How to Sharpen

An aid to the users of

PIKE SHARPENING STONES

HOW TO SHARPEN

A BOOK FOR THE MECHANIC, THE FARMER, THE HANDY MAN AND THE HOUSEWIFE

¶ PIKE SHARPENING STONES are the only line including every sharpening substance, Natural or Artificial, each best for some sharpening purpose

PIKE MANUFACTURING COMPANY
Pike New Hampshire USA

THE STORY OF OILSTONES

IN Egypt a few years ago a party of excavators for the British Museum unearthed a cabinet maker's tool basket. Its date, as they determined later, was about 1450 B. C.

This ancient tool kit contained such modern-looking things as chisels with wooden handles, a saw, a drill-bow and spindle, a rasp, a plummet and an oilstone as well as a horn in which to carry oil for it.

Surprisingly advanced as were these implements of 3400 years ago, the art of making tools and tool metals has been steadily improving and advancing further ever since—this in the case of all implements save one, the mechanic's sharpening stone.

It is hardly more than a dozen years ago that Science offered even the slightest assistance to Nature in the matter of sharpening hand tools. And even yet, when it comes to some kinds of sharpening, nothing that Science has done can approach the work of some of the old-time Natural oilstones.

Before coming into the details of "How to Sharpen," it is decidedly worth while to make the acquaintance of these old aristocrats of the oilstone family as well as of those newer members of the circle called Artificial stones.

An understanding of just how these various stones affect the steel and of the peculiarities of the stones themselves will make the pages on "How to Sharpen" much clearer. And such an understanding is the only guide to the selection of a stone—a matter fully as important as knowing how to use one. The Pike Manufacturing Company is the only company whose line includes each and every kind of stone, Natural or Artificial. This fact relieves us from the manufacturer's natural temptation to lean toward his own product and enables us to discuss the various types of sharpening stones with entire impartiality.

What Sharpening Means

It is not merely the friction between the stone and the steel that brings the latter down to an edge. Sharpening means *cutting*.

Every sharpening stone is a mass of minute crystals —infinitely sharp little cutting points each of which is harder than steel.

The coarseness or fineness of these crystals, their hardness and their brittleness or toughness—these are the things which, in various combinations, mark the differences between the several kinds of sharpening stones, making one kind better for its own purposes than another.

You would not think of sharpening a razor on a scythe stone. The scythe stone and the razor hone are the two extremes. Between them lie the various stones used in shops, as well as on the farm and in the home.

NATURAL AND ARTIFICIAL STONES

MODERN improvements in the hardening of tool steel brought with them new problems in sharpening. The recent advances which have resulted in the remarkably hard, sharp Artificial stones of today are the solution of these problems. Only in part, however, for there are still, as stated, a number of sharpening requirements for which the Natural stones are unequalled.

Apart from these few exceptional uses, the Artificial offer many advantages over the Natural stones.

Made in Electric Furnaces

By scientists the production of these Artificial stones is regarded as a triumph of the first order. It means the making by man of rock crystals which are harder than anything in Nature except the pure diamond. The Titanic magnitude of the operation may be partly understood when it is said that these crystals require for their making a temperature of 6000 to 7000 degrees of heat and that this becomes possible only by the use of great electric arc furnaces, the current for which can be economically supplied only by the vast power of Niagara Falls.

There are now two important types of Artificial oilstones on the market. They are known chemically as *Carbide of Silicon* and *Aluminum Oxide.* The dictionary word for the first of these is carborundum. To avoid confusion, however, the carborundum sold by this Company is given the trade name of PIKE CRYSTOLON.

The trade name of Aluminum Oxide is *Alundum* and, when sold in the shape of oilstones, this abrasive is known exclusively as PIKE INDIA.

Advantages of Artificial Stones

One of the chief advantages which *Pike India* and *Pike Crystolon* have over Natural stones is the absolute uniformity which it is possible to impart to the coarseness or fineness of the crystals. Since, as stated, the degree of

coarseness is one of the prime considerations in choosing a stone, it becomes a matter of real importance to be able to *control* this and thus to secure a perfect stone with either coarse, medium or fine grit.

A second advantage, fully as great and possible only to Artificial stones, is the unvarying hardness and texture throughout the stone due to the scientific "bonding" together of the crystals. This makes it possible to absolutely avoid all of the soft spots, hard spots, crevices, pebbles and other defects which sometimes come to light in even the best Natural stones.

This fact also enables the user of either a *Pike India* or a *Pike Crystolon* stone to buy a new stone of the same grit with the certainty that it will be precisely what he wants, a duplicate of his former stone.

These Pike Artificial stones are superior to other Artificial stones, first, in the fact that their chemical composition *never varies* in the slightest and, second, in the fact that in no others have the important problems of perfect "bonding" been so successfully worked out.

Another exclusive feature of *Pike India* and *Pike Crystolon* is that they are *oil-filled*, and by a patent process which gives them *remarkable freedom from glazing*. This also makes them ready for use with only a slight application of oil as soon as purchased and avoids the necessity of soaking them for days in oil as must be done with all other oilstones.

How India and Crystolon Differ

There is a marked difference between *Pike India* and *Pike Crystolon*.

The peculiarity of Carbide of Silicon crystals, from which *Pike Crystolon* is made, is that they cut extremely fast—but these crystals are very brittle. Hence, while Carbide of Silicon stones are ideal for soft steel and for other uses wherein it is desirable to have a rapid breaking down of the crystals so as to constantly present new cutting points, these stones are not so valuable for regular shop or other ordinary oilstone uses since they wear down too rapidly to satisfactorily hold their shape.

Alundum crystals, on the other hand, from which *Pike India* is made, are so extremely *tough* that, while they do not lose in fast-cutting quality, they stand up under even the hardest service.

Hence, *Pike India* stones hold their shape almost indefinitely. There is no steel too hard for them to sharpen quickly, nor hard enough to cause them to groove or wear down unevenly if properly used.

Being made in three grits—coarse, medium and fine—there is no ordinary class of sharpening of which they cannot take excellent care.

It is this unique combination of *toughness* with extreme *hardness*—this *fast-cutting* quality coupled with the ability to always *hold its shape*—that makes *Pike India* the most widely useful sharpening stone known.

This is why in the great machine shops, one after another, *Pike India* displaces all other sharpening stones as fast as it is introduced. This is why carpenters, woodworkers and other mechanics prefer it, and why we prefer to recommend it for every farm and household use.

Other sharpening stones should be looked upon as special stones for special uses.

The Chief Natural Stones

In spite of these superiorities of the Artificial stones, there is one Natural stone that holds its place as firmly as ever. This is that famous stone known to every user of extremely keen tools—"Arkansas." For many years the only quarries in the world extensively producing a high, even quality of Arkansas have been controlled by the Pike Mfg. Co. For this reason the choicest of these stones are known as *Pike Arkansas*.

Pike Hard Arkansas—No other stone, Natural or Artificial, approaches this for its particular purpose which is to sharpen tools requiring the very finest edge—such as are used by surgeons, engravers, dentists, wood and ivory carvers, and harness makers. It is sixteen times harder than marble and has a finer grit than any other oilstone, hence imparts the smoothest edge. Owing to the very limited supply of good Arkansas rock and to the great difficulty in quarrying and manufacturing (about 90% being waste) it is necessarily very high-priced.

Pike Soft Arkansas is more porous than the Hard and, a little coarser, hence does not impart as fine an edge.

Pike Washita—Before the advent of Artificial stones, Washita oilstones were the favorite variety with carpenters and in wood-working shops. Although they are slow-cutting stones, they will always be popular due to their

low price and to the fact that they give a long-lasting edge. *Pike Washita* comes in several grades, "Lily White" and "Rosy Red" being the best selection. The "Extra" Washita is a hard, fine selection especially suited to cutlers' use. The two other grades are styled "No. 1" and "No. 2."

Other Pike Stones—Among other Natural stones in the Pike line are the *Queer Creek, Chocolate, Turkey, Hindostan* and *Sandstone.* These stones are very inexpensive and find their chief demand among those whose tools do not require a particularly careful edge.

Two inexpensive Artificial stones, made of Corundum and Emery respectively, are *Pike Corundum* and *Pike Quick-Cut.* Both of these are very far superior to the ordinary, cheap, low-grade emery stone.

HOW TO SELECT A STONE

THE first thing, of course, to consider is the purposes for which the stone is to be used—whether a fast-cutting stone will be more useful to you than a slow-cutting stone that gives a finer edge.

This question answers itself as soon as you know, first, that the coarser grit a stone has the faster it cuts and, second, that *cutting edges* are classed in three groups —coarse, medium and fine.

This does not mean that a coarse edge is not a sharp edge. The ideal edge for your very best carving knife, for instance, is a "coarse" edge—best because such an edge will do this work *perfectly* and because to take extra time to get a finer edge on a slower-cutting stone would mean just so much time put in needlessly.

For Coarse-Edged Tools

Practically all of the tools in the coarse-edged group are *knives.* One of the reasons why these do not require a fine edge is the fact that knives are always used with a diagonal, or a saw-like motion. This adds to the cutting efficiency and at the same time the slight coarseness of edge, in its turn, adds to the sawlike effect, again making the cutting easier. These tools include canvas-cutters' knives, carpet knives, carving knives, bread knives, paring knives and kitchen, household and farm knives of all kinds, including scythes and sickles but *not* including *tools.* Some of these knives require a finer edge than others; but all can be given the best edge for their work on a coarse stone.

In every country home there is a scythestone. In addition to this, the most useful sharpening devices for household and farm uses are:

The *Pike India Kantbreak Knife Sharpener,* a coarse-grit stone ideally adapted to give just the right edge to all household knives.

The *Pike India Combination Bench Stone* for tools. This is an oilstone with one side of *coarse* India and the other side of *fine* India.

One of the various *Pike Hand Tool Grinders* for all sharpening and grinding that cannot be done properly on an oilstone.

All of these articles are described on page 24.

For Medium-Edged Tools

Medium-edged tools require more smoothness than a coarse edge affords but yet do not need extreme fineness. Such are the tools used by most mechanics—more particularly the broad, bevel-edged tools such as chisels, planes, draw knives and others used by carpenters and wood-workers.

The logical inference would be that to secure a medium edge one should use a stone of medium grit. This is not entirely correct. The heavy sale of medium-grit stones is due chiefly to the natural desire of the average mechanic to secure both fast-cutting and a fine enough edge from one stone. Except for special uses, the more satisfactory way is to use a *coarse* stone for rapidly cutting the edge down until it is ready to finish and then to finish on a *fine* stone to whatever degree of fineness is desired. For this reason, a *Combination Stone*, such as alluded to above, which unites a coarse stone and a fine stone, is usually more useful than a medium stone. Combination stones are becoming more and more popular among mechanics as well as in homes and on the farm.

For Fine-Edged Tools

The tools and instruments in this group are, without exception, used for highly specialized purposes. They never find a place in the home or on the farm. They are used in the professions, notably by the surgeon and the dentist, also by the scientist in preparing specimens for the microscope. They are also used by the metal engraver by the furrier and by most workers in leather such as harness-makers and shoe-makers. Such edges when quite dull are usually brought down to comparative sharpness on a fine-grit stone, such as *Pike India*, but the finishing touches are always given on an Arkansas stone.

Special Shapes and Sizes

For most users of tools, the stones just referred to will meet all ordinary requirements. A number of other

interesting and useful sharpening specialties are described on page 24.

In many of the trades the shape of the tools as well as other peculiarities make it necessary to use sharpening stones having special features of shape or texture. The most complete variety of these in existence, including scores of different stones, is illustrated and described in our Catalogue which will be gladly sent if request is accompanied by 10c. in stamps to cover mailing.

Make Sure of Quality

The main thing in selecting a stone is to avoid the cheap or ordinary varieties.

The best advice on this point is to depend on a good trade-mark; for no one, barring an expert, can tell the real quality of a sharpening stone simply by looking at it.

A good stone is good economy—it lasts longer and does much more efficient work than a poor one. A good stone lasts so many years that, after all, its first cost is but a trifle in view of the vast satisfaction it gives as compared with a merely ordinary stone.

Comparative Prices

As a matter of information, the following prices are given to show the comparative cost of the different types of stones. A seven-inch bench stone, for example, ranges through the following prices:

Pike Hard Arkansas, $4.25 each; Pike Soft Arkansas, $2.00 each; Pike "Lily White" Washita, 65c. each; Pike India, 75c. each; Pike Crystolon, 75c. each.

Taking a round-edge "slip" averaging 4½ inches long as a basis, the prices run as follows: Pike Hard Arkansas, $1.00 each; Pike Soft Arkansas, 50c. each; Pike "Lily White" Washita, 25c. each; Pike India, 35c. each; Pike Crystolon, 35c. each.

HOW TO SHARPEN

ONE rule that has very wide application in using cutting tools is to

Sharpen Against the Edge

With two exceptions, all kinds of sharpening (both on grinders and oilstones) are performed with the edge of the tool working *against* the stone. The exceptions are, (1) when sharpening on leather, as with a razor strop; (2) when the tool itself is held still while the whetstone or oilstone is moved to do the sharpening—as in sharpening a scythe or sickle with a whetstone or in sharpening the inside of a gouge or other concave edge with an oilstone slip. The reason for sharpening against the edge is that this results in less "wire edge."

Many people lay a blade on an oilstone and proceed to sharpen it by a *circular* or *rotary* movement. With a pocket knife or other short blade, this will put on an edge in time. But straight strokes sharpen more quickly. Moreover, in the case of chisel-like tools this rotary motion constantly changes the angle at which the tool is held and prevents the edge from being true.

The Wedge Form

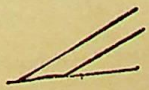


Fig. 1

The ordinary knife, big or little, with its thin blade and the ordinary chisel-like tool with its thick blade are both designed along the same lines so far as their *cutting edges* are concerned. Their mechanical actions are unlike but, in both, as well as in the gouge, axe, adz, razor, plane-iron and drawknife, and also in most edged tools for use on metal, the cutting edge is modelled on the principle of the wedge.

The better this wedge-form is maintained, the more perfect service the tool will give. The reasons for this will be clear from a study of Figs. 1, 2 and 3, all of which are somewhat exaggerated for purposes of illustration.

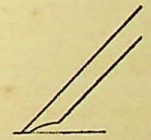


Fig. 2

The concavity shown in the main bevel of the chisel in Fig. 1, exactly corresponds with the curve of the grinding wheel.*

It will be apparent that this form, which is in line with that of the hollow-ground razor (see Fig. 4), has very great importance. The necessity for regrinding will be much more infrequent than in Fig. 3, which shows the result of letting the tool slip up and down while grinding, giving a bevel that is in effect convex instead of concave and thus impairing the wedge-form.

Fig. 3

The dotted line in Fig. 1 is the angle of sharpening on the oilstone after grinding and, as shown, it at first coincides with the angle of grinding. With successive sharpenings, however, it becomes necessary to tip up the bevel and gradually the sharpening angle is rendered more obtuse, as shown in Fig. 2, until it becomes necessary to use the grinder again to restore the acute, wedge-like angle.

Fig. 4

This wedge-form is, of course, of more importance in mechanics' tools than in household knives; but this explanation of the principle will aid none the less in adding clearness to the rules for sharpening knives, on page 16.

Sharpening Chisel-like Tools

By far the greater number of the cutting tools in common use are of the chisel-type. These instructions, therefore, apply with slight variation to chisels, plane-irons and all tools of this general pattern.

A tool of this type shows its dullness in the form of a thin white, or bright, line along the edge. Until the bevel-edge has become so obtuse as to need grinding (as explained above), this dullness is properly removed on the oilstone. The test of sharpness is the disappearance of the thin bright line.

*Only practice can make sure of such perfect grinding as this, the tendency being to slide the tool up and down on the face of the grinding wheel and thus destroy the concave curve. It is to make it easy for anyone to secure this hollow-ground effect without practice that we have perfected the patented adjustable Tool Rest which is included as one of the parts with Pike Peerless Grinders. See page 24.

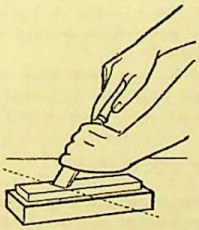


Fig. 5
Sharpening a chisel

First see that the oilstone lies perfectly level to insure a true edge. Apply a few drops of oil to the stone and grasp the tool as shown in the illustrations, Figs. 5 and 6.

Note that there is no side-wise turn in the right wrist. Any twisted or turned position in this wrist is sure to give a certain amount of rolling or twist to the tool, thus impairing a true sharpening angle. Swing the right arm from the shoulder, bending it only at the elbow and holding the wrist rigid. Place the edge at an oblique angle across the face of the stone as shown by the dotted lines, and rub backward and forward, bearing down with both hands.

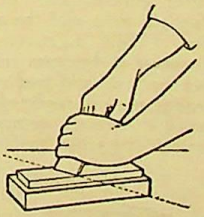


Fig. 6
Sharpening a plane-iron

If the bevel has been recently ground, hold the hands low to make the oilstone bevel correspond with the grinding bevel. With each sharpening it is necessary to hold the hands a trifle higher until, finally, the oilstone bevel becomes too obtuse, when the tool must again go to the grinder. In rubbing over the stone, move the hands *horizontally*—parallel with the stone—instead of giving them a dipping, or scooping motion, as this latter tends to round the edge of tool and make the stone hollow out. For the same reason, it is important to use, as much as possible, the entire face of the stone, rubbing the tool over the entire length and occasionally turning the stone end for end.

When, after wiping the tool clean, you find the thin line of dullness has entirely gone, turn the tool over, *keeping it PERFECTLY FLAT* on the stone, and with one or two light, side-wise strokes remove any burr or wire edge.

The bevel angle on a chisel or gouge varies according to whether the tool is to be used regularly on hard or soft

wood. A long, acute angle does not afford as much strength as does a more obtuse one. Hence men who work in hard woods use tools that would seem to workers in soft woods to have a rather blunt bevel.

The bevel on a framing or mortising chisel must, of course, be more obtuse than that on a paring, or "firmer," chisel for the reason that in the latter there is not as much need for strength.

Curved Edges on Plane-Irons

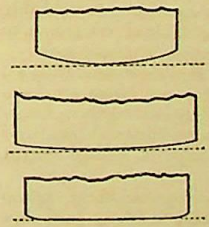


Fig. 7
Curved edges on plane-irons

To avoid leaving marks of the plane on the wood, the plane-iron should be ground to fit the tool in which it is used. (See Fig. 7.) For a single-iron jack-plane the edge should be rounded; for ordinary jack-planes, slightly rounded and for smoothing, panel and trying planes, straight except with a slight turning up of the corners. On all other planes, the edge is entirely straight.

Sharpening a Draw-Knife

Place the tool, bevel uppermost, with one handle flat on the bench and the other projecting over the edge so that you can grasp it firmly in the left hand. With the oilstone in the right hand, run it over the bevel, back and forth in an end-to-end direction as in this way it is more easy to steady the stone and hold it true to the proper angle.

Gouges and Irregular Edges

For good work, the bevel on a gouge must follow the curve of the tool. For this reason, it is necessary to give the gouge a rocking motion from side to side as it passes back and forth over the stone. (See Fig. 8).

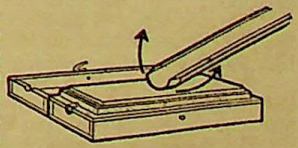


Fig. 8
Turn the bevel while sharpening as indicated by arrows

The same is true in grinding. Hold the length of the gouge, not parallel with the face of the wheel, but at right angles so that the bevel is ground side-wise and rock the entire surface of the bevel back and forth on the face of the wheel. In Fig. 9, A shows the result of good, accurate sharpening, while B indicates the irregular bevel-angle caused by attempting to sharpen a gouge without enough of the rocking movement.

To take off the wire edge from the inside, hold the gouge firmly against the bench and gently rub with a round-edge oilstone "slip." Be very careful to hold this flat against the inside of the groove to avoid turning the edge of the tool.

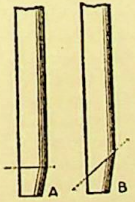


Fig. 9

Gouges and other irregular shaped tools with the bevel *inside* are likewise sharpened by holding them firmly against the bench while an oilstone "slip" of the right shape is rubbed against the bevel.

The two paragraphs above explain why it is desirable to have several slips of different shapes and sizes.

How to Sharpen Knives

As stated, knives are like the chisel type of tools in that they cut better if sharpened so as to retain the wedge-form. The wedge-like angle, however, is not the main bevel extending from the back of the blade down to the edge. If it were, the whole blade would have to be held flat on the grinder wheel and this would soon grind the blade down to such thinness as to rob it of rigidity and strength. The wedge-like angle, or cutting bevel, extends back from the edge only a very short distance—rarely more than an eighth of an inch even on a large knife. Often this bevel can hardly be seen.

This means that, on the grinder as well as on a Knife Sharpener or an oilstone, the blade is applied with its back tilted up to get the *bevel edge* flat on the stone.

Practically all mechanics' knives with straight edges are sharpened on a flat oilstone, many of the thinner blades never being put on a grinder at all.

For sharpening ordinary knives such as used in and around the home, the best device, as before stated, is a household Knife Sharpener. Because it sharpens so quickly and cannot be broken even by rough

usage, the most perfect of these is the *Pike India Kantbreak Knife Sharpener.*

It requires no skill and hardly any practice to get perfect results with this. Fig. 10 shows how to use it.

Holding it in the left hand with the point upward, the handle protects the hand so that one may swiftly sweep the blade downward, first on one side, then on the other, with the edge foremost. Hold the blade against the stone, with the back of the blade slightly lifted to give the right angle on the bevel. Always start each stroke at the "heel" of the blade and, sweeping down diagonally, cover the entire length of the edge from heel to point in each stroke. Do not use much pressure.

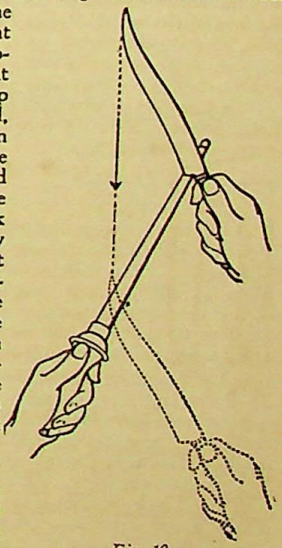


Fig. 10

No one but a butcher should depend on a "steel"—and even he is forced to use it almost constantly to make it effective. A "steel" is only useful to add the last touch of keenness to a knife already extremely sharp.

To Sharpen Scissors

With the tool-rest furnished with *Pike Peerless Grinders*, anyone can easily put a perfect edge on scissors. With a little practice, almost as good a result can be secured on a *Pike India Kantbreak Knife Sharpener.*

Hold the latter firmly against the edge of a table. Apply the blade to this so that the bevel lies accurately upon the face of the stone and with the blade crossing the stone at right angles. Then draw the blade smartly across the stone from heel to point. Do not run the blade back and forth—start each stroke at the heel of the blade.

Pocket Knives, Ink Erasers, Etc.

These should be sharpened preferably on a medium or fine oil stone, or better yet, on a Pen Knife Sharpener such as is referred to on page 24.

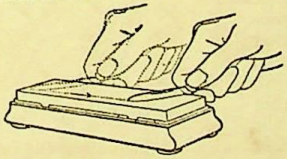


Fig. 11

Apply the blade of a pocket knife to the stone with its back slightly tilted. Hold it obliquely across the face of the stone, and smartly rub straight back and forth. (See Fig. 11.) Then reverse to the other side of the blade and repeat. With a *fine* oilstone, if the blade is sharpened thoroughly, there will be no perceptible wire edge—none at all, if it is finished on a Pike Arkansas. If it is necessary to remove all trace of burr, this may be done by stropping the blade on the coarse side of a razor strop, such as the *Pike India Strop*.

Mr. Frank H. Pierce, Director of Manual Training in Pratt Institute, Brooklyn, recommends the sloyd-pattern knife for young pupils in manual training. This knife has a pronounced bevel extending mid-way to the back of the blade and is best sharpened by laying this bevel flat on the stone. To sharpen all the way back to the "heel" on both sides of the blade, Mr. Pierce advises sharpening first one side of the blade with the right hand and then applying the blade to the left side of the stone and using the left hand.

Scythes and Long Blades

With blades like the scythe, sickle and others that are too large to be moved over the whetstone or oilstone, the blade is held firmly in the left hand and stroked along the edge with the stone—first on one side then on the other and always toward the point of the blade.

Augers and Gimlets

Augers and auger-bits are often sharpened with a file. But to get a smooth edge, it is necessary to use, at least for finishing, an oilstone "slip." The two parts that

get dull are the "nicker" or scoring nib, A, and the cutting lip, B, in Fig. 12. The scoring nib is sharpened only from the *inside*. Otherwise it would become smaller than the body of the bit. The cutting lip should be sharpened from the lower side, care being taken to preserve the original angle. *Pike India* stone No. 53 is especially shaped to get at the angles of an auger.

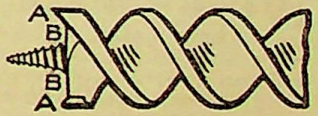


Fig. 12

To restore a gimlet, "fix a piece of oak about 1 ¼ inch thick in the vise and make a hole ¾ inch deep in its top with the gimlet to be sharpened. Fill the hole with flour emery, adding a few drops of oil and then reinsert the gimlet and bore down into the wood until the point shows through. Repeat for a few minutes, adding fresh emery and oil." Then repeat the process, using this time a piece of soft pine and emery without the oil.

HOW TO SHARPEN A RAZOR

MORE and more men are breaking away from the old idea that only a barber can hone a razor. With a well-chosen hone and a little practice any man can save this expense and greatly add to his shaving comfort.

The barber, whose constant use of razors enables him to draw fine distinctions, finds it worth while to choose carefully between the various types of good hones.

To the home shaver, however, the difference between these is not a matter of importance. The main thing is to make sure that the hone *is* a *good* hone. Since even an expert finds difficulty in detecting flaws in a hone by looking at it, the only safe rule is to be guided by a long-established and trustworthy trade-mark.

Among barbers, *Pike* hones have long been outselling all others. This is perhaps the surest recommendation to the man about to buy a hone. Some of the most widely popular of these are the *Pike Belgian, the Swaty, the German Water Hone, Pike Koenig, Pike Ezy Edge.*

For the amateur, our own recommendation would be either the *Pike Koenig*, the *Pike Ezy Edge* or the *Pike Strop-Hone* explained below.

Using the Hone

Hold the razor *perfectly flat* on the hone. The thick back takes care of the bevel. Lay the razor diagonally on the hone and draw it against the edge across the full length of the hone. Use very light pressure.

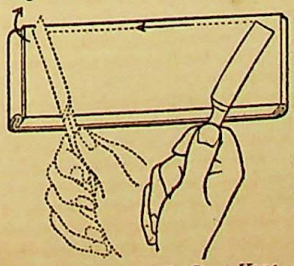


Fig. 13—Using Pike Strop-Hone

Reverse the razor at each stroke, rolling it on the back and repeat the stroke in the opposite direction. (See Fig. 13.)

Unless the razor is quite dull, a few strokes will make it ready for the strop.

Some hones may be used dry. On most hones, either

lather, water or oil is used to prevent glazing. Do not use the hone too freely. Beyond a certain point, the edge loses its velvety smoothness. This is called "over-honing," and may be safely avoided by observing the rule, "Use the hone less and the strop more."

In stropping safety razor blades, follow the same instructions. The holder takes care of the slight bevel on the edge of these blades.

Using the Strop

For either an ordinary razor or a safety blade in a holder, the action of stropping is this:

Hold the blade perfectly flat on the strop and hold the strop as *taut* and *straight* as possible to prevent rounding the bevel. Draw the razor diagonally from heel to point along the length of the strop—and *away* from the edge instead of against it. Then roll the razor on its back to reverse it and repeat the stroke in the opposite direction. *Strop lightly.*

Be sure that the entire length of the razor edge is covered during each stroke.

Most strops have a coarse and a fine side, and by using both with good judgment, it is possible to avoid frequent honing. This is particularly true with the *Pike India Razor Strop* which, with the fine, flour-like India crystals on its coarse side, sharpens even a dull razor with astonishing quickness.

A Great Thing for the Razor

In many ways the best solution of the razor-edge problem is the *Pike Strop-Hone.* In this, as shown in Fig. 13, a splendid hone is on one side and a high-class strop is on the other. The hone can be used *dry* and the strop *cannot sag* and round the bevel as does an ordinary strop in the hands of an amateur.

These two points aid the amateur to avoid his two commonest troubles. The dry hone makes it an easy matter for him to give his razor two or three strokes on it *each time he shaves.* And the strop, by virtue of its perfectly straight, flat surface, enables him to give perfect smoothness to the edge with a minimum number of strokes. Thus this device keeps a razor in ideal condition all the time without the need for much practice and with the least possible outlay of time.

HOW TO CARE FOR OILSTONES

LIKE anything else, an oilstone can be ruined by wrong treatment and lack of care.

There are three objects to be attained in taking good care of an oilstone: first, to retain the original life and sharpness of its grit; second, to keep its surface flat and even; third, to prevent its glazing.

To retain the original freshness of the stone, it should be kept clean and moist. To let an oilstone remain dry a long time, or expose it to the air, tends to harden it. A new stone should be soaked in oil for several days before using (this with the exception of *Pike India* and *Pike Crystolon* as already explained). If kept in a dry place (most of them are) it should be kept in a box with closed cover, and a few drops of fresh, clean oil left on it.

To keep the surface of an oilstone flat and even simply requires care in using. Tools should be sharpened on the edge of a stone as well as in the middle to prevent wearing down unevenly, and the stone should be turned end for end occasionally.

To restore an even, flat surface grind the oilstone on the side of a grindstone or rub it down with sandstone or an emery brick.

To prevent an oilstone from glazing requires merely the proper use of oil or water.

The purpose of using either oil or water on a sharpening stone is to float the particles of steel that are cut away from the tool, thus preventing them from filling in between the crystals and causing the stone to glaze.

The chief exceptions to this are the scythe stone and the household "Knife Sharpener." These are always of coarse grit and the pressure exerted on them is light as compared with that on the flat surface of an oilstone. For this reason the steel particles are not ground into the stone and no oil or water is needed.

All coarse-grained Natural stones should be used with water. Use plenty of it.

On medium and fine-grained Natural stones, such as Pike Arkansas and Pike Washita, and on *all Artificial*

stones, oil should be used always, as water is not thick enough to keep the steel out of the pores.

The most widely used oil on oilstones is *Pike Oil* made especially for this purpose. It is clear and thin, has no acid and is non-gumming and non-drying. This oil is also an ideal one for Sportsmen, Housewives, Jewelers, Carpenters, Machinists, Barbers, Motorists and Aviators.

To further prevent glazing, the dirty oil should ALWAYS be *wiped off the stone thoroughly* as soon as possible after using it. This is very important, for if left on the stone, the oil dries in, carrying the steel dust with it. Cotton waste is one of the best things to clean a stone with, and is nearly always to be found in a shop. Some carpenters use shavings, but they are very apt to leave the stone full of dust. A common clean rag would be better.

If the stone does become glazed or gummed up, a good cleaning with gasolene or ammonia will usually restore its cutting qualities, but if it does not, then scour the stone with loose emery or sandpaper fastened to a perfectly smooth board.

Never use turpentine on an oilstone for any purpose.

USING A TOOL GRINDER

UNLIKE the old-time grindstone, the wheel of a modern Tool Grinder is used *dry*. It gives much greater cutting efficiency and makes the grinding of a tool a much quicker and less tedious operation than it used to be.

The one word of caution is that the absence of water makes it possible to "burn" the tool and injure the temper. This can easily be avoided by being careful not to use too much pressure. It is also a good plan to keep lifting the tool off of the wheel frequently.

The most efficient and successful line of Tool Grinders now being sold are those bearing the *Pike* name. Prices are given on page 24.

A FEW OF MANY USEFUL SHARPENING STONES

Pike India Kantbreak Knife Sharpener. This handy device is needed in every home. It puts a quick, keen edge on carving knives, kitchen knives, scissors and shears. It is rubber mounted and reinforced throughout by a steel rod—can't break even if you drop it. Anyone can use it successfully. It lasts for years. Price, 35c.

Pike India Combination Bench Stone. Two stones in one—the *coarse* side is for fast cutting on very dull tools, the *fine* side for finishing them to a keen edge. Size 7 x 2 x 1, $1.00. Mounted in hardwood box, $1.25.

Pike India Reversible Oilstone. A combination stone mounted in handsome patent hinged box that permits instant use of either side, $2.00.

Pike India Pen Knife Stone. Price, 15c.

Pike Sportsman's Pocket Stone. One side coarse for sharpening knives, axes, fish-hooks, etc.—other side fine for finishing. In leather case that fits the pocket—50c.

Pike Strop-Hone. This handy article combines a razor-hone and strop all in one. Price, $1.00. (See page 21.)

Pike Koenig Razor Hone. Price, 50c.

Pike Ezy Edge Razor Hone. Price, 50c.

Pike Peerless Junior Grinder. A high speed, dust-proof, noiseless grinder that is thoroughly practical for home and shop use. Patent Tool Rest insures the correct angle on any edge. Fitted with cool-cutting, quick acting wheel, size 5 x 1, $5.00. Others, $3.00 to $7.00.

Pike Oil. This oil, formerly called Stonoil, is specially adapted to all kinds of stones—India, Arkansas, Washita, and even to barber's hones. It is an acidless, non-drying oil which flows very freely and never gums. It is an excellent preventative of rust and may be used for all general purposes in both home and shop. Three sizes—2-oz. bottle, 10c.; 6-oz. bottle, 25c.; 6-oz. can, with patent spout and cap, 25c.

Send for the Pike Catalogue

The most complete catalogue ever printed for this class of goods, 98 pages, fully illustrated, partly in color, will be sent on receipt of 10c. in stamps to cover mailing.

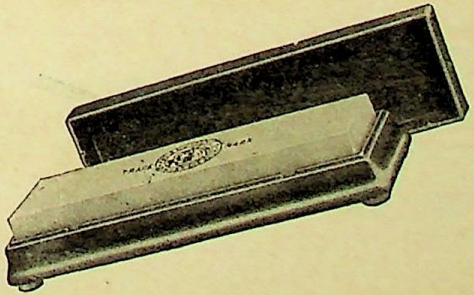
Guarantee

Your dealer is authorized to replace any Pike Sharpening Stone that proves defective.

PIKE SHARPENING SPECIALTIES

PIKE

"The only line that includes every sharpening substance—natural or artificial—each best for some sharpening need."



Pike India Oilstones

Sharp and quick. Don't wear down. Don't glaze. Without a peer for sharpening carpenters', machinists', pattern makers' and many other classes of tools. Cut fast and last for many years. Every stone guaranteed. Made in 66 different shapes and in Coarse, Medium and Fine grits. Coarse and Fine Combination bench stones made in all regular sizes. Send for price list showing all shapes and sizes.

No. 0 Combination 8x2x1"	**$1.25**
No. 0 Comb. in Iron Box	**$1.75**

Send for price list showing all shapes and sizes.