

The addition of zinc—at least a small proportion—does not generally affect the durable qualities of paint. Pure zinc paint alone gives a very hard, snow-white, porcelain finish. For inside white it is generally employed; but for outside work it is too hard and flakes off. Our painters, however, tell us that, while pure lead and pure ocher gives a more lasting combination, the paint may be cheapened by the addition of a little zinc; and this will, at the same time, give it a valuable quality in point of hardness, and prevent inclination toward chalking off. We are now using on our hives a combination made up as follows:  $\frac{1}{3}$  pure lead,  $\frac{1}{3}$  pure zinc,  $\frac{1}{3}$  genuine French ocher, mixed in pure unboiled or raw linseed oil. Such a combination is cheaper than a great many of the so-called mixed paints on the market—cheaper because it goes further, and because it will last much longer. It has all the valuable qualities of the zinc, the ocher, and the lead; and the resultant shade is a light straw color. For beehives it is undesirable, on account of melting down the combs from the sun's heat, to use dark shades. Theoretically, snow-white paint would be preferable; but in actual practice the light straw yellow will do about as well as the white.

Now a word about buying paints. It is to be regretted that so many manufacturers of white paint label their paint "Strictly Pure." If you consult any practical painter he will put you in possession of tables containing analyses of all the paints in the market—analyses that show the amount of adulteration and pure lead sent out by each manufacturer. If dealers and consumers alike could only understand that pure lead, or pure lead and zinc, is a great deal cheaper in the long run, they will not try to be buying their paint wherever they could do so for the lowest figure. It is the consumers who have to suffer, and some cheap paints are very dear at any price.

Besides the adulterations which do not in the least add to the good quality of paint, fish and mineral oils are used instead of pure linseed oil. Painters generally agree that there is nothing like pure linseed oil for paint. All other oils are practically worse than nothing. They are a snare and a delusion, and only reveal the true nature of the paint after it has been on the wood for a few months.

Very fortunately there is a simple way of detecting adulterations in paint. Any thing but linseed oil can usually be detected by the smell. Fish oil has a very rank, sickening odor. Barytes and lime can usually be detected in the following way: Buy a small can of the lead

that you purpose using with your ocher or zinc, as the case may be. Scoop out a little of it and put it in an empty tin can; pour on top turpentine, mix thoroughly by stirring, and then allow this to stand for 24 or 48 hours. At the expiration of this time, pour off the top; and if barytes of lime is used you will find a sort of dry powder in the bottom of the can, that has failed to unite with the oil. This lime or barytes is a positive detriment; and the only reason it is put in is because it cheapens the lead. If, on the other hand, after making the test as above, you find no chalky residue in the bottom of the can, you may feel pretty sure that your lead is pure, or, at least, has nothing worse in it than an addition of zinc, which will not hurt it. Genuine French ocher, on the other hand, combines perfectly with the lead or zinc, and leaves no residue.

There is another very simple test, though perhaps not so positive in its results. Dip your thumb and finger into pure white-lead paste and rub them vigorously together for four or five minutes. If the paint is made of pure lead and linseed oil, or of pure lead, ocher, and linseed oil, a rubbing of the fingers for four or five minutes will still leave only a soft oily residue. If, on the other hand, the paint is adulterated with barytes or lime, two or three minutes rubbing will reveal a sort of dry powder between the thumb and finger. Linseed oil combines perfectly with lead, zinc, and ocher, but it will not combine with lime, barytes, or chalk, and hence the fraud is easily detected.

Perhaps we might state, while we are about it, that there are on the market what are called white and gray ochers. We would warn beekeepers to let these alone. The only reason they are called "ocher" is because the general public understand that ocher paints—at least the yellow ocher—is known to be durable when spread upon the wood. We have tested some white ochers; and while we could not tell exactly, we felt pretty sure they were made up of barytes, lime, and clay. Gray ocher is, perhaps, a little better; but it does not begin to have the qualities of the yellow ocher.

While we are about it, we might add that Venetian red also makes another durable body when combined with pure linseed oil. Its color however, is against it. You can get a very pretty and durable red by mixing pure French ocher and Venetian red, half and half. Such a red will not deteriorate into a dull brownish red, but will remain of a bright glossy color. We use such a paint on our outside winter cases, or on any thing that is not to be used for summer use. We also use it on hive-stands. The