

## AS TO FILES AND RASPS.

HOW THEY ARE BROUGHT TO THE POINT OF PERFECTION.

Made in a Great Variety of Forms for Many Mechanical Purposes—Cutting by Hand Was Once Held to Be an Art in which Power Could Not Compete.

Rasps and files in the hands of a first-class mechanic rise to the dignity of tools of the first order in a machine shop, says the Chicago Record. To "file square" is a test of skill which has caused many a braggart to lower his crest, and an A 1 vise hand is a treasure in a shop where finishing is done on the bench. To file square means to file true; to finish the face of the work without marring it with scratches and rounding surfaces, and to do this as a regular everyday thing is an art to be won only through practice and long experience. Files ruin thousands of dollars' worth of work, and files add thousands of dollars to the value of manufactured product.

In some of the machine shops of Chicago are gray-haired mechanics who have worn the overalls for forty years and more. They remember well the time when machine-made files were held up to ridicule and scorn, and when all first-class, well-known makes of files were cut by hand. Some of these old fellows still insist that machine-made files are not and never can be as good as the files which are cut by hand, and they carry this prejudice to such an extent that they declare they cannot do good work with the machine-cut files.

It would be difficult for them to tell the difference between the two makes of files, for within comparatively few years machines have been making files that cannot be approached by the most expert file cutters of Sheffield. Files, and many of them, are still cut by hand, and a file cutter is probably the most expert user of a hammer and cold chisel in the industrial world.

Files and rasps are made of steel which varies from the "blistered" steel for the poorer quality of files to the best crucible, or "cast cast" steel, for the higher grades. The blanks thoroughly annealed or softened, and are perfectly clean and free from scale when laid on the bench of the workman who cuts the teeth.

A file cutter generally works on the same kind of a "cut" year in and year out. This gives him a mechanical perfection which cannot be secured in any other way, and it is said that a workman's hand becomes so accustomed to the spacing that were he to become blind he could cut just as well.

Files are made on many forms to suit the great variety of work which they are called upon to do, but the "cuts" which give coarseness and fineness to files are comparatively few; they are known as "rough," "bastard," "smooth," and "dead" smooth. These are the common "cuts." "Flats" are single-cut files are made by crossing the first cut with a second cut, thus changing the parallel, unbroken cutting edges of the flats into numerous points.

When a face, or one or more edges of a file, is left uncut it is said to be "safe." No matter what the form of the file is, whether flat, square, round, half-round, rat-tail, three-square, or knife-edged, the cutting is done the same way. A short, light, steel chisel, with a broad, straight cutting edge, is used. The hammer is a curious looking affair, for it is curved somewhat, and the handle is inserted well toward the smaller end. The hammer weighs from one to six pounds. In striking, the workman gives a peculiar pulling blow which raises the "burr" and gives the particular cut characteristic of files, and it was this cut that for nearly 200 years prevented inventors from designing machinery which would cut a file equal to the hand-cut article.

The workman sits on a low bench which comes out from a long wide bench. Before him is his anvil, usually a stone block or a slab of iron. The blanks are held in place by straps which pass over the tang and point, and then form a loop or stirrup under the anvil. The workman puts his foot in the loop, and thus holds the blank secure while he is cutting it. He holds the chisel between the finger and thumb of the left hand, and after each cut moves the blank slightly for the next cut. He does this by lifting the chisel over the burr and then pressing the point of the tool against the raised edge just out, at the same time loosening the strap so that the blank can be moved. In cutting small files or smooth or dead-smooth files, the hammer blows, movement of the chisel, loosening the straps, moving the blank, tightening the strap and striking the next blow are done so rapidly that they are nearly simultaneous. The flat cut is made first, and then the second cut is made. In making the second cut the workman strikes the chisel with less force, thus making a shallower cut. If the file is to be cut on the other side, the cut side is laid upon a plate of lead or pewter to protect the cutting edges. If the file is other than a flat shape, the lead or pewter is grooved or hollowed out to fit the shape.

After cutting, the files are hardened, for the annealing makes the steel so soft that the first use of the file would bend the cutting edges. Some files are curved before being tempered. This is done by heating the cut files to a dull red and bending them to the required curve over a wooden block with a wooden mallet. The files to be hardened are first covered with a mixture of salt and some sort of carbonaceous substance. This covering serves a two-fold

purpose; it prevents the teeth from oxidation and from losing the carbon in the steel, and by fusing indicates the proper heat for tempering. It also serves to prevent cracking when the file is suddenly plunged into the cooling liquid which gives the file the temper.

Naturally, a heated file suddenly cooled will warp more or less according to its form. This is prevented by giving the file a "set" in the other direction before it is tempered, so that the tendency to warp actually straightens the file. When the steel has reached the proper heat, the file is lifted from the fire by the tang and suddenly immersed in cold water, and before it has grown cold it is withdrawn and put in a screw clamp, which keeps it from curving or bending. The tang is then softened by sticking it in melted lead, and then the file is cleaned, dried, and piled. Watchmakers' files are delicate tools, seldom more than four inches in length, slender and trail, with minute teeth. From this size files range up to great coarse ones eighteen inches long, which are used on the heaviest work. Flat files which have parallel sides and edges are called hand, pillar or mill files of small or average length, and cotter files of large length. Square files usually taper somewhat toward the point; the knife file is shaped like a knife blade, and is used for finishing triangular notches or slots; half-round files are flat on one face and half round on the other; when round files taper they are called rat-tail files; the triangular file is commonly known as a "three-square," a "warding file" is used by locksmiths; it is thinner than a hand file, but of much the same shape; double, half-round, or cross files are belied on both sides, and the leather edge or screw-head file is diamond shaped in sections. "Rubbers" are heavy, cheap files for coarse work and "rillers," or curved files, are for finishing irregular surfaces.

Rasps are cut with punches having a pyramid-shaped point, for rasps do not have continuous cutting edges, but have isolated burrs or teeth. They are graded in the cut as files are. The handles of files and rasps are placed on the tang. Sometimes the nature of the work, such as facing a slide valve, does not permit of the use of the handle; in that case the tang is bent or a holder is used something like the holder of a flatiron.

The teeth of a file are not so regular as they look, for a close examination, aided with a magnifying glass, shows that some of the teeth are deeper than others and that there is a uniform unevenness all over the face. This is not the result of careless cutting or unskilled handling, but, in the case of hand-cut files, is an evidence of extraordinary skill, for perfectly even teeth are not wanted in files. If all of the teeth were even in height and depth the work would all come on the first teeth to meet the surface under the file. The teeth at the tang end would not cut unless great pressure was put on the file, and even then the file would "chatter." This "chattering" is the rebounding of the file from its work, and in the early days of machine-made files it was the "chattering" which kept them from use.

Finally a machine was invented which cut the teeth with a loose chisel, and the feed was such that the graduation of width and depth gave the teeth that uneven evenness which mechanics demanded. The space between the cut gradually widened from the point to the heel, and as this same feed was used in making the second cut the teeth did not track, and hence, the chattering was killed. Improvements in file-cutting machinery were made from time to time, until to day machine-cut files are better than the hand cut.

**Cheaper to Move Than to Bury.**  
Suicides are never wanted by hotel proprietors. Each one costs a hotel a considerable amount of money, and for months the room in which it occurred is shunned. At one of the leading hotels of this city lately a guest acted strangely, and the proprietor made up his mind that the man was going to do something desperate. So one night he went to the guest's room. There was no answer to his knocks and the door was locked. A look over the transom showed the guest writing a letter, a pistol at one side and a bottle of poison at the other.

"Let me in or I'll break open the door," called the landlord.

The door was opened after a little hurried work disposing of the things on the table.

"I don't any suiciding here," said the landlord, entering. "What's the matter with you, any way?"

"Out of money, out of work, and can't get out of town," sullenly said the guest.

"Well, how much cash will you take and agree to get out of town?" asked the hotel man.

"I could get home for \$20," was the reply.

"Here's the money; now pack your grip and take the first train."

The man went. It was a good business transaction for the landlord.

**Baldness.**  
The period in life during which premature baldness occurs is between 25 and 35. If an individual safely passes this period without losing any hair, he will not become bald until old age. When the hairs fall out, they are immediately replaced by others of a finer nature, which in their turn disappear to be replaced by others still finer, and so on until the scalp is bald and shining.

## HE WAS RANTANKEROUS.

OLD SOLOMON, THE BAD BEAR, AND WHAT BEFEL HIM.

He Had His Fun With the Hunters for Years but Made a Mistake at Last—His Duel to the Death With a Steamship—Victim of Big Bear at Last.

"There was a bear once up in the Lake George mountains," said Captain Dolf Brown of Hague, "that was so cute and tough and always up to snuff that he just naturally had his own fun with the hunters and trappers for years and years. The stories they tell of how this sagacious bear used to steal traps that were set for him and play jokes with them on the men who set them, and how he used to aggravate and circumvent hunters who took his trail by all sorts of bold and impudent stratagems would fill a large book. One time, I remember, a couple of hunters went into camp in the mountains back of Baldwin's, with particular signs on this old bear, and, according to their story, they were routed out about daylight the second day they were there by a great rattling and banging around the shanty. On investigating the cause of the disturbance they found that it was the rantankerous bear himself. He had boldly come into camp and noisily made his presence known as if by way of a challenge. Before the hunters could get their guns, Old Solomon—that was the name the smart bear got to be known by—was far away and out of sight. But he left a good, plain track in the snow, and as soon as the campers could get ready they started on the trail of the aggravating bear, feeling that at last he had overreached himself.

"The bear led the men a fine chase for three or four hours, but not once did the hunters come in sight of their coveted game. At last Old Solomon showed them further of his quality. They could scarcely believe their eyes at first, but there was no getting over it. The bear had brought them back right into their camp, where, judging from the condition of things there, he had preceded them an hour or so. As the hunters had gone into camp with the intention of remaining two or three weeks, they had supplied themselves well. Among other things, they had a two-gallon jug of whiskey, a gallon jug of molasses, a twenty-five pound sack of flour, and ten pounds of salt pork. The bear, after undoubtedly regaling himself liberally from both jugs, had smashed them on the floor of the shanty, and had waded about in the released rivulets of molasses and whiskey, and tracked the sticky combination all about the place. The bear had then broken open the sack of flour and spread its contents over the floor. The pork he had taken away with him when he had had his little fun and thought it time to leave the camp. The hunters gave up the campaign against old Solomon there and then, broke camp, and went home.

"This amazing bear was easily known from other bears because of a big patch of white fur on its breast, a patch as big as your two hands, which was an unusual marking on a bear. All the rest of his coat was as black as coal. I haven't any doubt at all that this bear would be having fun with folks along Lake George till this day if he hadn't got the big head and thought there wasn't anything he couldn't do, and so one day went out and bit off more than he could chew. It was the time the old Ganoussie was running on the lake. Burr Phelps was her pilot. On her early morning trip one day, after she had left Baldwin's dock, on the east side of the lake, and was nearing Anthony's Nose, her pilot saw a bear swimming in the lake, on the starboard bow. To see a bear swimming Lake George wasn't any rare sight in those days, and Phelps was showing the Ganoussie's nose along by this one without giving it more attention than he would have given a gull, when he was attracted by a loud and savage growl from the bear, and looking down at it saw that it was putting on a terribly ugly front, its eyes flashing, while it snapped its jaws and scarled, and showed its big teeth clear to the roots of the gums. The bear was headed straight for the ste motor.

"Why, blame your ugly skin," said Phelps. "You want to fight, eh? Well, I'll just cut your comb in less than no time."

"He rang for the engineer to slow down. The boat had run on ahead of the bear but the bear was coming right along after her. Phelps made a lasso out of a long rope, and when the bear came alongside, growling and snarling, he threw the noose, intending to drop it over the bear's head, but it was a bad miss, and before Phelps could haul the rope back the bear grabbed

it with one paw and yanked it out of the pilot's hands so quick he didn't know what had become of it.

"Somebody lower a boat," he bellowed, "and go chop that infernal bear's skull in."

"A boat was quickly lowered, and three men got into it, one in the bow with an ax to split the bear's head, while the other two managed the oars. The steamer had been stopped by this time, and excited passengers watched the outcome of this scurvy on the bold bear. The bear saw the boat coming and waited for it. The boat was rowed almost against bruin, and the man with the ax aimed a blow at the bear that would have cloven his skull if it had landed, but with one lightning-like sweep of his right paw the bear knocked the ax flying from the man's hands, and it sank in the lake ten feet away. At the same time the bear began climbing into the boat. As he raised himself out of the water a big patch of white showed on his breast.

"Old Solomon!" yelled the men in the boat, and tumbled themselves into the water and swam wildly for the steamboat, where they were fished out and got aboard.

The bear got into the boat as dextrously as if he had been climbing into the boats all his life. Seating himself in the stern, he faced the steamboat, and hurled defiance at it and all upon it by fierce snorts and growls, and an alarming and threatening display of blood-red jaws and gleaming white fangs.

"Now, by thunder," cried Pilot Phelps, now mad all through, "it may be, you white chested old bandit, that you're too much for the land forces of Lake George, but I'll be d—d if you can get away with the navy!"

"He signaled to go ah, and he turned the old Ganoussie around and sent her sharp bow-bumping straight for the bear. The steamboat struck the small boat amidship and cut it square in two. The astonished old bear seized the cut-water with a paw on each side and clung there for ten seconds, gnashing it with its teeth.

"Then he broke, and he fell back into the lake. He was drawn under the wheel box on that side of the boat, and the next instant there was a crash and clatter of broken paddles, while way back in the wake of the boat the bear came to surface, ugly and defiant as ever. A score of revolvers opened on him from the boat, but he didn't mind them a bit. The boat was rounded to again, and the pilot set straight for the bear. Phelps had made another lasso. Old Solomon avoided the rush of the boat, and as he went by Phelps threw his lasso. This time it dropped square on the bear's head, and tightened about his neck before he could prevent it. The engineer put on steam and Old Solomon's days were numbered. He was towed by the rope until he was either choked to death or drowned.

"For a bear that knew as much as that one," said Pilot Phelps, as the dead bear lay on the Ganoussie's deck, "he was the biggest fool I ever heard of."

"Old Solomon wasn't such a big bear after all. He weighed only a little over three hundred pounds. And he was a victim of big head, if there ever was one."—New York Sun.

## LONG HAIR FOR MUSICIANS.

Its Value Practically Illustrated Through the Instrumentality of M. Ysaye.

London Truth has recently been discussing the question of the hirsute eccentricities to which the majority of musicians are given. It wonders why things are as they are. "Is long hair an untailing mark of genius?" it asks. The answer is: No, not necessarily, but it is certainly a mark of policy. It does not require any profound wisdom on the part of a public performer to know that it is better to be talked about for his ugliness or his eccentricity than not to have his personality discussed at all, and if a man be so unfortunate as to possess a normal face and figure with the average number of features and limbs, in what quarter must he look for individuality save in his hair?

M. Ame Lechaume, the young French pianist who is this year touring with Rivarde, and who did the same last year with Ysaye, tells how he happened this season to bloom out as one of the long-haired brethren. When he first came to this country M. Lechaume wore his hair in every-day fashion, and also cultivated a tentative beard. People heard him play, exclaimed, "How unassuming!" went away, and forgot him. Since his conversion, however, the same persons cry, "How hideous!" but the man is evidently a genius. Bravo! and they depart, and this time do not forget.

It was Ysaye who brought this change about. Last year, in the course of their travels, the two artists found themselves in a town somewhere in the West. They were sitting in a room together when Ysaye exclaimed, "It's no use, Lechaume, I can't stand that beard of yours any longer; it is too ugly, and it must come off!"

"But, my dear man," answered the alarmed pianist, "I have taken such pains to grow that beard; it has cost me years of labor and anxiety; besides, you know one must have something distinctive about one."

"Yes, of course, I know that, but all you've got to do is to let your back hair grow like mine. And there's no time like the present, either, so you just sit down in that chair there, and we'll make short work of the business."

No sooner said than done. In a few seconds Lechaume was sitting trembling in the chair, while the great Ysaye wielded the razor about his devoted chin.

"In future, my dear boy, use a razor, but never scissors, and you are sure to become famous."

**Girls at a Dance.**  
The girl that has the best time at a dance is the one that looks fresh, bright, and happy, she may not be pretty, she may not be clever, but she will have numerous partners and a thoroughly good time. Therefore it behooves every girl not to look tired, and to guard against this she must have comfortable shoes. A shoe that pinches in the heel is bound to stamp on the girls' features a fagged expression before the evening is half over. Yet a shoe may not pinch and still be very fatiguing. A slipper especially may slip up and down at the heel if too large, and cause almost as much discomfort as a cramped feeling.

## A YOUNG LADY'S SUCCESS.

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Miss Minnie McBrine, of Bethany, Ont., positively declares that Paine's Celery Compound is worth its weight in gold for sick people. This statement, coming from one who was raised up to health and vigor, commands the close attention. Past failures with worthless medicines and perfect success with Paine's Celery Compound, is a strong and clear demonstration that the popular compound can be trusted in every case.

Read the following letter written by Miss McBrine, and then honestly decide whether Paine's Celery Compound is worthy of a trial as far as your case is concerned.

Consequently the girl that wishes success in a the ballroom should look well to the comfort of her shoes.

**THE HUMPBACK WHALE.**  
It is Agile and Yields Better Oil Than Does the Greenland Whale.

The humpback whale is a rorqual—"Banna Gibbosa" of the naturalists—and attains a large size, though inferior to the great "right" whales of Greenland. The quality of the oil is much higher, being less inferior to that obtained from the sperm whale, while the additional advantage of yielding baleen, or whalebone, is possessed by this species. The great drawback to the capture of this cetacean is his marvelous agility. No whaleman in his right mind ever attempts to strike one in the open sea. Whenever such a mistake has been committed a very few moments have sufficed to lose the whole of the boat's line, 300 fathoms, and the harpoon, and thanksgivings have arisen that the fishermen were so soon rid of such a vigorous leviathan. At the calving season, however, the gravid cows seek shallow waters and sheltered bays for the purpose of bringing forth their young, instinct teaching them that there they will be safe for the time of their distress from their natural enemies. Of course the whalemen early discovered this interesting fact, and have often turned it to the most profitable account. Either just before or soon after parturition, the cow humpback is languid and deliberate in her movements, and consequently unable to avoid or resist the attacks of the destroyer.

The blubber of the humpback, too, at this time is extraordinary rich in oil, yielding quite 50 per cent, more than it usually does. When struck with the harpoon, if she has a calf by her side, all the mother's energies are employed in its protection. For herself she takes no care, satisfied, apparently, if she can but interpose her huge body between her tender nurslings and the death-dealing lances of her foes. These she receives unheeding, and when at last, enfeebled by loss of blood, she nears her last struggle, the mighty maternal instinct is even then able to overcome the throes of dissolution, and she does not go into a fury, but calmly passed from life to death, clutching her young one to her bosom with her huge pectoral fins.

Sometimes it happens that through ignorance or carelessness the harpoon strikes the calf and kills it while yet the mother's powers are unimpaired. Then, indeed, the tables are turned with a vengeance. Every device that experience can suggest and presence of mind excite are needed if the terrible rage of the furious monster is to be escaped from. Utterly careless of her own safety, she endeavors by every means she can compass to destroy the boats and their crews. Many awful accidents are recorded from such contests as these, but nearly all of them might have been avoided by the exercise of a little more care on the part of those responsible.

**Advice to a Young Married Woman.**  
The following advice, given to a young married woman, who was visited by an older and more experienced one, may be helpful to some of our readers:

When the visitor arose to go the hostess came with her to the door, and out upon

"with the greatest pleasure that I add my testimony to the voluntes you have already on file in favor of Paine's Celery Compound. After suffering for a length of time, and having met with many disappointments in the use of medicines in general, I commenced to use Paine's Celery Compound which proved a complete success in my case. Your medicine cured me completely, and I feel as well as ever before in my life."

"Paine's Celery Compound is worth its weight in gold for sick people; I would specially recommend it to all weak and nervous people."

the pleasant piazza, which, however, looked a little dusty in the corners.

"Oh dear," said the young wife, "how provoking the servants are, I told Mary to sweep the piazza thoroughly, and now look how dusty it is!"

"Grace" said the older woman, looking into the disturbed young face with kindly humorous eyes, "I am an old housekeeper. Let me give you a bit of advice: Never direct people's attention to defects. Unless you do so, they will rarely see them."

"Now, if I had been in your place and noticed the dirt I should have said, 'How blue the sky is,' or 'How beautiful the clouds are,' or 'How bracing the air is.' Then I should have looked up at that as I spoke and should have gotten you safely down the steps and out of sight without you seeing the dust."—Boston Herald.

**"HEALTH FOR THE Mother Sex."**

This caption, "Health for the Mother Sex," is of such immense and pressing importance that it has of necessity become the banner cry of the age.

Women who have been prostrated for long years with Prolapsus Uteri, and illnesses following in its train, need no longer stop in the ranks of the suffering. Miles' (Can.) Vegetable Compound does not perform a useless surgical operation, but it does a far more reasonable service.

It strengthens the muscles of the Uterus, and thus lifts that organ into its proper and original position, and by relieving the strain cures the pain. Women who live in constant dread of PAIN, recurring at REGULAR PERIODS, may be enabled to pass that stage without a single unpleasant sensation.

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