

# medical sciences

## ASTHMATIC CHILDREN

### Sports activities encouraged

Restricting athletic activities is conventional treatment for asthmatic children, but it often induces an emotional crippling in the child because it segregates him from other children. The restriction is unnecessary, says the American Academy of Pediatrics. Most asthmatic children can participate in physical and athletic activities at school if their asthma is being controlled medically.

In the January *PEDIATRICS*, the Academy's Committee on Children with Handicaps declares that restrictions should be minimized and invoked only when the child's condition makes it mandatory.

The committee suggests noncontact sports such as tennis, swimming or rope climbing, in which fatigue or other early signs of trouble can be more easily spotted.

Concluding that both the child's physical and emotional health are at stake, the committee stresses the need for a balance between the child's needs to participate in physical activities and the limitations necessary for him to live a full life.

## POLLUTANTS

### Sulfur dioxide and RNA

The health effects of sulfur dioxide, a major air pollutant and a common food additive as well, are constantly being debated (*SN*: 1/7, p. 70). The latest evidence by a New York University chemist suggests that the chemical may cause mutations and cancer.

Dr. Robert Shapiro, associate professor of chemistry at the university's Washington Square College of Arts and Science, reports that sodium bisulfite, the compound formed when sulfur dioxide is taken into the body, damages nucleic acids, the basic genetic substances in living cells. The chemist applied sulfur dioxide to yeast RNA because it is a ready source of nucleic acid.

In the Jan. 28 *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*, Dr. Shapiro reports that the bisulfite molecule changes one component of nucleic acid, cytosine, into another, uracil. Such conversions, he says, are what is involved in any mutation.

Sulfur dioxide, reports Dr. Shapiro, converts up to 90 percent of all cytosines to uracils in yeast RNA.

Based on the theory that cancer is caused by chemical carcinogens attacking the cell's nucleic acids, Dr. Shapiro contends that sulfur dioxide could induce cancer. If sulfur dioxide damages RNA, and if RNA regulates a number of the cell's processes, then sulfur dioxide could interfere with cell development he says. He is now studying the chemical's effects on the DNA of other organisms.

## DENTISTRY

### Chemical for mouthwash

The toothbrush has never adequately prevented tooth decay, nor does the average person have the determination, technique or time to use it. One way of overcoming this problem is the use of chemicals. Some, like fluorides, are in use; many others are under consideration.

Two Danish physicians, Prof. Harold Løe and Dr.

Rindom Schiött of Aarhus University Dental School, have recently added the chemical, chlorhexidine gluconate, to the armamentarium. They believe the antiseptic might be the whole answer to oral hygiene.

To test the theory, the researchers had dental students use a mouthwash containing 10 milliliters of chlorhexidine gluconate twice a day for 40 days. Despite extreme consumption of sugar, the mouthwash almost completely prevented dental plaques, dental tartar, caries and inflammation of the gums. Bacterial count was reduced by 95 percent after 48 hours, but was maintained at 10 percent of normal after the fifth day. The fact that many millions of bacteria remained, and failed to cause problems, led the Danish researchers to suggest that chlorhexidine may have beneficial effects other than antibacterial.

Before the results can be judged, however, they agree that possible toxicologic and bacteriologic effects of the chemical must be explored further.

## OBESITY

### Hereditary corpulence healthier

Obesity is known to increase the incidence of a number of diseases, but according to a research team at Sahlgrenska Hospital in Gothenburg, Sweden, the risk of developing heart disease, diabetes and arteriosclerosis in adult life is less in those who inherited corpulence than in those who become overweight in adult years.

On the premise that the quantity of fat cells is less critical than the size of fat cells in aggravating disease, the Swedish team determined the size and quantity of fat cells by simple biopsy tests and tissue analyses. The team found that when corpulence is acquired in adult life, fat cells swell, whereas if obesity is inherited, the fat cells remain the same but their quantity increases to twice that of normal subjects. Also, the researchers say, if individuals become overweight either before or during puberty, more fat cells are developed.

## ARTIFICIAL ORGANS

### Anticlotting technique

One of the major problems long preventing artificial organs from being implanted has been the fact that blood clots around implanted foreign materials.

Drs. Donald J. Lyman and Joseph D. Andrade of the University of Utah told the recent 18th Annual Symposium on Blood in Detroit that coating polymers with a microscopic layer of protein molecules can produce a substance as resistant to clots as the natural vascular lining.

The Utah researchers coated rings of polystyrene polymers with albumin, one of the major blood constituents, by adsorbing the protein in solution and bonding it to the polymer. Within two hours, the physicians report, untreated samples showed major clotting, whereas the treated samples were essentially clot-free in both two-hour and two-week tests.

The problem with coated surfaces, however, is that imperfections that may exist can cause adverse blood interactions. Thus, the physicians say that a more basic understanding of adverse interactions between blood and plastics is necessary.