Electromagnetic fields produced by nuclear explosions are of considerable interest. In the initial phases of a nuclear explosion in space, the gamma rays emitted by the explosion will release Compton electrons from the surface of the explosive. This will result in a positive charge on the explosive and an electrical potential of a few million volts will develop. Beyond that point the Compton electrons will fall back upon the nuclear explosive and no further charge will occur. It is possible, however, to place near the nuclear explosive a great quantity of thin foil of an appropriate material. Under these conditions Compton electrons will be ejected from each foil and charge differences can occur between any of the foils and the neighboring foil that happens to lie at a somewhat greater radial distance. In this manner potentials of hundreds of millions of volts or even thousands of millions of volts might be produced in the initial phases of a nuclear explosion. While this potential will last for only a very short time, nevertheless particles might be accelerated to very high energies and these particles could be used in interesting experiments.

If the thin foil is placed on one side of the explosive, then extended and strong asymmetric fields can be produced near nuclear explosions in space. Actually there are other methods by which the same result can be obtained. In any case the production of such fields will result in the emission of strong radar waves. And these waves in turn might be used in astronomical explorations.* Long- and short-wave radar waves of this kind being reflected from a planet such as Venus could give us most interesting information about the nature of the surface of that planet.

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*Thomas Gold, "Some Experiments with Explosions in Space," LAMS-2443, pp 31-41.