

THE EFFECT OF HEAT UPON CLAYS

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The Effect of Heat Upon Clays by A. V. Bleininger

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A. V. BLEININGER

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HEAT UPON CLAYS**

The Effect of Heat Upon Clays

BY

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PREFACE

"The Effect of Heat Upon Clays" is a subject of vital interest to every clayworker. 'Tis said there are no two clays alike. Each clay has properties peculiar to itself, hence to insure the best results in product and economy in manufacture, each clay must be studied carefully and treated in a manner best adapted to develop the highest grade of ware, whether it be brick, tile or pottery, at the lowest cost. With a view of aiding clayworkers to solve some of the many difficult problems incident to the variation in clays, Prof. A. V. Bleininger some years ago prepared a treatise on this subject for THE CLAY-WORKER, which was published in serial form. The subject is of such prime importance that the matter has been revised by the author and is now presented in book form for library and reference purposes.

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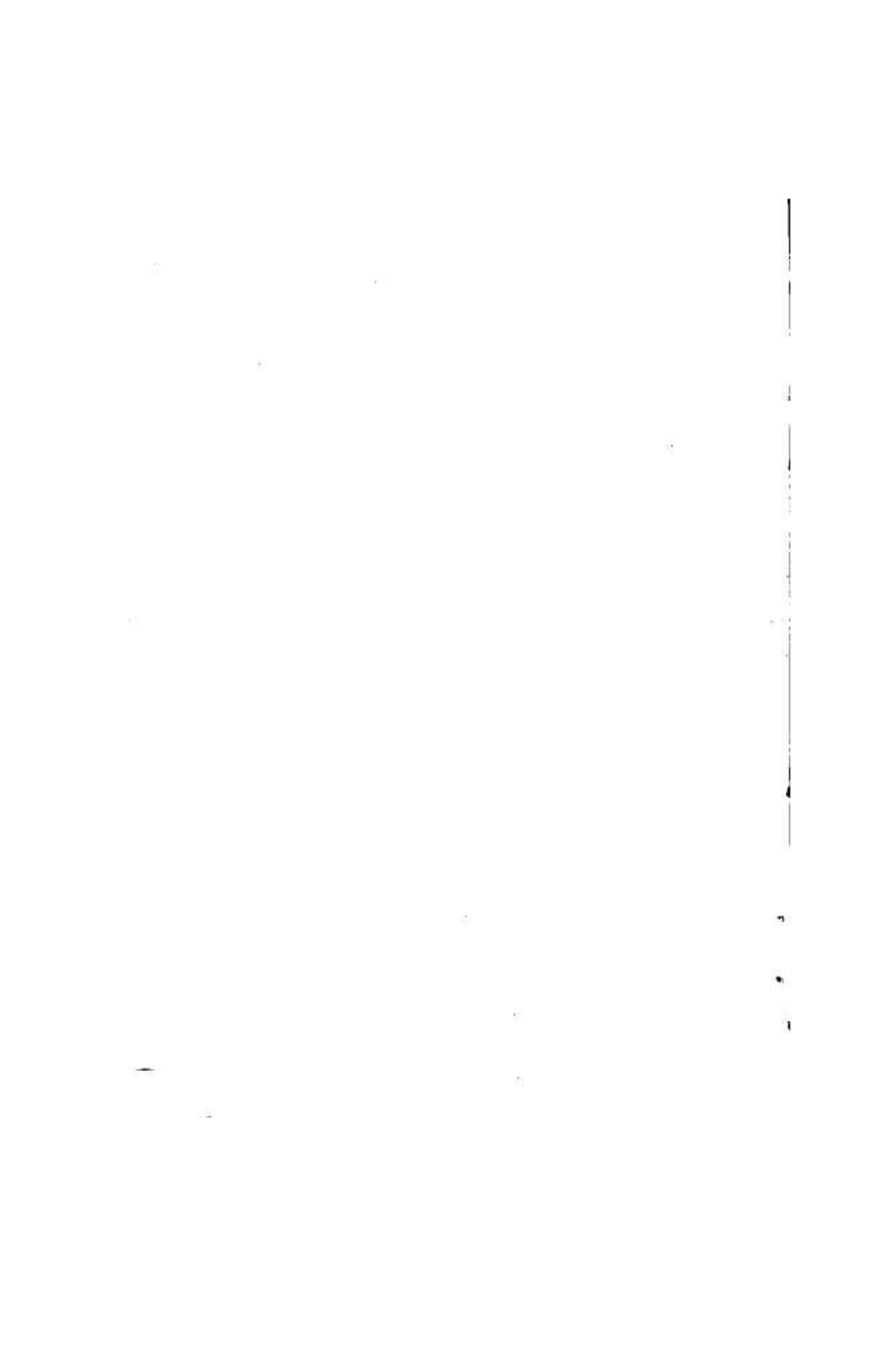
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CHAPTER I.—CONSTITUENTS OF CLAY.

THE FINAL VALUE of clay products depends upon the success with which the operation of burning has been carried out. Burning changes the raw clay into a hard, stone like material, useful in many forms. The heat applied in our kilns does work upon the clay just as it does work in converting water into steam to be transformed into power in the steam engine. This work is partly chemical and partly physical.

In order that we may be able to study the effect of heat upon clay, it becomes necessary that first of all we examine its make-up, just as it is necessary to know the structure of a machine or apparatus before we can speak intelligently about the operation of the same. Without going into a lengthy geological discussion of the origin of clay with which we meet so often, at almost every convention of clayworkers and in every clay report, we shall now examine briefly the mineral

constituents of all clays, for it must be remembered that clays are complex rocks made up of a considerable number of minerals, each of which contributes its share to the total character of a certain material.

An examination of the anatomy of a clay reveals the following constituents:

1. Clay substance.
2. Quartz.
3. Feldspar.
4. Mica.
5. Iron compounds.
 - a. Ferric oxide.
 - b. Ferrous oxide.
 - c. Ferrous carbonate.
 - d. Ferrous sulphide.
 - e. Ferrous silicate.
6. Lime compounds.
 - a. Lime carbonate.
 - b. Lime sulphate.
7. Sulphur.
 - a. Sulphides.
 - b. Sulphates.
8. Carbon.
 - a. Vegetable matter.
 - b. Bituminous.
 - c. Fixed carbon.
9. Gases.
 - a. Water.
 - b. Carbonic acid gas.
 - c. Sulphurous acid.
 - d. Sulphuric acid.