reach first magnitude. Its greatest glory was yet to come. In 1843 it outshone every star in the sky except Sirius, the brightest of all stars. For 15 years it remained a first magnitude star after which it took seven years to fade below naked eye visibility. After remaining around eighth magnitude for many years, Eta Carinae commenced to brighten around 1936. It has increased very slowly ever since. It is probable that this brightening has not been due to any increase from the star itself, but has resulted from a brightening of the halo that surrounds the star. No observer can watch this region without failing to be impressed by the wonder and beauty of both stars and nebulae. Just what Eta Carinae will do next I cannot predict. We all hope that eventually it will shine forth as it did in 1843.

The pulsating type of variable, whilst lacking in the spectacular appeal of the eruptive class, pose their own problems and number among their members the largest group of variables studied by us.

Many giants and supergiants, mainly of the late spectral types, belong to the large class of semi-regular variables. On the whole these stars do show some kind of period but these are subject to considerable variations. Their light curves are often different from period to period. This is often the result of different periods and amplitudes for the same star superimposed on each other. It is rather natural that since they include a wide diversification, they are sub-divided into several groups. Most do not have a range in excess of one or two magnitudes, whilst their periods range from around 30 days to 1,000 days or more. Alpha Orionis is a typical red semi-regular variable, whilst RV Tauri is representative of a distinctive class of supergiants with periodically varying mean brightness.

By far the most numerous and best known class of variables is the long period type, like Mira Ceti. These are giant stars with emission spectra of the late spectral types, M, N, S and R. Their periods can range from 80 to 1,000 days and their visual amplitudes from two and a-half to seven or eight magnitudes. In general the light curves remain in form much the same from one period to the next, but there is a certain amount of irregularity in individual periods. This can amount to up to 15 per cent of the mean period.

Two main groups of Cepheids are included among pulsating variables. First are the long-period, or classical Cepheids of which Beta Doradus is a typical example. The group is sub-divided into three sub-groups dependent upon their position in space. The periods of these stars, between one and a-half days and 80 days, show very little departure from the means. All such stars are supergiants of spectral types F, G and K. Cepheids happen to be very useful stars. If you observe one long enough to determine its period, and knowing also its apparent brightness, you can determine its distance.

Like the long-period Cepheids, those of short periods have spectra and temperatures that vary in phase with the brightness. In this group we have stars whose periods range from one and a-half hours to one and a-half days. More often these stars are referred to as RR Lyrae or cluster-type variables. Their amplitudes do not exceed one or two magnitudes. The name, cluster variable, was given because so many of them were found in globular clusters. Then Mrs Fleming found one, RR Lyrae, that was not a member of a cluster. It was thought it represented a star that had escaped from a cluster. But as the number discovered outside clusters rapidly increased it could not be held that they were all stars escaped from clusters.

Finally among the pulsating variables we come to stars of spectral types B1 to B3. These have periods that lie between 0.1 and 0.3 days. Their range is extremely small and generally amounts to a mere tenth of a magnitude.