

VITAL STATISTICS

U.S. Population Rising 7,400 Persons Per Day

► THE POPULATION of the United States is increasing at the rate of one million every 135 days.

If that rate continues, this country will have 190 million persons by the third week in September and 200 million by 1967, the Census Bureau estimates.

The figures are based on birth rate, death rate, and immigration and emigration, which combine to give an increase of 7,400 persons per day.

The growth rate is constantly changing. For instance, births are higher and deaths lower in summer than in winter. The rate also varies from year to year.

During the period 1958 to 1961, the rate of population increase was 1.7% per year—one million persons every 115 days.

However, in the past year and a half, it has dropped to between 1.4% and 1.5% per year.

In the next few years it is likely to rise again, as the large number of girls born right after the war reach child-bearing age. With their contribution, the U.S. should reach the quarter-billion mark about 1980.

Presently blessed with a high standard of living, the people of the United States may suffer if the increase is not brought under control before the turn of the century.

• Science News Letter, 84:31 July 13, 1963

AGRICULTURE

Useless Soil Reclaimed With Salt Solutions

► SCIENTISTS now are washing useless farm soil with salt solutions to make it productive again.

But it is not a simple process.

It all starts with a difficult soil called black alkali or sodic soil. These are particular soils with 15% or more sodium ions attracted to parts of their surfaces. When the soil is irrigated, this sodium causes the soil particles to swell and break apart. The resulting smaller particles fill the large pores or openings in the soil, and make it difficult for the water to soak into the soil.

Farmers find these sodic soils practically impermeable to water. They support only special crops, or are considered worthless unless reclaimed.

But now help is coming from research conducted at the U.S. Salinity Laboratory at Riverside, Calif., part of the U.S. Department of Agriculture.

Scientists are leaching or washing sodic soils with water high in salt concentration. The salt acts as a flocculent, causing small soil particles to join in larger bunches, state agricultural engineer R. C. Reeve and chemist C. A. Bower. This creates larger openings for passage of water.

Sodium ions, each with one positive electrical charge, do not adhere as tightly to soil particles as do calcium or magnesium ions, each with two positive charges. When the concentration of salt in the leaching

water is changed, some calcium ions dislodge sodium ions that are not tightly held, and the leaching water carries away the freed sodium. Because calcium ions carry two positive charges, each calcium ion displaces two single-charged sodium ions.

The scientists first used high-salt water to improve the soil's permeability. They then washed the soil several times with water of lower salt concentration. Finally they finished the test with water from the Colorado River. The soil was reclaimed in 12 days, and water then moved through the soil at a desirable speed of about 0.69 centimeters per hour.

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PUBLIC HEALTH

Reducing Air Pollution From Car Exhaust Studied

► CONVERSION of the smog-producing hydrocarbons present in automobile exhaust into the same harmless gases we exhale with every breath is being studied by scientists of the Department of the Interior's Bureau of Mines.

The Bureau has been studying a process called catalytic oxidation that converts the incompletely burned hydrocarbons into carbon dioxide and water vapor with the aid of catalysts—chemical agents that speed up reactions without being consumed themselves.

A new bulletin issued by the Department describes the Bureau's experiments and gives information on the ability of more than a dozen metallic catalysts to promote oxidation of some common hydrocarbons.

The work is part of a broader air pollution program, carried out in cooperation with the Public Health Service, that includes studies of the reactions of automobile exhaust gas with air in sunlight, pollution caused by fumes from coal refuse pile fires, and contamination caused by industrial smoke.

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RADIOLOGY

New Efficient Medical Scanners Being Installed

► A NEW MEDICAL scanner to obtain information about various organs of the body by measuring amounts of radioactive isotopes has been developed.

By feeding a patient a radioactive isotope and observing its progress through his body, internal conditions can be checked because the concentration of such isotopes is different in sick tissues than in healthy ones.

The radioactive scanning process, used in conjunction with X-ray examination, yields information not obtainable by any other means. The scanner, developed by Baird-Atomic, Inc., Cambridge, Mass., is now being installed in ten hospitals in the U. S. and abroad. It gives readings indicating directly the percentage of an isotope present, rather than merely giving a radiation count.

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SCIENCE BARGAINS

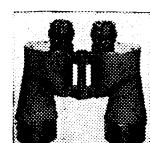
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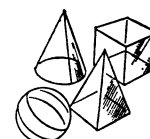
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