

CHEMISTRY-PHYSICS

Two Drops of Blood Reveal Elements in New Analysis

Spectroscope Used in Technique Capable of Finding Elements Present in Only One Part in 100,000

A NEW method of analyzing blood and other body fluids, capable of detecting elements present to the extent of only one part in a hundred thousand, was explained to the scientists attending the spectroscopy conference of the Massachusetts Institute of Technology.

The ultra-penetrating eye of science's master key of investigation, the spectroscope, forms the basis for the delicate and precise analysis. Dr. O. S. Duffendack of the University of Michigan, who developed the new technique along with Dr. Kenneth B. Thomson and Dr. William C. Lee, also of Michigan, told the conference that only two drops of the solution being tested are needed for the investigation, a decided advantage over other methods of analysis in that large amounts of complex body fluids are often not available to investigators.

Dr. Duffendack's technique also has the advantage of being considerably speedier than the usually employed chemical analysis while losing none of that method's precision.

The method was developed particularly for the analysis of urine, blood and other body fluids for sodium, potassium, calcium and magnesium. And Dr. Duffendack has found that the method also works well in ferretting out minute traces of aluminum, chromium, copper, nickel, iron, silicon, and similar substances in electroplating solutions, caustic liquors and other industrial chemicals.

New Research Weapon

The new technique is expected to arm investigators with a powerful new weapon in research and may prove to be the start of a new approach to some of science's most baffling problems.

There are two variations of the method as developed by Dr. Duffendack, each with its own peculiar advantages. In general principle, both employ fundamental spectroscopic technique, spreading the light given off into the colors of the rainbow. Each of these lines, or colors, tells a story, enabling

the scientist to see what elements are present by identifying them from their peculiar tints.

The first variation employs a 25,000 volt inductive spark, maintained between two electrodes which are in reality composed of the solution under analysis. A minimum of nine cubic centimeters, only a few tablespoonsful, of the solution is required for the test but the method regularly yields results with an average error of approximately three per cent.

Need Only Two Drops

The second method utilizes a high voltage alternating current arc between spectroscopic carbons upon which a drop of the solution under analysis has been evaporated. Thus only two drops of the solution are needed for the experiment, a valuable factor in the study of body fluids and other solutions available only in extremely small amounts. This method also has the added advantage of detecting elements present in exceptionally small amounts in solutions containing large amounts of other substances.

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AGRICULTURE

"Through Our Fault" Is the Waste of Land

"WE HAVE wasted our land recklessly in the past. In floods and dust storms, in higher taxes and human suffering, we are all paying the price today."

With these words Dr. Rexford Tugwell, now on the Front of the Drought in an effort to maintain the necessary folk-movement as an orderly retreat with good morale, instead of a starved and desperate rout, opens a new publication of the Resettlement Administration, "America's Land." Although written before the present crowning catastrophe in the Northwest, it is based on all-too-vivid national memory of similar harsh events in the recent past.

Incidentally, the pamphlet is a new landmark in better and more interesting-looking typographical work now being turned out by the Government Printing Office. In type, layout, and illustrations it is worthy of any printing plant in the world. Uncle Sam's linotypists, engravers, and pressmen are to be congratulated.

Administrator Tugwell continues his Confiteor: "The individual men who committed this waste did so ignorantly, not willfully. They followed the example of others, an example on which



THE HARVEST

It is hard to imagine where more potatoes could have found space to grow in this limited area. (See page 83.)