

true behaviour of many of these stars was entirely unknown before we commenced observing them. It is not inappropriate to mention just what one person can do. We are very proud of the fact that among our members we have the world's most prolific observer—Albert Jones of Nelson. In 21 years of observing he has made just over 150,000 separate records. That represents a monumental effort, notably not only for its number but also for the accuracy of his devoted application.

Far from the day of the visual observer being past, such records are more essential than ever. In the Southern Hemisphere there is a vast number of stars yet to be investigated as well as the most interesting of all stars in such objects as Eta Carinae, the large groups of RW Aurigae stars and classic examples of every known type of variable.

Allied with visual estimates are various types of photometers, that permit the more accurate measurement of small variations in light intensity. However, these have now been largely superseded by the photoelectric photometer. Some of our members, notably Harries-Harris and Waters, in South Australia, have applied simple photometry to short-period variables with marked success.

Photographic observations have the great advantage that the plates can be stored and their records are available for studies at all times. From these plates direct estimates can be made of the brightness of any star recorded. Such estimates have the same degree of accuracy as visual estimates. For the average amateur, photographic recording has to be limited in extent due to the cost. But we number among our members some, notably Menzel in Western Australia, who are providing regular photographic observations. These enable light curves to be constructed separately for comparison with visual records, an aspect of research that is normally left to the professional.

Photographic results are particularly valuable in patrol or survey work. For instance at Mount John we shall have a programme, in conjunction with other observatories, whereby plates are taken at frequent intervals of certain selected areas. This has a twofold purpose. It enables all variables within such fields to be studied and at the same time permits the detection and study of variables as yet unknown. This method has been applied with some success in the discovery of supernovae. Another example of the value of the photographic method is the detailed study of variables made by the Harvard Milton Bureau survey, under Sergei Gaposchkin, resulting in well-determined elements for all the stars studied. We have made a similar study of the extensive plates being taken by Stranson in Queensland of all variable star fields south of declination South 30° . These form the basis of charts that are prepared under a grant from the International Astronomical Union. To date 44 charts have been published, and 100 more will be ready in about two months' time, covering some 200 variables.

Because of the precise nature of photo-electric photometry, and its advantage of being able to observe in several colours, it is specially suited to the study of short-period variables. There is a wide open field here, especially in the Southern Hemisphere, for amateurs willing to undertake photo-electric observing. In this regard, size of the instrument is not the limitation that many people think. A telescope of around 16 inches aperture, equipped with a modern photo-electric photometer, has the same relative value in the study of variable stars as the 200-inch at Palomar has in securing slit spectral plates.

CLASSIFICATION OF VARIABLES

As the number of known variables grew, attempts were made to classify them into different groups or classes. At first such classification was entirely dependent