How to Create Your Own Photographs of Abnormal Levels of Airborne Radiation
By Idealist.ws

Photographic plates have been used in an array of scientific disciplines to measure levels of environmental radiation for over 100 years.

The earliest studies of cosmic rays and radiation effects on biological tissue utilized photographic plates. Back in the 1950s, the top U.S. public health agency and various 'nuclear' agencies of the government utilized X-ray film to measure fallout in air.

Although measurements of radiation from Fukushima's releases in Northern Hemisphere air and rain are being completed with the help of electronic instrumentation at dozens of laboratories, the quantity of data is far from suitable. Imagine that there are just 1,000 cell phone towers across the world. You would have to rely on other communication technologies when you are not near these rare towers. That's where you, photographers, come in.

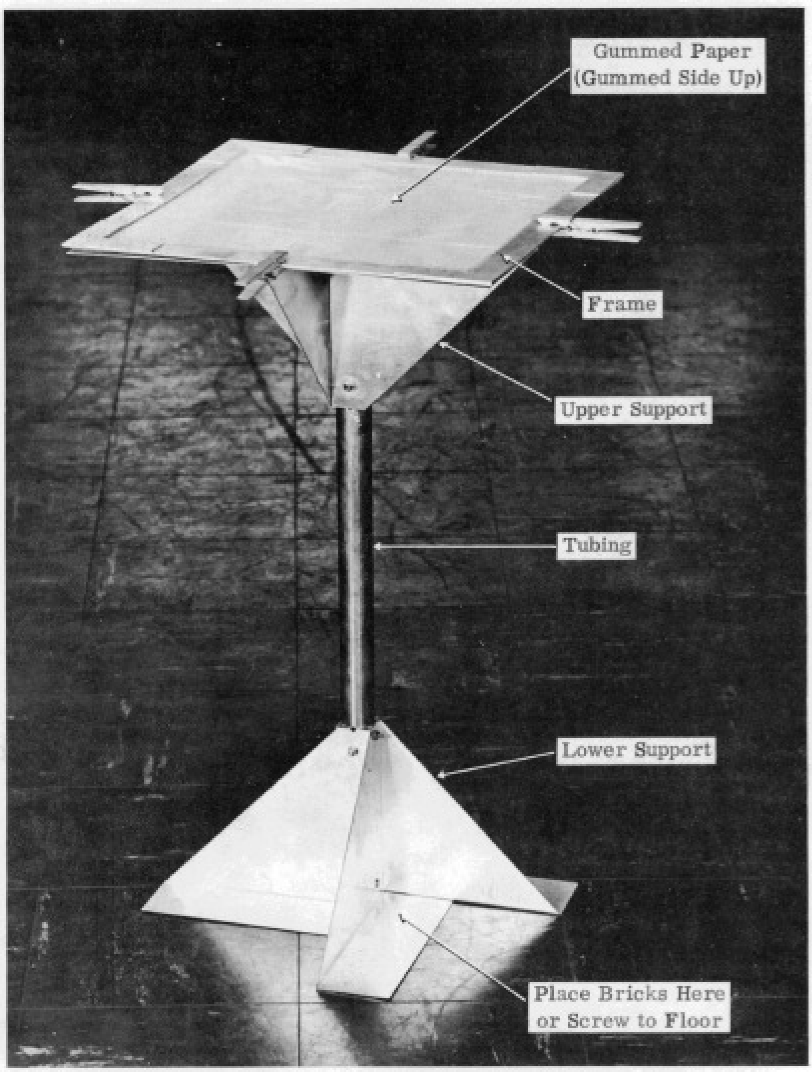

Fig. 4.1—Gummed paper holder.

During the Cold War, the U.S. government deployed gummed-film stations worldwide that simply were small structures like you see in this photo. The platform, measuring 1.1 square feet, would hold a sheet of 'sticky paper,' which was an adhesive sheet product much like fly paper. This contraption would catch descending radioactive debris particles and, to a point, even particles in rain would stick to the paper.

Every 24 hours this sticky paper would be removed and exposed to high-speed photographic film – preferably a X-ray sheet - in a dark room. Before exposing the film, lab technicians would place a layer between the gummed paper and the film. In the 1950s, they used rubber hydrochloride to create a patina over the sticky film. This would be done to prevent any exposure to the film from naturally occurring radioactive alpha particles, which make up most airborne 'background radiation' – alpha particles are too weak to pass through the rubber hydrochloride layer. (Of course, some human-made ‘alpha particles,’ like uranium, would not be ‘measured’). The silver bromide in the film, thus, will react with the high electromagnetic energies emitted by particles of radiation and will expose a number of dots ranging from pinhole-sized to dots several millimeters in diameter - the dot sizes will correspond with the concentrations of atomic particles and/or their rates of disintegrations.

This method could help a growing community of concerned citizens learn the dimensions of the radioactive particles in air at a given place. If these film sheets are developed every 24 hours in each area, we could gauge the evolution of a fallout pattern at your location based on the number and size of the white dots on the exposed film.

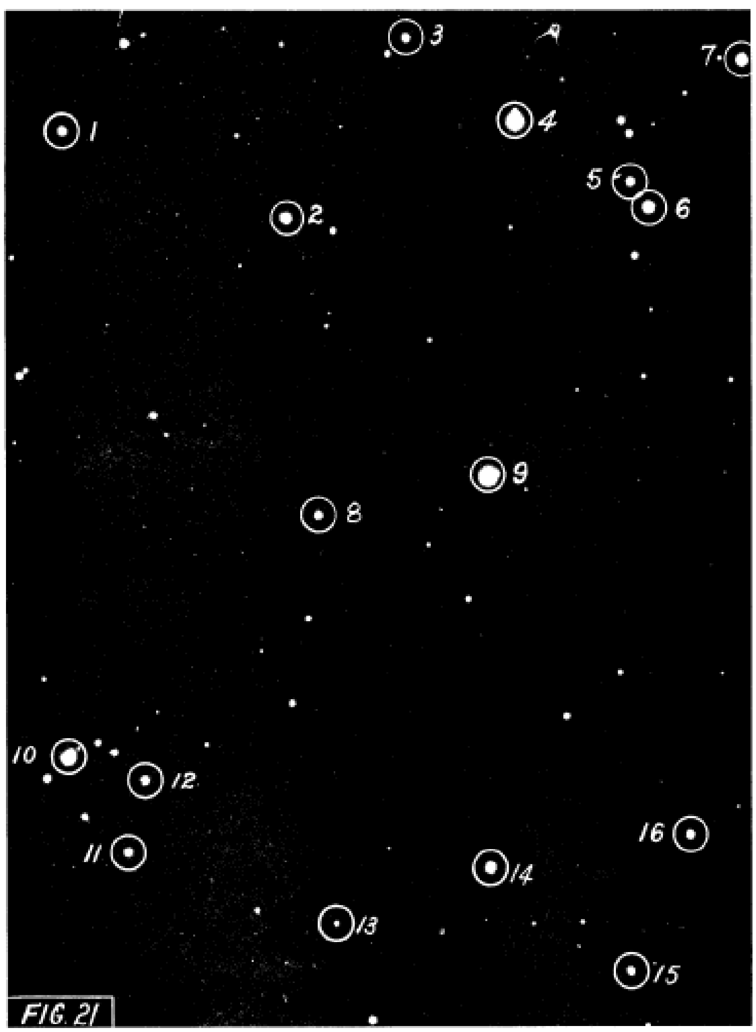

FIG. 21

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Photographers will need the following for this project: a dark room, supplies of fly or other adhesive paper, basic elevated outdoor ‘platform’ for the contraption, and X-ray (dental) grade black and white photographic film (more below). The developed film can easily be scanned or digitally photographed and uploaded to the web.

To the left is a photo of the results we’re looking (but not hoping) for.

Disclaimer: we have never advised anyone on this technique nor have we done this ourselves. But it worked in the 1950s and this is our most affordable way to chronicle any progress of radiation in the air.

Learn more at pages 66-68 at this link: http://www.scribd.com/doc/29660412/RADIOACTIVE-DEBRIS-FROM-OPERATIONS-BUSTER-AND-JANGLE-OBSERVATIONS-BEYOND-200-MILES-FROM-THE-TEST-SITE

Advanced: Nuclear emulsions are unique detectors in that they are actually a composite of tiny individual radiation detectors, silver halide micro-crystals or grains, primarily AgBr dispersed in gelatin.

Charged particles passing through the grains raise electrons from the valence into the conduction band in the AgBr lattice (requiring radiation particles with energy exceeding 2.5eV). This initiates a chain of events leading to the formation of silver specks that render the grain developable, that is, under the action of a developer a grain is reduced to silver. After the emulsion is developed it is fixed to produce a negative as with regular photographic film.

Depending on the size and the spacing of the grains the result is either a general darkening (X or Gamma), or a pattern of spots revealing the track of charged particles passing through the emulsion.

The larger the grains the greater is the sensitivity (speed) of the emulsion. High speed X-ray emulsions have grains diameters of 2mu. Emulsions for observing tracks of charged particles (alphas) have smaller well separated grains (0.1-0.6 mu)...The disadvantage of the nuclear emulsion is that the information stored as silver specks (the latent image) is degraded at high temperatures and humidity and fades after a few weeks, even under temperate conditions. Thus, the emulsion is not useful for long term monitoring although the lifetime can be extended by special packaging.

From ***Radiation Protection 4th edition, Jacob Shapiro, Harvard University Press, 2002***