.345MHz and is most active during the weekends although during major meteor showers there are often people on throughout the week.

RANDOM ms

During major showers it is possible to make unscheduled QSO's on the random calling frequencies. At present the official, nominal calling frequencies are 144.100MHz for CW operation and 144.400MHz for SSB.

Although 144.200MHz was officially withdrawn as a random SSB calling channel by the IARU region 1 conference in 1981 it still continues to be used by many operators throughout Europe.

The main difficulty in working random ms on SSB is the high level of QRM. During the major meteor showers, 144.200MHz is bedlam! When a burst occurs, three or four YU stations may be heard. Each of these is then called by one or more G stations. In the next burst, a different YU may be heard, along with two HG stations and an OK. Each of these is then called by one or more G's. People are still trying to work the YU's from the first burst, and through all this other G's are calling CQ. The resulting racket is more spectacular than it is useful.

In an attempt to solve this problem, the IARU Region 1 Conference held in Brighton in July 1981 introduced a new procedure for random calling on SSB. The basis of this scheme is quite simple: CQ calls are spread out across the band according to the last letter in the call-sign of the station calling CQ. To calculate 'your' frequency, you take the last letter of your call-sign. Modifiers are ignored, so G9XYZ/P counts as Z, not P, and PA9ABC/LX count as C, not X. The last letter is then converted to a number, using the rule A=1, B=2, C=3, etc. up to Z=26. You then add this number to 144,000 to give 'your' frequency in KHz. Or, in other words, your number corresponds to the number of KHz above 144.4MHz. In the case of PA9ABC/LX/P the last letter is C; C is the third letter of the alphabet, so his frequency is 144.403MHz. Similarly, for G4DEZ, Z=26, frequency 144.426MHz. All you do now is call CQ on 'your' frequency, and listen for replies on the same frequency.

So far, so good; it's a very simple matter to work out your frequency, call CQ on it, and listen for replies. QRM will be much lower because stations are spread over 26Khz instead of about 2Khz. Why then, does one not hear G4DEZ on 144.426, and why is 144.200 still universally used for random calling? The answer is that the new system does not work. It's fine for sending CQ's BUT NOT FOR HEARING THEM. It just isn't possible to catch a meteor burst while continually tuning up and down a 26Khz range (quite apart from which, if you try it your arm soon tires. *(What about auto scanning? — Ed!)*

A new system has been proposed by G8NGO which overcomes this difficulty. You begin by working out 'your' frequency in exactly the same way as in the IARU scheme. You then call CQ on 144.390MHz but listen for replies on 'your' frequency. As long as you hear no replies, you continue calling CQ on 144.390MHz and listening on your frequency. As soon as you hear a reply to your CQ you start the QSO attempt on your own frequency, and continue both transmitting and receiving on that frequency until the QSO is either completed or abandoned. From the other side, if you wish to listen for a CQ call rather than calling yourself, you simply listen on 144.390MHz. When you hear a station calling CQ, you work out what his frequency is according to the same rules as before. You then call him on his frequency and listen for his reply on his frequency also.

The advantages of this system are obvious: 144.390MHz will be occupied only by stations actually calling CQ. Replies to CQ calls and QSO's themselves take place on the frequency corresponding to the call-sign of the station that originally called CQ.

There is one disadvantage: a station calling CQ must be able to switch rapidly and accurately between two frequencies that are between 11 and 36kHz apart. The philosophical answer to this problem is that amateurs have always decided WHAT they wanted to do, and then bought, borrowed, built or bodged-up the gear to do it. The practical answer is that most operators already have suitable equipment. The latest generation of 2m transceivers mostly have twin VFOs or a memory. On older gear e.g. FT221 you can fit a crystal for 144.390MHz and set the VFO to 'your' frequency (or vice-versa). On some multi-mode rigs you can replace the repeater-shift crystal with one that gives a shift corresponding to the difference between 'your' frequency and 144.390MHz. If all else fails, remember that you only need split-frequency to initiate a CQ: you can use any rig to reply to one.

The system proposed by the IARU in July 1981 was to run for a three year experimental period. Perhaps the system proposed by G8NGO will initiate discussion among meteor scatter operators, that will lead to its successor.

USING THE RADIANT PATH PLOT

The plots shown in **Figs. 8a** to **8k** indicate the path of the radiant point for all major meteor showers and includes several minor and daylight showers.

They are all drawn for latitude 52 degrees N but will provide sufficient accuracy for stations between 42 degrees and 62 degrees N. As stated in the text it is the point midway between the two stations that requires the radiant to be at right angles to them with an elevation of 45-60 degrees.

This means that if the distant station is located due south at latitude 36 degrees N a new plot should be drawn for the mid latitude point of 44 degrees (assuming your latitude is 52 degrees N). Unfortunately this would require many pages of plots for the mid way points north or south of the observer. This point is made to make the reader aware of the minor errors introduced by producing plots for one particular latitude. These errors will be very minor and will not significantly alter results within the latitudes mentioned above.

QUADRANTIDS

Fig. 8a shows an example for the Quadrantids shower. Bearings are always laid off from the observer and in this example the other station is on a bearing of 154 degrees.

A line is drawn on this bearing through the observer with another line at 90 degrees to this passing through the projected path of the ra-