called a purely geometric one, and is based upon the fundamentals of the synthetic (or projective) geometry. The basic idea is a transformation from n- to $(n-1)$-dimensional space by means of parallel or point (perspective, pencils of rays) projections. The proposed corresponding analytic solution is based upon the theory of invariant groups and the theory of transformation with the decrease in number of dimensions. There are discussed some possible cases in space of higher-order dimensions.

Invisible Matter in the Solar Neighborhood. S. S. Kumar, *Physical Research Laboratory, Ahmedabad-9, India.*—It is known that the visible stars and the interstellar atomic hydrogen cannot account for all the mass existing in the neighborhood of the sun. It is proposed here that planetary objects, which get formed by the contraction of stars of very low mass ($M<0.07\ M_\odot$) to the black dwarf stage, contribute significantly to the unexplained or invisible matter in the vicinity of the sun. It takes a star of mass $0.04\ M_\odot$, assumed to be the average mass for a planetary object, only 100 million years after its birth, to become invisible. Therefore, the number of planetary objects within 20 pc from the sun is about 15 000. The mean density of the invisible matter in the form of planetary objects is 1×10^{-24} g/cm^3 in this region.

Calculation of Eclipse Functions for Binary Stars. Albert P. Linnell, *Amherst College.*—A group of computer programs has been written for calculation of eclipse functions for binary stars.

Programs are available for ${}^0\alpha$, ${}^{10}\alpha^{oc}$, ${}^{10}\alpha^{tr}$, ${}^{10}\alpha^{ann}$, ${}^x\alpha^{tr}$, ${}^x\alpha^{oc}$. Each program uses the formal analytic expression for the relevant function, and calculates a value of that function for arbitrary permissible values of the parameters x, p, k.

Programs are also available for the inverse functions ${}^x\psi^{oc}$, ${}^x\psi^{tr}$, ${}^x\chi^{oc}$, ${}^x\chi^{tr}$. The input arguments may be arbitrary permissible values of the parameters appropriate to the given function.

Lunar Observations at λ 10 μ and 1.2 mm. Frank J. Low (introduced by D. S. Heeschen), *National Radio Astronomy Observatory.*—Horizontal thermal gradients on the lunar surface have been measured with a double-beam infrared radiometer at the Cassegrain focus of the 82-in. McDonald telescope. This instrument, designed by H. L. Johnson and the author for stellar photometry, used a liquid-helium-cooled bolometer (Low, F. J., *J. Opt. Soc. Am.* **51**, 1300, 1961) limited to the 8–14 μ window by a cooled interference filter. The beam or field of view was 15 arc sec, exactly equal to the arc through which the beam was switched. Thus the signal was generated by temperature differences between adjacent regions of the lunar surface separated by ~30 km. Large daytime gradients were found outside the craters Tycho and Copernicus near the thermal anomalies reported by Murray and Wildey (to be published).

Scans across the region of the dark limb 5 days after full moon established an upper limit of 100°K for the minimum lunar temperature. The 10-μ temperature of Jupiter was taken to be 128°K (Murray, B. C., and Wildey, R. L., *Astrophys. J.* **137**, 692, 1963), and the apparent temperature of Saturn was measured as 85±2°K; therefore, the minimum observable temperature was about 80°K limited primarily by uncompensated sky brightness fluctuations.

Additional lunar temperatures have been measured at 1.2 mm. A single-beam bolometric radiometer was used with a 60-in. parabolic reflector located at Green Bank, W. Va. At the time of observation, system parameters were: beamwidth, 7′; minimum observable temperature change for an object outside the atmosphere and filling the beam, 1.0°K; integrating time constant, 10 sec; spectral response, 1.0 to 1.4 mm. Maximum lunar brightness temperature at the center of the disk near full moon is 286±20°K. Minimum near new moon is 157±15°K. These values are based on an assumed solar brightness temperature of 6000°K.

Avrett-Krook Model Atmosphere and the Continuous Absorption in the Violet and Ultraviolet Regions. Satoshi Matsushima and Yoichi Terashita, *State University of Iowa.*—Programs have been written for the IBM 7070 and 7040 to compute non-grey model atmospheres, following the iteration procedure recently developed by Avrett and Krook (*Astrophys. J.* **137**, 874, 1963). Application of the Avrett-Krook theory yields a model atmosphere strictly in radiative equilibrium. It was found that in general, only three iterations are sufficient to attain the flux constancy within the numerical fluctuations of the machine calculations.

One of the purposes of our calculation is to examine the effect of absorption by quasi molecular hydrogen as a source of continuous opacity in the violet and ultraviolet regions (Zwann, C., *Bull. Astron. Inst. Neth.* **16**, 225, 1962). The effect of recent revisions of H^- absorption coefficient by the Ohmuras (*Phys. Rev.* **121**, 513, 1961) and Geltman (*Astrophys. J.* **136**, 935, 1962) was also studied. In order to compare directly with observations, four models with different absorption coefficients were constructed. The difference between the model including only H and H^- (Chandrasekhar) and the