

been coprecipitated from sea water cannot be completely excluded. However, Opik points out that even with this high nickel content, the cosmic origin cannot be excluded, if one assumes that these spherules came from meteoric dust. Fredrickson (Goeteborg) again expresses confidence that these small particles in the order of 10 to 50 microns in diameter are of cosmic origin since they are found in such deep-lying deposits [*Nature* 177, 32 (7 Jan. 1956)]. That they may be artificially produced on the continents has been found by analyzing magnetic fragments from the air in industrial vicinities and from experiments carried out in the laboratory by burning an iron wire in an oxygen flame. Spherules found in the uppermost sediment surface may have terrestrial origin. But this cannot be possible in the case of layers deep below the surface that are millions of years old.

Petterson proposes that during the International Geophysical Year a collection of meteoric dust and fragments should be made on islands in the Pacific Ocean to provide more conclusive evidence for the origin of these particles.

AEC Secrecy Policy Challenged

The Joint Committee on Atomic Energy recently held hearings on the development, state, and growth of the atomic energy industry. A discussion took place between Lewis L. Strauss, chairman of the Atomic Energy Commission, and Sen. Clinton P. Anderson (D., N.M.), when Anderson challenged Strauss on the policy for maintaining secrecy on scientific advances in the peaceful uses of thermonuclear power.

Strauss pointed out that a peaceful thermonuclear reactor could also produce the neutrons necessary for weapons, therefore the release of information might help research "carried on by an unfriendly power." When asked a hypothetical question about what would happen if a college student who did not have access to AEC data made a major discovery concerning neutrons, Strauss replied that "a man takes his own chances" if he publishes without first submitting his paper to the AEC for clearance.

William Mitchell, general counsel for the AEC, added that the law constituted "no thought control," but did involve "a restriction on communication of ideas" when such ideas touched on national security. "He [the hypothetical student] is under obligation to treat [his discovery] as classified information even though it may have originated with him."

Anderson then commented that he now knew why the Federation of American Scientists has been asking that

peaceful thermonuclear work be declassified: "There's an absolute iron curtain of thought (and) we didn't write that into law. . . . The ultimate answer is that anyone who has a thought must first submit it to the AEC to see if they are allowed to think."

Geneva Nuclear Exhibit

The "Atoms for Peace Exhibit" that was displayed in Geneva, Switzerland, last summer will be shown in this country before it is dismantled. The exhibit will be set up in Oklahoma City, Okla., where it will be open for about 3 weeks, with the showing for the public running from 22 Apr. through 29 Apr. Special sessions for scientists throughout the nation are being arranged, which do not conflict with the public exhibition dates; conferences are also being planned.

Civic leaders have contributed \$50,000 to support the assembly and disassembly of the exhibit. A group of specially selected college science instructors and professors from Oklahoma A. & M. College and the University of Oklahoma will explain the atomic exhibit to visitors. These scientists will first be trained by representatives who will be sent to Oklahoma City from several of the major Atomic Energy Commission laboratories. Three Oak Ridge scientists will arrive beforehand to train demonstrators to process uranium. Visitors will see the entire processing of uranium from ore to final material.

NSF Appropriations

The Appropriations Committee of the U.S. House of Representatives recently reported its recommendations on funds for the National Science Foundation for the fiscal year beginning 1 July. The budget had asked for over \$41 million; the committee recommended nearly \$36 million. This is an increase of about \$20 million over the funds appropriated for the current fiscal year. If favorable action is taken on the recommendation by both houses of the Congress, travel funds, stricken from last year's budget request, will again be available [see "Foreign travel," *Science* 123, 125 (27 Jan. 1956)].

Tracing Atmospheric Pollutants

A method of using special smoke to trace paths of pollutants in the atmosphere was described by Frederick G. Sawyer and William H. Shallenberger in a paper given at the meeting of the American Institute of Chemical Engineers in Los Angeles.

The tracer material, finely divided zinc-cadmium, is fed into a stack that disperses it into the air. Sampler devices located downwind suck in the air bearing the tracer smoke, particles of which are identified by ultraviolet rays. By counting the number of particles collected per unit time, the concentration can be determined. Sawyer said "The tracer technique is no panacea, but it is the best available means for determining air movements and effluent concentration downwind from an emission source. As such, it is a valuable tool in air pollution abatement programs."

Electroluminescence in Disordered Zinc Sulfide

It has been known for some time (Destriau, 1936) that some microcrystalline copper-activated zinc sulfide phosphors can be made luminescent by the application of alternating electric fields. The luminescence is caused by a great many very small luminescent regions distributed over the surface of the material. In recent years this knowledge has been of particular interest because of its possible relationship to the development of special solid-state devices such as TV screens and so forth. Short, Steward, and Tomlinson of the General Electric Research Laboratory, Wembley, England, discuss electroluminescence in disordered zinc sulfide in the 4 Feb. issue of *Nature*.

Zinc sulfide exists in two modifications—the cubic one and the hexagonal one. In both of these electroluminescence has been reported. During the past few years it has been found that it is possible to produce a certain disorder in the hexagonal zinc oxide, a disorder that is described as a "stacking disorder of hexagonal planes."

X-ray examination, as well as examination under a polarizing microscope, shows that there are bands of interference color normal to the *c*-axis, and the luminescence streaks observed when a voltage is put on the crystal are parallel to these bands. Although the streaks of light are clearly parallel to the color bands, not all the bands have an associated electroluminescence streak. When x-ray patterns and optical examination suggest a more extensive disorder (with an identical activation treatment with copper), higher apparent brightness is observed and the crystals display many more light sources in the form of streaks and points, again in alignment. As before, parallel bands of color appear when the material is seen under a polarizing microscope.

Some of the crystals which display blue electroluminescent streaks also luminesce under ultraviolet excitation. But the ultraviolet luminescence is distributed evenly throughout the body of