WORKING ME

The second part of the article by John Matthews G3WZT covers the practical aspects of meteorscatter operating.
As with the first part, John's approach brings a new, popular appeal to the subject.

Part 2

CULMINATION TIMES

The only other unknown factor is the culmination time and is defined as the local time when the meteor radiant point crosses the observer's meridian between the pole star and the southern horizon. It is also termed transit or upper transit. Although it is possible to determine culmination times from Right Ascension angles it was not considered necessary to go into such depth as all the relevent timing details of each shower are shown on the individual plots of **Fig. 8**.

OPTIMUM CONDITIONS

Normally, meteor scatter contacts are established using forward scatter. In this case the optimum condition for reflection exists when the trail forms a tangent to an ellipse focused on both the transmit and receive aerials.

For a station which is located to the east, optimum propagation conditions exist when the radiant point is located mid-way between both stations and at the same time is crossing the path at right angles i.e. North to South or vica versa. It is also important to ensure that the meteor shower radiant elevation lies between 45 and 60 degrees. If these rules are followed by correct use of the plots shown in **Fig. 8** optimum results will be achieved provided the shower is suitable.

See the notes on page 39 and 40 for an extended explanation of the radiant path plots.

THE SITE

One big advantage for the ms operator is the fact that a good VHF site is less important than it would be for other forms of propagation. Almost any site with aerials in the clear and no obstructions in the immediate vicinity will give satisfactory results.

RECEIVER

The most important features for the receiver in a meteor scatter station are good long term frequency stability, frequency accuracy, and a low noise figure. Almost all modern day synthesised transceivers have excellent stability after the initial warm-up period. Although many types have digital readout for frequency displays it should be realised that the accuracy is only as good as the reference oscillators in the synthesiser and the system used for generating the digital readout. As the displays are not true fre-

TABLE 1 **MAJOR SHOWERS**

SHOWER & DATE	NORMAL LIMITS	CELESTIAL CO-ORDINATES RA°	DEC°	HOURLY RATE	CULMINATION (LOCAL TIME)
QUADRANTIDS JAN 3-4	10 Hours	232	+ 50	80	08.6 Hours
LYRIDS APRIL 21-22	2 Days	271	+ 33	8-15	04.2 h
ETA-AQUARIDS MAY 5-6	5 Days	338	+ 1	55	07.6 h
ARIETIDS JUNE 7-8	8 Days*	46	+ 21	60	10 h
ZETA-PERSEIDS JUNE 9	8 Days*	62	+ 24	40	11 h
PERSEIDS AUG 12-13	4 Days	46	+ 58	100	05.7 h
DRACONIDS OCT 9	6 Hours	262	+ 54	5-10	16.2 h
ORIONIDS OCT 21	2 Days	95	+ 15	20	04.4 h
TAURIDS NOV 8	20 Days	56	+ 14	5-10	0.6 h
LEONIDS NOV 17-18		152	+ 22	10	06.4 h
GEMINIDS DEC 13-14	3 Days	113	+ 32	60	02. h
URSIDS DEC 22	24 Hours	207	+ 74	5	07.7 h