



Westinghouse

**FLOATS ON AIR**—Imitating the movement of a satellite orbiting the earth, the "satellite motion simulator" floats on a cushion of air in a controlled environment. The simulator is in use at Westinghouse Electric Corporation, Baltimore, to test a new system for controlling tilt.

## GEOLOGY

## Evidence Continents Drift

The theory of continental drift, long debated by geologists, is supported by new evidence on magnetism in rocks, earth cleavage and age of islands.

➤ NEW EVIDENCE of three types supports the long-debated theory that continents were once connected and have drifted apart, a noted geologist reported.

Dr. J. Tuzo Wilson of the Institute of Earth Science, University of Toronto, said the following observations suggest "great horizontal displacements" have occurred in the earth's crust:

1. Measurements of the magnetism in rocks are uniform throughout each continent, but the continents themselves seem to have moved relative to the magnetic poles.

2. Several dozen large faults, cleavages in the crust, appear to have shifted tens or even hundreds of miles at different geological times. The great cliff in the floor of the eastern Pacific Ocean, for example, has shifted as much as 750 miles, according to other magnetic studies.

3. Islands seem to get older the farther they are from mid-ocean ridges, with the continents the oldest of all.

Dr. Wilson said the observations lead to two generalizations: One is that two continents were once connected wherever a mid-ocean ridge lies half-way between them. The other is that a study of ocean ridges, in addition to present shore lines, may be used to reconstruct the old positions of continents.

Thus, he said, the Indian Ocean would have been formed by the separation of Africa, India, Australia and Antarctica.

He said his theory would be further supported if the current International Indian Ocean Expeditions find that, in addition to the three known ridges between those land masses, a fourth extends northeasterly between India and Australia.

A fault long believed to exist along the west coast of India could then have been created when India was carried north and collided with the rest of Asia. Perhaps the floor of the Arabian Gulf kept moving northward, he said.

A similar reconstruction could be made, connecting Eurasia and North America.

His reconstructions differ from others already proposed, he said, in that they have been assembled "according to rules, and not merely by arbitrary matching of coasts."

Men for centuries have invented myths and theories about how land masses have drifted apart. One belief was that continents split up suddenly when the moon got trapped in the earth's gravitational field, causing enormous tides on earth.

Continental drift has been a hot subject at geological conventions since 1915 when great publicity was given to the observations of German meteorologist Alfred

Wegener. From studies of prehistoric climatic zones, he pointed out the similarity in outline between the eastern coast of South America and the coast of West Africa.

Dr. Wilson predicted that recent rapid advances in studies of the earth's interior, ocean floors and rock magnetism, combined with older information, will soon settle the continental drift question.

"Until an agreement is reached, no complete understanding is possible of geology, geophysics, evolution or palaeoclimatology," he reported in *Nature*, 198:925, 1963.

• Science News Letter, 84:23 July 13, 1963

## PSYCHOLOGY

## People Reason Only by Chance, Computer Shows

➤ PEOPLE reason only by chance, an Italian computer expert believes, and he has built a machine to prove it.

His computer reasons on the basis of probability theory, popular among gamblers, which deals with what the chances are that certain things will happen.

Dr. A. Gamba of the University of Genoa said that to make a machine capable of high mental activity, such as inductive reasoning, scientists should stop studying humans and concentrate on probability theory.

Psychological processes—such as learning, reward, punishment and adaptation—are "nothing else than techniques to establish probability values for an intelligent machine to work with," Dr. Gamba said in a report prepared for a symposium on information control at Northwestern University, Evanston, Ill.

"Once this point of view is accepted," he said, "one can then forget about biological intelligence and proceed, from a purely engineering approach, to build PAPA's."

PAPA is an Italian acronym for Automatic Programmer and Analyzer of Probabilities.

Small PAPA's, which receive messages through an electric eye, have been built at the University of Genoa.

"Even such simple PAPA's have proved capable of discriminating among rather sophisticated patterns and have indeed shown inductive abilities," he said.

• Science News Letter, 84:23 July 13, 1963

## MEDICINE

## Spinal Arthritis Found Among Canadian Indians

➤ A HIGH RATE of arthritis of the spine, called spondylitis, has been found among the 436 Haida Indians who live on the Queen Charlotte Islands northwest of Vancouver. Dr. H. S. Robinson of Vancouver, British Columbia, told the American Rheumatism Association meeting in Atlantic City that he and his associates had found ten cases of spinal arthritis among this small group. The percentage is much higher than in the general population and there is a possibility that genetic factors through inbreeding may have influenced the attack rate.

• Science News Letter, 84:23 July 13, 1963