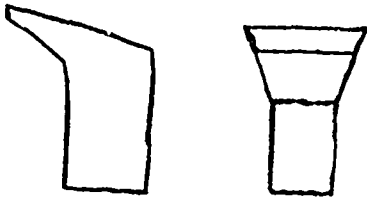


shafting between centres, where a half diamond point would be of no use.

In forging these, there are two ways of giving the necessary offset. The older way is to give this by hammering over the blade or cutting edge alone. The later is to bend over the end of the shank, which then carries with it the thin cutting part. This ought to be the stronger tool, there being less chance of a crack being developed in the steel. In appearance also it is better. This side tool is not used so much in planer work as formerly. A tool shaped somewhat like this cut is used very much for a down feed motion.



A modification of this latter, having round corners, and called in some places a shovel tool, is prominent among the round-nosed class. The usefulness of having the point in advance of the shank is obvious, *e. g.*, in planing up to a shoulder at right angles to the direction of stroke. The common round nose, having the cutting point in a line with the shank, is perhaps the cheapest tool in the shop to make and keep in working order. It is especially good for roughing cuts and *getting under* hard surfaces. A very efficient tool, especially for cast iron when hard, is a cast iron tool with chilled point, but it should not be mentioned here. A good tool for almost any kind of hard metal is a round-nosed mushet.

For planing such stock as Bessemer steel, Norway or Lowmoor iron, or such soft material, a tool such as is in the cut is useful. Its best use is in taking rough-



ing cuts with a comparatively coarse feed motion. Sometimes, too, it may be used on cast steel annealed. It is merely a side tool bent round into a semicircle approximately, thus having large cutting capacity.

The common flat drill is good enough for a variety of rough work to be found in every machine shop, and its existence is justified if only on the plea of cheapness. It is useless to compare it with the Morse or any other twist drill for quality of work. Again, in the matter of chucks or drill presses it comes short, for it requires to be made to run true, by a process of bending, every time it is put into the machine. As with other tools, it will not be lost energy to try and make its use as convenient as possible, if it is to have a place in a shop.

No matter how well a tool may be made, its excellence depends upon the tempering. This the smith has altogether in his power, and if the machinist cannot be present at this operation, or at least give suggestions as to the stock he is cutting, etc., so much the worse for himself and the system which prevents him. It is a wearisome thing, *e. g.*, to try to cut a thread of any kind with a brittle tool. The separate

outfit system seems to have the greater argument in its favor from the machinists' point of view, while if the average manufacturer considers the small tools at all, it is merely as a means to an end.

W. M. S.

NOTES ON THE (WHITE) MICA DEPOSITS AND MINES OF THE SAGUENAY REGION.*

BY J. OBALSKI, INSPECTOR OF MINES, P. Q.

This district, from a mining point of view, is an entirely new one, the first working having been commenced in the fall of 1892.

Some time prior to this date it was known that mica existed at certain places, but no attempt was made to work it. Recently, however, the increased demand for mica, by reason of its extensive use in the generation of electricity and its accompanying requirements, caused prospectors to take the field and certainly the results have proved satisfactory and gratifying.

The locality most prominent in this district, at present, is in the township of Bergeronnes, Saguenay County, and situated about twenty to thirty miles below the village of Tadousac, and at a distance of about ten miles from the shores of the St. Lawrence.

In addition to the discoveries made in above-mentioned locality, indications have been found in the adjoining townships of Tadoussac and Escoumains, also in the valley of the River "Aux Canards" on the other side of the Saguenay river.

The formation belongs to that of the Lower Laurentian, the country rock being mainly feldspathic and dioritic, easily discernible on the formation bordering the Saguenay river.

The character of the country is generally speaking barren, and is as yet unsurveyed and belongs to the Crown; the facilities for transportation, although one would think differently at first, are in reality good, by following the valleys of the streams unning to the St. Lawrence.

Numerous veins of quartz and coarse granite traverse the country rock, and in some instances are of great magnitude; we will only consider the latter kind. The elements, quartz, feldspar and mica, are well separated, and in some places large enough to warrant the name of "Mica Mines" being applied to them. The general direction of the veins is N.E., the dipping as well as the forms of same being variable.

While prospecting this district, I met with several veins, not less than fifteen of these well defined and worthy of consideration, but they do not all merit the title of mica mines; sometimes the mica being too small, or the veins themselves too narrow to admit of being profitably worked.

I will now give some details concerning the two most important properties, which have been developed with a marked degree of success. The kind of mica found in this district is uniformly of the white (Muscovite) variety, and of a brownish color when in thick crystals, whereas the same variety in the Ottawa region is invariably green under the same circumstances. It is remarkably clear, free from spots, is elastic and the cleavage is excellent. I have not any minute test of this mica, but have seen by the correspondence of the operators that it is highly appreciated and the demand is much in advance of the production

* Read before the Mining Association of the Province of Quebec.