to 190 km of the correlation coefficient between continuum and lines noted by Evans and Catalano (Solar Phys. 27, 299, 1972) and Canfield and Wehltretter (Solar Phys. 33, 33, 1973). Implications for energy transport models of the low photosphere will be discussed.

We have solved the hydrodynamic equations and the transfer equation for a high frequency wave with a period of approximately 30 sec and an initial energy flux corresponding to one of Stein's noise fluxes generated in the solar convection zone. As the sound wave travels upward through the undisturbed static atmosphere (Kurucz) its amplitude increases until it forms a shock. The position of the shock marks the beginning chromospheric temperature rise and defines the location of the temperature minimum. Most of the energy of the wave is dissipated in the shock except for a smaller fraction which penetrates into the chromosphere and is available for further heating. Both the height of the temperature minimum and the energy flux carried through the shock to greater heights are in good agreement with observations of the solar temperature minimum and of the energy radiated by the solar chromosphere.

These results are preliminary since only a single wave has been treated thus far.

q5 What Velocities are Consistent with the Interpretation of Supergranulation as Penetration Convection? R. B. GUBBEl, JILA and J. TOOMER, JILA & Dept. Astro-Geophysics, Univ. Colorado. - Supergranulation motions in the Sun are considered to result from convective driving, but the theory for compressible convection is vitally sketchy. No self-consistent theory currently exists that can predict the observed horizontal scales of granulation or supergranulation, and even the overall depth of the convection zone is considerable doubt. Theoretical predictions of velocity amplitudes simply do not exist, aside from uncertain estimates from mixing-length treatments of convection. However, in the absence of refined convection analysis, we can still identify certain global properties that the velocity field must satisfy if convection with a cellular structure is occurring. We feel that some of these properties are too often ignored in the interpretation of velocity observations and could well afford to be clarified. For instance, the relative amplitudes of vertical and horizontal velocities are constrained by the continuity equation to have particular dependences on the cell shapes and scales on the gradients of the vertical velocity. We discuss these functional forms for cellular motions taking place over multiple scale heights in a compressible atmosphere. Further, a very real possibility exists that the direction of flow may not be monotonic with height in a supergranulation cell. The motions from below are essentially coasting to a halt in a stably stratified photosphere. In such cases of penetrative convection, theory suggests that the vertical velocity may alternate in sign as it is transported vertically across the cell. This gives a net motion along the mean flow, which is not evident from observed velocities. The gaseous nature of the lower photosphere is also evident from other arguments which yield upper bounds to velocities in the photosphere. If these properties are assumed, we find that the velocity field is consistent with observed behavior.

q6 Height Dependence of Horizontal Velocities in the Photosphere. J. BRAVNIS, Lund Observatory, Lund, Sweden. - The line Fe I λ 5250.2 Å in high-resolution wiggly-line spectrograms of quiet regions, taken with a radial slit and covering 0.1-μm, was analyzed for center-line shifts. The line shifts were fit to a functional form which is analogous to the line-of-sight component of the radial velocity. The observed line shifts were used to obtain the horizontal component of the velocity. The results indicate that the horizontal velocity component is largest near the center of the line and decreases towards the edges of the line. The horizontal velocity component decreases with height in the photosphere, as expected for a compressible atmosphere. The results are consistent with the hypothesis that supergranulation motions are driven by convection in the photosphere.

q8 Radio Observations of the Solar 5-Hz Oscillations at the 2.0 cm Wavelength. F. L. IIOER, Mississipi Valley Laboratory, La Posta, Calif. - Observations of the Sun made with a 2.0 cm wavelength beam switching radiometer and the 60 ft. antenna of the Naval Electronics Laboratory Center, La Posta, Calif. are presented. The observations were made during the day and night, the zero point of the sky, and the radiometer itself (by replacing the feed horns with matched loads) in order to eliminate the equipment and terrestrial atmosphere and solar oscillations. The individual spectra are well approximated by power law relations. The average of four solar spectra has a spectral index of -1.3 and a 2.0 cm interval of 9.1 x 10^{-3} Hz. The spectrum shows an oscillation with peak power at 4.05 mHz (period = 247 sec), a bandwidth of approximately 0.6 mHz, and a peak-to-peak amplitude of 2.8 K. A weaker oscillation is seen near 6 mHz. Both oscillations are significant at the 90% confidence level. The average spectra of quiet and active areas on the solar disk show a number of differences. There are many more differences in the observed spectra than in the theoretical predictions. The observed spectra are more complicated than the theoretical predictions.

q9 Radio Oscillations at 2.8 cm. C. J. GEHRKEN and W. GRAB, Stanford Radio Astronomy Institute. - The Stanford 5-element array is capable of taking one-dimensional scans of the Sun at 2.8 cm (10.6 GHz) in rapid succession. The synthesized scans have a width of about 0.1 arc and an east-west resolution of about 10^" of arc. The quiet Sun was observed in this way on several occasions for an hour each time, with 3 scans per minute. These scans show characteristic small fluctuations with an amplitude of about 0.01 solar flux units or less. It was noticed that some of these small peaks appear to rise and fall on a time scale of about 5 minutes. Time series were then extracted from the one-dimensional scans by following spatially fixed points in time in an attempt to determine the amplitude of any five minute oscillations at this wavelength. The significance of a peak found near 3 mHz will be discussed.

q10 Photoelectric Observations of the Green Coronal Line. R. E. Ilissin, D. A. Landman and D. L. Mickey, U. of Ill. - Recent high-precision photoelectric measurements of green-line Stokes parameters have been directed toward (1) detection of intensity fluctuations in the corona, and (2) establishment of a real confidence level for green-line polarization measurements. Observations at various locations in the corona (1.06 < R/R_s < 1.4) under excellent observing conditions have shown no intensity...