



**PUNCHED TAPE CONTROLS**—A complete flight can be flown with such a punched tape giving orders to a robot autopilot designed by Minneapolis-Honeywell engineers.

## TECHNOLOGY

## Keep Planes on Time

► A ROBOT autopilot that makes sure a plane arrives at its destination within a "particle of a minute" of its scheduled arrival has been developed for the Air Force, the Air Research and Development Command announced in Baltimore.

The robot is designed to pilot a heavy plane from take-off to landing on a coast-to-coast trip without human hands ever touching the controls.

The Air Force said the Minneapolis-Honeywell autopilot is part of long-range planning for the day when automatic control and aircraft scheduling will be necessary in flight navigation.

Airports are becoming so clogged with traffic that soon it may be necessary for a plane's landing to be cleared at the destination before the plane can even begin the trip, the Air Force explained. The autopilot may help make flight scheduling much more precise by guaranteeing that the plane will land at the proper minute.

From runway taxiing to landing, the plane's flight is coded on punched paper tape. The tape is fed into an electronic "brain" about the size of a large video set. Carried on the plane, the "brain" works something like a player piano and feeds information from the tape to the plane's autopilot and air-speed controls. The pilot can switch from automatic to manual control instantly in an emergency.

By relieving him of the attention to details required for routine flight, the robot lets the pilot devote more time to his other duties as skipper. Currently the device is being tested at Wright Air Development Center, Dayton, Ohio.

Science News Letter, March 28, 1953

## GERONTOLOGY

## Ways to Healthier and Happier Old Age Sought

► WAYS TO more fun for old people as well as better health, jobs and fewer economic problems will be sought in a new broad program to be started soon at the Harvard School of Public Health with the aid of a \$112,688 three-year grant from the W. K. Kellogg Foundation of Battle Creek, Mich.

Because the Harvard School of Public Health feels that there are important relationships between all of the forces which affect the lives of the aged, it welcomes the opportunity to help pioneer an approach to the problems of old age that takes into consideration all of the social, economic and health factors with which the older person must contend, Brig. Gen. James Stevens Simmons, U.S.A. (ret.), dean, said in announcing the new program.

Science News Letter, March 28, 1953

## BIOLOGY

## Cells Build New Cells From Simplest Materials

► CELLS OF the body do part of their job of building new cells by starting with the simplest materials.

Unlike a woman making a dress who cuts out ready-made material and sews it together with the aid of a pattern, the cell first tears down the material to the very threads, as it were, and then weaves them directly into the finished product.

This is true at least for the cell's production of an enzyme, made by the cell to convert its food into living matter.

This finding, contrary to previous theory, and believed an important clue to the secret of cell growth, including cancerous growth, was made by Prof. Sol Spiegelman and Dr. Harlyn Halvorson, microbiologists of the University of Illinois.

Since doing this work, Dr. Halvorson has become associated with the University of Michigan.

Science News Letter, March 28, 1953

## ICHTHYOLOGY

## 13 Fatherless Fish Born—All Females

► THIRTEEN FATHERLESS fish have been born in a London laboratory, all seemingly authentic cases of "virgin birth," or parthenogenesis, Dr. H. Spurway of University College, London, reports in *Nature* (March 7).

All of the 13 guppies are females, too, backing up the probability of their being fatherless, Dr. Spurway added. Parthenogenetic offspring of higher animals must be females, because the inheritance factor for males is absent in the unfertilized female's egg cell or ovum.

In two of the cases described by Dr. Spurway, the female guppies were isolated from adult males when they were 12 and five days old respectively. The first gave birth to a single female 212 days later. The second gave birth to three females 188 days later.

The first of these guppies was with adult males during the first 12 days of her life, and with immature males for a few days afterwards, so there could be a possible chance for fertilization in this case, Dr. Spurway said. But not so with the second.

She was with her immature brothers only the first five days of their lives. Her brothers, however, showed no signs of sexual differentiation until they were 38 days old.

Even if the brothers had developed sperm early, Dr. Spurway said, it is difficult to see how the female could have been fertilized. Guppies are internally fertilized, the males using specialized fins as intromittent organs. But with the five-day-old brothers, these fins were still unmodified when the female was removed.

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