TECHNOLOGY

Photograph Air Particles

▶ A GIANT homemade camera built by Stanford Research Institute scientists in California may pave the way toward better control over those tiny air-borne particles that eat away house curtains, soil coffee tables and corrode automobile bodies.

The camera, weighing more than 500 pounds, shoots pictures of tiny solid or liquid particles in the air. The particles can be as small as 2/25,000 of an inch. Magnified 80 times by the camera lense, the particles are recorded on a 5 by 7-inch photographic plate and can be further enlarged 400 times.

The photographic image permits scientists to measure the tiny particles and to observe their shapes. From this, scientists can get an idea of the air contaminants and can figure out where the particles came from. Then they can work out solutions to the pollution problem.

The camera "sees" a volume of less than 5/100,000 of a cubic inch. Since aerosol particles usually are scarce in such a small field, multiple exposures are made so that several of the particles will register on a single plate.

An ordinary fog yielding a visibility of 1,000 feet has only about 200 particles in a cubic inch. A real "pea-souper" has about 2,000 particles in a cubic inch. Mathematically, neither of these fogs would have a particle in the field of view. But since aerosol particles move rapidly in the air, multiple exposures should insure catching the image of several particles on each plate that is used.

The camera's fast-flashing light source consumes up to three kilowatts of power. It can flash 100 times a second, producing over 2,000,000 candlepower to light the small field of view. Exposure times range from one- to ten-millionths of a second.

SRI scientists hope the camera will help settle a present scientific controversy about polar fogs. Some experts believe tiny ice crystals form the main element in some of these fogs. Other experts believe water droplets chilled to temperatures below freezing make up the main element. If this is true, the droplets may crystallize when they strike an object.

Science News Letter, August 1, 1953