Table 1. Spectrophotometric Analyses of Trace Germanium in Silicates

Silicate	Source	Ge content (p.p.m.)
Libyan Desert silica-glass	25° 2′–26° 13′ N. 25° 24′–25° 55′ E.	0·80
Libyan Desert sandstone	Gebel Qatrani District, north El Fayum, approx. 29° N. 31° E.	0·52
Libyan Desert quartzite	Gebel Qatrani district, north El Fayum, approx. 29° N. 31° E.	0·95
Libyan Desert sand	Gebel Qatrani District north El Fayum, approx. 29° N. 31° E.	0·77
Libyan Desert sand	From dune 50 km. north of Ghat, Libya, approx. 25° N. 10° E.	0·85
Aouelloul Crater glass	20° 15′ N. 12° 41′ W.	0·64
Impactite		1·67
Obsidian	Lipari, Ægean Sea	1·68
Obsidian	Iceland	0·23 ± 0·13
Average for tektites from eleven localities		0·09 – 3·02
Range of non-magnetic portion of six meteoritic stones		

Aouelloul crater. Obsidian, in general, has about twice the germanium content of the Libyan glass. Tektites, with which Libyan Desert silica-glass is sometimes classified, all have lower germanium contents than the latter. However, stony meteorites bracket the value of 0·80.

In Table 2 an analysis of the Libyan glass is compared with that of Aouelloul glass and sandstone, as well as an Ivory Coast tektite. It is seen that its trace elements match the sandstone more closely than even the impact glass and is quite different from the tektite. According to the results of Friedman[6], the Libyan Desert glass contains an order of magnitude higher water than any tektite and three times as much water as the Aouelloul glass. The latter difference may be correlated with the higher silica content of the Libyan glass.

The dark areas in Libyan Desert silica-glass were found by absorption spectral measurements to be due to streaks of ferrous iron. The inhomogeneity, the presence of crystallites, and the streakiness of the ferrous-containing regions indicate that the glass remained molten for only a short time.

I conclude from the chemical and mineralogical content that Libyan Desert silica-glass is terrestrial in origin, being formed from Libyan Desert materials, most likely by impact of some cosmic body. In this regard the area around 22° 18′ N. and 25° 30′ E., containing explosion craters (as well as volcanic evidence)[9], should be more thoroughly investigated. Ehmann and Kohman[10] indicate a cosmic origin for Libyan Desert silica-glass based on the apparent presence of aluminium-26 and beryllium-10. However, the level of activity of aluminium-26, for which the measurement was the more reliable, is lower than that in chondrites and in australite, and may be due to some other cause than free-space cosmic radiation.

Table 2. Analyses

Element (oxide)	Libyan Desert silica-glass*	Aouelloul: Sandstone‡	Aouelloul: Glass‡	Ivory Coast tektite§
SiO_2	98·20	95·30	86·10	76·56
TiO_2	0·23	0·55	0·60	0·60
Al_2O_3	0·70	1·85	5·05	11·54
Fe_2O_3	0·53	0·45	1·45	0·17
FeO	0·24	0·05	1·45	3·99
NiO	0·02	Nil	0·025	—
MnO	—	0·02	0·05	0·08
MgO	0·01	0·40	1·50	3·60
CaO	0·30	0·80	0·90	1·62
Na_2O	0·33	0·20	0·05	1·32
K_2O	0·02	0·10	2·05	0·82
H_2O	0·064†		0·02†	0·0047†

Analysts:
* M. H. Hey (ref. 5).
† Friedman, I. (ref. 6); value under Ivory Coast is average of 17 tektite analyses from various localities.
‡ Anal. Centre Technique d'analyse chimique, Paris (ref. 7).
§ Lacroix, A. (ref. 8).

A detailed report on the germanium contents of tektites and stony meteorites will be published elsewhere.

The germanium analyses were performed by Mr. John Anania of this laboratory. I wish to thank Prof. Truman P. Kohman of the Carnegie Institute of Technology for discussion of the cosmic-ray-induced radioactivities, for the samples of Libyan Desert materials, and for the obsidians investigated.

Alvin J. Cohen

Plate Glass Research Project,
Mellon Institute,
Pittsburgh, Pennsylvania.
March 23.

[1] Oakley, K. P., *Nature*, **170**, 447 (1952).
[2] Cohen, A. J., *Phys. Rev.*, **105**, 1151 (1957).
[3] Cohen, A. J., Fifth Inter. Congr. on Glass, Munich, July 1959 (to be published in *Glastechnische Berichte*).
[4] Schneider, jun., W., and Sandell, E. B., *Mikrochim. Acta*, **2**, 263 (1954).
[5] Spencer, L. J., *Mineral. Mag.*, **25**, 425 (1939).
[6] Friedman, I., *Geochim. et Cosmochim. Acta*, **14**, 316 (1958).
[7] Campbell Smith, W., and Hey, M. H., *Bull. Inst. français d'Afrique noire*, **14**, 762 (1952).
[8] Lacroix, A., *C.R. Acad. Sci., Paris*, **199**, 1539 (1934).
[9] Sandford, K. S., *Nature*, **131**, 46 (1933).
[10] Ehmann, W. D., and Kohman, T. P., *Geochim. et Cosmochim. Acta* **14**, 364 (1958).

Diurnal Lapse of Signals from *Sputnik III*

The radio signals from Satellite 1958 δ 2 have been observed consistently on close transits at Blaxland, near Sydney, in Australia, since shortly after its projection into orbit in May 1958. Until recently no definite failure of signal was observed, although the pulsed modulation code has at times been erratic.

Since early in March, however, there have been definite lapses of modulation. Systematic observation with equipment previously described[1] has established that the modulation is now present only when the satellite is actually in sunlight and ceases soon after it enters the Earth's shadow. This can lead to confusion in casual observations as the transmission may be detectable for only part of a transit. In a particular transit it may actually be received by an indirect propagation path when the satellite is approaching or receding, but not during the closest part of that transit when direct transmission would be expected.

An interesting feature is that, on very close transits, in the absence of the pulse modulation, a weak continuous-wave signal can still be detected with sufficient strength to record the Doppler shift. The rate of Doppler shift definitely establishes the signal as transmission from the satellite. It can thus be very useful for radio tracking in the absence of modulation. This continuous radiation is audible, and visible on the records, as a background when the modulation is present, as can be seen in the diagram in the communication mentioned. The reason for this background radiation would no doubt be apparent if we had a little information on the emitting equipment.

G. H. Munro

Radio Research Board Laboratory,
Electrical Engineering Department,
University of Sydney. April 28.

[1] Munro, G. H., and Heisler, L. H., *Nature*, **183**, 809 (1959).