



**HURRICANE-DAMAGE PROTECTION**—*This wave-testing machine, believed to be the largest in the world, is expected to aid in devising possible methods of protecting coastal areas from hurricane damage. Waves are created by a vertical bulkhead 20 feet high in a concrete tank 635 feet long, 15 feet wide and 20 feet deep, built by the Beach Erosion Board of the Army Corps of Engineers.*

In line with her research project, one of her choices for a career is medicine, but another is engineering. In college she wants to study theoretical and applied physics and take all the mathematics courses available.

## Oil Traps in Rocks

► A STUDY of how geologic structure can form a trap for migrating underground oil has helped a Shelby High School senior, Shelby, Mont., place among winners of the Fifteenth Annual Science Talent Search.

Leroy Edward Hood, 17-year-old son of Mr. and Mrs. Thomas E. Hood, made the geology study as part of a summer trip with geologists in the Beartooth Mountains last summer.

## New Kind of Cheese

► ALTHOUGH she lives in a state noted for cheese making, Ida Louise Riendl, 17, senior in Columbus High School, Marshfield, Wis., had never been inside a cheese factory until interest in bacteriology led her to build kitchen-size working models of cheese-making equipment.

Her bacteria studies are self-directed, and her interests have led her to collect an extensive library on the subject. This project has helped Ida Louise, daughter of Mr. and Mrs. Aloys Riendl, place among the 40 finalists.

Seven kinds of commercial cheese have been made successfully by Ida Louise in her project, cultivating the proper kinds of molds and bacteria to give the recognized qualities of flavor and texture.

She then developed a new variety that she describes as "a soft cheese with the characteristic green, somewhat mottled streaks of commercial mold cheese, but with a pronounced sweetened flavor entirely different from other cheese of its kind."

## TV Interference

► IN AREAS where TV "noise" blurs the picture, an automatic device that smooths black flecks or "snow" into a medium gray closer to the scene's background would be welcomed by the viewer.

A high school boy in Tahoe City, Calif., thought so, and has set about designing a gadget to give TV watchers this boon.

The boy is 17-year-old Gary Bertel Anderson, son of Mr. Bertel A. Anderson, a building contractor, and Mrs. Anderson. He will graduate this year from the Tahoe Truckee High School.

Gary's idea for improving television reception was submitted as his research report, part of the requirements for completing his entry in the Science Talent Search. In his device, voltage detector circuits find the values of the video signal immediately preceding and following the

"noise" signal that another noise detecting circuit has spotted and eliminated. It averages them and inserts this average in place of the unwanted disturbance.

"Since the wave segment forming circuits cannot gain enough information to construct an exact duplicate of the original wave which was displaced by the noise," Gary explained, "it constructs a wave which is an average of those immediately preceding and following the noise pulse."

## Student's War Game

► A WAR GAME that, unlike chess, takes advantage of the terrain over which the armies must proceed as in modern mechanized warfare, has been devised by a 16-year-old senior at Forest Hills High School, Forest Hills, N. Y.

The mathematics of games led to the development of this pastime by Martin Gary Groder, son of Mr. and Mrs. William Groder of Flushing, N. Y.

Development of the game, which offers players a choice of 12 kinds of countryside, built up of colored plastic, to fight over, started with a board on which globules of mercury were used as playing pieces. They were later replaced by more conventional counters. Gains and losses are scored by principles of modern logistics.

## Ear Bones of Fish

► FOSSIL EAR BONES of fish found in rocks in America and England, and recent ones saved by cooperative British fishmongers, gave a teen-age University High School scientist in Minneapolis, Minn., his subject for research.

When he learned that paired bones in the head of fish not only tell the kind of fish but give a record of the fish's age, John Howland Campbell, son of Dr. and Mrs. Berry Campbell, began his collection. Dr. Campbell is professor of anatomy at the University of Minnesota.

Photographs 17-year-old John took with polarized light show the growth rings, somewhat like the rings in the trunk of a tree, which are added yearly to the tiny ear bones. These he dissected from unusual fish heads market men saved for him two years ago, when he was spending a year in London.

He collected 250 pairs of otoliths, as the fish ear bones are called, and identified 17 different species. Fossil otoliths he found in England and in America form another part of his collection.

Wishing to take photographs to show the delicate structure of the tiny bones, John devised a way to make light shine through but not around the specimens, by making a polarized light background out of a pair of 3-D movie glasses.

The young scientist also worked out a formula correlating sizes of the otoliths with length of the fish heads from snout to gill. Since he had only the heads, he needed such a check on the size.

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