

## Computer Helps Study Waiting Time in Clinics

► SOMETHING is finally being done about the long waiting time of outpatients in hospital clinics—a digital computer has been put to work on the problem.

Some 10 hours of waiting time per patient could be saved if the patients were punctual, reported two Yale University researchers who simulated an entire outpatient clinic on an electronic computer to find out. By creating and varying the schedule of each "doctor" in the "clinic," the investigators were able to evaluate the effects of different kinds of delays.

Doctors' late arrivals also have a distinct bearing on the problem of patient queues. When the doctor in one study arrived an hour late, patient waiting time increased by almost 29½ hours a day.

The patient load, the number of walk-ins without appointments, early arrivals and other factors all affect the waiting time.

It is only recently that appointment systems have been set up and even today, the researchers pointed out, vestiges of the old "first in, first out" method of determining the order in which patients were seen, are found.

Formerly it was not unusual to have as large a crowd outside the doors of outpatient departments five minutes before opening as could be expected at the doors of a large department store on sale days.

Dr. Robert B. Fetter, Yale's director of graduate studies in the Department of Industrial Administration, and John D. Thompson, director of the Program in Hospital Administration, reported the computer studies in *Health Services Research*, 1:66, 1966. Computations were carried out at the Yale Computer Center where George Heidorn programmed the outpatient model.

### MEDICINE

## Talking, Not Pills, Is Key to Weight Control

► TALKING, not pills, is the key to successful dieting, a New Jersey study has shown.

Twice-monthly group discussions among obese patients were more effective in taking off pounds and keeping them off than were antiappetite pills, Capt. Abram M. London and Lt. Emanuel D. Schreiber of the Walson Army Hospitals at Fort Dix found in their study.

Pills definitely bring about weight reduction initially, but after a few months the drug's effect tapers off. In the end, total weight loss is no greater with pills than without them, said the

Army researchers in the *Annals of Internal Medicine*, July 1966.

Group discussions, on the other hand, motivate the obese patients to adopt new, permanent eating habits.

A permanent change in eating habits is the goal of obesity treatment, said the authors of the study. Use of the antiappetite drug "as a crutch" may prevent such a change.

For some of the 240 patients studied, group discussion in combination with the drug produced the best results. Mean weight loss came to 19 pounds. For those who took only pills, the loss was 10 pounds, while patients in group discussions without pills lost 14 pounds. The discussion also produced a more long-term effect.

"We think that a weight reduction regimen with a diet and discussions such as ours is practical for either hospital outpatient clinics or for private physicians," the officers said.

### CONSERVATION

## New Methods Urged For Handling Water

► SHORT-SIGHTED planning and growing pollution problems have caused serious shortages of fresh water that are becoming critical in many regions of the United States, pointed out the 14-member Committee on Water, sponsored by the National Academy of Sciences-National Research Council.

U.S. water planners during the past century have been dominated by a rigid "quick fix" outlook that solved impending water shortages by the cheapest rather than wisest method. By seeking new sources of water from a distance, from underground, from the clouds, or from the sea, planners followed a single engineering solution and excluded all other alternatives, including methods of conservation.

Narrowing down alternatives or picking the "single best plan" will simply not work anymore. Even aside from "knotty questions" of contending water rights, "it is difficult to disentangle fully the web of consequences that would result from pursuing one solution rather than the other."

Flexible water planning means changes in laws and prices, as well as in water-using equipment and behavior of the various users. A wide variety of studies should be made including research into the behavior of water resources, changes in environment, and new processes such as waste treatment, desalting, cooling, as well as in finding water substitutes.

Scientists, engineers, public officials and informed citizens should all be influential in such decisions.

The water committee, headed by Dr. Gilbert F. White of the University of Chicago and including men drawn from the Federal Government, universities and private business, studied for two years before making its report.

# IN SCIENCE

### MICROBIOLOGY

## Cleaner of Space Parts Used in Antibiotics Tests

► AN INVISIBLE curtain of air designed to keep spacecraft parts dust-free during assembly is now helping the Food and Drug Administration test antibiotics.

The moving air actually insulates a work bench from the person using it.

When new antibiotics are being evaluated, microorganisms riding on the tiniest of dust particles can ruin test results. The human testers, therefore, must handle samples by reaching through an air curtain that blows away and filters out dust particles as small as .0000117 of an inch.

The air comes down from a filtering hood, through thousands of tiny holes in the work surface, around to the filter and down again.

The FDA tests approximately 300,000 containers of injectable antibiotics every year, so the repeat tests necessitated by stray dust are a major headache. The air-curtained work bench will hopefully reduce the number of repeats.

### ANIMAL PHYSIOLOGY

## Mineral Hunger May Be Rabbits' Undoing

► WILDLIFE researchers have found that rabbits sometimes have a craving hunger for certain minerals—and this hunger could be used to kill them.

The minerals include sodium, potassium and magnesium, all of which can be lacking in areas inhabited by rabbits, possibly as the result of high rainfall.

When rabbits are deficient in such minerals, the adrenal glands regulating the sodium-potassium balance in the blood become enlarged and a driving hunger for the missing mineral develops.

Experiments at the Australian Government's Wildlife Division in Canberra have shown that for rabbits deficient in sodium, ordinary salt (sodium chloride) could make a cheap and highly selective bait.

In Australia rabbits cause millions of dollars damage each year to pasture. Myxomatosis was used 10 years ago to reduce their numbers by half, but since then in many areas rabbits have become immune to the disease.

Mineral deficiencies vary in type, time and area. Research is still needed to find out which deficiency affects a rabbit when, and where.

## POLLUTION

### Three-Ship Navy Fights Great Lakes Pollution

► A THREE-SHIP Canadian "navy" has been launched to fight water pollution in the Great Lakes.

The fleet's job is to assist in tabulating the industrial, domestic and surface pollution from Ontario, and to check the effect of these discharges on the Lakes.

The 65-foot Lac Vancouver is plying Lake Ontario, the 41-foot Sparks operates on Lake Erie and the 30-foot Pelican covers the Detroit and St. Clair Rivers, with side trips along the Lake Huron shore.

The ships will collect samples from predetermined points or stations on the Lakes, make preliminary analyses on them, including tests for dissolved oxygen, temperature, or acidity and alkalinity.

Samples are taken by a device capable of collecting water from any specific depth. In deeper water a sample is taken five feet below the surface, five feet from the bottom and half way in between.

Results of the shipboard tests are entered on a special deck sheet and at day's end the boats are met at port by drivers who take samples to special shore labs of the Ontario Water Resources Commission for further chemical and bacteriological analyses. The results of the tests will be fed into a computer for further examination.

Survey operations are scheduled to end in October, but will be resumed next spring. Great Lakes sampling is an extension of the Commission's regular water monitoring program which has been in operation for several years.

On an average day the boats cover about 60 miles each, collecting about 30 chemical and 30 bacteriological samples.

## MEDICINE

### Little League Shoulder Bothers Young Pitchers

► THE PAIN of "Little Leaguer's shoulder" is making inroads on the supply of young pitchers, a San Bernardino physician reported in *California Medicine*, 105:22, 1966.

Dr. Joel E. Adams, who has previously studied Little Leaguer's elbow extensively, warned that there should be a change in rules to protect pitchers, in spite of reluctance of program administrators to alter regulations.

"When the rules regulating the amount of throwing by pitchers in the Little and Pony Leagues were drafted," Dr. Adams said, "there was no definite medical knowledge available as to what effect the abnormal repetitious throwing motion would have on the ununited epiphyses of the arm."

The epiphysis, which is the part of the long bone between the cartilage and the main shaft, is believed to be the main point of bone growth.

X-rays of five boys between the ages of 13 and 15 showed abnormalities such as widening of the epiphyseal line or overdevelopment of the shoulder girdle causing pain.

Dr. Adams recommends several rule changes to help prevent both elbow and shoulder pain:

1. Restrict pitchers in the Little League to two innings and in the Pony League to three innings per game.

2. Encourage pitchers to report shoulder or elbow pain immediately and to discontinue pitching (though they can play in other positions) until the epiphyses are closed.

3. Advise pitchers not to practice at home before, during or after the baseball season, as excessive throwing invites trouble rather than perfection at this age.

4. Abolish curve ball throwing, as it puts additional strain on the arm and requires excessive throwing practice to perfect.

5. Establish medical advisory boards at national and local levels, and persuade coaches not to try to treat or to recommend a method of treating sore pitching arms.

## CHEMISTRY

### Detergent Molecules Prevent River Algae

► EXCESS household detergent draining into our rivers and lakes may combine with organic compounds in such a way as to halt the growth of green algae.

Scientists studying Michigan lakes and streams for the past three years have found that any quantity more than 0.3 parts per million of a detergent chemical called alkyl benzene sulfonate (ABS) prevents iron from binding with amino acids of the organic compounds in natural waters. This combination of iron and acid is necessary for growth of algae.

Tests showed that ABS combined with the iron.

When ABS was removed the iron rejoined the amino acids, and algae could thrive and increase again, reported Fred Kent and Frank F. Hopper of the Institute for Fisheries Research, University Museums Annex, Ann Arbor.

The scientists reported their research in *Science*, 153:526, 1966.

## TOXICOLOGY

### Pesticides May Plague Powerful Predator

► THE FALCON, once a powerful hunting companion to kings, may be a victim of pesticides, as so many other birds and small animals already are.

Female falcons in the United States and Canada are being fed starlings that have been contaminated in the laboratory with high but sub-lethal doses of dieldrin, a long-lasting insecticide used on crops to control grasshoppers and other insects.

Their eggs are then analyzed, and fat samples taken from these females and from control females are studied to determine the effect of known levels of the insecticide on fertility and on the efficiency of transfer of dieldrin from starling to falcon and from falcon to eggs.

Dr. James H. Enderson, professor of zoology at Colorado College, Colorado Springs, is conducting the study sponsored by the National Science Foundation.

## DENTISTRY

### Storage Fat in Teeth May Be Cause of Decay

► CAVITIES? You may suffer from "fat" teeth.

Animal experiments reported at the Seventh International Nutrition Congress in Hamburg, Germany, could explain why underfed people often have surprisingly good teeth, while the well-fed populations of the world are seriously afflicted with tooth decay.

Dental investigators have given little attention to fats in teeth because they account for only about one percent of the total weight, but Dr. Robert S. Harris, director of the Oral Science Laboratories of the department of nutrition and food science, Massachusetts Institute of Technology, and Dr. Salil K. Das, a staff member, experimented with diets of rats and discovered a difference in the teeth of underfed and well-fed animals.

Underfed rats developed "lean" teeth with no storage fat, while the teeth of well-fed rats contained as much storage fat as they did non-glyceride lipids that are useful in tooth metabolism. The presence of storage fat could plug tooth passages and hinder tooth metabolism.

Although no correlation with dental cavities was attempted in the MIT study the researcher predicted that lean teeth are more resistant to decay, or caries, than fat teeth.

The reason for the research was that Dr. Harris and his MIT collaborators recently had reported differences in the lipid patterns of the teeth of 16 species of animals. It is not yet clear whether these differences are due to heredity or to diet.