

either a repulsive state or an attractive state with sufficient vibrational energy (due to the operation of the Franck-Condon principle).

In some cases activation of a chemical reaction by an isomeric transition may follow from the formation of an undissociated molecular residue which, either before or after it regains an electron, is itself in a sufficiently reactive state. The irradiation of solutions by X-rays, wherein the same type of molecular excitation is produced, has also led to the observation of chemical decomposition and activation processes.⁹

(9) See H. Fricke, E. J. Hart and H. P. Smith, *J. Chem. Phys.*, **6**, 229 (1938), for bibliography.

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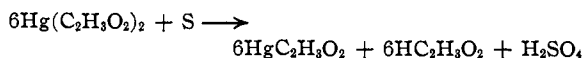
RECEIVED MARCH 20, 1940

Reaction of Sulfur with Mercuric Acetate in Glacial Acetic Acid

By RICHARD E. VOLLRATH

When sulfur is heated with mercuric acetate in glacial acetic acid, no mercuric sulfide is formed

but instead mercurous acetate. Quantitative experiments in which the reduction product was estimated as mercurous chloride and the oxidation product as barium sulfate indicate that the chief process taking place corresponds to



By carrying on the reaction in a sealed tube at 135°, over 90% of the mercury can be recovered as mercurous acetate. No more than a trace of mercuric sulfide was obtained after prolonged heating.

Prolonged heating of the mixture gives some mercurated acetic acid or related compound, as indicated by the fact that addition of sodium iodide no longer gives a precipitate of red mercuric iodide but instead a pale yellow iodide having the characteristics of an organic mercury compound. Further work is being done on this phase of the problem.

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LOS ANGELES, CALIFORNIA RECEIVED JANUARY 27, 1940

NEW BOOKS

Statistical Method from the Viewpoint of Quality Control.

By WALTER A. SHEWHART, Ph.D., Member of the Technical Staff, Bell Telephone Laboratories, New York, with the editorial assistance of W. EDWARDS DEMING, Ph.D., Senior Mathematician, The Department of Agriculture, Washington. The Graduate School, The Department of Agriculture, Washington, 1939. ix + 155 pp. Illustrated. 16.5 × 24.5 cm.

Based on four lectures delivered in March, 1938, this book is a critique of statistical quality control, for readers who already have some acquaintance with the elements of statistical theory, and are more interested in applying than in developing it. Chemists and physicists will be interested in the analysis of the data on basic physical and chemical constants, in the light of which the incompatibilities pointed out by R. T. Birge may be evidence that statistical sins, even in high places, do not go forever unpunished. "When a scientist makes a mistake in the use of statistical theory, it becomes a part of 'scientific law'; but when an industrial statistician makes such a mistake, woe unto him for he is sure to be found out and get into trouble." The discussion of the specification of accuracy and precision will be a disappointment to readers who are looking for easy answers, "...neither the physical nor the numerical aspect of an

operation by itself can be taken as a complete description of the operation." The table of contents by sections goes far toward atoning for the lack of an index, and the typography reflects credit on the Lancaster Press.

ELLIOT Q. ADAMS

Theoretical Qualitative Analysis. By J. H. REEDY, Associate Professor of Analytical Chemistry, University of Illinois. McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y., 1938. ix + 451 pp. 34 figs. 14.5 × 21 cm. Price, \$3.00.

Most present-day Qualitative Analysis texts consist of companion sections on the theory of the processes of precipitation and separation, and on the characteristic reactions of the various ions, with the detailed analytical procedures. The author has followed this plan, presenting first some 150 pages of theory dealing with solutions, colloids, mechanics of precipitation, analytical operations, equilibrium, mass law, ionization and its applications, sulfide behavior, amphoterism, complex ions, hydrolysis, cell potentials, and the handling and balancing of equations. This list is a comprehensive and ambitious one for the space allotted; the treatment of each item is matter-