a particular treatment whereby it loses its raw or native qualities, and becomes converted into a different body in many of its characteristics. The boiling process consists in heating the taw oil to a temperature of over 500' Fahr., wher by a lot of water that is inherently present in the oil is expelled. The oil is then either oxidized by passing steam or air through it, or it is boiled with some sort of a mineral such as litharge (an oxide of lead), borate of manganese, calcium sulphate of zinc, or some other bady which will react on the fatty acids of the oil to oxidize them and thereby change the fluid from a limpid oil to a viscous varnish. (To illustrate the difference between an oil and varnish, drop a drop of each fluid on a piece of glass or porcelain, and note the difference in the drying power ; the oil, if in the raw state, will remain fluid a very long time before it shows any signs of drying or hardening, and then it is only on its exterior surface that the drying occurs, forming a skin thereon ; whereas, with the spot of varnish, that begins to dry and harden immediately it is exposed to the air., Now, the object of boiling the oil has been to render it of a more drying nature-raw oil takes three months to dry when exposed to the air, but boiled oil does not take as many weeks. The pigment of a paint consists of a dry powder color which imparts the tint to the paint; this is ground up in the oil vehicle, whereby each dry particle of paint becomes coated with a layer of drying oil, whence such mixtures, when spread out thinly on a surface, will dry to form a thin layer or coat of paint. If the mixture of pigment and oil is not suffi-ciently siccative, the painter mixes in some "driers," which enables the com-pound to dry at a quicker rate. The addition of turpentine to a paint is made so as to render the paint of a thinner or more fluid consistence, whereby the paint These details are of necessity known to most painters; but this explanation is needed here, so as to render perfectly comprehensible what is to follow.

Now, apart from the chemical nature of the pigment used-whether it be a sulphide, oxide, chromate, silicate, car-bonate, etc., of a metal-it will be noted from the above that the nature of the "driers" mixed with the paint has also to be reckond with, and, lastly, the mixture of the turpentine. Consequently a "pot of paint," or "coat" of ditto, is not a simple compound. Quite the opposite, in fact; for, although the oil of turpentine used is always of the same nature, putting out of consideration for the moment the idea of adulteration or substitutes, the chemical composition of the pigment is not always the same; neither is the drier always the same. We shall have occasion to consider these points in other articles. At present we will confine attention to the loss of brightness, or "sinking in," as it is called, of colors.

Let us consider the nature of a coat of paint. It consists of pigment, an oil-varnish (i.e., the briled oil), drier and turps. When this layer is exposed to the air (that is, when the painter has ceased spreading it with his brush, the oil vehicle begins to become decom-posed, whereby it is separated with its

components, oleic, palmate, etc., acids, and at the same time the base of glycerine, to which these components are attached in the undecomposed oil, is eli-minated. As these chemical cha. ges occur, the atmospheric oxygen seizes on the olem and converts it into huolem, which is a solid, tough, clastic trans-parent body. The other fatty parts of the oil are more or less absorbed by the pigments, or else they are pushed to the surface of the coat of paint (as will be explained infra). The glycerine, how-ever, does not become absorbed.

As the exterior surface of the coat of paint becomes oxidised as above ex-plained, the particles of solid inoleia-sink to the undermost parts of the coat paint, and thus a fresh layer of the oil vehicle is pushed up to the exterior surface of the coat of paint, to be simi-larly converted by the atmospheric oxy-gen into solid linolein. When all the oil has become thus converted, we can con-ceive that as each particle of solid linolein sank down, the particle of pigment was left denuded of a pellicle, or covering of oil. Also, we can concerve that the in-terstices between the particles of solid linolein and those of the pigment become filled with air, and also with the glycer-ine that has been eliminated from the oil by the decomposition it has undergone.

Now, glycerine is a greedy absorber of moisture, and, as a consequence, side by side with the transparent shining particles of solid linolein there are particles of water or moisture. We can now conof water or moisture. We can now con-ceive the coat of paint to be in this condution. First, there is most of the oil next to the surface on which the paint is laid ; above this we can conceive its pigment ary particles almost uncovered with oil, and side by side, or permeating the mass, is a quantity of aqueous particles. Now, the color of the pigment is, of course, dull, or bereft of sparkling brilliancy, and it duil, or oerent or sparking orninancy, and it is the object, or should be, of the oil ve-hicles to clothe each particle of pigment with a layer of shining oil. This, how-ever, is not the case for the conception above foreshadowed. Now, when all the oil has become converted into solid transparent linolein, this linolein will rise to the surface if it has not become too hard and solid (that is, if it has been quickly formed); but as it rises above the pigment particles

they sink down, and becoming mixed with the glyceri e and the water it has im-bibed, we have a layer of transparent linolein above a layer of pigment, glycer-ine and water. Now, the oxidation of this inolem still proceeds, and will proceed until it is of a uniform tough skin. To enable it to do so its absorption of oxygen proceeds, and as this oxygen unites the layer of glycenne and water that is im-prisoned by the superimposed skin of linglen, the glycerne becomes oxidised to a glyceride, and which more or less permeates the skin of linolein, and thereby causes the latter to lose its transparency and become opaque; consequently the surface of the coat of paint s bereft of brilliance, and exhibits a dull appearance.

It will naturally occur to the thoughtful reader that what is wanted to prevent this sinking in of the pigment is either the incorporation of some solid transparent body that will not allow the solid pigment to sink through the oil, or else some pro-cess or material that will quickly convert the oil vehicle into solid transparent linolein, for if the oil be converted into this substance before the pigment has had time to settle away from it, the linolein as it dries will inclose the particles of pigment in it, and slowly form a trans-parent layer of linolein around each particle of pigment (the glycerine that has been eliminated would in this case be driven to beneath the pigment and linolein, with what effect we shall see in a future article). Now, if a resin be incorporated with the oil, or a varnish be used as the binding vehicle for grinding up the pigment in, then the colors will not sink in, because side by side with each particle of solid op aque pigment there would be a particle of solid transparent resin which would reflect the light, and consequently cause the coat of paint to exhibit a bril-liant appearance. Paint grinders, therefore, should grind up their pigment in an oleo-resinons vehicle. There is an addioleo-resinons venice. There is an audi-tional reason why such a vehicle should be used, because a resin will absorb gly-cerine, and thus, instead of fluid glycerine and water being beneath a coat of paint, which is often the cause of blistering and peeling off of paint, the coat of paint would be one solid homogeneous mass from exterior to the undermost surface.-H. Standage, in the Building News.

CHARLES HUGHES Milton West. Ont. -All Kinds of Municipal Work CURBING, CROSSING, CHANNELLING, FLAGGING, ETG.

Rough Heavy Lime-stone for Breakwater Cribbing, Etc.)

Credit Valley Grey Dimension, any size, Sills, Steps, Coursing, Bridge Blocks, Engine Beds. ---- Estimates Given for All Kinds of Cut Work ----

BELLHOUSE, DILLON & CO., 30 St. Francois Xavier St., Montreul Sole Agents for the Compagnie Generale des Asphaltes de France (Rock Asphalt).



Is the Highest Grade Artineial Portianu Cement and the Leos the All Class Work. Has been used largely for Government and Municipal Works. TO BE HAD FROM ALL CANADIAN DEALERS

C. I. de Sola, Manager in Canada 🚆 180 St. James Street, MONTREAL

MUNICIPAL DEBENTURES wanted for foreign clients. We can place Debentures di-rect with foreign clients without charge to municipalities.

: : : : Commission allowed to persons introducing new business : : : :

ÆMILIUS JARVIS & CO, Stock and Bond Brokers. Investment Agents. 23 King St. West, TORONTO ELECTRIC RAILWAY BONDS PURCHAGED.

STOCK EXCHANGE ORDERS PROMPTLY EXECUTED