sharply defined and definite. In Hole (1) the floor was encountered at 750 ft. and in Hole (2) at 415 ft. In Hole (3) what is considered to be the rim was encountered at a depth of 70 feet. The depths of the two inner holes correspond closely to those predicted for the depth/diameter ratio and the detailed profile of a lunar type or explosion crater 1.46 miles in diameter. The depth of the third hole as well as the general topography of the region indicates that any rim which originally existed had been mostly eroded away before the deposition of sediments.

Below the floor of the crater the drill cores consist of broken, granulated and powdered rock weakly recemented. At the first location 1400 ft. from the center it was not found possible to drill through to solid rock. At the second location, 2500 ft. from the center the zone of shattered rock was penetrated and found to be in excess of 400 ft. It could reasonably be expected to be much thicker at the center. No evidence of volcanic material has been found in any of the cores.

The general similarity which the Holleford crater shows to the well authenticated Barringer meteorite crater in Arizona both in its general shape and in the nature of the material below the floor is quite striking. This analogy suggests meteorite impact as the most probable origin of the Holleford crater, and so far no satisfactory alternative explanation has been found. The cores are being searched for meteoritic material but the statistical probability of a find would appear to be slight.

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Bretz, M. C. and Billings, D. E. Coronal emission from calcium xv.

The analysis of Climax coronal spectra, taken November 12, 1956 near an active spot region, shows that at and near the height where $\lambda 5446$ line emission is most intense the intensity ratio of the lines $\lambda 5694/\lambda 5446$ is about 2. The half-widths of the two lines are almost identical, and do not vary systematically with height. In reducing the spectra the underlying absorption features were taken into account. The results seem consistent with earlier tentative identification of $\lambda 5446$ as due to CaXV.

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Cameron, A. G. W. The role of the $C^{13}(\alpha, n)O^{16}$ reaction in the synthesis of heavy elements.

The author has suggested that C^{13} is made when helium thermonuclear reactions commence in a stellar core and the resulting C^{12} mixes with envelope hydrogen, and that subsequent $C^{13}(\alpha, n)O^{16}$ reactions will produce enough neutrons to synthesize large abundances of heavy elements. This has been criticized on the grounds that there would be too much competition for the neutrons by the $N^{14}(n, p)C^{14}$ reaction. The situation has been clarified by numerical integrations.

It was assumed that the onset of the $Be^8(\alpha, \gamma)C^{12}$ reaction released a lot of energy in the core, causing expansion and mixing of core and envelope material. The amount of C^{12} formed and the amount of hydrogen mixed with it were treated as variable parameters. Changes of composition were followed as (1), carbon-cycle reactions exhausted the admixed hydrogen; (2), the C^{13} formed reacted with helium; (3) the resulting neutrons were absorbed by heavy elements in competition with N^{14} ; and (4), the protons produced by the $N^{14}(n, p)C^{14}$ reaction regenerated some C^{13} . The variation of the heavy-element absorption cross section with composition was taken into account. Cases considered were neutron-production time scales long and short compared to the C^{14} half-life, a possible thermal resonance in the $C^{14}(p, \gamma)N^{15}$ reaction, and a solar and 0.1 times solar (Pop. II) ratio of heavy elements to hydrogen.

For a solar composition, if more than 4 to 8 per cent of the core helium (dependent on time scale) is converted to C^{12} , then overabundance ratios of heavy elements ≥ 100 are produced when 0.05 to ~ 0.2 protons are admixed per C^{12} nucleus in the core. The acceptable range of conditions is wider for a Population II composition. Hence, if envelope hydrogen does not mix to the centre of the core, then large overabundance ratios of heavy elements may be produced in a shell of undetermined thickness. A very much wider range of acceptable conditions exists if the admixed hydrogen is consumed at temperatures $> 100 \times 10^6$ °K, for then the most abundant equilibrium product of the carbon cycle is N^{13} .

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