

The literature of the subject is voluminous, but scattered, and often fragmentary and conflicting, and some of the most important contributions are in French or German or are in rare books and periodicals. The present work, which has been written in the spare hours of a busy life, makes no pretension to being a complete review of this literature; but it is believed that nearly everything of importance has been included, and, in the case of inaccessible or very important articles, full abstracts, or even extended quotations have been made, without hesitation.

In closing, the author wishes to acknowledge the valuable and most loyal aid of his several research assistants, whose names appear with his own on the title page. He also wishes to express his indebtedness to, and admiration for, the work of numerous investigators in the same field. It is impossible to name them all without repeating the bibliography; but especial reference must be made to the work of Dr. J. S. Haldane, F. R. S. of Oxford University, England; Professor W. S. Parr of the Engineering Experiment Station of the University of Illinois; and Dr. H. C. Porter of the United States Bureau of Mines, and to the research chemists working under their guidance.

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