

## ADDITIONS AND CORRECTIONS

1926, VOLUME 48

**Reduction Equilibria of Zinc Oxide and Carbon Monoxide**, by Charles G. Maier and Oliver C. Ralston.

P. 364. The authors of this paper write as follows: "Dr. Charles Rosenblum of the University of Rochester has kindly called our attention to an error in our paper on 'Reduction Equilibria of Zinc Oxide and Carbon Monoxide' appearing in the JOURNAL, Vol. 48, p. 364, 1926. The value of the  $T^2$  coefficient for  $\Delta C_p$  in Table III, p. 370, is incorrect because of an algebraic error in the summation and should be  $-14.73 \times 10^{-7}$  instead of  $+22.47 \times 10^{-7}$ . This produces a small change in the value of  $I$ , which now becomes  $-60.305 \pm 0.091$ , and the standard free energy equation on this basis is  $\Delta F^\circ T = +47,390 + 4.46T \ln T - 1.56 \times 10^{-8}T^2 + 2.455 \times 10^{-7}T^3 - 60.305T$ . The free energy of formation of zinc oxide at 298°K. is  $-75,720$ . Other values depending upon these figures will in consequence be subject to a small correction which, however, in general will be less than the experimental error of the determinations, and well within the figure of 300 calories probable error which we estimated in this work."

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**The Preparation of Crystalline *d*-Talonic Acid**, by Oscar F. Hedenburg and Leonard H. Cretcher.

P. 479. In line 7 instead of "gulconic" read "gulonic."

**Structure of a Protective Coating of Iron Oxides**, by Richard M. Bozorth.

P. 975. The last line of Table V should read, "Thickness of  $\text{Fe}_2\text{O}_3$  layer,  $2 \times 10^{-8}$  cm.; thickness of  $\text{Fe}_3\text{O}_4$  layer,  $2 \times 10^{-4}$  cm."

**Reciprocal Solubility of the Normal Propyl Ethers of 1,2-Propylene Glycol and Water**, by Henry L. Cox, William L. Nelson and Leonard H. Cretcher.

P. 1080. In line 8 instead of "low" read "high."

**Fluorescein and Some of its Derivatives**, by W. R. Orndorff and A. J. Hemmer.

P. 1277. Table I. In the first line of data, Col. 3, instead of " $F + 2\text{CH}_3\text{OH}$ ," read " $F + \text{CH}_3\text{OH}$ ."

In the seventh line of data, Col. 3, instead of " $F + 2\text{CH}_3\text{CO}$ ," read " $F + \text{CH}_3\text{COOH}$ ;" Cols. 7 and 8, instead of " $\text{CH}_3\text{CO}$ ," read " $\text{CH}_3\text{COOH}$ ."

In the eighth line of data, Col. 3, instead of " $1\text{CH}_3\text{CO}$ ," read " $\text{CH}_3\text{COOH}$ ."

In the sixteenth line of data, Col. 3, instead of " $F + 2\text{C}_6\text{H}_5\text{NO}_2$ ," read " $F + \text{C}_6\text{H}_5\text{NO}_2$ ."

P. 1278. Table II. In the third line of note *b*, instead of "This carbonate . . .," read "This carbamate . . ."

**The Composition of Corn Wax**, by R. L. Shriner, F. P. Nabenhauer and R. J. Anderson.

P. 1291. Last paragraph. "CORRECTION.—The credit for supplying the acids used for comparison by Dr. R. L. Shriner should be given to others. The behenic acid was prepared by Dr. R. R. McGregor and the *n*-eicosanoic acid was a synthetic product prepared by Dr. J. R. Johnson.

CARL R. NOLLER."

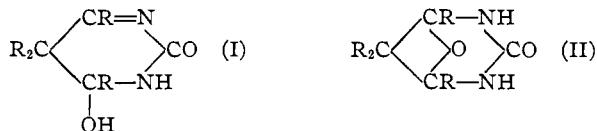
**Researches on Thiazoles. II. The Nitration and Reduction of 2-Mercaptobenzothiazole and its Substituted Derivatives**, by Jan Teppema and L. B. Sebrell.

P. 1779. Third paragraph, second line, instead of "6-phenyl-2-mercaptobenzothiazole," read "6-nitro-2-phenylbenzothiazole."

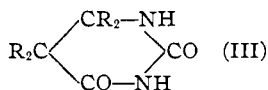
**Action of the Grignard Reagent on Alkylbarbituric Acids**, by Arthur W. Dox.

P. 2275. Addendum supplied by the author as follows:

In a recent paper of the above title<sup>1</sup> the writer showed that 5,5-dialkylbarbituric acids react with the Grignard reagent to form stable crystalline products. In the case of diethylbarbituric acid and ethylmagnesium bromide a complete analysis of the product gave the empirical formula  $C_{12}H_{22}O_2N_2$ . With barbituric acids or Grignard reagent containing other alkyls the nitrogen determinations indicated analogous products. The formula represents a product which would result from a reaction between one mole of the barbituric acid and two moles of Grignard reagent with loss of one molecule of water. On the assumption that two carbonyls had reacted and that the water could be split out in either of two ways, two structural formulas were tentatively proposed:



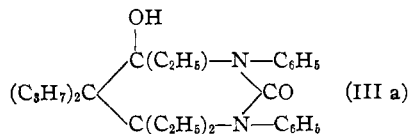
A third possibility occurred to the writer at the time but was not mentioned because it seemed less in conformity to the usual Grignard reactions. This consists in the reaction between a single carbonyl and two molecules of Grignard reagent with loss of one molecule of water, giving a product (III) with the same empirical formula:



It now appears that precedent is to be found for reaction products of Type III, since anhydrides and lactones react in this manner. Bauer<sup>2</sup> obtained dialkylphthalides (IV) and Houben<sup>3</sup> dialkylchromenes (V) by reaction between a single carbonyl and two molecules of Grignard reagent.



In the case of 1,3-diphenyl-5,5-dipropylbarbituric acid, where three Grignard reagent molecules reacted and one molecule of water was split off, the product, if represented by Type III, would be



The constitution of these substances still remains to be determined, but in the light of Bauer's and Houben's work Type III affords a fairly satisfactory explanation of the reaction except that hydrolysis would be expected to yield an amine instead of the ketone actually obtained.

ARTHUR W. DOX

**Magnesium Diethyl and its Reaction with Acetyl Chloride**, by Henry Gilman and F. Schulze.

P. 2329. In lines 9 and 18-19 instead of "dimethylethylcarbinol" read "methyl-diethylcarbinol."

<sup>1</sup> Dox, *THIS JOURNAL*, **49**, 2275 (1927).

<sup>2</sup> Bauer, *Ber.*, **37**, 735 (1904).

<sup>3</sup> Houben, *Ber.*, **37**, 489 (1904).