ultraviolet continuum. Densitometer tracings of the rocket spectra, traced at right angles to the direction of dispersion, provide the experimental profiles of the solar limb darkening.

In order to correct the observed profiles for instrumental broadening, different methods have been analyzed in terms of their accuracy and adaptability for use on the IBM 7040.

The instrumental broadening profiles, by means of which the observed profiles, are corrected, have been extracted from carbon arc spectra taken for calibration purposes through the same spectrograph before the flight. The basis for derivation is the assumption of a rectangular form for the unbroadened carbon arc profile, and the assumption that the functional form of the instrumental profile at a given wavelength does not vary within the observed profile of the same region.

It is found that the best method of correction for instrumental broadening is the Fourier inversion method, although for narrow instrumental profiles the iteration method and the direct numerical method may be satisfactorily applied.

The rocket spectra, being the only limb-darkening data available at the present time, are limited by the pointing accuracy of the spectrograph and the difficulty involved in the calibration of the photographic plates. The intensity determination at the extreme limb has to be made by extrapolating the characteristic curves. The probable errors due to these effects are estimated by the Fourier inversion method, and are found to be less than 5% for the λ 2500 Å region and increases to about 10% for the shorter wavelength regions down to λ 2000 Å.

The tracings of the plates were made by one of us (S. M.) at the Naval Research Laboratory. His visit to NRL was supported by the E. O. Hulburt Center for Space Research.

The Icy-Conglomerate Model of the Moon.

DONALD A. MACRAE, *David Dunlap Observatory*.—The moon is considered to have been formed by a gentle concurrence of smaller masses which are supposed to have been composed of ices in a matrix of solid matter (*Proc. Roy. Soc. Canada* 56, A27, 1962). The larger of these would originally have been spherical in shape. During or subsequent to the accretion some gravitational reorganization must have taken place, but many of the moon's present surface features are considered to be relics of these original bodies.

The possibility that subsurface ices and effluent volatile material were agents in moulding the moon's surface is discussed. Such agents may still be at work. Parallel processes which occur on earth (pingos) bear a strong resemblance to the lunar domes.

Photoelectric Spectral Observations of Nova Herculis 1963. STEPHEN P. MARAN, *Kitt Peak National Observatory*.—Photoelectric scans of the spectrum of Nova Herculis 1963 were obtained on 22 nights between 11 February and 27 September 1963. The range in wavelength was 3800–6800 Å and the spectral purity was usually 10.5 Å. Corrections for atmospheric extinction and instrumental sensitivity were determined primarily from measurements of nine 10.5 Å bands in the spectrum of α Lyrae. The observations were taken with the Tull spectrophotometer and Francis C. McMath 24-in. reflector of the University of Michigan.

Absolute intensities of the emission lines were determined. Probable physical parameters of the nova shell, summarized below, were derived on the basis of the assumptions that the emission lines arise in a thin, expanding nebula, that the distance to the nova is 1200 pc and that the visual absorption is $0^m.2$. The mass of hydrogen in the shell is about 8×10^{28} gm and the abundance of helium relative to hydrogen is 0.12 by number of atoms. On the 17th day after the outburst, the density of hydrogen atoms in all states in the shell was about 10^{10} cm $^{-3}$, and the shell consisted of an inner, ionized layer (thickness about 5×10^{11} cm) and an outer, neutral layer (thickness about 10^{13} cm). As the expansion proceeded, the ionized region occupied an increasingly larger fraction of the nebular volume, and the shell was fully ionized by the 86th day. The electron density was about 4×10^8 on the 244th day, when the last observations were made. The electron temperature of the shell rose from 9100° K on the 91st day to nearly 13 000° K on the 244th day.

The reported rise in the electron temperature may have been a real consequence of the decreasing emission rate of the gas in the expanding shell. However, the presence of condensations in the nebula would lead to an apparent increase in the electron temperature.

Diameter Distribution of Lunar Craters.

ALLAN H. MARCUS, *Rand Corporation* (now at Case Institute of Technology).—In a previous paper the author formulated a stochastic model of the formation and survival of lunar craters. The model took into account three important aspects of the phenomenon, namely, the birth of new primary and secondary craters and the damage of earlier craters by later ones which form nearby. The present paper also takes into account the disappearance of craters due to filling by dust or lava.

The functions of primary interest are the expected number density $\xi(x; t)$ of the diameter x of craters at time t , and the probability density $\zeta(\tau; x, t)$ of the age τ of craters of size x at time t . Exact functions are obtained for "clean" craters, and approximate