

## POLLUTANTS

### Vitamin C versus cadmium

In an experiment with Japanese quail, biochemists of the Food and Drug Administration have found evidence that adding ascorbic acid (vitamin C) to the diet may protect against some of the effects of ingested cadmium, an industrial waste now found in water, air, food and cigarettes.

Recent work has shown that cadmium has a role in human cardiovascular and respiratory diseases (SN: 6/6, p. 560). It augments these diseases by producing anemia—a reduction either of the number of red blood cells in the body or of the amount of the respiratory or oxygen-carrying pigment, hemoglobin, in each red cell. Heme, the nonprotein part of the hemoglobin molecule, is an iron compound. While the mechanism of action is not demonstrated, workers think cadmium competes with the iron in food for absorption in the gut.

Cadmium was added to the soybean diet of one group of quail. Both cadmium and ascorbic acid were added to the same diet of a second group. At four weeks, blood was collected from the wing veins and livers and assayed for iron and cadmium content by atomic absorption spectrophotometry. Cadmium markedly depressed the growth rate of the first group.

Ascorbic acid improved the growth of the second group. It also “probably improved the utilization of iron, but not sufficiently to correct anemia completely or to permit storage of iron in the liver,” Dr. M. R. Spivey Fox and Bert E. Fry Jr., write in the Sept. 4 SCIENCE.

Very high cadmium levels were used to reduce experimental time; thus results cannot be directly applied to humans. But studies of the probable gut-absorption mechanism continue.

## HOSPITALS

### Combining obstetrical service

Rationalization of hospital services by city and region has long been urged by academic leaders of the medical profession and long resisted by many private hospitals. Under such proposals, community hospitals would provide the first-line service, larger hospitals would specialize in special kinds of care—quarantine units for example—and central university-affiliated medical centers would provide such services as heart and neurological surgery.

In Seattle, six downtown hospitals took a step in this direction. They agreed to develop a single obstetrical center, equipped to handle some 8,000 births a year.

## DENTAL CARE

### 25 years of fluoride

Fluoridation of water supply has demonstrated that the cost of corrective dental care for children is less than half what must be spent in a city without it, a medical officer of the New York State Health Department told the Fifth International Water Quality Symposium in Washington, D.C.

Dr. David B. Ast studied the experience of Newburgh, N.Y., one of three cities where controlled testing of fluoride began in 1945, in comparison with Kingston,

N.Y., where fluoride was not used. The reduced cost of dental care in Newburgh, he said, has “tremendous implications in tax dollars.” In New York State, dental care for Medicaid recipients last year cost \$133 million.

Some 84 million persons in 5,000 United States communities now use fluoridated water, Dr. Ast says.

## NUTRITION

### Clue in the hair

With new awareness that malnutrition is widespread in the United States, many nutritionists believe that a patient's nutritional status should be checked as routinely as his blood pressure.

The National Institute of Arthritis and Metabolic Diseases last week called attention to a simple test developed by researchers to whom it had given a grant. Proteins of hair root are easily measured, according to Dr. Robert G. Crouse and colleagues at the Medical College of Georgia. In 28 mental hospital patients with clinical symptoms of malnutrition, these workers found protein levels less than half those found in hair samples from 53 healthy persons. Similarly reduced protein levels were found in hair samples mailed from Biafra to the researchers. Low hair-root proteins were found in a number of persons with malnutrition who had normal levels of protein indicators in the blood, indicating that the hair analysis technique is more sensitive.

## PARASITOLOGY

### Fighting schistosomiasis

In underdeveloped countries, chronic schistosomiasis is a disabling disease, sharply reducing the energy available for work. Some 200 million persons in Africa and other hot areas are infected by the liver parasite. A snail, in which the schistosomiasis organism is also parasitic, is the vector of this disease. The snail spreads larval eggs in both soil and water from which hatched larvae enter the skin of humans using the water for bathing or washing clothes.

Completion of Egypt's Aswan Dam threatens to intensify the disease because it will provide many added miles of shallow water in which the snails flourish.

Nuclear magnetic resonance spectroscopy is being used to analyze the structure of thioxanthene compounds by Dr. Andrew Ternay at the University of Texas at Arlington. Hycanthon, a drug being produced by Sterling-Winthrop and already being marketed in several African countries as a weapon against schistosomiasis, falls into this group. All the compounds carry three carbon rings.

Various substitutions, usually on the middle carbon ring, give many compounds with this basic three-ring structure therapeutic effect. Dr. Ternay has synthesized variations of the hycanthon structure (which itself is an improvement of an older schistosomiasis drug, lucanthon). He scans each of these, mapping the geometric structure by means of the NMR spectra of protons (nuclei of the hydrogen atoms) in the compounds. Those that come close to the specific geometric pattern that promises therapeutic power against schistosomiasis are sent to several pharmaceutical companies for study of biological activity.