it is shown that there exist special perturbation conditions under which both of the above-mentioned motions become stable.

The above results are of some interest in view of a recent article by J. Hazlehurst (*Astrophys. J.* **137**, 125, 1963) in which incompressible, inviscid, spiral flows are found unstable or stable, according as the flow is directed toward or away from the axis.

Evidence of Faulting in the Crust of Mars. Part I. Grabens. CLYDE W. TOMBAUGH, *Research Center, New Mexico State University*.—This is one of a series on the geology of Mars.

Since the methods of measurement of relief on the moon are not practical for Mars, an indirect approach was sought.

Under the extremely dry and cold conditions prevailing on Mars, vegetation could better survive in regions where the air is denser and warmer. Therefore, the intensity of darkness and residual persistence of the maria are interpreted as criteria of altitude. Since the maria vary in color and shade with the seasons, it was necessary to study their appearance over a period of thirty years in order to cover two equivalent years of Martian seasons.

The maria of the moon are round while those of Mars are angular, which suggests a different mode of origin.

While some maria exhibit features that suggest monocline folding, other maria have sharply defined and fixed boundaries that are difficult to explain unless down-throw faulting has been involved. Among the latter are certain maria in which canals have been seen at their borders during their late summer season. In still others, such as the apex of the Syrtis Major, the coastlines are exactly aligned with canals on the adjacent desert, which suggests that the canals are the result of crustal fracturing continuing beyond the mare escarpment.

In addition to the dark maria, there are several desert tracts which become semi-dark at times. It is significant that they are exactly bounded by canals, and are either rectangular or triangular in shape. These appear to represent abrupt sunken crustal blocks, known as grabens, accomplished by faulting.

Comparison of compiled minimal and maximal-darkening maps of Mars portray the areas of faulting.

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The Chemical Composition of the CH Stars, HD 26 and HD 201626. GEORGE WALLERSTEIN AND JESSE L. GREENSTEIN, *Berkeley Astronomical De-*

partment, University of California and Mount Wilson and Palomar Observatories.—The CH stars are known to have very high space velocities and a rather spherical galactic distribution; one has been found in the globular cluster ω Centauri. At low dispersion their spectra are characterized by weak metallic lines, strong CH, C₂, and Ba II.

We have compared two CH stars with the normal G8 III star, ϵ Vir, by a differential curve-of-growth method, using Palomar high-dispersion spectra (6.7–13.5 Å/mm) with the following preliminary results:

(1) The abundance ratio of Fe to H is low by a factor of 5 in HD 26 and by a factor of 30 in HD 201626.

(2) All elements observed between Na and Ni behave like Fe with the possible exceptions of Na and Mn, which may be low by an additional factor of 4.

(3) The abundance ratios of Ba, La, Ce, and Nd to Fe are high by a factor of about 20 in both stars.

(4) The abundance of Eu to Fe is high by a factor of 5 in HD 26 and by less than a factor of 2 in HD 201626.

(5) The ratio of C to Fe is about 5 times normal in both stars.

Arguments are presented to show that these stars are members of the old, halo population which have built an excess of heavy elements (Ba and the rare earths) by neutron capture on a slow time scale and that the products have been mixed to the surface. The detailed physical conditions of the slow neutron capture process cannot be established from our data. Except for the general low metal abundance, these stars resemble the Ba II star HD 46407. Our interpretation of the composition of HD 26 and HD 201626 is similar to the Burbidges' interpretation of that star. It is interesting to find evidence for s-process element formation in old stars of low metal content.

Photoelectric and Photographic Observations of 944 Stars in and near η and χ Persei. ROBERT L. WILDEY, *California Institute of Technology, and Mt. Wilson and Palomar Observatories*. A total of 944 stars in the general region of η and χ Persei in the Perseus galactic arm have been observed photometrically in U, B, and V of the Johnson–Morgan photometric system. Supergiants, O stars, giants, subgiants, and their fainter immediate neighbors (used to obtain reddenings) totaling 336 stars have been measured photoelectrically in the general OB association of which the galactic clusters form the nucleus. Within the extreme nuclei of the clusters proper, photoelectrically calibrated photographic observations have been made with completeness