Finally, our experimental cross-section curve for photofission shows a value of 0.1 barn at 17.5 Mev. Charbonnier, Wäffler, and Sherrer reported a value of 0.046±0.015 barn at this energy. This probably constitutes agreement within the large errors of cross-section determination for the bremsstrahlung spectrum.

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APPENDIX

Procedure for separation of neptunium from uranium.

1. A known amount of Np^{239} tracer was added so that the chemical yield could be determined.
2. Potassium permanganate added to oxidize both Np^{237} and Np^{239} to +6 valence state.
3. The neptunium was reduced with sodium nitrite.
4. Neptunium fluoride was precipitated using lanthanum fluoride as carrier.
5. The fluorides were metathesized with sodium hydroxide and dissolved in acid.
6. Steps 2 through 5 were repeated.
7. The neptunium was extracted into an organic solvent as the thenoyltrifluoracetone complex.

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Relativity Precession of the Asteroid Icarus

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The relativity precession of the asteroid Icarus is computed to be 10.05″ per century. This value is about one-quarter that of Mercury and exceeds that of any major planet excluding Mercury. Consideration of a figure of merit, which determines the possible precision in measurement of the perihelion advance, indicates that the motion of Icarus can yield a further test of the precessional formula of general relativity.

THE observational evidence[1,2] for the relativity precession of planetary orbits depends primarily on the rate of advance of the perihelion of Mercury. This note considers the possibility of obtaining a further unequivocal check of the precessional formula from the motion of the asteroid Icarus.

Icarus was discovered by Baade in 1949.[3] It is the minor planet of smallest known mean distance from the sun (its perihelion is within the orbit of Mercury) and is one of the highest in eccentricity. The predicted value of the angular advance v per century of the perihelion of Icarus is listed in Table I. For comparison purposes, the corresponding quantities for Mercury, Venus, the earth, and Mars[2] are likewise tabulated. The quantity α of the third column of Table I is a weighted figure of merit of the possible precision in measurement of the corresponding perihelion motion. For the major planets, the parameter α is essentially *kev* as used by Clemence;[2] for an asteroid, the definition of the over-all figure of merit requires modifications which will be explained in a fuller account of this work (to be published elsewhere).

TABLE I. Predicted relativity precessions.

Asteroid or planet	Advance per century, v	Observational figure of merit, α
Icarus	10.05″	>4.4″
Mercury	43.03	3.01
Venus	8.63	0.03
Earth	3.84	0.06
Mars	1.35	0.38

For Icarus, Table I indicates that the predicted relativity precession per century is about a quarter that of Mercury. However, the advance per century of Icarus exceeds that of any major planet excluding Mercury. The observational figure of merit α for Icarus[4] exceeds that of Mercury, and it exceeds by a factor of at least ten that of any major planet excluding Mercury. One notes from the table that only for Icarus and Mercury are the advance v and figure of merit α both relatively high. Thus, these figures indicate clearly that the motion of Icarus can yield a definite observational check of the precessional formula of general relativity, in the course of time, although decades of astronomical observation may be necessary to measure the perihelion advance with sufficient precision. The relativity precessions of other favorable asteroids amount to only one or two seconds of arc per century.

The author acknowledges helpful discussions of this problem with Professor Samuel Herrick of the University of California, Los Angeles (who computed the orbit elements of Icarus employed).

[1] G. M. Clemence, Revs. Modern Phys. **19**, 361 (1947).
[2] G. M. Clemence, Proc. Am. Phil. Soc. **93**, 532 (1949).
[3] R. S. Richardson, Publ. Astron. Soc. Pacific **61**, 162 (1949).

[4] *Note added in proof:*—Further study indicates that, for Icarus, $\alpha \gtrsim 14''$ (this revision is more favorable to the argument of the text).