

GENERAL SCIENCE

STS Winners' Reports

PHILLIPS WRITES

"1. Introduction

"This paper considers various problems concerning the compression of liquids and gases under gravitational pressure. The simplest case is that of an ocean of liquid with given depth. The problem is to find the distance its surface has been lowered by this compression. A variation treats the compression of a sphere of liquid under its own gravitation.

"Another gravitational problem is that of an atmosphere outside a planet. This has a practical bearing on the earth's atmosphere. Also considered is centrifugal force. This is a slightly distorted form of gravity, and is quite interesting.

"I have obtained general solutions for all these cases and numerical solutions for some of them. Although the majority of my cases will be found as problems in text-

books on differential equations, the work is entirely my own, and the liquid sphere problem (#3), as far as I know, is original."

—From the report of E. Alan Phillips.

MONSKY WRITES

"A. Subject of the Note

"The basic problem of geometrical optics is determining the path of a ray of light in a medium. This note will derive a general differential equation for a heterogeneous medium in a plane, solve the equation for several special cases involving radial symmetry, and consider the existence of solutions with two intersecting tangents at a point (a corner).

"This is a non-relativistic study. Also, phenomena such as emission, absorption and diffraction will not be taken into account, and the wave theory of light will not be used."

—From the report of Paul H. Monsky.
Science News Letter, March 14, 1953

Do You Know?

American motorists rolled up 500 billion miles of travel in 1952.

It is estimated that there are three rats for every human being on the earth.

More than a million big-game animals are harvested yearly in North America.

Water in the South Pacific's deep Tonga Trench shows a marked temperature rise below 18,000 feet.

The annual death rate from automobile accidents is three times the casualty toll for one year of the Korean War.

Such desert plants as yucca, creosote bush and mesquite trees represent a huge tonnage of cellulose, pentose sugars, resins, gums, and volatile oils which offer industrial promise to arid lands.

TECHNOLOGY

Midget Wing Deicer Works Faster, Longer

➤ A MIDGET airplane wing deicer that puffs up more than a half-mile of sensitive tubing on leading edges of wing and tail surfaces has been developed by B. F. Goodrich research engineers in Akron, Ohio.

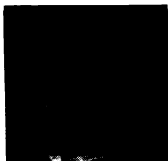
The deicer is one-sixth the size of original ones, works three times faster and should last twice as long. It uses a system of compressed air.

A network of small inflatable rubber tubes are imbedded in thin rubber panels which are cemented on the plane where ice is apt to form. When the tubes are expanded, the ice cracks off.

The system permits ice-cracking pressure to be applied exactly at the right points and in many small but vital areas. Earlier models were devoid of this feature.

Science News Letter, March 14, 1953

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