# BAFFLES SCIENCE.

## Why Hot Steel Is Tempered by a Sudden Cooling.

### SLOW COOLING KEEPS IT SOFT

**Yet the Busy Brain of Man Cannot Succeed In Reasoning Out Why This Is So—The Mysterious Properties Exhibited by Water, Tin and Glass.**

Here is a fact, known to everybody, which is as mysterious as would be the actual appearance of a ghost, by which I mean that the fundamental explanation of the phenomenon is about as far beyond our reach in the one case as in the other.

The fact to which I refer is the production of tempered steel by quenching in cold water. If hot steel is cooled very slowly it becomes soft and cannot take a cutting edge, but if it is cooled suddenly it becomes very hard and can be ground into keen swords, knives and cutting tools.

Now, why the difference? Have you ever thought about that question? If you have not, many a man of science has, and has been puzzled over it.

Here is another related mystery. If you beat an old Japanese sword, which for centuries has retained its capacity to slice off a head at a blow, or to open a swift passage for the soul of the victim of the harakiri mania, to the temperature of boiling water it gradually softens and loses the keenness that once made it so formidable.

It is the same steel, but it, too, seems to have lost its soul. At a temperature of 150 degrees centigrade the hardened steel commits harakiri in a few minutes. Surely there is something strange in that.

Then consider this: At zero temperature water changes from a liquid and suddenly becomes solid. But if you put the water in a vase and carefully protect it from dust you may cool it as much as 20 degrees below zero and yet it will not freeze! But now shake the vase or drop in a bit of ice, and the water immediately solidifies!

I owe the collection of these facts to a paper by Professor James H. Walton, Jr., of Wisconsin university. The explanation which he gives is that substances like the hardened steel and the unfreezing water are in a state of "suspended change." That accounts for the phenomena, but in a certain sense they remain mysterious, just as life is mysterious.

Many substances possess the same curious characteristics. Professor Walton says that if a flask containing sodium acetate, which has been cooled below its natural freezing point without solidifying, is opened in a room containing dust of the solid acetate the fine particles of the latter dropping into the flask will cause the whole contents to solidify.

Tin is a very strange metal with regard to this state of suspended change or "metastability." A severe winter cold will sometimes cause it to lose its hardness and crumble.

Objects made of tin sometimes undergo such change and are then said to be suffering from "the tin disease." The contact of "diseased" tin with bright, hard tin is capable of setting up the transformation.

Glass, Professor Walton informs us, is "an undercooled substance"—that is, it is in a metastable condition. If old glass tubes through which water has frequently passed are heated the glass crystallizes and loses its transparency.

All substances in this state are liable to change, and the change, under proper conditions, may be sudden. Hardened steel is in a similar category. If it were as perishable as tin it could not be safely used for many purposes for which it is habitually employed. Fortunately steel exhibits great reluctance to change of state after it has been tempered. Transformation is retarded or arrested.

"Does steel slowly return to the stable form and thus grow softer?" asks Professor Walton, and then answers: "That we do not know; we can only say that if such a change does take place, hundreds of years are necessary to bring it about."

The same ancient Japanese swords, which, when heated, as before described, become soft, retain all their hardness if carefully preserved.

It is evidently of the highest importance to the practical world that science is investigating these things and discovering the way and the circumstances in which the changes come about, even if it has not unveiled the underlying mystery of their cause.—Garrett P. Serviss in New York Journal.

#### Correct Interpretation Essential.

Many of the most beautiful pieces of poetry in literature would seem uninteresting and flat if read by a bad reciter. In the same way a good reciter will make attractive a poem whose beauties are not so apparent. A fine painter will light up each little beauty in his pictures until the smallest detail is attractive and strikes the eye. It is only the mediocrity whose work is characterized by sameness and lack of interest.—Strand Magazine.

#### Making Good.

"Darling," he cried, "I cannot live without you."

"But," she replied, "my father is bankrupt."

"In that case," he despondently replied, "I guess I'll go and shoot myself."—Chicago News.

It is indeed a desirable thing to be well descended, but the glory belongs to our ancestors.—Plutarch.

**The healing demulcent qualities of Foley's Honey and Tar Compound are not duplicated in any other medicine for coughs and colds. Any substitute offered you is an inferior article. Refuse to accept it for it can not produce the healing and soothing effect of Foley's Honey and Tar Compound. Insist on the genuine, which contains no opiates. Huntley Bros. Co.**

**Mrs. Nellie M. Alldredge and her daughter, Miss Edith, who have been seriously ill with typhoid fever, are slowly improving.**

# A MOTHER'S RUSE

By HELOISE BRAYTON

"Amy," said Mrs. Stringfellow to her daughter, "Walter Barnard has been paying attention to you now for six months. If you were engaged I presume that you would tell me. But I wish to know surely whether you are or are not."

"I am not," replied Amy dolefully.

"That evidently means that Walter hasn't spoken."

"I think he will, mamma."

"Not without being brought to the point."

"Mamma, you wouldn't wish me to tell him that I am expecting him to propose to me, would you?"

"Certainly not. That would not be the part of a girl. But a girl has her privileges, and one of them is to indicate to a young man paying her attention that she wishes him to discontinue doing so."

"But I don't."

The mother bit her lip, but said nothing more. Nevertheless she determined that since her daughter had not the spunk to bring her lover to a proposal she would make the attempt herself. To interfere in such a matter is always a great risk, and the lady realized that by doing so she might make a breach between herself and her daughter that might never be healed. But Mrs. Stringfellow was naturally diplomatic and determined that she would pursue a little game of her own which might mean a great deal or might mean nothing.

Not long after this little dialogue Mrs. Stringfellow arranged that Amy should go away on a visit. Amy objected, not being willing to leave Walter even for a day, though she did not see him oftener than once a week. But the mother prevailed, and Amy departed with fear and trembling that the man she wanted would during her absence fall into the toils of some other girl.

One day during Amy's absence Walter Barnard called upon her mother to pay his respects and ask how her daughter was enjoying herself. He was ushered into the library, where he usually visited with Amy. On the table lay a bill from a prominent dry goods store. It was so plainly exposed that the caller could not help seeing it, but he did not make himself acquainted with its contents till an unrolled package on a chair attracted his attention. It was white and of a delicate fabric. Near it was a box, in which some white gauzy substance so loosely rested that a part hung over the side. There was still another box with the cover on.

Barnard while waiting for Mrs. Stringfellow had nothing to occupy him, so his mind became fixed on these articles. He examined the fabric, and it seemed to him that there was about enough of it to make a dress. Then it occurred to him that the gauzy stuff might be intended for a bride's veil. Having gone thus far in his surmises, he was naturally curious to know what was in the covered box. He lifted the cover and saw that it was filled with orange blossoms.

Evidently some one was about to be married.

But who? There was only one single woman in the house, and that was Amy.

A terrible thought entered the young man's brain. Could it be possible that while he had been putting off his proposal some other man had come in and occupied the vacant place ahead of him? His heart seemed to stop beating. Perspiration stood out on his forehead.

He paced the floor till Mrs. Stringfellow came down. When she saw the dry goods she looked displeased, called a maid and directed her in a sharp tone to take them upstairs. Then she turned her attention to her visitor.

Barnard was too disconcerted to talk connectedly. He jumped from the warm weather to the news from abroad and from the news from abroad to the last bit of social gossip. Then he asked if Miss Stringfellow was enjoying her visit and was informed that she was having a delightful time. He asked when the young lady would return, and his hostess informed him that certain events that had happened since her departure would necessarily alter the time of her homecoming, but did not say whether it would be hastened or delayed.

Two or three times Barnard was on the verge of asking whether Amy was about to be married, but every time he balked. Once he got his question partly out, but Mrs. Stringfellow looked at him so coldly that he turned the question into something else. Finally he arose to go, stumbled against a chair's back or against an open door, dropped his hat and stepped on it, finally getting out in great confusion.

That night he slept only a few hours and in the morning took an early train for the place where Amy Stringfellow was visiting. She was much surprised at seeing him and waited for him to declare the object of his coming.

"Are you going to be married?" he asked in a tone to warrant that if she were he was ready to kill the groom.

"No. Why do you ask?"

There was an embarrassed silence for a few moments, when he spoke again.

"Well, then, I wish to put in my claim for you. I don't want any more scares like this."

When Amy returned to her home her mother confessed her ruse. Had it failed she could not have been convicted of it.

The man or woman who has kidney trouble is facing a serious proposition, whereas rare conditions readily follow neglect. Foley Kidney Pills are an honest curative medicine that at once taken into your system mean restored kidney and bladder action, and a return of health and strength.—Huntley Bros. Co.

William Sheahan, who has been on an Eastern trip on business in connection with the Willamette Pulp & Paper company, being day superintendent of that company, has returned to Oregon City.

# THE BALL PLAYER.

## He Faces Many Trying Ordeals In His Early Experience.

### MAKING A BIG LEAGUE CLUB.

**Tribulations of a Veteran Star Who Started In With a "Swelled Head" and Got Fired and Then Worked His Way Back Into Fast Company.**

In the American Magazine Hugh S. Fullerton writes an article entitled "The Making of a Big Leaguer." It is a true story of the development of one of the greatest ball players in the United States as told by himself to Mr. Fullerton. This player, of course, began the game as a boy and passed through all the stages from amateur to minor league teams and then into the big league. In this early experience he became a great victim of the "swelled head," hit the first ball pitched when he went to bat after being told to wait for two strikes and finally lost his position on the big league team. After many vicissitudes he lost his "swelled head" and got into the big league again, where today, at thirty-four years of age, he is one of the great veterans of the game. Of his final entrance into the big league he says:

"In June I was purchased for a large sum by the club which then was the strongest in the country. I didn't say a word about money, although the club paid over $4,000 for me. The new manager sat down with me in the hotel the night I joined his team.

"'All I want,' he said, 'is for you to get out there and hustle and behave yourself. I've heard you're hard to handle, but I'll take a chance.'

"'You won't have any trouble with me,' I assured him. 'All I want is a chance to show that I can play.'

"'You'll get all the chance you want,' he said quietly. 'You're in the lineup tomorrow.'

"Stage fright! Did you ever suffer it? I did that night. My nerves were jumping, and a thousand times I figured out plays—yes, and made them—in planning what I would do the next day.

"We were playing a game against a team which we figured we would have to beat out to win the championship. I pictured myself hitting home runs and making triple plays, and when I awoke in the morning I was nervous, a shaky, uncertain and scared ball player. In practice before the game everything hit my way I either fumbled or threw wild, as my nerves were rags. The crowd seemed to be sorry for me when they weren't mocking. It was a relief when the game started.

"I was second at bat in the lineup, on a foreign field and with a hostile crowd roaring. The first man flied out. 'Wait him out. Take two,' said the manager as I picked up a bat. The first pitched ball cut the heart of the plate. I saw it all the way up and knew it would have been easy to hit it hard, yet I let it go. 'Strike one,' the umpire yelled, and the crowd howled. I was cool as a Boston east wind. The second ball came whizzing up straight over the plate with nothing on it, and I itched to hit it, yet let it go for the second strike.

"Then I settled to hit, expecting a curve ball. The curve went wide. A fast one went high and wide. I figured that the pitcher thought he had a sucker at bat and would curve one over. He came with a fast ball a foot high, and I swung at it and struck out. My heart nearly got spiked as it sank into my toes going back to the bench.

"'That's the boy,' said the manager. 'Wait him out. Make him pitch.'

"I could have kissed him for those words. I went to short with my nerves steady and my system full of confidence. The first ball hit was a sizzler over second. I got the ball with one hand, and there wasn't a chance to throw the runner out if I stopped to straighten up, so I threw without looking and without waiting and plunged forward onto my face. The yell from the crowd told me the first baseman had caught it, and as I scraped the dust out of my eyes and trotted back to position I felt at home.

"I wasn't excited nor elated, but the confidence that had carried me through the minor leagues came back with a rush and all fear was gone. I was a big leaguer—and knew it. The next time at bat I crowded the plate, jockeyed with the pitcher and watched. He whipped a curve inside the plate. I pretended to dodge and let the ball hit me. It hit hard and I squirmed, but as the manager bent over me I winked at him and, letting him lift me, I limped down to first and stole second on the first ball pitched, sliding clear around the baseman. On my third trip to the plate I cracked a clean hit over second base and, after being sacrificed to second, stole third because I figured no one would expect a recruit to do that.

"In the clubhouse that night the manager said, 'You'll do, kid, if you don't get swelled.' And I replied, 'I've gone through that.'"

#### One to Five Meals a Day.

In England people are sometimes addicted to five meals a day—breakfast, lunch, tea, dinner and supper. The continental fashion is a snack for morning coffee, a midday meal and an evening meal. But when the great army of Xerxes was marching through Asia Minor, and city by city had to provide food for the day, the people thanked God that Xerxes and his army ate but once a day.

The path of success in business is invariably the path of common sense.—Samuel Smiles.

**Adenoids are a Menace to Children**

Adenoids result from a succession of colds in babies and young children. They spoil the mental and physical life of a child. Thec ondition that causes them may be easily avoided by careful parents. Quickly and thoroughly cure all colds and throat irritations by the use of Foley's Honey and Tar Compound, and adenoids will

Miss Zida Goldsmith left Wednesday of last week for Pendleton, Ore., where she will be the guest of friends and will also attend the Round-up.

# The War Fifty Years Ago

**A Lull In the Fighting Zones---Movement of the Federals Toward Chattanooga---The Line of the Rappahannock River Again Occupied by Armies---General Lee Resting His Troops Around Culpeper and Gordonsville---Federals Bridge the River---General John Buford's Cavalry Crosses Over and Drives the Confederates From the Southern Bank---Campaign Against Indians In Dakota---War Volunteers Expel the Sioux.**

By Capt. GEORGE L. KILMER, Late U. S. V.

DURING the month of July, fifty years ago, the west as well as the east was wrought with war excitement. In the east Lee had penetrated the heart of Pennsylvania; in the west John Morgan, the raider, was making a cyclonic sweep across Indiana and Ohio toward the Pennsylvania border. In opposition to the wishes of his chief the rash cavalry chieftain galloped far into the enemy's country. General Basil Duke, the right hand man of Morgan, has declared that his leader intended to join forces with Lee in Pennsylvania. He sent spies to examine the fords of the upper Ohio for that purpose.

In his conferences with his officers Morgan admitted the dangers in the way of his enterprise, but his enthusiasm overcame all caution. With the brigades of Colonel A. R. Johnson and General Basil Duke he crossed the Cumberland river into Kentucky early in July. His force comprised 2,460 troopers, with six pieces of horse artillery, according to General Duke, although the Federals placed his strength at 4,000.

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GENERAL J. H. MORGAN, C. S. A., AND WIFE, PHOTOGRAPHED IN THE FIELD IN 1863.

### A Stroke of Strategy.

Early in the summer of 1863 the main Confederate army of the west, then located in central Tennessee, was exposed to the risk of attack from two sources. Its immediate opponent, the army of the Cumberland, under General W. S. Rosecrans, lay a few days march north of its camp. In Ohio and Kentucky General A. E. Burnside was assembling another Federal force to penetrate east Tennessee. This move would menace the Confederate right and rear. General Braxton Bragg, the commander, decided to retreat to Chattanooga, south of the Tennessee river.

Morgan's command was attached to Bragg's army, and in order to cover his difficult retreat southward he sent the raider into Kentucky to break up the railroads, attack scattered Federal detachments and threaten to capture Louisville. Morgan wanted permission to extend his raid into Ohio, and Colonel Steele of his command, who was present at one of the conferences between Bragg and Morgan, stated that Bragg said, "Yes, go where you can be most effective to keep back any force of the enemy." "Even to crossing the Ohio river?" "Yes," answered Bragg.

Morgan rode into Kentucky, but only to get out of it as soon as possible, moving at the pace of a cyclone. The raiders averaged twenty-one hours in saddle every day. When horses gave out they seized fresh ones, sometimes three or four daily for a single trooper.

### Beyond the Ohio.

Crossing southeastern Indiana, where they eluded a column of pursuers under General E. H. Hobson, the raiders entered Ohio just north of Cincinnati, and rode through the suburbs of that city in the night. To accomplish this the column traveled fifty miles between sunrise and sunset. Morgan was accused of lack of enterprise in not capturing Cincinnati. It was weakly garrisoned, a fact unknown to the raiding chief, however. General Basil Duke, his historian and defender, says that the column had been reduced by casualties in action and hardship to less than 2,000 men.

Cincinnati was not the objective point of the raid. To traverse Ohio and not to capture its capital was Morgan's determination. Notwithstanding the fatigue of men and animals after their fifty mile ride the column marched on all night. Strong men fell from the saddle, and it was difficult in the extreme to keep the ranks from going to pieces. Reaching Williamsburg, twenty-eight miles east of Cincinnati, the evening of July 19, Morgan halted to rest his command. The raiders had covered ninety miles in thirty-five hours since leaving Summansville. It was at this stage that the raiders began to lament the loss of the horses of the Blue Grass region which they had abandoned on the way. Horses picked up in Indiana and Ohio became lame in a few hours.

### A Running Fight For Life.

When the column reached the eastern border of the state at Buffington's bar, on the Ohio, the expedition changed from a raid into a running fight for life. Morgan might have escaped into West Virginia by abandoning his artillery and wounded, but he preferred to save all or lose all. Early on July 19 the advance of the Federal pursuing column discovered the raiders' camp. After a skirmish in which Morgan's troopers won everything, the artillery began a duel at long range. A second Federal column under General Hobson moved up on another road from the one occupied by the advance, and at the same time some Federal gunboats in the river opened fire in Morgan's rear.

The concentrated fire from three directions stampeded Morgan's wagons, and they blocked the only road of escape. When the confusion was at its height in Morgan's lines the Seventh and Eighth Michigan cavalry and part of the Fifth Indiana charged the raiders. Morgan's guns were captured and his whole command thrown into panic.

Morgan himself rode out of the net at Buffington's Bar with 1,200 of his men. Galloping rapidly almost abreast of the column of his pursuers, he gained the river again twenty miles above the battleground and attempted to cross. About 300 raiders escaped by swimming, but the gunboats headed off the main party. Morgan had reached the middle of the river when the gunboats hove in sight. Seeing that the bulk of his command would be cut off on the Ohio shore, he turned back to share their fate.

### A Race and Scramble.

For the next six days, until disaster overtook the fugitive remnant with Morgan on July 26, it was a continual race and scramble for the 800 wornout men who clung to the leader. At a council of officers it was decided to march back to Blennerhassett's island, the scene of a previous attempt to cross to West Virginia. Hobson was in the vicinity with 3,000 men, but instead of closing in on the entrapped raiders he waited for the bloodless surrender which he supposed would follow. But at night Morgan led his men in single file over a bold mountain, and at daylight Hobson's troopers found only an empty bivouac to mark the raiders' path. They were well on the road north to the Muskingum.

The crossing was guarded in front by militia, who fell back, and the raiders passed safely over, with Hobson's column almost at their heels. Again

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A. B. Buckles, who left Wednesday of last week for his vacation, which was spent at Pendleton, attending the Round Up, has returned to Oregon City.

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Joe Harless, a prominent resident of Molalla, was among those in this city Monday.


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