Unfortunately, the orbital parameters of the two satellite flights reported in the note were classified, and only a vague statement that the satellites "orbited at *about* 200 km above the earth" could be given. For those who would be interested in checking our calculation, we cited an earlier article[2] where approximately the same yield for gold was determined at normal incidence. Here it was stated that Discoverer 26 had a perigee of 230 km and an apogee of 810 km. Its period was 95 min, of which approximately 20 min was spent in the denser atmosphere near perigee. If the relationship given here to find the yield had been used, no confusion would have resulted, since the formula includes a bombardment factor for the time the satellite spends near perigee.

Stuart's calculation on the sputtering yield reduces to ours by defining N as the average density, which in this case was 1×10^9 N_2/cm^3, and $Y \sim 1 \times 10^{-6}$ Au/N_2, as was given in our note.

We also consider it unwise for Stuart to compare his laboratory results with those made in the upper atmosphere and conclude it is doubtful that any detectable sputtering would occur at 9 ev because the experimental conditions are different.[3] In his paper, Stuart states his detector had a yield threshold of 10^{-5} atom/ion, and with it he would not have been able to measure lower yields at any energy. The beams are different. He was working with noble gas plasmas, and the upper atmosphere is composed mainly of neutral molecules moving in free molecular flow. In the upper atmosphere the vacuum is clean. He stated that his vacuum contained impurities at a partial pressure of 10^{-6} torr and a monolayer could build up on a clean surface in a second. Assuming that one started with a clean surface at a certain instant in time, it is difficult to imagine an experimenter madly twisting dials to get his apparatus working properly so that a good yield measurement even in the 10^{-5} range could be accomplished within a second. The measurement has to be made in less than a second because his beam was capable of sputtering about 5×10^{-3} monolayer/sec when the yield is 10^{-5}; otherwise, the clean surface would become contaminated before the beam could sputter enough surface atoms to permit a measurement to be made.

References

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[3] Stuart, R. V. and Wehner, G. K., "Sputtering yields at very low bombarding ion energies," J. Appl. Phys. **33**, 2345–2352 (1962).

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Erratum: "A Model for the Transition Regime in Hypersonic Rarefied Gasdynamics"

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On page 1048 of the original article, the first line in the left column ("assumptions will become progressi vely invalid when the") should be the first line on page 1049. When the page proof was released, the line was in its correct place but was inadvertently transposed when the printer was making up the forms.

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