The 3-methylfuran was synthesized by the following sequence of reactions: 3-furoic acid ⟶ 3-furoyl chloride ⟶ 3-furaldehyde ⟶ 3-furaldehyde-hydrazone ⟶ 3-methylfuran. It readily forms a chloromercuri compound (3-methyl-2-furylmercuric chloride) which melts at 142°, and such mercurials are recommended as satisfactory derivatives for the characterization of many furan compounds, including those with an α-carboxylic group [*Rec. trav. chim.*, **51**, 1054 (1931), and **52** (March) (1933)].

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THE EFFECT OF WATER ON THE PHOTOSYNTHESIS OF HYDROGEN CHLORIDE

Sir:

In the last few months several papers have questioned the necessity of having water vapor present in order to bring about the photochemical union of hydrogen and chlorine in visible light [Rodebush and Klingelhoefer, THIS JOURNAL **55**, 130 (1933); Kimball and Eyring, *ibid.*, **54**, 3876 (1932); Allmand and Craggs, *Nature*, **130**, 927 (1932)]. Coehn and Jung [*Z. physik. Chem.*, **110**, 705 (1924)] reported several years ago that the reaction would not proceed if the water vapor pressure was reduced below 10^{-7} mm., and the maximum rate was not attained unless the water vapor exceeded 10^{-5} mm. In order to test this observation it is obvious that great care must be taken to prevent the accidental entry of sufficient water to cause the reaction to go. The most certain method is to carry out the experiments with the entire reaction vessel at such a temperature that the equilibrium value for the water vapor pressure is within the desired limits. We have performed such experiments at various temperatures between 145 and 200°K. and we find no evidence of the falling off in the rate such as reported by Coehn and Jung. If we had confirmed their results, there should have been a marked decrease in the rate between 160 and 177°K. In a recent note Baker [*Nature*, **131**, 27 (1933)] claims to have demonstrated the effect of water on this reaction as a lecture experiment. As he used phosphorus pentoxide to dry his gases the results he observed must have been due to inhibitors introduced by this reagent. We feel that our results show definitely that water vapor has no effect on the rate of photosynthesis of hydrogen chloride.

In our experiments the reaction vessel was a Pyrex glass bulb placed in a lead block provided with a Pyrex window. This ensemble was suspended in a Dewar vessel and cooled by means of liquid air and a cold air blast. Resistance thermometers wound on the reaction vessel and

the lead block permitted accurate measurements of the temperature. In the temperature range covered, liquid or solid chlorine was present in the reaction vessel and therefore the rate could be followed by observing the pressure change.

At the present time we are investigating the rate law over the temperature range mentioned above. Preliminary results indicate that the dependence on the light absorbed changes from the first power to the square root as the temperature is lowered.

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NEW BOOKS

Hundert Jahre Liebigs Annalen der Chemie. (One Hundred Years of Liebig's Annalen der Chemie.) By RICHARD WILLSTÄTTER. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany, 1932. 12 pp. 14 × 22 cm.

The appearance during December, 1932, of the 500th volume of Liebig's *Annalen der Chemie* is a significant event in the life history of our science. This periodical, founded by Liebig just one hundred years ago, has had in the past as editors a succession of the great organic chemists of Germany—Wöhler, Kopp, Hofmann, Kekulé, Erlenmeyer, Volhard, Fittig, Von Baeyer, Wallach, Fischer, Graebe and Zincke. Today its editorial board consists of Willstätter, Wieland, Windaus and H. Fischer—every one of them a Nobel Prize laureate. In the pages of the *Annalen* are to be found a large proportion of the great classics of organic chemistry. Its five hundred volumes constitute substantially a history of the development of that science.

What other scientific journal has so inspiring a past and so brilliant a present!

ARTHUR B. LAMB

An Introduction to Chemistry. By FRANK B. KENRICK, Professor of Chemistry in the University of Toronto. The University of Toronto Press, Toronto, Canada, 1932. viii + 434 pp. 33 figs. 15 × 23 cm. Price, $3.00.

Not since Ostwald's attempt, a quarter of a century ago, to account for the fundamental laws of chemistry without the use of the atomic theory, has appeared a more interesting and consistent development of the principles of the science from actual laboratory observations than in "An Introduction to Chemistry" by Professor Kenrick. It is difficult to believe that in these days elementary students will "struggle" (to use the author's own word) with the labored and involved presentation of the subject, which is necessary when all terms and conceptions which are not rigidly defined by experiment are abandoned. It is equally difficult to believe that teachers will consider that a student can afford the time to master, for example, one hundred and forty-five difficult pages, in order to get the distinction between mechanical mixtures, solutions and pure substances. In short, to quote directly from the preface, "This will not be found to be a 'teachable' book; a teachable book must be a learnable book, and that is a most danger-