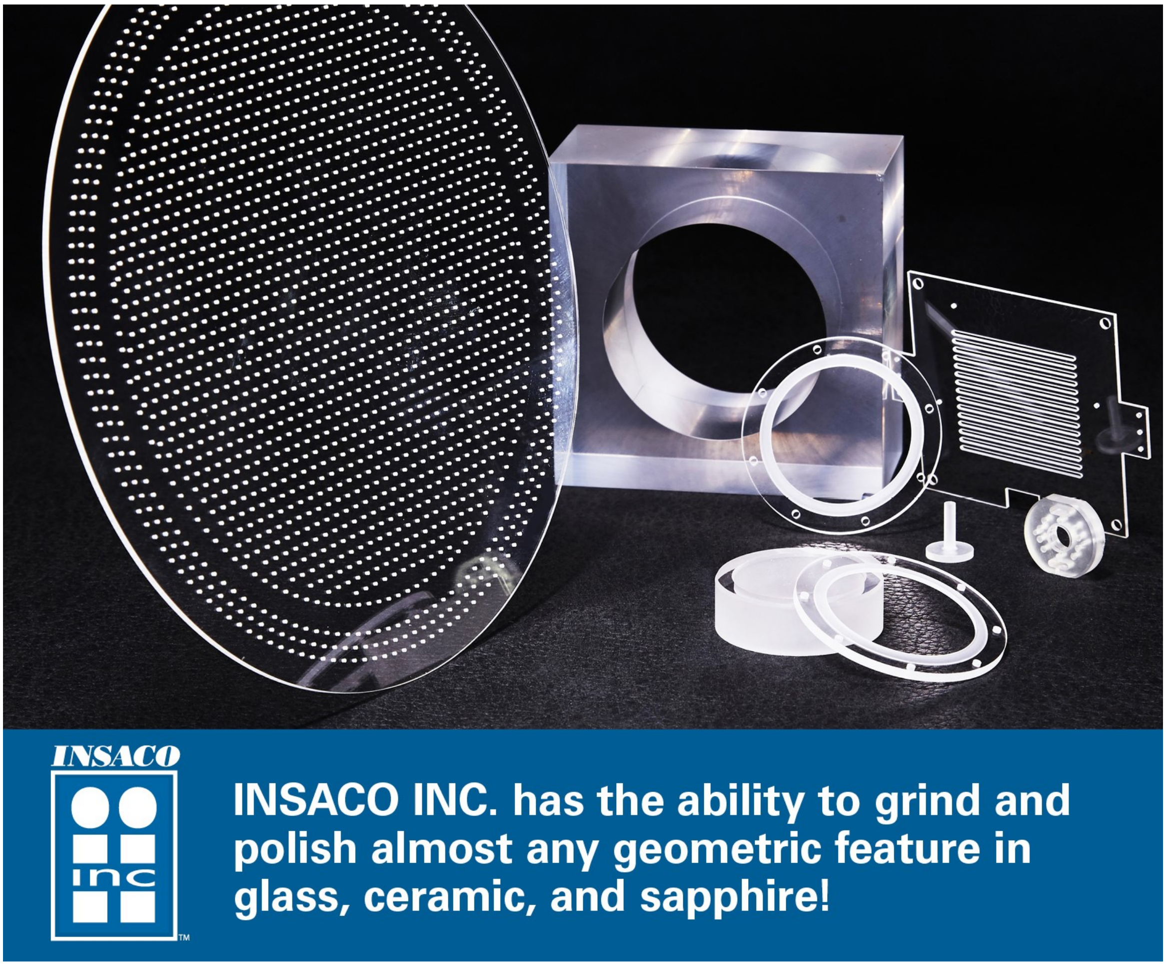
Corrections

Physics Today **67** (5), 9 (2014);
https://doi.org/10.1063/PT.3.2366



ulation of the Russian Arctic.[2] Correspondingly, the black carbon content of Arctic snow is now no higher than it was 30 years ago.[3] The dramatic loss of Arctic sea ice must therefore be attributed to other causes.

References

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Stephen G. Warren
(sgw@uw.edu)
University of Washington
Seattle

■ **Jeffries, Overland, and Perovich reply:** We thank Stephen Warren for pointing out that Arctic atmospheric black carbon concentrations have been decreasing. Nevertheless, black carbon remains a short-lived climate forcer that affects the radiation balance in the Arctic. As such, it is one of several potential contributors to Arctic amplification of global warming that is manifested, for example, in the dramatic reduction of sea-ice extent in the summer. Each of those contributors to Arctic amplification was described in our article. Nowhere in the article did we propose black carbon as the sole cause of sea-ice loss, as Warren's final sentence seems to imply.

Martin Jeffries
(martin.jeffries@navy.mil)
US Arctic Research Commission
Arlington, Virginia
James Overland
(james.e.overland@noaa.gov)
Pacific Marine Environmental Laboratory
National Oceanic and Atmospheric Administration
Seattle, Washington
Don Perovich
(donald.k.perovich@usace.army.mil)
US Army Cold Regions Research and Engineering Laboratory
Hanover, New Hampshire

Early sightings of comets near the Sun

The article "Comets as solar probes" by Karel Schrijver, Carey Lisse, and Cooper Downs (PHYSICS TODAY, October 2013, page 27) was very enjoyable and informative. Readers might be interested in some additional examples of comets that have been observed close to the Sun.[1] Obviously, in historical times these comets were only seen during total solar eclipses. The earliest comet observed traveling near the Sun was around 94 BC, "the comet that once was seen near the sun when the latter was eclipsed"; the record appears in *Naturales quaestiones* (7.20.4) by Seneca and in other classical sources.[2]

Several comets have been spotted near the Sun in the past two centuries. One example, observed during the eclipse on 17 May 1882, was the first comet photographed during a total solar eclipse.[3] Another interesting case demonstrates the difficulties of interpreting astrophysical observations: A modern analysis showed that the coronal comet of 16 April 1893, reported by John Martin Schaeberle from Mina Bronces, Chile,[4] was actually a disconnected mass ejection.[5]

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José M. Vaquero
(jvaquero@unex.es)
University of Extremadura
Mérida, Spain

Weighing in on the cost of research papers

The story entitled "A nuclear bomb worth more than its weight in gold?" (PHYSICS TODAY, December 2013, page 26) caused me to consider other specific cost comparisons (dollars per gram) that could be made.

For example, one could ask a typical science or engineering department to calculate the specific cost of its published refereed papers by dividing the department's total annual budget (in dollars) by the mass (in grams) of the published refereed papers for the same year. (No cheating! Use only standard-weight journal paper.) Ignoring for the moment that a department's publications might be entirely in electronic form—weightless soft copy, in which case the specific cost would be infinite—I believe that the specific costs of published technical papers would greatly exceed the cost of gold, currently about $46 a gram.

I actually did a similar measurement some years ago for an organization I headed. In that case, the specific cost of refereed papers turned out to be midway between that of small diamonds (relatively cheap at about $30 000 per gram) and high-quality large diamonds (about $1 million per gram). In comparison, lunar rocks returned by the Apollo program in the 1970s cost about $80 000 per gram in 1975 dollars.

Thus, relatively speaking, gold and nuclear weapons are quite cheap.

George Paulikas
(george.a.paulikas@aero.org)
Palos Verdes Estates, California

Corrections

April 2014, page 26—The input of the National Ignition Facility laser is not 1.8 mJ, but 1.8 MJ.

March 2014, page 46—In the figure caption, the facility being dedicated was the Submillimeter Array, and the year was 2003. ■