been made by W. E. Harper, J. S. Plaskett, J. A. Pearce, R. M. Petrie, and R. K. Young. The study of spectroscopic binaries continues with new discoveries being added in the prosecution of radial-velocity programs. Attention now is directed to detailed studies of particularly interesting systems. Thus, the only reliable data on the radii and masses of a strange class of sub-luminous stars are provided by orbital studies made at Victoria. Recently, a method has been devised and applied by R. M. Petrie whereby the relative brightness and dimensions can be found entirely from spectrophotometric investigations of double stars.

Determination of Stellar Distances.—The most exacting observational task in astronomy is to determine the distances to the stars. This knowledge is required to describe and understand the universe. For all but the nearest stars direct trigonometric methods are quite inadequate, although adaptations of such methods are used. Naturally, the base line must be of enormous length where astronomic distances are concerned. The one that best serves the purpose is the diameter of the earth's orbit about the sun (186,000,000 miles). Close co-operation of observatories in Europe, America, and other parts of the world are required for the determination and checking of such distances. Fortunately, spectroscopic studies have allowed estimates of the intrinsic brightness of stars and so find their distances from Earth. An extensive study at this Observatory, by W. E. Harper and R. K. Young, of the spectra of stars resembling our sun culminated in 1922, in the publication of the distances and true brightnesses of over 1,100 stars, an important contribution to the subject. At the present time efforts are being made to apply the principle to the high temperature stars and to discover spectroscopic criteria of luminosity. There is good reason to believe that, in the near future, reliable values may be obtained of the distances of the high temperature stars in remote parts of the Galaxy.

Studies of Interstellar Matter.—The contribution of the Dominion Astrophysical Observatory to the scientific study of the nature of the material universe and the structure of matter has been of far greater importance than is often realized.

A number of important researches at Victoria have added greatly to knowledge of the tenuous matter in the vast spaces between the stars. It had long been known from the pioneer surveys of the Milky Way by the Herschels, by Barnard, Seeliger and other astronomers of the last century that an extensive cosmic cloud pervaded the Galaxy. The diffuse galactic nebulae are visual evidences of this cloud, while the large irregular dark patches in the Milky Way unquestionably indicate the presence of extensive clouds of dust particles which redden and frequently occult the light of the more distant stars.

The nature of this interstellar matter was literally a dark mystery until two decades ago when spectrographic studies, principally at Victoria, revealed its true character. It was clearly shown by Dr. J. S. Plaskett, in 1924, that the strong and unusually narrow absorption lines of sodium and ionized calcium which he observed in the spectra of 50 distant O-type stars originated in a diffuse gaseous medium relatively at rest with respect to the stellar system. This investigation undoubtedly was the foundation for Eddington's theoretical discussion of diffuse matter in space. This theory was fully confirmed by a later research of Plaskett and Pearce on the motions and distributions of interstellar matter in the direction of over 260 high temperature stars. The interstellar calcium atoms were found to share in the general galactic rotation, and statistically, at least, were fairly uniformly distributed throughout the stellar system. A further result gave a direct relation