L SCALE: LOGARITHMS
This is another direct reading scale. The logarithms of angles and numbers consist of two parts: The Characteristic which is found to the left of the decimal point and the Mantissa which is found to the right of the decimal point. To find the logarithm (to Base 10) of any number, locate the number on the D Scale and read the Mantissa of its logarithm on the L Scale. And, to complete the logarithm, determine the characteristic with this rule: For all numbers greater than one, the characteristic is one less than the number of places to the left of the decimal point in that number; for all numbers less than one (decimal fractions), the characteristic is negative and its numerical value is one more than the number of zeros between the decimal point and the first significant figure. Example: to find the logarithm of 425, set the hairline over 425 on the D Scale and read the mantissa of the logarithm, 0.628, on the L Scale; since 425 has three digits, the characteristic is one less, or 2, and the complete logarithm is 2.628.

Example: If the logarithm is known, i.e. 3.248, set the hairline over 248 on the L Scale, read 177 on the D Scale; since the characteristic is 3, add one zero to make the number 1770, which is correct.

S SCALE: SINES AND COSINES
This scale gives a direct reading of the sines and cosines of all angles between 5.7 and 90 degrees. In using your S Scale, read Sines left-to-right and Cosines right-to-left. Because angles are usually expressed in degrees and minutes, it is necessary to translate the degrees into tenths of degrees. Six minutes equal 1/10 of one degree, e.g. 15° 30' equals 15.5°. To find the sine (or cosine) of an angle on the S Scale, set the hairline on the graduation that represents the angle and read the sine (or Cosine) on the D Scale; the decimal point is always placed at the left of your answer as read from the D Scale.

T SCALE: TANGENTS AND COTANGENTS
The T Scale works in the same fashion as the S Scale, except it reads from 5.7 to 45 degrees and tangents and cotangents are found on both the CI and the D Scales. To find the tangents or cotangents from 5.7 to 45 degrees, set the hairline on the graduation that represents the angle and read (a) on the D Scale, tangents of angles from 5.7 to 45 degrees, cotangents of angles from 45 to 84.3 degrees; (b) on the CI Scale, read tangents of angles from 45 to 84.3 degrees, cotangents of angles from 5.7 to 45 degrees. Further, if the tangent or cotangent value is read on the D Scale, the decimal point is at the left of the first digit read; if the value read is on the CI Scale, the decimal point is at the right of the first digit read. By setting the left index of the CI Scale directly over the left index of the D Scale, it is possible to read Log Sin and Log Cos values. Further, by reversing the procedures outlined, it is possible to determine angles when the sine, cosine, tangent or cotangent is known.

ST SCALE: SINES AND TANGENTS
This is a direct reading scale for angles less than 5.7° and angles between 84.3° and 89.42°. The ST scale is used in conjunction with the C scale to determine sines and tangents; and used with the CI scale to determine cosines and cotangents. Sines and tangents are read on the C scale and have one zero in the reading; cosines and tangents are read on the CI scale and have two zeros in the reading; degrees are always read on the ST scale. In example, sin 2° = tan 2° = .0349 read on the C scale, cos 2° = cot 2° = .00286 read on the CI scale.

SINE AND COSINE SCALE
This is a direct reading scale for angles between 5.7° and 90°. In using your S Scale, read Sines left-to-right and Cosines right-to-left. Because angles are usually expressed in degrees and minutes, it is necessary to translate the degree and minute value into tenths of a degree. Six minutes equal 1/10 of one degree, e.g. 15° 30' equals 15.5°. To find the sine (or cosine) of an angle on the S Scale, set the hairline on the graduation that represents the angle and read the sine (or Cosine) on the D Scale; the decimal point is always placed at the left of your answer as read from the D Scale.

ST SCALE: SINES AND TANGENTS
This is a direct reading scale for angles less than 5.7° and angles between 84.3° and 89.42°. The ST scale is used in conjunction with the C scale to determine sines and tangents; and used with the CI scale to determine cosines and cotangents. Sines and tangents are read on the C scale and have one zero in the reading; cosines and tangents are read on the CI scale and have two zeros in the reading; degrees are always read on the ST scale. In example, sin 2° = tan 2° = .0349 read on the C scale, cos 2° = cot 2° = .00286 read on the CI scale.

INSTRUCTIONS—
HOW TO USE YOUR PICKETT SLIDE RULE
This instruction guide will help you teach yourself the fundamentals of using your Pickett Slide Rule to obtain answers to mathematical problems. Accuracy and understanding are most important in using your slide rule—speed will come with experience. Study each phase of these instructions and be confident of each operation before you go on to the next one. Teach yourself in this sequence: (1) Learn the parts of the slide rule and how to read the scales; (2) Learn multiplication, division and proportion using the C, D and CI Scales; (3) Learn to use the A, B and K Scales to find squares of numbers, square roots, cubes of numbers and cube roots; (4) Learn to use the L, S, T and ST Scales to find Logarithms, Sines, Cosines, Tangents and Cotangents for trigonometric calculations.

KNOW YOUR SLIDE RULE
To simplify explanations, the parts of your slide rule and their proper names are shown below. All references in these instructions will be in accordance with this identification.

READING THE SCALES
This is the most important part of learning how to use your slide rule; formulas can be memorized or written down for reference, but only you can read a correct answer from your rule. In general, slide rules provide answers accurate to three, and sometimes four, significant figures. A significant figure is the first digit of a number that is not a zero, regardless of where the decimal point is located; a zero is a significant figure only when it is found between one or more significant figures. The following are samples of numbers with only three significant figures:

<table>
<thead>
<tr>
<th>Number</th>
<th>0.375</th>
<th>0.0895</th>
<th>0.703</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.23</td>
<td>756.000</td>
<td>0.0128</td>
<td>7.150</td>
</tr>
</tbody>
</table>

Since your slide rule can only provide three, possibly four, significant figures and will not locate a decimal point, we rely upon the problem itself and our own mental appraisal to determine the number of zeros and the location of the decimal point in the answer. This will be discussed below.

The C and D Scales are identical and they are basic for multiplication and division; if you learn to read these scales, you will be able to read all other scales because the same principles are applied. For the learning example, we will use the D Scale.

The D Scale is divided into Primary, Secondary and Tertiary divisions, each being represented by a mark (or graduation) on the scale. We locate a number by reading the graduations to determine a primary, secondary and tertiary significant figure.

These are the primary graduations which locate the first (primary) significant figure. These are the secondary graduations which locate the second significant figure. These are the tertiary graduations which locate the third significant number of an answer. Note that as the Secondary and Primary divisions are placed closer together, the value of the Tertiary division changes. This should be remembered when reading an answer. Practice finding three significant figure numbers so that you can find them at any point on the D Scale. When you feel you can read these numbers accurately, go on to multiplication.
To find a number on the D Scale, we locate the proper Primary, Secondary and Tertiary graduations, and read what we find. Here are some samples:

```
 149 173 246 247

LEFT INDEX
```

**DECIMAL LOCATION**
Common sense can usually guide placement of the decimal point. In multiplying 133.4 × 12.4, the scale reading for the result is 1655; mentally, we can multiply 10 × 133 = 1330 and decide that 1655 and not 16.55, nor 165.5, must be the proper answer.

**MULTIPLICATION: C AND D SCALES**
To multiply two numbers (factors), set the index of the C Scale over one of the factors to be multiplied on the D Scale; locate the other factor to be multiplied on the C Scale using the hairline of the cursor and read the answer directly below on the D Scale. Example: To multiply $2 \times 4$, set the Left Index of the C Scale over 2 on the D Scale; set the hairline on 4 of the C Scale and read your answer, 8, directly under the hairline on the D Scale.

```
C 5
2 4 3
```

**DIVISION: C AND D SCALES**
Division is the reverse of multiplication, as can be illustrated by $2 \times 4 = 8$ and $8 \div 4 = 2$. The basic rule is set the divisor on the C Scale opposite the number to be divided on the D Scale; read the result, or quotient, on the D Scale directly under the index of the C Scale. Example: To divide 8 by 4, place the Divisor, 4, on the C Scale over the number to be divided, 8, on the D Scale and read your answer, 2, on the D Scale directly under the left index of the C Scale. In essence, you set up a fraction and read the answer under the Index. Test your understanding with these problems:

```
83 ÷ 7 = 11.86  47 ÷ 29 = 1.62
69 ÷ 79 = 0.873  75 ÷ 92 = 0.815
```

**K SCALE: CUBES AND CUBE ROOTS**
Just as the A and B Scales were half-length D (or C) Scales, the K Scale consists of three one-third length D (or C) Scales. And, as with squares and square roots, the cube of any number located on the D Scale is found directly above on the K Scale. By example, 8 ($2 \times 2 \times 2$) on the K Scale is directly above 2 on the D Scale; 27 ($3 \times 3 \times 3$) is over 3, and 125 ($5 \times 5 \times 5$) is over 5. Bear these examples in mind because the rule to find Cube Roots is divide the number into units of three from the decimal point, disregard complete units of three and if the remainder is one digit use the left part of the K Scale; if the remainder is two digits use the middle part of the K Scale; if the remainder is three digits use the right part of the K Scale. Example: To find the Cube Root of 64, count from the left of the decimal point (6.4 is a number greater than 1) and you have a remainder of one; set the hairline over 6.4 on the left part of the K Scale and read your answer, 1.857, below on the D Scale. 64 has two digits, therefore from the middle part of the K Scale we read 4 on the D Scale; 640 has three digits, therefore the setting is from the right part of the K Scale and the answer, 8.62, is found below on the D Scale.