

# UNIVERSITY OF IDAHO

EXTENSION DIVISION

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## TOOLS THEIR USE AND CARE

BY H. T. NIECE  
*Ada County Club Leader*

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COOPERATIVE EXTENSION SERVICE IN AGRICULTURE  
AND HOME ECONOMICS OF THE STATE OF IDAHO  
UNIVERSITY OF IDAHO EXTENSION DIVISION  
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COOPERATING

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### FARM BUREAU JUNIOR CLUBS

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## What Do You Know?

**A**NY BOY will find a lot of things in this bulletin that he already knows. But that isn't the point. How many things are there in it that he does not know?

Sometimes a few simple facts make all the difference between success and failure. The boy or girl who knows these simple facts will succeed; the one who does not know them will fail. And he will not know why he failed.

That is why so many simple things are told in this bulletin. Any boy will find things in these pages that are new to him. And they may be just the things he needed to turn his failure into success.

## What Will You Make?

**W**HAT shall a boy make with tools, anyway? Make something you are interested in. If you are a pig club boy, ask your club leader to get you Mr. Niece's bulletin on "Problems in Handicraft for Pig Club Projects." Or you yourself can write to the extension division for it.

"Problems in Handicraft for Corn Club Work" is good for corn club members.

"Problems in Handicraft in Poultry Club Work" will interest poultry people.

"Problems in Handicraft for the Home" tells how to construct articles of great usefulness about the home, any one of which ought to make a hit with almost any boy's mother.

# TOOLS; THEIR USE AND CARE

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## TOOLS AND THEIR USES

A LARGE investment in tools by club members is not necessary for the handicraft work in the different club projects. Usually most of the tools necessary will be found at home. In rural schools where there is provision made for manual training, all tools necessary are to be had, and an excellent opportunity for good practical work along vocational lines. For most of the wood-working exercises the following are sufficient: crosscut saw, rip saw, two-foot rule, steel square, try square, hammer, jackplane, marking gauge,  $\frac{1}{4}$ -inch and  $\frac{1}{2}$ -inch chisels, bits and brace, and screw driver. New tools should be of good quality. It pays to buy the best, even if only one or two tools are purchased at a time.

Nearly all farm boys are more or less familiar with the use of the above-mentioned tools but a brief statement of the uses of tools given in the list may be of value to some.

### HAMMER

A claw hammer has two uses—i.e., to drive nails and to pull nails. When driving, grasp the handle near the end farthest from the head. This gives a balance which insures the nail being hit squarely on the head. When pulling nails, the handle acts as a lever. It is well to place a small block of wood under the head when pulling nails from finished lumber, to prevent scarring.

### SAWS

The crosscut saw is used to cut across the grain of the wood; its teeth are filed to sharp points as shown.

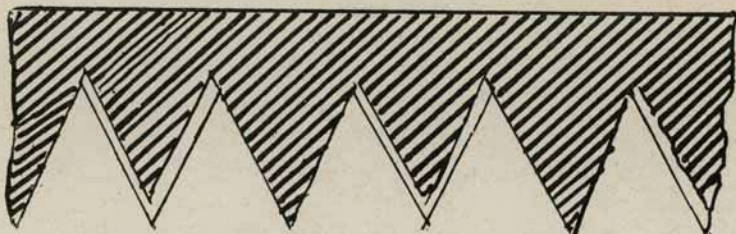


DIAGRAM OF TEETH OF CROSSCUT SAW

The teeth are usually set or bent alternately so as to be at a slight angle with the body of the saw blade. The insides of the teeth are filed in sharpening as indicated in the figure.

The rip saw is used to cut with the grain of the wood. Its teeth are filed to the shape of chisels, placed one behind the other as shown in the figure.

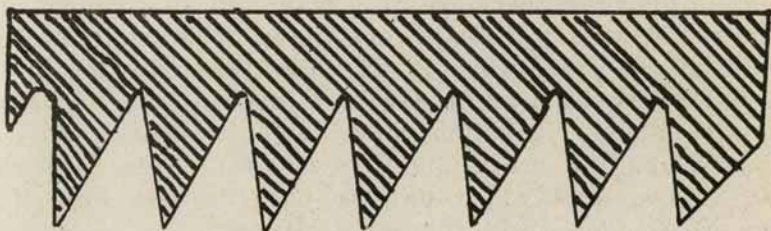
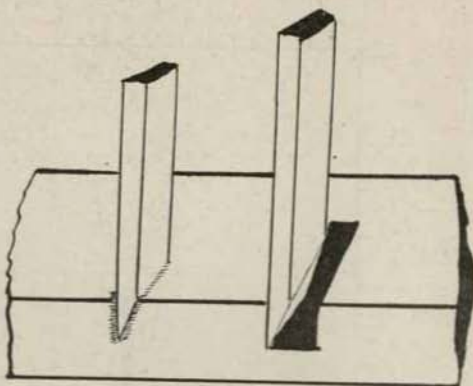


DIAGRAM OF TEETH OF RIP SAW

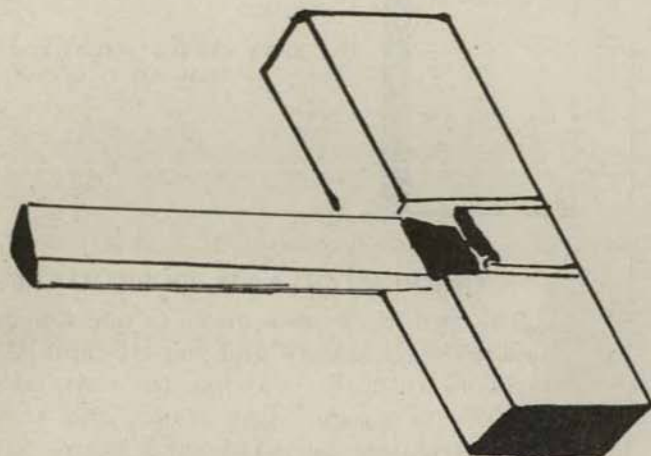
In using the saw, the index finger should be along the top of the handle on the right side and the thumb on the left side. They are then in a position to guide the saw. The hand, elbow and shoulder should be in a straight line. To start sawing, place the left hand on the mark on the board as shown in the drawing, to guide the saw, and make a light up stroke. In this position make several short up strokes and then make full length strokes of the saw. Do not bear down or "ride" the saw, but saw steadily and with a hold on the handle that does *not* grip too hard.

### CHISEL

The chisel is used in clipping and paring out portions of wood. When cutting with a chisel, grasp the handle with the right hand and the shank with the left, and incline the tool to get a paring edge. Do not use hammer or mallet except on rare occasions. Keep the chisel sharp.



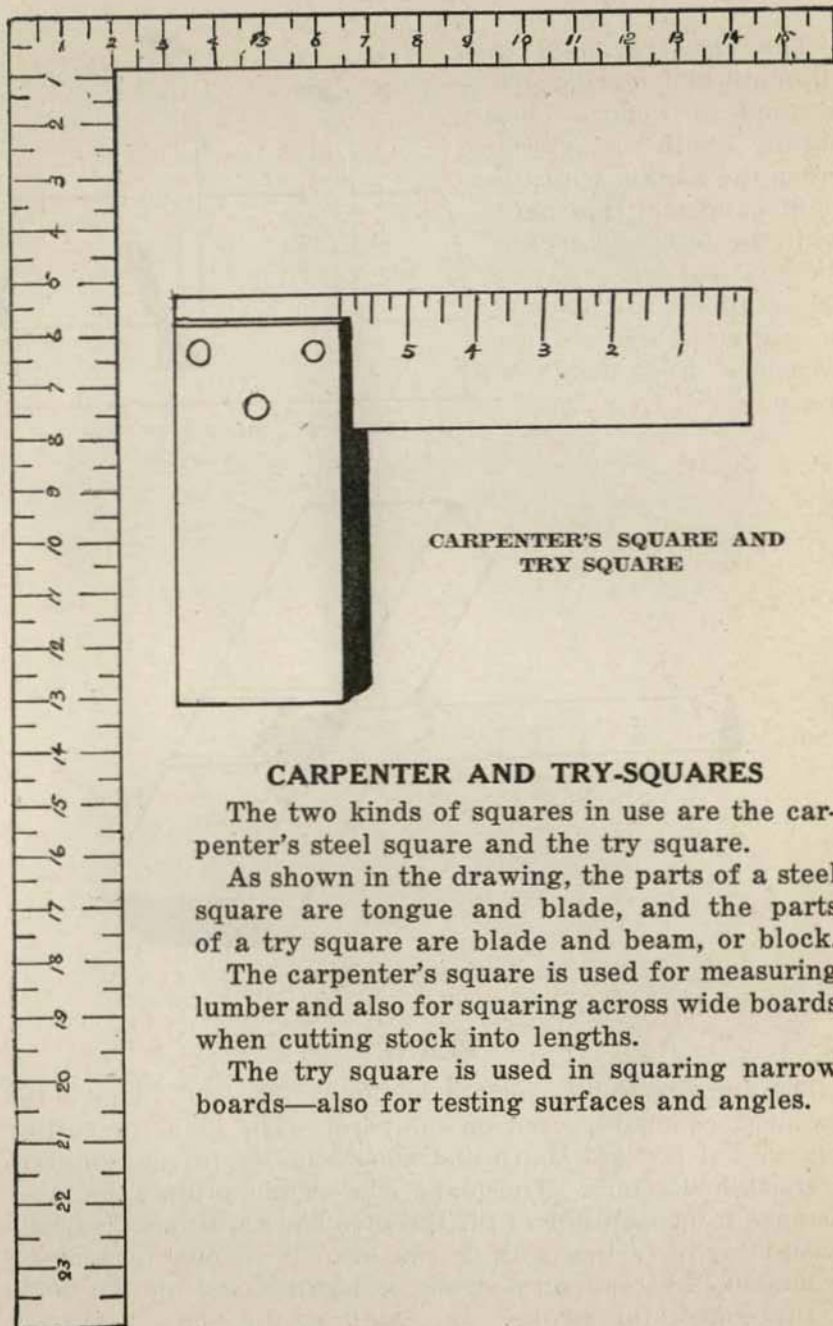
Method of Cutting with Chisel



PARING WITH CHISEL

### PLANE

The plane is used to smooth surfaces. The jack plane is the one most commonly used on the farm. The plane or cutting iron should be kept sharp and should be set to cut comparatively thin shavings. The plane iron should project the same distance from each side of the throat. The adjustment is tested by sighting or feeling with the fingers. In planing long pieces of lumber, take as long a stroke as possible and lift the plane at the end of the stroke. Do not drag the plane backward over the surface of the board.



### CARPENTER AND TRY-SQUARES

The two kinds of squares in use are the carpenter's steel square and the try square.

As shown in the drawing, the parts of a steel square are tongue and blade, and the parts of a try square are blade and beam, or block.

The carpenter's square is used for measuring lumber and also for squaring across wide boards when cutting stock into lengths.

The try square is used in squaring narrow boards—also for testing surfaces and angles.

### MARKING GAUGE

The marking gauge is used to gauge or mark a line parallel to the edge of a board. To set the gauge, loosen the set screw and place the gauge block at the point on the scale desired and tighten the set screw. It is best always to test the measure by the rule, as the point of the marking gauge may be bent out of line.

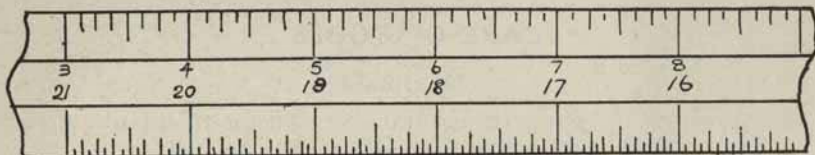
Place the gauge block against the edge of the board, hold firmly and push the gauge from you, dragging the point and making a fine line like a knife line.

### SCREW DRIVER

When using a screw driver, be careful not to break the head off the screw. If a small hole is drilled where the screw is to be driven and a little soap placed on the screw before inserting it into the wood, little difficulty will be encountered.

### RULE

The rule is the measuring gauge. Accurate measurements are necessary if good work is to be done. On the two-foot rule, one edge is divided into inches, halves, quarters and eighths, and the other into inches, halves, quarters, eighths and sixteenths, as shown in the figure.

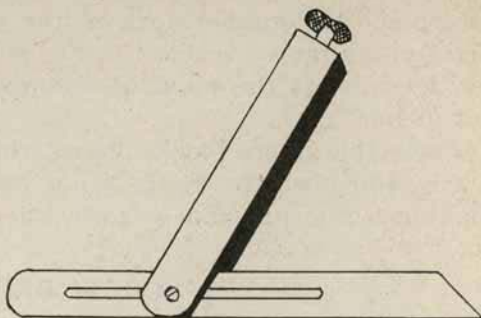


SECTION OF CARPENTER'S RULE

When measuring a number of pieces of the same length, it is best to measure one piece and then use that to get lengths of all other pieces like it.

### SLIDING T-BEVEL

The sliding T-bevel is a tool that is very convenient in cutting different angles. The sliding T-bevel consists of a blade with a slot which works over a screw in the handle and is set by a thumb screw which works in the end of the handle. The angle desired may be obtained on the carpenter's square and then the T-bevel blade may be set at the angle required. The T-bevel may also be used as a try-square.



THE SLIDING T-BEVEL

Place the blade and the handle over the tongue and blade of the carpenter's square, thus making a right triangle, then tighten the blade of the T-bevel by turning the set screw in the handle.

### BRACE AND BIT

In using the brace and bit, unless boring a slanting hole, the bit should enter the wood straight. If the side lips touch the wood at the same time, you are sure that the bit has entered the wood straight.

### CARE OF TOOLS

#### Maxims

1. A place for everything and everything in its place.
2. Keep tools in repair.
3. Keep tools sharp.
4. Keep them wiped off with an oiled rag.
5. Handle them with care.

If you expect to do good work with tools you must see that they are well cared for. To keep tools from rusting, wipe the surface with an oily cloth once each week. Keep the parts in repair and replace lost parts. A place must be provided in which to keep tools when not in use; otherwise, they may be lost or broken. Make a work bench and put a drawer in it; make a tool rack on the back of it; build a cabinet with shelves above it on the wall. When using tools outside of the shop, you should have a small tool carrier.



The cutting edges of tools must be kept sharp. More discouragement and poor work are caused by dull tools than anything else connected with wood handicraft work. If chisels or plane irons become very dull they are first sharpened on the grindstone or emery wheel and then finished on an oilstone. They are ground at an angle of 25 degrees and finished on the oilstone at an angle of 30 degrees. When one starts to work with a chisel or plane, it should always be rubbed up a little on the oilstone. When grinding, hold the tool firmly on the stone or emery wheel with the bevel side down, and grind until a fine wire edge is seen; next, rub the bevel side on the oilstone and then the reverse side laid flat on the stone; repeat until the wire edge disappears and the edge becomes sharp.

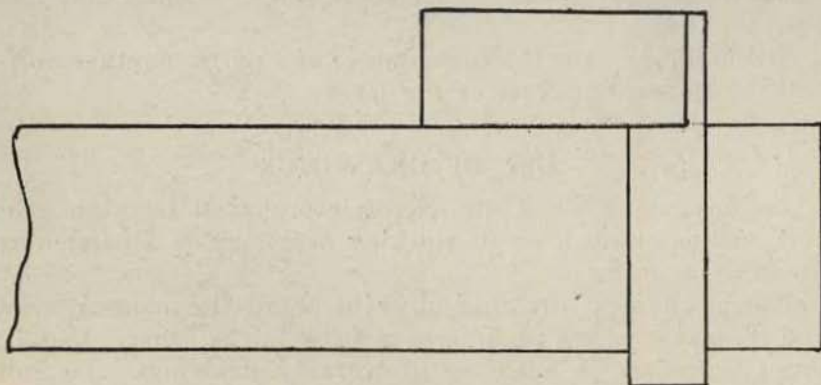
Saws should be kept sharp, but they are difficult to sharpen and an experienced hand should be employed.

### TERMS USED IN WORKING

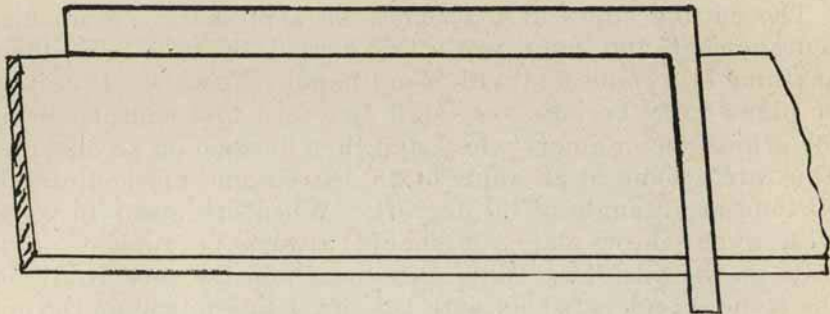
1. Squaring up.
2. Laying out.
3. Cutting to lines.
4. Assembling.

Squaring up means making the rough piece into one that has smooth, flat, straight sides that are at right angles, and that is of the desired length, breadth and thickness.

When planing, place the board on the bench with the grain of the wood away from you and push it against the bench stop. Begin planing along one edge of the face; take a stroke the length of the board and continue in this way, moving across the piece. Test by means of try square. (See drawing.) The blade of the try square should touch all the way across.



Correct Position of Placing Try Square on Board



Correct Method of Laying Carpenter's Square on Board

This smooth face is called the working face. Mark it with an X or some other mark. The working edge is made by planing one edge true and square with the working face. To test the edge, see illustration. If the blade touches along the entire edge and the beam touches along the entire working face, the edge is true and at right angles to the working face. Next, gauge the width by placing the gauge block against the working edge and gauging the desired width.

To gauge thickness, place block of gauge on working face, set and gauge line along the two edges.

Measuring for length is the last detail of squaring up. Measure length by placing the rule or square on edge along the arris of piece; square line across as shown in previous figure on square, using pencil or knife; true up with block plane.

Laying out the work has reference to the drawing of lines on a piece of finished stock to indicate the shape in which it is to be cut. Work should be laid out on the working face and working edge.

Cutting to lines means cutting all stock to lines that have been laid out.

Assembling means the fastening of the parts together either with nails, screws, glue, or the like.

### USE OF DRAWINGS

Accompanying all of the exercises prepared for club members will be either a set of working drawings or a perspective drawing or both.

The mechanical drawing gives in detail the measurements and the place where each piece is fitted to the other. Usually, three views are in each set of working drawings: i.e., top, side and end views.

The perspective drawing gives a picture of the object as it appears when completed.

To aid in the construction of each exercise, a few brief words of explanation in the different steps of construction are given. The kind and amount of material required are stated; the names of the tools that are necessary; and, in most, the stock bill is given. The stock bill sometimes is omitted to give the club member the practice of making out his own stock bill. Last, is given a more or less detailed method of actual construction.

If a club member receives too much assistance he becomes weaker in the matter of initiative. If he is allowed to figure out something for himself, he becomes more responsible and self-reliant.

