TABLE I. VALUES OF THE COEFFICIENTS IN THE EXPANSION
 $\Psi_{II} = \sum c_i \varphi_i^N P_i^N$

	3-term function	6-term function
c_0	.997535	.997945
c_1	.069227	.062583
c_2	.010398	.012739
c_3	.003528	.004322
$\sum c_i^2$	.999989	.999991

The expansion of φ_0 in terms of symmetrized products of hydrogenic functions with $Z = 2$ is given in Table II.

TABLE II. VALUES OF THE COEFFICIENTS IN THE EXPANSION

$$\varphi_0^N = \sum \left\{ C_{nl'n'l'} \frac{1}{\sqrt{2}} [R^N(nl|1)R^N(n'l'|2) + R^N(n'l'|1)R^N(nl|2)] \right\}$$

$nl \ n'l'$	$C_{nl'n'l'}$	$C^2_{nl'n'l'}$
1s 1s	.9643	.9299
1s 2s	-.2164	.0468
1s 3s	-.0759	.0058
1s 4s	-.0432	.0019
1s 5s	-.0291	.0008
2s 2s	-.0144	.0002
1s ∞ s		
$\sum C^2_{nl'n'l'}$		.0016
1s 6s		
$\int_0^\infty C^2_{nl'n'l'} d\epsilon$		.0115
$\sum C^2_{nl'n'l'} + \int_0^\infty C^2_{nl'n'l'} d\epsilon$		.9985

Comparison is made with a previous numerical expansion in Hartree self-consistent field functions.¹ This work is being continued.

This work was supported by a grant from the Research Corporation.

I. L. C. Green *et al.*, *Phys. Rev.* Jan. 15, 1952.

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Hall, John S. A photoelectric photometer designed for measuring polarization, color, magnitude and spectral type.

As the light is transmitted through a cylinder of calcite it is split into two beams. The foci of the two beams are near two limiting apertures which rotate with the calcite at 15 cycles per second.

The axial beam, or ordinary ray, passes through a hole in the center of a mirror and continues along the optical axis, to a photomultiplier. The alternating current which results if the starlight is polarized is presented as a sine wave on an automatic recorder once every two minutes.¹

The off-axis beam, or extraordinary ray, is reflected from the mirror and made to pass through one of a sequence of four interference

filters to a second photomultiplier. The direct current from this multiplier is amplified and displayed by a second recorder. A deflection, lasting about twenty seconds, for each color filter occurs once every two minutes.

Preliminary reduction of the observations of 50 stars indicates that the polarization, magnitude and color of stars of the 10th magnitude and brighter can be accurately measured in this way with the 40-inch telescope. The work of Ström-gren² has shown that observations with a narrow filter centered at $H\beta$ can be compared with those centered in adjacent spectral regions to determine spectral types. Suitable filters for accurate spectral classification have not yet been obtained here.

A second direct-current amplifier and associated recorder is used for calibration purposes and to record possible changes in observed light intensity as the other measures are being made. This amplifier measures the average direct-current level of the alternating current produced by the first photomultiplier.

Polarized sky background can be automatically eliminated. Care must be exercised to make sure that there are no field stars close to the object under observation.

With this photometer a new series of measurements of the Pleiades has been initiated. A year ago a polarization of 2.2 per cent was reported³ for the cluster member Hertzprung 371. Recent measures have shown that another cluster member, Hertzprung 322, shows equally strong polarization. A 47° difference in observed position angle exceeds the probable error of measurement by a factor of 15. The distance between these two cluster stars is probably less than two parsecs; if they are at equal distance from the sun, they are only 1/3 parsec apart. Several other cluster members are now suspected of showing polarization of 0.2 or 0.3 per cent.

These observations suggest that this polarization is produced by clouds which are very small and possibly independent.

1. *Pub. U. S. Naval Obs.* 17, Part I, 1950.

2. *Trans. I. A. U.* 7, 404, 1950.

3. *A. J.* 56, 40, 1951.

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Helfer, H. Lawrence. Magneto-hydrodynamic shocks.

This paper is a description of the alterations produced in the physical properties of a magneto-hydrodynamic fluid with infinite conductivity