p10

The TOOL SHED

Number 36 April 1985

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KING OF THE ADJUVANT TOOLS

by Frederick A. Shippey

The silhouette of an eighteenth-century wooden brace and bit combined with the printed word forms the eye-catching logo of CRAFTS of New Jersey. This familiar profile of an adjuvant tool is unforgettable. The word "adjuvant" refers to an implement that enables a woodworking tool to carry out an indispensable process in cabinetry, coopering, chairmaking, and carpentry. By itself, the brace is incomplete; and likewise, by itself, the bit is incomplete. However, the unique combination of a brace and a bit, joined in a common task, yields a new arena of craftsmanship.

The primary significance of the brace has been noted by eminent scholars. In the American Mechanical Dictionary Knight speaks of the brace as "...a revolving tool holder...the handle by which a bit is held and rotated...." Mercer (Ancient Carpenters' Tools) stresses "...the fact that the revolution is continuous and not intermittent, that gives the tool its importance." Writing in the History of Woodworking Tools, Goodman explains, "The main advantage of the brace is that the turning movement imparted to the bit is continuous and positive, and not intermittent, as with augers, or with an idle return stroke as in various bow, pump, or strap drills."

In the Dictionary of Tools Salaman reminds us that "Though crank motion was known in China in the first century A. D., the brace did not appear in Europe until the fifteenth century." Surprisingly, Goodman concludes that "...there appears to be no connection between the brace and any other form of boring tool which preceded it." The "crank motion" noted by various authors provides valuable insight respecting the towering significance of the brace. Truly it is the King of the adjuvant tools!

Development of the Brace

The brace which appeared in the fifteenth century was of simple design and of wood construction. At best it was a crude, inadequate implement. Nevertheless, by the end of the nineteenth century, this adjuvant tool had undergone incredible technological changes. Many modifications occurred in two places—the head and the foot. The former became a ball-bearing, discoidal head of rare hardwood, usually trimmed with brass. The offset section

[Continued on page 8]

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MEETING ON APRIL 14 TO BE HELD AT CLINTON HISTORICAL MUSEUM VILLAGE —HAROLD E. FOUNTAIN TO SPEAK—

CRAFTS of New Jersey will hold its spring meeting on Sunday, April 14, at the Historical Museum Village in Clinton (directions to the Museum are given on page 2).

The meeting will begin at 1:00 pm with the "Swap & Sell," with the formal program starting promptly at 2:00 in the Education Center of the Museum.

Making a return appearance as the featured speaker will be Harold E. Fountain. The title of his lecture/demonstration will be "Stair Building: Tools and Techniques." Harold is a discriminating collector, an acknowledged authority on tools, and a master

[Continued on page 2]

CRAFTS of New Jersey

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Membership in CRAFTS is open to anyone interested in early trades and industries, and the identification, study and preservation of tools and implements used and made in New Jersey. Annual dues are seven dollars for the membership year of July 1 to June 30. Membership fees may be sent to the Treasurer: John M. Whelan, 38 Colony Court, Murray Hill, NJ 07974.

The Tool Shed

Published five times per year for members of CRAFTS of New Jersey. Editor: Robert Fridlington, 8 Keith Jeffries Ave., Cranford, NJ 07016. Contributions, especially about New Jersey tools and trades, are welcomed.

[Meeting, continued from page 1]
craftsman (see Speaker Profile on page 3). This should be an outstanding program.

For those who have not yet been to Clinton Historical Museum Village, take I-78 to Clinton. Turn off at the exit marked CLINTON-PITTSTOWN (do not turn off at the Clinton-Washington exit). Turn right onto Route 173 East (West Main Street) and proceed approximately one-quarter of a mile. Turn again at first left (the Clinton House is on the corner). Go about 50 yards and you are at the Museum Village.

There has been a change in the program originally scheduled for the June 9 meeting. Charles and Walter Jacob, who were to talk on "Using the Stanley 55 Plane," will be unable to appear. They have been rescheduled for the November 24 meeting next fall, however, so you can still learn how to use your 55.

The June program will now have as its speaker Charles H. Peterson, a Professor of Industrial Technology at Kean College. His talk is entitled "Wood: Identification, Properties, Use." Peterson is a recognized authority on wood types and wood uses.

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EASILY MISIDENTIFIED

by Larry Campanell

I am writing this in the hope that others will also send in examples of what I call "tools that could easily be misidentified."—that is, tools that might look as though they are one thing, when they are actually something else. The tools identified by Robert Cameron in "Pudding in the Eaves Trough" and "A New Identification for a 'Planemaker's Float'," The Tool Shed (No. 22, June 1982) are prime examples of what I am talking about.

Just imagine this scenario. At a CRAFTS "Whatsit" session, the tool in Figure 1 is shown. The "Whatsit" Chairman holds it up and says, "This looks like a long auger; it drills about a 1½-inch hole; it's about six feet overall; and the knob on its end is painted red."

Figure 1

Now the debate begins. One after another the possibilities are considered: raft auger, ship auger, barn auger, pump-log auger. For various reasons, each in turn is rejected. Finally, someone asks, "Could it have been used in wooden bridge building?" Many in the audience nod in agreement. Now we're getting somewhere.

But what about the red knob on the end? A voice from the back row says, "I've heard auctioneers say that if a tool is painted red it usually means it's from Canada."

That's it then! It's a Canadian bridge-builder's auger. Most of the audience are satisfied and ready to move on to the next "whatsit." And so, one more unknown tool is identified. They should all be so easy.

Of course, you realize that all of this is purely imaginary. We know that this could not really happen at a CRAFTS meeting. If, however, you are still interested, look at the bottom of page 10. You'll get a blast out of this tool.

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RIGHT AND LEFT SHOES—EIGHTEENTH CENTURY

by Raymond R. Townsend

The concept that all shoes of the eighteenth century were made straight—that is, no right or left—is true only for the majority of shoes. This was not because they lacked the knowledge that a right and left last could be used but because the straight shoe was the accepted style. And style then, as now, dictated what they wore.

It was realized that straight-lasted shoes would push out on the outside if continually worn on the same foot. Therefore it was recommended that the shoe worn on the right foot one day be worn on the left the next and so on.

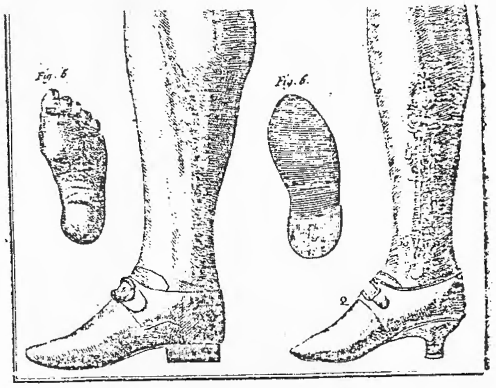

Figure 1

A few men, who wanted left and right shoes, had casts made of their feet, which were then turned over to the last maker. The lasts were then given to the shoemaker to make a pair of right and left shoes. It was stated that although this man with his right and left shoes might be considered "a Great Sportsman, it is true that the slant made by the bottom of his soles did not satisfy the view."

The illustration (Figure 1) shows a left shoe for both a man and a woman, from an eighteenth-century French source.

It is interesting to note that at this period people with deformed feet could also have lasts made of their feet for the shoemaker.

Straight lasts continued to be available for some time. The one shown here, "15" (Figure 2), is from the shoe catalog of Andrew Cowen & Co., Louisville, Ky., in the late nineteenth

Figure 2

century. It was listed as "Style 15, Standard Toe, straight Block Last, Medium with round toe.......each, 27¢." And was added, "Special Lasts for Unusual feet made to order in two weeks, prices 2 00 to 5 00 a pair."

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SPEAKER PROFILE
HAROLD E. FOUNTAIN

Harold Fountain really needs no introduction to most of our members, as he has been an active and devoted member of CRAFTS since the organization first began. He has been a formal speaker at one previous meeting and an informal consultant whenever he is around.

Harold and his wife Ethelle, who live in Westhampton Beach, N.Y., share the distinction of being the CRAFTS members who regularly drive the longest distance to attend the meetings, traveling over those delightful Long Island highways.

Beginning work as a carpenter just after World War II, he was soon in business for himself as a builder. For the past twenty-five years or so, he has specialized in stairbuilding and millwork.

A tool collector for some twenty-five years, he has assembled a spectacular collection. He says he collects the tools of the trades and crafts associated with woodworking, but he has been known to stray into other areas as well.

* * * * * * *

SHOEMAKER'S TOOLS

by Raymond R. Townsend

On the page opposite are pictured sixteen tools used by shoemakers. The illustration is taken from the Henry Arthur 1874 price list of leather and findings (reprinted by Alexander Farnham, Stockton, N.J., in 1981).

The following brief descriptions explain the functions of these tools.

Top Row: Left to Right

1. Fudge Wheel: for ornamenting the welt. To show the stitch up boldly on the welt, the fudge wheel is run around it before the stitching is commenced. The wheel makes an impression on the leather resembling stitching, and the real stitching will appear regular if the awl is put through exactly in the wheel marks. Came in various sizes and was used slightly warm.

2. Cord Wheel: a decorative impression wheel used to make the shoe sole appear better. Resembles a cord; hence the name.

3. Bottom Wheel: a decorative wheel for making impressions on the bottom of the forepart of the sole. Sometimes used to hide the joining of a half sole.

4. Stitch Wheel: to mark evenly where the needle is to enter, providing an even stitch.

5. Shank Wheel: a decorative impression wheel to be used on the shank—that part of the sole which is the arch. They came in 15 different patterns.

6. French Wheel and Key: sometimes called French Key Wheel. A decorative impression wheel; same purpose as those above.

7. Key for Wheel: used for smoothing and leveling out imperfections and rough places on the sole. Left as is or in preparation for the French Wheel.

8. Yankee Key Wheel: same as the French Key Wheel but with guards on both sides of the wheel acting like a fence on a plane.

There are various other types of wheels, but all have the same purpose—improving the appearance of the sole edge and heel edge and bottoms at the shank and forepart. None of these would be considered essential to the making of a shoe.

Bottom Row: Left to Right

9. Rahn Files: also called Rand Files. Used for smoothing welts and rands. A rand is a strip of leather placed under the quarters of the shoe to make this level before the lifts of the heel are attached. If a welt is used at the heel, the file applies there also. As noted, its primary function is that of smoothing rands, but it also can be applied to smoothing the welt.

10. Welt Knives: sometimes also called Rand Knives; for trimming rands or welts.

11. Jigger, Long Handle: for finishing the edge of the sole. Its primary purpose is to compress the leather to make it better able to resist water penetration, as well as to improve its appearance. The handle of the long jigger can also be used for smoothing or burnishing the sole.

12. Jigger, Short Handle: except for use of the handle, this has same function as jigger described above.

13. Channel Gouge: for cutting or gouging cut a groove in the bottom edge of the sole in which to embed the thread to protect it from wearing out.

14. Seam Sett: as the name implies, for setting a seam, smoothing it out, etc.

15. Strip Awls: not an awl, but for cutting stitches. Sometimes called Stitch Cutting Tool.

16. Channel Openers: when a cut (not a gouge) is made either on the top around the edge of the sole or on the edge for embedding the stitching, this is used to open this cut or channel.

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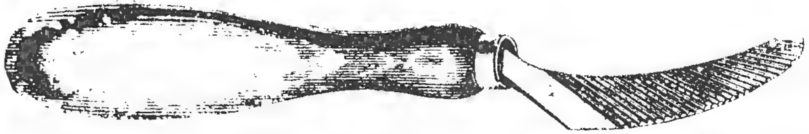

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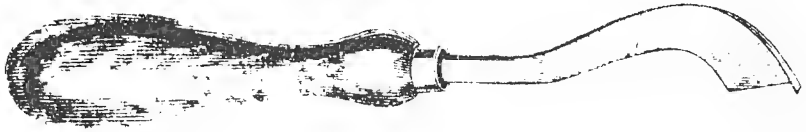

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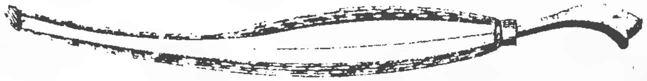
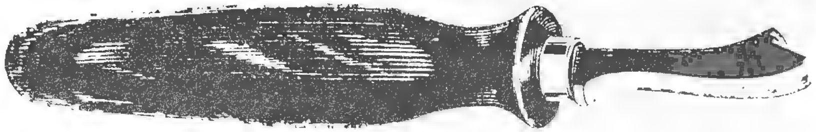


[illegible] Long Handle. 40 cts.



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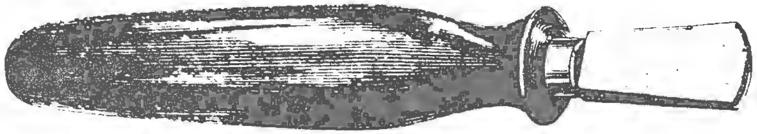
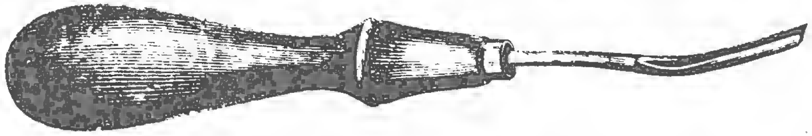
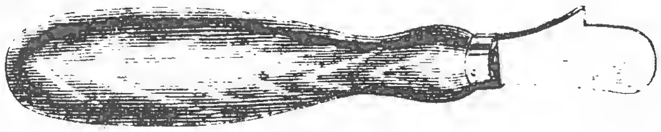


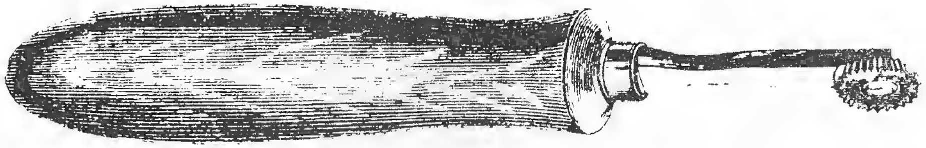
Seam Sett. 20 cts.



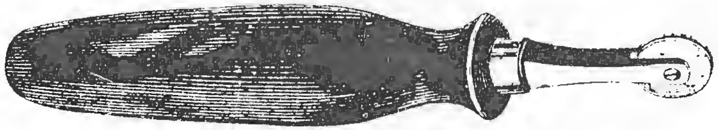
Strip Awls. 15 cts.



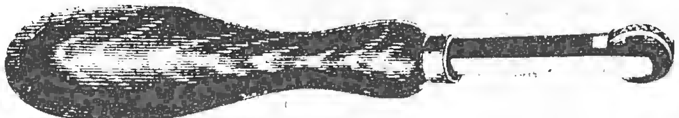
Channel Openers. 15 cts.



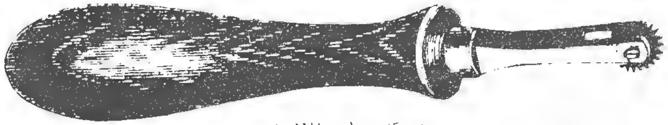
Fudge Wheels. 30 cts.



Cord Wheel. 25 cts.

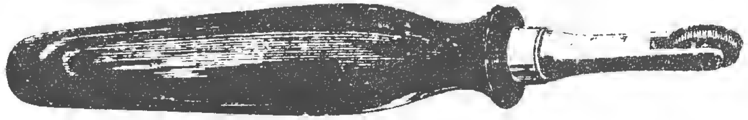


Bottom Wheel. 30 cts.

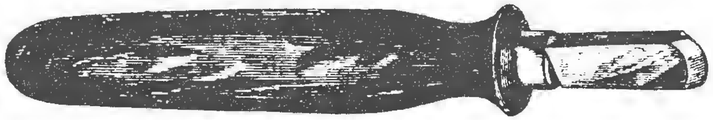


Stitch Wheel. 35 cts.

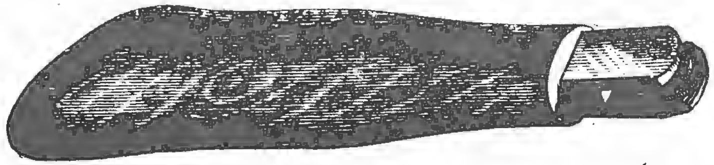
Shank Wheel. 25 cts.



French Wheel and Key. 50 cts.



Key for Wheel.



Yankee Key Wheel. 40 cts.

STEEL

by John M. Whelan

Steel is so cheap and available today that it is difficult to keep in mind that this was not so before 1860, when Bessemer and open hearth furnaces began to produce it in quantity. The tools with a sliver of steel welded to a soft iron body remind us that once steel was costly. Fine steel was highly prized; its manufacture was not easy to control and telling the difference between good steel and bad was an art that had to be acquired. Most of the secrets of this technology are understood now, but it took thousands of years for mankind to solve the many puzzles of this fascinating subject.

Soon after early man found iron in the ashes of his cooking fires, he noticed that sometimes it would shape easily, but blunt quickly; at other times it would hold an edge but was brittle. Over the centuries ironmakers slowly learned how to control this empirically: the reasons were not understood until the eighteenth century. Let's review them.

Iron is very fond of the oxygen of the air, as all of us who fight rust know. To release it from its wedding with oxygen in iron ores, we must use a material with even greater affinity for oxygen. The carbon of the first wood fires filled the bill, and carbon in various forms is still the material of choice. This is so convenient that there had to be a catch. The catch is that hot iron can dissolve carbon, even combine with it; and small variations in the carbon content of the iron can profoundly affect its behavior. Too little and the metal is soft: too much and it is brittle. And too much is just over two percent. These were facts, dimly perceived by the smiths, that underlay their art and craft for centuries. Even the existence of oxygen was unknown to them until 1774. Though they recognized symptoms such as graphite inclusions in brittle iron and color differences (gray and white iron), they did not have methods of measurement of carbon content, even if they did recognize that graphite and the carbon of their charcoal were related.

The early forges had great difficulty in holding the temperature needed to melt iron (2795 F). This was a blessing in disguise: the newly formed iron was a semi-solid paste which did not take up carbon from the charcoal. The product was a mixture of quite pure iron with molten slag (iron and other silicates) left behind from ore residues. Beaten with hammers (later by machines) to squeeze out the slag, a residue of fibrous glassy material was left behind which stiffened the soft iron. This is wrought iron, the principle form of iron in the Middle Ages. A Catalan forge in the Spain of 1300 could produce about 140 pounds in a five-hour heat.

As furnaces were made bigger, both to increase production and to save fuel, higher temperatures were developed: the iron melted. The molten iron dissolved carbon from the charcoal, and the product was cast iron, because it was "cast" from the liquid, or pig iron, because the shape of the ingots reminded them of a sow with suckling pigs. The remedy for too much carbon seems strange: one reheats the cast iron with carbon. The crucial factors are the access to oxygen and the temperature of the iron: oxygen will burn the carbon out of iron faster than it can be taken up if the temperature is not too high. Control of the carbon content is difficult—even today, in modern Bessemer converters, it is usual to burn off most of the carbon. At first this was done in simple forges, later (after 1784) in "puddling" furnaces, to give wrought iron or on hearths to form "charcoal iron."

The middle range of carbon content (in the one percent range) then required another step. Bars of iron were sheared into convenient lengths and packed in powdered charcoal in a tightly closed vessel. These were held at about 1800 F for 8-11 days. Carbon slowly diffused into the solid iron. Meeting iron oxide inclusions, it formed bubbles of carbon monoxide which worked their way into the surface of the bars and caused blisters—hence the name for the product, "blister" steel. The bars were rolled to remove these defects, to give "single shear" steel. A better product was obtained by again shearing, reheating, and rolling (which made the carbon distribution more uniform)—thus, "double shear" steel.

The problems associated with uneven distribution of carbon in shear steel came to a head in the effort to make an acceptable clock spring. It was known that remelting the steel gave a uniform product, but how was this to be accomplished without reintroducing carbon? What was required was a crucible which could withstand the temperature and not contribute undesirable properties to the melt. The solution was provided in 1740 by Benjamin Huntsman. Calling on the ceramic knowledge of the tableware makers, he developed a material which would not only contain molten steel for hours but contributed scavengers for the gaseous products that caused blowholes in the final casting. Thus, cast steel became a reality.

As with many other advances, this brought with it unexpected advantages: the molten steel could be doctored in other ways. The recipes that were developed and jealously guarded consisted of four parts mythology and witchcraft to one part of solid truth, but better steel was produced. The wonder of being able to get a piece of steel that could be depended upon had a great impact. To this day the phrase "Sheffield Steel" carries an aura of excellence.

Even given a piece of perfect steel, there are plenty of opportunities to ruin its properties in the process of converting it into a tool. The mysteries of annealing, hardening, and tempering steel (to say nothing of the difficulties of welding steel to iron) gave rise to enormous folklore. Various quenching liquids were held to have special influence on these processes. To pick an extreme example, a sword for a Roman general might be quenched by plunging the red-hot blade thrice into the body of a slave.

Understanding came in the late 19th century. We now know that iron can exist in several different crystalline states. Just as pure carbon can appear as either soft black graphite or hard, lustrous diamond, so pure iron can appear as either a soft, ductile metal or a hard, brittle one. It prefers the soft form at room temperature, one of two hard forms at high temperatures. If we hold it at red heat until it transforms into the hard form, then cool it quickly enough, it remains in the hard form (The rate of transformation between forms is slow at room temperature). With pure iron, it was impossible to cool it quickly enough to catch it in the hard form. When the iron contains a small amount of carbon, the rate of transformation to the soft form is retarded, and the iron can be caught in the hard state by rapid cooling. Nickel and several other metals have an even stronger effect of this type, giving us high-speed steel. Steel with about 0.8 to 1.2 percent carbon gives the right balance for cutting tools. Files use a slightly higher percentage. Once the amount of carbon exceeds the level that can be dissolved in the molten iron (about 2.2%), it separates out on cooling to give the brittle cast iron.

We can touch only briefly on other problems that plagued the ironworkers—steel which crumbled on the anvil while hot ("hot short"), or which could not be cold worked ("cold short"). We now know that as little as a few hundredths of a percent of sulfer causes the former problem, while a like amount of phosphorus causes the latter. They could not control or cure this. As a result, steels from different countries acquired reputations for being good for different specific purposes, in which their peculiar impurity levels were less objectionable.

Quenched steel is too brittle for most uses: it is harder than glass but unfortunately just about as brittle. A better balance for a cutting tool is obtained by permitting a portion of the iron to return to its soft form. Some of the old recipes depended on controlling the rate of quenching to permit this to happen in one step—this is possible but very difficult to control. Change from the hard form to the soft is reasonably rapid at 400-570 F, and can be controlled to give the right degree of change. By a remarkable coincidence, the rate of development of oxide colors on clean steel is quite similar to the rate of iron transformation, permitting us to come quite close to the desired hardness simply by watching the colors

[Continued on page 12]

[Continued from page 1]
of the bow acquired a rotating or "loose" handle which facilitated the crank motion.

Extraordinary changes came to the foot. In early days. a crude bit affixed to an awkward pad of wood was wedged into a foot aperture. At first each bit had its own brace. Then the former was notched in a peculiar fashion to fit only a specific manufacturer's brace. Moreover, it involved an awkward and time-consuming chore to change over from one bit size to another. Eventually, a wedge, or a thumbscrew, or a spring latch locked the tool in place. Spofford's split-socket brace held bits firmly in place by means of a thumbscrew. This socket received nearly every kind of square tang. However, within a few short years, the Barber Brace appeared with its shell, screw-type chuck, with its ability to hold any type of tang, and to accomplish, when necessary, a swift exchange of tools. The time required for a quick removal of a bit in use to the locking in of its replacement was done within five seconds, according to a nineteenth-century tool catalogue.

Improvements did not end here. Eventually, a steel frame (bow) replaced the fragile wooden brace. This new adjuvant implement could bore larger and deeper holes without a breakdown, thus eventually and effectively replacing the old hand auger. Interlocking chuck jaws were added to the Barber patent. Moreover, at least six convenient sweep lengths (4, 6, 8, 10, 12, and 14 inches) were provided for the artisan who utilized the Barber brace. Further, a ratchet drive was added during the 1860's. An angular attachment was devised to facilitate work in corners and in other cramped places. An extension shank was added to bore deep holes. Despite these amazing technological improvements, the brace retained its primary "crank motion" which comprised its unique contribution to woodworking processes. Thus, the brace eventually became the King of adjuvant tools. No other implement could match its all-round versatility.

Since the 1400's, at least five developmental stage can be noted:

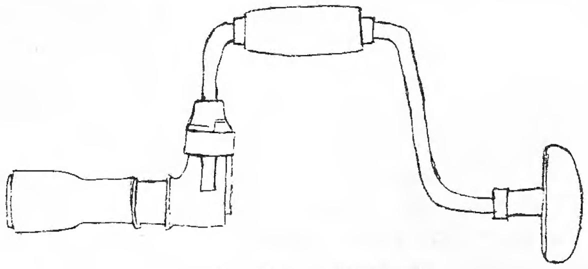
(1) The fifteenth-century bit-stock appeared with a small bit to bore "pilot holes" that the more powerful hand augers subsequently enlarged and trued-up. Goodman calls attention to a relevant illustration: a Maitre de Flemalle painted panel, dated 1438, which shows Saint Joseph holding the afoementioned tool in the "Annonciation."

(2) The Spofford split-socket pattern brace (1859) possessed the advantage of holding almost any bit with a square tang, with or without notches. Salaman reports that a thumbscrew drew the split sections together.

(3) The Barber shell-type, screw chuck (1864) appeared with adjustable jaws and soon after with a ratchet drive (1865). Goodman noted here that "The Barber braces soon ousted both the Spofford and the European wooden braces, and since the end of the 19th century have monopolized the market all over the world."

(4) In England, at least two special types of adjuvant tools were made: the Sheffield-style of plated and unplated braces (17th and 18th centuries) and the Ultimatum-style brass-framed brace (19th century). Salaman speaks of the latter as "...a very expensive tool...."

(5) The American Pattern brace is a contemporary design. Stanley bought out the J. S. Fray & Co., along with the Barber patents in 1919. Salaman observed that the brace is called "Yankee" and that it has a concealed ratchet mechanism and parallel jaws.



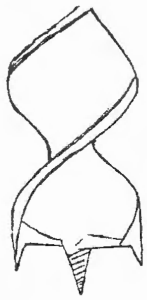
MODERN BRACE

This brief reference to five types of braces does not exhaust the subject, but it does call attention to selected significant changes which took place across the intervening centuries. Today, the brace is a strong, efficient, and sophisticated implement which excels all others in its capacity as an adjuvant tool.

Development of the Bit

Fifteenth-century bits were as crude as the early braces. They were attached to clumsy wood pads. According to Knight (American Mechanical Dictionary), there existed forty-six (46) types of boring bits and there adjuncts. I tried unsuccessfully to examine each one of them but had to content with only thirty-five (35) varieties. Evidently some items on Knight's list have vanished from the woodworking field. In their place new bits have appeared. Enormous changes in technology probably are responsible for the eleven missing kinds. As the years passed, the brace and bits more and more adapted to each other. Not only has the brace improved significantly since the 15th century, but equally significant modifications have appeared respecting bits.

At least nine prominent changes can be noted: (1) metal shanks replaced wooden pads; (2) round and square-tapered tangs became universal; (3) bits and braces were enabled to bore larger and deeper holes; (4) threaded bit points facilitated the boring process; (5) double spurs along with cutting edges loosened wooden chips; (6) adequate helical grooves removed shavings; (7) special bits modified designated holes; (8) adjustable bits were invented; and (9) "crank motion" was applied to non-boring uses (screwdriver, nutdriver, spoke pointer, washer cutter, etc.).



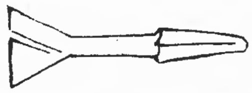
TWIST BIT

Further, other aspects of technological change can be discussed under three rubrics: hole-boring bits; hole-modification bits; and bits for special projects. This three-fold delineation can provide a helpful introductory discussion.

(a) Hole-Boring Bits. At least sixteen kinds of tools are used in the hole-making process. The bits included here are car, caster, centre, chair-drilling attachment, dowel, expansive, felloe, gimlet, gouge, nose, round lip, round shank, ship, spiral, spoon, and twist. Among manufacturers involved are: Clark, Cook, Ford, L'Hommedieu, Irwin, Ives, Russell Jennings, Morse, Pugh, Snell, Steers, Swan, and Wright. This inventive tool-making process spans several centuries of enormous technological change. Hole-making instuments of various sizes and diverse designs add up to more than 185 different tools utilized in a brace.

EXPANSIVE BIT

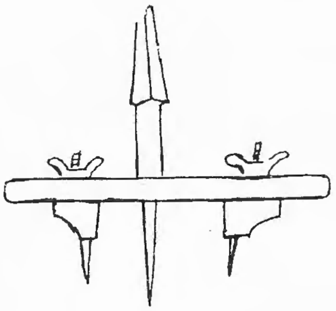
(b) Hole-Modification Bits. At least nine different kinds of bits were developed to alter holes already bored. This additional processing step was taken to achieve desired practical results. Necessary hole-modification was accomplished by means of special tools: angular bit-stock (chuck extension), counter-boring, countersink, countersink gimlet, depth guage, mortise chisel, reamer, smooth-bottom housing, and taper. The list of manufacturers includes: Buck Brothers, Clark, Diamond, Forstner, Humphrey, Smith, and Wheeler. An accumulation of at least seventy-five bits of varying sizes, type, and manufacture discloses the competitive dimension of the changing technology. The reciprocal improvements of the brace and of the bit promoted fine craftsmanship.



DOWEL TRIMMER

(c) Bits for Special Projects. A surprising number of tools became available that required an adjuvant device with a crank motion to provide additional processes in the woodworking field. At least ten special tools are

[Continued on following page]



WASHER CUTTER

noted here: brace wrench (square or hexagon), dowel sharpener (trimmer), hole saw, hollow auger, paint stirrer, plug cutter, screw driver (square or forked), spoke pointer, tap and die bits (wooden thread), and washer (gasket) cutter. As expected, an interesting list of manufacturers can be mentioned: Beal & Smith, Bonney, Clark, Damon, Douglas, Forster & Kreuter, Goodell, Ives, Stearns, and Universal. At least ten different kinds of activity and fifty-four varying sizes and manufacturers of relevant tools are involved here.

The carpenter's brace started out as one of the least promising, least useful, and most fragile of woodworking implements. It began with a single, tiny bit to bore pilot holes for the hand auger. Today, centuries after its initial appearance in Western Europe, the brace is capable of using more than three-hundred different tools in woodworking processes. It has become the strongest, the most versatile, and the most sophisticated implement in the hands of an artisan. Today it is the King of the adjuvant tools!

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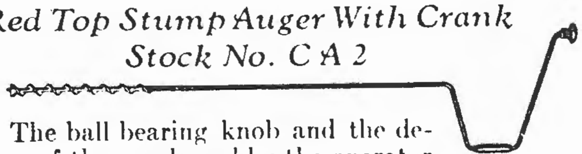
Red Top Boring Tools for Use With Explosives

These tools are especially designed to cut the cost of clearing land, getting out stumps for distillation, removing the earth for a ditch or a road, planting trees or blasting timbers.

Red Top Boring Tools are highly recommended by E. I. du Pont de Nemours & Co., Wilmington, Del., and all branch offices. Orders may be placed either at Wilmington, Del., or any du Pont office, also with the Red Top Auger Company, Inc., Birmingham, Ala., The Irwin Auger Bit Co., of Wilmington, Ohio, or hardware dealers.

Red Top Stump Auger With Crank Stock No. C A 2



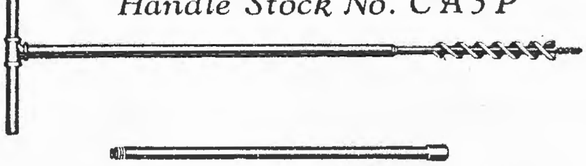
The ball bearing knob and the design of the crank enables the operator to bore easily and rapidly. The crank may be detached and welded to a new auger. The size of the auger is 1½"—length of twist, 18"—length overall, 6'. List price with crank, $7.50 each. Weight, 9¼ lbs. Augers only, $4.50 each.

[34]

Red Top Stump Auger With Pipe Handle Stock No. C A 4 P

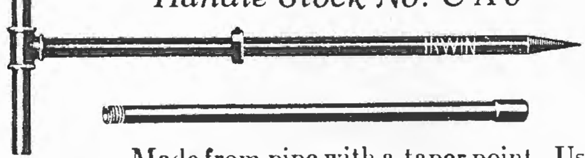
Length overall, 4½'—length of twist, 12"—diameter, 1¾". Finish, black japan. Weight, 10¾ lbs. List price, $6.75 each.

Red Top Earth Auger With Pipe Handle Stock No. C A 5 P



Recommended for use in hard soil and stump blasting, boring under the stump and not in wood. Length overall, 5'. Length of twist, 12"—diameter, 1¾". Weight, 11½ lbs. List price, $6.75 each.

Red Top Punch Bar With Pipe Handle Stock No. C A 6



Made from pipe with a taper point. Used for making holes in soft earth, for ditching, tree planting, etc. Diameter of bar, 1$\frac{11}{16}$"—length overall 4'. Weight, 13¾ lbs. List price, $3.50 each.

[35]

(From a 1926 Irwin Auger Bit Co. Booklet, How to Select, Use and Care for Bits.)

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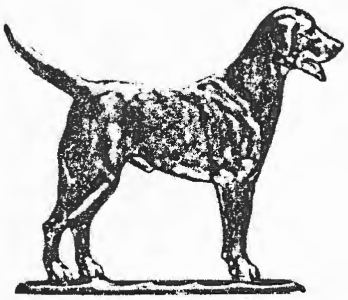
CRAFTS TRIVIA QUIZ

by Whatshisname

For the past couple of years, the board game "Trivial Pursuit" has been extremely popular. Now, not to be out-done, CRAFTS presents its own "Trivia Quiz."

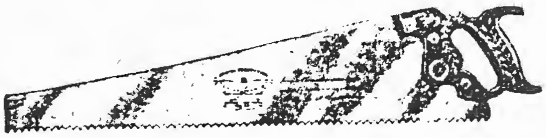
We recognize that these questions will be absurdly easy for our veteran CRAFTSmen, but perhaps some new members will find them stimulating.

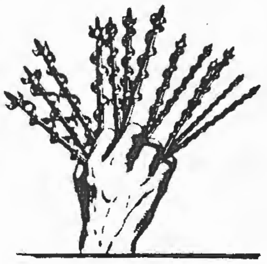
1. What was the name of Dr. Henry C. Mercer's dog? (Hint: He had more than one dog; this one's paw prints are in the concrete at the Mercer Museum.)



2. Who invented the famous "Ultimatum" brace?

3. What did the three A's (AAA) in the E. C. Atkins & Co. (saw makers) trademark stand for?





4. The Irwin Auger Bit Co. used names to distinguish its different types of bits. Which one of the following was not used? Surebor, speedbor, borbor, mainbor, endbor, or carbor. (Look at it this way—you have one chance in six of being right.)

The parts of a bit

5. What tool company used this motto: "EXCELSIOR—onward and upward; He who stands still, runs behind, outstripped by his fellows"?

ESTABLISHED A. D. 1853.

OUR MOTTO:

"EXCELSIOR"—*onward and upward;*
He who stands still, runs behind, outstripped by his fellows.

6. What kind of tool is an "ulu"?

7. How many different sizes and types of planes were there in the 1867 Stanley Rule and Level Company's catalog?

[Whatshisname says that he will reveal the answers in the June issue.]

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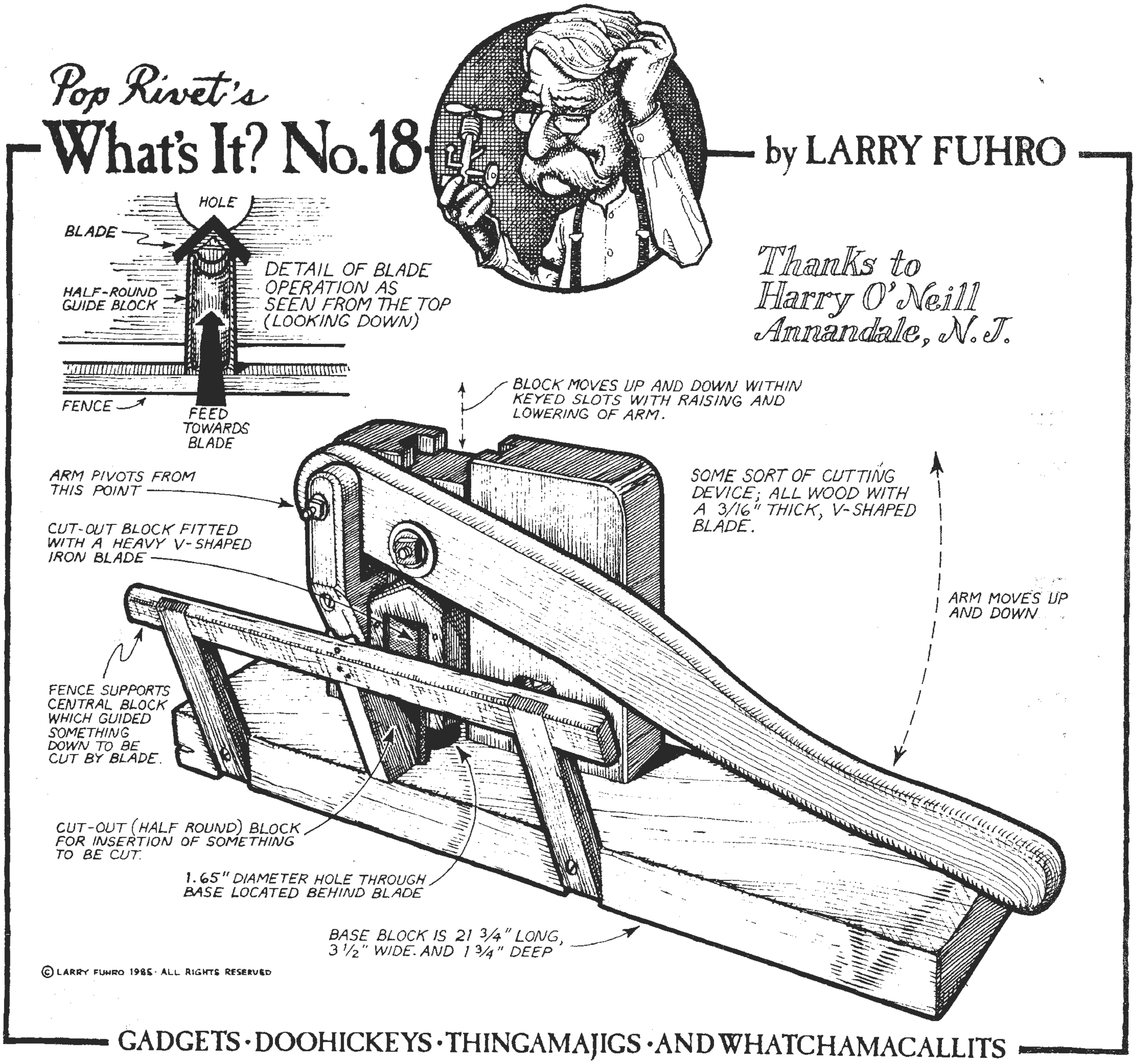

[Steel, continued from page 7]
develop. There is no direct relationship between these colors and the steel hardness—you can develop a lovely straw temper color on mild steel, but it won't be hard.

Like many other wood butchers, I have certain old chisels that I would not trade for the best that can be bought today. Sure, they had no analyses and no computer-controlled tempering ovens, but they did make good tools. I don't subscribe to the belief that some lost art is involved: tools that were too soft have been sharpened into nubs and those that were too brittle have been broken. What are left are the good ones. You can get better steel today, and I suspect you could have tools custom made that would match the best old ones. Some believe that hand-forging gives better grain structure than can be obtained by one-blow machine forging. This may be part of it. But one should not be surprised that most tool manufacturers expect their tools to be treated roughly, and prefer to temper them for toughness rather than for best edge-holding properties.

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