

The Art of Soldering, Sweating and Brazing

(Concluded from June issue)

Hard Soldering or Brazing

Hard soldering, or, as it is more usually called, brazing, is a process similar to soft soldering, but differing from it in that the solder requires a far higher temperature to fuse it—varying from a low red to a bright yellow heat. It is hardly possible to get this heat in an ordinary fire. It can, of course, be reached easily in a smith's forge; but the most general and convenient sources of heat are the acetylene blow-pipe, the gas blow-pipe and the kerosene or benzine blow-lamps.

Oxy-acetylene and gas blow-pipes are not to be found in the ordinary motor house; and the man whose workshop runs to even a good-sized gas forge is not likely to stand in need of elementary instruction for using it; so we will leave the blow-pipes and confine ourselves to the possibilities of the blow-lamps.

The smallest size of blow-lamp in general use is the one used by painters for burning off paint. This holds about a pint of fuel, and burns for an hour and more on one charge. One may do all sorts of small brazing jobs with a lamp of this size, and it is extremely handy for heating soldering irons, or any other purpose where a sharp, clean heat is necessary. If the work is properly supported by suitably arranged fire brick one could probably, as a stunt, braze a scarfed point on a shaft $\frac{3}{8}$ in. in diameter. On a light car a job so big is a large job, and the majority of the work would be of $\frac{1}{2}$ in. or less in diameter, and consequently well within the range of the lamp.

The next size is the $2\frac{1}{2}$ pint size. The flame is very little hotter, but as there is more of it one can braze larger stuff. The five

pint size is the one in general use in garages.

For general handiness in all small work the present writer has come round to the opinion that the smallest size is the most useful. After sternly refusing to have anything in his workshop smaller than the $2\frac{1}{2}$ pint size for the last eight years, a little pint lamp sneaked in six months ago, and gets used five or six times as often as the larger lamps.

The principle of these lamps is that kerosene is forced under pressure through a heated coil of tube, and issues at a fine jet or nozzle in a spray of grayish vapor, which, mixing with air, burns in a nearly invisible blue flame.

Motorists will recognize this as being similar in idea to the carburetor adapted for kerosene. There is the same heating of the fuel and mixing it with air in the choke tube, only in the carburetor the fuel is sucked out of the jet instead of being forced out. Also, the fuel is heated more in the blow-lamp; it can be properly vaporized in the heater and supplied at a steady pressure as the lamp works always on practically full throttle, so to speak.

A little gasoline or methylated spirit is poured into the cup beneath the burner and lighted. By the time it is nearly burnt out the burner is hot enough to vaporize the kerosene, and a few strokes of the pump may be given. The kerosene will hiss out of the jet in vapor, which will be ignited by the burning gasoline below. When fairly warmed up—say, after two or three minutes—the lamp can be pumped till it gives a steady roar.

The $2\frac{1}{2}$ pint and larger sizes are furnished with a screw-down valve to the jet, so that the lamp



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