

REQUIREMENTS OF A DESENSITIZING GUM. The gum in the etch or gum solution must fulfill two functions. It must be the type of material which is water-loving or "hydrophilic" so it will prefer water rather than ink on the press. Secondly, it must hold tightly to the surface of the metal in the non-image areas. The plate is wet continuously by the water fountain solution on the press. If the gum dissolved rapidly from the plate, the bare metal would soon be exposed and might begin to take ink. Many natural and synthetic materials are hydrophilic and thus fulfill the first requirement. Some of these are gum tragacanth, gum arabic, cherry gum, larch gum, mesquite gum, methyl cellulose, hydroxyethylcellulose, arabogalactan, dextrans, alginates, oxidized starches, polyvinyl pyrrolidone, and polyvinyl alcohol. But these materials vary widely in their ability to adhere well to a metal surface and therefore differ widely in their efficiency in desensitizing the non-image areas of a lithographic plate.

Probably these desensitizing materials do not actually react chemically with the metal, but are *adsorbed* on the surface of the metal (see page 109). A good desensitizing gum such as gum arabic is very soluble in water. When a pressman "washes off the gum" when he starts a plate on the press, he removes a considerable amount of the gum which has been dried on the non-image areas of the plate. But a thin, adsorbed film of gum remains attached to the metal. This adsorbed film cannot be removed with water and it is this film which desensitizes the non-image areas.