

Fig.1.
During printing the non-image areas on a litho plate carry a layer of water; sometimes an oil film one molecule thick spreads from the ink over the water layer

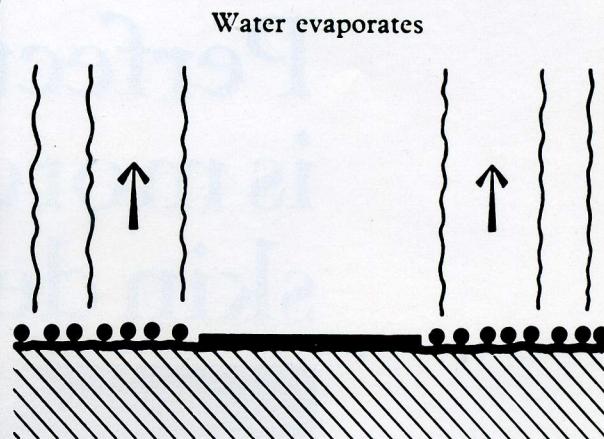


Fig.2.
If the water evaporates from the plate during a stoppage the oil film comes into contact with the plate



Fig.3.
The oil molecules tend to congregate on the peaks of the plate grain; when printing recommences they will pick up ink and hence cause scumming



Fig.4.
The normal precaution is to gum up the plate at the start of a stoppage; when this is done the oil layer lands on the gum instead of on the plate surface and is removed when the gum is washed off

relevance contact angle measurement has to lithography?

Banks The contact angle provides the scientist with a convenient measure of the tendency of an ink to invade the water areas. If the shapes of drops of a liquid resting on two different surfaces (like the image and non-image of a plate) are compared, the drop of liquid showing the greatest adhesion or wetting tendency will appear to be flatter and form a sharper 'wedge' than will the drop of liquid showing less tendency to wet and which will form a blunter 'wedge'. The sharpness of the wedge is measured by its angle, called the contact angle, which can be used as a measure of wetting tendency of a liquid for different surface treatments. The contact angle is an essential tool from the scientist's point of view when determining which material shall

be used for making plates, or combinations of materials for bi-metal plates.

BB One understands the idea of etching in letterpress but in lithography etching to desensitise the plate takes place. What exactly happens when plates, such as aluminium plates or anodised aluminium plates, are etched. What is the chemistry behind the etching process?

Banks All the common metals, certainly those used in lithography, are covered with an invisible film of 'rust' because of the presence of oxygen in the surrounding area, and this rust is more attractive to water than to ink. This is why anodised aluminium is such a good desensitised surface. The anodic film is the equivalent of a rust layer which is inert to chemical