

CHEMISTRY

Aid Chemical Assay

Neutron irradiation of many different chemicals in atomic reactors gives almost a new dimension to analysis, international conclave finds.

▶ ALMOST A new dimension is given to chemical analysis through use of neutron irradiation from atomic reactors. Neutrons activate impurities so that they give off alpha, beta or gamma radiation, and measurement of this radioactivity allows estimation of impurities in materials when concentrations are as low as one part in a billion.

Such new radiochemical methods were discussed at the International Congress on Analytical Chemistry in Oxford, England, attended by 700 scientists from 21 countries.

How neutron activation allows the determination of trace quantities of the alkali metals was told by Dr. M. T. Kelley of Oak Ridge National Laboratory, Tenn.

Small quantities of uranium in rocks and minerals can be determined by radioactivation, A. A. Smales of Britain's Atomic Energy Research Establishment, Harwell, reported.

Optical methods using ultraviolet, infrared, visible and X-ray illumination are used to detect and determine particular compo-

nents of complex mixtures in a few minutes. Prof. M. G. Mellon of Purdue University, Lafayette, Ind., discussed ultraviolet determination of arsenic.

Even animals, one-celled creatures and fungi are used to analyze for the amounts of various substances present in materials. Dr. David M. Tennent of Merck Institute, Rahway, N. J., told how to estimate accurately the amount of a bacterial pyrogen, or fever-producer, by injecting some of the unknown material into rabbits and measuring the rise in their temperature.

Dr. L. D. Hunter of the Sloan-Kettering Institute for Cancer Research, New York, told how protozoa can be used for chemical analysis. So much is known about nutrition of both protozoa and fungi that measuring their growth rate, when they are fed an unknown material along with a food lacking one particular ingredient being assayed for, allows determination of vitamins, amino acids or metals in minute concentrations.

New reagents for metal analysis are being developed. Many thousands of organic compounds have been used as bases for sensitive color or spot tests for metals. Prof. Henry Freiser of the University of Pittsburgh told how compounds known as metallic chelates, which are more organic than inorganic, are useful in metal analysis. Made-to-order reagents, whose synthesis will be planned so that the various structural features of the molecules affect their analytical behavior to give more selectivity and sensitivity, are under study.

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Do You Know?

Lemons now can be sorted according to color by machine.

Bees must pollinate about 75,000 clover blossoms for every pound of clover seed produced.

Tuberculosis kills more persons in the United States than all other infectious diseases combined.

Sulfur dichloride vapor reacts with many paints, inks and varnishes, causing them to dry in a matter of seconds.

A drive-in post office near Long Beach, Calif., now is serving motorists who do not have time to get out of their cars to mail letters, buy stamps and transact other post office business.

Questions

AERONAUTICS—For what length trips would helicopters be quicker than 300-mile-an-hour airplanes? p. 228.

. . .

ARCHAEOLOGY—What is believed to be the oldest town in the world? p. 231.

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GENERAL SCIENCE—What research is now going to be taxed under a new ruling? p. 230.

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MARINE BIOLOGY—At what depth have lobsters now been found off New England? p. 229.

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PHYSICS—How can you make a battery for six cents? p. 229.

What new types of atoms have been discovered? p. 231.

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PHYSIOLOGY—What is believed to be the maximum that a person can drink in 24 hours? p. 233.

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PSYCHOLOGY—How does mental test coaching affect scores? p. 232.

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PUBLIC SAFETY—How can you insure that your sweater will not go up in flames? p. 233.

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AERONAUTICS

Transatlantic Tourist Fare Increases Traffic

▶ TOURIST RATES for airplane trips across the Atlantic are paying off, the International Air Transport Association was told in Switzerland by Sir William P. Hildred, its director general. Transatlantic traffic increased about 50% this year in the first three months the fares were lowered by the scheduled airliners.

Approximately 150,000 persons crossed the North Atlantic by scheduled airliners in May, June and July this year. This compares with 100,000 persons crossing during the same three months of the previous year, before the tourist rates were available. Increase in travel by first class service was only 20%.

The 50% increase in traffic was achieved with only a 10% increase in the number of flights. This means the average passenger load per trip was greater and planes were filled more nearly to their capacities.

The introduction of tourist service has not been without difficulty and has had to be only gradual, he said. Tourist rates have been made possible principally by more economical utilization of aircraft capacity for the purpose of carrying revenue load. This is accomplished by the use of lightweight seats, by omitting passenger "bait" provided in first class service, and by reducing fuel loads through use of more intermediate stops.

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