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SCIENCE NEWS LETTER



THE WEEKLY SUMMARY OF CURRENT SCIENCE • NOVEMBER 13, 1943



Tank Ambulance

See Page 313

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Do You Know?

Food prices in Palestine have increased more than 150% since 1939.

The expression "a round of *ammunition*" came into use perhaps because early bullets were round in shape.

The marine *black-sand* deposits of Coos County, Ore., are now yielding chromium concentrates by magnetic separation.

The largest terrapin *hatchery* in the world, a Federal hatchery at Beaufort, N. C., has produced nearly 200,000 diamond-backs for restocking purposes.

In two years since the first transatlantic *air-express* was inaugurated, over 2,000 tons of express have been transported between Europe and the United States.

The Hawaiian *goose*, or nene, is now known to exist only on the Island of Hawaii; for the past five years the nene population there has been estimated at only 50 wild birds.

Penicillin, the most promising, medically, of all anti-bacterial products so far discovered, is a strong acid soluble in water and freely soluble in ether, alcohol, acetone and ethyl acetate.

Basic English, which uses 846 of the more common English words, is easily learned by non-English speaking people; it includes 600 nouns, 150 adjectives, 18 verbs, and 78 pronouns, adverbs and prepositions.

Question Box

Page numbers of Questions discussed in this issue:

AERONAUTICS

How will cargo probably be shipped after the war? p. 310.

ARCHAEOLOGY

How were bathtubs constructed in prehistoric Colombia? p. 308.

ELECTRONICS

What instrument helps pilots keep tabs on their instruments? p. 313.

ENGINEERING

What means for fairing ailerons into plane wings has been patented? p. 318.

FORESTRY

What machine is designed to fell trees? p. 313.

GEOLOGY

What is Paricutin's latest development? p. 312.

What is the true depth of the Mexican murder pit? p. 319.

MEDICINE

Why is skin care important for war workers? p. 319.

METALLURGY

What will they put into pennies next? p. 312.

MILITARY SCIENCE

What agency must local draft boards consult before inducting men from war jobs? p. 309.

NUTRITION

What new vitamin is linked with blood cell production? p. 307.

ORDNANCE

What three weapons have been devised to fight "Tiger" tanks? p. 312.

PHYSICS

What principle governs a recently devised microscope? p. 309.

PHYSIOLOGY

What were the objectives and results of the Air Force life-raft tests? p. 314.

PUBLIC HEALTH

What is the health condition of men and women in our armed forces? p. 311.

RESOURCES

What are the reasons for the critical fuel shortage? p. 310.

SAFETY

What are the ten commandments for safe hunting? p. 313.

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

Pellagra, now known to be induced by nutritional deficiency, was first described in 1735 by a Spanish physician; its name, first applied to it in 1771, is from two Italian words meaning "skin" and "rough."

Life jackets for men fallen into the sea sometimes have attached packages of dye; the dye when released spreads a fluorescent yellowish green 25-foot spot around the men which can be seen from airplanes high in the air.

Cranberry pulp and seed, waste products in cranberry jam plants, is found to yield ursolic acid, an excellent emulsifying agent, as well as cranberry wax and cranberry seed oil; all have commercial uses.

Tailless African macaques, or Barbary *apes*, on the Rock of Gibraltar receive excellent care as certain British soldiers are said to believe that "as long as the apes remain the British will hold the Rock."

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The Rubber Plant

**with roots
two miles deep!**

THE MAKING OF synthetic rubber involves among other things the exact control of gas mixtures of great complexity. Formerly the analysis of some gases required several days of painstaking laboratory work, and in some cases a complete analysis was impossible.

Westinghouse scientists—working in close collaboration with engineers of leading oil and chemical companies—have perfected an electronic “chemist” which is an important addition to the present methods of analysis.

With the improved technique and apparatus now available, the time required for accurately making some of these analyses has been reduced *to an hour or less!*

An amazing electronic device . . . known as the mass spectrometer . . . not only improves the accuracy of the synthetic rubber process, but frees hundreds of skilled chemists from tedious but important production testing in these vital plants.

The mass spectrometer analyzes gases by sorting the molecules—according to their mass—in (roughly) the same way that a cream separator sorts out the cream from whole milk.

Let's say we want to analyze a simple gas mixture containing *one part* of oxygen and 10,000 parts of nitrogen. Here's how the mass spectrometer accomplishes this incredible feat:

First, the gas sample is bombarded



with electrons. This *ionizes* the nitrogen and oxygen molecules, giving them electrical charges of their own.

These ions are then drawn by electrical force into a curved vacuum tube. Here, ions of different molecular weights whizz around *different curved paths*—depending upon their reaction to a powerful electromagnet surrounding the tube.

The heavier oxygen ions follow a straighter path than the lighter nitrogen ions and are directed through a tiny exit slit onto a plate where they give up their electrical charge. The amount of this charge, amplified and recorded by sensitive electrical instruments, is an extremely accurate measure of the *quantity*

of oxygen in the gas mixture.

The starting voltage is then changed to allow the nitrogen ions to pass through the same exit slit—thus measuring the *quantity of nitrogen*. This same principle applies to the analysis of complex hydrocarbon mixtures.

The development of the mass spectrometer . . . for the quick, accurate analysis of butadiene . . . is a typical example of the way Westinghouse “know how” in electronics is tackling the wartime problems of industry in an effort to speed victory.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pennsylvania.

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