

RECENT DEVELOPMENTS IN PAINT TECHNOLOGY.*

By Henry A. Gardner.†

Lumber and Its Relation to Paints.—The proper choice and treatment of lumber is one of the most important problems which the builder as well as the painter has to face. When about to build a dwelling, barn, or other structure made principally of wood, the question is sure to arise in regard to what variety to select so as to get the maximum service and money value. The locality in which the structure is to be built must often have a bearing upon this question. While it is true that the painting of each type of wood demands the special consideration of the painter, it is also true that the study of paints for wood protection points toward the production of a paint that will give satisfactory results under all conditions and on all grades. It is the writer's opinion that a paint may be made that will be perfectly well suited for the preservation of every species of wood, provided the paint is properly treated in the hands of the skilful and intelligent painter, who can produce lasting results on almost every type, by varying the proportion of thinners and oil in the various coats. The painter who uses the same paint on soft pine and again on hard pine, without making a special study of how to reduce the priming coat for the hard pine, will be likely to get inferior results on the latter. In case of failure, the natural impulse is often to place the blame upon the paint, whereas the real responsibility may rest upon the painter's lack of knowledge.

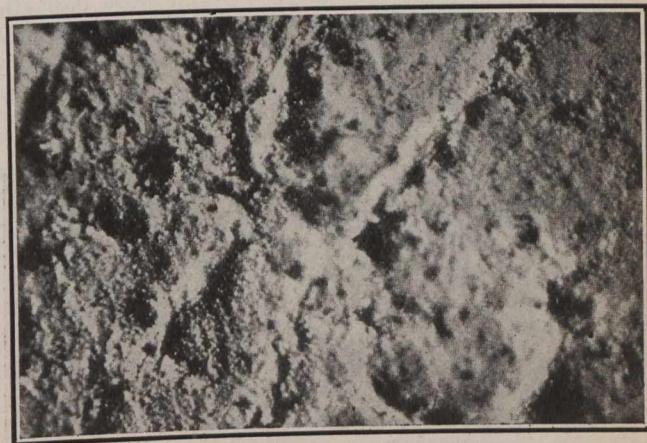
Signs of Paint Failure.—Those who are responsible for the care and maintenance of property the familiar with the condition of surface presented by almost all wooden buildings or structures which have been improperly painted with inferior paints. "Chalking" or "flouring" are terms used to describe the condition of a paint surface which has deteriorated within the paint film. The formation of minute fissures generally spoken of as "checking," as well as the effects best described as cracking, scaling, peeling and blistering, are other signs of failure which cause paint coatings to present an unsightly appearance, and which point inevitably either to the use of improperly made paints or to improper application. The cause of these conditions is not difficult to understand when even a brief study of the character of the materials entering into the composition of a paint has been made. It is, however, a fortunate circumstance that the proper admixture of different types of pigments enables us to correct the strong tendency exhibited by special pigments to rapidly deteriorate in an oil film. This point will be more fully discussed in a later paragraph.

Requisites of a Good Paint.—Progressive manufacturers are aiming to produce a paint which will show, under the widest range of conditions, good hiding power, adhesiveness, freedom from internal strains, permanency of color, relatively high imperviousness to moisture, sufficient elasticity to prevent scaling or cracking when subjected to expansion or contraction, and freedom from the chemical action which results in deep checking or excessive chalking. Such a product as this cannot be obtained, in the writer's opinion, by the use of any one pigment in linseed oil. In order to meet all the demands as stated above, there should be in an economical and durable paint a proper percentage of the various pigments which, united, will tend to correct

each other's faults, and thus produce a durable paint coating of maximum efficiency.

The Composition of Paints.—As is well known, a paint is a mixture of one or more pigments and a vehicle which acts the part of the spreading and binding medium. Up to the present time the vehicle portion of paints has generally been made of linseed oil, admixed with some volatile thinner, such as turpentine. The subject of oil and plant vehicles will be discussed more fully later on.

Physical Properties of Pigments.—The pigment portion of a paint for use on barns and farm buildings may, if desired, be composed of properly selected iron oxides or other colored pigments, even containing in some cases a moderately high percentage of silica, clay, or other inert materials, and give perfectly satisfactory results. For the preservation and decoration of dwellings, however, the pigment portion of paints is generally made as a whole or in part of the most expensive white pigments, such as white lead and zinc oxide. The relative values and properties of these white base pigments will now be taken up.



"Chalking."—Type of Decay Exhibited by Improperly Made Paint.

White Lead.—White lead, either of the corroded or sublimed type, is perhaps the most generally used of all the white pigments as a paint base. Corroded white lead is a basic carbonate of lead, while sublimed white lead is a basic sulphate of the same metal. Both of these types are white and admirably adapted as painting materials. They take relatively the same amount of oil and spread easily, producing paint films which are highly opaque and which, therefore, hide efficiently the surface upon which they are placed. Sublimed white lead is a relatively finer pigment than corroded white lead, and seems to show a tendency to chalk to a greater extent upon exposure to the weather. Corroded white lead is more alkaline, however, than sublimed white lead, and when used alone with linseed oil generally shows a tendency to chalk to a considerable extent in a short time and to show deep checking, thus permitting the admission of moisture. The alkaline nature of this pigment produces considerable action upon certain tinting colors and results in fading or darkening when mixed with delicate greens or blues.

The use of white lead has been condemned in some parts of this country, as well as abroad, because of its alleged poisonous properties. While it is true that lead poisoning may occasionally occur in some factories where the workman and his conditions are not properly safeguarded, it is, nevertheless, a fact that lead poisoning very seldom occurs among painters of experience and cleanly habits. Carelessness in mixing white lead is, fortunately, a practice almost obsolete among painters. The use of

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† Assistant Director, Institute of Industrial Research, Washington, D.C.