

A good Copper Amalgam must possess the following properties, viz.: purity, cleanliness, plasticity, and quick-setting. To be pure, it must contain no other metal than copper and mercury—not even a trace. To be clean, it must not contain anything in the shape of oxides of either copper, mercury or any other metal, or any other substance whatever; it must be plastic and quick-setting so as to be easily manipulated.

As I said before, copper is an oxidizable metal, and, in connection with mercury, equally so. The action of water, air, and heat will oxidize it. The oxides so formed render the amalgam unclean, and injurious to its lasting qualities. They also tend to discoloration of the tooth structure, which does not occur with a perfect copper amalgam. We cannot prevent the surface of the filling becoming discolored when it comes in contact with the fluids of the mouth; this discoloration is necessary, and whenever we find a copper filling does not become black, it is an indication not to use it in that mouth, because disintegration is sure to take place.

At the time I presented the former paper upon this subject, I was under the impression that the more mercury that could be removed from the amalgam the better, "the more quickly it would set and the harder it would become." Other manufacturers and operators believe so still, and some of them make use of hydraulic pressure to squeeze out the mercury. I have since become convinced that this is unnecessary, that it interferes with the plasticity and sometimes with the setting, and also that extreme hardness is a decidedly objectionable feature in an amalgam. I have also found that when the amalgam contains so little mercury, more heat is required to render it plastic, that this increase of heat makes it unclean (oxidizes it, in fact) and retards the setting.

It was only after a great deal of experimenting that I discovered how to make a copper amalgam which would become plastic at a low temperature, and also set in a few minutes without the necessity of removing mercury. I bring about this result by a process of tempering.