are adopted from the Zanstra theory while their distances are estimated from the strengths of the interstellar K line, and from the statistical discussions by Berman and by Parenago. The Balmer lines enable us to estimate the electron pressure and the mass of material above the photosphere. Since the gas is almost completely ionized, the electron pressure is half the gas pressure, and if the atmosphere is in hydrostatic equilibrium we may estimate the effective surface gravity. The star's temperature, apparent magnitude, and distance give an estimate of the radius of the star, whence we may find a lower limit to the mass of the star. The data for 5 stars are consistent with the suggestion that these objects are dwarfs with masses comparable with that of the sun. If "turbulence" can be excluded and the role of radiation pressure evaluated, a more precise estimate should be possible.

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Bauer, Carl August. Meteoric helium.

The discovery that the large helium contents occur only in the relatively small meteorites demands an explanation. In addition, the ages, ranging from 60 million to 7600 million years, that were previously derived on the assumption that the observed helium contents are affected only by the decay, at the present observed rate, of uranium and thorium present certain difficulties. Several independent arguments indicate that the meteorites had their origin in the disruption of one, or a very few, planet-sized bodies. It is unlikely that the times since the solidification of the different parts of a small metallic core could vary by a factor as large as 100. In addition, according to this interpretation, the age of the hypothetical planet must be at least 7600 million years which is already more than twice the age of the oldest rocks in the earth's crust.

The most promising explanation of the occurrence of the large helium contents in only the relatively small meteorites is that cosmic radiation has produced extra helium in the small meteorites. Observations show that cosmic radiation produces nuclear disruptions in which helium nuclei are among the disintegration products. On the basis of published observations it appears that cosmic radiation in the neighborhood of the earth is sufficiently intense to produce helium in small meteorites at the average rate of one nucleus per 100 seconds per gram of meteorite. At this rate this process would produce the largest ob-

served amount of helium, 4×10^{-5} cc/gm, in only 3.4×10^9 years which is about one-half of the present assigned age of this meteorite. The helium that is produced in large meteoroids is concentrated in the surface layers. Consequently, this helium is largely lost because large meteoroids maintain their high cosmic velocities through a greater thickness of the earth's atmosphere and thus lose a thicker layer of material by evaporation than do small meteoroids.

The decrease in the sun's general magnetic field with distance may have allowed more intense cosmic radiation to act on the meteorites than we observe in the neighborhood of the earth. This additional intensity may decrease the time necessary for the formation of the observed helium contents by a large factor, up to 100.

The proposed process can be checked by: (1) Determination of the ratio $He^3:He^4$ for the helium from meteorites. (2) Determination of any radial variation in the helium content of meteorites. (3) Measurement of the helium, uranium, and thorium contents of both the metallic and stony portions of stony-iron meteorites. (4) Investigation to detect any "cosmic-ray elements" such as C^{14} .

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Bidelman, W. P. The peculiar star, HD 30353.

A discussion of the peculiar absorption-line spectrum of HD 30353 ($m_v = 7.7$) is presented on the basis of a spectrogram of dispersion 76 Å/mm at $H\gamma$ taken at the McDonald Observatory. This star appears to be an extremely luminous A-type supergiant, the spectrum of which is characterized by very strong lines of the ionized metals, comparatively weak Ca II lines, and extraordinarily weak hydrogen lines. A comparison with normal supergiants of luminosity class Ia on the Morgan, Keenan, Kellman system indicates that this star is probably of even higher luminosity than the A5 star, ϕ Cas. The abnormal weakness of the hydrogen lines makes more appropriate, however, a comparison with two other stars showing this peculiarity, ν Sgr and R CrB. It is shown that nearly all lines which appear in the spectrum of ν Sgr, except those of hydrogen and helium, are greatly enhanced in the spectrum of HD 30353. It is considered possible that the helium lines at $\lambda\lambda 4026$ and 4471 are also present in this star, although this cannot be definitely stated because of blending with strong lines of the ionized metals.