**Studies of Solar Type Stars.**—Dr. K. O. Wright recently completed an important research which added greatly to knowledge of stellar atmospheres. Using the most powerful spectrograph at Victoria he observed a number of giant and dwarf stars similar in spectral type to our sun. Detailed measurements of the positions and intensities of over 600 lines in the spectrum of each star were made, from which data, curves-of-growth relating the intensities of the absorption lines to the number of atoms active in forming them were constructed. Values of the excitation temperatures, electron pressures, chemical composition and other properties of the stellar atmospheres were deduced. Important results on the thermal equilibrium, or lack of it, in these stars were obtained. These accurate stellar observations indicate the great need for more laboratory measurements of spectral lines since the theory of line intensities is still incomplete.

**Studies of the R- and N-type Stars.**—In recent years, a systematic survey of approximately 50 of the red giant stars of spectral R- and N-types has been carried out by Dr. Andrew McKellar with interesting results. These stars are among the coolest stars known and their spectra show progressions of bands due to molecular compounds of carbon. Detailed spectrophotometric measurements of the complex bands have enabled Dr. McKellar to distinguish the two different isotopes of carbon $C^{12}$ having atomic weight 12, and $C^{13}$ having atomic weight 13. On Earth, the abundance ratio of $C^{12}$ to $C^{13}$ is 90 to 1, and it is very important to determine this ratio in stellar sources. A few of the 21 R-type stars investigated have the ratio $C^{12}$ to $C^{13}$ of over 50 to 1, but the majority give the surprising value of this ratio of 3 to 1. The results indicate that these stars may be subdivided into two "age" groups a discovery having an important bearing upon theories of stellar evolution and the energy production in stars. A similar study is in progress for 25 red giant N-type stars.

The highly important result of the above survey was the identification of the resonance line of lithium, λ6707 in the faint red star WZ Cassiopeiae. Lithium is a common element on the earth, and its presence in the sun is shown by a faint line in the solar spectrum: previous to this discovery it was not known in stellar sources. Dr. McKellar's subsequent observations showed that only a few of the coolest of these rare red giants have small amounts of lithium in their atmospheres, so presumably, the cosmic abundance of this element is very low.

**Investigations of Cometary Spectra.**—Only three comets have been bright enough to be observed spectrographically from Victoria, during the past ten years. Using a spectrograph of moderate dispersion, spectra of the highest spectral purity were secured of comet Whipple II, 1942g, which for the first time, resolved the cyanogen band λ3883 into lines. From a study of the structure of this band Dr. McKellar was able to show that the mechanism giving rise to the emission bands characteristic of cometary spectra is that of resonance–fluorescence by the primary solar radiation. Thus, a fifty-year mystery was satisfactorily explained. It is of interest to state that the same explanation was independently advanced in the same week by McKellar of Victoria, Minkowski of Mount Wilson, and Swings of Chicago. Subsequently, a joint paper on this subject was published by these astronomers, an example of the spirit of co-operation, and competition, that exists in astrophysical research.

**Assistance of Observatory Personnel to the War Effort.**—During the war years, 1939-45, all members of the staff made valuable contributions to the national war effort. Dr. A. McKellar, M.B.E., and Dr. R. M. Petrie, M.B.E.,