The change of metallicism with depth of convection zone is discussed in view of these results for these stars.

A Cosmic X-Ray Survey from the Southern Hemisphere. B. A. COOKE, K. A. POUNDS, AND E. A. STEWARDSON (introduced by Oscar T. Manley), *University of Leicester*.—A proportional counter spectrometer was flown on an unstabilized Skylark rocket (SL-118) from Woomera, South Australia, on 10 April 1967 with the aim of conducting a search for cosmic sources of x radiation. The flight took place at 20.21 h local time and in the absence of the moon; aspect data are provided by magnetometer and an infrared horizon sensor. The detector area was 300 cm² and a bandwidth of 1.5 to 15 Å was analyzed into six photon energy channels. Improved x-ray sensitivity was provided by inclusion of a recently developed method of pulse noise reduction which exploits the different rise times of the soft x-ray and the "noise" pulses. Spectra are given of the x-ray flux from a number of discrete sources and from the background night sky.

Photographic Search for Comets During 12 November Solar Eclipse. HENRY C. COURTEN AND RICHARD W. GENBERG, *Adelphi University*.—Under NASA grant to Adelphi University a four-man team set up and operated a ground-based photographic station in Bagé in southern Brazil at the centerline of the eclipse path. Specially modified aerial cameras with coverage out to 40 solar radii were used with interference filters and 8×10 in. glass plates to search for small bright comets proximate to the sun.

Although a high thin atmospheric haze resulted in a rather high level of sky background, star images to mag +7 were recorded, along with excellent images of the coronal structure.

The comet search equipment is a follow-on to the initial search conducted by Dr. B. Donn and Dr. Francois Dossin during the 1963 total eclipse. The most recent effort was enhanced by direct cooperation with Wesleyan University (Van Vleck Observatory) which, under NASA grant, supported an airborne observer with identical photographic equipment.

This brief report describes the techniques and equipment used by the Adelphi group. Projection slides exhibit the filter characteristics as matched to the camera lens transmission curve, the equipment erected and ready for field operation, and several sample photographs showing coronal detail. Because of the practical difficulties inherent in reproducing very fine star and comet images arti-

cially enhanced slides of the original negatives are shown.

Complete reduction and analysis of the plates is expected to take several more weeks; therefore conclusions on the existence of the family of comets predicted by Dr. P Swings cannot be drawn at this time. Comparison of very recent star plates with those exposed during the eclipse will be accomplished within the next few weeks. Since the earlier stellar images are too faint for blink comparison the simple, yet effective, techniques which are being employed in the analysis are described.

On the Determination and Astrophysical Application of Oscillator Strengths measured in Free-Burning Arcs. CHARLES COWLEY AND BRIAN WARNER, *Yerkes Observatory*.—We have calculated a model of the emitting regions of the electric arcs used by Corliss and Bozmann (*NBS Mono.* No. 53, 1962) and Corliss and Warner (*Astrophys. J. Suppl.* No. 83, 1964) for the determination of oscillator strengths.

Calculations based on this model show that the normalization function should be very nearly flat for most neutral atoms with ionization potentials less than about 8 eV. For ions and neutral atoms with high ionization potentials, the normalization function should decrease with excitation potential for the higher excitation potentials.

Systematic increases in the excitation temperature of the sun and stars that have been found for the highest excitation potentials may be attributed to systematic errors in the oscillator strengths. These systematic errors were introduced when a universal normalization function was applied to neutral atoms as well as ions.

Intrinsic Colors for Main Sequence A- and F-Type Stars. D. L. CRAWFORD, *Kitt Peak National Observatory* AND BENGT STROMGREN, *Institute for Advanced Study Princeton*.—The four-color data of Stromgren and Perry (*Astrophys. J.*, to be published) and the H β photometry of Crawford *et al.* (*Astron. J.* 71, 1966) have been used to calibrate the intrinsic color $(b-y)_0$ of the *uvby* system in terms of β , Δc_1 , and Δm_1 . The parameter Δc_1 is the difference between the measured c_1 and a zero-age line in a c_1 vs β relation. For A and F stars, it is a measure of relative luminosity for stars of the same temperature. The parameter Δm_1 is the difference between the measured m_1 and the average relation for the Hyades (Crawford and Perry, *Astron. J.* 71, 206, 1966). It is a measure of the relative line blanketing near 4100 Å. Of the 1217 stars in the Stromgren-Perry catalogue, 379 were omitted as being outside