

An explanation for non-uniformity of surface illumination may lie in non-uniform formation of titanium oxide in the atmospheres of the two components. Such a phenomenon would lead to a mottled blanketing of the stellar surface in the wave-length regions of the titanium oxide absorption bands, and a subsequent non-uniform distribution of surface temperature.

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Kuiper, Gerard P. Some results on planets.

Three topics are discussed: (1) Pluto, Triton, Titania and Oberon were photographed with low dispersion up to 8800 Å. No methane or other absorptions were detected, though the test is much sharper than that made previously on panchromatic plates. Saturn and its rings were observed up to 12000 Å (on Z plates), but the spectrum stops near the first, rather weak, absorption band of snow so that nothing significant is added to previous results with the *PbS* cell.

(2) In a systematic survey of planetary spectra a system of four or five new narrow bands was found near 7500 Å in the spectra of Uranus and Neptune; they appear to be not due to CH_4 , C_2H_4 , C_2H_6 , CO , CO_2 , H_2O , O_2 , N_2 , N_2O , H_2S , NH_3 and probably not to CH_2 .

(3) The second satellite of Neptune was confirmed; its period is about two years, its semi-major axis 400'', its orbital plane inclined 6° to the ecliptic, but its direction of motion as yet undetermined.

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McKellar, Andrew. Intensities of isotopic carbon bands in the $\lambda 6191$ sequence of the Swan system for some R-type spectra.

Recently a study of the intensities of the main and isotopic bands of the $\lambda 4737$ I,0 sequence of Swan bands in the spectra of twenty-one R-type stars has been concluded.¹ For six of the stars, the bands were too intense to allow accurate evaluation of their intensities. The present paper deals with five stars of the latter group, and describes the measurement of the intensities of members of the considerably weaker $\lambda 6191$ sequence of C_2 bands.

On the spectrograms used (dispersion 35 and 20 Å/mm at $\lambda 6200$), serious blending was encountered for three of the six bands in the 0,2 ($\lambda 6191$) and 1,3 ($\lambda 6122$) transitions. The only bands usable for a study of the isotopic abundance ratio

were the $C^{12}C^{12}$ $\lambda 6122$, 1,3 band and the $C^{12}C^{13}$ $\lambda 6101$ 1,3 band. From these, ratios of the $C^{12}C^{12}$ to $C^{12}C^{13}$ band intensities varying from 1.4 to 1.0 were found for the five stars, giving, on the assumption of direct proportionality between intensity and abundance, C^{12} to C^{13} abundance-ratios from 2.7 to 2.0.

It is possible that blending effects are present even in the bands used. This matter is being further examined using spectrograms of higher dispersion.

1. *Pub. Dom. Astroph. Obs.* 1, 395, 1948.

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Mayall, Margaret Walton. Six novae, one with a late-type spectrum.

As a result of the nova patrol program in the Sagittarius region, I have found 6 more novae in the last few years. They were all found on objective prism plates taken with the 10-inch Metcalf telescope in South Africa. They are listed in the table with their 1900 positions and approximate maximum magnitudes.

The spectrum of Nova Sgr 1943 is the most interesting of the group, but the light curve is the most poorly observed, for it was seen on only 3 chart plates. On a spectrum plate taken August 19, it appeared to be of a K type, with strong absorption H and K, and possibly *TiO* bands, and $\lambda 4227$. Five days later, a plate showed a banded nova spectrum, with widened hydrogen emission and strong absorption H and K and $\lambda 4227$. On August 29th, the spectrum consisted mostly of wide bright bands. The nova is on the edge of the globular cluster, NGC 6533.

Nova	α	(1900)	δ	m_{pg}
Sgr 1943	18 ^h 2 ^m 54 ^s		-26° 0'.4	8
Sgr 1944	18 1 8		-33 21.8	8
Sco 1944	17 46 27		-35 48.9	7.5
Sgr 1945	18 12 11		-28 19.6	9
Sgr 1946	18 12 48		-24 8.1	12
Sgr 1947	18 19 24		-20 15.1	10

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Mikesell, Alfred H. Comparison of signal-to-noise ratios of a number of 1P21 photo-multipliers.

Thirty-nine type 1P21 photo-multipliers were tested at dome temperatures on a source equivalent to a 3.5 magnitude A0 star in a 5-inch refractor, through 49Å plus 34Å Wratten filters with effective wave length near 4450 Å. One multiplier constructed with mica spacers did not

respond to this source. For 38 multipliers the response to blue light was independent of multiplier construction and varied over 2.5 magnitudes. The ratio of the signal of light effective at 6100 Å to that of the blue source, for each multiplier, varied by 16 to 1 for these samples. The best multiplier would yield about 1.5 microamperes for an unfiltered 6.0 magnitude A₀ star in a 12-inch refractor.

Multipliers with non-hygroscopic bases showed more uniform signal-to-noise ratios (S/N) than black-based multipliers. They also had smaller dark and leakage currents which varied less with temperature. Relative S/N ranged from 3 to 26 for 13 multipliers constructed with mica spacers; from 6 to 53 for 15 multipliers with ceramic spacers and black bases; and from 24 to 58 for 10 having yellow bases. Three out of each of the last two categories were selected as being within 0.8 magnitude of the best with regard to both sensitivity and S/N.

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Washington, D. C.*

Nassau, J. J. and W. W. Morgan. A survey for stars of high luminosity in the galaxy.

An examination of a continuous belt 6° wide on either side of the galactic equator has been undertaken with the 4° objective prism attached to the Schmidt-type telescope of the Warner and Swasey Observatory. The survey extends from galactic longitude 347° to galactic longitude 184°. The program is carried out jointly with the Yerkes Observatory and is financially supported by the Office of Naval Research.

The belt is covered by 168 overlapping circular fields each 5.3 in diameter. Five- and two-minute exposure plates on Eastman IIa-O emulsion are to be taken on each field.

The plates for the central zone producing a minimum width of 3.4 and maximum of 5.3 have been taken. The present report describes the progress of the work in this belt. The survey includes stars of spectral class B5 and earlier together with supergiant stars of later classes and objects of special interest between apparent photographic magnitude 6.5 and 10.0. A number of stars of astrophysical interest have been discovered. Among these are a considerable number of O and B stars whose spectra contain the interstellar absorption feature at $\lambda 4430$ in great strength. Sometimes this feature is as pronounced as the hydrogen lines while in some cases it is the most prominent line in the spectrum.

A large number of supergiants of classes F, G

and K were found. Many G2 to K5 giants were detected which show an absorption blend in the neighborhood of $\lambda 4150$ abnormally strong.

From the material on hand we have obtained provisional surface distribution of B stars.

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and Yerkes Observatory,
Williams Bay, Wis.*

Norris, Donald K. and Frank S. Hogg. A search for meteoritic matter in atmospheric dust.

Due to the increasing cosmic importance of the problem, a series of collections of atmospheric dust was inaugurated in 1947 at the David Dunlap Observatory, with the ultimate hope of isolating genuine meteoritic particles, and estimating their frequency. Our work so far has been restricted to magnetic dust, as it appeared unlikely that non-magnetic meteoritic material could be readily differentiated from ordinary terrestrial dust. The method of collecting finally adopted was as follows: sheets of hard smooth surfaced plastic Arborite, 24 by 18 inches, were coated with a very thin film of a silicone compound, and were exposed for intervals ranging from one day to one week. The plates were designed so that they could be coated, folded, and shipped via air express and returned for cleaning. The exposed plate is cleaned off with a plastic scraper, and the silicone is dissolved and washed into a test tube. The magnetic particles are removed from the solvent, and transferred to a microscope-cover glass. Particles range in size upward from several microns.

It soon became apparent that for plates near the observatory, the nearby railroad formed such a generous source of microscopic iron globules that any probable meteoritic dust would be hopelessly diluted by railroad smoke particles. To reduce the percentage of telluric matter, tests were made in fairly isolated regions in the Rideau Lakes, and in Haliburton, during the summer of 1948. As we expected, these collections yielded much smaller total amounts of telluric plus cosmic dust. To carry the project still farther, systematic collections were inaugurated at Baker Lake and Fort Smith, N. W. T. under winter conditions.

At Baker Lake an estimated 200 micrograms were collected in 70 days; this would correspond to less than half a kilogram per kilometer² per year. The spherules and cindery material common farther south were greatly reduced in number.