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AIR POLLUTION

The search for clean air

A land-locked chamber like an atom sub creates an experimental atmosphere

by Faye Marley

The dispute over the effect of exposure to heavy air pollution has been going on for years, especially between concerned scientists and industrialists disdainful of what they see as frenetic fear of unproved health hazards.

The Environmental Policy Panel of Former President Johnson's Science Advisory Committee soothed industry last year with this statement:

"While we fear and many believe that long-continued exposure to low levels of pollution is having unfavorable effects on human health, it is heartening to know that careful study has so far failed to produce evidence that this is so, and that such effects, if present, must be markedly less noticeable than those associated with cigarette smoking."

The problem has been a lack of experimentally derived evidence, a lack a chamber designed like a landlocked submarine in Washington, D.C., 50 miles from the nearest salt water, may help fill.

The design was inspired by U.S. Navy Commander, now Congressman William R. Anderson (D-Tenn.), who in his experience as skipper of the submarine Nautilus found that crew members, freed from air pollution, did not develop colds, coughs or other respiratory symptoms.

Dr. Robert E. Snell, assistant professor of pediatrics at Georgetown University and director of research at the Hospital for Sick Children, with his col-

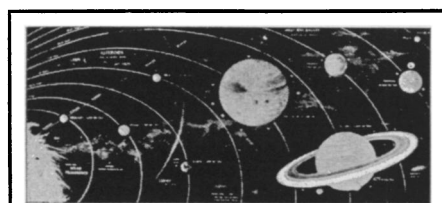
laborators, picked the idea up from Anderson's book, "Under The North Pole." They passed on the idea of a landlocked submarine to Dr. John Everetts Jr., Pennsylvania State University, professor of architectural engineering. Dr. Everetts had already developed a controlled-environment unit for the study of arthritis. He went to work on a unit for asthmatic children.

The result of the strange collaboration is a device in which children with intractable asthma will take three-week trips, a few at a time, inside the sub-like chamber's suite of rooms.

Access to the suite, which has 600 square feet of tastefully decorated space, is through two submarine hatches. From a control panel, physicians are able to control and monitor barometric pressure, temperature and humidity inside the rooms. The idea of filtering air in and out of the unit also was adopted from the construction plans of the Nautilus.

Dr. Snell says the equipment will enable researchers to duplicate any physical environment in the United States, including below-sea level areas and those as much as 5,000 feet above sea level.

He explains that the purpose is to determine whether there is a significant improvement in children with respiratory disorders, if they are moved from an ordinary city environment to a clean



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Cmdr. Anderson: no colds below.

atmosphere such as the sub affords.

If there is an improvement in the children's breathing and condition, the doctors will try to find out whether it is due to any specific agents in the air.

The first pollutants to be studied will be sulfur dioxide and particles that have been suggested as a cause of acute asthmatic attacks. Also, during the first series of tests, the effect of climatic variations on asthma will be studied.

Working with Dr. Snell as principal investigator is Dr. Frederic Burke, medical director of the Hospital for Sick Children.

Submariners, exhaling carbon dioxide and surrounded by other off-gases from men and machines, have to be protected while they are submerged, and the Navy's answer includes a combination of adsorbents and catalysts.

To handle a foul-air mixture containing hydrogen, nitrogen, carbon monoxide, oxygen, carbon dioxide and several Freon gases, the first step is to pass the mixture through chemicals whose crystals or particles will lift most of the contaminants. Next, the hydrogen and carbon monoxide are catalytically combined into water and carbon dioxide that can be removed.

For the first time, says Dr. Delbert S. Barth, director of the Bureau of Criteria and Standards of the National Air Pollution Control Administration, with passage of the Air Quality Act of 1967, there is on the books a legislative program for the control of air pollution which takes full cognizance of the need for scientific evidence in diagnosing the part played by the complex variety of these pollutants.

The studies at the Hospital for Sick Children are being supported by a three-year grant of \$340,000 from the National Center for Air Pollution Control of the U.S. Public Health Service. The hospital, which has 84 beds, is a residence-type institution far out from the city's center. ◇



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