

technology notes

AIR POLLUTION

Stronger national standards for air pollution

New and stronger national standards for the control of air pollution from exhausts have been issued by the Department of Health, Education and Welfare (SN: 1/20, p. 61).

The standards, effective for 1970 models, will cover both American-made and imported passenger cars, trucks and buses. Diesel-powered motor vehicles are included for the first time.

Exhaust tailpipe emissions from gasoline-fueled passenger cars and light trucks will be limited to 23 grams of carbon monoxide and 2.2 grams of hydrocarbons per mile of driving, compared to the 34 grams and 3.3 grams now in effect for a passenger car in the most popular size range.

Such an automobile, if not equipped to control air pollution, would discharge about 73 grams and 11.2 grams, respectively.

The 1970 standards for large trucks and buses limit diesel smoke emissions to a faint plume.

DISPLAY

Practical uses for liquid crystals

Another electronic display for print, pictures and moving images has been developed using liquid crystals, organic compounds having the mechanical properties of a liquid and the regular molecular structure characteristic of a polycrystalline solid (SN: 3/16, p. 268).

Among the proposed uses are electronic clocks and watches without moving parts, and automobile dashboard and other displays, such as thin TV screens, whose images do not wash out in sunlight. Prototypes of the clock and of a small TV screen have been produced in the Radio Corporation of America's Laboratories in Princeton, N.J.

Dr. George Heilmeyer, who led the development effort, says the new liquid crystal screen resulted from the application of the discovery that certain materials can be made reflecting when an electric voltage is applied. The temperature range over which this occurs now reaches from below freezing to the boiling point of water.

MINING

Tunneling technology past and present

Methods man has used in tunneling through rock from prehistoric time to the present are outlined in a new report from the Interior Department's Bureau of Mines.

The report traces tunneling from the Bronze Age, about 3500 B.C., to the modern tunnels driven by both the drill-blast method and the continuous borer. The report is available from the Government Printing Office at \$.45.

The report was compiled in hopes of aiding the development of some kind of integrated tunneling system to replace the present "drill, blast and muck cycle." Without such a device or system, a Bureau official says, "each phase in the cycle has to stop while the other goes on."

The early standard tunneling method was to drive

wooden wedges into the rock, which split when the wedges were soaked with water and expanded.

FOOD PROCESSING

Reverse osmosis for concentrates

The process of reverse osmosis, under development for removing salt from sea water inexpensively, is finding application in such other diverse fields as food concentrates and waste reclamation.

Reverse osmosis has been found by scientists at the U.S. Department of Agriculture to make possible food concentrates that retain their color and texture, as well as much of their natural aroma and flavor. No heat is employed in the process, which may prove less expensive than evaporation. Commercial units are now being built based on one in use producing concentrated maple syrup.

Another application of reverse osmosis, still in the testing stage, would be to help solve the disposal of food processing wastes. Whey, a by-product of cheesemaking, is a serious river pollutant, yet it is rich in amino acids, sugars and soluble proteins. Reverse osmosis can concentrate these useful solids, while eliminating the salts and acids that make untreated whey unsuitable as food.

COMMUNICATIONS

Computerized information system for ships

To improve information flow between ship's officers and shoreside managers, a computerized information processing system has been especially designed for ship-board conditions.

A 21-day test aboard the Grace Line ship Santa Monica has proved successful, according to the Ship-board Information System Development Group of the National Research Council. During the test, the system was used to generate a payroll, a breakdown of wage costs by department, a list of maintenance and repair actions, and a printout of earnings by contract labor.

Use of a coding and instruction manual enabled the ship's department heads to record the necessary information on a data collection form designed for computer processing. Further testing aboard a tanker and another ship are planned before the project is completed this fall.

EDUCATION

Army med school gets color TV

An elaborate color television system, reportedly the most extensive ever designed for medical training, has been installed at Brooke Army Medical Center at Fort Sam Houston, Tex.

The system can provide live, filmed or taped programs to 125 classrooms and other locations, including two 1,000-seat theaters, at the post's Medical Field Service School. Four separate channels can be carried simultaneously by cable to any of the locations. As many as 325 color receivers can be used, and the system includes provision for adding color motion pictures and slides to the equipment.

The half-million-dollar complex was provided by RCA's commercial electronic systems division in Camden, N.J.