PAINTS-HISTORY AND PROPERTIES*

By Robert Job, A.B.

Vice-President, Milton Hersey Company, Ltd., Montreal

FAR back into history dates the use of paint for decorative and for preservative purposes; but in the brief time at our disposal we will consider only some of the most prominent types of modern paints and their most important properties.

Paint is described, in a general way, as the mixture of finely divided particles of solid matter called "pigment"



Fig. 1—White Lead Paint, Showing Chalked Condition

in a liquid called the "vehicle." Asphalt paint is merely solid asphaltum dissolved in benzine or some other vehicle.

The pigment functions to hide the surface over which the paint is applied to resist the action of weather and wear, and to give color. The selection of the most suitable pigment or combination of pigments depends very

largely upon the relative importance of these functions under the conditions for which the paint is intended to be used.

The vehicle functions as the carrying and cementing body, and dries and binds together the solid particles of pigment in somewhat the same way that Portland cement and water unite sand and broken stone to form concrete.

The types of paints best known are three, differentiated by the vehicles used to carry and cement their pigments. The most important are the oil paints; but the enamel paints are now used quite extensively and cold water paints are daily becoming more popular for interior walls.

Asphalt paint is really a varnish. The varnishes differ from the paints in that they do not ordinarily have a pigment; though occasionally a little is added to give color, and we then approach what is known as "enamel paint."

The oil paints consist of pigment ground in a paint mill with oil as a vehicle, to which is added a small proportion of Japan drier to cause a fairly rapid solidification when the paint is applied.

Linseed oil, which is pressed from flaxseed, is the best known vehicle used in the oil paints. Until recent years, it was employed for all the better paints of this type, but it has the defect that a film of it is readily penetrated by water. Other vehicles, as substitutes and improvements, were diligently sought, because of this unfortunate non-waterproof property of linseed oil. Among others, fish oil, Soya bean oil, and corn oil have been carefully tested and successfully used under certain conditions, but the greatest advance has been made by using China wood oil.

China wood oil, when properly manufactured, is very resistant to water, and it is largely employed at the present time in the manufacture of both paints and varnishes.

The enamel paints consist of pigment ground in a

vehicle of varnish, which consists ordinarily of gum or resin, oil and turpentine. The evaporation of the turpentine leaves the gum and oil as a strong cementing medium for the pigment. Some of these enamels are very serviceable and resistant to weather, and the coating dries with an excellent gloss.

Cold water paints consist of pigment combined with gum, casein, etc., that dissolves in water to form the vehicle at the time of application. The evaporation of the water leaves the gum to serve as the cementing medium for the pigment. Some paints of this type have very fair weather resistance.

White lead pigment is one of

the oldest and best-known. It was originally made from pieces of metallic lead called "buckles" that were corroded to form the white powder termed "basic carbonate" and known as "white lead." This process is largely used at the present time, though other methods have been adopted to shorten the period required for manufacture and to im-



Fig. 3—Short-Lived Coarse-Particled Pigment Paint

After Same Exposure

Fig. 4—Long-Lived Fine-Particled Pigment Paint

prove the product. White lead, as first produced, is purified, dried and powdered before being sent to the paint mill.

White lead paint, when the pigment is properly ground with an oil vehicle of good grade, has very great covering and hiding qualities. Unfortunately, it also has certain disadvantages. It is very poisonous and on exposure to weather it has the property of "chalking." When one's hand is rubbed over a board which has been painted with it for a year or more, the hand becomes coated with a white powder.

Chemical action between the white lead and the oil causes the change in a white lead paint film; and this

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