

SCRAPING

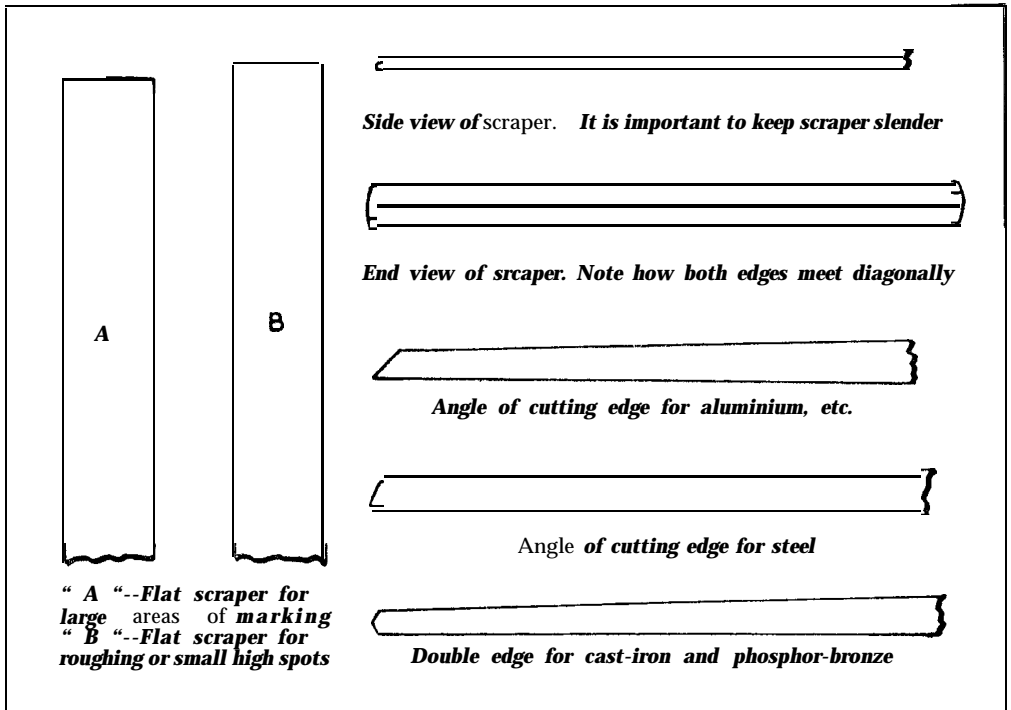
by A.E.U.

Get your surfaces well scraped, mottled and bedded-in

I BELIEVE that one of the most satisfying sights to an engineer, amateur or professional, is a well scraped surface, whether it be mottled, or just bedded-in without any frills.

The art of scraping depends on two things, practise and having good scrapers (and patience !). Scrapers for flat surfaces should be thin so as to have a certain amount of spring when applied to

dual) ; for roughing out and removing large inaccuracies, a scraper with a fair radius is best. Remember, a straight or nearly so scraper will give a bed with broad areas of marking and shallow depressions in between high spots. A scraper with a fair radius will give a bed with small high spots and rather deep depressions between high spots. This type of bed is best



the surface to be scraped. When a scraper is “ just right,” it should, when applied firmly to the job, just shave the surface without digging in or chattering. Most commercial scrapers suffer from being too thick, and are unwieldy and dead.

From Old Files

Most fitters make their scrapers from old files, (usually for two reasons, cost and the fact that a scraper is an individual's tool and is best made by the individual who is to use it). Later in this article I will describe how.

One of the most important parts of a scraper is its cutting edge and the contour of that edge. For finishing work with broad areas of “ bed,” a scraper with a very nearly straight-edge is best (just how near to straight depends on the indivi-

for surfaces that have to act as bearings or machine slides, as it will retain the maximum oil film. Most fitters, however, prefer one (a scraper of course !) between the two extremes.

To scrape a surface we need a “ master” of some sort, a surface plate, straight-edge or special “ rubbing block,” and some form of marking, i.e., prussian blue oil paint (artists), engineers blue (same as prussian blue), printer's ink or red lead mixed with oil and paraffin. Only a very thin film of “ marking” should be used. It is best applied to the master with a pad of rag and should be spread evenly and very sparingly, otherwise a false marking will result. If only the centre of the work-piece is marking, scrape away until the marking is only at the edges and then carefully scrape until the marking appears all over, otherwise it is easy to

produce a convex surface that is marking all over ! When scraping, the direction of cut should be altered at each marking so as to obviate ripples and to facilitate the removal of high spots.

Accurate Surface

If a really accurate surface is required, when the surface is marked all over continue to rub the job with the master, whereupon the high spots will burnish and appear as highly polished spots ; these should be removed very gently until they appear all over the job.

If you cannot obtain a master larger than the piece to be scraped, fair results can be obtained with a straight-edge and a small rubbing block. To check with a straight-edge proceed as follows : Check along the edges of the job with the straight-edge and three pieces of paper (cigarette papers are best), one paper at each end of the straight-edge and one paper to check the gap between the job and the straight-edge. After the edges have been checked, the diagonals should be checked. If all edges and diagonals are correct, the job is flat and requires but little scraping. (Use the rubbing block to find the high spots.)

How to Make a Scraper

The best files to make scrapers from are smooth fine files, and for most purposes one about 8-in. long will be quite long enough, but for small surfaces like locomotive cylinder blocks (model ones, of course) files down to 4 in. long will suffice. Smooth files are best because it is easier to remove the teeth marks (do not leave even a trace of the teeth on the part to be rehardened or forged). The marks will cause hardening cracks if not removed. The file should be heated to orange red and beaten out as shown in sketch (do not allow to blister). When satisfactory, cool and grind scraper to finished shape. To reharden the scraper it should be heated to between orange red and cherry red (the heat varies with the brand of file used) and then quenched in water and note ! **Not tempered.**

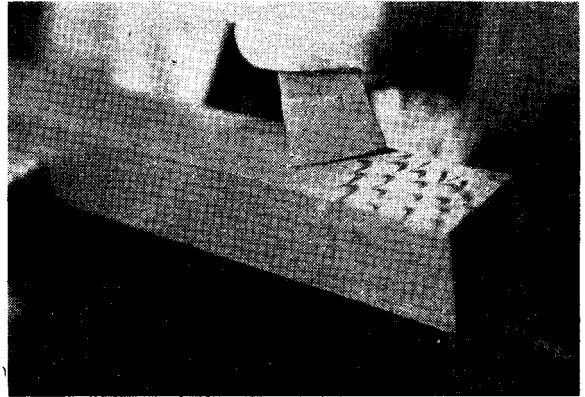
Sharpening

To sharpen the scraper, it should be ground and then stoned. The best stones are Norton India stones. I use a medium grade stone 8 in. x 2 in. x 1 in. (for procedure see photographs), always remembering to stone flats last before using the scraper.

Mottling or feathering are hard to describe with words, and the "way how" is best found by experiment and practice.



First-stone end of scraper. (For iron the scraper should be worked diagonally across stone, dragging the scraper along at the same time)



Mottling



Lastly-Stone flats of scraper (for best results use paraffin on stone)