

CHEMISTRY

Chairman: JOHN H. BILLMAN, Indiana University

R. G. LARSON, Valparaiso University, was elected chairman for 1954.

ABSTRACTS

The Metalation of Alkyl Sulfones. WILLIAM E. TRUCE and KENNETH R. BUSER.—In view of the lack of information on the metalation of dialkyl sulfones, the action of organometallics on dialkyl sulfones is currently under investigation in this laboratory. This constitutes a preliminary report on our work in this field.

Dimethyl sulfone has been successfully metalated with both methylmagnesium iodide and ethylmagnesium bromide. The resultant methane-sulfonylmethylmagnesium halide has been added to benzophenone and benzaldehyde. On hydrolysis, the adduct with benzophenone gave β -hydroxy- β , β -diphenylethyl methyl sulfone, while the adduct with benzaldehyde gave β -hydroxy- β -phenylethyl methyl sulfone.

For the metalation and the subsequent reaction of the metalated derivative, three different solvents, ethyl ether, benzene, and anisole, were tried. Of these, anisole gave the best results.

The superiority of anisole as a solvent is probably mainly due to the fact that both dimethyl sulfone and the metalated derivative appear to be more soluble in anisole than in either benzene or ether and also to the higher reaction temperature possible with anisole than with either of the other solvents.

Put S. A. in those demonstration lectures! ERNEST H. GHERKIN, Indiana University.—Our present efforts to increase the number of chemistry majors will fail unless we can hold the students beyond the general chemistry course.

The problem of arousing and nourishing a growing interest on the part of the student demands considerably more of the lecturer than a mechanical recitation of facts. Enthusiasm is the watch-word and after that come such traits as absolute fairness, a ready sense of humor and as good showmanship as can be developed.

Variety is not only the spice of life, it is life, and to this end the lecturer should develop a bag of tricks such as short inspirational quotes from literature, student participation, the old hair tonic formula, etc.

The preparation and properties of ethyl 4-methyl-2-quinolone-1-acetate. D. J. COOK and R. S. YUNGHANS.—The condensation of 4-methylcarbostyryl with ethyl chloroacetate has been shown to give ethyl 4-methyl-2-quinolone-1-acetate by comparison of the above product with the known product which had been prepared from ethyl phenylglycine and diketene after ring closure of the substituted acetoacetanilide.

Chloracetamid when condensed with 4-methylcarbostyryl follows the same method of addition while the addition of ethyl chlorocarbonate gives

an addition product which easily hydrolyzes to the original 4-methylcarbostyryl.

The oxidation of 4-methylcarbostyryl and ethyl 4-methyl-2-quinolone-1-acetate with selenium dioxide in diphenyl ether has been found to proceed in good yields. Ethyl 4-formyl-2-quinolone-1-acetate can be oxidized to the 4-carboxy derivative by oxidation with sodium dichromate and subsequent saponification of this acid-ester gives the diacid.

Some evidence is indicated that selenium dioxide oxidation of ethyl 4-methyl-2-quinolone-1-acetate might give along with the principal product, ethyl 4-formyl-2-quinolone-1-acetate, some ethyl 4-formyl-2-quinolone-1-glyoxylate.

Sulphuric acid. D. A. DAVENPORT, Purdue University.—Even a cursory examination of the widespread uses of sulphuric acid and oleum in organic chemistry indicates that in any one case sulphuric acid may be acting in one or more of a number of capacities. Proton availability, sulphur trioxide availability, and ionizing power seem to be particularly important. By using our knowledge of the inorganic chemistry of sulphuric acid solutions it is possible to account qualitatively, and at times semi-quantitatively, for its reaction with organic compounds. This is illustrated by reference to aromatic sulphonation, deuteration and desulphonation and also by the reaction of sulphuric acid and sulphur trioxide with ethylene-type double bonds.

Metallic Complexes in Liquid HF. ALAN F. CLIFFORD, Purdue University.—Evidence is presented for the existence in liquid HF of complexes of Co(II), Co(III), Ni(II), Cu(II), Zn(II), Hg(II) and Pb(II). In particular the system Ni(II)-CH₃CN is discussed and evidence presented for the existence of the ions NiCH₃CN⁺² and Ni(CH₃CN)_{1+x}⁺². The instability constant for the former was found to be 1.7×10^{-3} .

The prediction of the shapes of inorganic ions and molecules from simple electrostatics. ALAN W. SEARCY, Purdue University.—The shapes of ions and molecules are predicted to be the most symmetrical arrangements possible for the pairs of valence electrons, whether bonding or non-bonding. The bond directions predicted agree in most cases with observation to within a few degrees. The significance of the good general agreement to chemical theory is discussed.

Pyrrolidine-copper complex ions. ALVIN W. MEIBOHM and LARRY P. SCHIEB, Valparaiso University.—Copper can be determined colorimetrically by use of pyrrolidine. The blue color is stable, reaches its maximum absorption at 600 mμ, obeys Beer's law and is independent of excess amine. An ammonium nitrate concentration of 2.0 M should be present to prevent precipitation of cupric hydroxide. The reagent is 1.3 times as sensitive as ammonia.

Ions with a pyrrolidine-copper ratio of 1:1 and 4:1 were found to be present in solution.