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ABSTRACT

The manual provides instructional guidance and reference material in the principles and procedures of general drafting and constitutes the primary study text for personnel in drafting as a military occupational specialty. Included is information on drafting equipment and its use; line weights, conventions and formats; lettering; engineering charts and graphs; geometrical construction; intersections and developments; multiview projections; pictorial drawing and sketching; dimension and notes; and methods of reproduction. The appendixes are lists of references, abbreviations, and illustrations and tables. There is also a subject index. (AG)

TM 5-581A



TECHNICAL MANUAL

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GENERAL DRAFTING

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GENERAL DRAFTING

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* This manual supersedes TM 5-230, 29 October 1962.

CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

a. This manual provides instructional guidance and reference material in the principles and procedures of general drafting. This manual is the primary study text for personnel in this military occupational specialty. The career pattern for soldiers in this specialty is described in AR 611-201.

b. This manual contains the information required in applying the general draftsman military occupational specialty (MOS). It covers types of drafting equipment and their use; line weights, conventions, and formats; methods of lettering; preparation of charts and graphs; geometrical construction; surfaces and projections; drawing and sketching; dimensioning drawings; and methods of reproduction.

1-2. Duties

The general draftsman's military occupational specialty is the basic entry MOS into the career fields of construction draftsman, cartographic draftsman, map compiler, illustrator, and model maker. The duties of the general draftsman include but are not limited to the following. He draws a variety of general drafting details such as diagrams, graphs, and charts; and assists personnel engaged in construction drafting, cartographic drafting, map compilation, model making and related art and drafting activities. He prepares graphic sections of organizational charts, statistical reports, and visual aids. He letters drawings, plans, artwork, and other related material by freehand or mechanical devices. He compiles and enters information such as dimensions, specifications, and legends on appropriate section of drawings.

1-3. Drafting a Graphic Language

Engineer drawing has been called the graphic language of the engineer. It has definite rules of usage to insure that it has the same meaning wherever it is used. Anyone who learns the rules can read engineering drawings. Engineering

drawing must present information such as size, shape, location, material, and so forth, meeting certain requirements and specifications. It must be presented in such a manner that the finished product will be in accordance with the requirements specified by the designer. Special tools, or drawing instruments, are used to record this language with the necessary accuracy. These tools are used by military draftsmen and engineers to produce engineering drawings that conform to accepted standards and practices.

1-4. Types of Engineer Construction

a. General construction performed by engineer construction units include such structures as headquarters installations, housing facilities, workshops, hospitals, depots, protective shelters, storage and supply facilities, laundries, bakeries, refrigerated warehouses, training facilities, and miscellaneous related projects.

b. Specialized construction projects include construction of new roads or upgrading of existing ones; building permanent and semi-permanent bridges; construction and repair of railroads; planning and constructing military pipeline facilities; repair and construction of port facilities; and construction of airfields and heliports.

1-5. Principles of Military Construction

a. Construction should be accomplished within the allocated time using a minimum of materials, equipment and manpower. If new design is necessary, it should be simple and flexible and must reflect available materials and level of training of construction personnel. The permanency of any structure erected must not exceed limits established by the theater commander.

b. Generally, a large project is completed in units to allow the completed parts to be used while construction continues. Underground or protected sites should be considered in the construction of essential facilities. Improvisations should be used whenever possible to reduce material requirements. Facility planning should be of

such a nature as to avoid creating lucrative targets; dispersion of installations should be considered at all times.

1-6. Comments

Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the

specific page, paragraph, and line of text in which change is recommended. Reasons should be provided for each comment to insure complete understanding and evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commandant, US Army Engineer School, Fort Belvoir, Virginia 22060.

CHAPTER 2

DRAFTING EQUIPMENT AND ITS USE

2-1. Introduction

a. This chapter illustrates and describes the equipment which helps the draftsman to perform his job more easily, swiftly, and accurately in the required graphic language of the engineer. It is important to learn the correct use of these drawing instruments from the beginning. Proficiency will come with continued practice, but it is essential to start with the correct form. With practice, the skillful use of drawing instruments will become a habit.

b. For competence in drawing, accuracy and speed are essential in military as well as commercial drafting. It should be realized from the beginning that a good drawing can be made as quickly as a poor one.

2-2. Drafting Table

a. Professional draftsmen and engineers do most of their drawing on tables similar to those shown in figure 2-1. Although the construction details vary, the tables are made either to a fixed standard height or adjustable to any desired working height. A turn of a hand knob or lever permits the top to be regulated to various angles; on some tables to full easel position. Many tables

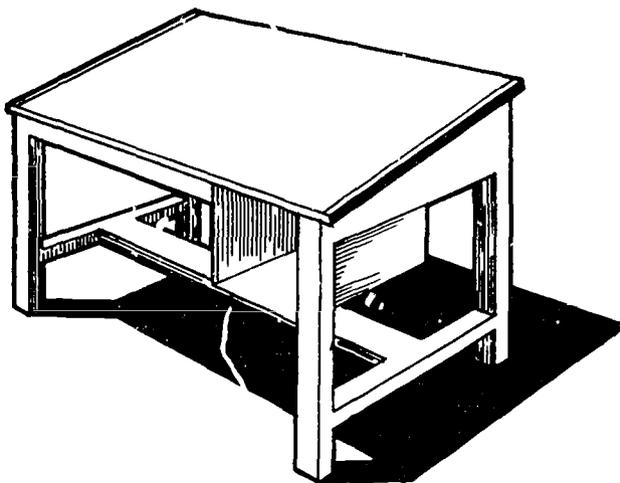


Figure 2-1. Drafting table.

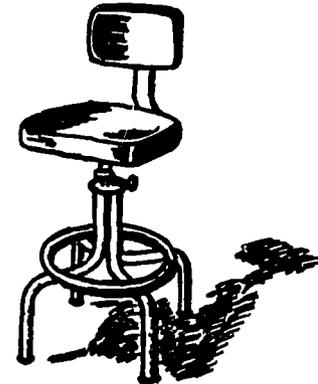


Figure 2-2. Drafting chair.

have a steel cleat on each end to hold and keep a straight edge as well as to prevent warpage.

b. The drawing table should be set so that the light comes from the left, and it should be adjusted to a convenient height, usually 36 to 40 inches, for use while sitting on a standard drafting stool or while standing.

c. The instruments should be placed within easy reach on the table or on a special tray or stand which is located beside the table. The table, the board, and the instruments should be cleaned before starting to draw.

2-3. Table Cover

a. The draftsman usually covers the table top with a special buff or green colored, waterproof, board cover paper. This minimizes glare and provides a smooth, firm working foundation under the drawing sheet. This helps produce sharp, clear—cut pencil lines, and makes erasing easier.

b. There is also a special green plastic board cover that, in addition to providing a smooth, firm working area without glare, is self-sealing, that is, it seals holes made by staples or thumbtacks.

2-4. Drafting Chairs

To facilitate the work of the draftsman, many drafting rooms are equipped with posture chairs in place of the customary drafting stool, as illus-

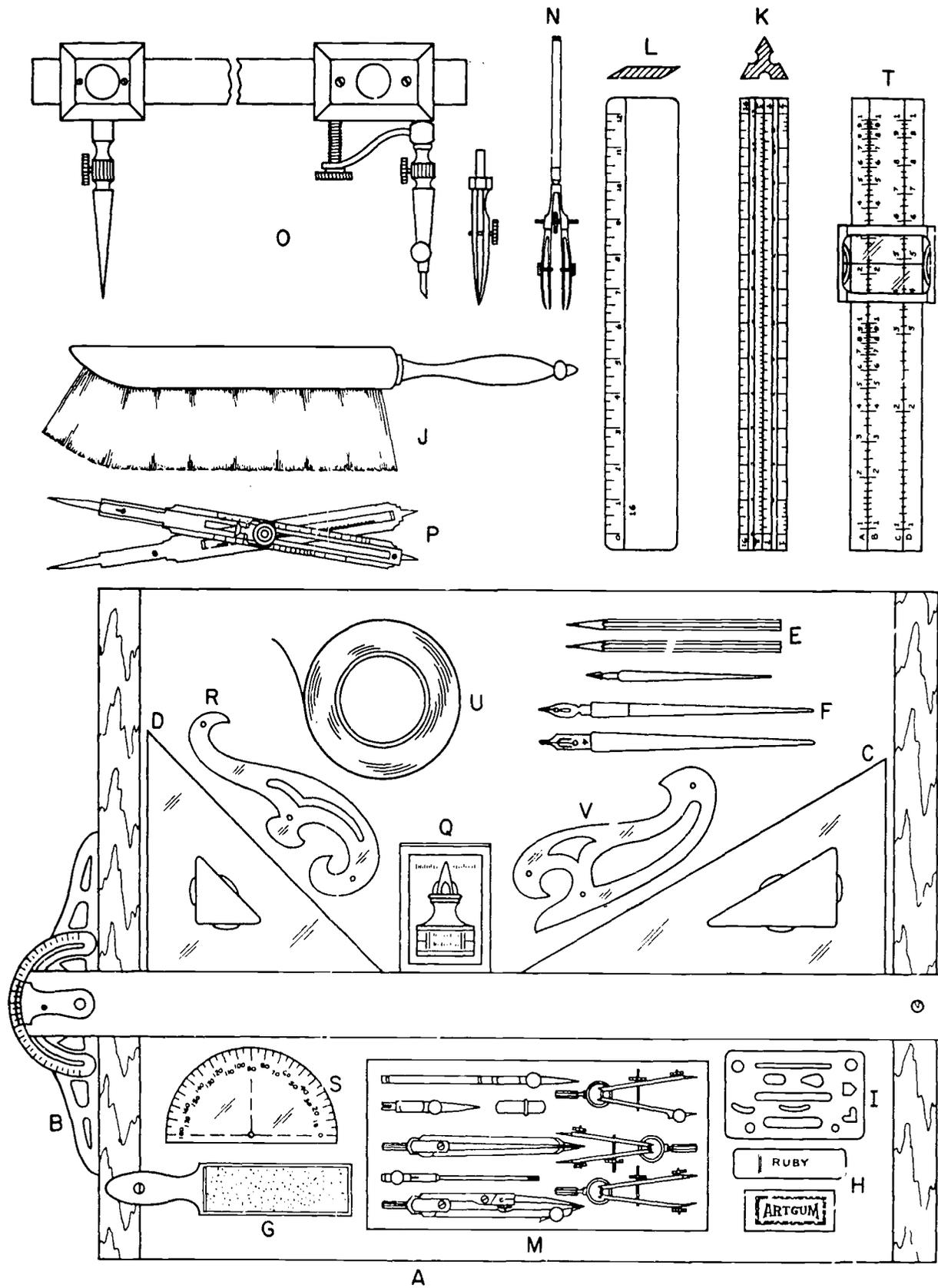


Figure 2-3. Drafting equipment.

trated in figure 2-2. The posture chair has a free floating back rest with a seat that can be raised or lowered to desired positions.

2-5. Drafting Board

The drawing board (A, fig. 2-3) is used by draftsmen primarily for field work. It is commonly found in schools when drafting tables are not available. These boards are made of either white pine or bass wood and come in a variety of sizes.

2-6. T-Square

a. The T-square (B, fig. 2-3) is used for drawing horizontal lines and as a supporting straight-edge for triangles when vertical and slanted lines are to be drawn. The length ranges from 18 to 60 inches. For maximum effectiveness, the T-square should extend the entire length of the drafting board. The most popular T-squares have plastic or celluloid edges which permit lines to be visible underneath the edge of the blade. Care should be taken to avoid marring the celluloid edges. The working edge of the T-square should never be used as a guide for a knife. The T-square must be perfectly square to be accurate, so care must be taken not to drop and damage it.

b. There is also a T-square with a protractor

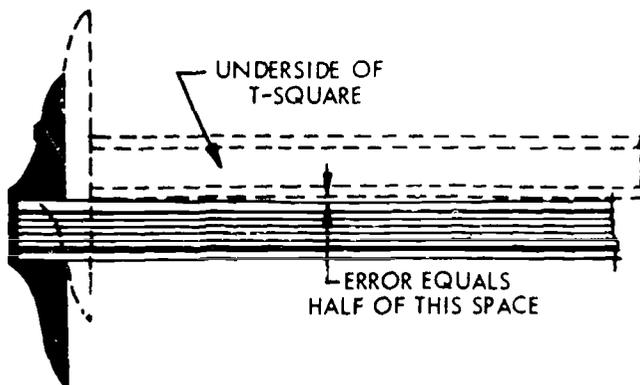


Figure 2-4. Testing the T-square.

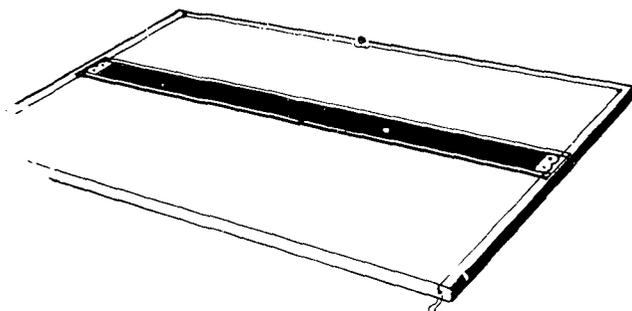


Figure 2-5. Parallel straightedge.

head. An adjustable steel head is fastened to a blade usually made of stainless steel. The head has a vernier corresponding to a protractor fastened to the head so that angles may be set to fractions of a degree.

c. Since accurate work can only be achieved if drafting tools are in proper working condition, a draftsman should periodically check his T-square for straightness. To check, draw a sharp line with the T-square between two widely separated points (fig. 2-4). Then turn the T-square over and draw a line, using the same edge, between the same two points. If the T-square is true, the two lines will coincide. Any deviation from the straight line will indicate an error in the blade equal to one-half the space between the two lines.

d. In drawing lines, take great care to keep them accurately parallel to the guiding edge of the T-square. The pencil should be held lightly, but close against the edge, and the angle should not vary during the progress of the line. Horizontal lines should always be drawn from left to right. In order to help keep a sharp point if a conical point is used on the lead, the pencil is twirled as it is sliding across the page. Always draw lines along the upper edge of the blade. After drawing your T-square over your drawing as far as possible, but be sure the head is in contact with the left edge of the board before drawing the next line. For the left-handed draftsman the process is reversed.

2-7. Parallel Straightedge

a. The parallel straightedge (fig. 2-5) is preferable to the T-square for large drawings. While the T-square is satisfactory for small work, it becomes inaccurate when working out on the end of the T-square. Since the parallel straightedge is supported at both ends, its advantage over the T-square is that it maintains parallel motion automatically and may be moved up and down with slight pressure at any point along its length.

b. The straightedge can be mounted on either the drafting board or the drafting table. It is controlled by a cord which runs through both ends of the straightedge. The arrangement of the cord and guiding pulleys varies, depending upon the manufacturer.

2-8. Drafting Machine

a. The drafting machine (fig. 2-6) is a standard piece of equipment in most drafting rooms. It is an extremely useful device since it eliminates the

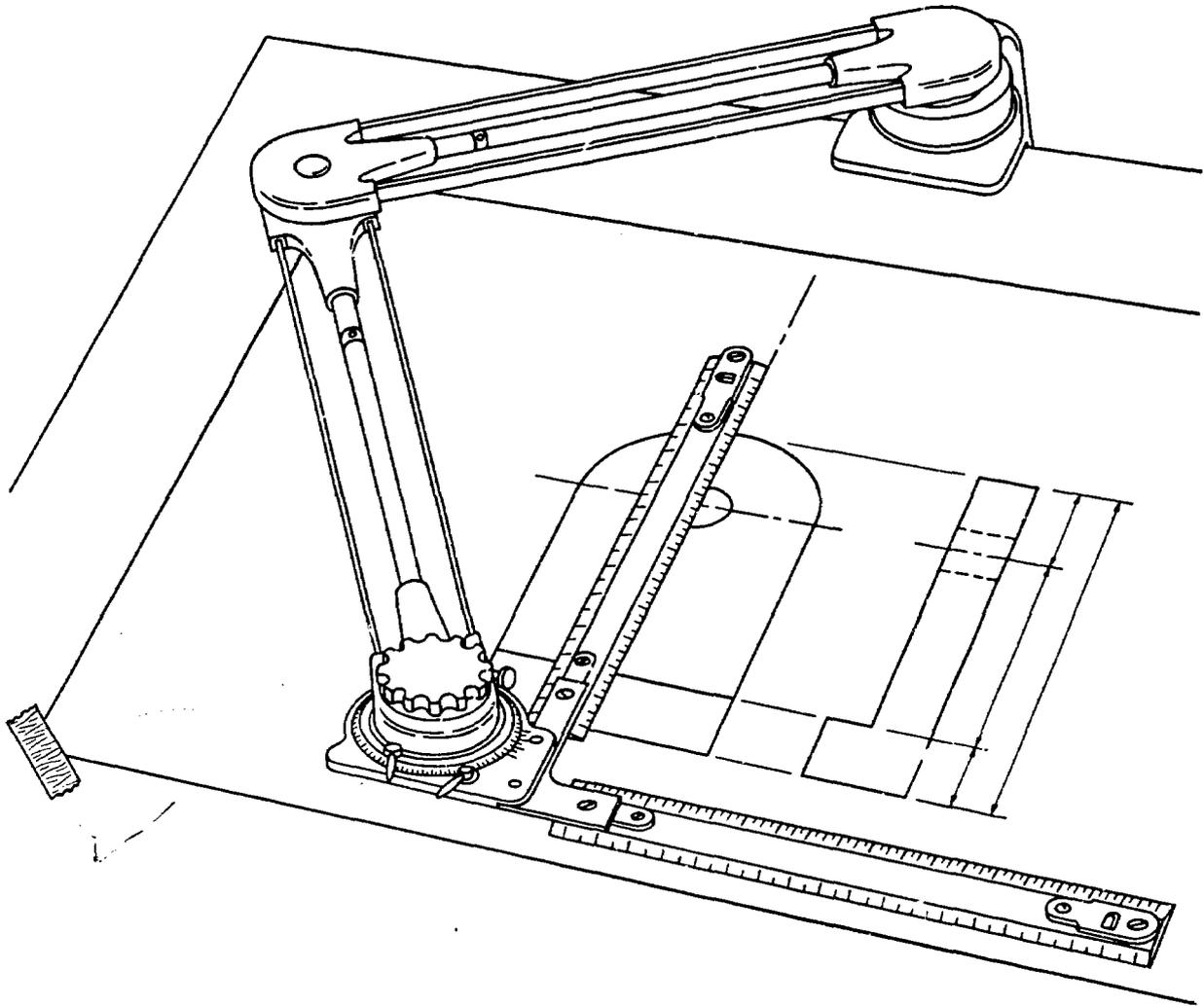


Figure 2-6. Drafting machine.

need for separate scales, triangles, protractor and T-square.

b. Its time saving value lies in the fact that many drawing operations can be combined, such as laying out horizontal and vertical lines, and measuring and laying out angles. The machine allows the draftsman to accomplish these operations with his left hand, leaving his right hand free for drawing. Thus to draw a line or predetermined length at a given angle, the draftsman, using his left hand only, simultaneously sets the correct angle, and swings the arm of the drafting machine until zero of either the horizontal or vertical scale is on the desired point. With his right hand, he simply draws the lines of the required length. Without resetting the controls, parallel or perpendicular lines can be drawn anywhere on the board.

2-9. Triangles

a. Triangles are used for drawing vertical and

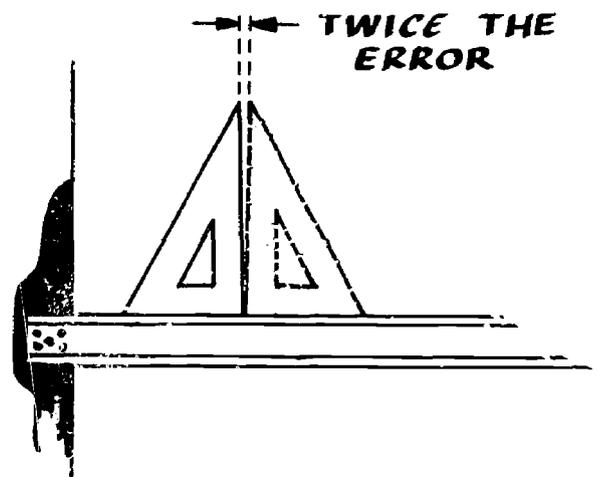


Figure 2-7. Testing triangles.

slanted lines. The two triangles used for this purpose are the 45° (D, fig. 2-3) and the 30° to 60° (C, fig. 2-3) triangles. They are made of transparent celluloid or plastic and come in various

sizes. The most common are the 8- or 10-inch for the 30° to 60° and 6- or 8-inch for the 45° .

b. The straightness of a triangle is tested by placing it against the T-square and drawing a vertical line (fig. 2-7). Then reverse the triangle and draw another line along the same edge. If the triangle is straight, the two lines will coincide; if they don't coincide, the error is half the resulting space.

2-10. Adjustable Triangle

The adjustable triangle (fig. 2-8) is often preferred by draftsmen instead of regular triangles. Since it has a built-in protractor it enables the draftsman to draw any angle from 0° to 90° . The adjustment arm is held firmly in place by a clamp screw, which also serves as a handle for lifting or moving the instrument.

2-11. Protractor

Protractors (S, fig. 2-3) are used to measure and set off angles other than those measurable with the draftsman's triangles. The protractor is usually numbered at 10° intervals. The smallest graduation is $\frac{1}{2}$ of a degree. It is semicircular in shape and is most commonly made of transparent

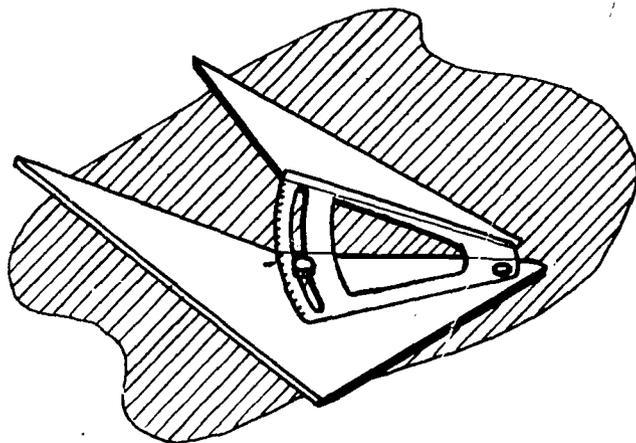


Figure 2-8. Adjustable triangle.

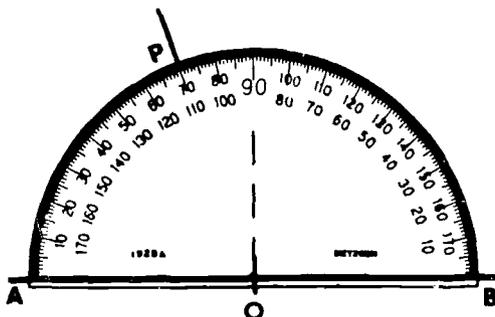


Figure 2-9. Use of protractor.

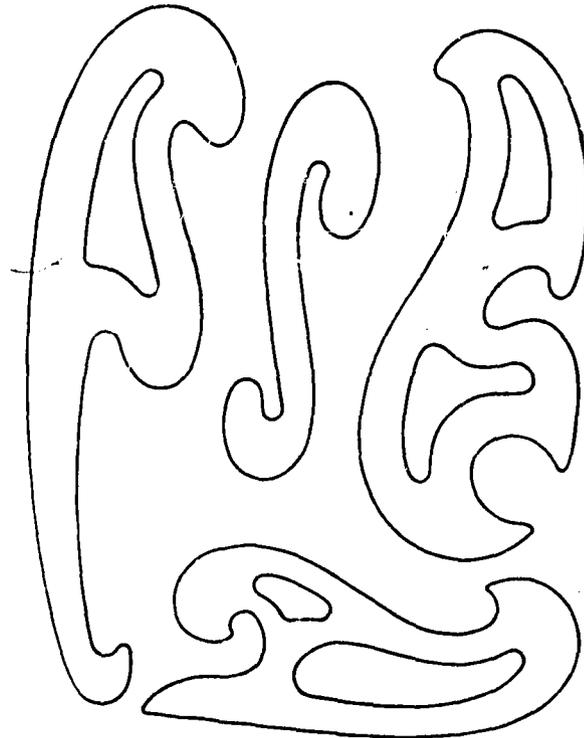


Figure 2-10. Irregular curves.

plastic with a beveled edge. The scale may be read from either end. To draw an angle of 70° or a line inclined 70° to the horizontal (fig. 2-9), draw a line AB . Mark at point O where the inclined line or vertex of the angle is desired. Place the protractor with the 0° and 180° on line AB and the hole directly under 90° place over point O . Place a point P at 70° and connect points O and P .

2-12. Irregular Curves

a. *Description.* Irregular curves (fig. 2-10) are used as mechanical guides for drawing curves other than circles or circular arcs. They are made of transparent plastic and their edges represent successive portions of ellipses, parabolas, spirals, and other standard geometric curves.

b. *Use.*

(1) A uniform and accurate curved line can be produced when two or more points are plotted along each segment of the entire curved line. Figure 2-11 shows how a smooth line is drawn through a series of plotted points.

in (A) match points 1, 2, 3, and 4. Draw line from 1 to 3 only (not to 4).

in (B) match points 3 to beyond 4. Draw line from 3 to 4 only (not to 5).

in (C) match points 4, 5, and 6. Draw line from 4 to 6 (just short of 3).

in (D) match points short of 6 to beyond 7. Draw line from 6 to 7.

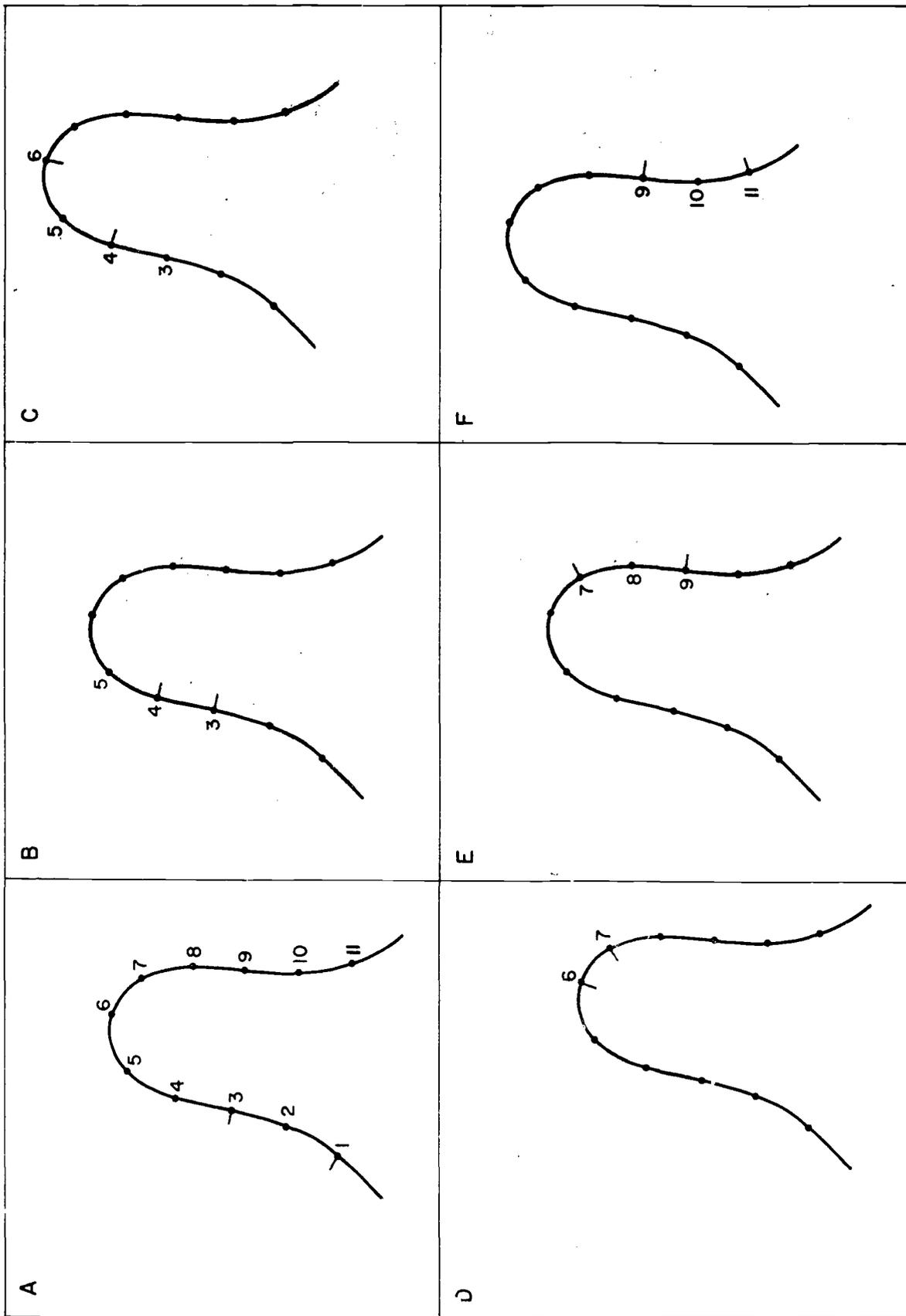


Figure 2-11. Use of irregular curve.

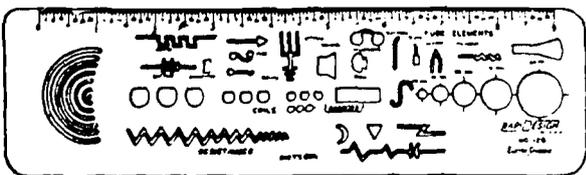
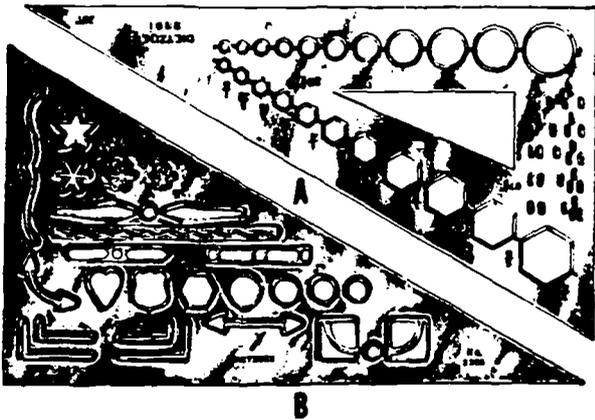
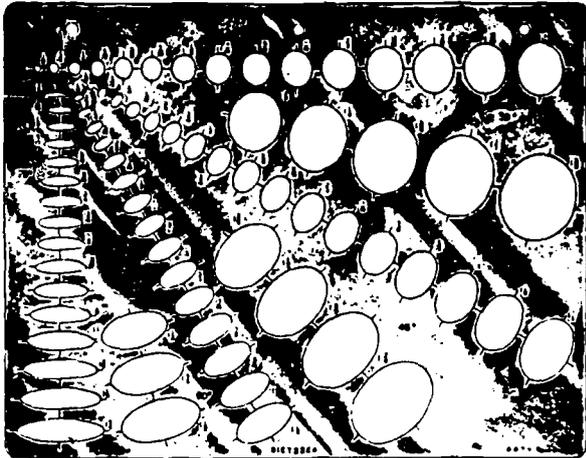


Figure 2-12. Templates.

in (E) match points short of 7 to beyond 9. Draw line from 7 to 9.

in (F) match points short of 9 to beyond 11. Draw line from 9 to 11.

(2) Notice how the irregular curve is turned over and reversed to fine portions which fit the points on the line with increasing or decreasing changes in curvature.

(3) Like the triangles, the irregular curve should always be kept flat to avoid warpage.

2-13. Adjustable Curves and Splines

The adjustable curve consists of a core of lead,

enclosed by a coil spring attached to a flexible strip. The spline consists of a flexible strip to which weights, called ducks, are attached. The adjustable curve and spline can be bent to form any desired curve limited only by the elasticity of the material.

2-14. Railroad Curves

Railroad curves are fixed regular curves, perfect arcs of a circle. They usually come in a set of plastic curves, either edge being usable, making arcs with radii of 1½ inches to 200 inches. Special sets come with arcs from radii of 200 inches to 1000 inches. Used in pairs, one slightly larger than the other depending on the width of the road or railroad, they make perfect curved parallel lines. Some railroad curves come with a short tangent which permit the plotting of highways and railroads from the point of tangency with a straight line. All sets are marked with a center-line (radius).

2-15. Templates

a. A draftsman can save a great deal of time by using templates (fig. 2-12) on jobs where the same shape or symbol is to appear a number of times. Most of the templates commercially available are made of transparent plastic and offer a wide variety of shapes, including ellipses, hyperbolas, circles, hexagons, and arcs. There are special templates for symbols and shapes used in architectural, civil, electrical, mechanical, and industrial process drawings.

b. There are templates for various Mil-Std (Military Standard) symbols; for example: electrical and electronic symbols, dimensioning and tolerancing symbols.

2-16. Scales

a. Introduction.

(1) Technically, a *line* is determined by any two points and may continue to infinity. The draftsman deals only with *line segments*. He must lay off line segments to a given length or measure the length of given line segments or both. The instrument used for either of these purposes is a *measuring scale*. Just as line segments are commonly referred to as lines, so a measuring scale is often called a *scale*. The term *scale* also means the size of a drawing or model relative to the size of the original.

(2) Measuring scales are made of boxwood or plastic and are a little longer than 12 inches. Pocket scales are approximately 6 inches long.

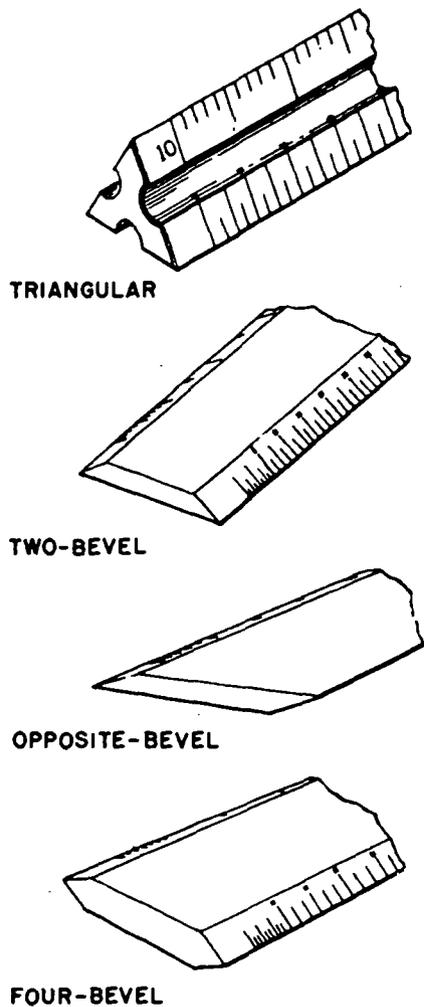


Figure 2-13. Scale shapes.

(3) Standard scales are made in four different cross-sectional shapes (fig. 2-13): triangular, flat with two bevels, flat with opposite bevels, and flat with four bevels. Each shape has its advantages and disadvantages. The triangular scale offers six faces for different size scales, so many scale combinations are readily available on one instrument. Flat scales are usually preferred by professional draftsmen since the scale face being used is always readable without having to search. The two-bevel scale always has both scale faces visible. The opposite-bevel scale can be picked up more easily from the drafting board and reveals the proper scale without a prolonged search. The four-bevel scale is normally used on the 6-inch pocket scale.

b. Scale Graduations.

(1) The inch is the basic unit of measure in most drafting. There are a number of ways of subdividing inches. The most familiar way is to divide it into quarters, eighths, sixteenths, and sometimes thirty-seconds (fig. 2-14).

(2) Another method of division is decimal, in which inches are divided into tenths and fiftieths.

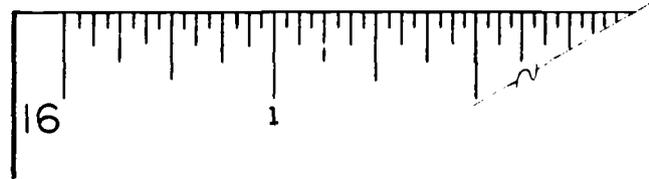


Figure 2-14. Inch scale.

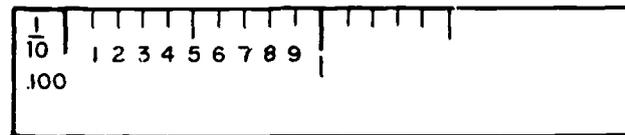


Figure 2-15. Decimal scale.

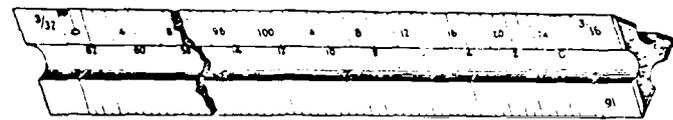


Figure 2-16. Open-divided scales ($3/16''$ and $3/32''$).

On this scale, each $1/10$ equals 0.10 or $1/10$ of an inch (fig. 2-15).

c. Open- and Full-Divided Scales. Scales are divided in one of two ways: they are open-divided or full-divided.

(1) Open-divided scales are those on which the main units are numbered along the entire length but finer units are placed only outside the zero marks. Figure 2-16 contains an example of an open-divided scale. Note that the $3/16$ scale has fine units only outside the zero. On such a scale, each of the large divisions represents one foot. The fine divisions are inches, with each small line representing one inch. A $3/32$ scale, half as large as the $3/16$ scale, runs from the opposite end. For this scale, as with all others, the large section equals one foot. There are only six fine divisions, therefore, each of the lines equal 2 inches. On some open-divided scales, there are divisions smaller than 1 inch. Figure 2-17 above shows two examples of such divisions. On the scale to the left, for example, the entire unit shown equals 1 foot. Each of the long lines represents 1 inch. Each of the medium lines is $1/2$ inch. Each of the short lines is $1/4$ inch. On the scale to the right, the entire unit shown equals 1 foot. The longest line represents 1 inch. The next shorter line represents $1/2$ inch; next, $1/4$ inch. The shortest line represents $1/8$ inch. The fully-divided section of an open-divided scale is called the *divided foot*.

(2) A fully divided scale has divisions along its entire length. Therefore, it does not need a divided foot outside its zero point. Examples of fully divided scales are the full scale shown on the engineers' and metric scales.

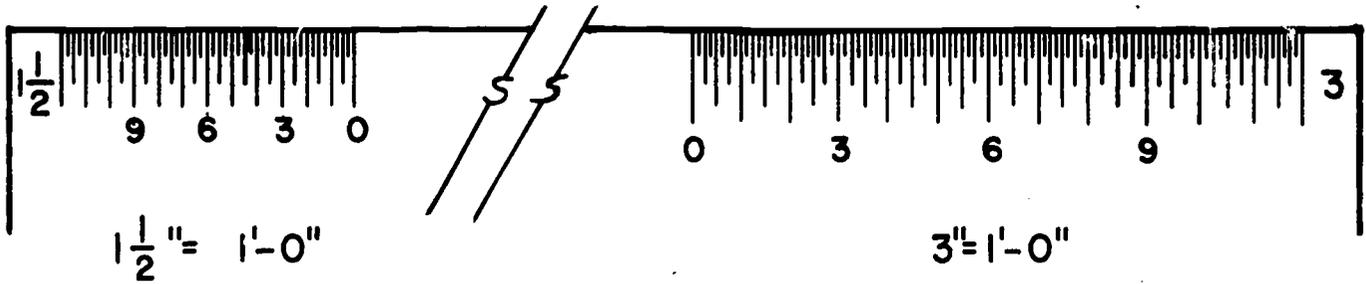


Figure 2-17. Open-divided scales ($1\frac{1}{2}$ " and 3").

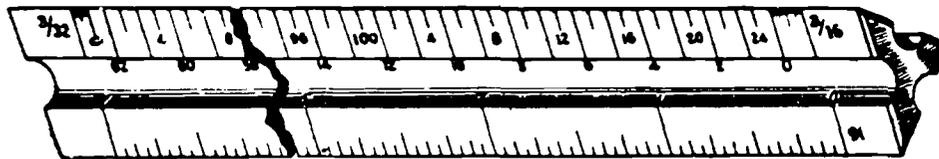
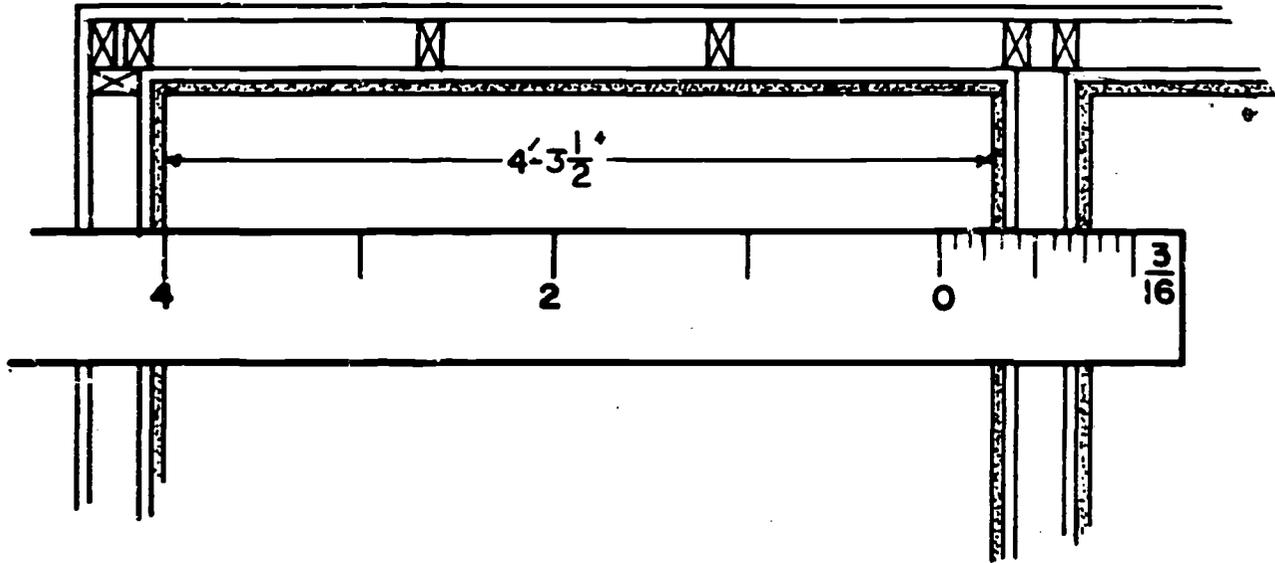


Figure 2-18. Architect's scale.

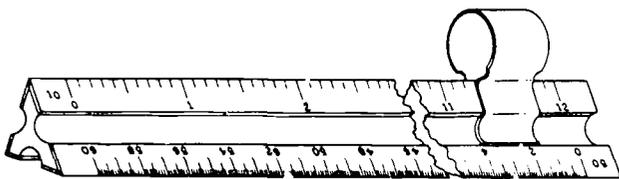


Figure 2-19. Engineer's scale.

d. *Architect's Scale.* The architect's scale (fig. 2-18) is used for building construction where length is measured in feet and inches. The large units, representing 1 foot, are subdivided into twelfths, representing inches. The scales are paired, with two on each face as follows: 3 and $\frac{1}{2}$; 1 and $\frac{1}{2}$; $\frac{3}{4}$ and $\frac{3}{8}$; $\frac{1}{4}$ and $\frac{1}{8}$; $\frac{3}{16}$ and $\frac{3}{32}$. Zero marks are at opposite ends of each face.

e. *Engineer's Scale.*

(1) The civil engineer's scale, or engineer's scale (fig. 2-19) is a triangular scale 12 inches

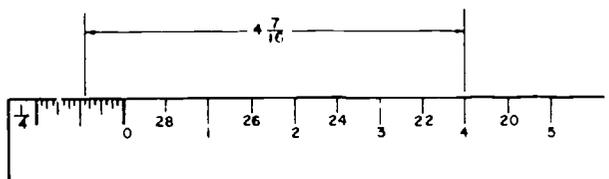


Figure 2-20. Mechanical engineer's scale.



Figure 2-21. Metric scale.

long with increments on each side of its three faces. The basic unit is the inch, which is divided into 10, 20, 30, 40, 50, and 60 parts on the different scales. These parts represent the number of feet in every inch measured by the scale: in the 10 scale, each of the ten lines is 1 foot, and so on.

(2) This scale is used on drawings where great reduction in size is needed. It deals with long distances measured in feet and decimal parts of a foot. It is often used for maps.

f. Mechanical Engineer's Scale. The mechanical engineer's scale (fig. 2-20) is similar to the architect's scale. Its reduced scales follow the same pattern. It differs in that it is subdivided into sixteenths, thirty-seconds, sixty-fourths, or decimal units (0.01 or 0.02) rather than twelfths.

g. Metric Scale.

(1) A metric scale (fig. 2-21) is a two-bevel scale with one scale on each side of its face. One scale is a fully divided 12-inch scale. The other has metric increments and is 30 centimeters long.

(2) The basic unit of length in the metric system is the meter. There is 39.37 inches in a meter. One meter is divided into 100 centimeters. One centimeter equals 10 millimeters.

- 1 meter = 10 decimeters
- 1 meter = 100 centimeters
- 1 meter = 1000 millimeters

(3) When working with a metric scale, remember that all values are decimal parts of a meter and not of an inch. One inch equals 2.54 centimeters.

h. Use of the Scale.

(1) For a draftsman, accuracy and speed in scaling vary inversely with one another. Exacting layouts, made to scale for workmen, must be very accurately represented. This takes time. Drawings with figured dimensions need not be as accurate and may be drawn more quickly.

(2) To lay off a distance, put the scale on the paper aligning the zero with the starting point. Measure out the required distance along the scale and mark it with either a sharp pencil dot or a pin prick. Do not use the scale as a straightedge for drawing the line. To avoid cumulative errors, successive measurements on the same line should be made without moving the scale.

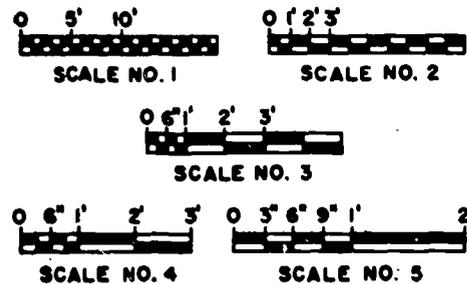


Figure 2-22. Graphic scale.

(3) In stating the scale used on a drawing, the information should be given in compliance with the scale used for the drawing. If a mechanical engineer's scale is used, scale can be expressed as *half size* or *three-tenths size* as well as in the standard equation such as $\frac{1}{2}'' = 1' - 0''$ or $\frac{3}{10}'' = 1'$. The standard form for the architect's scale is $3'' = 1' - 0''$, $\frac{1}{4}'' = 1' - 0''$, and so on. When noting the scale, the first figure always refers to the drawing and the second to the object drawn. For the civil engineer's scale, the format is the same. Examples are: $1'' = 60'$, $1'' = 50'$, and $1'' = 40'$.

(4) In the graphic method of representing scale, an actual measuring scale is shown in the drawing (fig. 2-22). This scale provides a means of determining the approximate dimensions of an object on an enlarged or reduced reproduction. Graphic scales may be used for drawing in which complete dimensions of the object or arrangement are not required, such as assembly, installations, subassembly, and welded assemblies, and which are intended for reproduction at other than actual drawing size. Graphic scales should *never* be used as indications of accurate dimensions. When graphic scales are used to indicate the equation method, a single horizontal bar is divided into appropriate vertical graduations. When graphic scales are used in a drawing, the reference, GRAPHIC, will be entered after SCALE in the space provided on the drawing. When all views and sections are drawn to the same scale, the scale representation and the corresponding fraction followed by SCALE are to be entered near the title block. When more than one scale is used, the graphic scales will be grouped near the title block, and the equation scales will be placed directly below the views to which they pertain.

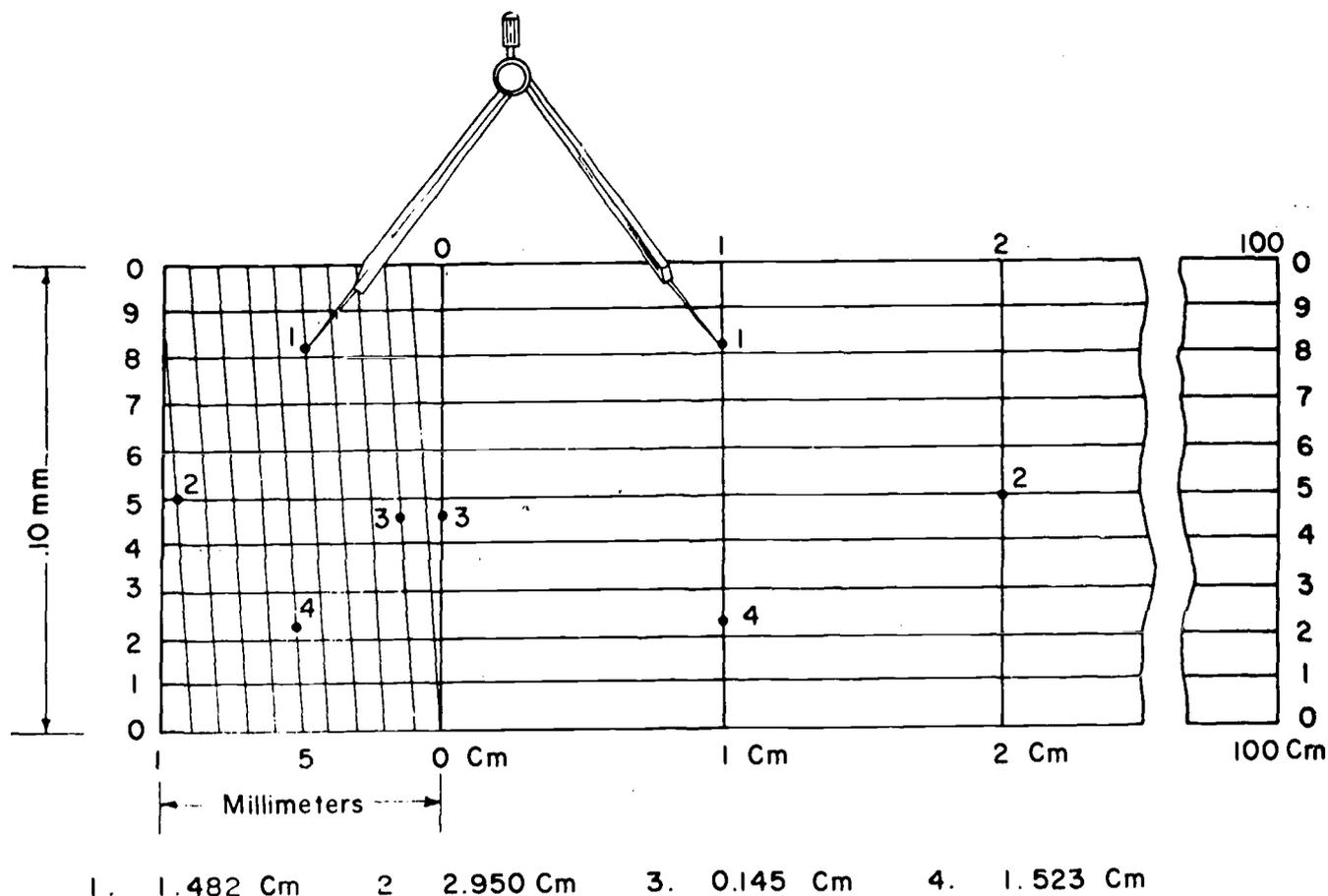


Figure 2-23. Invar scale.

(5) In drawings drawn to scale, but in which certain dimensions are not to scale, the abbreviation NTS is placed directly above or below the dimensions affected, or the dimensions are underlined.

i. Invar Scale.

(1) The invar scale (fig. 2-23) is made from a special steel alloy having a low coefficient of expansion and, therefore, the change in length due to temperature differences is insignificant. This scale is used when very precise measurements are required.

(2) One side of the scale is calibrated in the metric system and the other side in the English system. On the left side of the bar, one unit—an inch on the English side and a centimeter on the metric side—is graduated in tenths by parallel *diagonal* lines extending from bottom to top. It is further divided into hundredths by *parallel* lines extending throughout the length of the bar. The thousandths are *estimated* along the diagonal between the parallel hundredths lines. The measurements must be made parallel to the horizontal lines at all times. For example, if one end of the bar beam compass is on the fourth line from the

bottom, the other end also is placed on the fourth line from the bottom.

(3) *The invar scale should never be taken from its protective box.* To use the reverse side merely close the box, turn it over, and reopen it. Use care when adjusting the points on the beam compass to a decimal measurement to avoid scratching the surface of the scale.

2-17. Drawing Instrument Sets

A serviceable set of instruments is very essential for producing good drawings with a minimum amount of effort and in the shortest possible time. There are many different kinds of sets. Some contain numerous special accessories while others include only the basic instruments. The set of drawing instruments illustrated in M, figure 2-3 is a standard issue and the tools are common to most sets of drawing instruments. The set contains the following:

a. Compasses.

(1) *Friction compass.* The friction compass has legs approximately 6 inches long. Its radius setting is adjusted by finger pressure and it de-

depends on friction at the pivot joint to maintain its setting. It can be used to draw radii up to 5 inches and when using the extension bar up to 9 inches.

(2) *Bow compass.* There are two types of bow compasses: one has a center thumbscrew between the legs and the other has a side thumbscrew outside one of the legs. The small bow compass can be used for circle arcs up to 1-inch radius.

(3) *Drop compass.* The drop compass is designed for the drawing of small accurate circles. The center rod contains the needlepoint and remains stationary while the tube carrying the pen or pencil revolves around it.

(4) *Beam compass.* A beam compass (0, fig. 2-3) consists of a long bar with a needlepoint attachment at one end and pencil or pen attachment at the other. All of the attachments are adjustable, to permit the drawing of large circles easily.

(5) *Use of the compass.*

(a) The compass, with pencil and inking attachments, is used for drawing circles of approximately 1-inch radius or larger. Most compass needlepoints have a plain end for use when the compass is converted into dividers, and a "shoulder end" for use as a compass. Adjust the needle point with the shoulder end out and so that the small point extends slightly farther than the pencil lead or pen nibs (fig. 2-24). Sharpen compass lead as shown, forming an ellipse approximately a quarter of an inch long.

(b) To draw a penciled circle, take the following steps: set off the required radius on one of the center lines, place the needle point at the exact intersection of the center lines, adjust the compass to the required radius (1 inch or more), lean the compass forward and draw the circle clock-

wise while rotating the handle between the thumb and forefinger. To obtain sufficient weight of line, it may be necessary to repeat the movement several times. Any error in radius will result in a doubled error in diameter; therefore, it is best to draw a trial circle first on scrap paper and then check the diameter with the scale.

(c) When drawing inked circles and large penciled circles, "break" the legs of the compass so that they will stand approximately perpendicular to the paper. On drawings having arcs and tangent straight lines, draw the arcs first as it is easier to connect a straight line to an arc than the reverse. For very large circles, use the lengthening bar to increase the compass radius. Use both hands but be careful not to jar the compass and thus change the adjustment.

(d) When using the compass to draw construction lines, use a 4H to 6H lead so that the lines will be very light. For required lines, the arcs and circles must be black and match the straight lines. Since heavy pressure cannot be exerted on the compass as it can on a pencil, it is usually necessary to use a compass lead that is about one grade softer than the pencil used for the corresponding line work. For example, if an F pencil is used for visible lines drawn with the pencil, then an HB might be found suitable for the compass work. In summary, use compass leads that will produce arcs and circles that match the regular pencil lines.

(e) It is necessary to exert pressure on the compass to produce heavy "printable" circles, and this tends to enlarge the compass center hole in the paper, especially if there are a number of concentric circles. In such cases, use a horn center or "center tack" in the hole, and place the needlepoint in the hole in the tack.

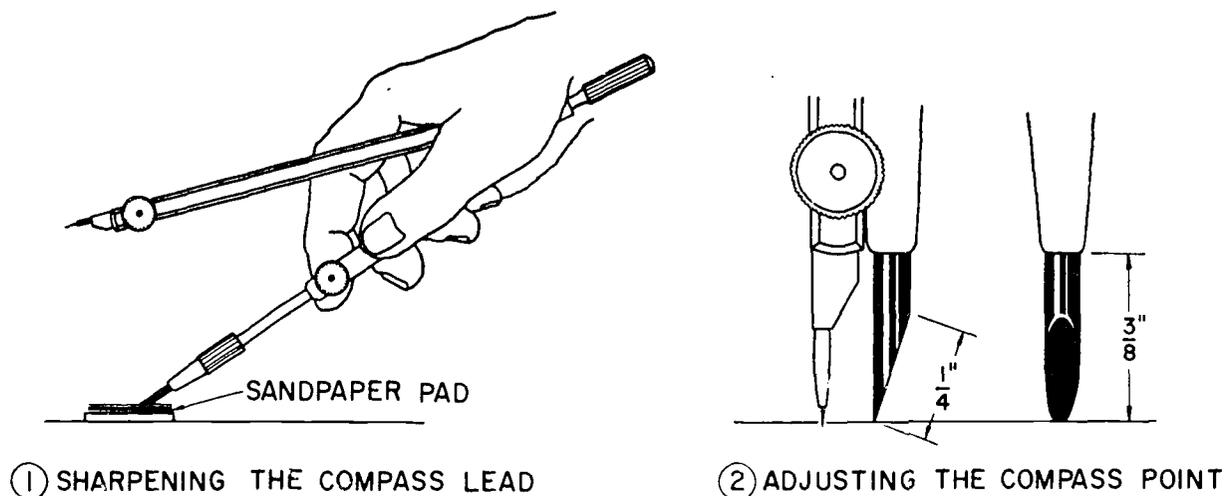


Figure 2-24. Adjusting a compass.

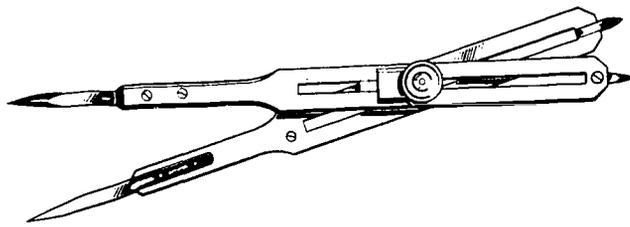


Figure 2-25. Proportional dividers.

b. Dividers.

(1) There are two types of dividers: the *bow dividers* and the *friction dividers*. Dividers are used to space off equal distances, to divide lines into equal parts, and to transfer dimensions.

(2) When a draftsman is required to make copies of drawings to an enlarged or reduced scale, he frequently employs the *proportional dividers*. This instrument permits reproducing the lines of a drawing so the lines in the copy are of a known ratio to the original, and producing a drawing so the content of a solid or area of a plane surface will be in proportion to the original. Proportional dividers (fig. 2-25) consist of two legs on a sliding, adjustable pivot, making it possible, when the legs are open, to have the distance between the points at one end bear a definite proportion to the distance between the points at the opposite end. The legs are marked with correctly divided scales and when the sliding pivot is set to the proportion desired on any particular scale, that proportion is established.

(3) Dividers are used (fig. 2-26) for transferring measurements and for dividing lines into any number of equal parts. The instrument should be opened with one hand by pinching the chamfer with the thumb and second finger. This will throw it into correct position with the thumb and forefinger outside the legs and the second and third fingers inside, with the head resting just above the second joint of the forefinger. It is thus under perfect control, with the thumb and forefinger to close it and the other two to open it. In coming down to small divisions, the second and third fingers must be gradually slipped out from between the legs as they are closed down upon them. Notice that the little finger is not used in manipulating the dividers. Care should be given as to not punch holes in the paper, but just barely mark the surface for future reference.

c. Ruling Pen.

(1) *Use.*

(a) Ruling pen is used for inking straight lines and is always used in connection with a guiding edge, T-square, triangle, or curve. An ink

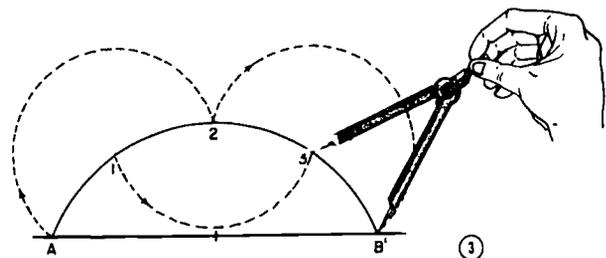
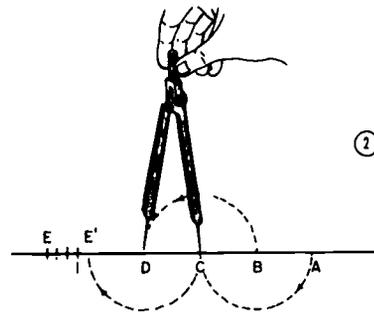
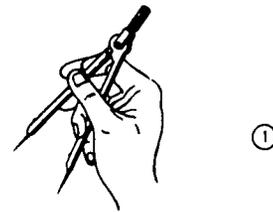


Figure 2-26. Using dividers.

Not enough ink to finish line

Ink on outside of blade

Pen pressed against T-square too hard

Straight edge slipped into wet line

Pen sloped away from straight edge

Pen too close to straight edge

Pen not kept parallel to straight edge

Figure 2-27. Routine mishaps in inking.

reservoir is formed by the space between the two blades. An adjusting screw controls the thickness of the line by regulating the clearance between the pen nibs. Many of the *routine mishaps* (fig. 2-27) encountered by a new draftsman when preparing an ink drawing or tracing can be avoided by paying attention to a few basic principles in inking techniques. Remember that it takes time for ink to dry; and be careful when moving the guiding

edge. It is generally good practice for the beginning draftsman to attach small coins or other suitable devices to the bottom of the straightedge, triangle or curves when inking to lessen the chances of ink running under the straightedge. The ruling pen is held in a vertical plane perpendicular to the plane of the paper and inclined 30° in the direction of the movement. It is held between the thumb and forefinger with the adjusting screw pointing outward and the blade resting against the second finger. The third and fourth fingers slide along the blade of the guiding edge and aid in steadying the pen. Lines are drawn with a steady, regular arm motion. Short lines are drawn with a motion of the fingers holding the pen; the fingers resting on the straightedge remain stationary. Long lines are finished with this finger motion. Do not allow the pen to rest at the end of a completed line; pick it up smartly and move the straightedge from the line.

(b) Fill the ruling pen with the quill attached to inkstand filler or to the stopper of the ink bottle or directly from the squeeze cartridge (fig. 2-28). Do not fill the pen more than $\frac{1}{4}$ inch from the point; too much ink causes blotting. Take care that no ink gets on the outside surface of the blades; if it does, wipe the pen clean and refill it. Never fill pen until it is ready for use because the ink dries quickly when not flowing from the pen. Ink should never be allowed to dry in any instrument. Never lay a ruling pen down with ink in it. Some drawing inks have an acid content that will pit a ruling pen if left to dry in the pen repeatedly. The student should clean the pen frequently by slipping a stiff blotter or a folded cloth between the nibs. Sandpaper should never be used to remove dry ink. Dry ink should be removed by scraping very lightly with a pen knife. Ruling pens constructed so that the nibs will separate for cleaning are available.

(c) Line width is determined by the distance between the pen blades at their points; the greater the separation, the wider the line. Spacing between the blades is regulated by the adjusting screw. The width of a new setting should always be tested by drawing trial lines on a piece of scrap paper of the same quality, or in the margin outside the trim lines of the working sheet. Other factors that affect the width are the amount of ink, speed of pen movement, shape and condition of nibs, quality of paper, and hardness of the working surface. If a pen is held so that its top leans outward, the point leans against the guiding edge and causes ink to run under the edge and blot. If the top of the pen leans too far inward, the outer nib does not touch the paper and causes



Figure 2-28. Filling the inking pen.

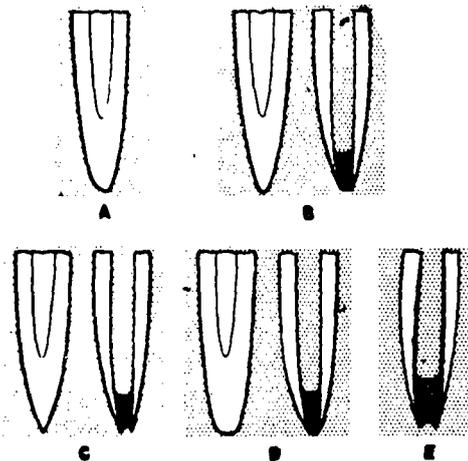


Figure 2-29. Shapes of ruling pen nibs.

an irregular line. The amount of pressure necessary varies with the quality of the paper and the sharpness of the pen. Pressure should be just strong enough to produce a clean, even line. Excessive pressure compresses the blades, narrows the width of the line along its length, or causes a line of varying width. The pressure against the guiding edge need be only enough to control the direction. If ink refuses to flow it may be started by pinching the blades slightly or drawing the pen across the thumbnail. Dried ink or particles from the wiping cloth clog the pen and cause an uneven line if allowed to accumulate. Dried ink can be removed by washing the pen in a weak solution of ammonia. Always put inking instruments away clean.

(d) Fine lines and lines of even width can be produced only by a ruling pen with sharp, properly shaped nibs. A draftsman who has trou-

ble producing fine lines or lines of even width, may find that his ruling pen needs sharpening or reshaping either because it is a poorly shaped new pen or because it is worn from constant use. He should know how to detect and remedy these conditions.

(2) *Examining and sharpening pens.*

(a) *Examining pen.* The nibs of a correctly shaped pen are elliptical in form and are founded equally (B, fig. 2-29). When filled and viewed from the side, the ink arches inward slightly at the point. If the nibs are pointed too sharply (C, fig. 2-29), the ink forms a concave arch between the blades and is difficult to start. If the nibs are blunt and rounded (D, fig. 2-29), the ink forms a convex arch that extends beyond the tips and causes blots and thickened lines at the ends. A dull pen (A, fig. 2-29), shows a spot of reflected light that passes from the side of the blade over the end of the point as the pen is turned in the hand. The nibs should be sharpened until these bright points disappear. E, figure 2-29 shows a pen that is too curved.

(b) *Sharpening pen.* Clean the blades thoroughly first in a weak ammonia solution, dry, and screw the nibs together until they just touch. Use a fine-grained Arkansas oilstone and hold the pen against it in line-drawing position (1, fig. 2-30). Draw the pen along the stone, as if drawing a line, moving the handle in a pendulum motion from an angle 30° through perpendicular position to an angle of 30° opposite to the direction of movement. Repeat the motion until the nibs are equally rounded in the proper elliptical shape (3, fig. 2-30). Next open the nibs slightly and sharpen each blade on the outside, holding the pen almost horizontal to the stone (2, fig. 2-30); use a slight, rocking motion, following the contour of the blade. Test the pen at intervals to see that the ink flows easily without blotting and that the blades

do not cut the tracing paper. Burs or wire edges formed on the inside of the blade can be removed by drawing a strip of leather or detail paper through the closed nibs, or open the pen wide and lay the entire inner surface of the blade flat on the stone and move it with a very light touch.

2-18. Drafting Pens

a. *Fountain Types.* There are two kinds of fountain pens used for drafting pens; Rapidograph and Graphos. Both fountain pens come with ink reservoir and various replaceable nibs with different sizes and shapes. The advantages in these pens are as follows: One is *speed*. There is practically no need to refill after a line or two as with a ruling pen. It is possible to change from one thickness of line to another rapidly. The second is *continuity*. Since the thickness of size of line is fixed, it is possible to have, without difficulty, the same thickness of line on the entire drawing, or drawings by all draftsmen in the department.

b. *Road Pen.* The road pen (N, fig. 2-3) is a swivel instrument similar to the ruling pen, except that it has two sets of nibs instead of one. Each nib is adjustable for line weight and the two sets can be adjusted with respect to each other. This instrument enables a draftsman to maintain an exact road width by tracing the entire road casing in one motion. This pen is to be used free-hand.

c. *Railroad Pen.* This pen (fig. 2-3) is similar to the road pen except that it has no swivel arrangement. Its purpose is to draw two lines that are parallel in a single motion with the assistance of a straightedge or curve.

d. *Contour Pen.* The contour pen (or curve pen) is an instrument similar to the ruling pen with

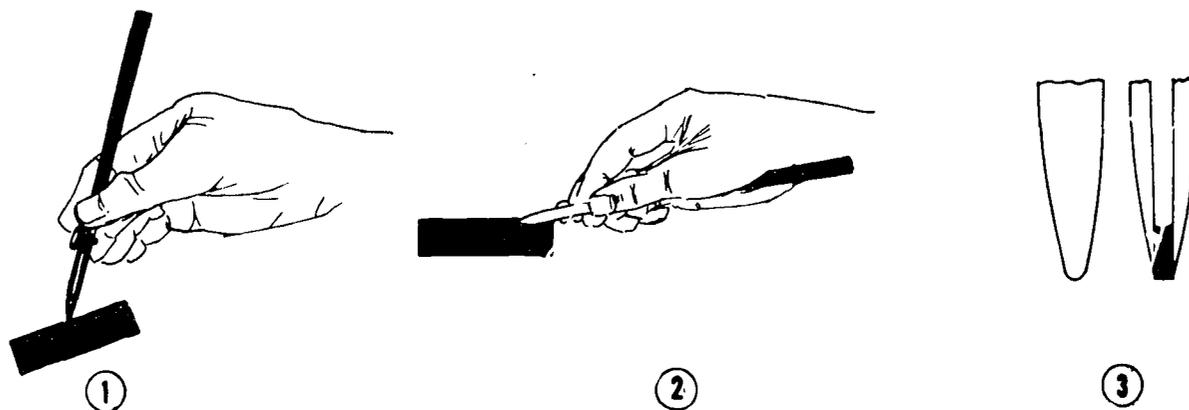


Figure 2-30. Sharpening the inking pen.

curved nibs and a swiveling barrel. It is used for drawing irregularly curved lines such as contour lines. The swivel barrel allows the draftsman to change direction of movement with a slight lateral pressure. The contour pen is used freehand and never in conjunction with a straightedge or curve. This pen is held almost perpendicular to the paper, with only a slight inclination in the direction of the stroke.

2-19. Freehand Pens

These pens (F, fig. 2-3) are held in the same manner as the pencil, tightly enough for control but allowing a loose, free movement. Strokes are drawn, not sketched, in the same manner as a ruling pen. Avoid pressure on the pen; pressure spreads the nibs and produces an uneven line. Hold the pen in the same manner consistently because tilting it in different directions causes different stroke weights. Regular practice is the only way to achieve uniform lettering of acceptable quality.

a. Penpoints. Crowquill pens produce the finest line weight. Gillott or equivalent pens produce a heavier line weight and are for normal lettering. Payzant pens have a flat body containing a reservoir and curved nibs resembling a beak. These pens come in 11 sizes ranging from No. 000, the coarsest, to No. 8, the finest. Speedball pens are used with a regular pen holder. These pens come in four styles and resemble ordinary pens with a round, square, oval, or oblong shoe at the end.

b. Filling and Cleaning. Do not ink the pen too heavily or apply ink to the point. If ink flows too freely, blots occur more frequently and the first line strokes made after each filling will be heavier than the rest. While in use, pens should be wiped often with a soft cloth. They should be cleaned thoroughly before being put away.

2-20. Ink and Ink Holders

Drawing ink is finely ground carbon in suspension with natural or synthetic gum added to make the mixture waterproof. Nonwaterproof ink flows more freely but smudges easily. Bottleholders prevent the bottle from upsetting and ruining the drawing table or floor. Drawing ink also comes in small plastic squeeze dropper cartridges which are very convenient.

2-21. Drawing Pencils

a. Various Types.

(1) Drawing pencils are made of graphite encased in wood (fig. 2-32), shaped hexagonally, marked according to hardness, and are usually without erasers. Care should be taken not to cut off the hardness mark by sharpening the wrong end.

(2) Drawing pencils are available with leads of different grades of hardness. The hardness is designated on the pencil by numbers and letters. These symbols range from 7B, which is very soft, through 6B, 5B, 4B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, and 9H which is the hardest. A 6H or 5H pencil may be used for a penciled layout on detail paper of good texture and a 4H,

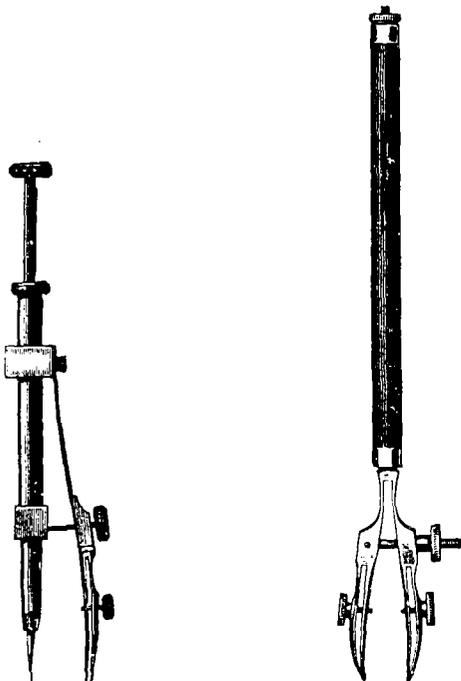


Figure 2-31. Drop compass and railroad pen.



Figure 2-32. Standard and mechanical pencils.

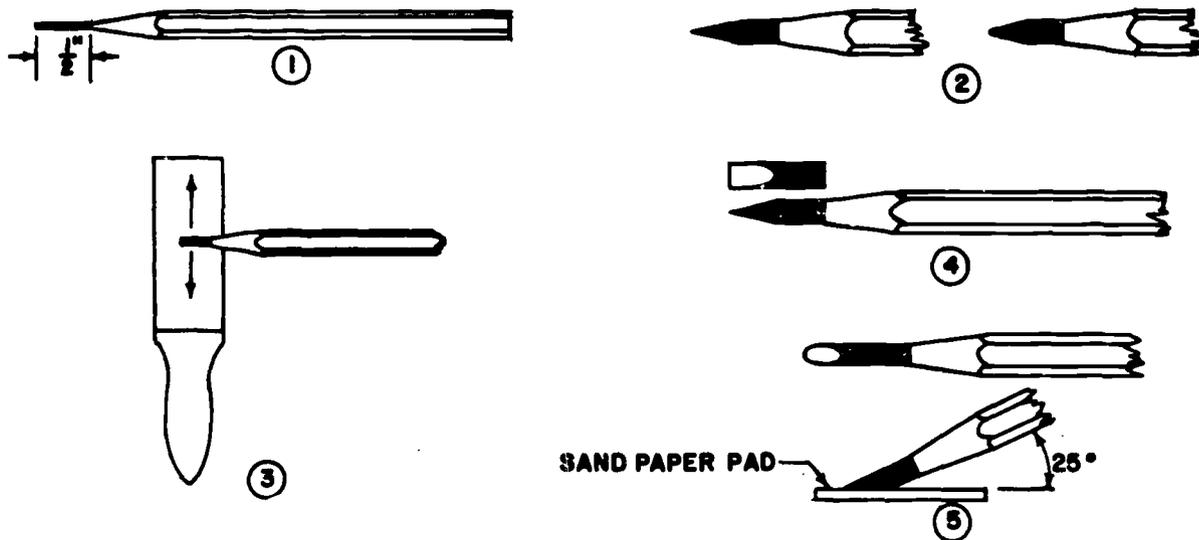


Figure 2-33. Pencil points.

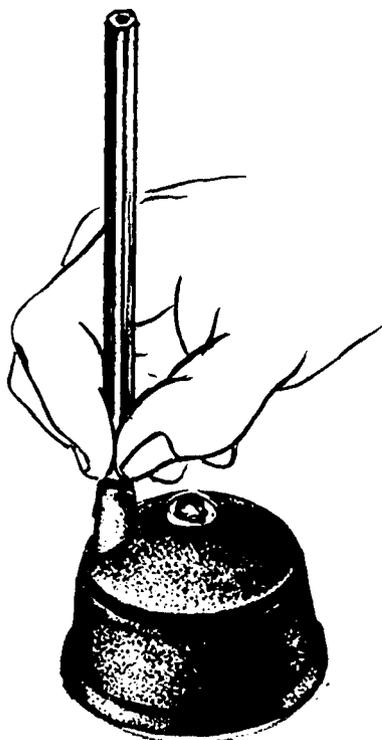


Figure 2-34. Lead sharpener.

3H, or 2H pencil may be used to darken these lines. The 3H to H pencils are used for finished pencil drawings or tracings on vellum. The F pencil is generally used for technical sketching while the H or HB is used for lettering. In every case, the pencil must be hard enough not to blur or smudge but not so hard as to cut grooves in the paper under reasonable pressure.

(3) There are also special plastic leads designed to be used on plastic paper or drafting film. These leads come in various degrees of hardness

similar to the graphite leads, (H, B or HB, and so on) or use a special numbering system (K1-5, 2S-6S, E1-E5 or V1-V5, etc.) depending on the manufacturer.

(4) Many draftsmen prefer to use a mechanical pencil (fig. 2-32) because its length is constant and it can easily be refilled with new lead.

b. Sharpening the Pencil.

(1) In sharpening your pencil, use a knife or a razor blade to cut the wood away from the pencil lead, as shown in figure 2-33. Cut the wood back until about $\frac{3}{8}$ of an inch of the lead is visible. Sharpen the tip of the lead on a sandpaper pad (G, fig. 2-3) by twirling the pencil as the lead is rubbed with long even strokes against the sandpaper pad or file; or place in a special lead sharpener (fig. 2-34). Do not allow graphite to fall on paper, drafting board, or equipment.

(2) The conical pencil point shown in 2, figure 2-33 is most commonly used. However, some draftsmen prefer using the wedge point (4, fig. 2-33) for drawing straight lines as the wedge point will not wear away as fast as the conical point. Have the sandpaper pad within easy reach, and keep the pencils sharp. The professional draftsman sharpens his pencil every few minutes. After sharpening the lead, wipe the excess graphite dust from the point before using the pencil. Form the habit of sharpening the lead often and keeping the point clean and free of graphite dust.

(3) Not only must pencil lines be clean and sharp, but for pencil drawings and tracing to be blueprinted, it is necessary that all the lines be uniform, firm, and opaque. This means a careful choice of pencils and the proper use of them. Too much emphasis cannot be given to the importance of clean, careful, accurate penciling.

2-22. Pencil Pointers

After the wood of the ordinary pencil is cut away with a pocket knife or mechanical sharpener, or the lead extended from a mechanical pencil, the lead must be sharpened. This can be done by a sandpaper pencil-pointer pad (G, fig. 2-3) or by a variable taper lead pointer (fig. 2-34). Some electric erasers come with an adapter which sharpens lead pencil points.

2-23. Erasing and Cleaning Supplies

a. A red rubber eraser (H, fig. 2-3) should be used for general erasing of both pencil and ink lines. This eraser not only removes pencil lines effectively but also removes ink lines without seriously damaging the surface of the paper or cloth.

b. An artgum eraser, (H, fig. 2-3) is useful for cleaning paper and cloth of finger marks and smears.

c. A steel arrowhead or knife eraser should be used only as a last resort for removing small segments of inked lines because it is almost certain to damage the drawing sheet.

d. The plastic eraser is useful in erasing special drafting lead used on plastic vellum, and is also useful in removing pencil lines without erasing ink lines.

e. The electric erasing machine with erasers of various degrees of hardness—white, grey, and pink—saves time and is essential if much drafting is being done.

f. There are also various kinds of eradicators to remove ink, bluelines, or sepia lines on paper, cloth, prints, or reproductions.

g. Pounce is a fine white powder that can be sprinkled over the paper when ink is used to prevent smudges, and cut oily or greasy smudges.

h. The dry-clean pad is a rubbery granular substance in a loosely woven cloth sack that can be sprinkled over paper when pencil is used to prevent graphite smudges.

i. The erasing shield (I, fig. 2-3) is a small plate of thin spring steel that has slots of various shapes stamped out, allowing unwanted lines to be removed while leaving other lines untouched. The edges of the shield also clean the eraser, thus avoiding smudges.

j. The dustbrush (J, fig. 2-3) is a soft-bristled brush used to keep the drawing sheet free of eraser debris. The brush should be kept clean and dry and be used only for its intended purpose,

otherwise it may become dirty and smear the working area of the paper or cloth.

2-24. Materials

a. *Drawing Paper.* Many drawings are made on tracing paper or cloth rather than on paper. However, beginning students of drawing usually start their work on drawing paper and then progress to tracing paper and cloth after some skill in drawing is mastered. Drawing paper is produced in roll and sheet form and comes in white, cream, and light green color. The light green paper has the advantage of not showing dirt as readily as the others and reduces glare to a minimum. Several grades of drawing paper are available; however, it is advisable to use a good quality paper because it withstands erasing better. One surface of the paper has a smooth finish and the other surface a rough finish. The smooth finish is more adaptable for ink work whereas the rough finish is better suited for pencil drawings.

b. *Tracing Paper.* Formerly, most drawings were first prepared on some kind of opaque paper and then traced on tracing paper from which a print was developed. Today, draftsmen make their drawings directly on tracing paper in order to accelerate the drawing process. Tracing paper is a thin, transparent paper, which is sometimes chemically treated. The treated papers are called vellums while the untreated types are referred to as natural tracing papers. Natural tracing papers are manufactured in many different grades in either pure white or blue tinted colors. These papers do not, as a rule, possess the high degree of transparency as the vellums. The vellums are made of 100 percent pure white rag stock and are particularly noted for their high transparency. They withstand repeated erasing without leaving ghost marks, have good pencil and ink taking qualities, do not discolor with age, and stand a considerable amount of, handling without damage.

c. Tracing Cloth.

(1) *Description.* Tracing cloth is a transparent fabric and is used when the original tracing has to be preserved for a long period of time. It is available in either white- or blue-tinted colors. One side is usually dull and the other glazed. Tracing cloth will take both pencil and ink. In making drawings on cloth, the dull side should always be used. For inking purposes, a tracing cloth powder or pumice is sprinkled over the cloth and then dusted off with a felt pad or brush. The pumice prepares the cloth to take ink more readily.

(2) *Preparation.* Tracing cloth should be cut

several inches larger than the required finish size. For large drawings, allow the tracing cloth to lie flat for a short time before tacking it down. Occasional traces of oil that appear on tracing cloth prevent a smooth flow of ink; dusting the sheet with pounce or powdered chalk after it has been tacked down and wiping it with clean, dry cloth will remove any traces of oil.

(3) *Erasing.* Erasing inked lines must be done with care if re-inking is contemplated; a pencil eraser can be used in conjunction with an erasing shield to avoid wrinkling the paper. A triangle slipped underneath the tracing cloth at the point of erasure also minimizes wrinkling. The erased spot should be finished smooth with a thumbnail or triangle edge after erasing. A cloth dipped in carbon tetrachloride or benzine can be used to remove graphite smudges and pencil lines from tracing cloth. Never use a knife eraser on a line that must be re-inked because it will invariably damage the surface enough to permit ink to seep through. Use a draftsman's dustbrush to remove eraser debris.

(4) *Moisture.* Certain types of tracing cloth are sensitive to moisture and atmospheric changes. Do not allow moist hands and arms to come in contact with tracing cloth. For large tracings, it is advisable to cut a shield from detail paper to protect finished work. When the making of a tracing is to extend over several days, it is recommended that one view at a time be fully completed rather than working over the entire area. The cloth is quite responsive to changes in the moisture content of the air and will expand or shrink a great deal from one day to the next.

d. Plastic. Plastic paper, such as Mylar, Helios, Polyester, and so on, is transparent, more durable, and can be easily erased without leaving a "ghost" or damaging the working surface.

e. Cross Section Paper. Cross section paper is printed in many different grid sizes; but it is usually printed in green or red squares with 100 squares (10×10) or 400 squares (20×20) to the square inch and is available in sheets or rolls. Cross section paper is used to plot statistical data, graphs, and road elevations taken transversely to the centerline section of the road. It can also be used for sketching using the various squares as a guide.

f. Profile Paper. Profile paper is generally used in road work. The lower half of the paper is normally printed in orange squares, of 4 divisions horizontally by 20 divisions vertically to the square inch. The upper half of the sheet is blank and is used for drawing a plan view as of a road

seen from the air. The portion printed with orange squares is used to plot the elevation of the road along its centerline. The most common sizes are 23 by 36 inches; special sizes and profile paper in rolls are obtainable on special order in quantity. For further details refer to TM 5-581B.

g. Poster Board. Poster board is used by the military draftsman mainly for charts and graphs. Made with sturdy 3-ply construction, the smooth, white surface of these boards accepts ink easily. Available with printed border and titles or plain, the boards may be rolled without damage to board or surface.

2-25. Paper Fasteners

a. A drawing sheet can be fastened to the drawing board with drafting, masking, or cellophane tape. Though these tapes do not make holes like thumbtacks or staplers, they may roll up under the T-square or damage or leave sticky gum on the paper or drafting board. Thumbtacks preferably with thin flat heads, or wire staples inserted with a stapling machine can be used but they damage the working surface of the drawing board unless it is protected with a plastic drafting board cover that is self-sealing.

b. Since the T-square blade is more rigid near the head than toward the outer end, the paper should be placed close to the left edge of the board with its lower edge several inches from the bottom of the board. With the T-square against the left edge of the board, square the top of the paper; hold it in this position, slipping the T-square down from the edge, and fasten each upper corner. Then move the T-square down over the paper to smooth out possible wrinkles, and fasten the other two corners. When the sheet is larger, fasten drawing material in between corners as necessary.

2-26. Special Equipment

a. Mechanical Lettering Sets.

(1) One type of mechanical lettering set consists of five component parts: a number of guides or templates in which the lines of the letters are indented, a three-legged scribe, a number of ink-pens of varying sizes and a pen holder with a special penciling attachment for the scribe. One leg of the scribe holds the pen or pencil, and the other two legs terminate in tracer points. One tracer point or tail pin moves in a long, straight groove on the template. When this latter point is moved around the contour of a letter, the entire scribe hinges on the tail pin in the groove and

the pen or pencil traces the letter on the drawing paper. Refer to paragraphs 4-13 through 4-15 and figure 4-11 for a complete description and use of this set.

(2) Another type of lettering set contains a vertical penholder for various penpoints and a number of templates. Each template contains a number of differently shaped perforations from which letters in one size and style can be stenciled.

(3) The Varigraph is a more elaborate device for making a wide variety of either single-stroke letters or "built-up" letters. The Letterguide scribe is a much simpler instrument, which also makes a large variety of styles and sizes of letters when used with various templates available. They both operate with a guide pin moving in the grooved letters of the template, while the pen, which is mounted on an adjustable arm, makes the letters in outline. The letters can be filled in black, zip-a-toned, shaded, left blank, or reversed, that is, white letters with a black background.

b. Scribing Instruments. The standard military method of making color separations for map reproduction is the use of scribing instruments on

coated plastic sheets. The principal scribing instruments are called gravers, which hold scribing needles or blades. There are several types of gravers and accessories. For detailed information of their use, refer to TM 5-240.

c. Slide Rule. A slide rule (T, fig. 2-3) is a portable calculating device based on the principle of logarithmic addition and subtraction. Computations are an important part of engineering drawing and a draftsman who is proficient in the use of a slide rule finds it an essential aid in rapid calculations.

d. Other Miscellaneous Items. Certain other items may or may not be available to the draftsman through local purchase or supply, but may be used by the draftsman if available. They include, but are not limited to: pantographs, polar planimeter, scale guards, lettering triangle, parallel rules, hatching pens, Zip-a-tone, Prestype, horn centers, tri-tractor map measures, paper cutters, tack lifters, staple removers, oilstones, draftsman's pencil sharpeners, horizontal map files, vertical plan hold files, stack roll files, mailing tubes, headliner, and so forth.



CHAPTER 3

LINE WEIGHTS, CONVENTIONS AND FORMATS

3-1. Line Conventions

Line conventions are symbols that furnish a means of representing or describing some basic aspect of a real object. The meaning of the symbols is determined by definition, and is expressed by a combination of line weight and characteristic appearance, as presented in MIL-STD-100A, Engineering Drawing Practice and NAVFAC DM-6, Design Manual, Drawings and Specifications.

3-2. "Alphabet of Lines"

Four widths of lines (fig. 3-1) for finished drawings are recommended: *thin* for center, extension, dimension, leader, long-break, adjacent-part, alternate-position, section and repeat lines; *medium* for hidden outlines, stitch lines, phantom and reference lines; *thick* for visible outlines, short-break and datum lines; *extra thick* for cutting plane, viewing plane and cutting plane lines for complex or offset views. The weights of these lines for the average drawings in ink should be 1/100 inch for thin lines; 1/60 inch for medium lines; 1/40 inch for thick lines; and 1/25 inch for extra thick lines. Pencil lines will be a little thinner.

a. Types of Lines.

(1) *Ink lines.* Ink lines shall be opaque and of uniform width for each type of line. Three widths of lines will be used—thin, medium, and thick, as shown in figure 3-1, with their widths in proportions of 1:2:4. The actual width of each type of line will be governed by the size and style of the drawing; relative widths of the lines will approximate those shown in figure 3-1.

(2) *Pencil lines.* Pencil lines will be opaque and of uniform width throughout their length. The line widths specified above do not apply to pencil lines; however, the thick lines used for outlines and other visible lines will be sufficiently prominent to differentiate them immediately from lines used for other purposes. Hidden, sectioning, center, phantom, extension, dimension, and leader lines will be thinner than outlines. In selecting the widths of pencil lines, consideration will be given to the medium of reproduction involved to insure

proper reproduction and reduction of the thinner lines.

b. *Line Characteristics.* The line characteristics described in (1) through (12) below will be used for all drawings other than diagrams, such as schematic. Figures 3-1 and 3-2 illustrate the proper presentation and use of line conventions.

(1) *Centerlines.* Centerlines are composed of long and short dashes, alternately and evenly spaced with a long dash at each end, and at intersections the short dashes intersect. Very short centerlines (fig. 3-2) may be broken if there is no confusion with other lines. Centerlines are also used to indicate the travel of a center.

(2) *Dimension lines.* Dimension lines will terminate in arrowheads at each end. They will be unbroken on construction drawings and will be broken on production drawings only where space is required for the dimension. The proper method of showing dimensions and tolerance is presented in chapter 10.

(3) *Leader lines.* Leader lines are used to indicate a part or portion to which a number, note, or other reference applies and will terminate in an arrowhead or a dot. Arrowheads should always terminate at a line; dots should be within the outline of an object. Leaders should terminate at any suitable portion of the note, reference, or dimension. Penetration of leaders is permissible when necessary for clarity.

(4) *Break lines.* Short breaks will be indicated by solid, freehand lines. For long breaks (fig. 3-1), full, ruled lines with freehand zigzags will be used. Shafts, rods, and tubes that have a portion of their lengths broken out will have the ends of the break drawn as indicated in figure 3-2.

(5) *Phantom lines.* Phantom lines will be used to indicate the alternate position of delineated parts of the item, repeated detail, or the relative position of an absent part. They will be composed of alternating one long and two short dashes evenly spaced with a long dash at each end.

CENTER LINE		THIN
DIMENSION		THIN
LEADER		THIN
BREAK (LONG)		THIN
PHANTOM		THIN
SECTIONING AND EXTENSION LINE		THIN
HIDDEN		MEDIUM
STITCH LINE		MEDIUM
OUTLINE OR VISIBLE LINE		THICK
BREAK (SHORT)		THICK
DATUM LINE		THICK
CUTTING PLANE		EXTRA THICK
VIEWING PLANE		EXTRA THICK
CUTTING PLANE FOR COMPLEX OR OFFSET VIEWS		EXTRA THICK

Figure 3-1. Line characteristics and conventions.

(6) *Sectioning lines.* Sectioning lines will be used to indicate the exposed surfaces of an object in a sectional view. They are generally full thin lines but may vary with the kind of material shown.

(7) *Extension lines.* Extension lines will be used to indicate the extent of a dimension and will not touch the outline.

(8) *Hidden lines.* Hidden lines will consist of

short dashes evenly spaced and will be used to show the hidden features of a part. They will always begin with a dash in contact with the line from which they start, except when such a dash would form the continuation of a full line. Dashes will touch at corners and arcs will start with dashes at the tangent points.

(9) *Stitch lines.* Stitch lines (fig. 3-1) will be used to indicate the stitching or sewing lines on

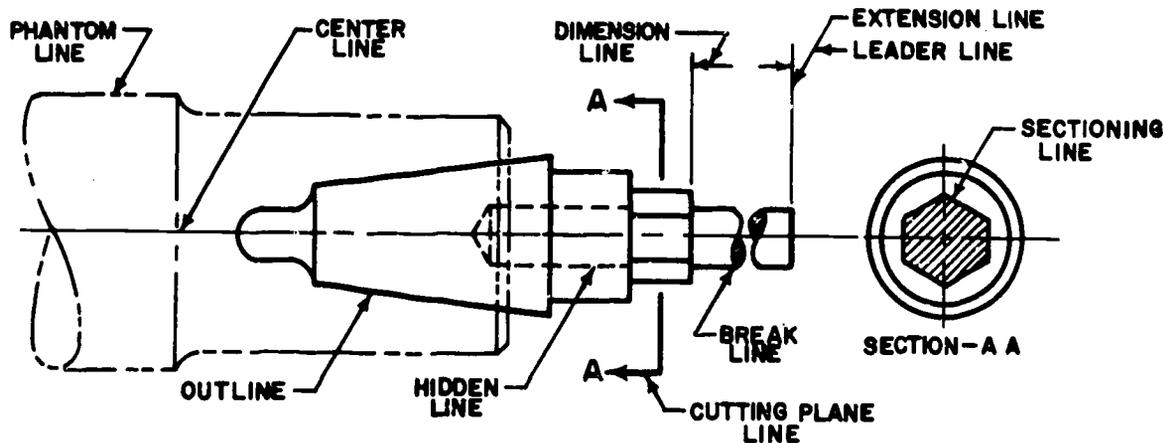


Figure 3-2. Line conventions.

an article. They will consist of a series of very short dashes, approximately half the length of the dash of hidden lines, evenly spaced. Long lines of stitching may be indicated by a series of stitch lines connected by phantom lines.

(10) *Outlines or visible lines.* The outline, or visible line, will be used for all lines in the drawing representing visible lines on the object.

(11) *Datum lines.* Datum lines (fig. 3-1) will be used to indicate the position of a datum plane and will consist of one long dash and two short dashes evenly spaced. Application of datum planes is covered in chapter 10.

(12) *Cutting-plane and viewing-plane lines.* Cutting-plane lines will be used to indicate a plane in which a section is taken. Viewing-plane lines (fig. 3-1) will be used to indicate the plane from which a surface is viewed.

c. Reading Line Conventions

(1) *Uniformity.* A draftsman must always be aware that he is drawing line conventions for others to read. Their understanding of the meaning of line symbols is based on the definitions in *b* above and figures 3-1 and 3-2. Line conventions will conform to the specifications so that only one interpretation is possible. Specific notes must identify the structural or mechanical symbolism which requires heavier than standard line weights, for example, steel beam centerlines.

(2) *Reproduction.* Copies of original drawings prepared by draftsmen are produced for distribution to the various mechanics and supervisors responsible for the manufacture of the part or assembly represented. Various reproduction processes are used, but the best known are blueprints and ammonia process prints. Regardless of the process used, fine pencil drawing is the basis of a good reproduction. Reproductions are made

either directly from a finished pencil drawing or from an ink tracing made from a pencil drawing.

d. Precedence of Lines.

(1) In any drawing where there is a coincidence of lines, the following precedence of lines should be followed:

- (a) Object line.
- (b) Hidden line.
- (c) Centerline or cutting-plane line.
- (d) Break line.
- (e) Dimension and extension lines.
- (f) Crosshatch lines.

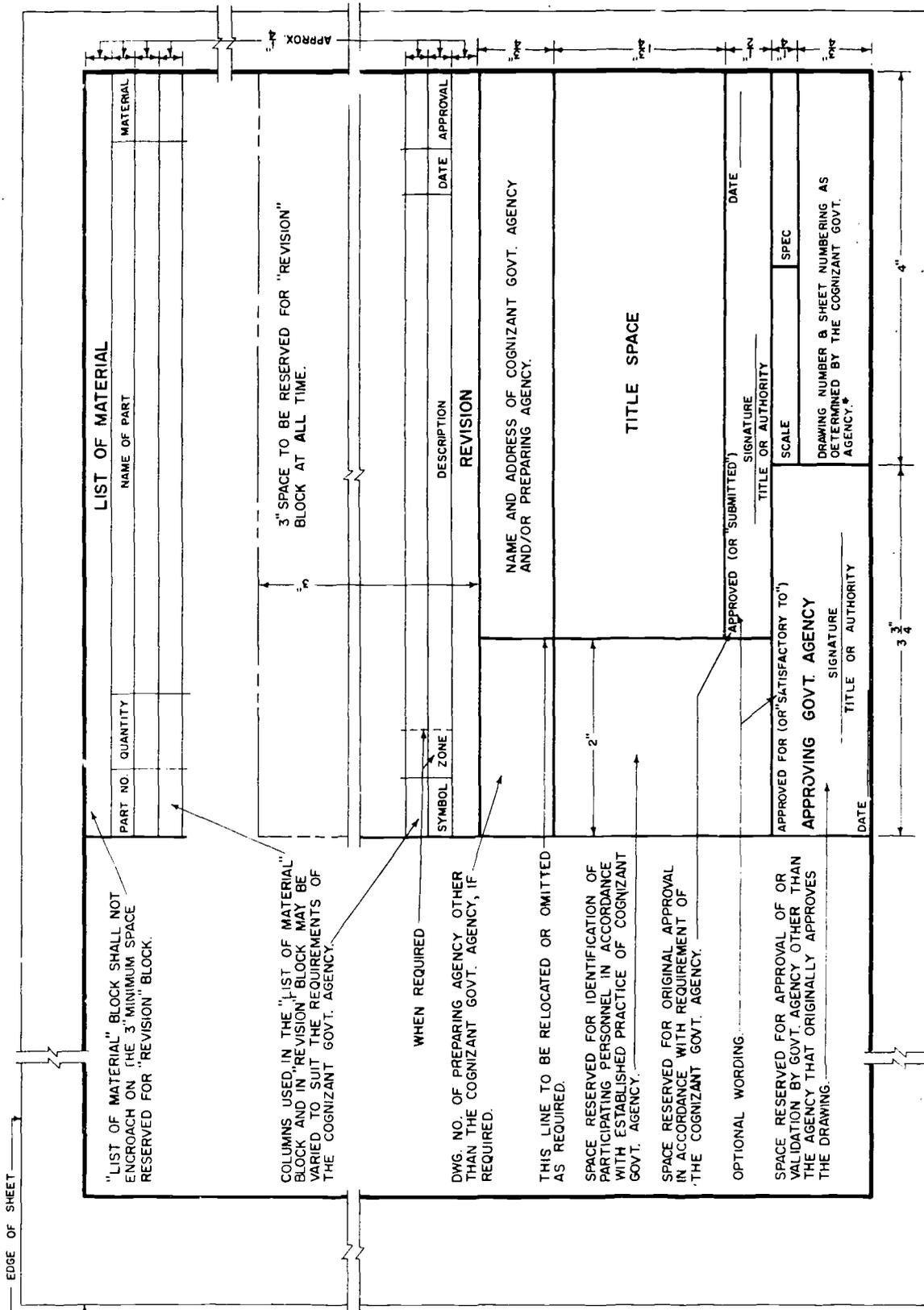
(2) In accordance with the above list, whenever a centerline coincides with a hidden line, the hidden line should be drawn and the centerline left out.

3-3. Drawing Formats

A drawing must not only provide information about the size and shape of the object being represented but must provide information that enables the drawing to be identified, processed, and filed methodically (fig. 3-3). The systematic arrangement of sheet space to provide a consistent location for this information is known as the format of a drawing. Sizes and formats for military drawings are arranged in accordance with military standards.

3-4. Sheet Sizes

Flat size refers to drawings that usually have a printed format and, because of their relatively small size, can be stored flat. Roll size refers to drawings that, because of their length, are filed in rolls and usually do not have a printed format. To provide protection, a 4-inch margin may be added to the right end of minimum lengths specified for roll sizes. When practicable, the maximum length



* COGNIZANT GOVERNMENT AGENCY IS THE AGENCY HAVING COGNIZANT OVER THE PREPARATION OF THE DRAWING, WHETHER PREPARED BY IT OR BY ANOTHER PREPARING AGENCY UNDER ITS DIRECTION.

Figure 3-3. Format for drawings.

of roll sizes should not exceed 144 inches. Finished sheet size refers to dimensions between trim lines. Sheet width is measured parallel to the working edge of the drawing board; length is

measured perpendicularly to the working edge of the drawing board. Further information on drawing size can be found in table 3-1 and MIL-STD-100A.

Table 3-1. Finished Format Sizes (Inches)

Flat sizes				Roll sizes				
Size	X (Width)	Y (Length)	Z (Margin)	Size	X (Width)	Y Min (Length)	Y Max (Length)	Z (Margin)
(A) Horiz	8½	11	¼ and ⅜ *	G	11	42	144	⅜
(A) Vert	11	8½	¼ and ⅜ *	H	28	48	144	½
B	11	17	⅜	J	34	48	144	½
C	17	22	½	K	40	48	144	½
D	22	34	½					
E	34	44	½					
F	28	40	½					

* Horizontal margin ⅜ inch; vertical margin ¼ inch.

3-5. Sheet Layout

Sheets of drawing or tracing paper are cut slightly larger than their required finished sizes and are fastened to the drawing board. Using a hard (6H) pencil and a T-square, draw a horizontal trim line near the lower edge of the paper, then draw a vertical trim line near the left edge of the paper with a T-square, pencil and triangle. Dimensions establishing the finished length of the sheet (distance between vertical trim lines) and the location of the vertical borderlines are marked off on the horizontal trim line. The full-size scale is used when laying off a series of measurements along a line. Dimensions, establishing the finished width of the sheet (distance between horizontal trim lines) and the location of the horizontal borderlines, are marked off on the vertical trim line. Dimensions may be scaled along the borderlines. Borderlines are given the required weight (fig. 3-3) when the drawing has been completed. After the completed drawing has been removed from the board, it is cut to its finished size along the trim lines.

3-6. Basic Formats

Military drawings are classified as construction or production drawings, depending on the method of manufacture of the object or assembly represented on the drawing or set of drawings. The format of each type is arranged differently, although sheet and margin sizes are common to both.

3-7. Construction Drawing Formats

Construction drawings are drawings developed or

used to illustrate the design of structures or other constructions, and include services, utilities, approaches, and any other required features. Maps (except those with construction drawings), reports, sketches, presentation drawings, or renderings are not considered to be construction drawings within the meaning of this standard. The basic construction drawing format consists of the margin, the title block with its various subdivisions, the revision block, and the block containing the list of material. Figure 3-3 shows the layout and dimensions of the typical construction drawing format. Table 1 gives margin requirements between trim and border lines. The following modifications should be applied to the data presented in figure 3-3.

a. Drawing Number. The drawing number is assigned by the cognizant Government agency.

b. Approval by Government Agency. The use of "Approved for" or "Satisfactory to" is optional in the block requiring the signature of a government agency. Space should be reserved in this block, to the left of the signature line, for approval of validation by government activities other than the agency that originally approves the plan.

c. Approval by Individual Authority. The use of "Approved" or "Submitted" is optional.

d. Revision Block. When there is no list of material, the revision block may be placed in the upper right-hand corner and extended downward; headings and column widths can be changed to suit requirements.

e. List of Material. Headings and column widths in the list of material may be changed to

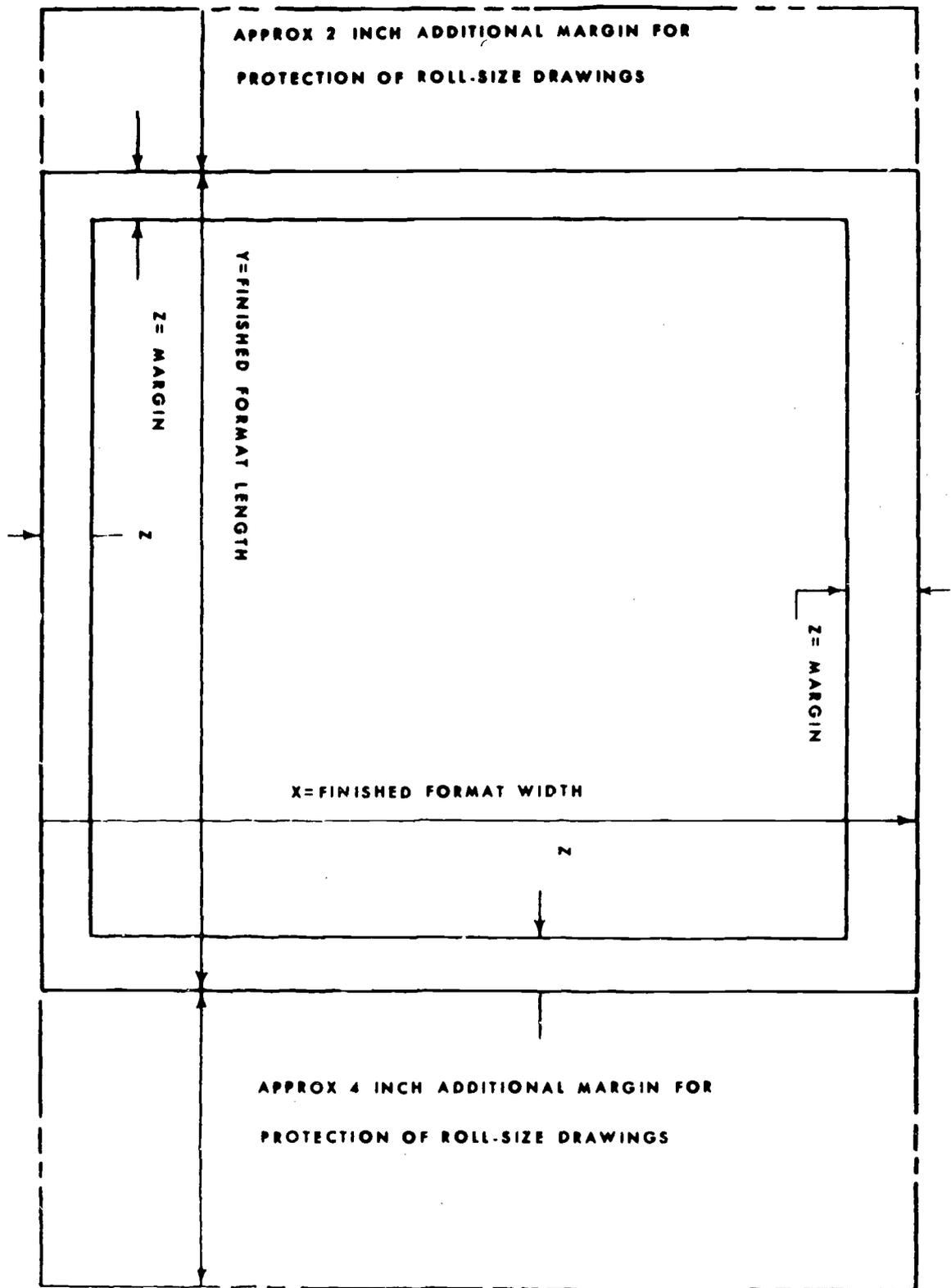


Figure 3-4. Finished format sizes (inches).

suit the requirements of the agency preparing the drawing. Additional columns may be used as required.

f. *Patent Notice, Security Classification.* If pat-

ent has been requested, a patent notice block should be included. If the drawing is classified, a security classification block must be included (MIL-STD-100A, and NAVFAC DM-6).

3-8. Production Drawing Formats

Production drawings represent those types of equipment or articles that are produced in quantity, or that are of such design as to permit such production. The basic format consists of the margin (fig. 3-4), title block, and revision block.

a. Title Block. The title block is located in the lower right-hand corner of the drawing. It contains the number that identified the drawing; the drawing number (located in a block in the lower right-hand corner of the title block); and certain information common to all drawings, including the name and address of the government agency preparing the drawing, the title of the drawing scale, drafting record, authentication, and date.

b. Line Weights and Lettering. All lettering and numbering that ordinarily would be printed on drawing forms to indicate items, such as zoning, column headings, and space identification, may be of any appropriate size. Line weights and all other lettering are the same as specified for construction drawing formats.

c. Additional Specifications. For further specifications concerning size, location, and use of the blocks described above, as well as data on supplementary blocks, security classification, and patent notices, refer to MIL-STD-100A.

3-9. Order of Inking

Lines are inked in a definite order to save time

that would otherwise be wasted in waiting for inked lines to dry, and to produce lines of the same width from the same adjusting screw setting. The natural progression for the right-handed person for drawing horizontal lines is from top to bottom; vertical lines normally are drawn in sequence from the left to the right-hand side of the sheet.

a. Centerlines. Ink all centerlines first; begin with centerlines for full circles.

b. Points of Tangency. Be sure all tangent points are marked in pencil directly on tracing.

c. Thick Lines. Ink all arcs and circles, irregular curves; then all horizontal lines from the top down, vertical lines beginning at the left, and then inclined lines.

d. Medium Lines. Ink all hidden and stitch lines in the order described in *c* above.

e. Thin Lines. Ink all dimensions, extension, leader, phantom, and sectioning lines next, and inclined lines last. When drawing sectioning lines, do not attempt to trace them; place a blank sheet of paper between the pencil drawing and the tracing cloth and draw sectioning lines by eye.

f. Freehand Lettering. Ink all arrowheads, dimension figures, specific notes, and general notes including the list of materials.

g. Border and Title Block. Ink borderlines, and letter the title block.

CHAPTER 4

LETTERING

Section I. LETTERING REQUIREMENTS

4-1. Legible Information

The shape and description of a part, machine, or structure that is presented graphically by the various views in a drawing will be supplemented by additional information that is freehand or mechanically lettered. Numerical dimensions, notes on material and finish, and a descriptive title should all be lettered in a style that is legible, uniform, and capable of rapid execution. As far as the appearance of a drawing is concerned, the lettering is the most important part. The usefulness of a drawing can be destroyed by lettering done haphazardly or carelessly, because illegible figures are apt to cause mistakes in the work. Illegible information may be interpreted by the contractor to produce a cheaper and inferior product or structure than required by the contract, or cause unnecessary expense due to a claim made against the US Government by the contractor.

4-2. Style

Lettering style will be single-stroke upper-case, commercial Gothic, except when typewritten characters are used. Vertical lettering or inclined lettering may be used, but only one type should appear for a single drawing or set of drawings. Lower-case letters may be used on construction drawings, except for titles. Typewritten characters may be uppercase or lowercase. The expression single-stroke means that the width of lines composing the letters is the same as the width of a stroke of the pen or pencil used for lettering; it does not mean that each letter is executed with a single, continuous movement of the pen or pencil. Uppercase refers to capital letters.

4-3. Proportions

The ratio of letter width to letter height varies with individual letters. This chapter presents standard proportions that take into consideration the characteristics of individual letters. Letters using these proportions are called normal letters.

When letter width is decreased in relation to letter height to conserve space, the letters are said to be compressed letters. When letter width is increased in relation to letter height, the letters are known as extended letters.

4-4. Stability

If the areas of the upper and lower portions of certain letters and numerals are made equal, an optical illusion is created which causes them to seem top-heavy. To correct this and give the impression of stability, the letters *B, E, F, H, K, S, X,* and *Z,* and the numbers *2, 3, 5,* and *8* must be drawn smaller at the top than at the bottom.

4-5. Uniformity

Lettering in a drawing will present a uniform appearance. Height, inclination, alinement, line weight, and spacing are the principal considerations. Uniform height, alinement, and inclination are achieved through the use of guidelines; uniformity in line weight depends on skillful use of the pencil or lettering pen. Uniform spacing of letters in words and of words in sentences is performed by eye; good judgment results from practice.

4-6. Guidelines

Guidelines are horizontal, vertical, and/or inclined. They are always used in executing freehand lettering. Horizontal guidelines determine horizontal alinement, letter height, and the spacing between lines of lettering. Two horizontal guidelines are used for uppercase letters; the upper line is called the cap line, and the lower line is called the baseline. The distance between cap lines and baselines establishes the height of uppercase letters. Guide lines for lowercase letters are constructed in proportion to uppercase sizes. Four horizontal guidelines are used, cap lines and baselines being the same. The two additional lines are called the waistlines and droplines. Vertical and inclined guidelines serve to keep the vertical-

ity of inclination of freehand characters uniform. Guidelines are drawn with either standard or lettering triangles and are spaced at random.

a. *Size and Spacing.* The size of lettering and the line spacing which should be used on a drawing are controlled by the size of the drawing form in relation to the detail incorporated, and by the amount of reduction, if any, which will be used. The modern procedure of reducing drawings to small size or reproducing them on microfilm and then enlarging them, limits the minimum size of characters and the line spacing which may be used. It is recommended that the minimum size of lettering after reduction be not less than 3/64 inch. In the absence of factors making larger characters desirable, the recommendations for size of characters for drawing sizes A, B, and C table 3-1 are listed in table 4-1. For D-size drawings or larger (table 3-1) the sizes of characters shall be governed by the considerations set forth above. When commercial lettering guides are used, sizes corresponding to those given above are acceptable.

Table 4-1. Character Sizes.

	Size (inches)	Lettering guide size
Drawing and part number -----	1/4	.250
Title -----	3/16	.175
Subtitle -----	5/32	.140
Letters and figures for body of drawing	1/8	.125
Fractions and tolerances -----	3/32	.100
Designation of section and detail views:		
"Section" "Detail" -----	5/32	.140
"A-A" "B" -----	1/4	.250

Note. Lettering and numbering used for special notices, such as patent notices, may be of any size satisfactory for the purpose intended.

b. *Lettering Triangle.*

(1) *Description.* Lettering triangles are made in many sizes and styles. The 45° triangle shown in figure 4-1 is typical. It has an elongated slot for drawing standard slant guidelines and is columns of countersunk holes numbered 3, 4, 5, 6, 7, and 8 for drawing horizontal guidelines. The triangle is always used with its hypotenuse sliding against the working edge of the T-square (or another straightedge if lettering lines are not horizontal). The round hole cut through the center of the triangle has beveled edges and is intended for inserting the fingernails as an aid in picking up the triangle.

(2) *Horizontal guidelines.* The six columns of numbered countersunk holes are designed for inserting the cone point of the 6H pencil and horizontal guidelines by sliding the triangle with the pencil inserted along the working edge of the T-square. The numbers mean 32nds of an inch be-

tween cap line and baseline, (the size of the capital letters required). For example: (8) = 8/32 or 1/4 inch (6) = 6/32 or 3/16 inch, (5) = 5/32 inch and so on; also the numbers correspond to MIL-STD-1A, governing lettering sizes. Note that the holes are grouped in clusters of 3 for drawing a cap line, a waistline and a baseline. No holes are drilled for drawing droplines. The letters requiring a dropline are drawn to size by eye. For normal lettering the standard spacing between lines is two-thirds the height of the capital letters. Line spacing is half capital height for compressed lettering and one and a half capital height for extended lettering. The holes in the lettering triangle are drilled for normal lettering and to give standard spacing between lines if two or more clusters are used in sequence without relocating the T-square. Figure 4-1 illustrates by arrows the manner of drawing guide lines for 8/32- or 1/4-inch lettering. In special cases where the size of lettering varies from line to line, such as in title blocks, the single hole at the top of a column is placed over the baseline of the preceding lettering to determine the spacing between lines.

(3) *Inclined guidelines.* The standard slope for inclined lettering is at an angle of 22 1/2° to the right of vertical or at an angle of 67 1/2° with the horizontal. The elongated slot (fig. 4-1) in the lettering triangle is cut at an angle of 67 1/2° to the hypotenuse for use as a guide in drawing inclined guidelines for slant lettering. The sides of the slot are parallel so that either side may be used for drawing slant guidelines. The triangle rests with its hypotenuse free to slide along the working edge of the T-square to the desired location for the guidelines. As many inclined guidelines may be drawn as experience dictates, but at least one for each letter for a beginner. There are several other methods of obtaining the correct angle for inclined lettering if no lettering triangle is available. Two simple methods are:

(a) Bisect the angle between a vertical line and a 45° line.

(b) Construct a small triangle of base equal to 1 inch and an altitude of 2-7/16 inches. The hypotenuse of this triangle will make an angle of 67.7° with the horizontal which is close enough for guidelines. In each case, having established a line at 67 1/2° it is necessary to draw all slant guidelines parallel to it by using two triangles sliding against each other.

c. *Lettering Instrument.*

(1) The Ames lettering instrument (fig. 4-2) works on the same principle as the lettering triangle. The main difference is that it has angles of

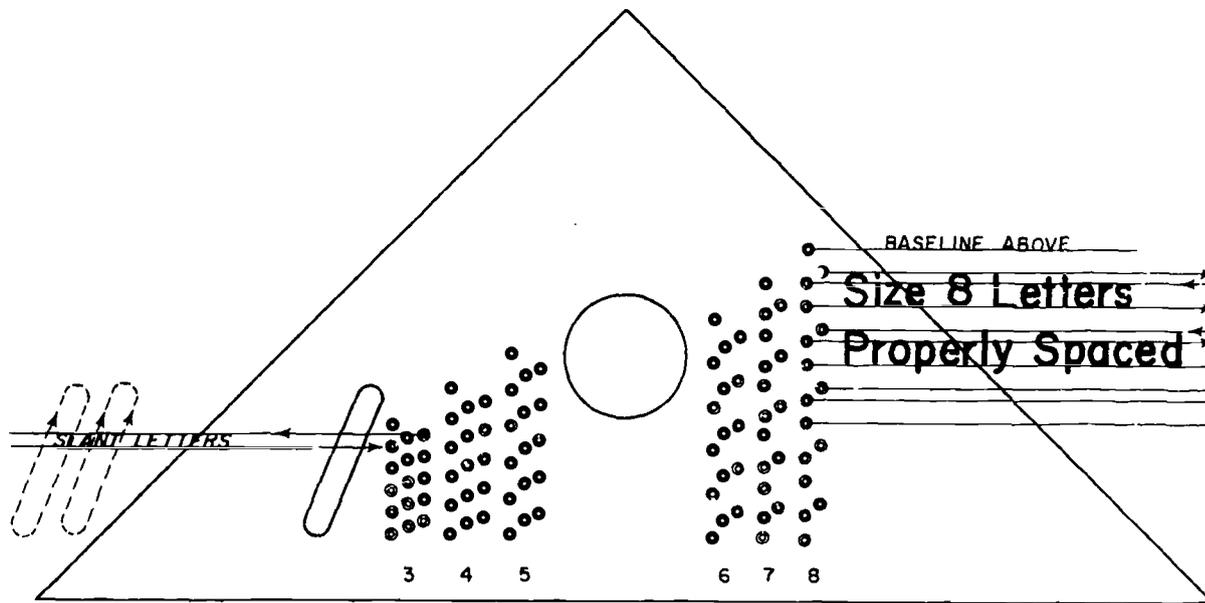


Figure 4-1. Use of the lettering triangle.

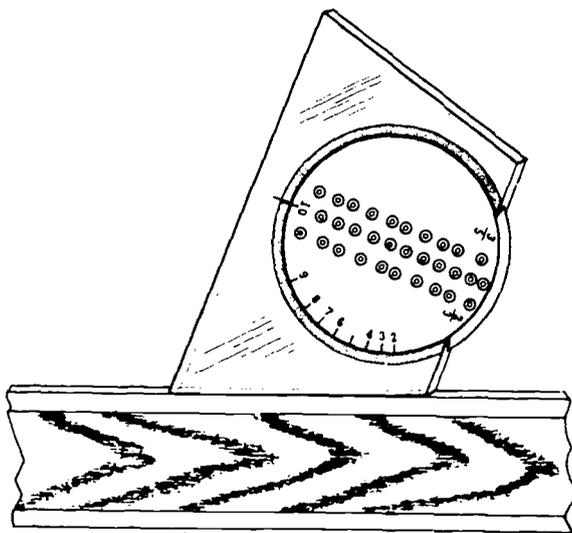


Figure 4-2. Ames lettering instrument.

68° and 75° for construction of inclined guide-lines. The numbers 2 through 10 are numerators of the denominator 32. If the circular disk is turned so that numerator 9 is matched with the line on the frame, the total height of the resultant capital letter would be $9/32$ inch.

(2) If the disk becomes too loose in the frame, remove it and press the edges of the frame about $1/4$ inch together. If the disk is too tight, apply a light powder on the edge of the disk. To clean, use soap and water.

Section II. FREEHAND LETTERING

4-7. Pencil Technique

All letters and figures are drawn with the basic strokes illustrated in figure 4-3. To execute satisfactory letters, a draftsman must learn and practice the direction and sequence of strokes used to form each letter.

a. Position. Rest the forearm on the drawing board below the edge of the paper. Hold the pencil between the thumb, forefinger, and second finger so that each rests against a flat side. The third and fourth fingers and the ball of the palm rest on the drawing sheet.

b. Basic Strokes. Vertical strokes are drawn from the top down with an even finger movement. Inclined strokes are drawn in the same way and are slanted in the desired direction. Horizontal strokes are drawn from left to right with a complete hand movement, pivoting at the wrist. Curved strokes proceed from above downward, moving in the desired direction, and are produced with a combined finger and wrist motion. Lettering strokes are drawn, not sketched; the uniform, single-stroke appearance required of lettering can be achieved only by practicing the fundamental strokes in the manner described.

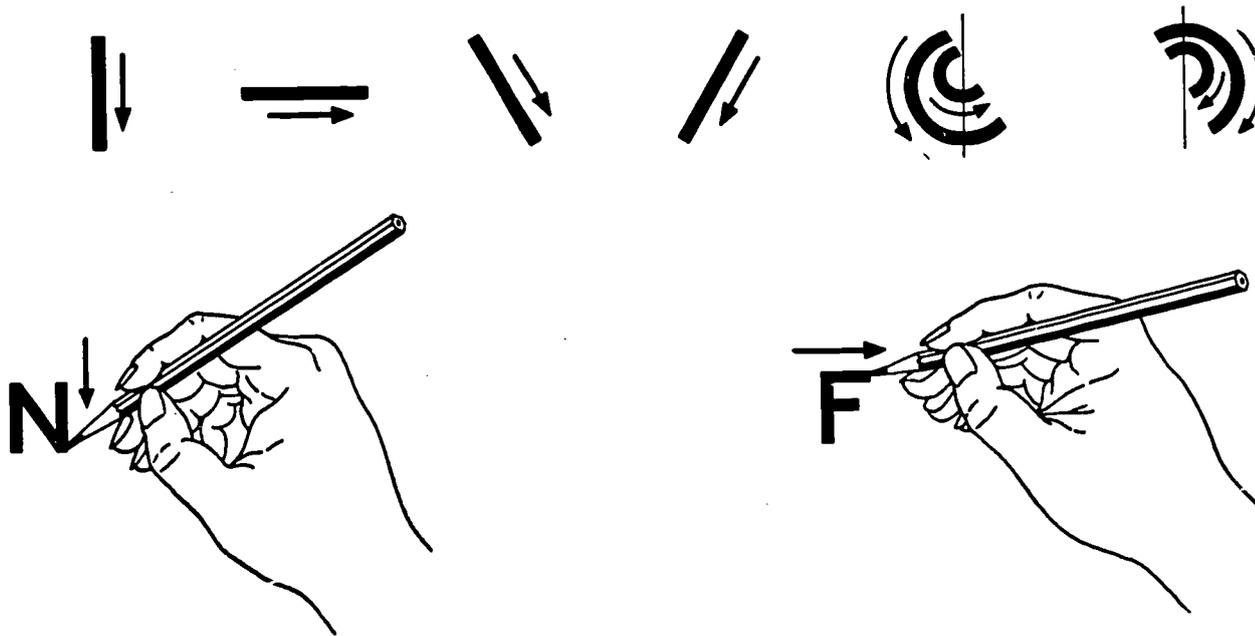


Figure 4-3. Basic lettering strokes.

4-8. Lettering Pen Technique

The lettering pen is held in the same manner as the pencil, tightly enough for control but allowing a loose, free movement. Strokes are drawn, not sketched, in the same manner as pencil strokes. Avoid pressure on the pen; pressure spreads the nibs and produces an uneven line. Hold the pen in the same manner consistently because tilting it in different directions causes different stroke weights. Regular practice is the only way to achieve uniform lettering of acceptable quality.

a. Pen Points. Crowquill pens produce the finest line weight. Gillott or equivalent pens produce a heavier line weight and are used for normal lettering. In general, penpoints that are too flexible produce a wavering line and those that are too stiff cause the draftsman to use too much pressure, thus spreading the nibs.

b. Filling and Cleaning. Do not fill pens by dipping them into the bottle. Use the quill in the stopper of the ink bottle and insert ink in the slot on the underside of the pen. Do not ink the pen too heavily or apply ink to the point. If ink flows too freely, blots occur more frequently and the first line strokes made after each filling will be heavier than the rest. While in use, pens should be wiped regularly with a soft cloth. They should be thoroughly cleaned before being put away.

4-9. Vertical Letters

Figure 4-4 illustrates the required shape of vertical letters and numerals. Figures 4-5, 4-6, 4-7, and

4-8 illustrate construction of characters against a square background with each side divided into six equal units except the letters *I* and *W*. The background serves as a reference framework for comparing the height of the various characters in proportion to their width as well as locating the individual lines that compose these characters. A smaller drawing below each character in figures 4-5 and 4-6 shows the direction and sequence of the strokes used in the formation of the character.

a. Straight-Line Capitals, (Figure 4-5).

(1) *I, A, L, T.* The letter *I* is the basic vertical stroke. Stroke 3 of the *A* is located a third of the distance up from the baseline; inclined strokes 1 and 2 intersect just above the cap line. The horizontal stroke of the *T* is drawn first; the vertical stroke, or stem, is drawn from the center. With both *L* and *T*, the horizontal stroke may be lengthened or shortened to balance the letters in a word. If, for example, *L* precedes *A*, its horizontal stroke is reduced slightly; if *T* precedes *A*, its horizontal stroke is extended slightly.

(2) *H, F, E.* In *H, F,* and *E*, the central horizontal bar is placed slightly above the center for stability. In both *E* and *F*, the cap line stroke is 4 units long. The baseline of *E* is $\frac{1}{2}$ unit longer than its cap line.

(3) *V, W, M, N.* The 2 inclined strokes of the *V* intersect just below the baseline. The *W* is $1\frac{1}{3}$ times the width of a normal letter; note that it is wider than the *M*. Strokes 1 and 2, and 3 and 4 of the *W* intersect below the baseline. Strokes 3 and 4 of the *M* and 2 and 3 of the *N* intersect on the

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1 2 3 4 5 6 7 8 9 0 $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{7}{16}$

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1 2 3 4 5 6 7 8 9 0 $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{7}{16}$

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1 2 3 4 5 6 7 8 9 0 $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{7}{16}$

ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz

.498-.002 .498^{+.000}_{-.002} .498
.496 $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{7}{16}$

Figure 4-4. Vertical Gothic lettering.

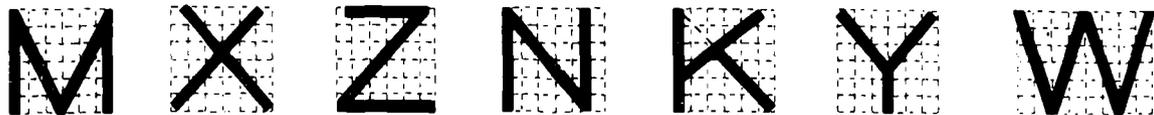


Figure 4-5. Vertical straight-line capitals.

baseline. Note that the outside strokes of the *M* and *N* are drawn first.

(4) *Z*, *X*, *Y*, *K*. Stroke 2 of the *Z* is longer than stroke 1. The inclined strokes of the *X* are closer together at their starting than at their finishing points. The 3 strokes of the *Y* intersect

slightly below the center of the square. Stroke 2 of the *K* intersects stroke 1 at a point $\frac{1}{3}$ of the distance up from the baseline. Stroke 3, if extended, would intersect stroke 1 at the top.

b. *Curved and Straight-Line Combination*, (Figure 4-6).

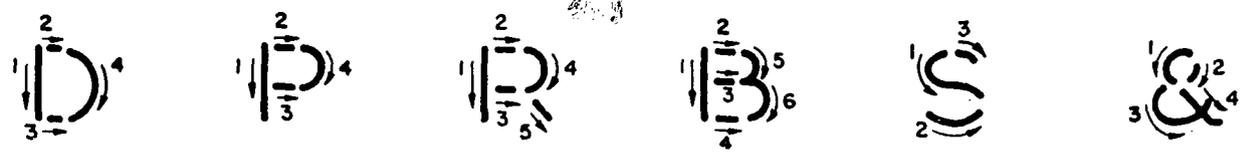
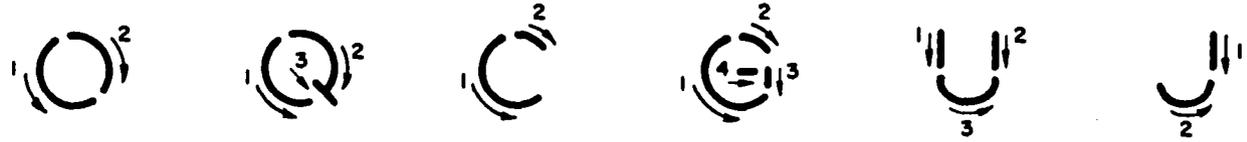
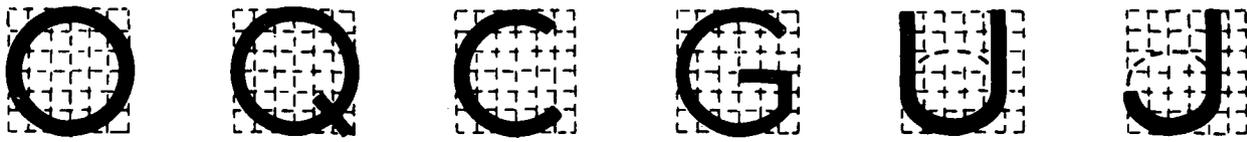


Figure 4-6. Vertical capitals, curved and straight-line combinations.

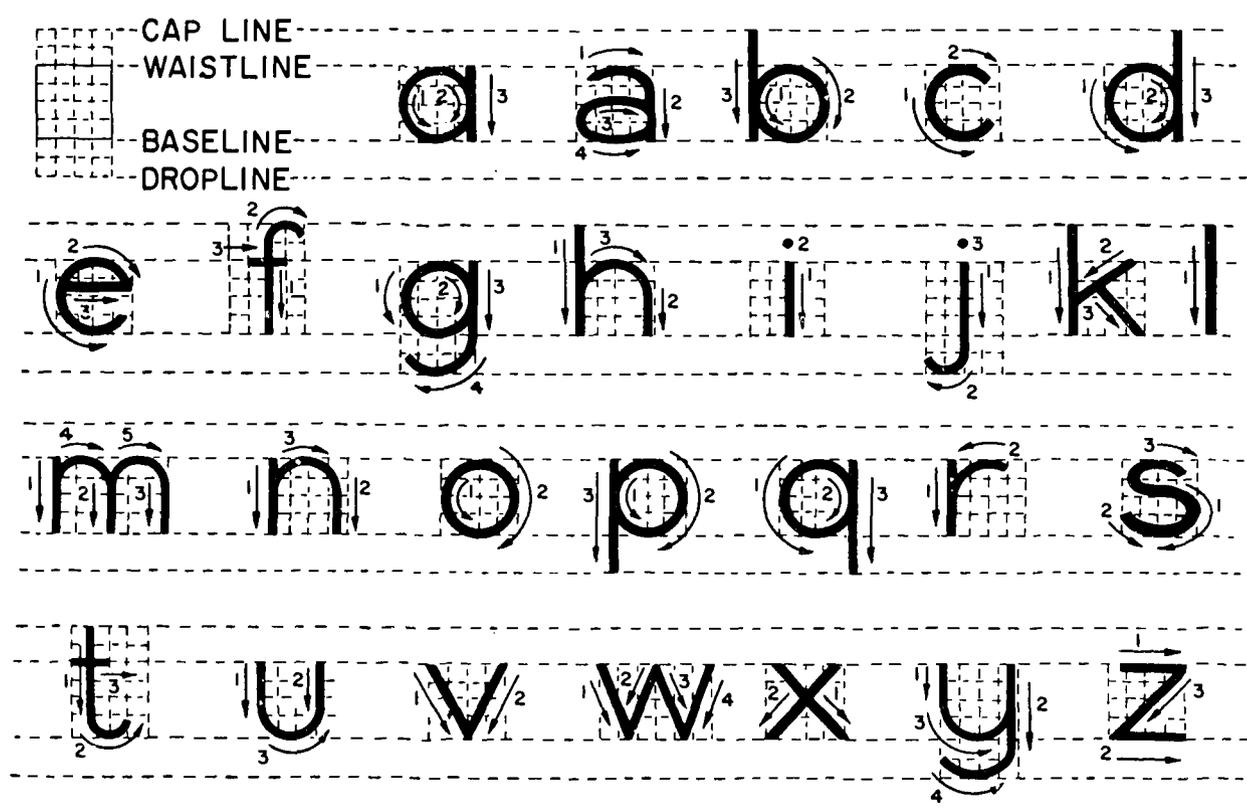


Figure 4-7. Vertical lowercase letters.

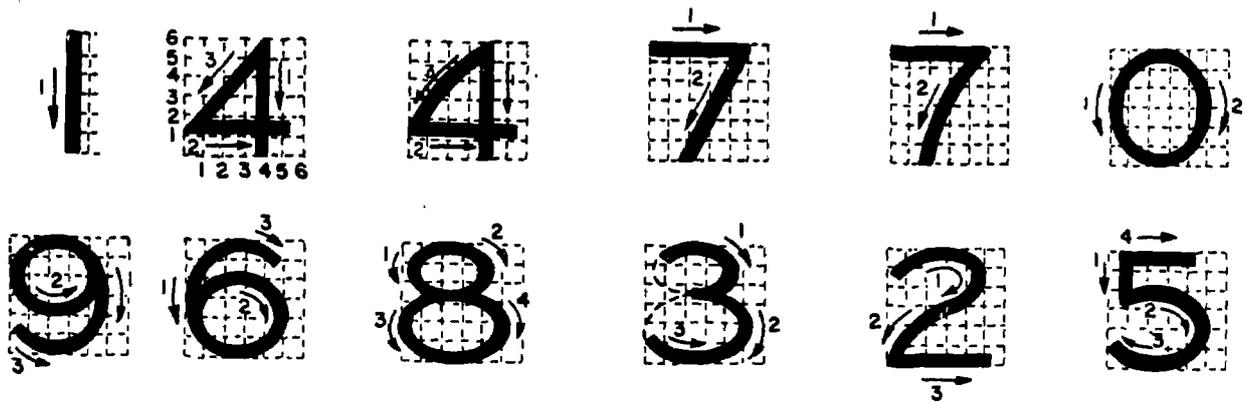


Figure 4-8. Vertical numerals.

(1) *O, Q, C, G*. The *O* and *Q* are complete circles; *C* and *G* are not the full width of the square because they are not full circles. The tail of *Q* if extended, would intersect the center of the circle. Stroke 4 of *G* begins at the center of the circle.

(2) *U, I, D*. Stroke 3 of *U* is elliptical and connects two parallel vertical lines a third of the distance above the baseline. Stroke 2 of *J* is similar but not as broad. Stroke 4 of *D* is circular, joining two horizontal segments.

(3) *P, R, B*. The horizontal midstrokes of *P* and *R* lie just below the midpoint, and the horizontal midstroke of *B* lies just above the midpoint. Horizontal stroke 4 in *B* is slightly longer than strokes 2 and 3, which are the same length.

(4) *S* and *&*. The upper and lower portions of *S* are ellipses, the upper slightly smaller than the lower. The ampersand is basically similar despite a greater difference in the sizes of the ellipses.

c. Lowercase Letters.

(1) *Guidelines*. The waistline is two-thirds the distance from the baseline to the cap line (fig. 4-7). The waistline establishes the body height of lowercase letters. Extensions of lowercase letters above the waistline are called ascenders. The dropline is drawn below the baseline (fig. 4-7) at a distance equal to that between the waistline and cap line. Extensions of lowercase letters below the baselines are called descenders. The dropline is used to establish the length of descenders and can be eliminated once a draftsman is able to judge this distance by eye. All ascenders, except that of *t*, extend to the cap line. All descenders extend to the dropline. As with capital letters, vertical guidelines are drawn at random.

(2) *Characteristics*. The crosses of *f* and *t* are on the waistline and extend the same distance on either side of stroke 1. The bodies of *a*, *b*, *g*, *p*,

and *q* are circular and the vertical strokes of these letters do not increase their width at the points of tangency. The vertical strokes of *p* and *q* terminate in curves that are tangent to the drop-line.

d. *Numerals and Fractions*. The need for drawing numerals (fig. 4-8) carefully cannot be overstressed, particularly in the preparation of construction drawings in which a poorly drawn numeral can cause costly errors and delay.

(1) *Guidelines*. Numerals are drawn to the same guidelines as capital letters. Vertical guidelines are spaced at random. Numerals should not be made so small or be crowded so closely as to impair their legibility.

(2) *Characteristics*. The vertical stroke of the 4 is placed 2 units from the right side. The horizontal bar is $\frac{1}{4}$ the height of the number above the baseline. Note that the closed curves of 0, 6, and 9 are elliptical not circular. The 6 is an inverted 9. The 8 is composed of 2 ellipses tangent slightly above the center point. The top ellipse also is narrower. The 3 is the same as the 8 with the left portions of the loops cut off. The curved lines of 2 follow the elliptical contours of 8. The top portion of the 5 is slightly narrower than the bottom. The bottom ellipse is $\frac{2}{3}$ the height of the figure from the baseline.

(3) *Fractions*. The division sign of a common fraction (figs. 4-4 and 4-9) will be parallel to the direction in which the dimension reads. The complete height of a fraction is twice that of a whole number. The division bar is centered midway between the baseline and cap line. The top guideline of the numerator and the bottom guideline of the denominator are spaced a full number height from the division bar. The numbers composing a fraction are $\frac{3}{4}$ the height of a full number. The clear space on either side of the division

connecting horizontal strokes of *L* and *T*. Actual clearance between *E* and *L* can be slightly less than that between *M* and *E*. The spacing between words should be equivalent to the basic width of the letters *M* and *O*.

b. Uppercase and Lowercase Combinations. Spacing between letters in words using either lowercase or uppercase and lowercase combinations follows the same general rules of word composition as set forth above. Spacing between lines of lettering on a drawing requires that the clear space between the dropline and the cap line below it be equal to $\frac{1}{3}$ the distance between the baseline and cap line (or $\frac{1}{3}$ the height of capital letters) as established for that drawing. If droplines are not used, the distance between one baseline and the cap line below it is equal to $\frac{2}{3}$ the height of capital letters as established for that drawing.

c. Spacing Between Words. Spacing between words should be uniform for the entire drawing and is estimated by the space necessary to insert a capital letter *I* between words. Thus by erasing the *I* in WATERIGAP the two words WATER and GAP are properly spaced.

d. Spacing Between Sentences. Spacing between sentences should be uniform for the entire drawing and is a matter of personal choice. For uniformity, the space necessary to insert a capital *M*

between the period at the end of a sentence and the first letter of the next sentence is satisfactory.

e. Spacing Between Lines. Spacing between lines is described in paragraph 4-6b(2).

4-12. Title Blocks

The location and size of letters for title blocks have already been described (para 3-8a and 4-6a). The remaining problem is one of composition. Using the space allotted, lines of lettering must be arranged symmetrically about a vertical centerline. First, a satisfactory trial title is worked out on a separate sheet of paper, using guidelines marked to equal the space in the title block. When a satisfactory line of lettering has been achieved, count the number of letters (each space between words also counts as a letter) and mark the midpoint of the line. Draw horizontal and vertical guidelines in the title block of the drawing sheet and establish a vertical centerline. If transparent tracing paper or tracing cloth is used, the trial title may be slipped underneath, guidelines and midpoint aligned, and the title traced. If the drawing sheet is not transparent, the trial lettering may be placed directly above the drawing sheet guidelines and centered. The space arrangement worked out on the trial sheet is used as a guide in lettering the drawing sheet title.

Section III. MECHANICAL LETTERING

4-13. Use

Mechanical lettering is executed with a special pen held in a scribe and guided by a template. The standard lettering set is used for mechanical lettering in military drawings. Because guidelines are not required, uniform, legible characters can be produced more rapidly than by freehand methods. Mechanical lettering is used principally for title blocks and marginal data for special maps, charts, graphs, and photographs for reproduction. It should be noted that freehand lettering is the required lettering in drafting; mechanical lettering is confined to the special uses just described. The availability of mechanical lettering devices should not deter draftsmen from the daily practice required to execute freehand lettering.

4-14. Standard Lettering Set

The standard lettering set consists of a set of templates, a scribe, and a set of pens (fig. 4-11).

a. Templates. Templates are made of laminated plastic with characters engraved in the face so

that their component lines are guide grooves for the scribe. The height of the characters, in thousandths of an inch, is given by a number on the upper right-hand side of the template. The range of character heights offered by a standard set of templates is from 80 (0.008 inch or $\frac{5}{64}$ inch) to 500 (0.5 inch or $\frac{1}{2}$ inch). The scale at the bottom of each template has the zero in the center and is arranged for proper spacing in relation to character heights. The distance between each scale division represents the area required by a normal letter.

b. Pens. A standard set of pens for producing various line weights consists of 10 sizes ranging from 00, the finest, to 8N. Each pen is composed of two parts: the ink reservoir and the cleaning pin. The reservoir is a series of connected tubes of decreasing diameters, the lowest establishing line thickness. The cleaning pin acts as a valve, protruding beyond the edge of the bottom tube when the pen is not touching the drawing surface. In this position, no ink flows. When the pen is rested on a drawing surface the cleaning pin is pushed

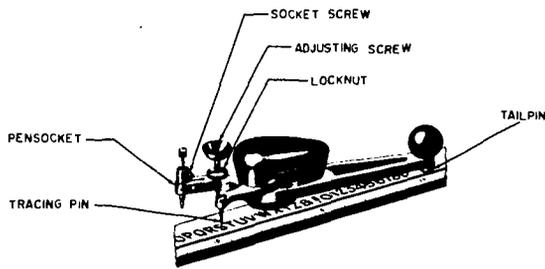
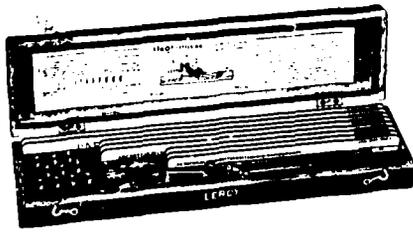


Figure 4-11. Standard lettering set.

up, allowing a flow of ink. Action of the pin in the tube minimizes ink clogging.

c. Scribes. The scribe holds the pen in alignment and controls its motion as the tracing pin is guided through the character grooves of the template. Two types of scribes are available, adjustable and fixed. An adjustable scribe produces vertical and inclined letters ($22\frac{1}{2}^\circ$) from a single template; a fixed scribe produces only vertical letters. Except for the locknut, which permits the setting of an adjustable scribe to be changed, both scribes consist of a tracing pen, pen socket, socket screw, adjusting screw, locknut, and a tailpin.

4-15. Lettering Set Operation

a. Line Weight. Recommended combinations of template and pen for best proportion between line thickness and letter size are presented below. If a heavier line weight is required, do not use a pen more than two grades above the recommended size.

Template size	Pen size
060	000
080	000
100	00
120	0
140	1
175	2
200	3
240	3
290	4
350	4
425	5
500	6

b. Letter Size and Spacing. The rules for free-hand letter sizing and spacing also apply to mechanical lettering. For blocks having more than one line of lettering, horizontal baselines may be drawn at intervals for the size of letters used. Lines of lettering are arranged symmetrically about a vertical centerline. In centering a line of lettering, count the number of letters in the line, add $\frac{1}{2}$ for spaces between words, and subtract $\frac{1}{2}$ for each letter I. Select the template bearing letters of the desired size and place the zero of its scale on the vertical centerline. Mark the number of divisions equal to half the number of words in the line first to the left and then to the right of the zero. This indicates the starting and finishing points.

c. Procedure. Loosen the socket screw of the scribe. Choose the pen recommended for the template selected. Insert the pen in the pen socket, so that the shoulder seats against the scribe arm, and tighten the socket screw. Loosen the adjusting screw locknut, and fill the pen reservoir with drawing ink. With the template edge against a T-square, set the scribe tailpin, in the straight groove of the template and the scribe tracing pin, in the groove of a character. Using a piece of scrap paper for trial lines, regulate the adjusting screw, so that the cleaning pin is pushed far enough back to allow the ink to flow freely. If the pin is pushed back level with the end of the tube (that is, if no clearance is provided and the tube is allowed to rest against the drawing surface), ink will not flow smoothly. The amount of clearance varies with the consistency of the ink and the nature of the drawing surface. When satisfactory trial lines are produced, tighten the adjusting screw locknut. Proceed with the lettering by moving the tracing pin in the character groove, at the same time keeping the tailpin in the straight groove. Spacing between letters is by eye and involves the same considerations of equal letter areas as in freehand lettering.

d. Technique. Hold a T-square in position with the ball of the left hand against the blade. The fingers of the left hand hold the template against the working edge and change the position of the template when necessary. The scribe is held between the thumb and first three fingers of the right hand. The little finger of the right hand presses the right side of the template against the T-square edge, preventing slipping from the motion of the tracing pin in the character grooves.

(1) *Ink flow.* The reservoir should be kept from $\frac{1}{4}$ to $\frac{3}{4}$ full; too low an ink level results in

irregular lines. When the pen is filled and not in use, it should be placed so that the tip is not in contact with any surface. Before reusing, the cleaning pin should be twirled in the tube to loosen any clotted ink. Never use pressure on a

scriber if the ink does not flow. Check the adjusting screw setting and the reservoir level.

(2) *Fractions*. The numbers in a fraction are made by using a template one size smaller than that used for whole numbers.

Section IV. OTHER LETTERING DEVICES

4-16. Typing

When there is an extraordinarily large number of long notes, they may be typed on transparent tracing paper with a "yellow backing" (an orange colored carbon used with the carbon facing the back of the tracing paper). Black typing will appear on the front side, and orange typing will appear on the back side in reverse. Type in either uppercase or lowercase. After proofreading, adhere to desired location on transparent tracing paper with transparent mending tape. In order to cut the typewritten sheet in the exact size and shape of the "hole" in the drawing, place typewritten sheet in the desired location, and cut both sheets at the same time with a razor blade and a metal straightedge. Adhere with the tape and press firmly and rub so that tape becomes thoroughly transparent.

4-17. Printed Title Blocks

Some offices provide drawing sheets with the main headings and borders of the title block and margin lines already printed on. The missing information need only to be added.

4-18. Prepared Lettering

Prestype and Zipatone have lettering of various styles and sizes printed in reverse on a waxed paper, that can be transferred simply by rubbing into position. The Headliner manufactured by Varitype produces various styles and sizes of print photographically on 35 mm strips of transparent film or opaque paper with or without adhesive back.

CHAPTER 5

ENGINEERING CHARTS AND GRAPHS

Section I. GRAPHIC PRESENTATION OF ENGINEERING DATA

5-1. Definition

Graphic presentation of engineering data means using charts and graphs, rather than numerical tables or work descriptions, to present statistical engineering information. Properly selected and constructed, each form of charts and graphs offers a sharp, clear, visual statement about a particular aspect of a series of related facts. The visual statement either emphasizes the numerical value of the facts or shows the way in which they are related. A chart or graph that emphasizes numerical value is called *quantitative*; one that emphasizes relationships is called *qualitative*. The trend of an activity over a period of time, such as the number of tanks produced over a 10-year period, is more easily remembered from the shape of a curve describing the trend than from numerical statistics. Successful graphic presentation of engineering data requires as much drafting ability as the graphic representation of engineering objects. Lines must be sharp, opaque, well contrasted, and of uniform weight. Letters and figures are normally executed with the standard lettering set in accordance with the standards presented in chapter 4.

5-2. Classification

Graphs and charts are classified as technical charts, display charts, and training aids, according to the use for which they are intended.

a. Technical Charts. Technical engineering charts usually are based on a series of measurements of laboratory experiments or work activities. Such measurements examine the quantitative relationship between a set of two factors, or variables. Of the two variables, one has either a controlled or regular variation and is called the independent variable. The other is called the dependent variable, because its values are related to

those of the independent variable. The line connecting plotted points is called a curve, although it may be broken, straight, or curved. The curve demonstrates the relationship between the variables and permits reading approximate values between plotted points. This type of chart is discussed fully in section II of this chapter.

b. Display Charts. Display charts are drafted primarily to convey statistical data to nontechnical audiences. The message presents a general picture of a situation, usually comparative. There are many varieties of display charts, including bar charts, pictorial charts, pie charts, and training aids. This type of chart is discussed fully in section III of this chapter.

c. Training Aids. Training aids are graphic illustrations that assist the instructor in teaching and the students in understanding a point not easily understood verbally. They are usually poster-like in simple bold design, and with some wording or simple brief text. Training aids are discussed in section IV of this chapter.

5-3. Graphic Aids in Construction Work

Any construction job involves quantities of men, materials, and equipment. Efficient operation and completion of the job results from planning, organization, and supervision. Graphic presentation of data is important. Statistics of results on past jobs with similar working conditions provide a basis for predicting the amount of time that a proposed job will take. These statistics offer the best possibilities for study when presented graphically, usually in the form of a curve. The prediction of expected achievement usually is presented as a bar chart and is called a time-and-work schedule. Safety posters are another example of graphic aids in construction supervision. As a supplement to this chapter, refer to DA Pam 325-10.

Section II. TECHNICAL CHARTS

5-4. Frame of Reference

When the statement is made that an automobile has moved a mile, it usually is meant that the vehicle has moved a mile relative to the earth's surface. If the position of the automobile is measured relative to the sun, the vehicle may be thousands of miles from where it started. Relative to its passengers, the automobile has not moved at all. The position of a point, like the motion of a body, cannot be expressed except in relation to a known point or framework of lines that must be considered fixed. The way in which the position of a point is described depends on the choice of a frame of reference.

5-5. Rectangular Grid Systems

A fixed framework of straight lines intersecting at right angles to each other, made for locating points, is called a rectangular grid system. The system is based on two primary reference lines that intersect and are perpendicular to each other. When a grid system is staked out on the ground these main reference lines are called *zero lines*. The main reference lines of a grid system on paper are called coordinate axes. The auxiliary reference lines or coordinates that complete the framework run parallel to the zero lines and have a numerical value proportional to their perpendicular distance from the zero lines. Once a set of zero lines has been established, the position of any point on the grid can be defined by constructing its coordinates, that is, by measuring the perpendicular distances from the point to the two zero lines.

a. City Grids. Many cities are laid out on a grid system, with the avenues running north and south and the streets running east and west. The directions are not required to be exact, merely approximate enough for identification. The streets and avenues from which the numbering begins become the main reference lines.

b. Local Grids. Rectangular grid systems are used for construction projects and are known as local grids. To prevent confusing the designated direction of the coordinate lines with compass bearings, a north-pointing arrow is shown in the drawing to define the direction of the north-and-south baseline as grid north. Building points, such as corners of foundations, are located in the job area by their coordinates.

5-6. Coordinates

Coordinates are quantities which designate the

position of a point in relation to a given reference frame. Telling someone that the post office is "two blocks north of Main Street and three blocks east of Broadway" is using coordinates. Coordinates are often used in conjunction with a grid (para 5-5). There are many systems of coordinates used and below are described three of the most often used systems.

a. Base Line System. The reference frame consists of horizontal and vertical base lines (fig. 5-1). Each base line is divided into units of measurement; each of the units is further divided into tenths. Call the direction of the vertical base line "North", call the direction of the horizontal base line "East." The intersection of the base lines is called the origin and has coordinate values of zero-zero; that is, 0.0 North and 0.0 East. Point "P" is located 3 units plus 1/10 of a unit more, or 3.1 units, above the horizontal base line. P is also 2.6 units east of the vertical base line. The coordinates of P, therefore, are 3.1 north and 2.6 east.

b. X and Y System. As described in *a* above, the lines create rectangles; therefore, these coordinates are also referred to as rectangular coordinates. There are various systems for designating the elements of a coordinate system, X and Y being one of these systems. Figure 5-2 shows the X and Y coordinate designation system in which x and y are distances from the base lines to the coordinated point. Theoretically, coordinate axes extend on either side of the point of intersection, called either the point of origin or O. The horizontal axis XX' is called the abscissa or X-axis. The

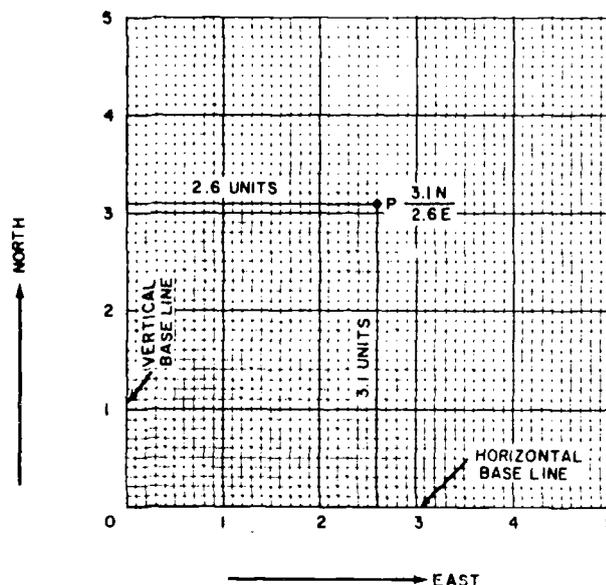


Figure 5-1. Base line systems.

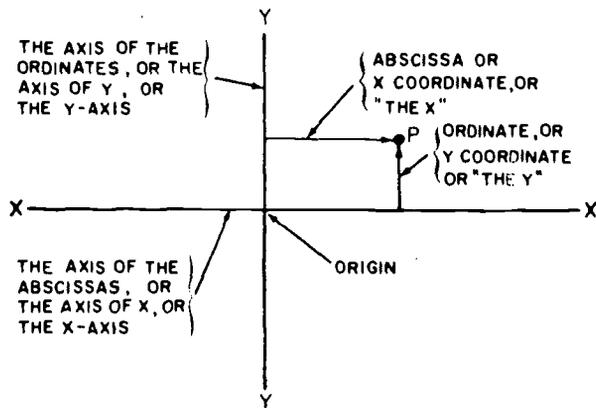


Figure 5-2. X and Y coordinate system.

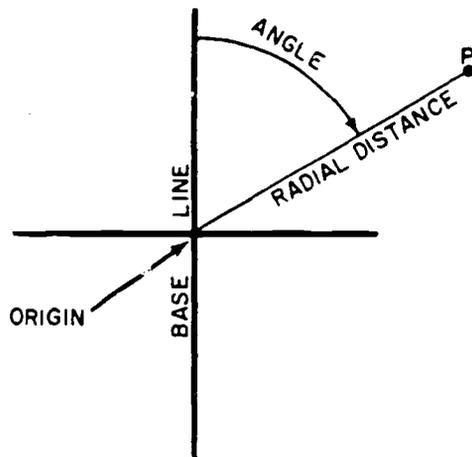


Figure 5-3. Polar system.

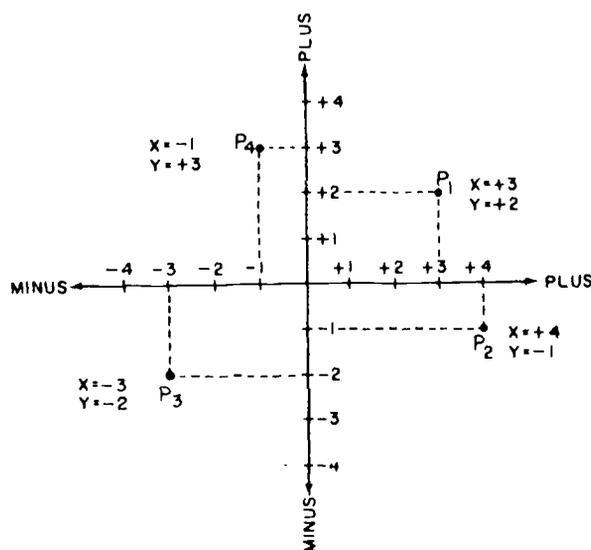


Figure 5-4. Rectangular coordinates.

vertical axis, YY' , is called the ordinate or Y -axis. The coordinate axes divide the sheet into four parts, or quadrants, that are numbered counter-

clockwise. The first quadrant is in the upper right-hand corner. Mathematical graphs use four quadrants; the main axes are considered zero lines and quantities less than zero are plotted below the X -axis and to the left of the Y -axis. The two coordinate axes form a two-coordinate frame of reference because all points within their boundaries are located by reference to the perpendicular distances from the two main axes. It is customary to give the x value first and then the y value when identifying a point by x and y coordinates.

c. Polar System. This system is similar to those described in *a* and *b* above, but not all coordinates are rectangular in nature. In the polar system, point P is located by an angle and distance (fig. 5-3).

5-7. Rectangular Coordinates

Coordinate paper provides a readymade framework for locating numerical data. When plotted data falls between coordinate rulings or when coordinate paper is not used, as on display graphs, the same method of perpendicular measurement is used. In a two-coordinate frame of reference, every point has both an X and a Y coordinate. The X coordinate represents the perpendicular distance to the right (or left) of the Y -axis, and the Y coordinate represents the perpendicular distance above (or below) the X -axis. In figure 5-4 the coordinates of the points are shown as dashed lines. The main axes are represented with the line symbol for a datum line. A datum line is a reference, or zero, line from which measurements are made.

5-8. Curves

When only one curve is depicted on a graph, it should be represented by a solid line; when more than one curve is presented on a graph, they should be differentiated by using varied line characteristics. A solid line should be used for the most important curve. When several curves are presented, each should be identified by a brief label placed close to the curve and alined horizontally. These labels should be kept within the vertical and horizontal limits of the curve on the graph. When the label must be connected to a curve to avoid confusion, the connecting arrows should be short, straight, inclined to the coordinate rulings, and parallel to each other.

5-9. Scale

The choice of scales should be considered carefully because the picture of the relationship between the two variables is affected most sharply by the

**THE GROWTH OF POPULATION OF THE UNITED STATES
IN MILLIONS FROM 1830-1960**

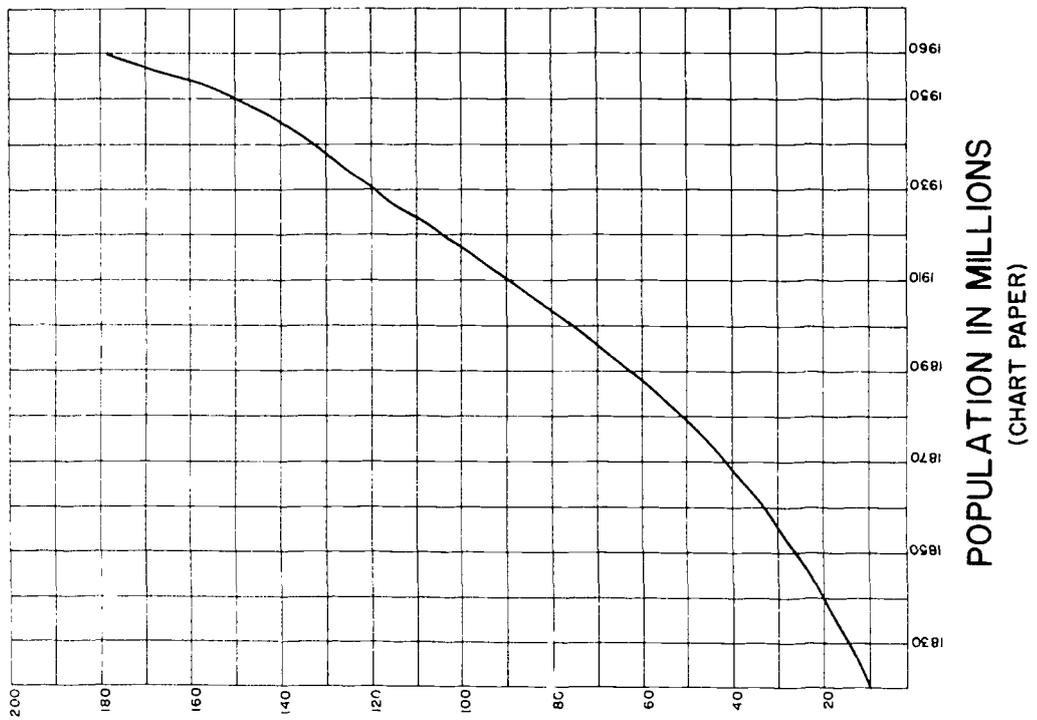
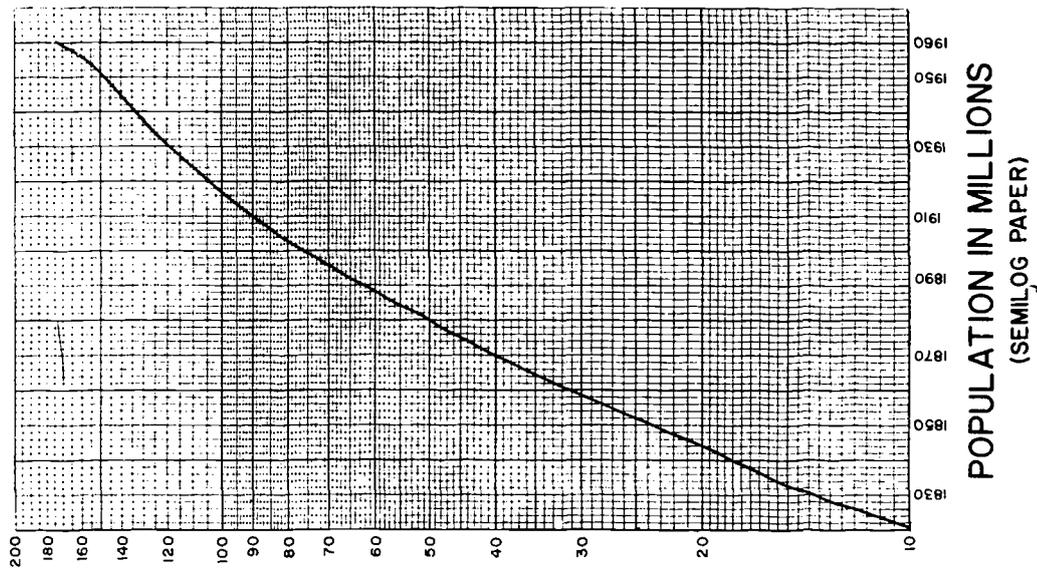


Figure 5-5. Comparison of amount and rate of change.

values assigned to the spaces between coordinate rulings.

a. Range. Separate scales are assigned to the horizontal and vertical axes. In both cases, the range of scales should ensure efficient and effective use of the coordinate area in presenting the message of the chart. The angle of slope (the steepness of the curve) is controlled by expanding or contracting the vertical scale relative to the horizontal scale.

b. Zero Lines. If the chart is quantitative and designed for reading approximate values, the main axes do not have to intersect at the point of origin. Space in the coordinate area may be saved by beginning the marking of a reference line on or just before the first significant measurement.

c. Arithmetic Scales. Values increase arithmetically. Decimal values of 1, 2, and 5 are best for the spaces between coordinate rulings because intermediate values may be interpolated more readily. One square, for example, might equal 0.01, 0.1, 1.0, 10.0, 100.0, and so on. If a value of 0.1 is assigned to a single square, five squares equals 0.5. The independent variable scale values along the abscissa should increase from left to right. The dependent variable scale values along the ordinate should increase from bottom to top.

d. Scale Indication. Scale values should be placed outside the coordinate axes. They are at the bottom for the horizontal (abscissa) scale and at the left side for the vertical (ordinate) scale. The numerical value of coordinates should be indicated at intervals spaced far enough apart to avoid a crowded appearance while still permitting quick identification. On 1/10-inch coordinate paper, every fifth ruling provides a suitable interval.

e. Scale Captions. Each scale caption should describe the variable represented and the unit of measurement. In the case of the independent variable in figure 5-5, the dates of the years are self-explanatory. The dependent variable requires that "Population" be further defined so that the caption reads "Population in Millions." If the symbol *P* had been used in the text to describe population, the caption should read "Population, *P*, in Millions." Captions should be readable from the bottom and right side of the graph.

5-10. Rectilinear Charts

Rectilinear charts are constructed with a two-coordinate frame of reference. Points are located with rectangular coordinates and connected by a curve. Scales are arithmetic, that is, equal spaces on the axes represent equal numerical distances.

Rectilinear charts are used to demonstrate the amount of change during a period. They are also used for interpolating values, demonstrating trends, emphasizing movement rather than actual amounts, and for picturing a series in which there are many successive values to be plotted. Several curves can be shown on the same chart. Rectilinear charts are undesirable when the series depicted has relatively few plotted values, when the movement of the data is extremely irregular and does not indicate a trend, when the emphasis should be on change in amounts rather than a trend, or when the presentation is intended for popular appeal.

5-11. Types of Rectilinear Charts

a. Time Series. A time series chart is the most common form of rectilinear chart. Time in units such as hours, days, months, or years is scaled along the horizontal axis. Amounts, in appropriate units, such as degrees of temperature, thousands of dollars, or millions of population, are scaled along the vertical axis.

b. Profile Graph. A profile graph is made by blackening or crosshatching the area inclosed between the curve and horizontal axis. In such a case, the curve must begin at the vertical axis and end at the right side of the grid area. Profile graphs are used to emphasize the quantities involved in a trend, rather than the amount of variation.

c. Multiple-Curve Graphs. Comparisons between trends of factors representing aspects of a particular problem can be made by plotting several curves within the same frame of reference (fig. 5-6). If the amounts involved in the comparison are so different that two different vertical scales are required, the second scale is placed either along the right-hand edge of the grid or to the left of the first amount scale. Each scale must have a clear caption and each curve must be labeled in this situation.

5-12. Coordinate Ruling of Rectilinear Charts

The proper construction of a grid involves more than simply converting a convenient space with cross rulings. As in the matter of general layout, the nature of the data and purpose of presentation must be considered (fig. 5-1 and 5-4).

a. Vertical Rulings. There should be sufficient number of vertical rulings to aid in reading values on the horizontal scale and to indicate the frequency of plotting. They should be of sufficient weight to guide the eye readily to the horizontal scale. Line weights should be heavier at selected

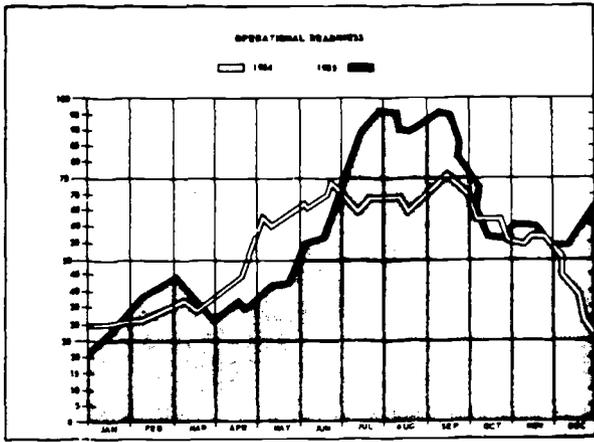


Figure 5-6. Multiple-curve graph.

regular intervals to indicate major divisions along the horizontal scale.

b. Horizontal Rulings. Horizontal rulings should be drawn so as to meet the requirements of their two-fold purpose, which is to assist the reading of values on the vertical scale and to provide a series of horizontal bases of comparison. Horizontal rulings should be light enough to contrast sharply with the curves and sufficiently heavy to guide the eye to the vertical scale without conscious effort.

c. Principal Reference Lines. Principal reference lines are wider than other coordinate rulings but narrower than the curves. Coordinate rulings are half the weight of reference lines; curves are twice the weight of reference lines.

5-13. Titles and Notes on Rectilinear Charts

The title of a graph must state its message in a clear, concise manner. Given sufficient thought be-

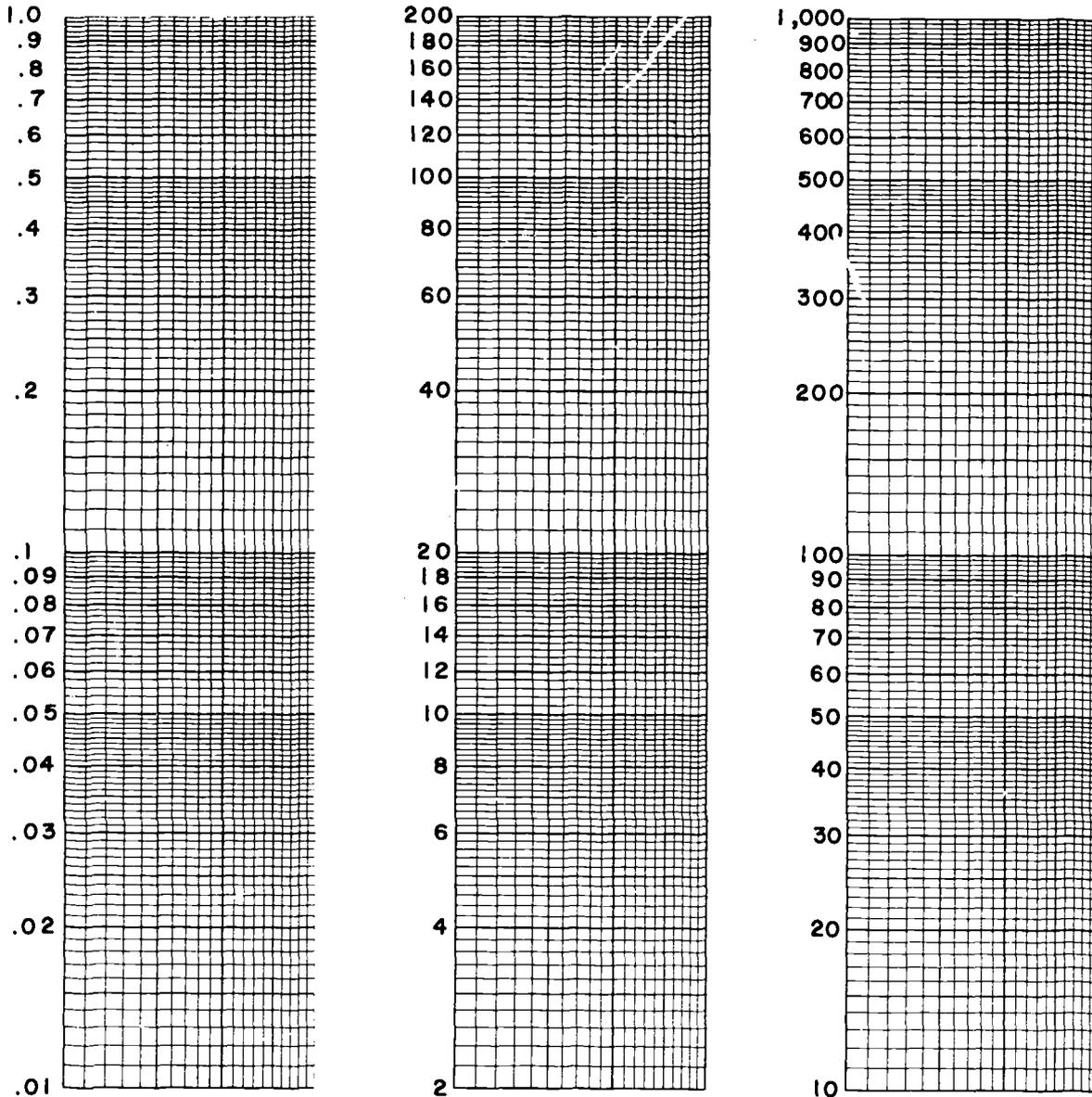


Figure 5-7. Logarithmic scales.

forehand, most titles can present adequate information in a single line. If supplementary information is necessary, a subtitle may be used. Further explanatory information is added, as a note.

a. Location. The title is located outside the grid area at the top of the graph and should be arranged symmetrically around the approximate centerline of the grid area. Subtitles are placed beneath titles and spaced according to the rules for lettering title blocks. Notes are lettered just above the topmost horizontal grid ruling beginning from the left-hand corner with the word NOTE (fig. 5-6).

b. Lettering. Lettering for charts and graphs is executed with the standard lettering set. Choice of template and pen number depends on the size of the chart or graph. The title lettering should be the most prominent.

5-14. Logarithmic Charts

a. Semilogarithmic Charts. Semilogarithmic grids are constructed by dividing the horizontal scale with equally spaced vertical rulings and dividing the vertical scale with logarithmically spaced horizontal rulings. In a time series chart, time would be arranged along an arithmetic scale and amounts would be arranged along a logarithmic scale. Because semilogarithmic charts are designed to indicate rate of change rather than amount of change, they are also known as rate-of-change charts or ratio charts. Figure 5-7 illustrates the construction and labeling of a logarithmic scale. Figure 5-5 compares the amount of change of population as shown by a curve on coor-

dinate paper with rate of change of population as shown by a curve constructed on semilogarithmic paper.

(1) *Uses.* Semilogarithmic charts should be used to indicate the relative movement of a time series, or to compare the relative movements of several time series, but only when the intended audience is likely to be familiar with this form of chart.

(2) *Reading curves.* If the curve is a straight line inclining upward, it indicates a constant rate of change. A convex curve that flattens out, like that in figure 5-5, indicates an increase at a decreasing rate, despite the increase of population shown on the amount-of-change chart. A concave curve that slopes upward as it approaches the right side of the grid indicates an increase at an increasing rate.

(3) *Precautions.* The plotting in rate-of-change charts requires considerable care because of the peculiar character of the logarithmic spacing. When special grids are prepared without intermediate rulings, it is desirable to use a logarithmic plotting scale, which may be made easily from printed commercial paper. Profile graphs are not constructed on semilogarithmic paper. Points are connected with a solid line when a single curve is drawn.

b. Double Logarithmic Charts. Double logarithmic charts are used more for solving problems than for presenting facts. Both horizontal and vertical scales are spaced logarithmically with the result that all algebraic equations representing multiplication, division, roots and powers are straight lines.

Section III. DISPLAY CHARTS

5-15. Hundred-Percent Bar Charts

The purpose of a 100-percent bar chart is to show graphically the component percentages of a whole, the whole represented as a single bar and the component percentages as component proportional areas. The bar may be drawn either horizontally or vertically; a common ratio of length to width is 6 inches long to 2 inches wide. A scale can be constructed on a separate sheet of paper dividing the length into 10 divisions, each of which is further subdivided into 10 units. Each unit equals 1 percent. The scale is used to divide the bar into the desired percentages, which are expressed graphically as areas by drawing perpendiculars across the width of the bar at the appropriate percentage markings.

a. Shading. The component segments of a 100-percent bar chart are differentiated from each other by solid or line shading (fig. 5-8). Solid (black) shading is used only in a series of segmented 100-percent bar charts. Line shading parallel to the length of the bar is easy to construct; horizontal lines are used for horizontal bars, vertical lines for vertical bars. Line shading perpendicular to the length of the bar is not recommended for segmented bars because it confuses the location of the segment limits. Diagonal line shading or crosshatching is used only in small segments because it causes optical illusions of blending if used over a long segment. Crosshatch shading may be used in place of black for wide columns. Dotted shading (pebbled or stripped) is effective for columns of medium width, particu-

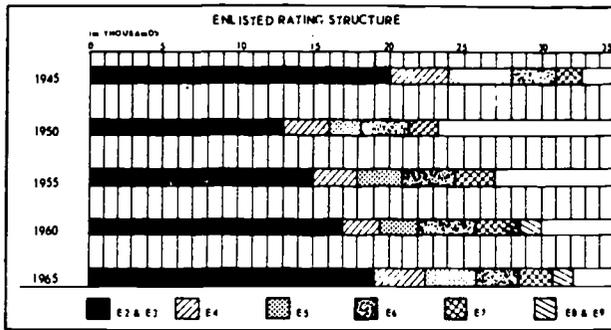


Figure 5-8. Shading in bar charts.

larly where a small segment requires a third or fourth distinguishing shading. Lines are spaced uniformly and not too close together. Intersecting diagonal lines also are used for shading.

b. *Labels.* In addition to shading, each segment is identified by a percentage figure and a word label. The identifying label is placed outside the bar adjacent to the appropriate section and arranged to read horizontally from left to right whether the bar is drawn horizontally or vertically. Numerical percentage figures are placed inside the bar and arranged about the centerline, running parallel to the length. All lettering should be completed before the areas are crosshatched or shaded. When, for reasons of clarity, it is necessary to give the numerical quantities in addition to percentages, the numbers are presented on the side opposite the identifying segment labels; numerical values are then read from left to right and are aligned horizontally.

c. *Comparisons Between 100-Percent Bar Charts.* The 100-percent bar chart presents the component parts of a whole, usually for a specific period or for a particular geographical location. If a chart showing comparisons of component items over a period of years or several geographical locations is desired, a series of 100-percent bars is used. Each bar is the same height and width and contains the same component items. Each item is identified by a different kind of shading; the meaning of the shading is explained through a key placed where it will not interfere with the chart. Darkest shadings are placed nearest the baseline. Such charts require a two-coordinate frame of reference. If the bars extend vertically, percentages are scaled along the vertical axis. Time, location, or other limiting conditions are scaled along the horizontal axis, which also serves as the datum line for the bars.

5-16. Multiple-Bar Charts

A use of the bar form other than as a 100-percent

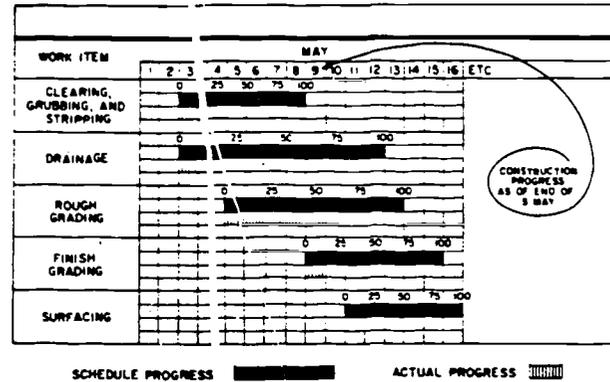


Figure 5-9. Progress chart.

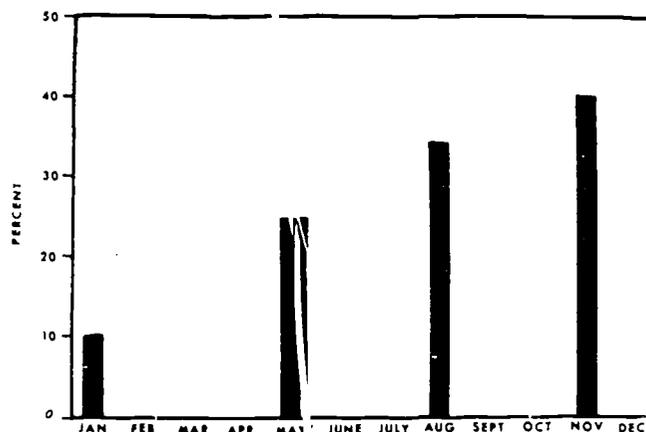


Figure 5-10. Scale selection.

bar chart is to have the length of each bar proportional to the magnitude of the quantity represented (fig. 5-9). Bars may be aligned vertically or horizontally; when aligned vertically, the chart is called a column chart. Rules are given for vertical alignment. The same principles apply for constructing a horizontal chart.

a. *Use.* The column is effective when used to emphasize comparisons of amount in a single time series, to picture period data as against point data, and to present facts for popular understanding. It should not be used for comparing several time series or for time series over an extended period with many plottings.

b. *Layout.* A chart consisting of a few columns should be higher than wide; for more than a few columns a wider-than-high chart is preferable.

c. *Grids.* A completely ruled coordinate surface is not required. The columns themselves make vertical rulings unnecessary. Because multiple-bar charts generally are used for popular presentation and present approximate comparisons, horizontal rulings should be drawn only frequently enough to guide a reader's eye to the vertical scale at major

intervals. Horizontal rulings will not extend through bars and need cover only that portion of the field occupied by the columns.

d. Scale Selection. In column charts, the interest generally is in comparisons of amounts for different dates (fig. 5-10). The amounts are proportionate to the height of the columns; hence the zero line, when it is the principal line of reference, should always be included.

e. Scale Designation. Vertical scale values are placed on the left side, where horizontal rulings are complete. If the tallest columns are at the right, another vertical scale may be placed at the right. Horizontal scale values are centered beneath the columns. Values should not be placed at the top of the individual columns to indicate magnitudes because of the apparent increase they give to the height of the columns.

f. Column Spacing. To space columns equally along the horizontal scale, divide the available horizontal space into twice as many spaces as there are to be columns and center the columns on every other division mark beginning with the first from either end. When there are only a few columns in a chart they should be narrower than the white space between; when there are many columns the reverse should be true.

5-17. Time-and-Work Schedules and Progress Charts

Figure 5-9 shows the application of the principle of the 100-percent bar chart for presenting graphically the time estimated for completing various phases of a road construction project. The figure also affords a comparison of a graphic presentation of estimated time, known as a time-and-work schedule and a graphic presentation of the actual

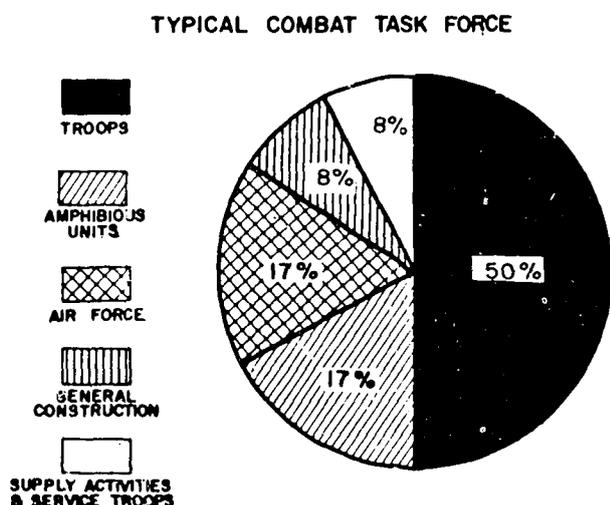


Figure 5-11. Pie chart.

time taken, known as a progress report. The end points of each black bar are determined by the estimated starting and finishing dates of each construction phase. The length of each black shaded bar equals 100 percent of estimated time. Subdividing the black bar into quarters makes comparison of estimated and actual progress easier. Actual progress is represented by transverse cross-hatching. Although not recommended for bar-charts having several component items, transverse crosshatching is acceptable in this case because time is the only item depicted, and because daily limits are demonstrated more easily with transverse shading than with diagonal or stripped shading.

5-18. Hundred-Percent Circles

The circular form (fig. 5-11) can be used in the same manner as the bar form to show the percentage-wise distribution of the component parts of a whole. Charts using the circular form to show distribution are called sector, or pie, charts.

a. Layout. When several component parts are to be shown, as in figure 5-5, the circle is regarded as a clock with the 12 o'clock position as the starting point.

b. Shading. Segments are distinguished from each other with the same shading techniques used in component bar charts. Solid shading is recommended for the largest segment. Color may be used to increase the dramatic effect.

c. Labels. Lettering and numbering should be aligned horizontally inside the circle so that the chart can be read without turning. When it is impossible to place the lettering inside the segments being identified, the labels are placed in a legend or key and identified by shaded symbols. When several circles are used to compare the distribution of the same items in different periods, it is easier to identify the component items with consistent shading patterns than with labels. In such a case, the shading symbols must be explained through a legend or key.

5-19. Pictorial Charts

A pictorial chart (fig. 5-12) is basically a form of multiple-bar chart with the bars aligned horizontally. Magnitudes in the multiple-bar chart are proportional to the lengths of the bars; in a pictorial chart they are proportional to the number of symbols in a line. The subject of a bar chart is presented in its title or the legend that explains the shading symbols; the subject of a pictorial chart is explained through the nature of the pictorial symbols.

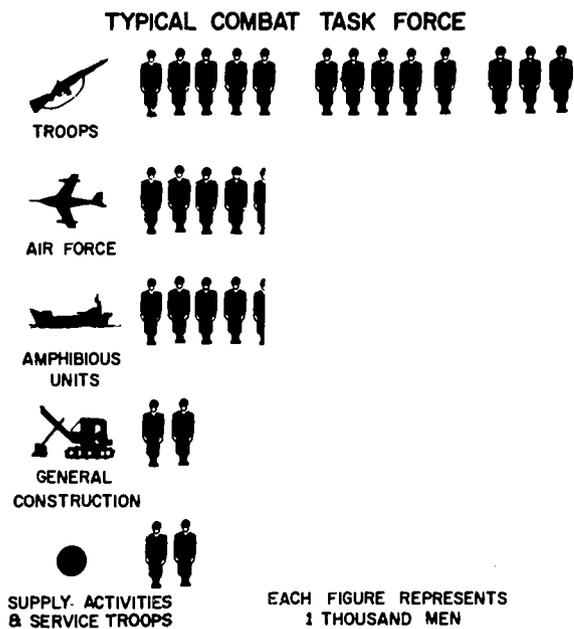


Figure 5-12. Pictorial chart.

a. *Scope.* Pictorial charts are used to compare approximate quantities. Statistical data are rounded off to fit pictorial units. Symbols should express some basic characteristic of the subject so that a minimum of explanation is required. Increasing quantities are shown by proportional increases in the number of symbols used, not by proportional increases in symbol sizes. Like multiple-bar charts, pictorial charts are used only for comparisons, not for making isolated statements.

b. *Layout.* Pictorial charts are read from top to bottom and from left to right. The initial problem is to determine the size of the chart. Once this is known, the next step is to divide the space to achieve a balanced effect and clear presentation. A trial chart is blocked out with rectangles of proportions equal to the height and length of the lines of lettering and rows of symbols. Sufficient space must be allowed between rectangles; space between rectangles should not be more than their height or less than half of it. The area occupied by the total of the individual rectangles is represented as a large rectangle and centered in the chart. All rectangles begin from a common, vertical reference line at the left. The reference line is drawn lightly as a guideline and does not appear in the completed chart.

(1) *Rows per chart.* The rule of thumb is to limit the number of rows to between three and six. If the comparison is such that more than six rows are required to present a clear picture of a trend or relationship, the data should be presented as a curve.

(2) *Symbols per row.* Symbols must be large

enough to be clear and with enough white space separating each from its neighbor for both to be distinguishable. Values assigned to the individual symbols influence the number required. For general purposes, the number of wide symbols, buildings and machinery for example, should not exceed 12. The number of narrow symbols, people for example, should not exceed 25. Symbols should be wide enough for the basic unit to be divided in half vertically. To aid in counting long rows of symbols, make units of five by providing a wider space after each fifth symbol.

c. *Symbols.* Simplified silhouettes are the most effective for pictorial charts. The most important feature of simplified silhouettes is that the simple symbols represent the most general situation and are recognized by the widest audience. A general rule for selecting the most characteristic symbol is to use the one that can be drawn from memory. After the size and shape of the basic symbol has been decided, it must be reproduced uniformly in the necessary quantity. A convenient sized rectangle of detail paper is laid out with a horizontal baseline and vertical width lines extending to the edges of the sheet. Figures are drawn between the vertical lines and from the baseline. Guidelines are drawn lightly on the chart surface. If the chart is to be reproduced and tracing paper is used, the figures are placed underneath the tracing sheet and the guidelines aligned. If the chart is drawn on an opaque surface, the back of the template may be blackened carefully with a soft pencil to create a carbon paper effect. The figures are traced off from above after guidelines are aligned.

d. *Titles and Symbols Explanations.* Titles are lettered in uppercase letters centered at the top of the chart. They should be as concise as clarity allows and should not include facts not shown in the chart. Symbol explanations are located beneath the rows of symbols and are executed in uppercase letters of a smaller size.

5-20. Organization and Flow Charts

An organization or flow chart is one which shows a related sequence of events, a chain of command, a system of administration, or any other system in which it is necessary to graphically represent a connection between separate but interdependent units. It is not primarily concerned with numbers and quantities but with how the components of an organization relate to one another.

a. *Organization Chart.* One of the simplest and most common types of organization charts shows

the arrangement of authority and responsibility within an organization (fig. 5-13). Before drawing in finished form, it is advisable to make a rough sketch on a piece of scratch paper to learn what the approximate shape and size of the final drawing will be. The name, rank or grade, and position of the highest authority in the organiza-

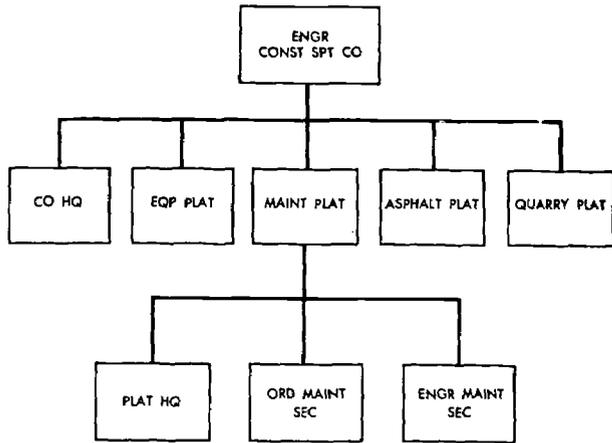


Figure 5-13. Organization chart.

tion chart to be made should be placed centered and near the top of the sheet and enclosed in a box drawn with medium lines. Other members of the organization who are directly responsible to him should be placed below, also in boxes drawn with medium lines. Connect the boxes with thick lines that are perpendicular rather than radiating from a single point. Continue this process downward, placing subsidiary members of the organization below and properly balanced around their superiors. If there is a liaison, organized cooperation, or other regular contact between two units which are equal in authority, connect them horizontally with a dotted or dashed line.

b. *Flow Chart.* A flow chart (fig. 5-14), like the organization chart, also shows a relation between different parts of steps. It differs in that it shows a process or sequence of events that must take place in a specific order to produce a desired result. The flow may not always be a simple series, with step A followed by step B, then step C, etc. There may be a sequence of events that must take place simultaneously with one step in order to

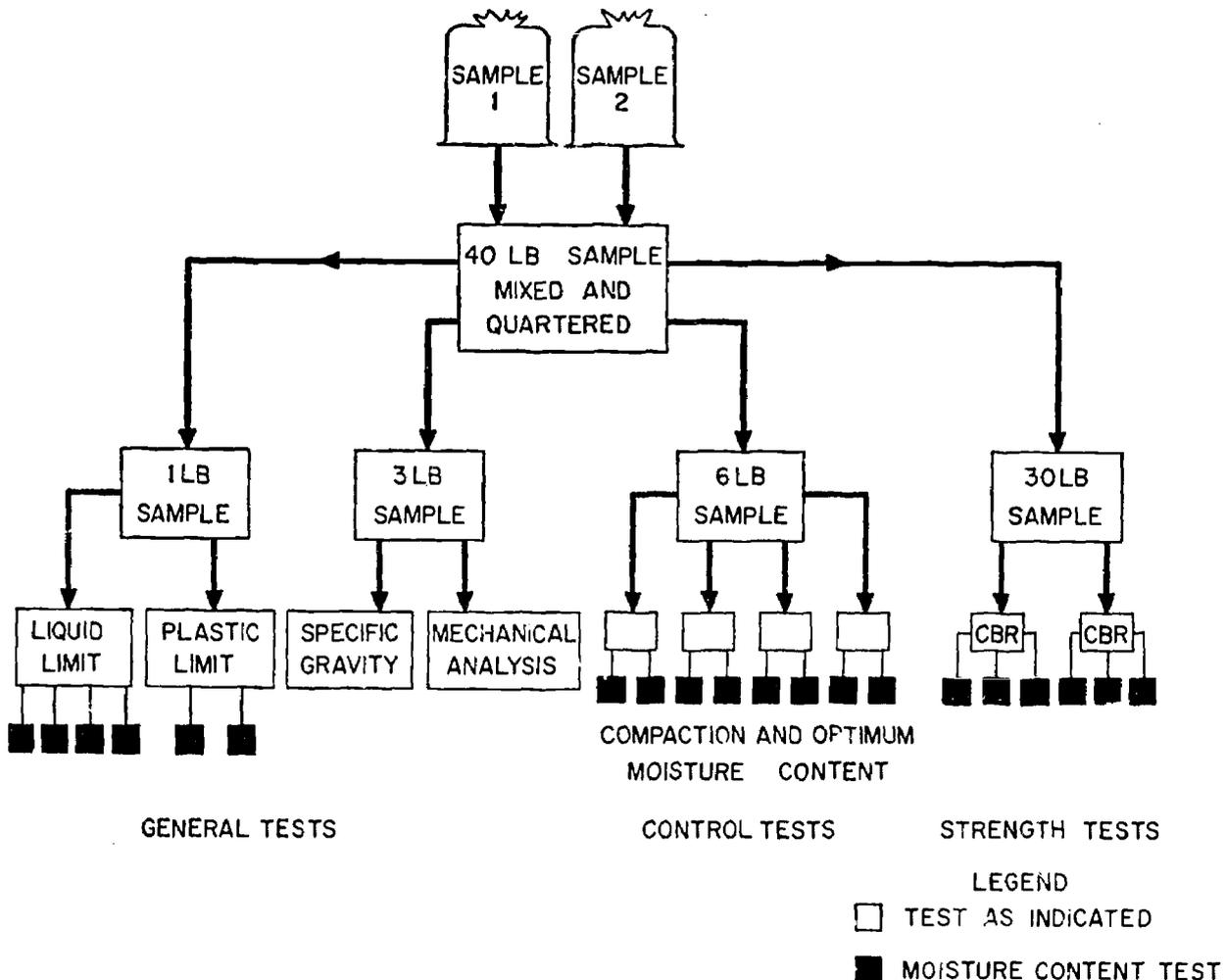


Figure 5-14. Flow chart.

make the next step possible. For example, step X, followed by step Y, followed by step Z may be necessary before steps A and Z can combine to make step B possible. No matter what format is used, keeping the chart as simple as possible is necessary. It must be remembered that the purpose is to make a complex process understandable at a glance. AVOID a chart obscured by needless lines or poorly organized components. For this reason rough drafts should be made, and the flow chart well planned. If the chart is to be used for large-scale display, dimensioning arrows are too small to indicate flow clearly; therefore, large arrows should be used.

5-21. Tools and Materials

a. *Tools.* Working charts not intended for display or reproduction are constructed on coordi-

nate paper with drawing pencils and standard drafting equipment. Charts for display or reproduction are prepared in pencil and traced in ink, or inked in. The ruling pen is used for inking lines drawn with a T-square or triangle. Payzant and Speedball pens are used to give the proper weight to curves and other freehand lines.

b. *Chart Paper.* Smooth, heavy paper provides the best surface for display charts. Bristol board and illustration board normally are available in standard flat sheets 22 by 30 inches and in thicknesses up to $\frac{1}{8}$ inch. Both sides of Bristol board are satisfactory drawing surfaces; illustration board provides only one suitable side. Hot-pressed surfaces are glossy and suitable for pen-and-ink work and water colors. Cold-pressed surfaces are duller and suitable for water colors but are not as good for pen-and-ink work as hot-pressed.

Section IV. TRAINING AIDS

5-22. Characteristics

A training aid is a simple explicit poster-like representation of an official standard, and is used to direct its audience to a specific decision, selection, or method of behavior. For example, figure 5-15

provides a quick and ready aid for determining the standard specifications of common nails so that a correct selection can be made. A training aid may consist of a picture plus wording or wording alone. The paragraphs in this section present sufficient information for the draftsman to produce an adequate training aid by using his technical drawing skills.

5-23. Elements of a Training Aid

Wording, or text, and the picture are the principal elements of a training aid. Together they should compose a poster that is simple and bold in design, brief in text, understood at sight, pleasant and strong in color, balanced in composition, and designed to attract attention.

a. *Picture.* The considerations governing the choice of appropriate pictorial material are similar to those presented for choosing pictorial symbols (para 5-19c). The picture should convey the same information as the text; it should not be so detailed as to distract attention from its message; and it should be general enough to be recognized by the widest possible audience. Clippings of pictures from newspapers and magazines may be used if drawing talent is not available. If the clipping is cut carefully and given a few touches of color after being mounted, it will give the appearance of having been painted on the card. A file of clippings for tracing or mounting will be helpful to draftsmen engaged in preparing training aids. Whenever a clipping contains a human figure, it should be faced toward the text so that the eye of the observer is led toward the text.

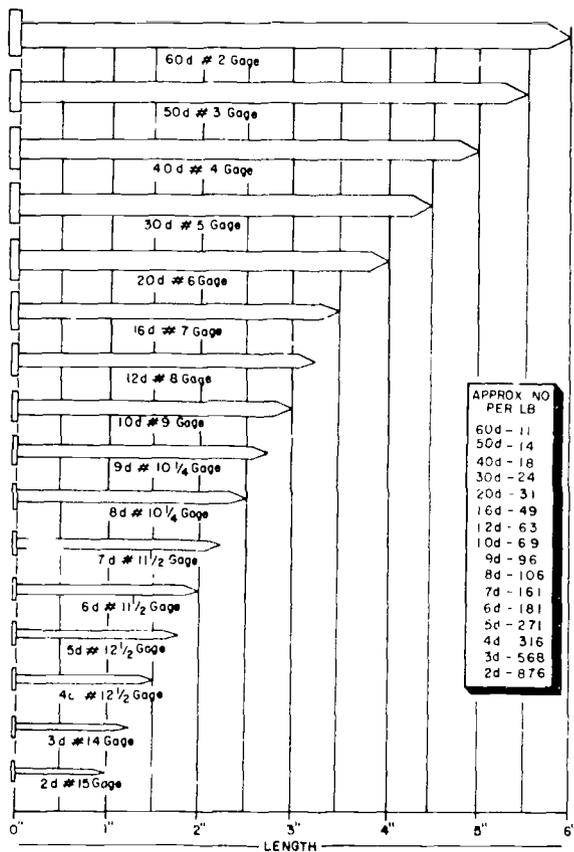


Figure 5-15. Training aid.

b. Text. Text should be brief; it should make a complete statement; and its meaning should be clear. When a training aid makes a series of statements, the number should not exceed four. Negative statements should be avoided; the poster should tell what to do, rather than what not to do. When not expressed as a directive or command, the text should express a conclusive attitude. Wording is effective by virtue of its message and its mechanical arrangement on the poster.

5-24. Layout

The layout of a poster is a rough pencil plan that arranges lines, paragraphs, and pictures so that they have a pleasing relation to one another. The important considerations in the layout of a poster are balance, harmony, unity, and simplicity.

a. Balance. The principle of balance is similar to that described in the layout of a pictorial chart. Lines of lettering and pictures are represented as rectangles and arranged symmetrically about vertical and horizontal centerlines or along intersecting diagonals drawn between opposite corners of the card. The lines of the rectangles parallel the borderlines of the poster. Balance also is affected by tones. If one line of lettering is quite dark, it must be balanced by an equal area of the same tone or a larger area of a lighter tone.

b. Harmony. Harmony implies a relationship between the various layout rectangles. Size, shape, tone, and color must have qualities in common throughout.

c. Unity. The component parts of a training aid must blend to focus audience attention on the most important units. This can be done by arranging the most important parts of the inscription at the most important points on the poster. Unrelated statements should be avoided.

d. Simplicity. Training aids should not be over-ornamented. Letter styles, borders, and backgrounds should be simple enough to permit concentration on the central message. Lettering is drawn to the size required by good balance and emphasis.

e. Lettering. Letters are sketched in with a soft pencil, and with guidelines to establish letter height and inclination. If many posters are to be made with the same size and style of lettering, templates can be made by drawing the alphabet and numbers on a sheet of cardboard and cutting the letters out with a sharp knife and steel straightedge. Beginners should construct block letters of the kind shown in figure 4-4. The outlines are drawn with a ruling pen after the letters

have been sketched, and the open areas are filled in with a brush or ruling pen.

5-25. Use of Color

India inks are available in various colors. Draftsmen should limit themselves at first to two colors in preparing training aids.

a. Color Combinations. Red is the most suitable single color for use in combination with black and white. It provides brightness and effective contrast and its intensity permits the eye to focus readily at normal reading distance. Black lettering against a yellow background provides the best visibility both for those with normal vision and for those who are color blind. For this reason the black-and-yellow combination is used on highway safety signs. Green against red, blue against red, and red against green should be avoided because these combinations seem to make the letters vibrate and difficult to read.

b. Application of Colors. Poster color or ink may be applied with a wide-point pen or a brush. If sufficiently diluted, poster color may be used in place of ink to produce fine lines drawn with a ruling pen. If a stencil is used for uniformity, letters may be cut out of colored paper and pasted on a poster with rubber cement or glue.

5-26. Materials

Illustration and Bristol board are satisfactory for preparing training aids.

a. Brushes. Brushes are made of sable or camel's hair with the former preferable. They are in two styles, round and flat with square ends. The widths of the sizes most generally used range from $\frac{1}{4}$ to 1 inch. Brushes are used for lettering with water colors.

(1) *Use.* A brush is held between the thumb and the first two fingers in a nearly vertical position and should not be gripped too tightly. Strokes are made with a full, swinging movement of the arm and with the extreme tip of the brush. The flat brush should be kept well filled with color and should be lifted abruptly from the paper at the end of the stroke to give the stroke a square tip. Persistent practice is essential for the development of a satisfactory technique.

(2) *Care.* Brushes should always be kept clean and stored either flat or upright on the handle. To clean a brush, use the proper solvent or thinner for the color or colors used, to remove as much of the color as possible. Wet the brush in lukewarm water, apply a mild soap, and work up a lather by rubbing the brush on the palm of the

hand, then rinse it thoroughly. Reshape the brush and put it away.

b. Color. Prepared poster colors are available in jars. Unless a particular color is used extensively, only the following colors need be on hand: white, black, and the basic primary colors, red, yellow, and blue. To obtain the secondary colors combine, red and yellow to get orange, yellow and blue to get green, and blue and red to get purple. White can be added to any of the above colors to get pinks, tints and light pastel colors. Black can be added to the warm colors (yellow, red, and or-

ange) to obtain browns varying from raw umber to burnt sienna. Complimentary colors such as red and green can also be combined in equal amounts to produce a neutral brown. To obtain olive drab (O.D.) start with a quantity of green and add small amounts of red until the desired color is obtained. In some cases, due to the quality of pigment used in the paint, it may be necessary to add a touch of yellow or black or both to achieve the desired color. There are also available special fluorescent colors that glow, especially under ultraviolet light, and can be used for special effects.

CHAPTER 6

GEOMETRICAL CONSTRUCTION

6-1. Introduction

a. The principles of geometric construction were developed using only the pencil, straight-edge, compass and the mathematics of plane geometry. However, the draftsman has at his disposal many other instruments. The T-square, triangles, scales, curves, and so on, are used to make these constructions with speed and

accuracy. Applied geometry is the application of the instruments of the draftsman to make geometric constructions.

b. Knowledge of the principles of geometric constructions and applied geometry is essential to the draftsman. The representation of objects that require this knowledge occur frequently in engineering drawings. Each construction problem in this chapter is described by a sequence of steps.

Section I. GEOMETRICAL NOMENCLATURE

6-2. Point

A *point* represents a location in space or on a drawing, and has no width, height, or depth. A point is represented by the intersection of two lines, by a short crossbar on a line, or by a small cross (fig. 6-1).

6-3. Line

A *line* has length without breadth. A *curved line* is generated by a point moving in a constantly changing direction. A *straight line* is the shortest distance between two points. If the line is indefinite in extent, the length is a matter of convenience, and the end points are not fixed. If the end points of the line are significant, they must be marked by means of small cross bars (fig. 6-1). A *segment* is any part of a divided line. A *vertical line* is the position described by a string hanging in space with a weight attached to its lower end, a plumb line. A *horizontal line* is perpendicular to a vertical line. Two lines are *perpendicular* to each other if they form right angles (90°) at their intersection. Two perpendicular lines may be marked with a box to indicate perpendicularity as shown in figure 6-2. Either straight lines or curved lines are *parallel* if the lines remain equidistant from each other at all points. A common symbol for parallel lines is \parallel , and for perpendicular lines is \perp (singular) or \perp s (plural).

6-4. Angles

An *angle* is formed by two intersecting lines and

is measured in degrees of arc or hours of time. In construction drafting the degrees of arc definition is most commonly used. A degree is divided into

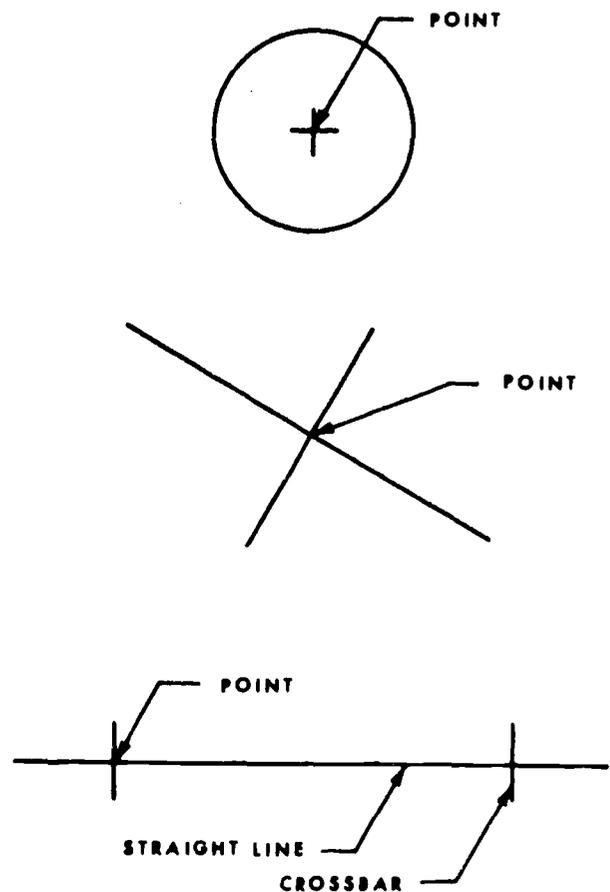


Figure 6-1. Points and straight line.

60 minutes (60') and a minute is further divided into 60 seconds (60''). Figure 6-3 shows different types of angles and the terminology used to describe them.

a. A full circle contains 360 degrees (360°).

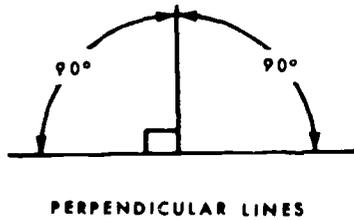
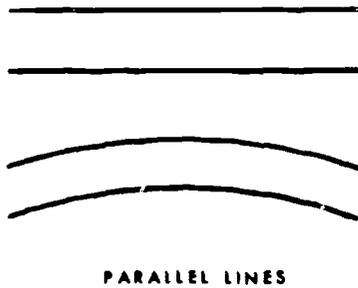


Figure 6-2. Parallel and perpendicular lines.

b. A straight angle is 180°, notice the leaders and crossbar to properly indicate this angle.

c. A right angle is 90°.

d. An acute angle is any angle containing less than 90°.

e. An obtuse angle is any angle containing more than 90°.

f. Two angles are complementary if they total exactly 90°.

g. Two angles are supplementary if they total exactly 180°.

6-5. Triangles

A *plane triangle* is a figure bounded by three straight sides. The sum of the interior angles is always 180°. The following triangles and terminology are keyed to figure 6-4. If no sides or angles are equal, it is a *scalene triangle*. If one of the angles of a scalene triangle is obtuse, it is an *obtuse scalene triangle* (a). If 2 sides and 2 angles are equal, it is an *isosceles triangle* (b). If all sides and angles are equal, it is an *equilateral triangle* (c). If one of the angles is 90°, it is a

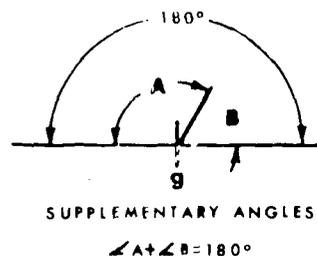
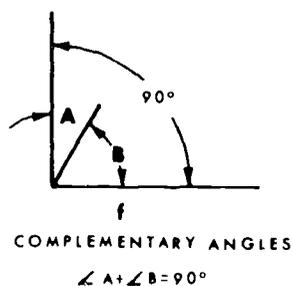
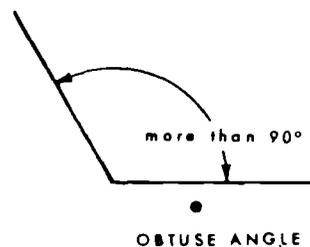
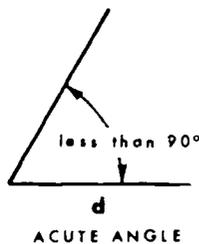
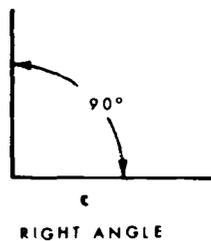
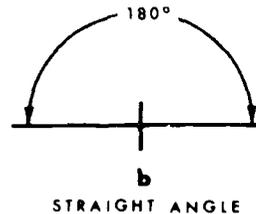
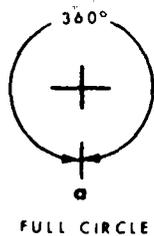
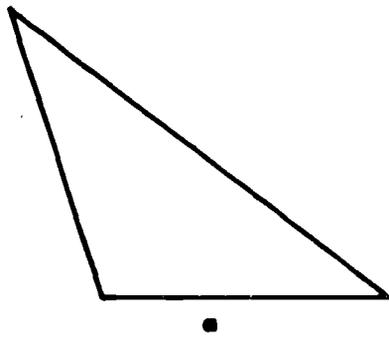
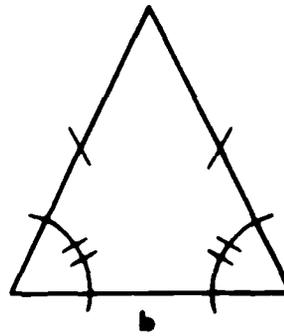


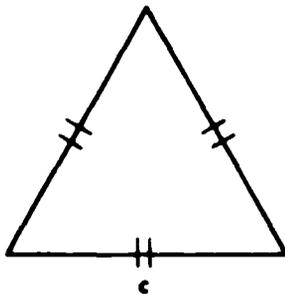
Figure 6-3. Angles.



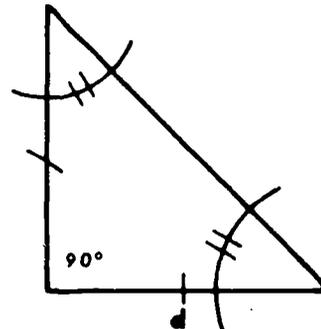
OBTUSE SCALENE TRIANGLE



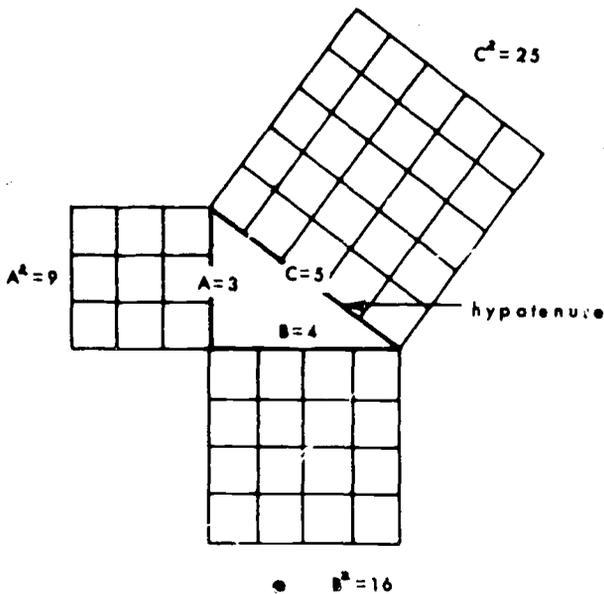
ISOSCELES TRIANGLE



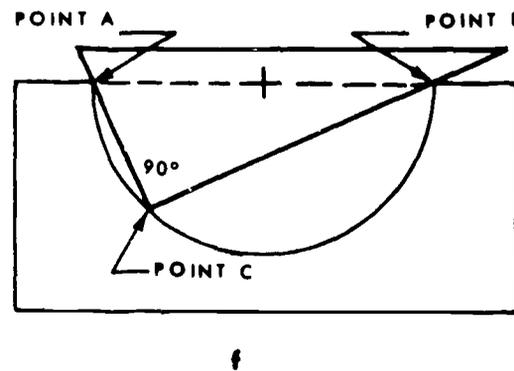
EQUILATERAL TRIANGLE



RIGHT TRIANGLE,
also a right isosceles triangle



RIGHT TRIANGLE, PROOF



SCALENE TRIANGLE,
also a right scalene triangle

Figure 6-4. Triangles.

right triangle (d). In a right triangle, the side opposite the 90° angle is called the hypotenuse. The square of the hypotenuse is equal to the sum of the squares of the other two sides $C^2 = A^2 + B^2$ (e). Any triangle inscribed in a semicircle is a right triangle if the hypotenuse coincides with the

diameter (f). Assume any point C on semicircle, line A-B = Hypotenuse = Diameter, and angle $ACB = 90^\circ$.

6-6. Quadrilaterals

A quadrilateral is a plane figure bounded by four

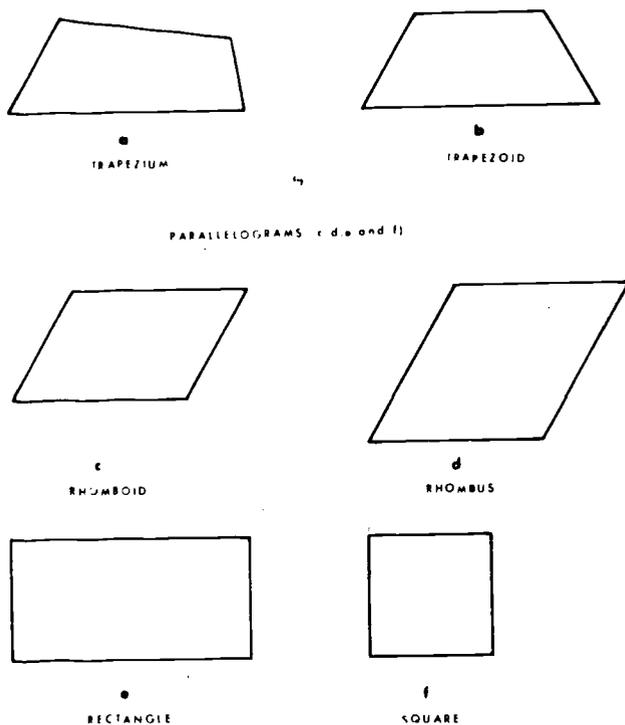


Figure 6-5. Quadrilaterals.

straight lines. Figure 6-5 shows the different types of quadrilaterals and is keyed to the following terminology. If no sides are parallel, it is a *trapezium* (a). If only two sides are parallel, it is a *trapezoid* (b). If the opposite sides are parallel, the quadrilateral is also a *parallelogram* (c, d, e, and f). If opposite sides are parallel and have two obtuse and two acute angles, it is a *rhomboid* (c). If opposites are parallel, all sides equal, with two acute angles and two obtuse, it is a *rhombus* (d). If opposite sides are parallel and equal, with right angles, it is a *rectangle* (e). If all sides are parallel and equal with right angles, it is a *square* (f).

6-7. Polygons

A *polygon* is any plane figure bounded by straight lines. If the polygon has equal angles and equal sides, it can be inscribed in or circumscribed around a circle and is called a *regular polygon*. An equilateral triangle is a regular polygon, while a scalene triangle is not. A square is a regular polygon, while the other quadrilaterals are not. Figure 6-6 shows some of the regular polygons, which are an inscribed triangle, a circumscribed square, an inscribed pentagon, an inscribed hexagon, an inscribed heptagon, and an inscribed octagon. Other polygons that are not shown are Nonagon, which has 9 sides; Decagon, 10 sides; Dodecagon, 12 sides.

6-8. Circle

A *circle* is a closed plane curve all points of which

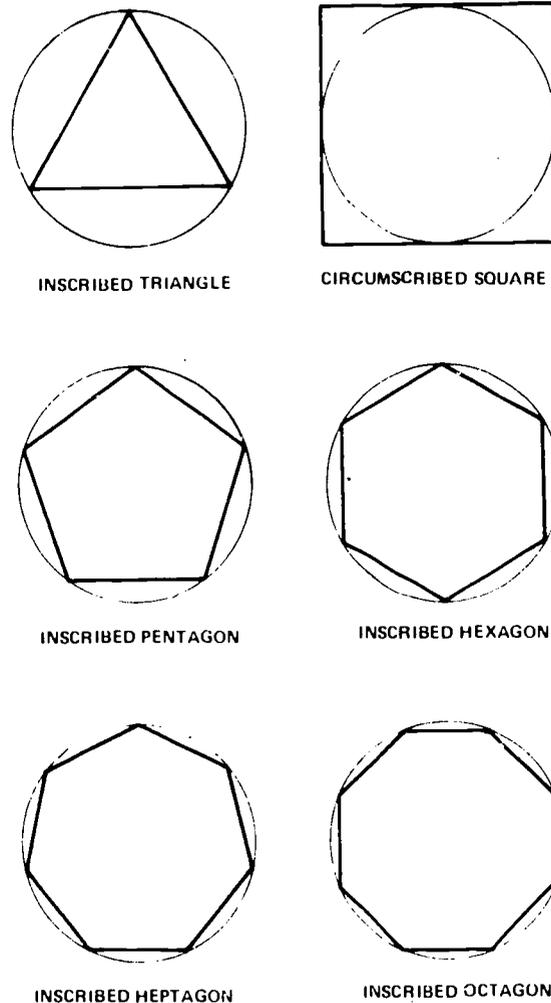


Figure 6-6. Regular polygons.

are the same distance from a point called the *center* (fig. 6-7). The distance around the circle is called the *circumference*. A portion of the circumference is called an *arc*; half the circumference is called a *semicircle*. A straight line from the center to the circumference is called the *radius*. A straight line passing through the center of a circle with the end points at the circumference is referred to as the *diameter*. A line not bounded by the circumference and intersecting a circle at more than one point is called a *secant*. A line intersecting a circle at more than one point with the end points bounded by the circumference is called a *chord*. A line that intersects a circle at only one point is called a *tangent*. Secants, chords and tangents are all perpendicular to one of the radii. Tangents are perpendicular to the radius at the point of intersection. The radii that are perpendicular to the secants and chords bisect them. A plane that is bounded by a 90° arc and two radii is called a *quadrant*. A plane bounded by an arc and two radii is called a *sector*. A plane bounded by a chord (or secant) and an arc is

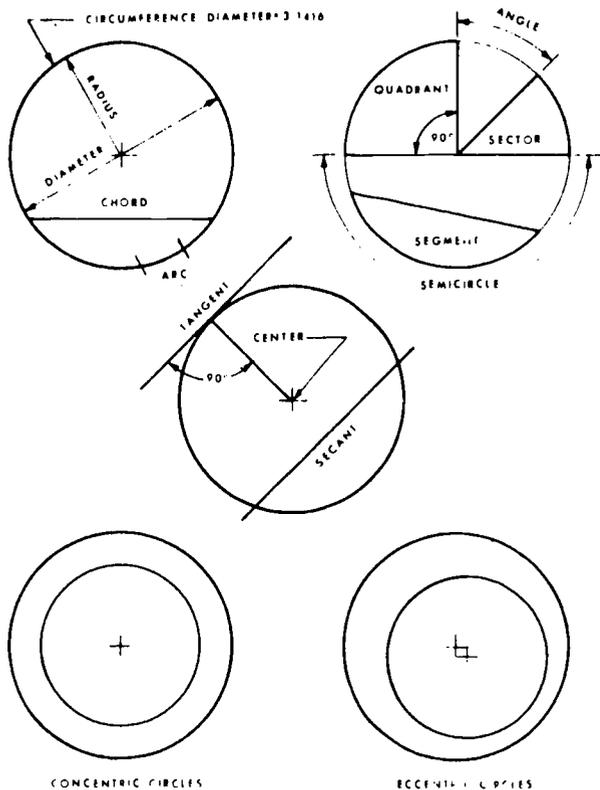


Figure 6-7. Circles.

called a *segment*. Circles having a common center are *concentric circles* and those that do not are *eccentric circles*.

6-9. Four Plane Curves

Four plane curves (conic sections) are obtained

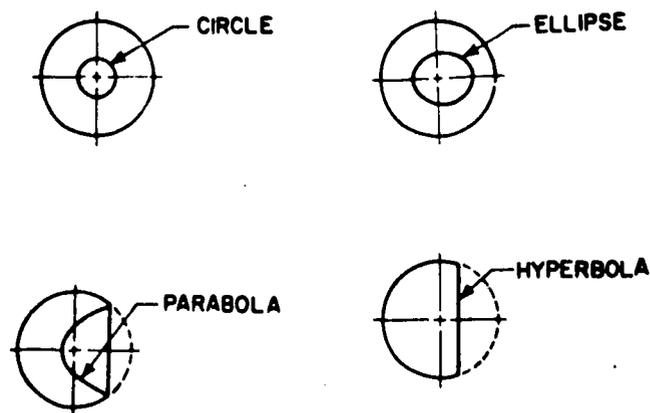


Figure 6-8. Four plane curves.

by cutting a right-circular cone at different angles, producing the following curved figures: circle, ellipse, parabola, and hyperbola (fig. 6-8).

6-10. Special Curves

Special curves are cycloid, epicycloid, hypocycloid, involutes, spirals and helix. Refer to paragraphs 6-76 through 6-79 for a detailed description and methods of drawing. Other curves, whenever necessary, can be found in any good text book of analytic geometry and calculus. Typical of the curves that may be needed are the catenary, cardioid, sine curve, cosine curve, logarithmic spiral, reciprocal (hyperbolic) spiral, parabolic spiral, logarithmic curve, exponential curve and curves of velocity and acceleration.

Section II. STRAIGHT LINE CONSTRUCTION

6-11. To Draw Straight Lines

a. Horizontal Lines.

(1) *With T-square and drawing board.* The draftsman's horizontal line is constructed by drawing from left to right along the working edge of a T-square (B, fig. 6-9). The pencil should be inclined to the right at an angle of about 60° , with the point close to the junction of the working edge and the paper. The pencil is held lightly and, if sharpened with a conical point, is rotated slowly while the line is being drawn to achieve a uniform line width and preserve the shape of the point. Normally, when a series of horizontal lines is being drawn, the sequence of drawing is from the top down.

(2) *With triangles.* To draw a straight line through two points with triangle (fig. 6-10), place the point of the pencil at point B and bring the triangle against the point of the pencil. Then using this point as a pivot, swing the triangle

until its edge is in alinement with point A, and draw the line.

b. *Vertical Lines.* Vertical lines are produced parallel to the working edge of the drawing board by using triangles in combination with a T-square. One leg of a triangle is placed against the working edge of the blade and the other faces the working edge of the board to prevent the draftsman from casting a shadow over his work (A, fig. 6-9). Lines are drawn from the bottom up. The pencil is inclined toward the top of the working sheet at an angle of approximately 60° , with the point as close as possible to the junction of the triangle and drawing paper. Sequence in drawing a series of vertical lines is from left to right. At no time should the lower edge of the T-square blade be used as a base for triangles.

c. *Inclined Lines.* The direction or angle of inclination of an inclined line on a drawing sheet is measured by reference to the baseline from which

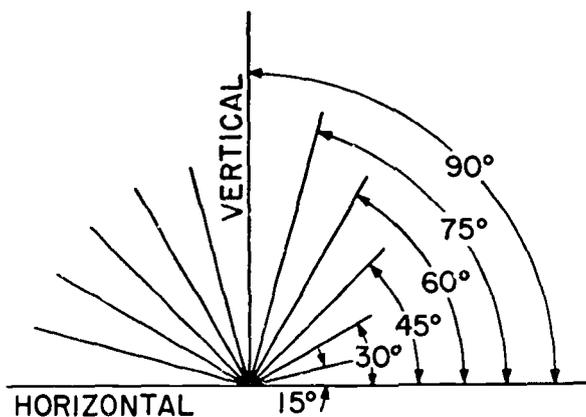
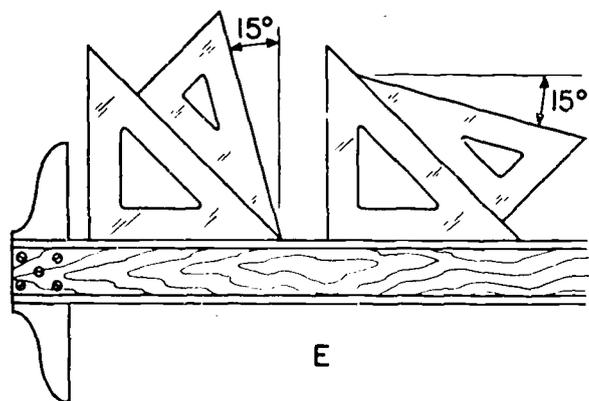
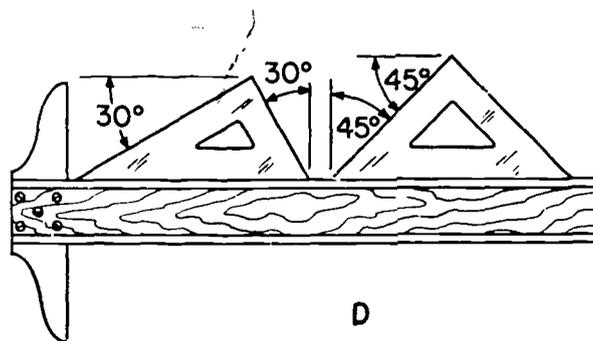
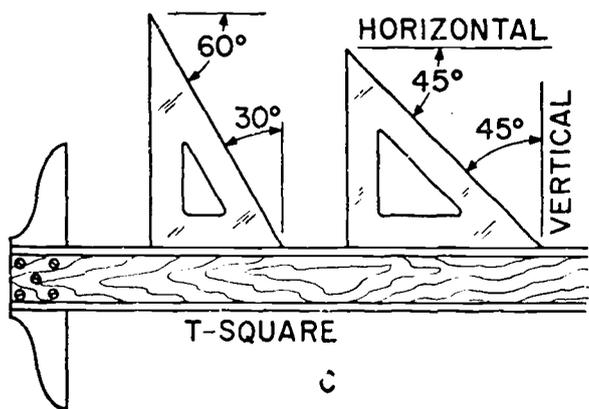
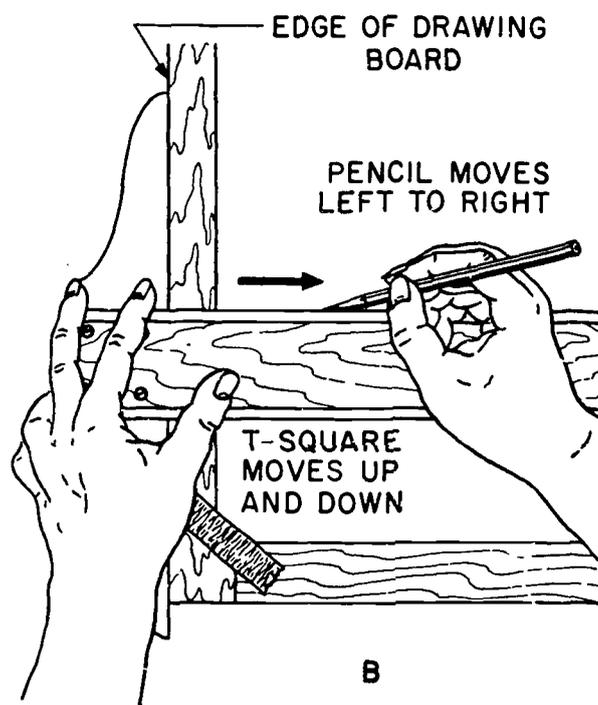
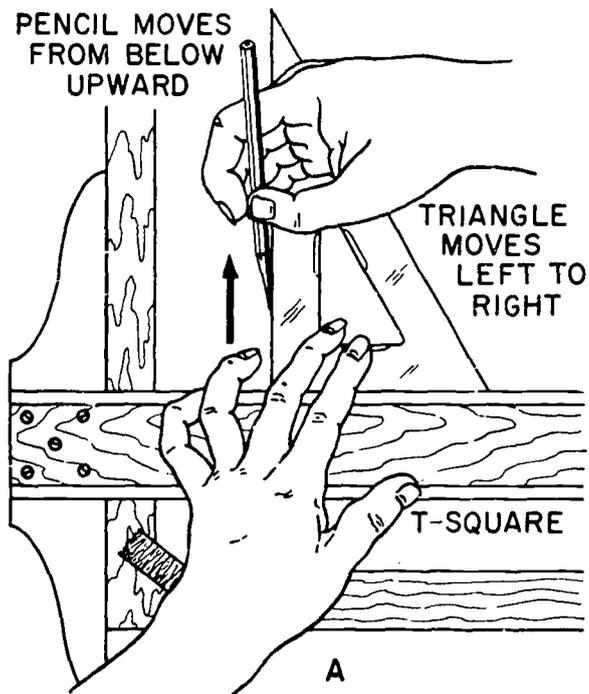


Figure 6-9. Drawing straight lines with T-square and triangles.

it is drawn. Inclined lines at standard angles are constructed with the T-square as a base for triangles used either singly or in combination (fig. 6-9). Used in combination with the T-square as a base, the triangles serve as guides for producing lines at intervals of 15° . Used singly, the 45° triangle will divide a circle into 8 equal parts; the $30^\circ \times 60^\circ$ triangle will divide a circle into 12 equal parts. For drawing lines at angles other than those described above, the protractor is used (para 2-11). Either triangle may be used as a straightedge to connect the two points indicating the vertex and angle of inclination.

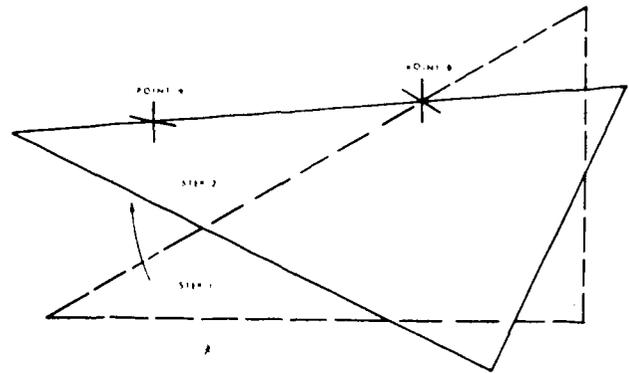


Figure 6-10. Drawing a line with a triangle.

d. *Parallel Lines.* To draw a line parallel (fig. 6-11) to a given line, adjust the hypotenuse of a right triangle in combination with a straightedge (T-square or triangle) to the given line; then, holding the straightedge firmly in position, slip the triangle to the desired position and draw the parallel line along the hypotenuse.

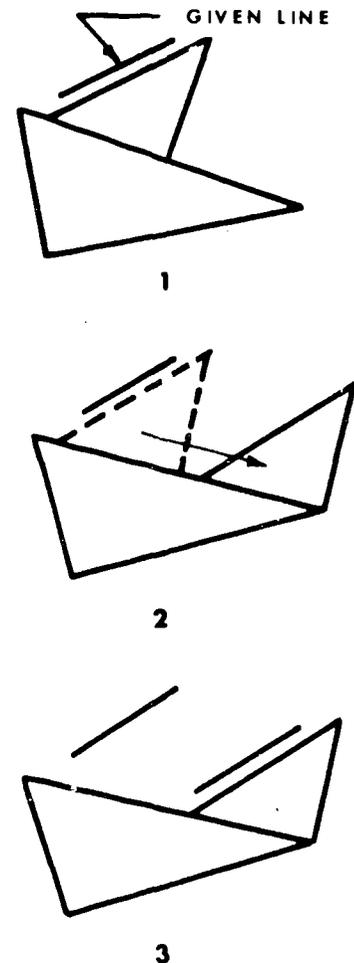


Figure 6-11. Drawing parallel lines.

e. *Perpendicular Lines.* To construct a line perpendicular (fig. 6-12) to an existing line, use the right triangle and a straightedge in combination, the hypotenuse of the right triangle resting against the upper edge of the straightedge. Adjust one leg of the right triangle to a given line. Then the right triangle is slid along the supporting straightedge to the desired position. The line is drawn along the leg perpendicular to the leg that was adjusted to the given line.

6-12. Bisecting a Line With a Compass

From the two ends of the line (*A* and *B*), swing arcs of the same radius (1, fig. 6-13), greater than $\frac{1}{2}$ the length of the line, and draw a line through the arc intersections (*C* and *D*). This line bisects the given line and is the *perpendicular bisector*.

6-13. Bisecting a Line With a T-Square and Triangles

To construct on the given line *AB* equal angles at points *A* and *B* (2, fig. 6-13), draw lines *AC* and *BC* using a 50° to 60° or 45° triangle. Then draw a perpendicular line from point *C* to line *AB* using the 90° side of the triangle. The perpendicular line *CD* cuts *AB* at the midpoint *D*. *CD* is the perpendicular bisector of the given line *AB*.

6-14. Trisecting a Line With a Compass and Straightedge

On the given line *AB* (fig. 6-14) and using a radius equal to *AB*, draw two arcs of somewhat

more than quarter circles, using *A* and *B* as centers. These arcs will intersect at *C*. Using the same radius *AB* and with *C* as center intersect the first arcs at *D* and *E*. Then draw lines *DA* and *EB*, which intersect at *O*. Using length *OA* or *OB* (which should be equal) as a radius, *A* and *B* as centers, draw arcs to intersect at *T* which also will cut *AD* and *BE* at *R* and *S*. Draw lines *RT* and *ST*, which will intersect *AB* at the required trisection points *U* and *V*.

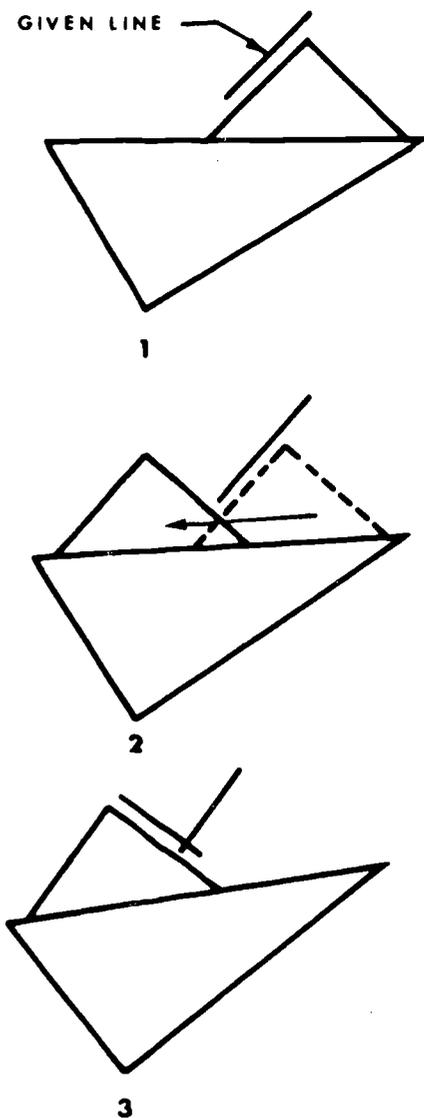


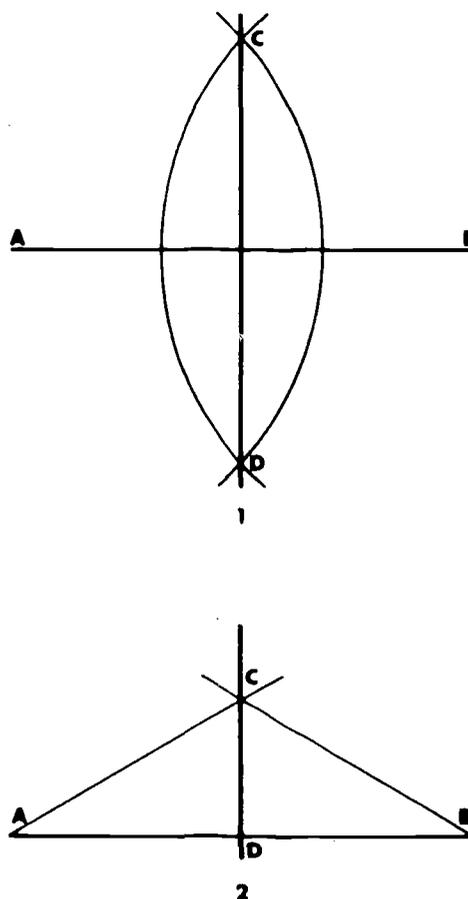
Figure 6-12. Drawing a perpendicular line.

6-15. Trisecting a Line With a T-Square and 30° to 60° Triangle

From the given line AB , draw lines from A and B at an angle of 30° that intersect at C (1, fig. 6-15). Then from C draw lines at an angle 60° that intersect AB at D and E , the required points.

6-16. Dividing a Line Into Equal Parts With a T-Square and Triangles

The principles of bisection and trisection can be combined to achieve successive bisections of a line into 2, 3, 4, 6, 8, 9, 12, or 16 equal parts. As shown in 2, figure 6-15 equal angles from A and B locate C , and the perpendicular from C to AB gives the mid-point. Successive operations will give 4, 8, 16, etc. parts. In figure 6-16, lines at an angle of 30° to AB from A and B locate C , and lines at an angle of 60° to AB from C locate D and E , the



ANGLES AT POINTS A AND B MUST BE EQUAL.

Figure 6-13. Perpendicular bisectors.

third points. Then 30° lines from A and D will bisect AD at F , giving sixth divisions; or trisecting DE gives points G and H producing ninth points; or bisecting EB to locate mid-point J , and again bisecting EJ and BJ locate points K and L , giving twelfth divisions of AB .

6-17. Dividing a Line Into any Number of Equal Parts With a Compass and Straightedge

Given the line AB (fig. 6-17)—

a. Draw line AC from point A at any convenient angle and length.

b. With a compass or dividers, mark off the required number of equal parts along line AC . (Example shows 5 equal parts.)

c. Draw line from point B to last point marked off on AC (5 on example), thus making angle P .

d. The next step is to construct an angle at point 4 equal to angle P . With point 5 as center, with any convenient radius R_1 , intersect lines $B5$ and AC at points x and y . Then with point 4 as center, and the same radius R_1 , strike an arc MN .

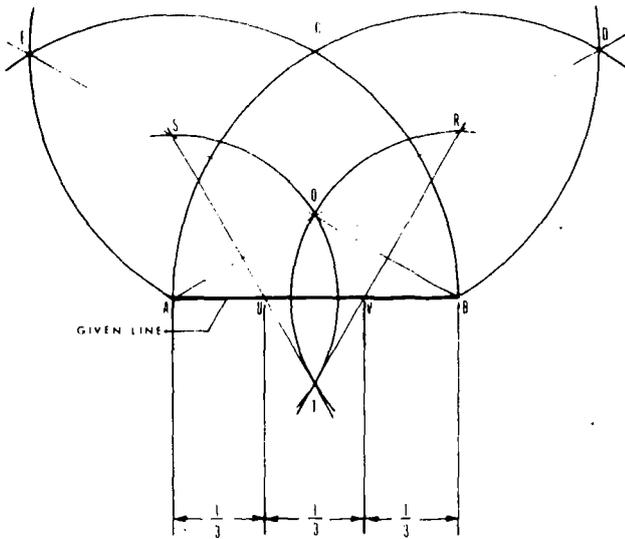


Figure 6-14. Trisecting a line with a compass and straightedge.

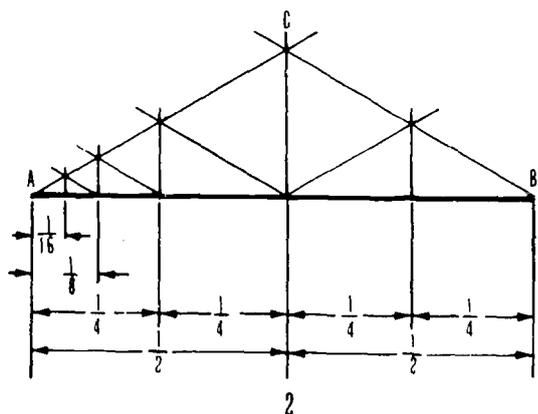
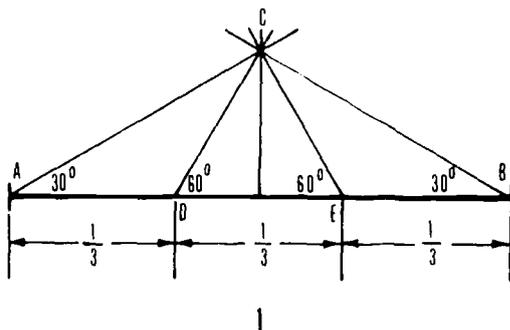


Figure 6-15. Dividing a line into equal parts using a T-square and triangles.

e. With a radius of R_2 equal to the straight line distance of xy , using point y' as center, strike an arc intersecting arc MN at point x' .

f. Step Six. Draw a line from point 4 through point x' intersecting line AB at point $4'$. This forms angle P' equal to angle P , thus making line

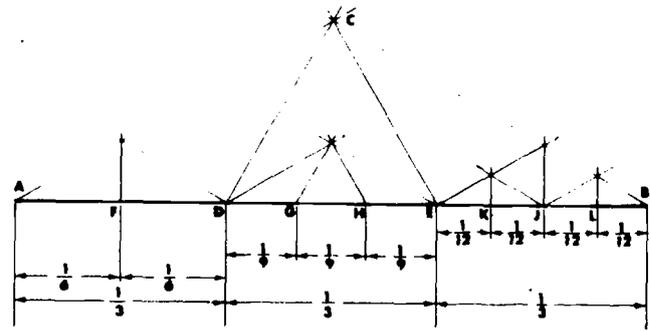


Figure 6-16. Dividing a line into equal parts by bisections and trisections using a T-square and triangles.

4 parallel to line 5. Continue to construct equal angles and parallel lines at 3, 2, and 1 repeating d and e above. Points $1'$, $2'$, $3'$, and $4'$ divide line AB into 5 equal parts.

6-18. Dividing a Line Into any Number of Equal Parts With a Scale, T-Square and Triangle

Given the line AB (fig. 6-18)—

a. Draw a vertical line from point B of given line AB with T-square and triangle.

b. Set zero of scale at point A .

c. Swing scale up until tenth unit falls on vertical line and make marks at each unit. (Any unit may be used on the vertical line depending on the number of equal parts required.)

d. Draw vertical construction lines through each point with T-square and triangle. These lines divide line AB into the required equal parts (10 in example).

6-19. Drawing a Line Through a Point Parallel to a Given Line Using a Compass and Straightedge

Given the line AB and point P (fig. 6-19)—

a. Take a compass and place pin point at given point P as center, strike an arc CD with any convenient radius R that intersects the given line AB at a point E .

b. Without adjusting the compass, using the same radius R , but this time with point E as center strike an arc FG intersecting given line AB at point H .

c. Adjust the compass to the straight line distance PH , the new radius, R' . With center at E , strike an arc IJ with the new radius R' intersecting arc CD at point Q .

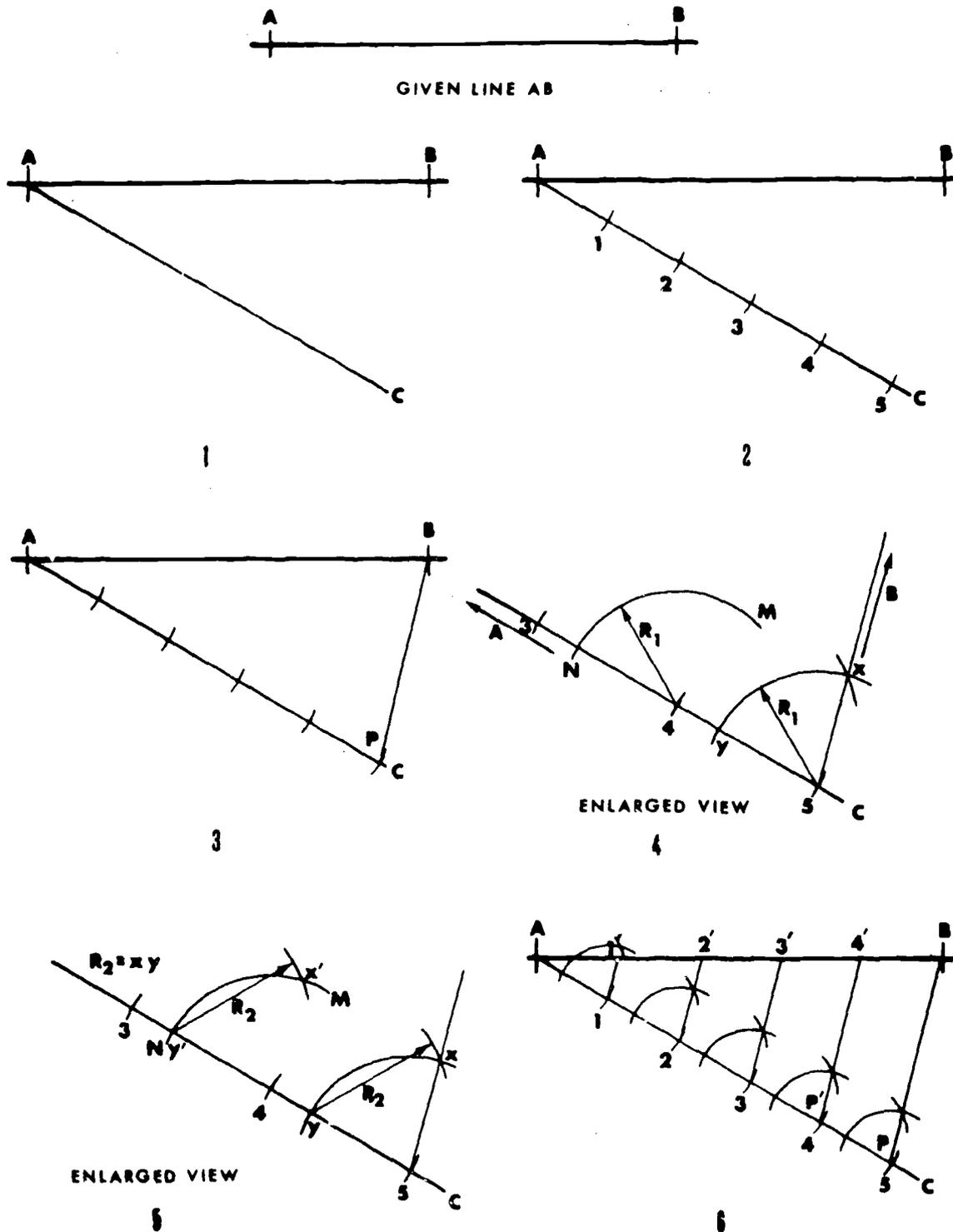


Figure 6-17. Dividing a line into any number of equal parts with a compass and straightedge.

d. Draw a line through points P and Q ; this is the required parallel line to given line AB through given point P .

6-20. Drawing a Line Through a Point Parallel to a Given Line Using Triangles

Adjust a triangle to the given line AB (fig. 6-20) with a second triangle as a base. Slide the aligned

triangle to its position at point P and draw the required line.

6-21. Drawing a Line Parallel to and a Given Distance From a Given Line, Using Triangles and Compass

Draw an arc with the given distance R as radius (fig. 6-21) using any point (P) on the given line

AB as center. Then adjust the triangle to line AB , with a second triangle as a base. Slide the aligned triangle to a position tangent to the circular arc and draw the required line.

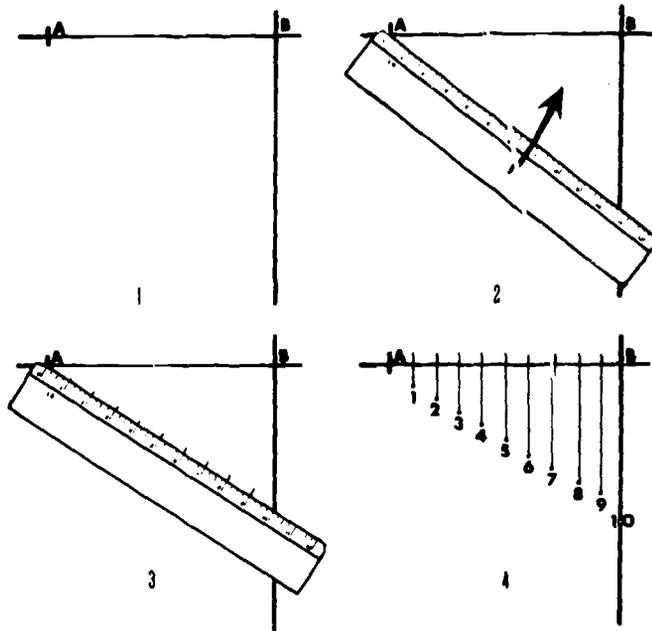


Figure 6-18. Dividing a line into any number of equal parts with a scale, T-square, and triangle.

6-22. Erecting a Perpendicular to a Line From a Given Point With Compass and Straightedge

With given point P as a center and radius R_1 of any convenient length, draw arcs intersecting given line AB , at points X and Y (fig. 6-22). With X and Y as centers and radius R_2 of any convenient length, draw arcs intersecting at point Q . Line PQ is then the required perpendicular.

6-23. Erecting a Perpendicular to a Line From a Given Point With a Triangle and T-Square

Square the given line with the top blade of the T-square. Slide the triangle along T-square blade to the point and draw perpendicular (fig. 6-23).

6-24. Erecting a Perpendicular to a Line at a Given Point on the Line With a Compass and Straightedge

Given the line AB and a point P on the line (fig. 6-24)—

- a. Select any convenient point O as a center.
- b. With radius OP and O as center, draw an arc

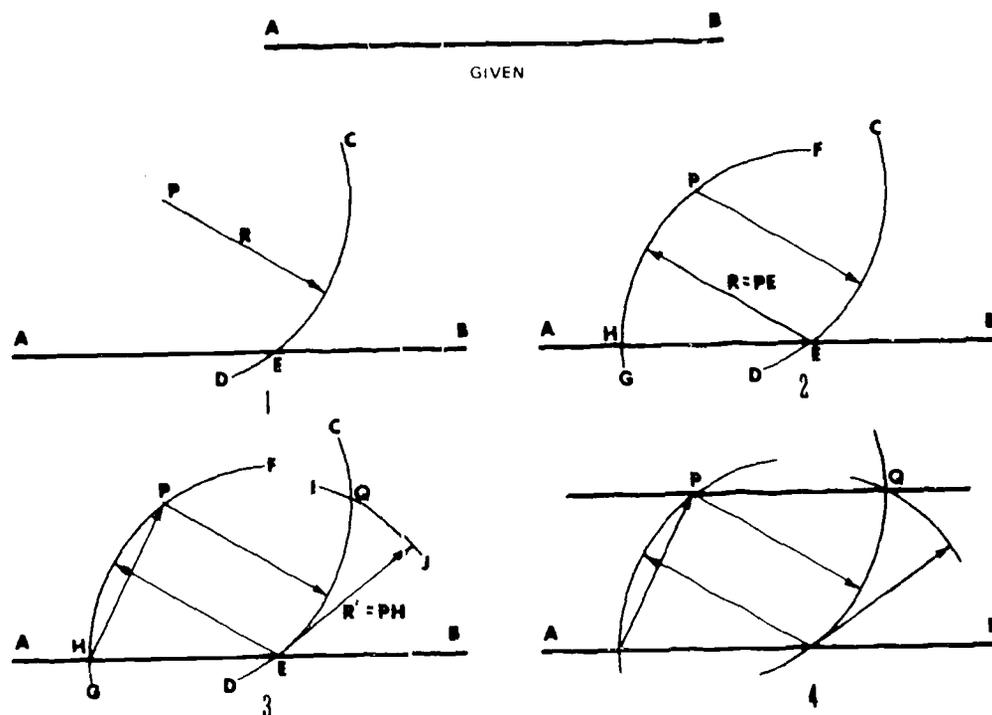


Figure 6-19. Drawing a line through a point parallel to a given line using a compass and straightedge.

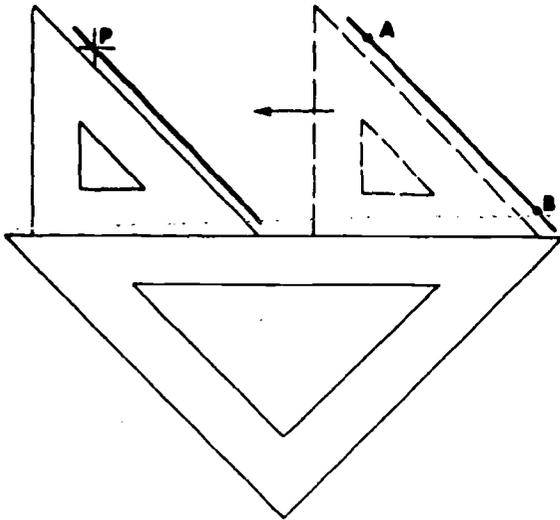


Figure 6-20. Drawing a line through a point parallel to a given line using triangles.

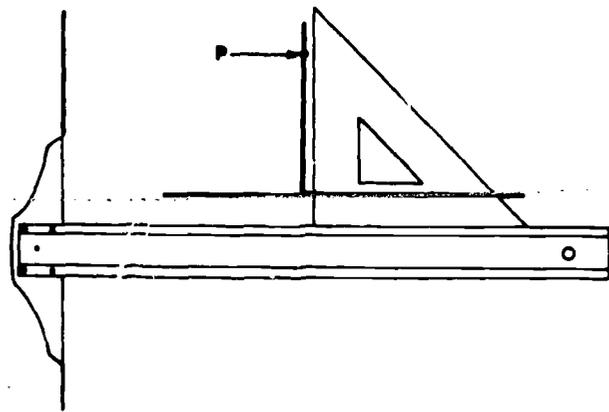


Figure 6-23. Erecting a perpendicular to a line from a given point with a triangle and T-square.

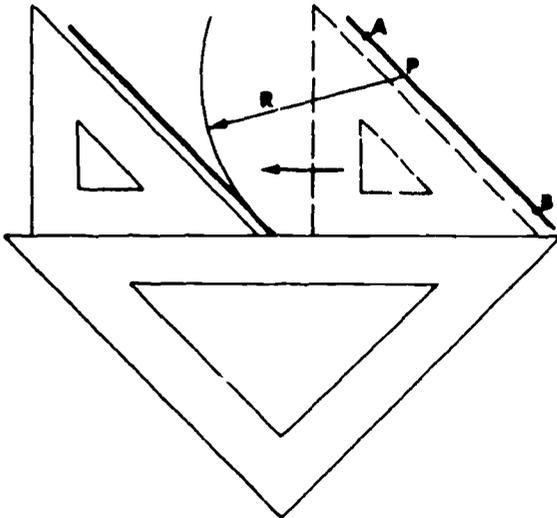


Figure 6-21. Drawing a line parallel to and at a given distance from a given line, using a compass and triangles.

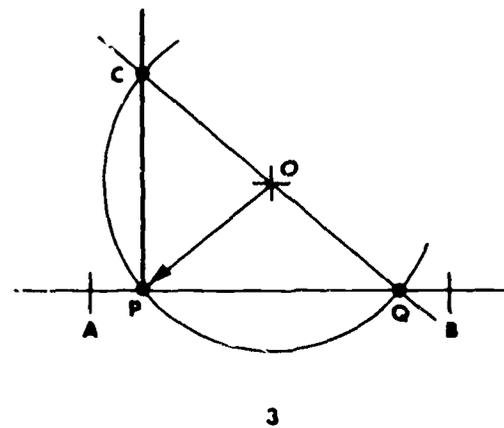
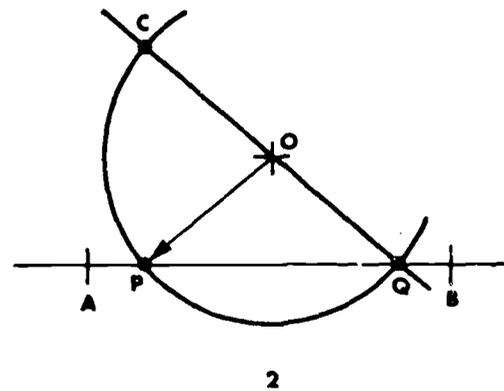
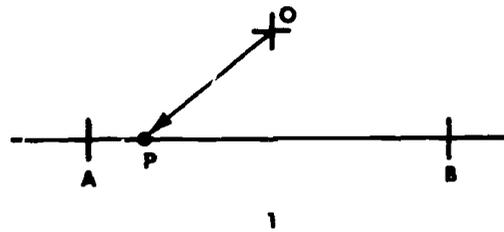


Figure 6-22. Erecting a perpendicular to a line at a given point on the line with a compass and straightedge.

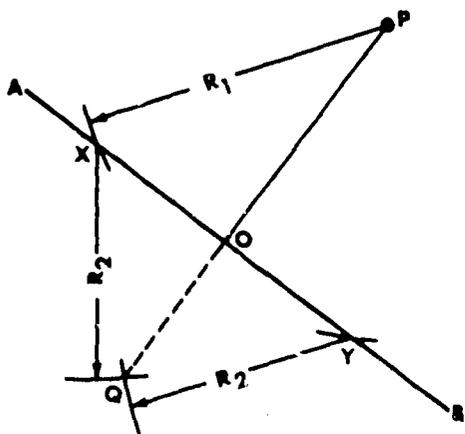


Figure 6-22. Erecting a perpendicular to a line from a given point with a compass and straightedge.

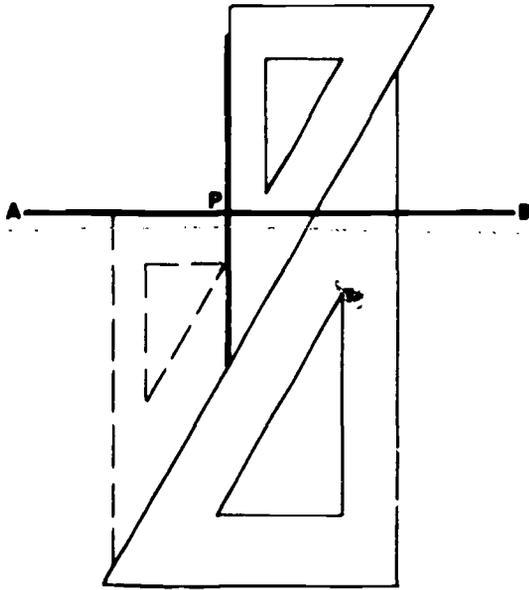


Figure 6-25. Erecting a perpendicular to a line at a given point on the line using a triangle.

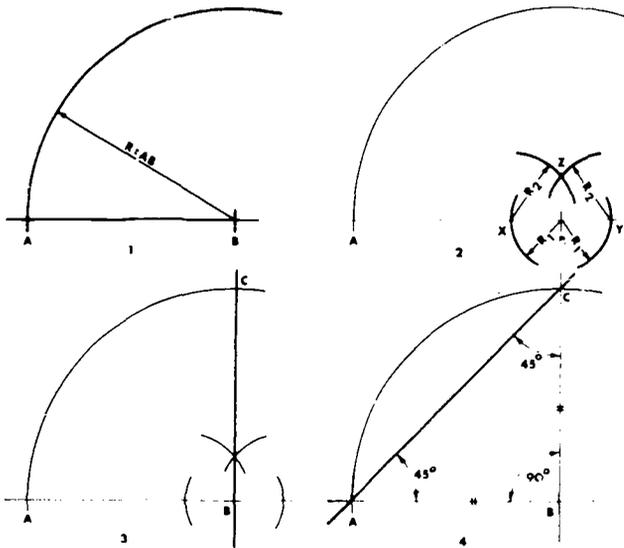


Figure 6-26. Constructing an angle of 45° with a compass and straightedge.

slightly greater than a semicircle establishing point Q on the given line. Extend a line from point Q through point O , intersecting the arc at point C .

c. Connect points P and C , forming the required perpendicular.

6-25. Erecting a Perpendicular to a Line at a Given Point on the Line Using a Triangle

Set a 30° to 60° triangle so that its short side coincides with line AB (fig. 6-25). Place a second triangle against the hypotenuse of the first. Then hold the second triangle firmly and slide the first triangle upward until its vertical edge rests on point P .

6-26. Constructing an Angle of 45° With a Compass and Straightedge

For large construction or when great accuracy is needed, the method of equal legs (fig. 6-26) can be used as described below.

a. With any distance AB on the given line, with the center at B and radius AB draw an arc of more than a quarter circle.

b. Erect a perpendicular to line AB at B .

c. The intersection of the arc and perpendicular is point C .

d. Form a triangle by drawing a line connecting points A and C . The angles at A and C are 45° . The three angles of a triangle total 180° , the perpendicular forms a right angle which is 90° , and equal legs of a triangle form equal angles

6-27. Laying Out Angles With a Compass and Straightedge

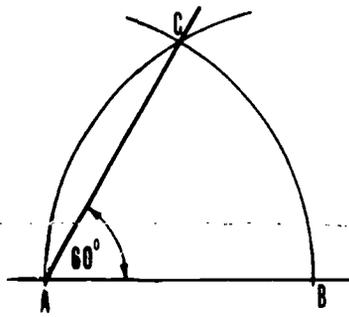
Angles in multiples of 30° may be needed for large constructions, and when great accuracy is required the following method can be used (fig. 6-27). On a given line, with radius AB , swing an arc with A as center. With the same radius and B as center, cut the original arc at C . The included angle CAB is 60° , and by bisection (para 6-28) 30° is obtained. For 120° , radius AB is laid off from A and C to D , the line AD is drawn, and the angle DAB is 120° . By bisecting angle DAC , angle FAB is 90° .

6-28. Bisecting an Angle

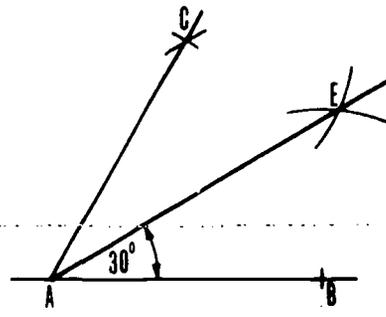
With point O , the apex of the given angle AB , as a center and with radius R_1 of any convenient length, draw an arc intersecting both sides of the angle (fig. 6-28). With the points of intersection A and B thus formed as centers and with radius R_2 of any convenient length, draw arcs intersecting at point P . Connect points P and O , bisecting the given angle. Repeating this method will divide the angle into 4, 8, 16, 32, and so on.

6-29. Dividing an Angle Into Any Number of Equal Parts

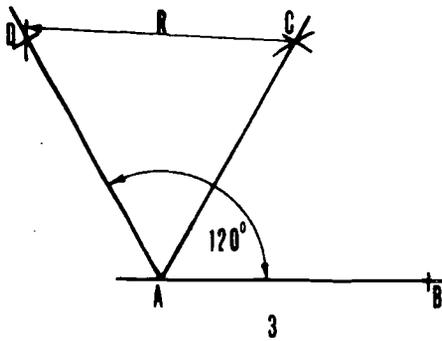
Swing an arc of any convenient radius intersecting AB and AC (fig. 6-29). With dividers, divide the arc into required number of segments. This method is done by trial and error, and is time consuming. Lines drawn from A through these points will divide the angle into the required number of segments. Another method is to divide the number of degrees by the number of divisions desired. For example to divide a 45° angle into 5



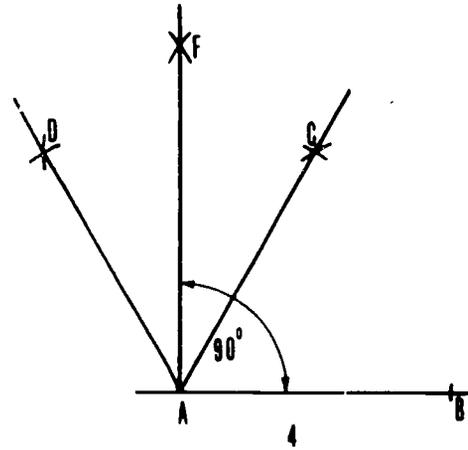
1



2



3



4

Figure 6-27. Laying out angles with a compass and straightedge.

equal parts, $45 \div 5 = 9^\circ$. Use a protractor and set off 9 degrees 5 times.

6-30. Constructing an Angle Equal to a Given Angle

Draw a line DX of convenient length as one side of the angle to be constructed. With point A as a center and any convenient radius R_1 strike an arc intersecting both sides of the given angle A at points B and C (fig. 6-30). With point D as center and the same radius R_1 strike an arc of convenient length, intersecting the line DX at point E . Set compass to the radius R_2 equal to the chord BC , and with point E as the center strike an arc which intersects first arc at point F . Draw line DF , making angle D equal to angle A .

6-31. Constructing an Equilateral Triangle Given One Side Using a Compass and Straightedge

With side AB as a radius and centers at A and B , strike arcs intersecting at C . Draw AC and BC

forming equilateral triangle ABC (1, fig. 6-31). The geometric center can be found by drawing arcs with A and B as centers and radius AB . These will intersect at C . With center at C and radius AB strike arcs to locate points X and Y . Then draw BX and AY which will intersect at O , the geometric center (2, fig. 6-31).

6-32. Constructing an Equilateral Triangle Given One Side, Using a T-Square and Triangle

Draw line AB . Construct 60° angles at points A and B . The radiating lines will intersect at point C forming an equilateral triangle (fig. 6-32). Construct 30° angles with construction lines at points A and B . The lines will intersect at point O locating the geometric center.

6-33. Constructing an Isosceles Triangle Given Base and One Side

With side AC as a radius and centers A and B , strike arcs intersecting at C . Draw AC and BC forming isosceles triangle ABC (fig. 6-33).

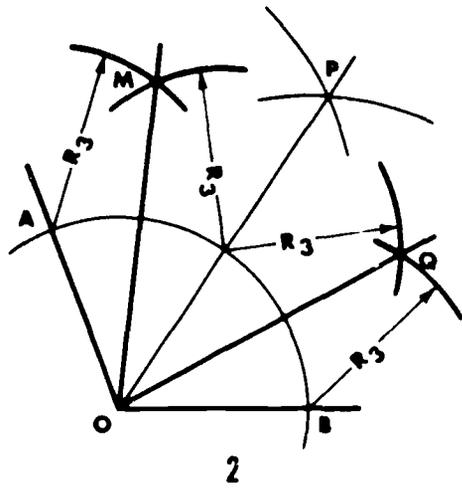
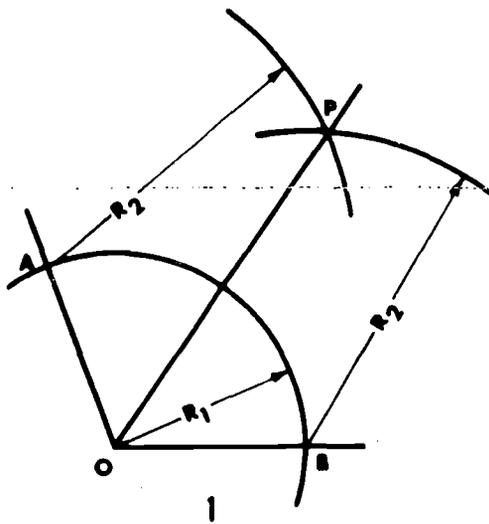


Figure 6-28. Bisecting an angle.

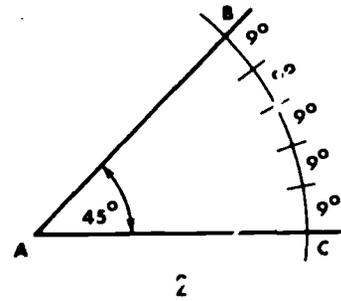
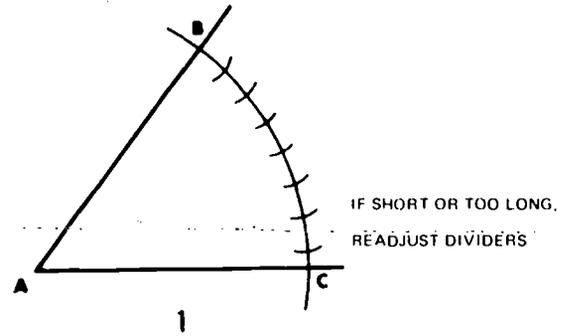


Figure 6-29. Dividing an angle into any number of equal parts.

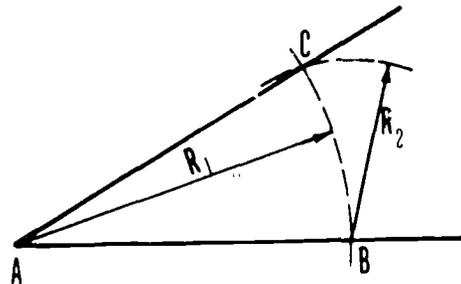


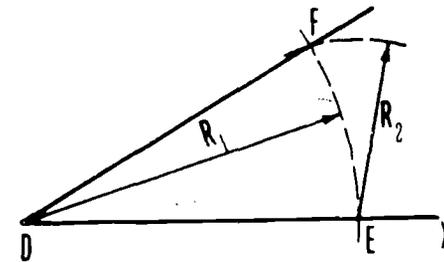
Figure 6-30. Constructing an angle equal to a given angle.

6-34. Constructing a Scalene Triangle Given Three Sides

Given sides A , B , and C , draw one side (2, fig. 6-34). Strike two arcs from the ends of line A with radii one equal to B , and one equal to C . Draw sides C and B from intersection of arcs and the ends of side A .

6-35. Drawing a Right Triangle When Hypotenuse and One Side are Given

Draw a line AB equal to the length of the hypotenuse, bisect it to find point O . With point O as the center and half the length of the hypotenuse as the radius, strike an arc (2, fig. 6-35). With one end of the hypotenuse as the center and the length of the given side AC as the radius, strike



an arc intersecting the first arc (3, fig. 6-35). Connect the intersection of the arcs to the ends of the hypotenuse (4, fig. 6-35).

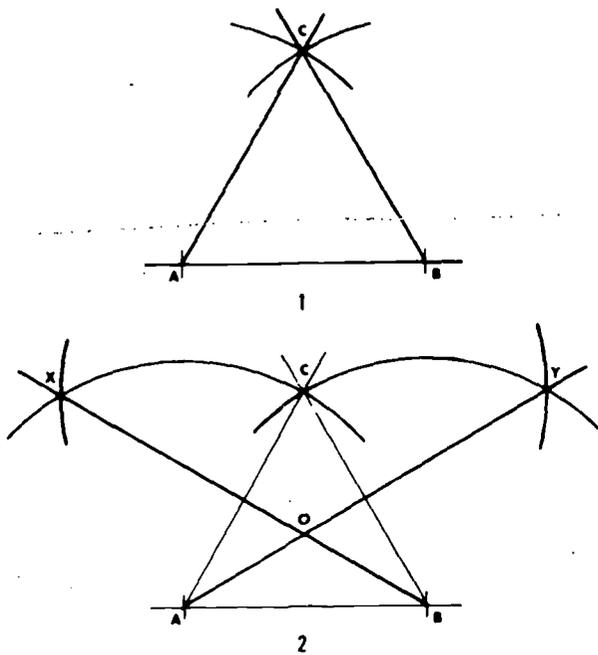


Figure 6-31. Constructing an equilateral triangle given one side, using a compass and straightedge.

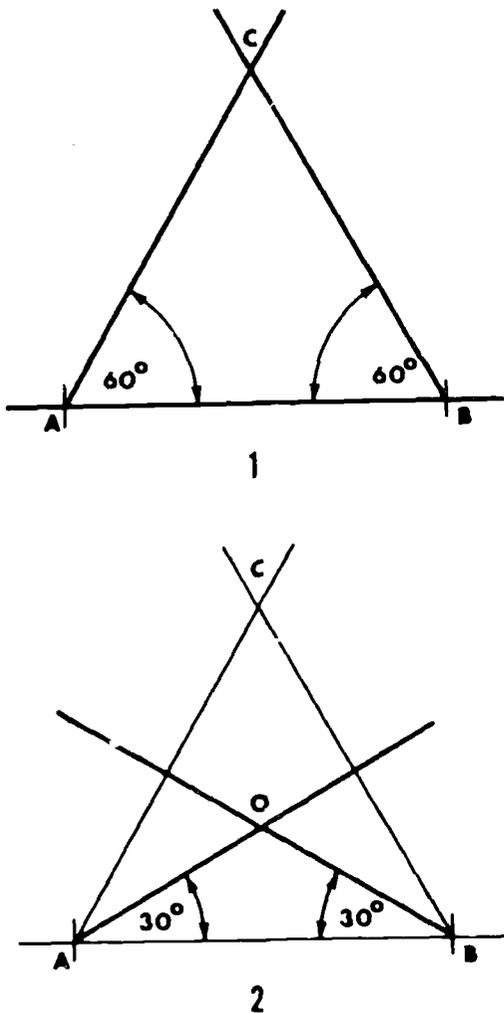


Figure 6-32. Constructing an equilateral triangle given one side, using a T-square and triangle.

6-36. Drawing a Square Given One Side, Using a Compass and Straightedge

- Draw a given side AB . Through point A , construct a perpendicular (1, fig. 6-36).
- With A as center and AB as radius, draw the arc to intersect the perpendicular at C (2, fig. 6-36).
- With B and C as centers, and AB as radius, strike arcs to intersect at D (3, fig. 6-36).
- Draw lines CD and BD (4, fig. 6-36), completing the square.

6-37. Drawing a Square Given One Side, Using a T-Square and Triangle

- Draw the given side AB . Using the T-square and 45° angle triangle, draw lines AC and BD perpendicular to line AB (1, fig. 6-37).
- Draw lines AD and BC at 45° angles to line AB (2, fig. 6-37).
- Draw line CD with T-square (3, fig. 6-37), completing the square.

6-38. Drawing a Square With the Distance Across the Corners Given

- Draw a circle with a radius of half the distance "across the corners" (2, fig. 6-38). The distance "across the corners" is distance measured along the diagonal from opposite corners.
- Draw two diameters at right angles to each other. The intersection of these diameters with the circle are the vertexes of the inscribed square (3, fig. 6-38), connecting the vertexes completes the square.

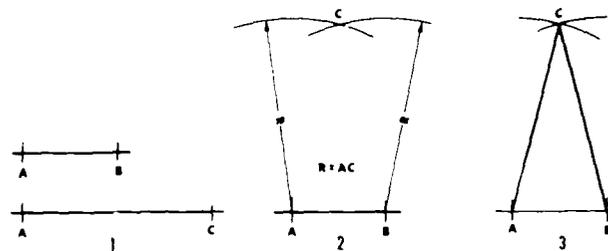


Figure 6-33. Constructing an isosceles triangle given the base and one side.

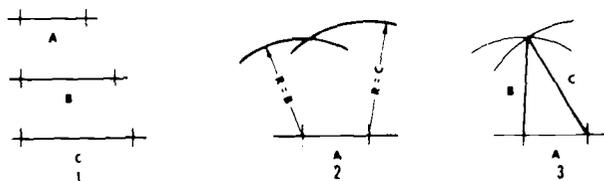


Figure 6-34. Constructing a scalene triangle given three sides.

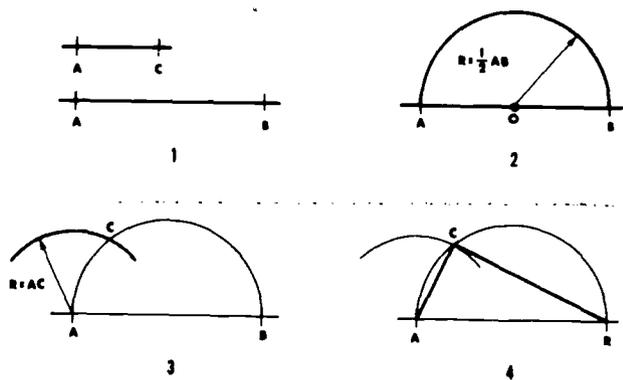


Figure 6-35. Drawing a right triangle when the hypotenuse and one side are given.

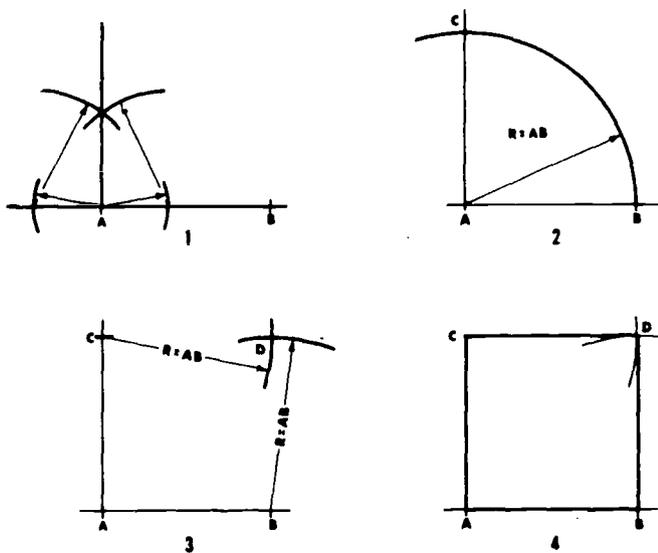


Figure 6-36. Drawing a square given one side, using a compass and straightedge.

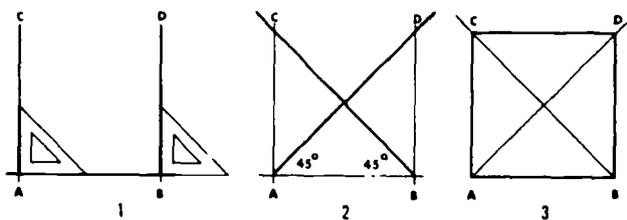


Figure 6-37. Drawing a square given one side, using a T-square and triangle.

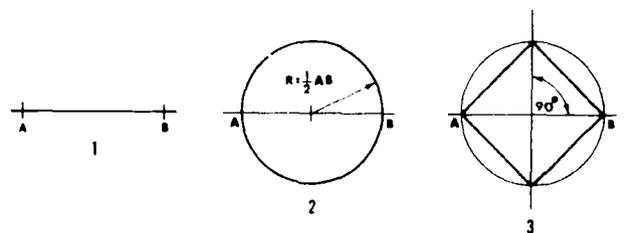


Figure 6-38. Drawing a square with the distance across the corners given.

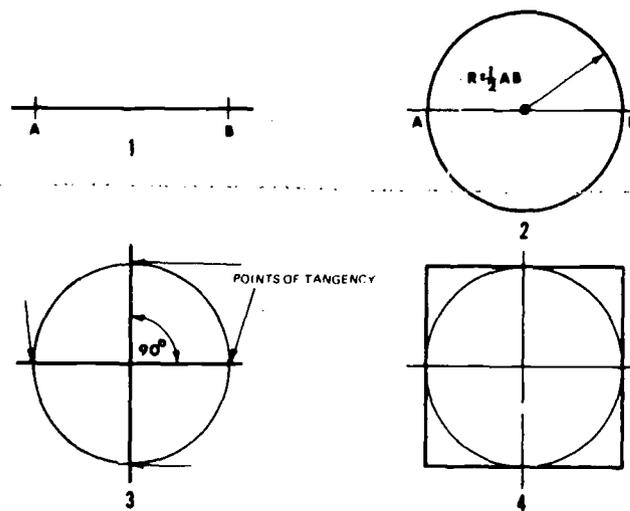


Figure 6-39. Drawing a square with the distance across the flats given.

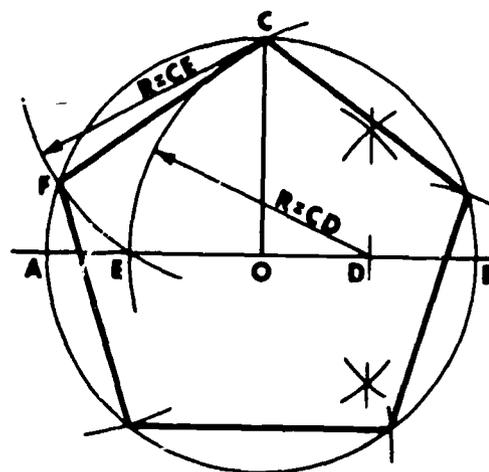


Figure 6-40. Drawing a pentagon inscribed in a given circle with a compass and straightedge.

6-39. Drawing a Square With the Distance Across the Flats Given

a. Draw a circle with a radius of half the distance "across the flats" (2, fig. 6-39). The distance "across the flats" is the distance measured from the center of one side to the center of the opposite side.

b. Draw 2 diameters perpendicular to each other to locate the points of tangency (3, fig. 6-39).

c. Using the T-square and 45° triangle, draw the four sides tangent to the circle (4, fig. 6-39), completing the square.

6-40. Drawing a Pentagon Inscribed in a Given Circle With a Compass and Straightedge

Draw a diameter (AB) of the given circle (fig.

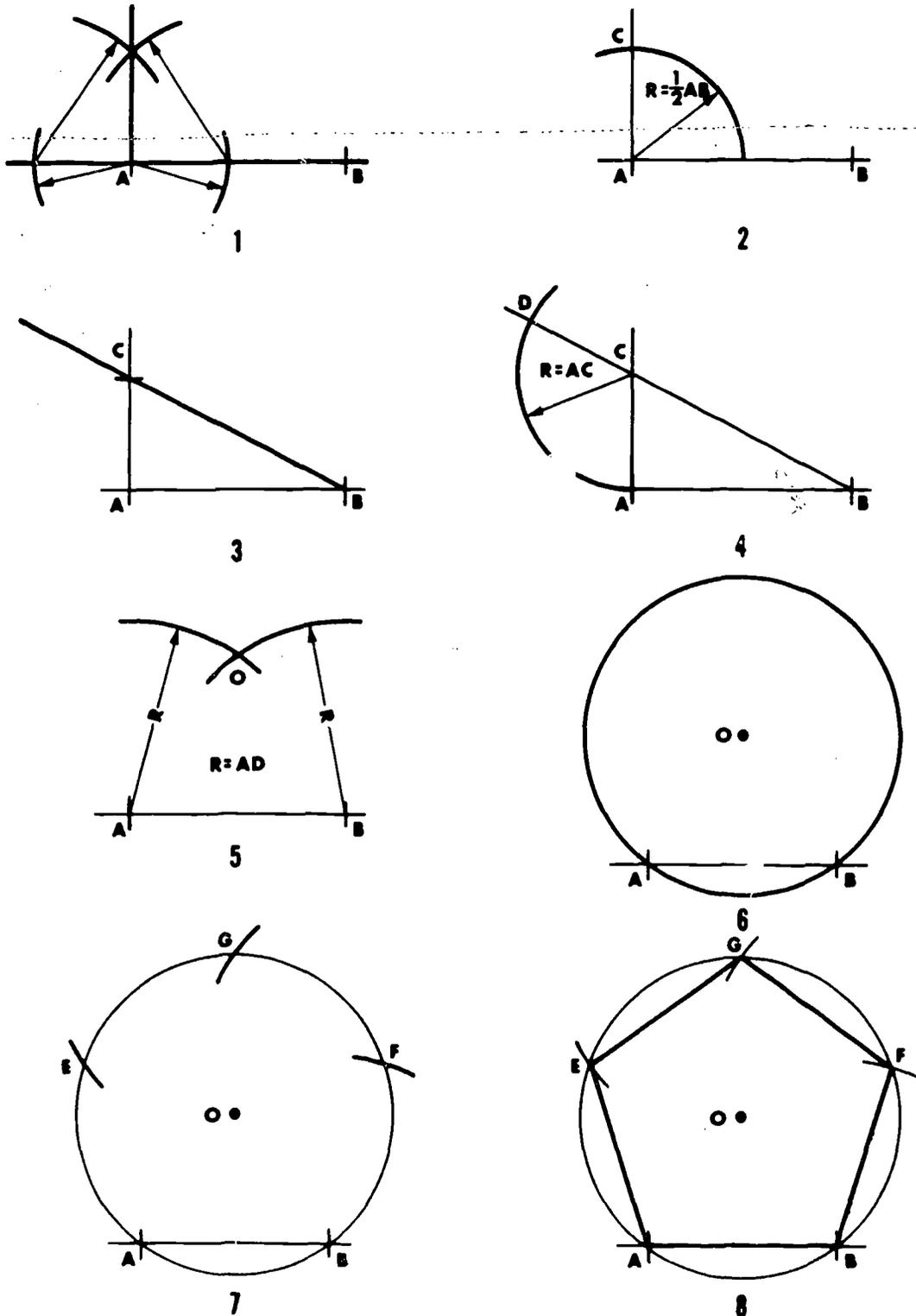


Figure 6-41. Drawing a regular pentagon given one side.

6-40). Draw radius OC perpendicular to the diameter AB . Bisect line OB at point D . With point D as a center and using CD as a radius, draw an arc intersecting the diameter at point E . With point C as a center and using CE as a radius,

draw an arc intersecting the circle at point F . Draw line CF , thus forming one side of the required pentagon. Using the compass, step off distance CF around the circle. Connect the points thus formed to complete the required pentagon.

6-41. Drawing a Regular Pentagon Given One Side Using a Compass and Straightedge

- Draw the given side, line AB . Construct a perpendicular at A (1, fig. 6-41).
- With a radius of $\frac{1}{2} AB$, and A as the center, locate point C (2, fig. 6-41).
- Draw line BC and extend it beyond C (3, fig. 6-41).
- With a radius of AC , and C as the center, locate point D (4, fig. 6-41).
- With radius AD and centers A and B , draw arcs to intersect at O (5, fig. 6-41).
- With the same radius AD and center O draw a circle (6, fig. 6-41).
- Step off AB as a chord to locate points E, F , and G (7, fig. 6-41).
- Connect the points to complete the pentagon (8, fig. 6-41).

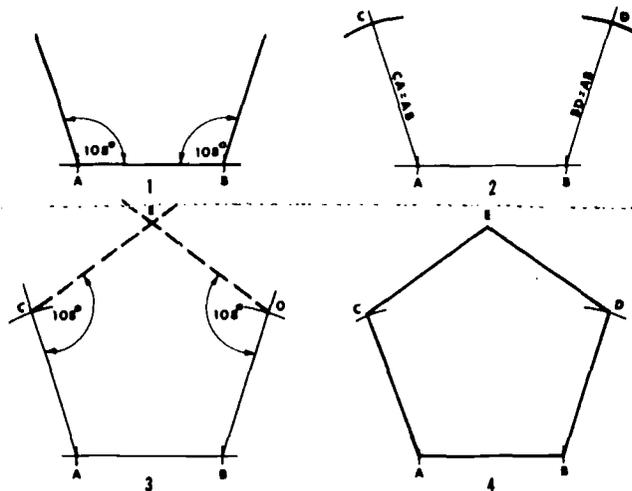
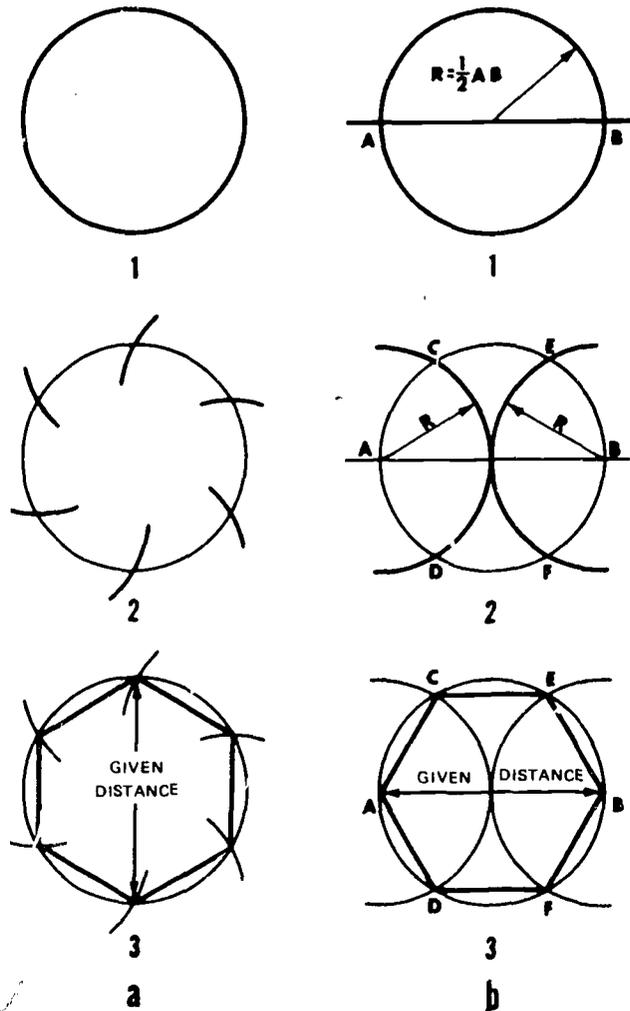


Figure 6-42. Drawing a pentagon given one side using a protractor and straightedge.

6-42. Drawing a Pentagon Given One Side Using a Protractor and Straightedge

- Draw the given side AB , and draw angles of 108° at points A and B (1, fig. 6-42).
- Mark off given side AB to locate points C and D (2, fig. 6-42).
- Measure an angle of 108° at points C and D to locate point E . Connect lines CE and DE (3, fig. 6-42), forming the pentagon.



6-43. Drawing a Hexagon Given the Distance Across the Corners

- With Compass and Straightedge.* Set the compass with radius half the distance given across corners (diameter), and draw the circumscribed circle (a, fig. 6-43). Each side of a hexagon is equal to the radius of the circumscribed circle. Therefore using the compass set at the distance of the radius of the circle, set off the six sides of the hexagon around the circle, and connect the points with straight lines.
- With Compass, T-Square and Triangle—Method One.* Draw a circle with radius $\frac{1}{2}$ the given distance across corners (b, fig. 6-43). With the same radius, and centers A and B , draw arcs to intersect the circle at C, D, E , and F . Complete the hexagon as shown.

Figure 6-43. Drawing a hexagon given the distance across the corners.

- With Compass, T-Square and Triangle—Method Two.* Draw given circumscribed circle with vertical and horizontal center lines (c, fig. 6-43). Then draw diagonals CF and DE at 60° or 30° with horizontal; then with 30° to 60° triangle and T-square, draw the six sides as shown.

6-43). Then draw diagonals CF and DE at 60° or 30° with horizontal; then with 30° to 60° triangle and T-square, draw the six sides as shown.

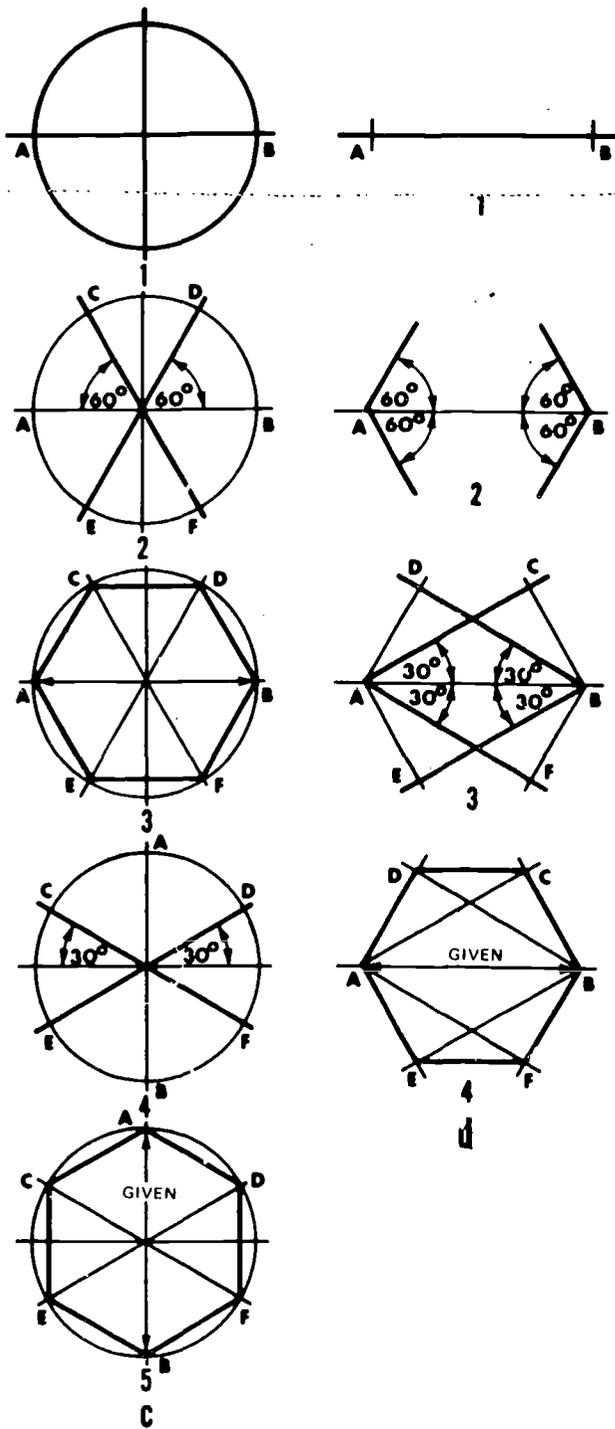


Figure 6-43—Continued

d. *With T-Square and Triangle.* Draw given distance across corners, then draw lines with 30° to 60° triangle as shown (d, fig. 6-43). Complete the hexagon as shown.

6-44. Drawing a Hexagon Given the Distance Across the Flats

a. *With Compass and Straightedge.* Find the midpoint O of given distance AB (a, fig. 6-44). With point O as center and OB as the radius,

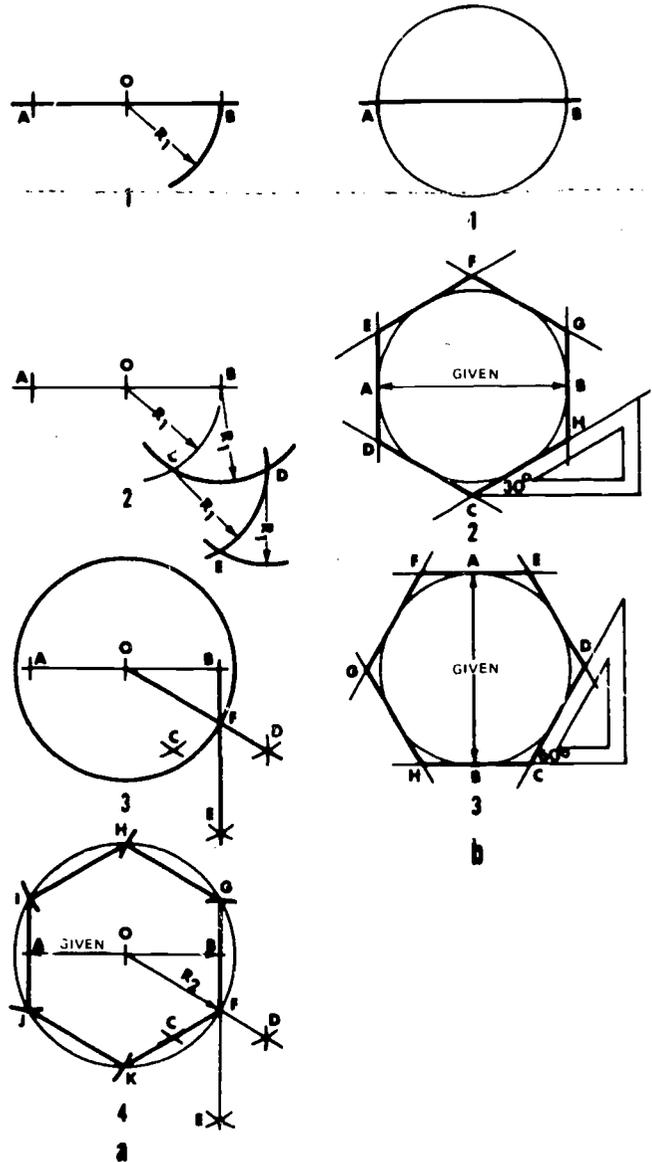


Figure 6-44. Drawing a hexagon given the distance across the flats.

strike arc of at least 60° from point B in a clockwise direction. With point B as center and with the same radius, strike arc intersecting the first arc at point C and extending at least 60° in a counterclockwise direction. With point C as a center and the same radius, strike an arc intersecting the second arc at point D and extending at least 60° in a clockwise direction. With point D as a center and the same radius strike an arc intersecting the third arc at point E . Draw lines BE and OD intersecting at point F . With point O as a center and $OF = R_2$ as the radius, draw a complete circle. Starting at point F and the radius R_2 , step off points $G, H, I, J,$ and K . Connect points $F, G, H, I, J,$ and K to complete the hexagon.

b. *With Compass, T-Square, and Triangle.* The distance across flats is the diameter of the in-

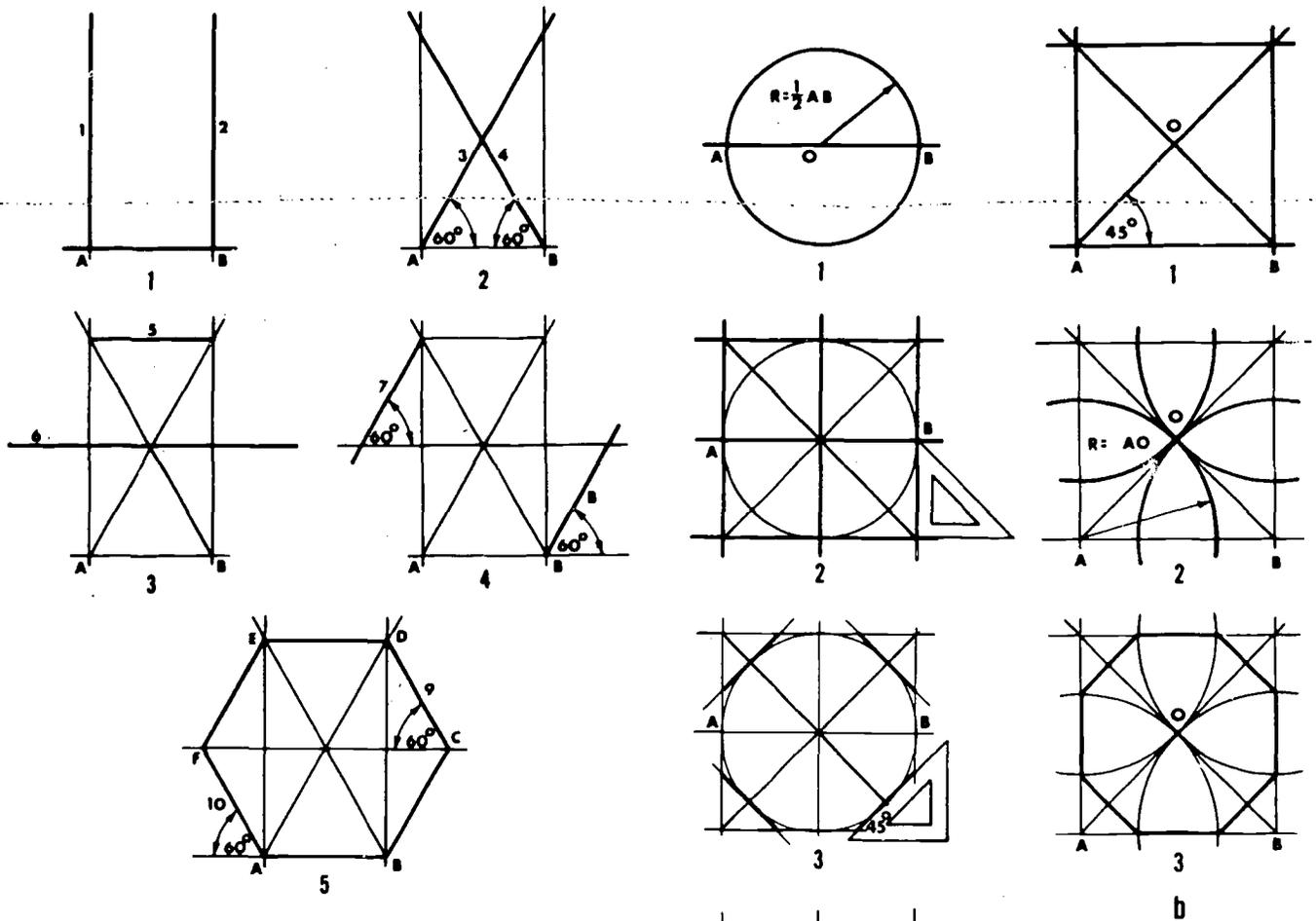


Figure 6-45. Drawing a hexagon given one side.

scribed circle. Draw the circle and using the 30° to 60° triangle draw the tangents to the circle as shown (b, Fig. 6-44).

6-45. Drawing a Hexagon Given One Side

Draw given side AB (fig. 6-45), and then draw construction lines 1 thru 6 as shown. Complete the hexagon by darkening lines 5, 7, 8, 9, 10 and given line.

6-46. Drawing an Octagon Given the Distance Across the Flats

a. *Inscribed Circle Method.* Draw a circle with radius equal to $\frac{1}{2} AB$ (given distance). Using the T-square and a 45° triangle, draw the eight sides tangent to the circle as shown in a, figure 6-46.

b. *Circumscribed Square Method.* Construct a square using the given distance as a base and draw the diagonals of the square (b, fig. 6-46). Then using a radius equal to half the diagonal distance and the corners of the square as centers, draw arcs cutting the sides. Complete the octagon as shown.

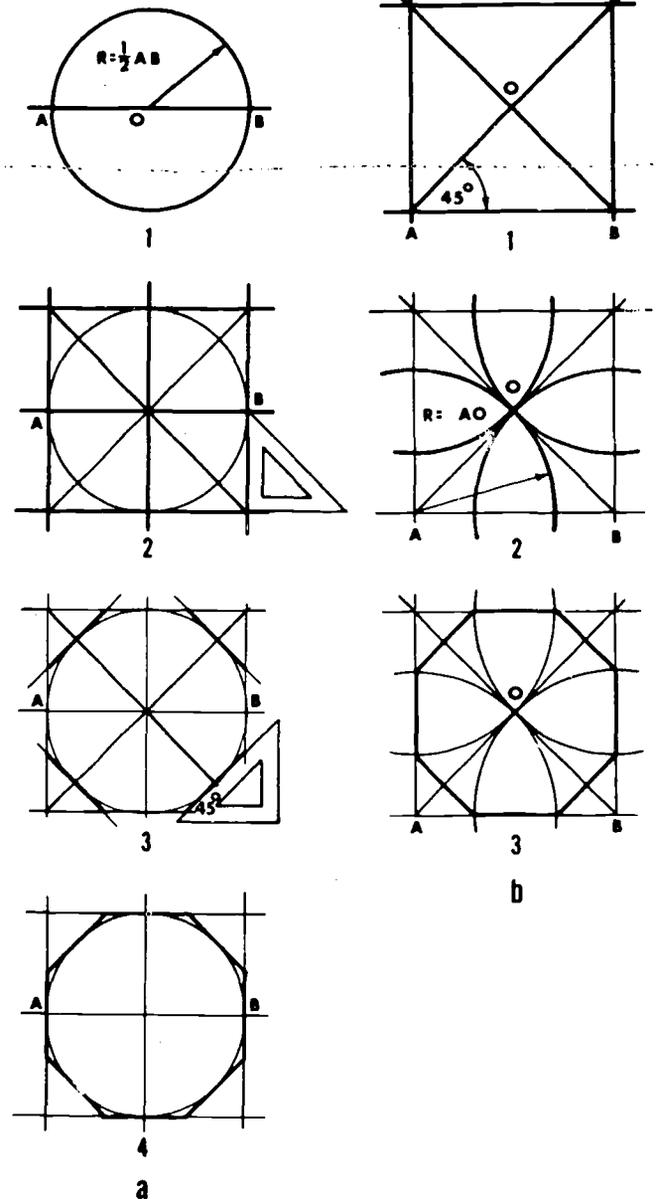


Figure 6-46. Drawing an octagon given the distance across the flats.

6-47. Drawing an Octagon Given One Side

Draw given side AB (fig. 6-47). At points A and B , draw lines outward with a 45° triangle as shown. Strike two arcs with centers at A and B using a radius equal to the distance of the given side. Draw vertical lines upward at points C and D . Mark off the given distance along verticals to locate points E and F . Draw lines inward with a 45° triangle as shown from points E and F . Mark off given distance to locate points G and H . Complete by drawing in line GH .

6-48. Drawing any Regular Polygon Given One Side

a. Draw given side AB (fig. 6-48).

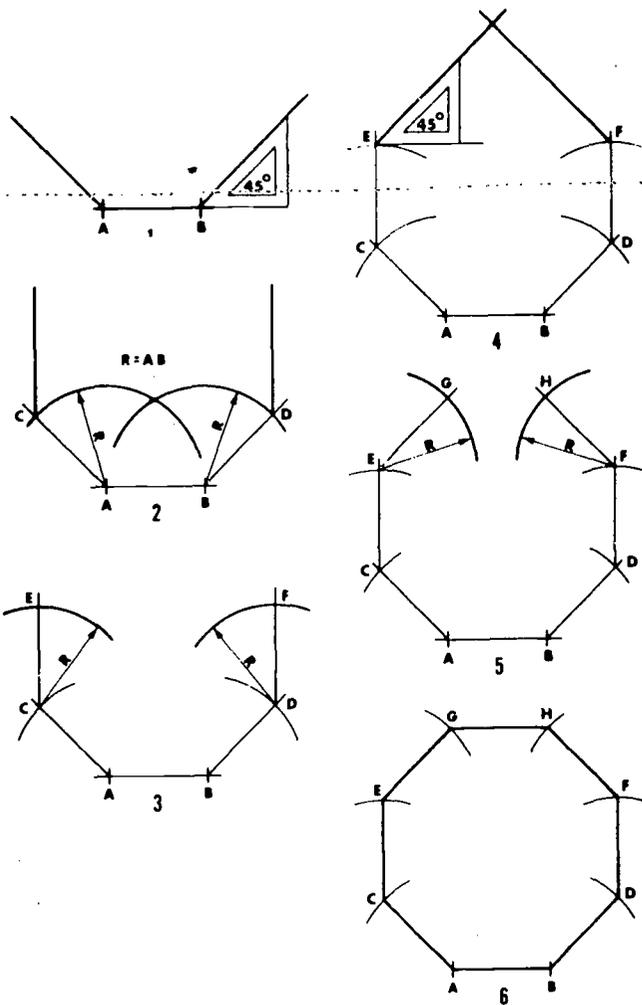


Figure 6-47. Drawing an octagon given one side.

b. With A as center and AB as the radius, draw a semicircle as shown.

c. Divide this semicircle (180°) equally into the number of required sides. For a heptagon, divide into 7 equal parts and draw radial lines from point A as shown. Darken radial line $A-2$. With AB as radius and B as center, cut line $A-6$ at C . With C as center and the same radius, cut $A-5$ at D and so on at E and F .

6-49. Drawing a Regular Polygon Given an Inscribing Circle

a. Draw the circle and divide (fig. 6-49) its diameter into the specified number of equal parts (para 6-16 or 6-17).

b. With ends of the diameter A and B as centers and a radius equal to the diameter AB , draw two arcs intersecting at C .

c. From point C draw a line thru the second division point of the diameter until it crosses the circle at point D .

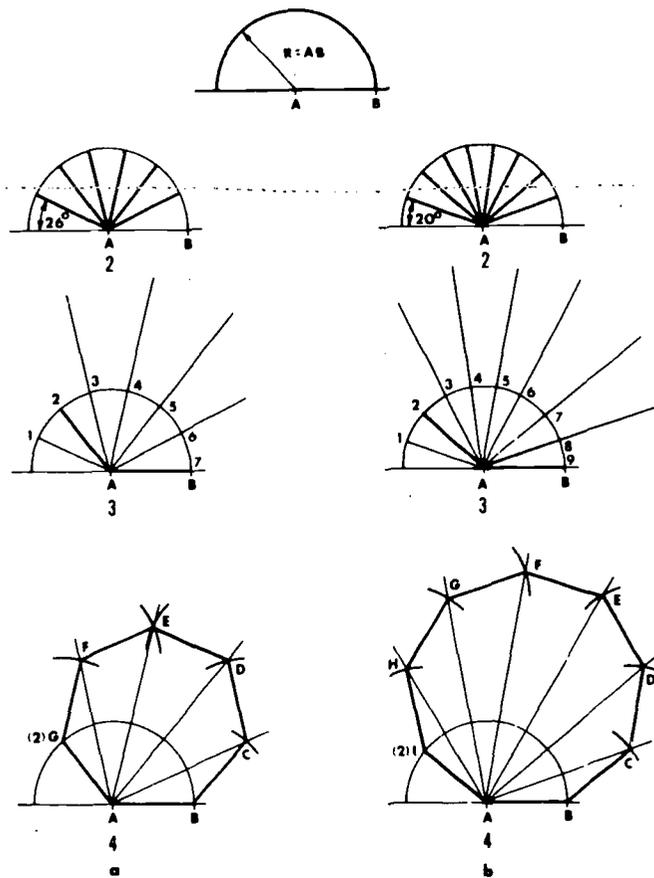


Figure 6-48. Drawing any regular polygon given one side.

d. The chord AD is one side of the polygon. Step off the distance AD around the circle to complete the polygon.

6-50. The Use of the Diagonal

The diagonal can be used in many ways to save drafting time and simplify construction. For example:

a. it can be used to enlarge or reduce geometric shapes (1, fig. 6-50).

b. for drawing inscribed or circumscribed figures (2, fig. 6-50).

c. for locating the center of a rectangle (3, fig. 6-50).

6-51. Transferring a Plane Figure by Geometric Methods

a. *Triangulation.* To transfer a triangle, draw side AB in the new location (a, fig. 6-51). With the ends of the line as centers and the lengths of the other sides of the given triangle as radii, strike two arcs to intersect at C . Join C to A and B and complete the triangle. To transfer other

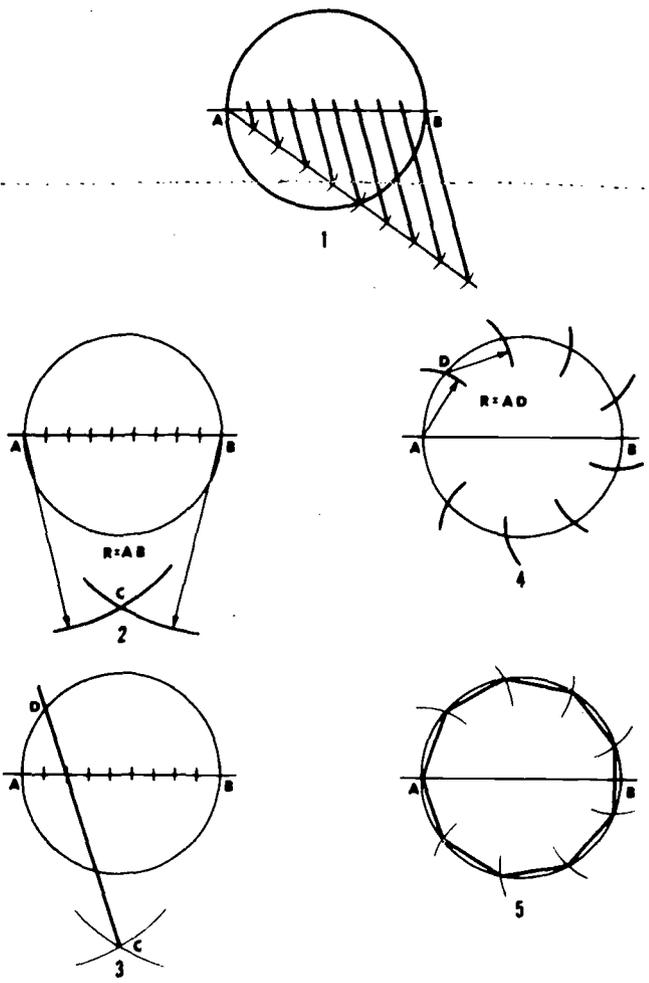


Figure 6-49. Drawing a regular polygon given an inscribing circle.

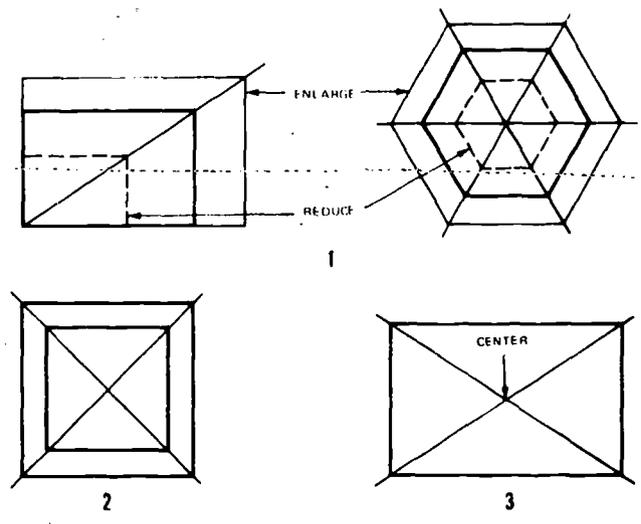


Figure 6-50. The use of the diagonal.

polygons, divide them into triangles (b, fig. 6-51) and transfer each triangle individually.

b. *Rectangle Method.* Circumscribe a rectangle about the given figure (c, fig. 6-51). Draw a congruent rectangle in the new location and locate the vertexes of the given figure along the sides of the new rectangle as shown.

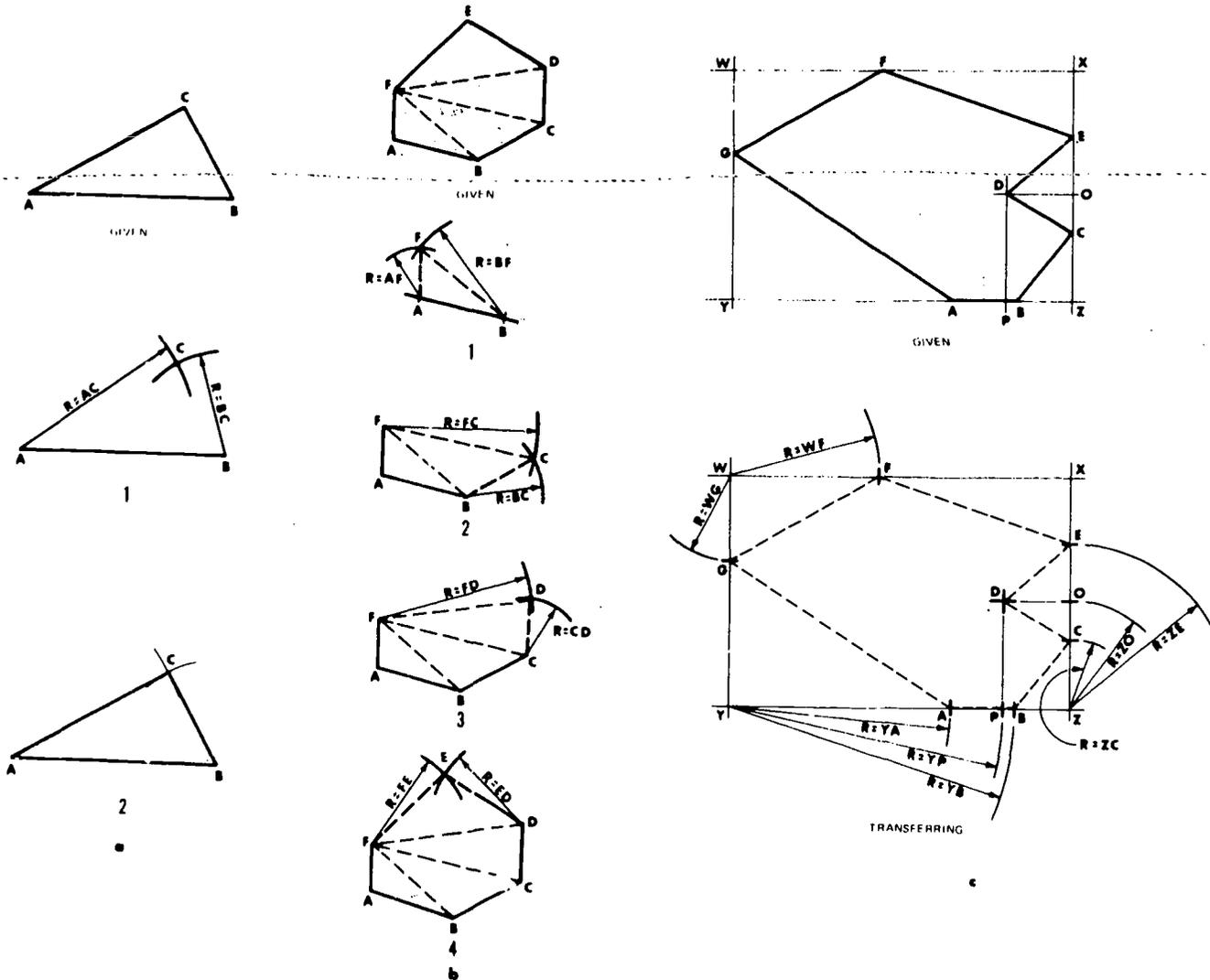


Figure 6-51. Transferring a plane figure by geometric methods.

Section III. CURVE LINE CONSTRUCTION

6-52. Bisecting an Arc

With points A and B as center and radius of any convenient length, strike arcs intersecting at points C and D (fig. 6-52). Draw a line connecting points C and D , locating point O , which is the midpoint of arc AB .

6-53. Locating Arc Centers

Select three points (A , B , and C on the arc or chord (fig. 6-53). Bisect arcs AB and BC ; their perpendicular bisectors will intersect at the arc centers (O).

6-54. Approximating the Length of an Arc

Given the arc AB (fig. 6-54). At A draw a tangent AD and a chord AB . Lay off AC equal to half the chord AB as shown. With center C and radius

CB , draw an arc intersecting AD at E . AE will very nearly be the length of the arc AB .

6-55. Laying Off an Arc the Approximate Length of a Given Straight Line

Given a line AB tangent to the arc at A (fig. 6-55). Lay off along AB the distance AC equal to $\frac{1}{4} AB$. With C as center and a radius CB , draw an arc intersecting the arc at D . The arc AD is very nearly equal to the length of AB .

6-56. Drawing an Arc Tangent

a. Given line AB , point P and radius R (a, fig. 6-56). Draw line DE parallel to the given line at a distance R . At P draw arc with radius R , intersecting line DE at C , the center of the required tangent arc.

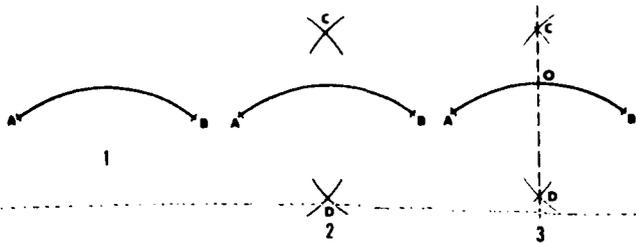


Figure 6-52. Bisecting an arc.

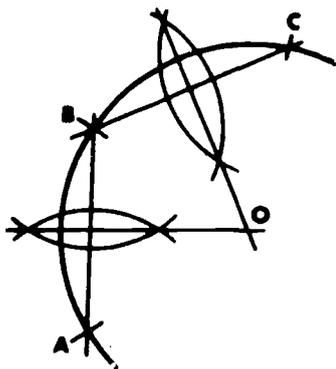


Figure 6-53. Locating arc centers.

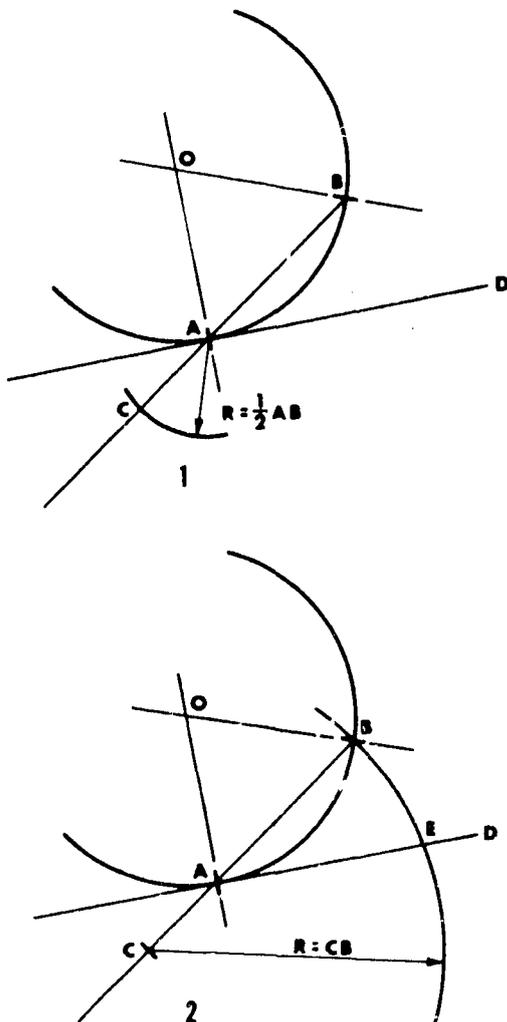


Figure 6-54. Approximating the length of an arc.

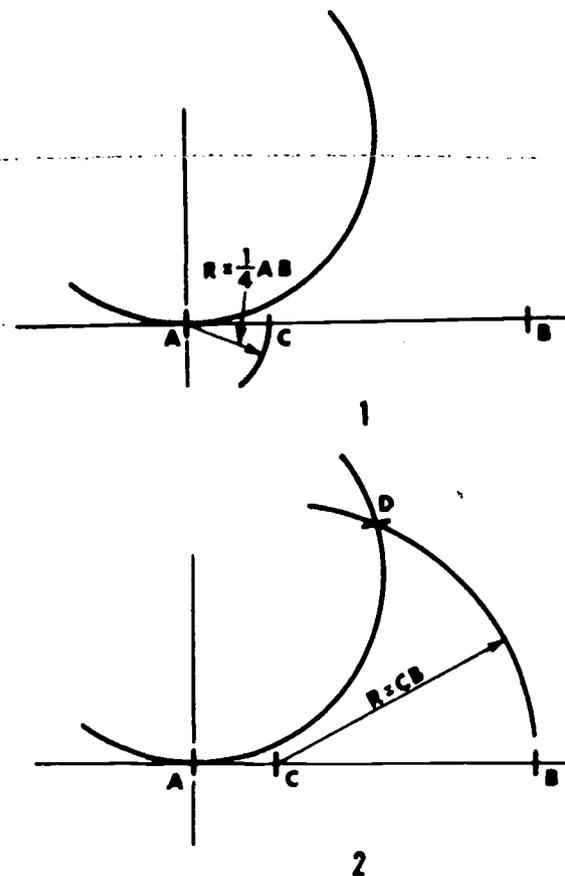


Figure 6-55. Laying off an arc the approximate length of a given straight line.

b. Given line AB , point P , and a tangent point Q on the given line; (b, fig. 6-56). Draw PQ which is a chord of the required arc and construct a perpendicular bisector DE . At Q erect a perpendicular to the given line to intersect line DE at C , the center of the required tangent arc.

c. Given arc with center O , point P , and radius R (c, fig. 6-56). From P strike arc with radius R . From O strike arc with radius equal to that of the given arc plus R . The intersection of the arcs, C , is the center of the required tangent arc.

6-57. Drawing a Tangent Arc to Perpendicular Lines

With given radius R , strike arc intersecting given lines at tangent points T (fig. 6-57). With given radius R and with points T as centers, strike arcs intersecting at C . With C as center and given radius R , draw required tangent arc.

6-58. Drawing Fillets and Rounds

For small radii such as $\frac{1}{8}$ inch R for fillets and rounds, it is not practicable to draw complete tan-

gency constructions. Instead draw a 45° bisector of the right angle (fig. 6-58) and locate the center of the arc by trial along this line as shown.

6-59. Drawing a Tangent Arc to Two Lines That are at Acute or Obtuse Angles

Draw lines parallel to the given lines at distance R , intersecting at C , the required center (a and b, fig. 6-59). From C drop perpendiculars to the given lines to locate points of tangency T . With C as center and with given radius R , draw required tangent arc between the points of tangency.

6-60. Drawing a Tangent Arc to an Arc and a Straight Line

a. Given an arc with radius R_1 , straight line AB , and radius R_2 (a and b, fig. 6-60).

b. Draw a straight line and an arc parallel respectively to the given straight line and the arc at the radius R_2 , to intersect at C , the required center.

c. From C drop perpendicular to given straight line to obtain one point of tangency. Join centers C and O with a straight line to locate the other point of tangency. With C as center and radius R_2 draw the arc.

6-61. Drawing an Arc of Given Radius, Tangent to Two Arcs

a. Given the radius R , of the arc tangent, and R_1 and R_2 the radii of the given arcs (a, fig. 6-61). With point O as a center and a radius equal to R plus R_2 , draw an arc. With point S as a center and a radius equal to R plus R_1 , draw an arc intersecting the first arc at point C . Join centers S and C , O and C , to locate points of tangency (T_1 and T_2). With point C as the center and the given radius R , construct the required arc tangent to the given arcs from point of tangency (T_1) to point of tangency (T_2).

b. Given the radius R of the arc tangent, and R_1 and R_2 the radii of the given arcs (b, fig. 6-61). With A and B as centers, strike arcs $R - R_1$ (the

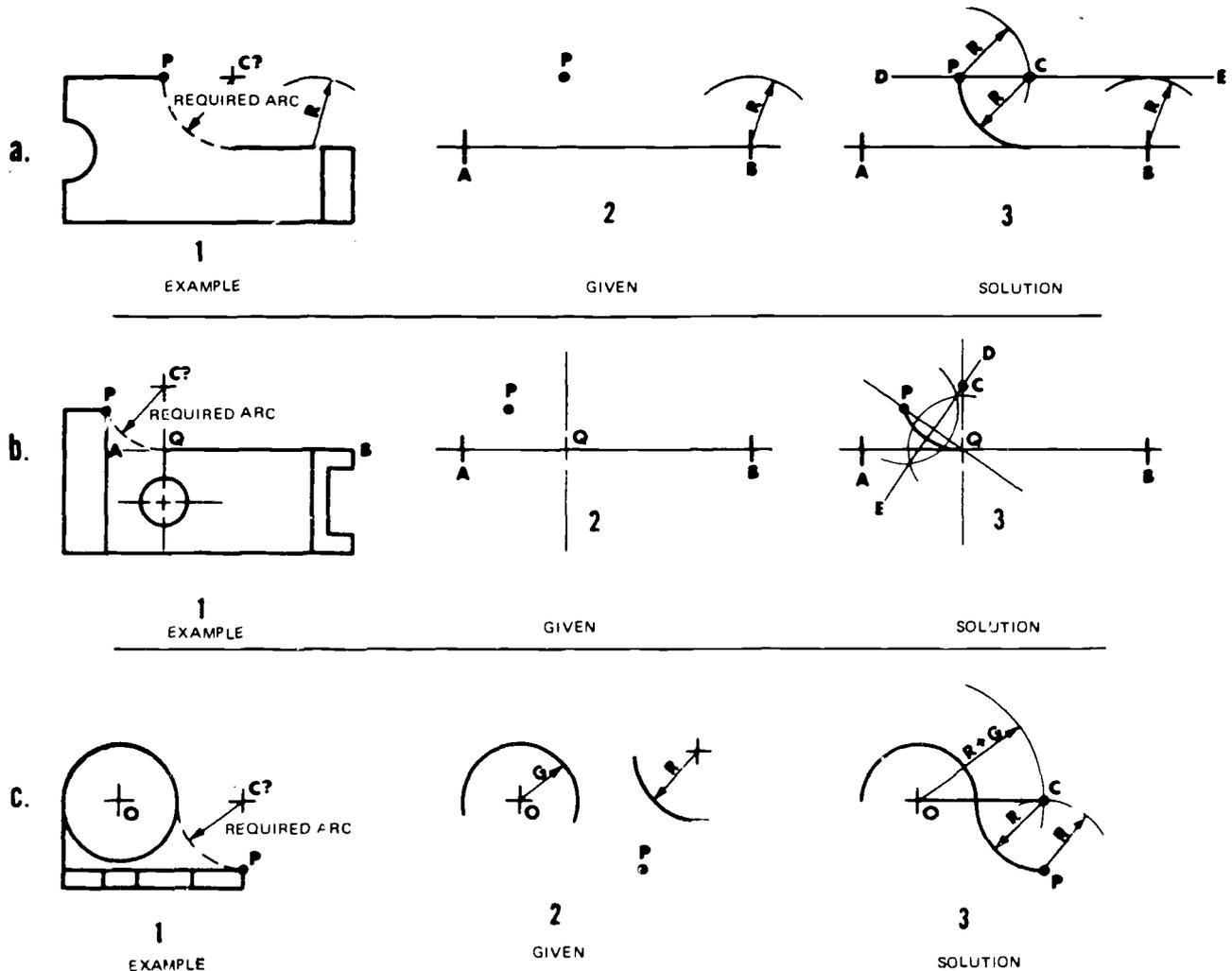


Figure 6-56. Drawing an arc tangent.

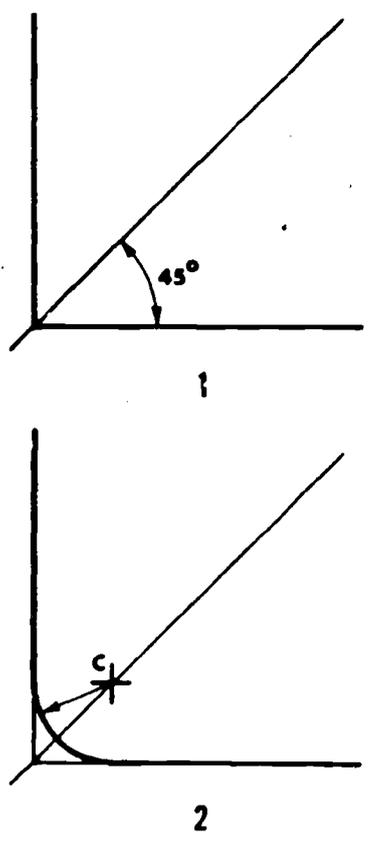
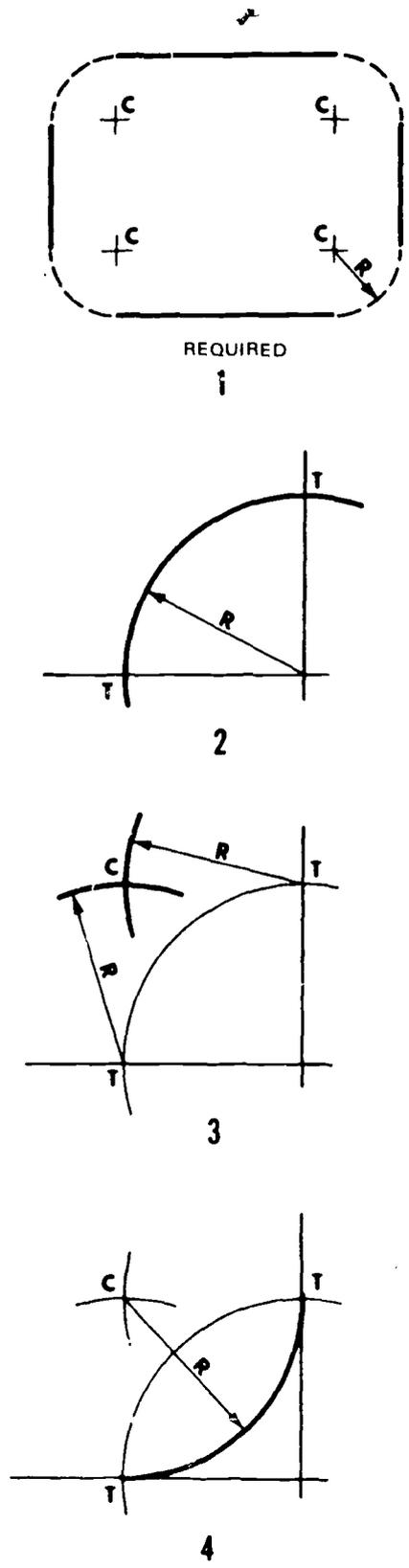


Figure 6-58. Drawing fillets and rounds.

given radius minus of small arc) and $R - R_2$ (given radius minus radius of large arc) intersecting at C , the center of the required tangent arc. Lines between centers CA and CB extended determine points of tangency, T . Draw required arc tangent from point of tangency (T_1) to point of tangency (T_2).

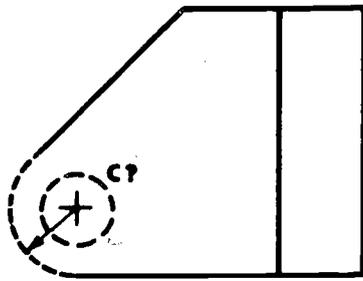
6-62. Drawing an Arc, Tangent to Two Arcs and Enclosing One

Given points P and Q , and radii R_1 , R_2 and R_3 (fig. 6-62). With point P and Q as centers, strike arcs $R_3 - R_2$ (given radius minus radius of small arc) and $R_3 + R_1$ (given radius plus radius of large arc) intersecting at C , the center of the required tangent arc. Lines between centers CP and CQ (extended) determine points of tangency, T .

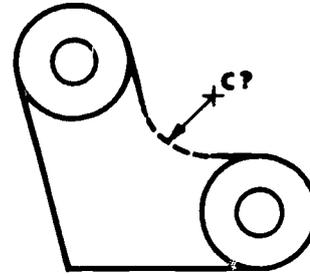
6-63. Drawing a Reverse Curve Between Two Lines

Let parallel lines AB and DC represent the given lines (fig. 6-63). Draw line AC intersecting the given lines at points A and C . Bisect the line AC locating point E . Erect perpendiculars from the given lines at points A and C . Bisect lines AE and EC , intersecting the perpendiculars at points F

Figure 6-57. Drawing an arc, tangent to perpendicular lines.



EXAMPLE



EXAMPLE

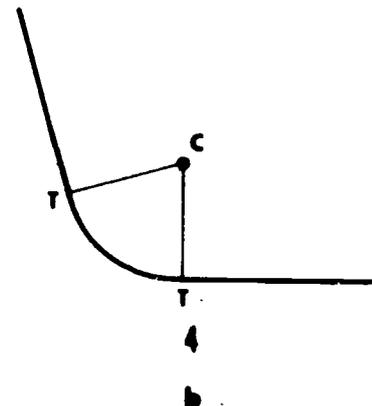
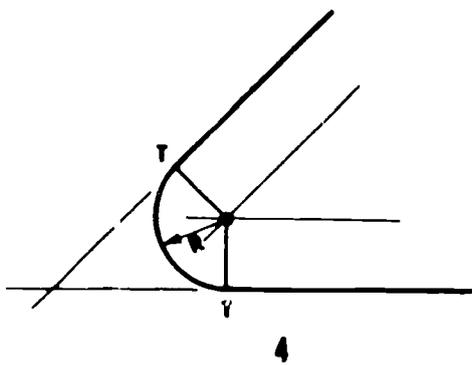
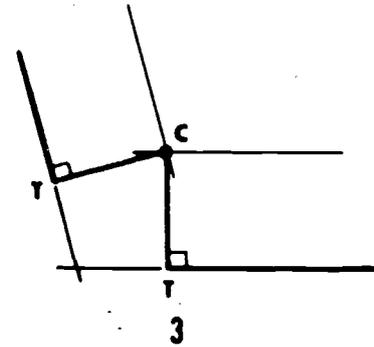
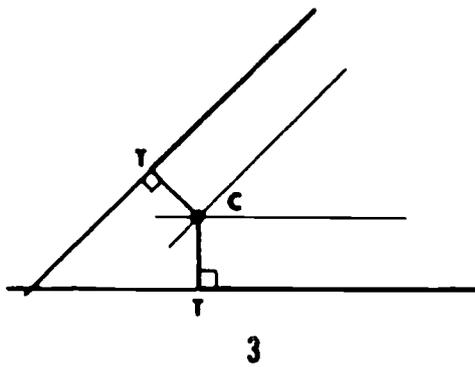
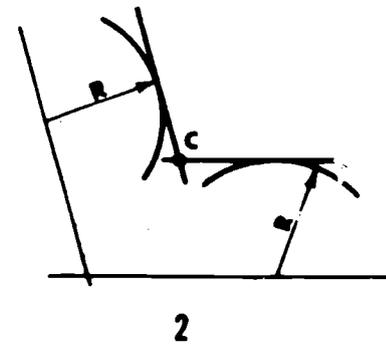
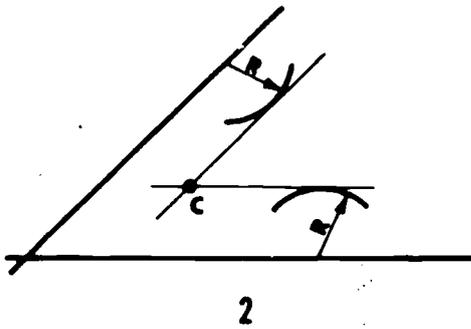
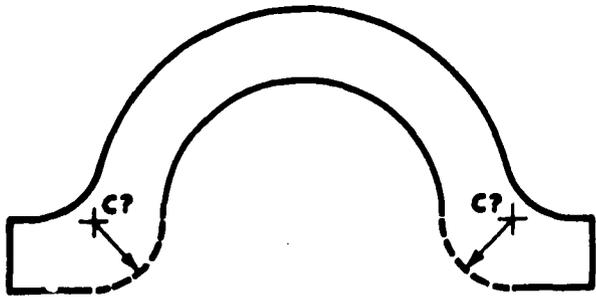
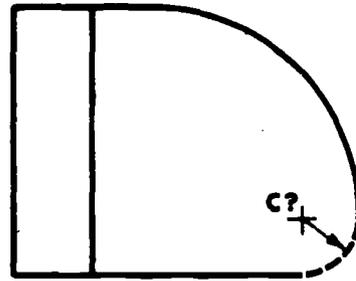


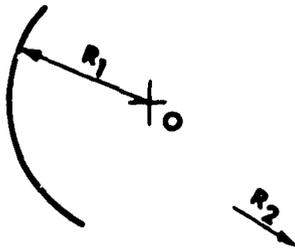
Figure 6-59. Drawing an arc, tangent to two lines that are at acute or obtuse angles.



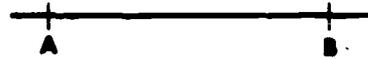
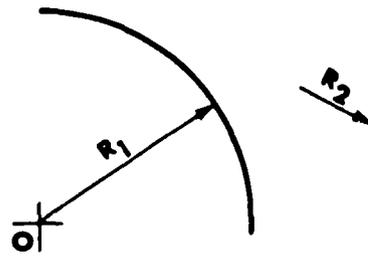
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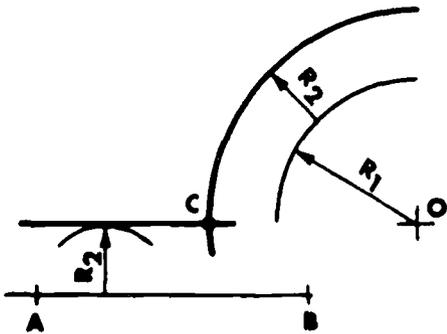
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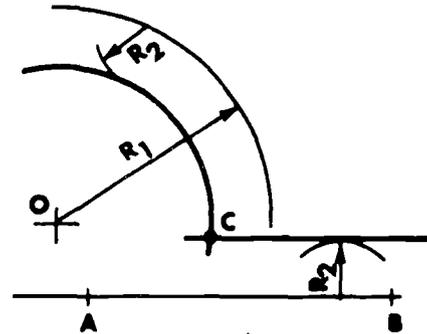
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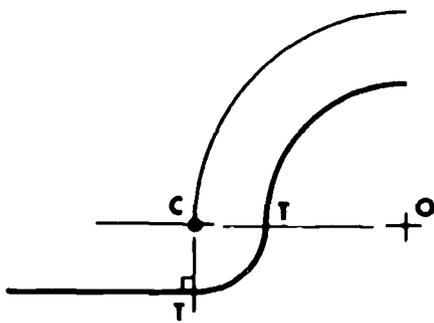
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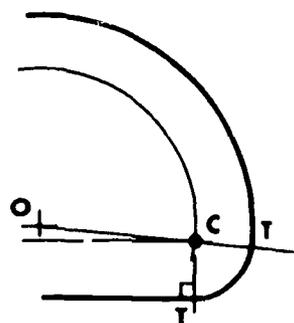


3



4

a



4

b

Figure 6-60. Drawing an arc, tangent to a circle, and a straight line.

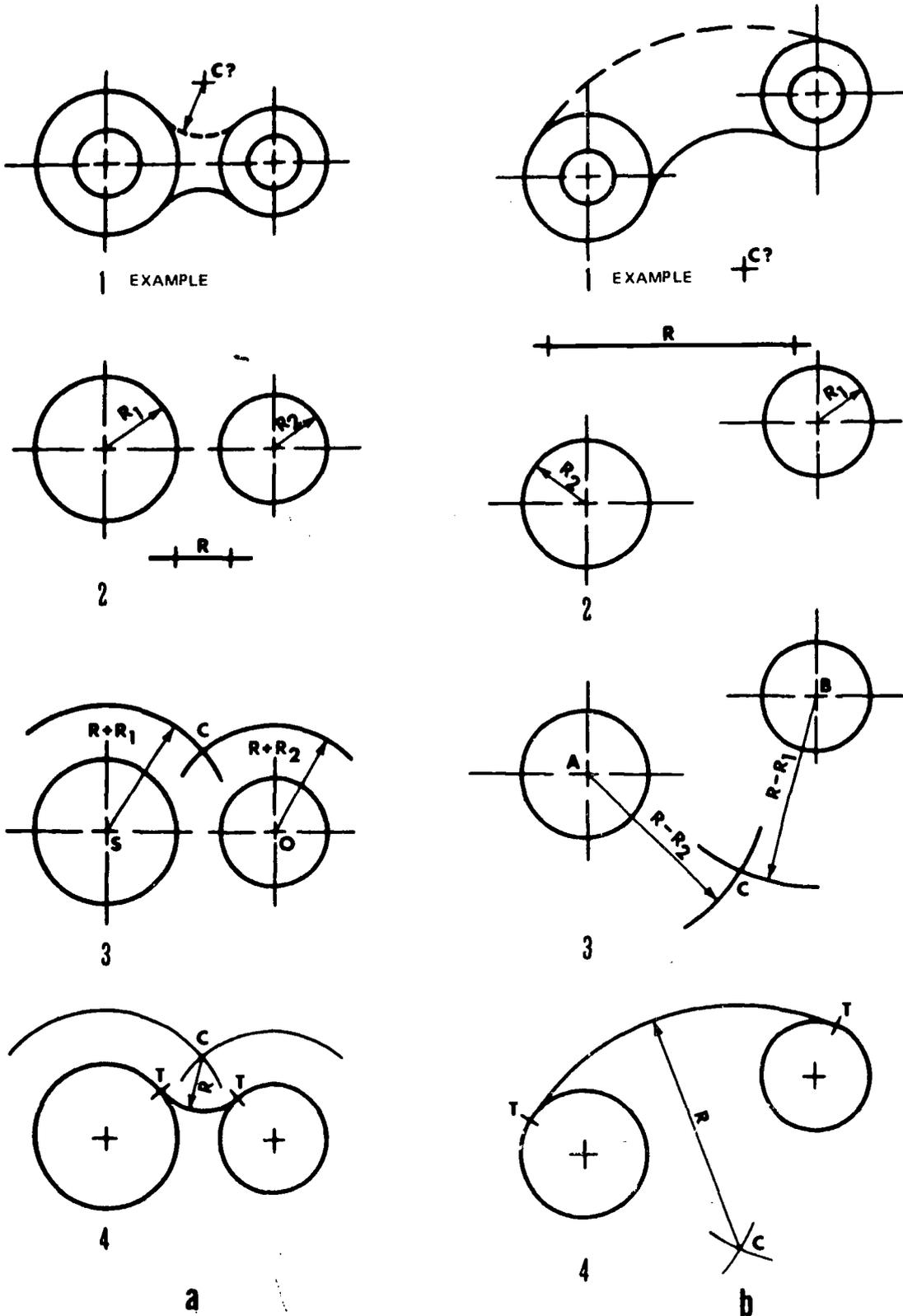
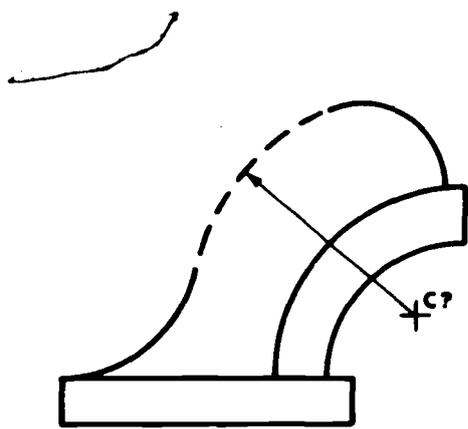
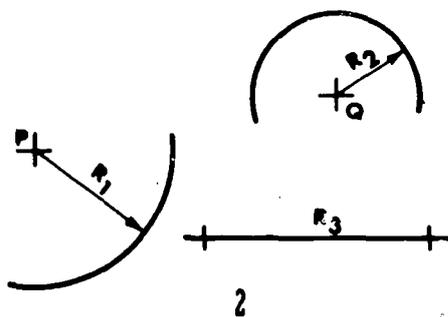


Figure 6-61. Drawing an arc of given radius, tangent to two arcs.

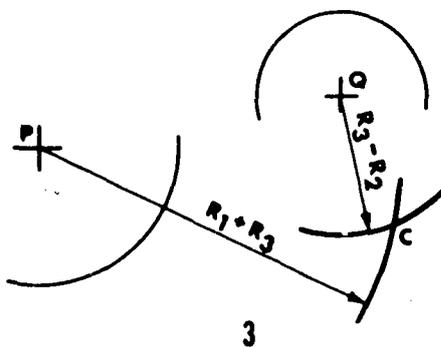


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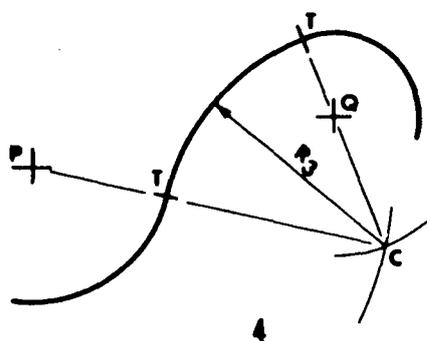
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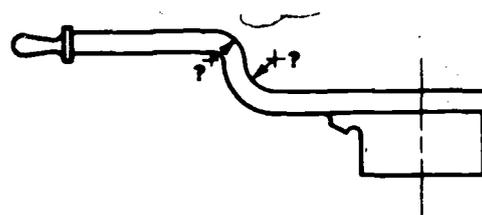
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Figure 6-22. Drawing an arc, tangent to two arcs and enclosing one.

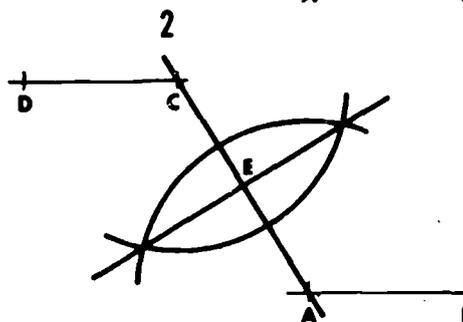
and G. With points F and G as centers and a radius of FE or GE, construct the required reverse arcs.

6-64. Drawing a Curve, Tangent to Three Intersecting Lines

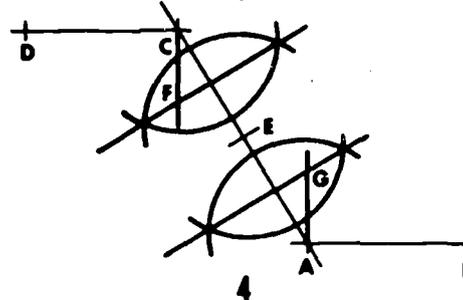
Let AB, BC, and CD be the given lines (fig. 6-64).



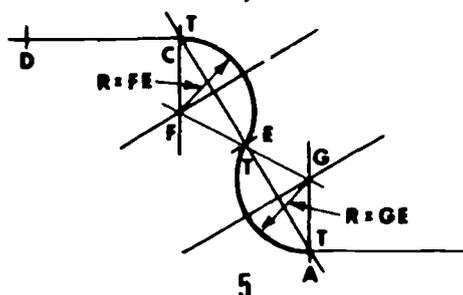
EXAMPLE



2



3



4

Figure 6-63. Drawing a reverse curve between two lines.

Select point of tangency, T, at any point on line BC. Make BP equal to BT, and CS equal to CT and erect perpendiculars at points P, T, and S. Their intersections O₁ and O₂ are the centers of the required tangent arcs.

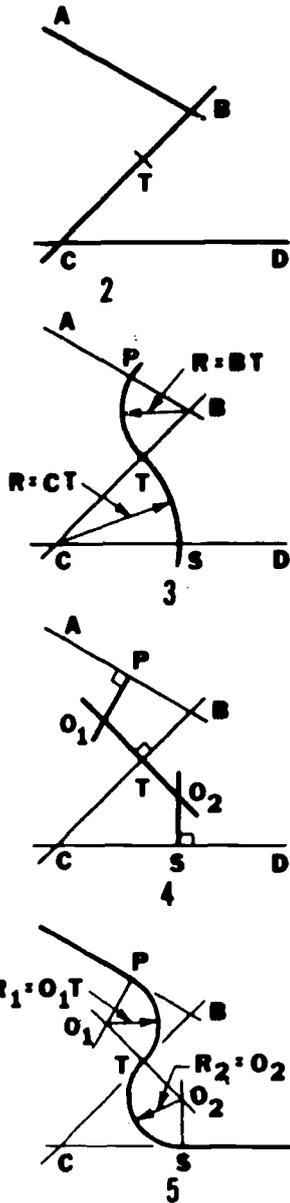
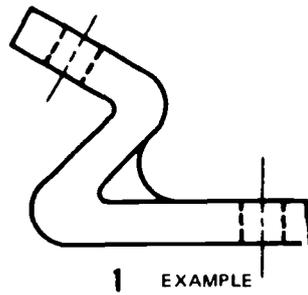


Figure 6-64. Drawing a curve, tangent to three intersecting lines.

6-65. Drawing a Series of Tangent Arcs Conforming to a Curve

Sketch lightly the approximate smooth curve required. By trial, find a radius, R , and a center, C , produce an arc AB which closely follows that por-

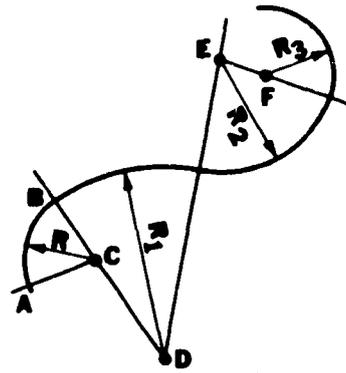


Figure 6-65. Drawing a series of tangent arcs conforming to a curve.

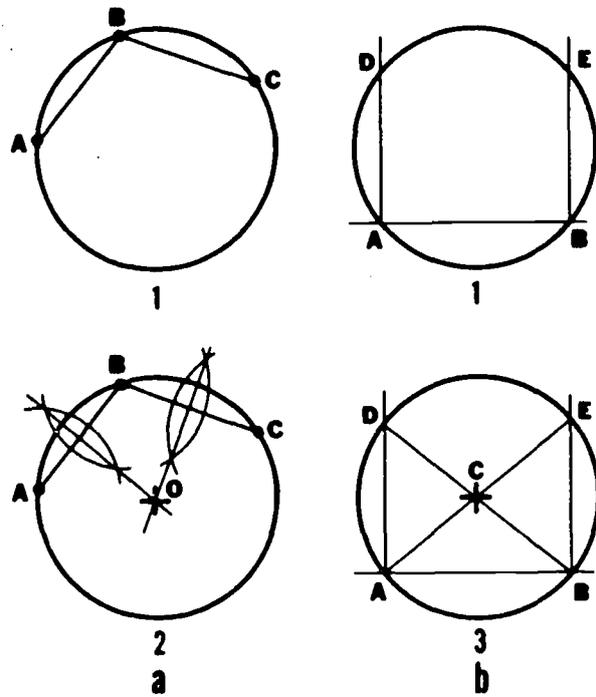


Figure 6-66. Finding the center of a circle.

tion of the sketched curve. The successive centers D , E , and F , will be on the lines joining the centers and the points of tangency as shown in figure 6-65.

6-66. Finding the Center of a Circle

a. *With Compass.* Draw any two chords AB and BC (a, fig. 6-66). Bisect these chords. The point of intersection of these bisectors will locate the center of the circle.

b. *With T-Square and Triangle.* Draw any chord AB horizontally (b, fig. 6-66). Draw perpendiculars at points A and B , cutting the circle at points D and E . Draw diagonals DB and EA . The intersection of these diagonals will be the center of the circle.

6-67. Drawing a Circle Through Three Points

Draw lines AB and BC connecting the three given points (fig. 6-67). Construct the perpendicular bisectors of these lines locating point of intersection, O . Using O as center and the distance OA as radius, draw the required circle through the three given points.

6-68. Drawing a Tangent to a Circle at a Given Point

Given point P on the circumference of a circle with R as the radius (fig. 6-68). With P as the center and the radius R strike an arc about 90° intersecting the circumference at point A . With point A as the center and the same radius, strike an arc of about 90° intersecting first arc at point B . With point B as the center and the same radius, strike an arc intersecting the second arc at point C . Connect points P and C forming the required tangent.

6-69. Drawing Two Tangents to a Circle From a Given Point

Given a circle and a point P outside the circle (fig. 6-69). Draw line OP and bisect it, locating point C . With point C as the center and OC as the radius, draw arcs intersecting the circle at points T and T' . To the points of intersection thus formed, draw the required tangents from point P .

6-70. Drawing Tangents to Two Circles

a. *Belt Around Two Pulleys Type 1—T-Square and Triangle.* Move the triangle and T-square as a unit until one side of the triangle is tangent, by inspection, to the two circles (a, fig. 6-70); then slide the triangle until the other side passes through the center of the other circle, and mark the point of tangency. Finally slide the triangle back to the tangent position, and draw the tangent lines between the two points of tangency. Draw the second tangent line in a similar manner.

b. *Cross Belt Around Two Pulleys Type 2—With Compass and Straightedge.* Draw a line through center of circles O and S (b, fig. 6-70). Erect perpendiculars OA and SB at centers of circles. Draw line AB intersecting line OS at point P . Bisect lines OP and PS , providing points C_1 and C_2 . With point C_1 as the center and using OC_1 as a radius, draw arcs intersecting the circumference of the circle at points 1 and 2. With point C_2 as the center and using C_2S as a radius, draw arcs intersecting the circumference of the second circle at points 3 and 4. Connect the intersections points 1, 2, 3, and 4 as shown to form the required tangents (cross belt).

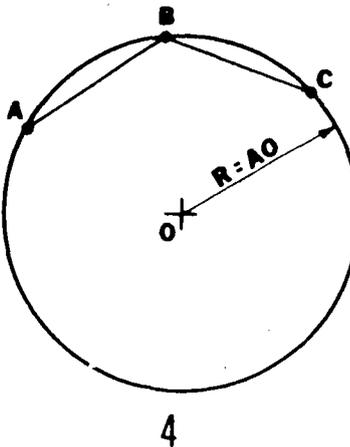
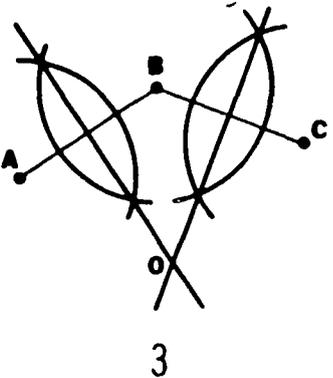
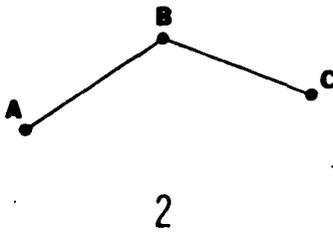
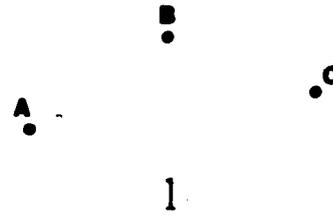


Figure 6-67. Drawing a circle through three points.

6-71. Constructing a True Ellipse

a. *Pin and String Method.* This method is mentioned first as it closely follows the description of an ellipse. However, this method is not accurate enough for general drafting. Given the major and minor axes (a, fig. 6-71), locate foci points F_1 and F_2 (c below). Drive pins at points D , F_1 and F_2 , and tie an unelastic thread or cord tightly around the three pins. Remove pin D , and move a

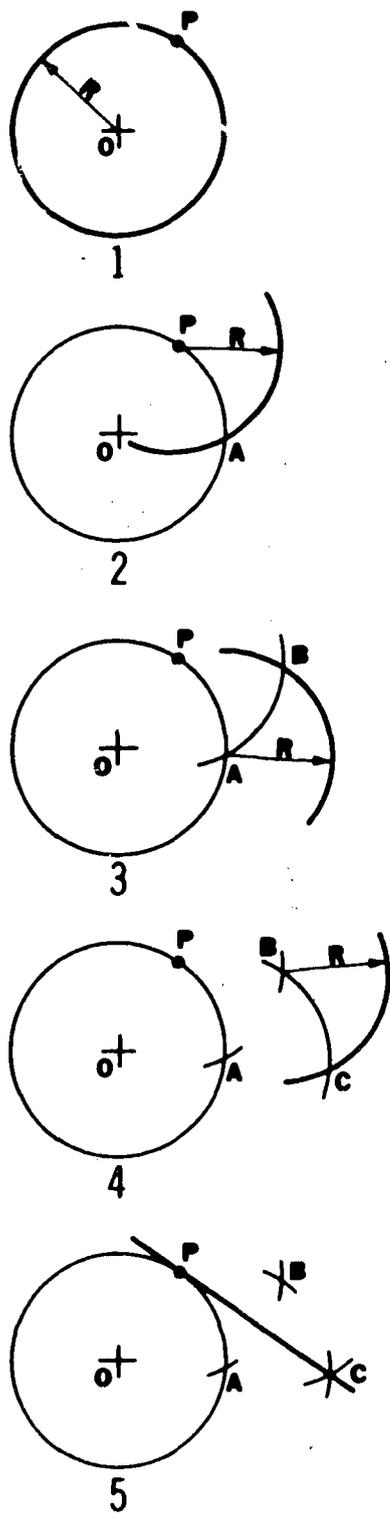


Figure 6-68. Drawing a tangent to a circle at a given point.

marking point in the loop, keeping the cord taut. This will describe a true ellipse, "a point moving so that the sum of its distances from two points (foci) is constant and equal to the major axis."

b. *Trammel Method.* Prepare a long trammel or short trammel from a small strip of stiff paper or thin cardboard (b, fig. 6-71). Set off on the edge

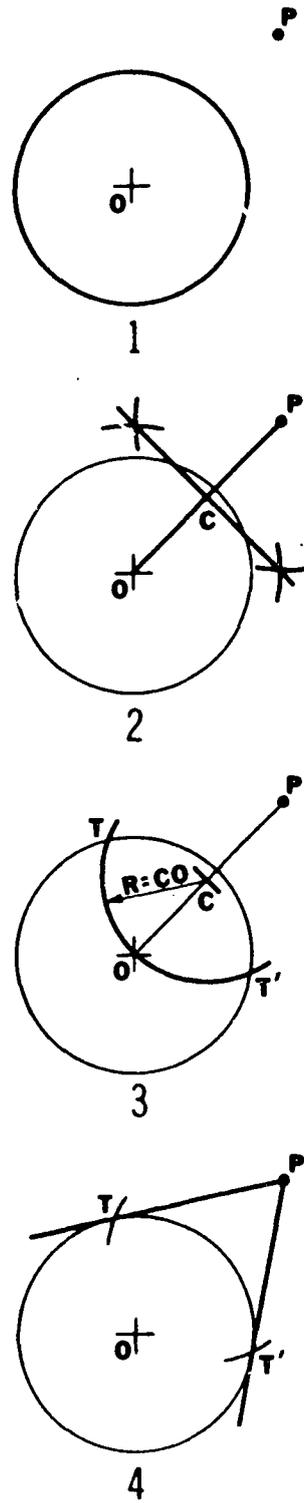


Figure 6-69. Drawing two tangents to a circle from a given point.

of the trammel distances equal to the semimajor and semiminor axes. The long trammel has them end to end; while the short trammel has them overlapped. In either case, place the trammel so that two of the points (one from each axis) are on the respective axes, as shown; the third point will then be on the curve and can be marked with a small dot. Find additional points by moving the

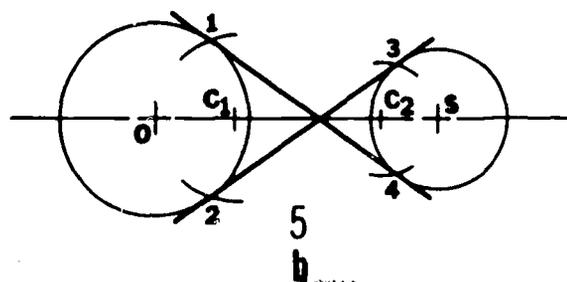
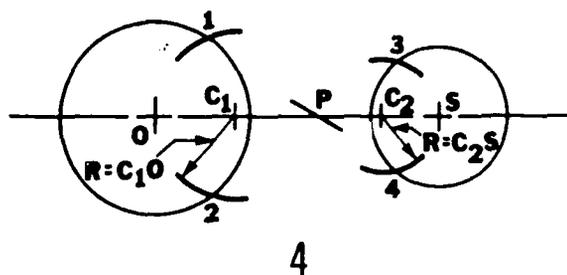
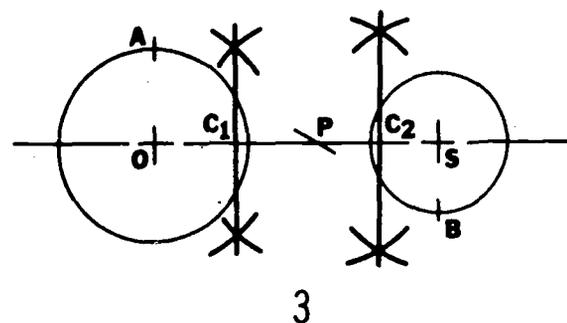
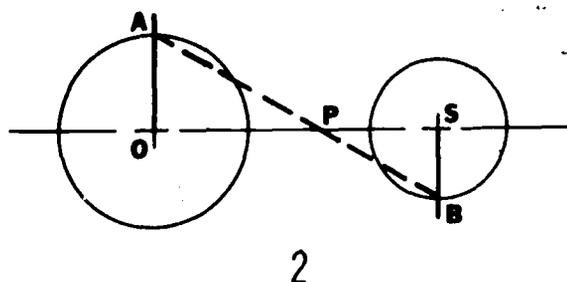
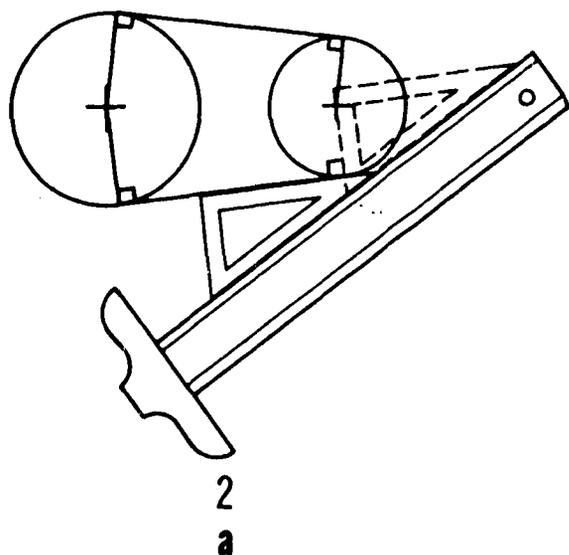
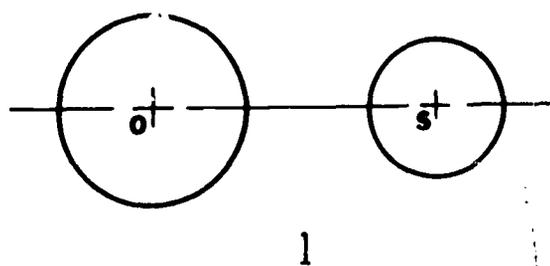
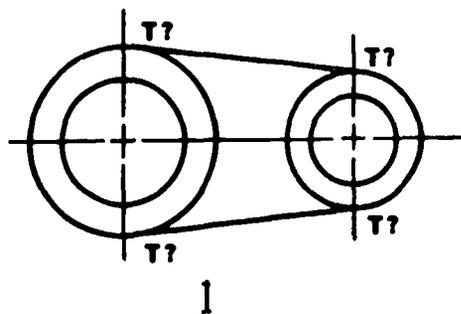
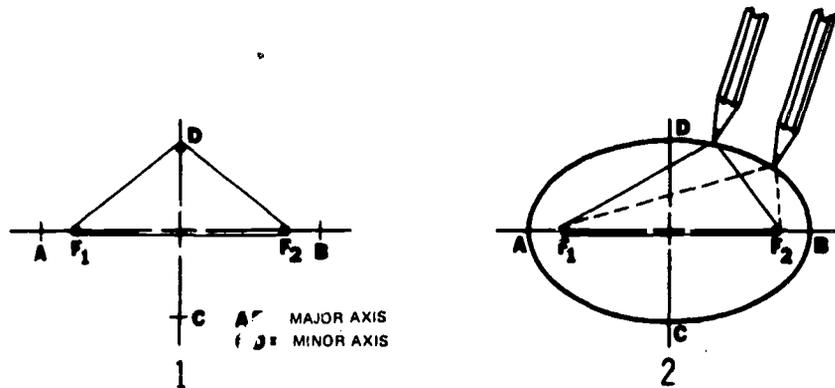


Figure 6-70. Drawing two tangents to two circles.

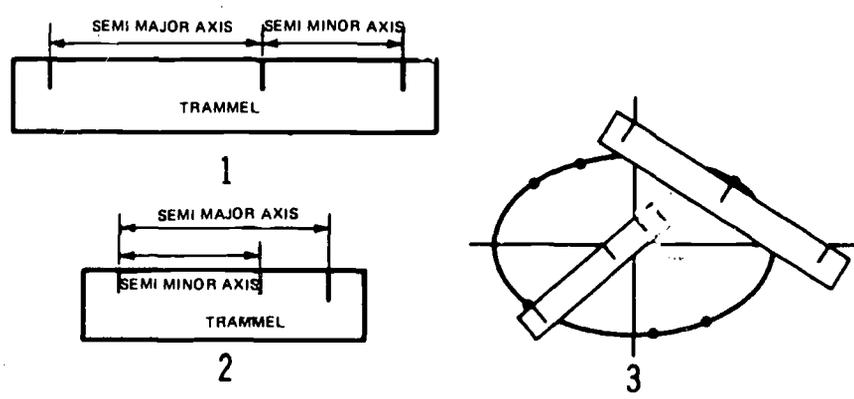
trammel to other positions, always keeping the two points exactly on the respective axes. Extend the axes to use the long trammel. Find enough points to insure a smooth and symmetrical ellipse.

c. *Geometrical Method.* Draw the major (M_1M_2) and minor (m_1m_2) axes (c, fig. 6-71). To find foci F_1 and F_2 , strike arcs with a radius equal to half

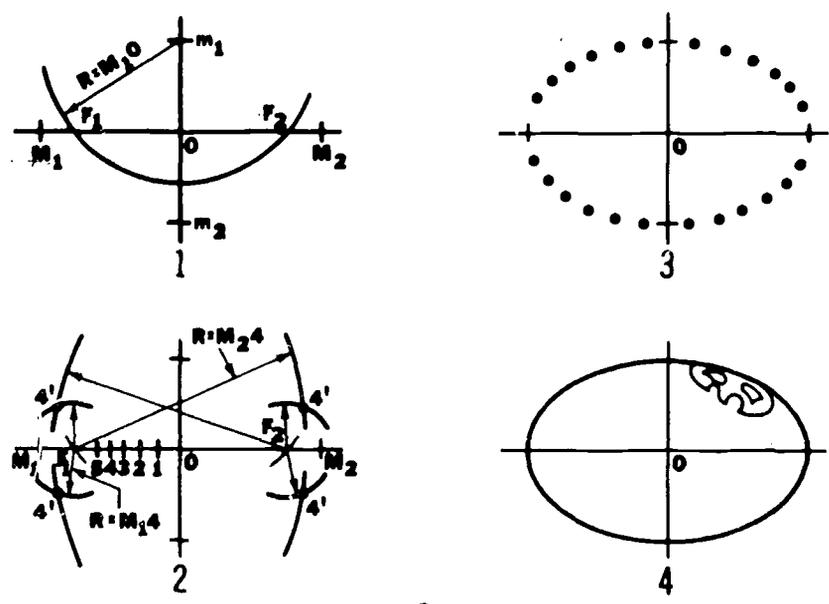
the major axis (M_1O or M_2O) and with the centers at the ends of the minor axis, intersecting on the major axis at points F_1 and F_2 . Between F_1 and O on the major axis, mark at random a number of points, spacing those nearer to the circumference closer together, equal to the number of points desired in each quadrant of the ellipse.



a



b



c

Figure 6-71. Constructing a true ellipse.

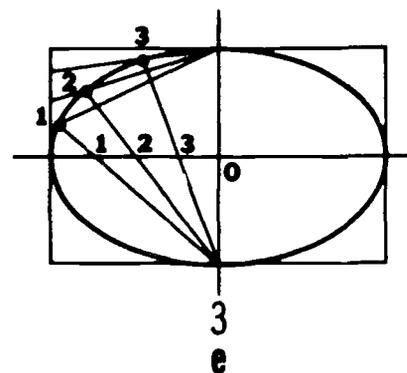
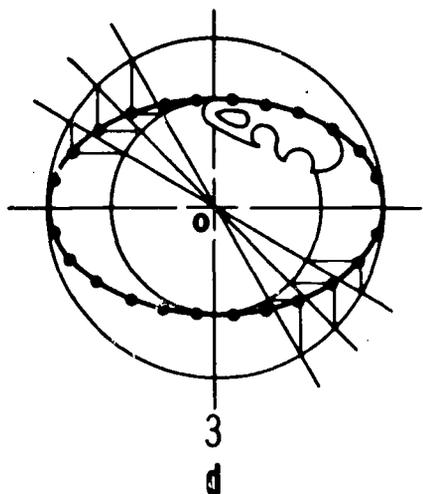
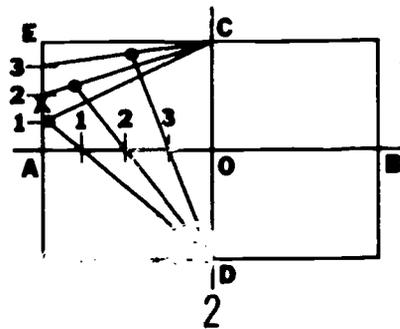
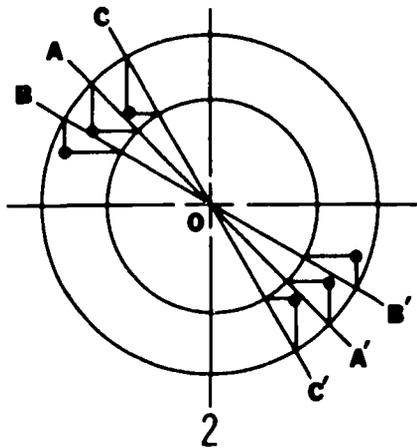
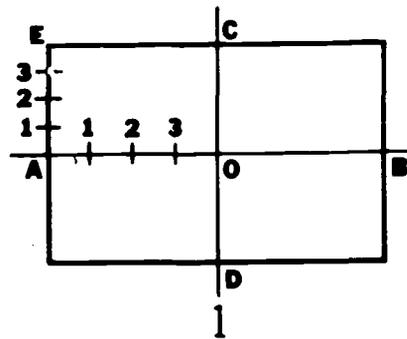
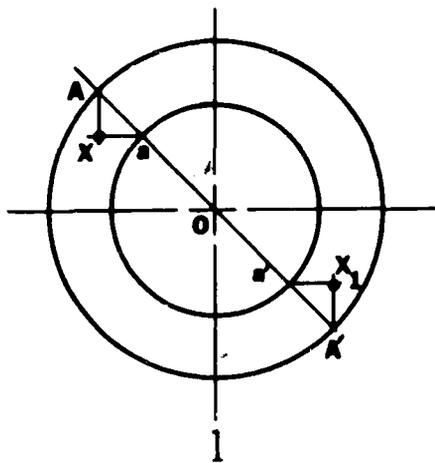
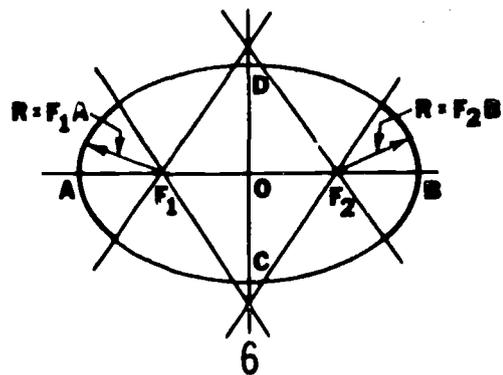
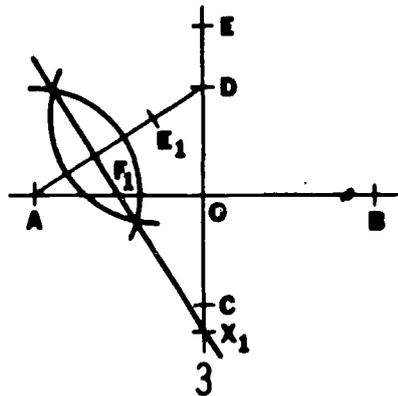
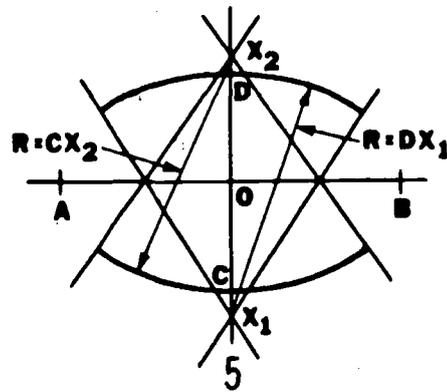
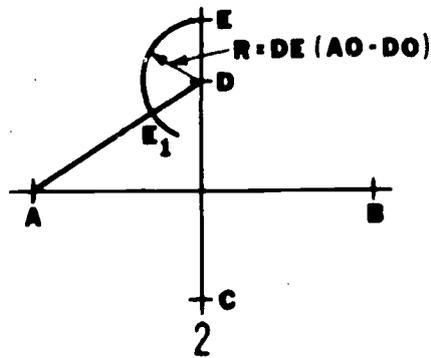
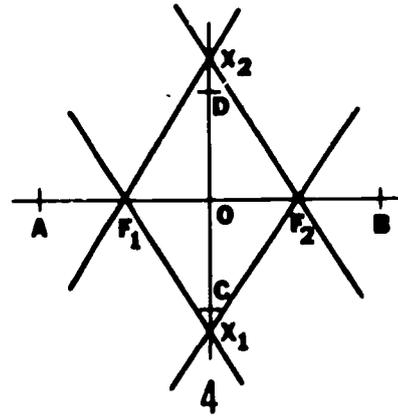
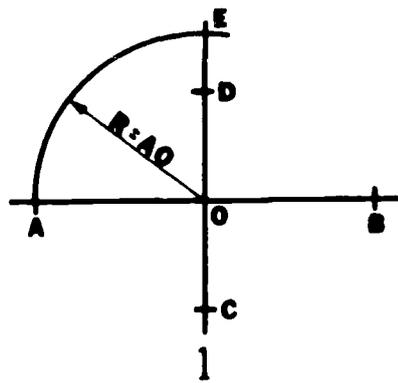


Figure 6-71—Continued.

Begin construction with any one of these points, such as 4. With F_1 and F_2 as the centers and the radii $4-M_1$ and $4-M_2$, respectively, strike four points $4'$, as shown. Repeat with other remaining points. Sketch the ellipse lightly through points; then heavy-in the final ellipse with the aid of the irregular curve.

d. Concenic-Circle Method. Draw two circles with the major and minor axes as diameters (d, fig. 6-71), then draw any diagonal, AA' , through center O . From points A and A' on the large circle, draw lines AX and $A'X_1$ parallel to the minor axis. From points a and a' on the small circle, draw lines aX and $a'X_1$ parallel to the major axis.



a

Figure 6-72. Constructing an approximate ellipse.

The intersections X and X_1 are points on the ellipse. Draw as many additional diagonals as needed and complete as above.

e. Rectangle Method. Draw the major and minor axis and a rectangle with the length and height of the major and minor axis as shown in e, figure 6-71. Divide AO and AE into the same number of equal parts, and draw lines through these points as shown. The intersection of like-numbered lines will be points on the ellipse.

Locate points in the remaining three quadrants in the same way, connect points and complete as above.

6-72. Constructing an Approximate Ellipse

a. Four-Center Method. This method works best if the major and the minor axis are nearly equal. Draw the major and minor axis (a, fig. 6-72).

(1) Construct arc with radius AO to locate E .

37. At the time when Dr. Hallenbeck was making editions to the first draft of his testimony he added this remark here.

At the time we talked I had not read Ivan Illich's, Deschooling Society. Now I would extend this statement to cover his central idea to the effect that schools condition people to an authoritarian environment and legalistic dependency which defeats creativeness and individualism. 'By golly, I'm afraid he is right.'

38. Among the books written by Harold Clark are: Classrooms in the Factories (Rutherford, New Jersey: Fairleigh Dickenson University, 1958), and The Pursuit of Solvency for Higher Education in the U.S.A. (New York: McGraw-Hill Book Company, 1959).

Clark's studies showed a significant development of education in business and industry during and since World War II. His data showed:

(1) The number of companies providing educational opportunities for their employees significantly increased,

(2) Professional leadership for industrial education became increasingly discriminate,

(3) The subject matter of industrial education broadened,

(4) Industry developed closer cooperation with formal educational institutions, and

(5) Industry began providing facilities exclusively for educational purposes.

39. Alonzo Meyers was Head of the Higher Education Department in the School of Education at New York University. He was active in the New York Council for Adult Education of which Hallenbeck was president for several years before he retired. Under the auspices of the New York Adult Education Council, Meyers carried out his first experiment with a group cooperatively considering plans for retirement. This is mentioned later in the interview with Hallenbeck.

40. Robert C. Cook and Mary A. Smith, eds., Who's Who in American Education (NIV, Nashville, Tennessee's Who's Who in American Education, Inc., 1949-50), p. 961.

Raymond Walker Phipps became the Director of Adult Education for the school system of Houston, Texas, in 1949. Hallenbeck got to know Phipps in Korea. Phipps was there as the United States advisor in Vocational Education in the U.S.A.H.G.I.K.

41. Hallenbeck might have been influenced by Lyman Bryson's thought as expressed in a panel discussion reproduced in Adult Education Bulletin of October, 1937, pp. 11-12.

An adult educator cannot set himself up as somebody who decides what people need; neither can he always find out just what people want and give it to them. I would say the teacher's responsibility is always to help the student find out what he wants. The only person I would quarrel with is the person who says, 'I'll give him what he needs,' because that is an assumption which I think adult educators cannot make.

Just what is the relationship between adult education and politics? There are three positions: (1) that the primary social function of education is the continuity of culture; that civilization would go to pieces if education were not the chosen agency for teaching each generation what the past generations have done. Then there is the position at the other extreme. The positions of persons who say, 'We not only believe in change, but we know what the change ought to be.' They should be protected in their attitude but accept the responsibility which so few of them will ever accept in being enemies of society. The middle position, I think is more essentially an educational position. It says, 'As a human being, or an individual citizen, I have my opinions about what ought to happen and I reserve my right to state them whenever it is appropriate to do so, but as a teacher I have, in addition, certain other duties. It is my business to help people who do not agree with me to clarify and better understand the position that they hold. If I refuse to do this, I am refusing to teach some people who want me to teach them.'

42. See "Thompson, William Godfrey," Who's Who, 1971 (New York: St. Martin's Press, 1971), p. 3131.

William Godfrey Thompson has been Guildhall Librarian and Director of the Art Gallery, City of London, since 1966. He entered the library service at Coventry in 1937; was Deputy Borough Librarian of Chatham from 1946; Deputy City Librarian of Kingston-upon-Hull from 1952; Deputy City Librarian of Manchester from 1958; City Librarian of Leeds from 1963. He was President of the Association of Assistant Librarians in 1962 and has been a member of the Council of the Library Association since 1968 and on the Council of ASLIB since 1968. He is the Honorary Secretary of the International Association of Metropolitan Libraries. His writings include:

London's Statues (London: J. M. Dent and Sons, Ltd., 1971).
and An Encyclopedia of London, edited by William Kend and revised by Godfrey Thompson (London: J. M. Dent and Sons, Ltd., 1971).

43. E. L. Thorndike, an important contributor to the school of objective psychologists who applied their findings to educational practice, did most of his work at Teacher's College, Columbia University. On the basis of a vast amount of experimentation Thorndike enunciated his stimulus-response psychology before World War I in 3 volumes entitled Educational Psychology. He asserted that learning was a process of forming bonds between stimuli and responses. Out of

this assumption Thorndike developed his three laws of effect, exercise, and readiness (mental set). The law of effect said that a bond is reinforced when accompanied by a satisfying effect and weakened when accompanied by a dissatisfying effect. The law of exercise stated that a bond between a stimulus and a response will be reinforced when it is used and weakened when it is not used. The more frequent the use the stronger the learning. The law of readiness (mental set) asserted that when the action system is ready to act, satisfaction will follow action and failure to act will result in displeasure.

Thorndike's contribution to the field of adult education gave the field a great boost when his research regarding adults was published in 1928 in Adult Learning. See Adult Learning (New York: Macmillan and Company, 1932). His research showed that the ability to learn rises till about 20 years and then declines very slowly. Of course, these results had a profound effect on adult education activity.

Recent research in the area of adult learning indicates that adult capacity to learn may increase with age.

44. In an attempt to uncover any repercussions from Spence's social and political ideology on his career I asked the following questions. The responses to these questions laid the basis for the comment "Dr. Spence, we were talking earlier about the community" etc.

J: Dr. S., has your social and political ideology affected your career in any way?

S: Well, that is hard to say because I've always lived in a kind of situation where it was relatively easy to keep the two close together. . . . I'm not an aggressive follow througher and so I don't push the things to the point where you get into trouble. I grew up in a liberal family and have always been associated with people who have been on the liberal side. Yet you wonder when the chips are down how you'll behave. For example, as you see, we live in a sheltered suburb of Athens, Georgia. If you look at Athens as an integrated community we're not out in the forefront doing something about integration that I believe in. I write about it and talk about it and am for it but I don't put myself out the way some of my friends do.

J: You say you regard yourself as a liberal and have associated with liberal people. What have been your political predilections in the past?

S: Well, we haven't been active politically. My wife and I have always been Democrats.

J: You were a fairly young person during the Norman Thomas era, for example. Would you consider your ideas to be antithetical?

S: No. We were always sympathetic but as far as Norman Thomas was concerned we felt that it was more important to make our choice in terms of the place where the decision was going to be made.

J: I understand.

S: This is an interesting area, this whole problem of making changes. How should they come about? Through what kinds of persuasion. So far as adult education is concerned, in the long run, what we've got to do is to develop the methods of discussion.

45. See "Benne, Kenneth," Who's Who in America (37th ed., 1972-73, I, Chicago: Marquis Who's Who, Inc., 1972), p. 221.

Benne's career includes a year as president of the Adult Education Association of the USA (1955-56); Editor of Adult Leadership (1952-53); Vice-President of the Boston Adult Center (1957-60); and service on the executive board of the New England Adult Education Institute (1958-69). He was one of the original founders of the National Training Laboratory and has written much on the subject of T-theory and sensitivity training. See the author's taped interviews of Leland Bradford which include background information on Benne's part in the founding of NTL.

46. Spence is talking here of Benne's unpublished Ph.D. thesis from Columbia University which later became published under the title:

A Conception of Authority: An Introductory Study (New York: Teacher's College, Columbia University, 1943).

47. The Greek concept of education which injects itself into Western culture is, of course, the Athenian conception of education. It was based on an optimistic view of man who had potential for excellence in all things--"Man is the measure of all things."

48. Levy in The Meanings of Work (1965) examines the concept by analyzing the similarities and differences in meaning among three major classes or occupational groups in today's society. He focuses on managerial-professional workers, blue collar workers, and women. For the first group work is of overwhelming importance. It is a way of life which includes a man's relationship to his family, his community, and to society in general. A broad understanding of the world becomes an urgent necessity and in broadly educating the man to become a responsible citizen he becomes educated for the managerial position. In this sense, then, the work ethic serves as the purpose of liberal education since a better man is a better manager.

For the blue collar worker, on the other hand, work is seen as a means of concentrating on the development of more constructive use of non-work time; bringing men into close contact with the needs of society as expressed in community affairs; and to enhance their lives

around the idea of leisure. Where the managerial attitude seeks educational support for the work image, the blue-collar group seeks educational support for the leisure image.

As regards women they straddle two work worlds. As managers of homes and also in industry they take their position alongside the managerial-professional group. But as blue collar workers they identify very closely with the blue collar group. Her adult education becomes oriented toward the work image or the leisure image dependent upon her type of employment and upon her own concept of self in the work situation.

For an interesting examination of work and other implications for "being a self" as a woman in a world of increasing automation and leisure see Freda H. Goldman's A Turning to Take Next; Alternative Goals in the Education of Women. Notes and Essays on Education for Adults, #47. Boston: Center for the Study of Liberal Education for Adults, 1965.

It exalted freedom of the mind and freedom of the spirit which were felt to be the necessary bulwarks of happiness. No subject was thought too trivial to be investigated. Education was the inculcation of the ideals of moral excellence and its purpose was to serve this end continually throughout life. Discussion was the most popular method and the content was humanistic. It should be noted that such an education was available to a small minority only of Athenians. The very large majority of the population could expect, if any at all, a vocational type of training.

49. See Paul L. Essert; Creative Leadership of Adult Education (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1951).

50. Spence further notes in the interview with regard to getting people involved: How do you keep a person in each stage of his life to be reasonably concerned--not overly concerned; not always worrying as to whether his slip is showing--with whether in terms of possibilities what makes sense for him? One of the interesting things that I'm working on in the adult education department now is a little guide to new students in which we're trying to help that student approach graduate education as a learning situation. Here is an individual. We're asking him what he expects. Why is he interested in a year or more of graduate education? What does he expect to get out of it? What does he bring to it? If he doesn't have too many restrictions put on him by university regulations, what are the kinds of things that he ought to do that he can really concentrate on? What can the university offer him? All of this is an attempt to get the student really involved.

51. See Government Publications, Public Law 92-318, Section 405(a)(2), June 23, 1972, p. 94.

The Congress further declares it to be the policy of the United States to--

(i) help to solve or alleviate the problems of, and promote the reform and renewal of American education;

(ii) advance the practice of education, as an art, science, and profession;

(iii) strengthen the scientific and technological foundations of education, and

(iv) build an effective educational research and development system.

(b)(1) In order to carry out the policy set forth in subsection (a), there is established the National Institute of Education (hereinafter referred to as the "Institute") which shall consist of a National Council of Educational Research (referred to in this section as the "Council") and a director of the Institute (hereinafter referred to as the "Director"). The Institute shall have only such authority as may be vested therein by this section.

(2) The Institute shall, in accordance with the provisions of this section, seek to improve education, including career education, in the United States through--

(A) helping to solve or to alleviate the problem of, and achieve the objectives of American education;

(B) advancing the practice of education, as an art, science and profession;

(C) the strengthening of the scientific and technological foundations of education; and

(D) building an effective educational research and development system.

22. The New York Hour Meeting of the Air was one of the early forums using the broadcast medium of radio. It was a popular program during the '30s and '40s and was for some time moderated by Secretary Vernon Lenny, who was also its founder.

See "Secretary Vernon Lenny," Who's Who in America, 1940-41, Vol. 11.

23. The forum idea in adult education has a history of more than a century of activity but it experienced a great boom partly as a response to the social disorganization of the depression years after 1929. Lyran Bryson of AAEP fame was an outstanding discussion leader. John W. Studebaker established a group of forums in Des Moines where he was superintendent of schools. The Des Moines forums were initially supported by grants for five years from the Carnegie Corporation. Anyone interested in delving further into this experiment may read Studebaker's book, The American Way: Democracy at Work in the Des Moines Forums (New York: McGraw-Hill, 1935). Following his appointment as United States Commissioner of Education in 1934 Studebaker enabled the Des Moines forum system to become nationwide by allocating \$330,000 of Federal emergency relief funds to its dissemination. Nineteen demonstration centers were established all over the country and one of the early leaders associated with Studebaker in this work was H. Shents.

54. "Frank Hague" (1874-1956), Encyclopedia Americana, 1950, 13, 115. Born in Jersey City, New Jersey in 1874, he became involved in Jersey City politics with his first elective office as constable in 1896. From that time on his career as a politician led him to the Mayorship of Jersey City in 1917. He used his position as mayor to establish a power base which exerted influence on national as well as state politics. His administration was paternalistic and totalitarian; paternalistic in that it spent great amounts of money on public services and welfare programs; and totalitarian in that his machine was merciless in enforcing his politics. He was able to state, "I am the law" with a great deal of truth. He maintained his power by a wide system of patronage. His use of violence to suppress the activities of organized labor in 1939 eventually led to his retirement as mayor in 1947 of Jersey City and the defeat of his candidates for mayor of Jersey City and state governor in 1949.

55. A research report by P. B. Gowin and George W. Faignault, The Part-Time College Teacher, Report #304 (Chicago: CSEA, 1961), based on an extensive survey by the authors and their colleagues at the University of Bridgeport focused on the part-time teacher. The results suggested that many administrators are reluctant to expect the same performance from a part-time teacher as from a full-time faculty member. Requirements of expectations are presented: (1) the instructor is selected because he can teach at a specified time, for a small amount of money, prepared for the job by a talk with the dean and a handbook, but ignorant of theoretical and philosophical ideas of education in general; (2) the part-time teacher in college education is a "stranger" to the group of professionals, and is judged by conventional standards of teaching, scientific, and generally part-time or administrative standards. Evidence is presented that a program of mutual cooperation will help the ideas and attitudes which prospective teachers hold about teaching.

56. Ralph Hale, who was a Professor of Communications at the State University for many years, was a specialist in this field. His major studies which were valuable contributions to the literature of the field of communications were:

Audio-Visual Methods in Teaching (New York: Dryden Press, 1947), and Teaching With Motion Pictures: A Handbook of Administrative Practice (Washington, D.C.: American Council on Education, 1937).

Hale was also a consultant to the Fund for Adult Education.

57. Edith Tyler, also in Communication at Ohio State University wrote:

Radio and the School, A Guidebook for Teachers (Yonkers-on-Hudson, New York: World Book Company, 1945). This was an evaluation of radio use in education.

He is a national authority in his field and he has acted as advisor to several foreign governments in his area of competence. He

is head of the area of Radio and Television Education at Ohio State University.

57. Herschel Nisonger (now deceased) ended his career as Director of the Bureau of Educational Research at Ohio State University. Previously he was for years head of the Bureau of Special and Adult Education at Ohio State University. On a national basis he was widely known in the field of education of the mentally retarded.

58. Dr. William D. Dowling went to Ohio State University from the University of Wisconsin where he had been supervisor of formal education programs.

Dr. John Ohliger went to Ohio State University from a junior college in Alberta, Canada, after getting his degree under Watson Dickerman and Paul Sheats at UCLA.

59. Hendrickson obviously means educere, which means a leading out--developing.

60. This is the Latin verb educare.

61. See John Bartlett, Familiar Quotations (Boston: Little, Brown and Company, 1968), p. 513.

From Wordsworth's Ode (Intimations of Immortality) st. 5

Our birth is but a sleep and a forgetting:
The soul that rises with us, our life's star,
Hath had elsewhere its setting,
And cometh from afar:
Not in entire forgetfulness,
And not in utter nakedness,
But trailing clouds of glory do we come
From God, who is our home:
Heaven lies about us in our infancy!
Shades of the prison-house begin to close
Upon the growing boy.

62. Andrew Hendrickson, A Review of Postwar Literature on Public School Adult Education (Columbus, Ohio: The Bureau of Special and Adult Education, Ohio State University, 1949), p. 8.

In San Francisco a vast program of parent education is carried on under the supervision of the assistant principal of the Marina Adult School. The practice is to make all activities free, available to all who wish them, and offered in convenient locations in peoples own neighborhoods---in the local school buildings, club houses, churches, etc.

63. Donald R. McNeil in "The University and Adult Education," Adult Education, v. 13:2, 1963, pp. 80-85, makes the point that if

adult education is to do the job which it has committed itself to, then there must be financial support from the university policy-makers who control the purse. He emphasizes that the ability to pay must not be the sole criterion for the adult student, and that if private support and local and state subsidies are not enough, then federal aid must be provided to fill in the gaps.

64. The author has not been able to track this down.

65. See the University of Kentucky Catalog, 1972-73, p. 59.

The Herman L. Donovan Fellowship of Senior Citizens

Named in honor of the late Herman L. Donovan, University President 1940-56, this fellowship is for people 65 years of age and older. It provides that they can enter the University and attend any regular course without the payment of fees. Work may be taken for credit; some have earned baccalaureate and graduate degrees. Others register as auditors and attend classes for the sheer joy of learning.

Donovan fellows participate in many intellectual, social and cultural programs which characterize the University. They, together with retired University teachers and staff, have their own organization--The Donovan Club. The Club publishes The Pillars, a monthly newsletter, holds regular parties, arranges for travel-study seminars and symposiums on Great Issues of Our Times, and investigates special problems of older adults with a view to devising appropriate procedures for solving them.

66. For an interesting experiment at North Hennepin State Junior College, Brooklyn Park, Minnesota, where the young and the old come together for learning see John G. Rogers, "Happy Schoolrates," Parade (New York, New York), September 10, 1972, p. 27.

67. H. Y. McClusky, "Mobilizing the Community for Adult Education," No place, No date, p. 1. (Mimeographed.)

The Adult Education movement is vigorous, sprawling and amorphous--vigorous because it originates in basic human need; sprawling because it is the function of widely diverse agencies; and amorphous because, springing from an extensive range of human interests, it lacks an integrating focus.

68. See Essert response to questions, "What do you feel is your concept of adult education?" and "Has this concept always been your concept or has it changed over the years?"

Essert's views in later years have moved closer toward the point of view of educating community groups.

69. Professional Preparation of Adult Educators--A Symposium (Notes and Essays on Education for Adults, #15. Chicago: Center for the Study of Liberal Education for Adults, 1956), p. 137.

70. Adult Leadership was established under a special grant from the Fund for Adult Education by the Adult Education Association of the USA as a monthly magazine. Its first publication appeared in May, 1952. The magazine's original purpose was to provide a link between the Association and the practitioner.

* See Malcolm S. Knowles, The Adult Education Movement in the United States (New York: Holt, Rinehart and Winston, Inc., 1962), pp. 236-237 for a more complete account of the founding of Adult Leadership and Adult Education, the theoretical journal of the Association.

This is the standard history of adult education in the United States with the evolution of university adult education and agricultural extension traced in context of the whole field of adult education. Part II deals with the development of coordinating agencies within segments of the field and with the problem of developing a unifying national organization. Section III discusses the nature and dynamics of the field of adult education and reviews likely future developments. It has an excellent and extensive bibliography.

71. In a panel discussion published in the Journal of Adult Education, Vol. 7, #3 (June, 1933), pp. 259-262 under the title, "Who Are Our Leaders and How Are They Trained?" note the following conversation:

Mr. Maxwell--Some persons are leaders primarily because of expert knowledge acquired through special training in the field in which they work. . . . On the other hand, there are leaders whose chief qualification seems to be their ability to work cooperatively with groups of people, exploring their interests and drawing upon experts from time to time as the occasion requires.

Mr. Beck--Hence the important qualification of the teacher is general education.

Mr. Maxwell--We now have found three qualities that seem to be applicable in all fields: scholarship, or knowledge of the subject; personality, or certain innate gifts that are capable of cultivation; and methodology, or the most effective means of inducing learning in those with whom we are working. . . .

Miss Fisher--Teachers must like people, they must respect them, and they must stimulate the best that is in them.

72. See "Waymack, William Wesley," Who's Who In America (37th ed. 1966-67, 34, Chicago: Marquis Who's Who, Inc., 1972), p. 4829.

Waymack, born in 1888, received his A.B. fromorningside College, Cicou City, Iowa. The major part of his career was spent as a

journalist in various capacities with the Sioux City Journal and the Des Moines Register and Tribune. He was the recipient of the Pulitzer Prize for distinguished editorial writing in 1937. He was Deputy Chairman of the Federal Reserve Bank in Chicago from 1942 to 1946; Chairman of the Economic Policy Commission from 1938 to 1941; special advisor to the State Department; and was a member of the Atom Energy Commission, the American Council for NATO, a Trustee of the Carnegie Endowment for International Peace, the 20th Century Fund, among others.

See Lyman Bryson, Reason and Discontent (Pasadena, California: The Fund for Adult Education, May, 1954), p. 2, which contains this account:

Lyman Bryson received his B.A. from the University of Michigan in 1910 and his M.A. from the same university in 1915. After working as a newspaperman in Omaha and Detroit, Mr. Bryson joined the Red Cross; he was with the American Red Cross and the International Red Cross in Europe and Asia from 1918 to 1920. He was executive director of the California Association for Adult Education (1927-32) and the director of the Des Moines Public Forum (1930-34). He was Professor of Education at Teacher's College, Columbia University, from 1936 until 1954 when he became Professor Emeritus.

Among Mr. Bryson's books are Adult Education (1936), Which Way America? (1939), The New Prometheus (1941), Community of Ideas (editor, 1947), Science and Freedom (1947), and The Next America (1950).

Mr. Bryson had long been associated with and active in the Columbia Broadcasting System's adult education board and he became Director of Education for CBS in 1942. He founded "The People's Hour" (1939) and moderated it for eight years. He founded "Invitation to Learning" (1940) and directed it for fourteen years. He became its permanent chairman in 1949. He conducted "Time to Reason" (1945-47). Other radio programs he was connected with in various capacities were "School of the Air," "Church of the Air," "Of Men and Books," "You and the World Series," and "We Take Your Word." He was moderator of the religious and ethical television program "Lamp Unto My Feet" from 1949 to 1952.

In 1942 and 1943 Mr. Bryson was Chief of the Bureau of Special Operations of the Office of War Information. In 1947 he was consultant to UNESCO in Paris.

Mr. Bryson was president of the American Association for Adult Education (1944) and president of the Institute for Intercultural Studies. He was a fellow of the American Association for the Advancement of Science and was Vice-President of the Jewish Theological Seminary's Conference on Science, Philosophy and Religion. He was also president of the Columbia Faculty Club. His impact on early twentieth-century adult education leadership was very great.

73. "Scott Milross Buchanan," Who's Who in America, 1968-69, Vol. 35, 321.

Dr. Buchanan, a foundation consultant, was born in Sprague, Washington, on March 17, 1895. He received his A.B. from Amherst College in 1916 and was a Rhodes Scholar to Oxford University from 1919-21. In 1925 he received his Ph.D. from Harvard University. His long and fruitful career in education included the following: Instructor in Greek, Amherst College, 1917-18; assistant in philosophy, Harvard, 1922-24; instructor in philosophy, College of the City of New York, 1924-25; Assistant director, People's Institute, New York, N.Y., 1925-29; associate professor of philosophy, University of Virginia, 1929-30; professor, 1930-36; Chairman, committee on the liberal arts, University of Chicago, 1936-37; dean, St. John's College, Annapolis, Maryland, 1937-47; director, Liberal Arts, Inc., Pittsfield, Massachusetts, 1947-49; trustee, Foundation for World Government, 1949-54; professor of philosophy, chairman of the department of religion and philosophy, Fisk University, 1956-57, consultant, Fund for the Republic, 1957- ; visiting lecturer, Christian Gauss Seminar, Princeton University, 1956. He has written the following books: Possibility, 1926; Poetry and Mathematics, 1929; Symbolic Existence, 1931; The Doctrine of Signatures, 1937; Essay in Politics, 1953.

In 1972 the National Association of Educational Broadcasting gave him its "distinguished service award."

74. James Robbins Kidd, former Head of the Division of Adult Education, Ontario Institute for Studies in Education has had a long interest and experience in adult education. He began this career as a counsellor for the Y.M.C.A. in Montreal and then Ottawa. His work in Ottawa during World War II gave him a chance to see the whole scene in Canadian adult recreation and education. After the War he obtained his doctorate from Columbia University. After that one responsibility followed another: Associate Director and Director of the Canadian Association for Adult Education (1947-61); First President, Adult Education Division of World Confederation of the Organization of the Teaching Profession (1959-61); and Chairman of the International Committee for the Advancement of Adult Education, 1961-66.

For further information on Dr. Kidd see James Robbins Kidd, The Implications of Continuous Learning (Toronto: W. J. Gage Ltd., 1966), pp. 9-13.

Alexander H. Charters, presently Vice-President for Continuing Education and Professor of Adult Education at Syracuse University, received his B.A. in History in 1936 from the University of British Columbia and his Ph.D. in 1943 in Adult Education from the University of Chicago.

He has had connections with the following organizations and associations:

Member of the Board of the Center for the Study of Liberal Education for Adults, 1957-67; Chairman, 1964-65.

Treasurer, International Congress of University Adult Education, 1962-70.

Member New York State Advisory Board on Continuing Higher Education.

Member Committee of Adult Education Organizations.

Coordinator 1969 Galaxy Conference CAEO.

Member Adult Education Council and Past President.

Member and past president, Association of University Evening Colleges.

Member and past president, National University Extension Association.

Past member, Executive Committee, U.S. National Commission UNESCO.

Member, National Advisory Board ERIC Clearinghouse on Adult Education.

His latest publications include:

"Continuing Education for the Professions," Handbook of Adult Education, 1970.

Toward the Educative Society (1971).

Report on the 1969 Galaxy Conference of Adult Education Organizations (1971) and

Real Estate Tax Exemption for Continuing Education Programs (1972).

75. For an account of the aims of the Fund for Adult Education see The Fund for Adult Education Established by the Ford Foundation, Annual Report (Pasadena, California, 1951), pp. 11-16.

The Ford Foundation's Study Committee Report of November, 1949, adopted five major areas where it felt it could give effective assistance to contemporary society. They included:

- (1) The Establishment of Peace
- (2) The Strengthening of Democracy
- (3) The Strengthening of the Economy
- (4) Education in a Democratic Society
- (5) Individual Behavior and Human Relations

Goals for efforts in each area were promulgated. The goals for "Education in a Democratic Society" were described as:

The Ford Foundation should support activities to strengthen, expand, and improve educational facilities and methods to enable individuals more fully to realize their intellectual, civic, and spiritual potentialities; to promote greater equality of educational opportunity; and to conserve and increase knowledge and enrich our culture. Education must meet the needs of the human spirit. It must assist persons to develop a satisfactory personal philosophy and sense of values; to cultivate tastes for literature, music, and the arts; and to grow in ability to analyze problems and arrive at thoughtful conclusions.

To carry out these commitments the Foundation created two independent groups: The Fund for the Advancement of Education and The Fund for Adult Education. The first Fund was responsible for action relevant to formal education in schools; while the second was responsible for action relevant "that part of the total educational process which begins when schooling is finished." The aim of the latter was "the expansion of opportunities for all adult men and women to continue their education throughout life in the interests of mature and responsible citizenship "mindful that in today's world civic responsibilities are political, economic, and social in scope."

The Fund for Adult Education saw its task as providing programs and supporting projects which emphasized the liberal education of adults. Liberal education was concerned with the lifelong process of independent careful thought for the masses of people. The Fund conceived of the continuing process of education of adults as far different from that of the education of the young. The education of adults demands materials and methods attractive to adults; it must be non-compulsory, therefore, those who freely participate must share in the responsibility of preparing and carrying out educational programs. If it is to serve the mass, it must use all the modern media of communication to make this possible. To enable the mass to understand the complexity of modern life it must address itself to education in world affairs, political affairs, and economic affairs. And in order to understand the relation of each of these to the other programs emphasizing the insight and wisdom of the humanities would be exploited.

The Fund dedicated itself to operate within democratic values, institutions and methods.

For a more thorough exposition of the history and role of the Ford Foundation and the Fund for Adult Education see Malcolm S. Knowles, The Adult Education Movement in the United States (New York: Holt, Rinehart and Winston, Inc., 1962) and C. Martley Grattan, In Quest of Knowledge (New York: Association Press, 1955).

R. J. Blakely worked with The Fund for Adult Education for ten years (1951-60). During that period he was the Director of two scholarship-fellowship programs; Director of the Test Cities Projects (experiments in the coordination of adult education in twelve middle-sized communities); liaison officer with colleges and universities, public schools, libraries, labor and farm organizations, Negroes and government. At the International UNESCO Conference in Montreal in 1960, he planned and ran a workshop on the uses of mass media. He ran the International Pugwash Conference on Adult Education in Nova Scotia in 1960 and he planned and conducted national conferences at Arden House for such groups as the American Law Institute and the National Association of Public School Adult Educators, as it was then called.

76. C. Scott Fletcher was the president of the Fund for Adult Education and a strong supporter of continuing liberal adult education all throughout the Fund's ten years of existence.

See Ronald Shiler, Able People Well-Prepared (Pasadena, California: The Fund for Adult Education, 1961), preface in which S. Fletcher notes:

The key to better, more varied and extensive programs consists of people--able, well-prepared and strongly committed--to plan, create, promote, administer and provide educational opportunities for adults to continue their liberal education; --through such methods as study, study and discussion, lectures and discussion, telecasts and films, institutes, conferences, and workshops; --through such institutional channels as universities and colleges, public schools, public libraries, agricultural organizations, labor unions, business corporations, a wide range of voluntary organizations, and the media of mass communications . . .

As president of the Fund, I have been in a position to make my own evaluation, and, simply stated, it is that (these programs and projects) have done much to advance the idea and practice of continuing education in the United States; and, furthermore, to advance the concept and reality of continuing liberal education as a field of education and participation worthy of the best talents and the best preparation.

For more insight into Scott Fletcher see his The Great Awakening (1958) in which he compares the philosophies of education of the Soviets and the Americans. He complains that while the Soviets educate their citizens to reach state goals, America has done very little to develop the leadership necessary for a free society.

77. The Center for the Study of Liberal Education for Adults was founded in 1951 by the Association for University Evening Colleges. Funds totaling \$160,000 were granted to the Center by the Fund for Adult Education for its establishment in 1951. Since that time the Fund has contributed well over one million dollars for the maintenance of the Center that had its seat first in Chicago and then later in Boston. Malcolm Knowles notes in The Adult Education Movement in the United States (1962): pp. 162-63 that

The Center has had three major areas of interest: improving university programs of liberal education for adults, developing improved methods of teaching and discussion leadership, and building a climate of understanding and support for liberal adult education in the colleges and universities and in the general public. Its program has included 4 types of activity: a research program conducted by the staff, a clearinghouse for collection and distribution of information, a series of publications, and conferences and consultation. The Center sponsored a series of leadership conferences that brought leaders of adult education work in the evening colleges and university extension divisions together, often with representatives of other segments of the field, to consider needs and strategies for future development. In

publications, which have included Notes and Essays (a series of pamphlets on problems and issues in liberal adult education); Reports (including research studies, surveys, and program descriptions); occasional papers; a Clearinghouse Bulletin; and various discussion guides, have been widely used both inside and outside the college and university segment. By virtue of the leadership it exerted and the communication lines it established, the Center has become one of the principal coordinative agencies within the college and university segment. It has accepted responsibility for relating its work to the larger field of adult education, as evidenced by its involvement of representatives of other segments in its conferences, by the extent to which it has made its publications available to the general field, and by the extent to which it has entered into such activities of the Adult Education Association as the Council of National Organizations, conferences on architecture and residential adult education, and the work of the Commission of Professors of Adult Education.

The Center is no longer in existence having been terminated in July, 1968; its work being taken over by the Publications Program in Continuing Education at Syracuse University. In April, 1969, the Ford Foundation granted \$100,000 over a five-year period to sustain the publications program.

For an excellent history and analysis of the activities of the Center during its seventeen years of existence see:

James A. Whipple, A Critical Balance: History of CLEA, Notes and Essays on Education for Adults, No. 55 (Boston: Center for the Study of Liberal Education for Adults, 1967).

78. In Toward a Homeodynamic Society (1965), Blakely discusses the increase in knowledge and power in the present age and the inability of modern man to control them. His thesis is that man must learn how to control knowledge and power. He makes use of a theory of systems as a means of recovering control and asks a set of questions: What does control mean? What does learning control involve? What is the relation between learning control and education? and How is it possible for us to regain control? Blakely asserts that control of knowledge and power can only be solved in the continuing education of adults--adults as parents, citizens and workers.

Knowledge Is the Power to Control Power (1969) is a report based on new patterns and arrangements for continuing education in the United States during 1969. The study points to a trend in the United States toward applying knowledge in solving social problems. Examples illustrating the use of continuing education by non-educational institutions and the expansion of continuing education toward a more central position in formal educational institutions are noted. Developments leading to cooperation are presented as well as obstacles in the way of progress. Blakely suggests ten ways in which improvements

in the field of continuing education may be realized and concludes that continuing education needs a strategy for making a cumulative impact.

The author believes these two pamphlets are important critiques of the field of adult education and recommends that they be as widely read as possible by the field.

79. For excellent discussions of the importance to adult education of the field of public broadcasting see the following:

Henry C. Alter, Of Messages and Media: Teaching and Learning by Public Television, Notes and Essays on Education for Adults, No. 58 (Boston: Center for the Study of Liberal Education for Adults), 1968. The author gives a brief history of educational television and talks about programs produced by National Educational Television;

John Ohliger, Listening Groups: Mass Media in Adult Education, Report No. 218 (Boston: Center for the Study of Liberal Education for Adults, 1967). This study treats the listening group as a method for adult discussion and learning;

_____, Mass Media in Adult Education: A Report of Recent Literature, Occasional Papers No. 18 (Boston: Center for the Study of Liberal Education for Adults, 1968). Contains an excellent annotated bibliography prepared by the ERIC Clearinghouse on Adult Education; and

Robert J. Blakely, "The People's Instrument: Philosophy of Programming for Public Broadcasting," Public Affairs Press, 1971, pp.

80. For a more comprehensive view on the definition and description of adult education as well as an elaboration of Blakely's viewpoint on this subject see "Adult Education Defined and Described" by Wayne Schroeder in the Handbook of Adult Education (Smith, Aker, and Kidd, eds., 1970).

81. "Robert Maynard Hutchins," Encyclopedia Americana, 1969, 14, 527.

An American educator who was born in Brooklyn, New York, on January 17, 1899. He was educated at Oberling College and Yale University. After a career in education at Yale University to become president of the University of Chicago in 1929 at which position he remained until 1945. He was Chancellor of the University of Chicago from 1945 to 1951. As president he reorganized the University's administrative system and started the plan of a four-year junior college and a liberal arts university independent of the professional schools. He was associate director of the Ford Foundation (1951-54), editor (1952) of Great Books of the Western World, and in 1954 became president of the Fund for the Republic. Among the best known of his published works are The Higher Learning in America (1936), Education for Freedom (1943), and The Conflict in Education (1953).

32. There is a publication called Liberal Education Reconsidered (1969). See Bibliography. This pamphlet represents the last papers of the staff members of the Center for the Study of Liberal Education for Adults. The main theme expressed is that liberal education embodies a concern for man rather than for things; though I don't know why the concept "liberal education" needed reconsideration since I think this is what the term has meant since the Greeks invented it. For me, in any case, a better title might have been "Liberal Education Reemphasized."

But, the booklet I believe Blakely is referring to here may be Evaluating Liberal Adult Education (1961). See Bibliography. It is a report published by the COLEA and written by Henry L. Miller and Christine McGuire. It describes the state of adult education programs in 1961 with regard to their background, rationale, educational objectives, and evaluation of achievements. It includes a study of four general areas of liberal education; namely, political and social concerns, community life, value (moral and ethical), and aesthetic value.

33. See Aristotle, Nicomachean Ethics, 5.3 1131a 10-24.

34. Pinebrook was the name given to a large tract of land bordering Upper Saranac Lake by Governor Morton of New York State in 1898. During subsequent years the area was developed by the construction of a variety of buildings by later owners. In 1948 Mr. and Mrs. Carl H. Loeb, New York City investment brokers, gave the camp, along with the Moss Lake camp, to Syracuse University which came to be known as the Pinebrook Conference Center. At first the Center was used for faculty and student meetings but later, after the construction of a variety of facilities for the exclusive use of adults, it came to be the site of a full range of business and professional conferences.

I believe the conference that Blakely is talking about here was held at Pinebrook in December of 1969. The working papers and seminars that came out of the conference were published in the Essays on the Future of Continuing Education Worldwide (1969). See Bibliography.

35. See Alexander N. Charters, Toward the Educative Society, Notes and Essays on Education for Adults, No. 67 (Syracuse: Publications Program in Continuing Education, 1971).

Much has been written on the subject. McClusky mentions in his article in Adult Leadership (October, 1971) that it has been called the Learning Society (McClusky, Sheats, Hutchins), the Knowledge State (Druckers), and the Educative Community (Cyence, L. Sport, McClusky).

36. In Illich's book Celebration of Awareness (Garden City, New York: Doubleday, 1970), he says,

"The 'age of schooling' began about two hundred years ago. Gradually the idea grew that schooling was a necessary means

of becoming a useful member of society. It is the task of this generation to bury that myth. . . . I expect that by the end of this century, what we now call a school will be a historical relic, developed in the time of the railroad and the private automobile and discarded along with them. I feel sure that it will soon be evident that the school is as marginal to education as the witch doctor is to public health. . . . There is no intrinsic reason why the education that schools are now failing to provide could not be acquired more successfully in the setting of the family, of work, of communal activity, in new kinds of libraries and other centers that would provide the means of learning. . . . The basic purpose of public education should be to create a situation in which society obliges each individual to take stock of himself and his poverty. Education implies a growth of an independent sense of life and a relatedness which go hand in hand with increased access to, and use of, memories stored in the human community.

See Ivan Illich, Celebration of Awareness (Garden City, New York: Doubleday, 1970).

_____, Deschooling Society (New York: Harper-Row, Inc., 1971).

For another interesting discussion of education which occurs outside of the traditional educational core area see Stanley Mosca, The Learning Force: A More Comprehensive Framework for Educational Policy, Occasional Papers, #25 (Syracuse: Publications Program in Continuing Education, 1971).

87. Erik Erikson, psychoanalyst and Professor of Developmental Psychology at Harvard University has added great insights into the psychosocial development of the individual which have and will continue to have profound implications on the philosophy, methodology, curricula, and programming of adult education. It was while working with American Indians that he began to observe certain patterns relevant to the emotional problems of the adults of those tribes. He noted similar patterns at the Veteran's Rehabilitation Center after World War II in San Francisco. Erikson defined their problem as "identity confusion." It was sometime later that he published his thoughts from those experiences in a book called Childhood and Society (1963).

He reached three general conclusions:

(1) that along with psychosexual stages of the ego development of the individual, as explained by Freud, there were also psychosocial stages in which one had to make new and fundamental orientations to himself and to the social milieu in which he lived;

(2) that the development of the personality was a continual phenomenon, and

(3) that each stage of development had positive as well as negative aspects.

In order to understand this one should look at Erikson's theory of eight life stages in each of which the individual must create ideas of his interaction with himself and his society:

- Stages I--Trust vs. Mistrust
- II--Autonomy vs. Doubt
- III--Initiative vs. Guilt
- IV--Industry vs. Inferiority
- V--Ego Identity vs. Role-Confusion
- VI--Intimacy vs. Isolation
- VII--Generativity vs. Self-Absorption and Stagnation
- VIII--Integrity vs. Despair

33. See R. J. Blakely, "Adult Education Needs a Philosophy and a Goal," Adult Education, III, 1 (November, 1952), p.

39. See John B. Schwertman, I Want Many Lodestars, Notes and Essays on Education for Adults, No. 21 (Chicago: Center for the Study of Liberal Education for Adults, 1958).

Schwertman asks that a theory for university adult education be developed based on research into the problems of curriculum planning, learning theory, and the evaluation of the results of liberal adult education programs. He asks for a self-evaluation of the urban university with regard to adult education. He asks questions and poses answers to those questions, e.g., What are the differences between teaching adults and teaching the young? What is the importance of the adult's experience in establishing curricula targeted at adults? Will the same goals, patterns, and procedures which succeed with formal education of the young succeed in the education of adults? And, if we assume that graduates of our schools will continue to learn throughout their lives, what education is most appropriate for them in school and after school? Schwertman concludes his essay by enumerating fourteen programs and concepts which represent planning which he thinks ought to be done:

- (1) Programming with common welfare groups,
- (2) Establishment of intellectual and cultural centers,
- (3) Residential adult education,
- (4) Programs for alumni,
- (5) Continuing education for faculty members,
- (6) Custom-tailored programs for individuals,
- (7) Focused study programs like Great Books Program, American Heritage, etc.,
- (8) The idea of "Community Development" where colleges should enter the arena of social action and become conscious "change agents,"
- (9) Opportunities for research related to adult education,
- (10) Programs for the aging,

- (11) The use of mass media for adult education,
- (12) New degree programs for adults,
- (13) A.M.A. program "Explicitly for Adults," and
- (14) Penetration of existing organizational structures like the National Secretaries Association and County and State fairs.

90. See R. J. Blakely, "The Urn and the Atonement," Adult Leadership, XX, 6 (December, 1971), p. 207.

His article was the result of an address he gave on July 12, 1971, to the Atlantic Seaboard Workshop of Adult Basic Education at the University of Georgia, Athens, Georgia.

91. In this article Houle describes Federal policies in support of adult education and indicates ways in which they are being changed. Policies which he sees as continuing are: adult education programs which aim at specific objectives or missions; support for adult education will continue in the form of grants in aid, contracts for services, and special grants to stimulate public or private groups to undertake special kinds of services; and the acceptance by the Federal government of its responsibility to equalize educational opportunity.

92. The Cooperative Extension Service was established when President Wilson in May, 1914, signed the Smith-Lever Act. For decades before the passage of this bill numerous types of activities attempted to educationally influence rural men and women without much success. One method, however, did produce significant results. Demonstration farms were begun in various rural areas of the United States where it was shown that agricultural problems could be solved. In the South, for example, it was demonstrated through methods developed by the Department of Agriculture that cotton could be grown successfully in spite of the boll-weevil menace. It soon became obvious that such a system was a very effective way of influencing farmers to adopt new practices. Agents were assigned, primarily at the county level, by the Office of Farm Management of the Department of Agriculture to all areas in the United States. Slowly a national system of out-of-school education developed which generated sentiment for federal support. It was as a result of this sentiment that the Smith-Lever Act was passed which empowered Cooperative Extension work in agriculture and home economics.

The law provided that each state was to receive a \$10,000 federal grant each year with supplemental amounts added in proportion to the size of its rural population when the state was able to present a satisfactory plan for agricultural development. The law also empowered each land-grant college to create a separate extension division under a director and that leadership from the federal government would come from an office of extension work in the Department of Agriculture. By the end of World War I Cooperative Extension Service became recognized as a way of substantially increasing the productivity of a large element of the American population.

For a complete account of the Cooperative Extension Service see H. C. Sanders, ed., The Cooperative Extension Service (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966).

See also The Directory of Adult Education Organizations 1970 (The Library of Continuing Education at Syracuse University, 1970), p. 24.

See also Warren Rovetch, "Cooperative Extension and the Land-Grant System in University Adult Education," in Renee Petersen and William Petersen's, University Adult Education, pp. 201-23. Rovetch gives a brief history and tradition of Cooperative Extension. He describes its relationship to the university and to its non-university supporters. He examines the social changes which expose the conflict it has between political sensitivity and rigidity and institutionalization of organization and tradition.

93. See Walter B. Emery, Broadcasting and Government: Responsibilities and Regulations (East Lansing, Michigan: Michigan State University Press, 1971), p. 83.

The Corporation for Public Broadcasting was authorized by Congress as part of the ETV Facilities Act.

. . . while the act states that the Corporation is not an agency or establishment of the U.S. government, at the present time it is largely funded by Congress (it is authorized to receive private moneys), and the members of its board of directors was appointed by the President with the advice and consent of the Senate. . . .

It is a non-profit, non-political organization, and its purposes, broadly stated, are to provide financial aid for the planning and production of high quality non-commercial educational TV and radio programs, and to assist in the development of systems of interconnection for the distribution of these programs throughout the United States. It does not produce programs itself, but receives and makes grants-in-aid to others (creative individuals, groups and organizations, educationally disposed) to produce programs and to distribute them for wide reception.

94. See "Harold Dwight Lasswell," Who's Who in America (37th ed., 1972-73, Vol. 2, Chicago: Marquis Who's Who, Inc., 1972), p. 183.

Harold Lasswell is a distinguished educator and political scientist. The book Blakely refers to is Politics: Who Gets What, When, and How (New York: McGraw-Hill, 1936).

95. For an interesting account of some sociological characteristics of doctoral adult educators see Adams (1969). His study was an analytical sociological profile of professional adult educators with doctorates. A questionnaire was mailed to 200 of whom 86% responded. Adams found the following characteristics: (1) respondents tended to

be Protestant married men, between 46 and 50 years old, middle-class liberal Democrats, from rural Midwestern America; (2) he had earned his first professional degree in the social sciences between ages 20 and 30 and his doctorate in adult education (Ed.D) between the ages 36 and 40; (3) he had been working in adult education from 16 to 20 years largely in universities, and was at the time of his response an administrator; (4) he was "mildly satisfied" with his national professional organization, satisfied with adult education as an occupational field, very satisfied with it as an educational field, and he identified himself more closely with his field than with his employer; (5) he felt that his field should be under the influence of the professors of adult education; and he preferred group discussions and the seminar method for his own continuing education.

Marilyn Miller's, ed. On Teaching Adults: An Anthology. Notes and Essays on Education for Adults, #32 (Chicago: CSIEA, 1960), also speaks to the question of qualities of a good adult educator.

96. I was not able to track this article down.

97. Coolie Verner defines (Jensen, Liveright and Hallenbeck, 1964, p. 32) adult education as "a relationship between an educational agent in which the agent selects, arranges, and continuously directs a sequence of progressive tasks that provide systematic experiences to achieve learning for those whose participation in such activities is subsidiary and supplemental to a primary productive role in society.

Whereas the respondents interviewed by the author envision adult education as a process where both the agent and his clients share the responsibility of selecting course content, method of learning, and self-evaluation, Verner's definition implies that the agent has something to give and the client has something to take.

On the question of method Verner is clear (p. 36).

This question of method is primarily a matter of institutional concern where the institution as the agent establishes a relationship for learning with a prospective body of participants. Thus the selection of method is an administrative decision made by the adult educator responsible for the administration of the institution on the basis of the use of the institution's resources and the fulfillment of its educational objective. Method therefore identifies the role of the institution with respect to the education of adults.

98. In December of 1954, President Eisenhower appointed 34 Americans representing all interests in American life to a Committee for the White House Conference on Education. Its responsibility was to make as thorough a study as possible on the educational problems of Americans. The President asked the Governors of all the States and Territories to convene conferences on education in the areas of jurisdiction of each which would then culminate in a White House Conference on Education.

All States and Territories took part in the program with more than 3,500 preliminary conferences on education being held prior to the White House Conference in Washington November 28 through December 1, 1955. More than 500,000 Americans were directly involved with this study.

CHAPTER III

CURRENT AND FUTURE PROBLEMS PERCEIVED BY RESPONDENTS AND SUGGESTED STRATEGIES FOR SOLUTION

Chapter II was concerned with the underlying premises of education in general and adult education in particular of the respondents and their perceptions of adult education goals congruent with those premises. Recordings in this chapter are designed to discover their perceptions of problems which inhibit or block desired ends together with present and future strategies suggested to remove those blocks. Oftentimes respondents simply identified problems and avoided offering solutions. For example, one said that he believed his job as a teacher was to point to a door which his student could choose to go through or not. The author thought it was fair, however, to draw inferences from comments made by respondents with regard to particular problems. The author chose to go through that door to suggest solutions he felt were congruent with the thoughts of respondents where they remained silent. If, for example, a comment were made in response to a question to the effect that the Adult Education Association-U.S.A. should have been more oriented in the past to the political sources of power in the United States in order to secure increasing material and moral support for the programs of adult education, and nothing more was said about this--then, it is fair for the author to infer that present and future AEA action should seek to cultivate, by whatever legitimate and desirable methods, the political

sources of power in America for support for its programs. The author has inferred solutions on the basis of such logic. The testimony follows.

Howard Yale McClusky

Q: Dr. M., what haven't we learned from our adult education history?

M: Well, I might have said that I wished--I'm now back there as a technical operator--that university adult educators had, particularly the practitioners, been more students on the job of what they're doing. I wish they had set aside 5% of their time for validation or innovation or program development and program validation, rather than just to satisfy ad hoc needs. We've been too ad hoc. I wish we had been a little more visionary in the sense of conceptualizing why we're doing it. I wish we had asked ourselves more constantly than we have, what we have learned from this that is good and which should be continued. What have we learned from this that could be generalized and transferred? What have we learned and how is it adding up to something that will give us a solid basis of rationalization for what we are doing? And cues as to what we ought to be doing. I think we failed to learn and to apply the--skeptical is perhaps the wrong word--scholarship and the productive scholarly attitudes as to what we were doing. Were you following me?

J: Sure. This implies inquiry; it implies evaluation; it implies skepticism; it implies analysis. At least these are the things which come to my mind while you were speaking.

M: Yes. In effect we ought to professionalize the field. The difference between a physician who really knows his stuff and who can also take a blood count and a technician who comes in and takes your heart and blood pressure. That's one reason why I think I see--I saw it at Wisconsin and I think I see it here now as the staff becomes better trained and more professional, in the good sense and not in the bureaucratic sense. We look at this in greater depth and greater implication. It's more than just being a bell hop for folks.

Q: Is what you're saying that we really haven't known where we're going and we're only now beginning to determine it?¹

M: That's right. And we're more thoughtful students of it now.

Q: What do you consider are the major problems that university adult educators face today?

M: I think it is related to what I've just said. In the first place we need more resources. I think our function is better accepted.

We are much further along to acceptance in function. May I just say for the sake of the record and share with you what I picked up when I said--I think I said that I had been on this Office of Education project at the University of Utah for the last two years. I've been to New Mexico, Idaho, Washington, Missouri, Kansas, and so on. There is no question about acceptance. State and federal governments are reaching out and so we're over that hill. We've got to implement that. Our big job is resource to implement this new interest and I certainly think we need about as much creativity at this point so that we just won't beat the old kettle. You see, we are in a creative period, in a sense, of new concepts of time patterns. You don't have to go from September to--and so on. All of that stuff is a loosening of the requirement. What we need now is innovation and creativity and new resources.

Q: When you say new resources, what do you mean?

M: More money--more staff.

Q: Okay, then what should university adult education and adult educators be doing now? Have you perchance read Alvin Toffler's Future Shock?² I don't want to lead you or put ideas into your mind but I'm just wondering--should we as university adult educators now be considering the future?

M: By all means. Part of my answer can be found in my October, 1971, article in Adult Leadership.³ Replication of some of the basic research. University adult education should be leading more than it has in the past in the substantive field. I'm bragging now, but this new committee that has been created on the Campus; it's been said that if I'd been ten years younger they would have offered it to me.⁴ If I had that job, I would pull in a larger section of the University than we ever have before. I would have gotten more people in a partnership relation. By the way. It is not unrelated to some of the things you bring up here. This quote that you give of Bob Luke.⁵ It's part of the same problem. Let's be very specific. I would try to get a nice big hunk of money, not to set up a research division of my own, but to farm out research to the relevant agencies. To be specific, if I had any money, I would ask the Institute of Social Research to duplicate the WORC studies that were done ten years ago.⁶ I would ask the boys in motivation to do everything we know about the resistances in adult learning. I would ask the social workers, the social psychologists, the sociologists to help me understand a little bit more of the flow of communication in the inner city. In other words, I would make more use of our existing resources to get at the process in depth.

In summary, I think university adult education has got to go in greater depth as to the basis of what it's doing and also has got to be more demonstrative in the sense of more demonstration, more innovation, more trying out, more experimentation, and so on. Now

if there is anything unique about a university in the field of knowledge it is that it is creating knowledge, it's discovering, it's trying out, it's pushing the frontiers. University adult education will always have its lectures, its workshops and institutes, its correspondence divisions, its credit and non-credit course and all the rest of it. The typical main line tradition and we ought to do these better, but we ought to move from that state now. We're really ready for a breakthrough.

Q: What do you see for the future? Can you tell us about this breakthrough?

A: Yes. I'm really gung-ho. All we need is a little seed money to show what can happen. We're back to what I implied yesterday. It's related to your Toffler's Future Shock. The whole fact of change and the profoundness of this change are my favorite themes. Because of the change and because of the necessity of continuing education for everybody puts the whole problem of education at any stage of life in a different light. It changes the whole thing. Professional education has got to make much more room for comparative history and history in general. That's one reason why I think this project you're in right now grows on me. And today it seems more significant for almost the same reason it would have been five years ago. General education at the literary college level has simply got to train people for the future, to learn to transfer for the future, to anticipate change. I see it wrapped up with education as a whole in the effort to respond to change. That part of the total institutional response that we call university adult education, in a sense, would be the leader on the practical run of the things. It is pretty general. Cable TV is around the corner.⁷ We've got the technology to get the answers back for some central information or knowledge center. Some big libraries have that now. Louisville Library has had that for years.⁸ The concept of skill and learning centers placed all over the place.

Q: Do you foresee, for example, any diminution of the gap between technology and the desire to use that technology by all elements of the power structure for the benefit of the mass "properly"?

A: I think we have not anywhere exploited the new technology for educational purposes. It's been for entertainment purposes. They've done some reasonable work educationally. I'm thinking of Sesame Street.⁹ I did some consulting down at Appalachia in Adult Basic Education where they got records and got Johnny Cash to do a little pitch for Adult Basic Education and got up into the hills where they never got before.¹⁰ And I think of the little mini-learning lab and medical unit that goes back over the hills. I've seen this and I've talked to the ladies, good paraprofessionals, who go into the homes of ladies who can't get away and take instrumental materials back there. When you see what can happen when they really put their money to it and effort to it and provide for it, it's encouraging.

I happen to be on the advisory board for the Public Broadcasting Corporation and they're going right now for the drop-out between the eighth and eleventh grade--the adult who dropped out of school at about that time. They're preparing something roughly comparable to Sesame Street for the Adult level. Since I've seen you this week I've gotten the report. They are about ready for a recording. All of which is just another way of saying that we have not anywhere near developed the educational uses of these things.

Q: It is possible for us to do technologically almost anything we want. Do you see any evidence that we will desire to use this technology for "good" change? Will this gap diminish?

M: Well, we're betting a lot. One of the things that always shocked me in the old NORC reports was the 29% of the target population which responded didn't want to know and learn anything more. 71% were pretty excited. We don't know how big this apathetic group is. I don't think we can answer this until we have listed the media and this is the old G-R. We don't know the response capability until we do a better job with the input. A lot will depend upon resource. We can have a lot of Cable TV but it can be drivel. Presumably it will give you a much wider range of options and a lot of local participation in the thing but you may come up with nothing. The future of adult education depends upon whether we can get the resources to get the talent to take the task. The need is there.

Q: What have been the failures of AEA?¹¹ These can be looked at in terms of current problems and current needs and, of course, implies strategy for future AEA action.

M: I think it should have gotten more deliberately to the source of power in government. It probably should have kept beating the door of some other foundation beside Ford.¹² It probably and possibly should have gotten closer to the sources of power. I don't know whether it could have been more aggressive in retaining and cultivating membership. It might have recruited in and cultivated that kind that belonged to the old AAEE like the Newton Bakers, the John Finlays, the Wielsens, and the Dorothy Canfield Fishers.¹³

Q: What should the AEA be doing now?

M: See Adult Leadership, October, 1971.¹⁴ But I did stress strengthening the sections in order to take care of specialized interests. And what I would say is that from now on adult educators must be futurists. This is not to say the past was wrong. The past may have been right, for all we know. In fact, I believe the past, in some places, was more right than we realize. But we've got to re-relate it to the future. And this is all the more reason why we should look at the past of the AEA because adult education, almost by its very nature, is an instrument whereby we adapt to change and therefore we should understand and anticipate it. Again, I mention seeking sources of

power and the establishment of new coalitions. I think AEA should be the leader of cooperation, i.e., that it should always be seen and redouble its efforts to get close to the sources of power. I can't understand why AEA had not gone to the foundation more than they have with projects. I recommended that they reproduce the NORC studies, Volunteers for Learning.²⁵ I'm sure that could be done.

Q: Dr. M., can we deal now somewhat more specifically with those problems that relate directly to the selection and training of professional adult educators? The process by which we choose people to become candidates for the Ph.D. has been under attack for some time. Do you think we should accept anyone who wants to come into the field?

M: My general reaction there is that we should be much more free than we have been in the past. In other words, if we see some fellow who seems, by virtue of performance--let's forget credentials now for a moment--who shows talent and interest, commitment and style that would fit in, I think we should make it easier for him to study than we have in the past. Performance should be the big criterion. On the other hand, I would frankly say this, and we face this with the black student today, that I would want to be realistic about the kind of environment and the kind of circumstances he is going to find himself in. While he may be the greatest guy in the world and he may be quite bright, if he doesn't have those minimum academic competencies that will enable him to do reasonably well in this competitive race, it's not fair to him to say, "You're a great guy and you're bright. Come in here. You're bound to succeed." And he gets into a rip snorting hot course over in Psychology and he gets cut down. That is what is happening to a lot of our black students. Bright, able, good guys who come up here. They don't know the culture. Their style doesn't fit them in to the style here and they get decimated. That would be the only reservation I would make.

Q: Should we select people with regard to their attitudes? Should personality tests or whatever be criteria for selection?

M: I think the personal dimension is terribly important. Except, there, I don't have enough faith in the average test to be too definitive about it. I think you can get some good clinical personality assessments to give you a sense of probability but not a firm assurance. I would do that, perhaps, to screen out the extreme cases, which I think you can pick up sometimes. But I also believe we should counsel the person along the line.

Q: Dr. M., if we could just change tack for a bit now. Many adult educators regard the lack of enthusiasm of the young for learning as an adult education problem. Do you agree? If yes, what can we do to inculcate or help to inculcate in the young a desire to continue to learn?

11: Well, you'd be interested to know that at the White House Conference section on education there was a lot of interest on the part of the older people.¹⁶ They weren't all old--past 60 or 65. There were a lot there younger who were professionally interested in this very question. The general feeling was that if you want to get people to grow; to learn in the later years, a lot will depend on what happened before. I'll give you a little article I wrote for the School of Education in Boston on the Retroactive Influence of Adult Education on K-12; namely, that it is true and it is becoming more and more true that education and learning must be life-long.¹⁷ This we all admit today. Therefore, K-12 plus K-14 plus K-16 should be conceived of as preparatory for life-long learning. This means, therefore, that an education should be in terms not only of the immediate product but also the later product. Not only what it is going to do to him now but also to what extent it will equip him or stimulate him or ignite him to want to keep on. So learning becomes open-ended; never complete. You never complete a course, in a sense. Everything is introductory. So one of the big objectives is to consider the person, to use the analogy of the airport to the runway, as taking off. He's not landing. Every course, every bit of instruction should be taking off. He's not landing.

The problem of evaluation should be followed in those terms. We ought to be very careful not to evaluate him in such a way as to give him the idea that he is no good as a learner. He may not be very good as a learner in a given subject, but if he gets the idea, in the light of our present society, that learning is not for me, this guy is whipped before he's started. So I say, if you think of that and its implications for teaching, it's terrific. Even though the person may flunk the course, the teacher ought to do a superb job of counselling and seminar, rearranging things to explain to the person that this is not the end for him. If you really take this seriously, it revolutionizes learning.

Now let's take grading. At Wisconsin they were considering not even putting from now on a failure on a person's record. Just put on his record where he succeeded. In our university graduate school here at Michigan you have people who screen the initial applications to the graduate school on two grounds. The first is grade point average at the undergraduate level and the other is the standing on the Miller Analogies.¹⁸ I know of several cases, on the point I'm making just now, where a person will come up with an E or an F sprinkled in through his undergraduate work and if you add that in to the overall it brings his grade point down. But if you look at the profile, the guy's outstanding in some of these other things. This makes all the difference in the world. In the attitude toward grading, toward promotions, toward counselling. You know what NORC's finding is--the more education you have the more you are likely to want and get.

H: The change is so profound and the learning is so important. Our typical attitude toward screening and toward elimination.

J: Do you think it has anything to do with our system which emphasizes competition rather than cooperation?

H: Oh yes. No question about it. I'd like to be a little mouse and wander around the school system and see what's happening. I know this is not typical but I heard that a fifth grade teacher or principal was marking the class according to the normal curve of distribution. When I heard that, I was horrified. Lots of places don't give grades until the seventh grade, but I don't know where we are.

J: Dr. H., would you summarize for me, then, what you see as the problems of the field and what you see as possible solutions to these problems?

H: Well, some of this is in my last October article. I'm not against the past but I think we could be a little more on the innovative side. I think we could be more frontier than we are. We are becoming quite frontier, methodologically, although I'm not sure that the new yeasty stuff is coming up from within the adult education crowd. I don't want to be unfair, but I'm willing to go on the record for this. I have the feeling and I may be wrong about this. You hinted at this earlier. That the present crop of folks moving into the field and those moving into it are so anxious to become accepted by the academic establishment, that they are probably not as free to be as innovative as I think they should be--that frontier. Now, I'm not saying our generation was any more frontier. I think our big bag was to help establish the discipline, you see, which was a pretty respectable sort of thing. I wish there were more frontiers.

The other thing I wish we would come to grips with is the problem of conflict and controversy. I think you hinted at this, too. Shall we get into politics and so on? Should we take a stand? What is the role of adult education in conflict, in dissent, in a society where so much has happened by violence. I think we can be more creative in response in that field. We can make a more constructive and positive contribution to the process there and to meeting some of the problems that give rise to violence. Our preoccupation with methodology has made us a little more innocuous than we should be. Do you follow me?¹⁹

J: Very, very well.

H: We can be more inventive and more aggressive, and when I say more aggressive, I'm not saying we should get better flags. I'm not using the old terminology. I think I would even recommend that we study how Chavez and how Martin Luther King--not the Students for a Democratic Society, not how do you blow up the place, not the

typical let's get the communications network and plug in on that-- but, how can you, this side of violence, bring about constructive change. Let's say the Ghandi approach, the coercion by non-violent means which is a little bit more than the educative approach; the legitimate use of non-violent techniques to get the society to confront the basic issues more. How this is kind of romantic, but I kind of felt that I would have liked to see more programs in the AMA on what is to be the adult education role in dissent.

J: Yes. That's a question I've been very much concerned about.

K: And the other thing inside of the institution of the university itself. As a graduate field we ought now to begin to move about. We ought to get a larger section of the university in on the act than we are presently. Perhaps the primary emphasis will always be on graduate programs but we ought to have linkages stronger and stronger with the resources of the university as a whole. We are at the stage now to draw upon those substantive resources. We have allies in the whole university that I don't think we are using. I would not only beef up what we already have in extension service but I would deliberately go out all over the campus. I know there are allies there. All you need to do is to agree that once a month we're all going to get together and talk things over. We've got to be a little more systematic than we have in the past in getting the university as a whole in on it.

Wilbur Chapman Hallenbeck

Dr. Hallenbeck and I were discussing his role at Teacher's College especially vis-a-vis research. His comments on this subject lend insight into the problems of the doctoral candidate in professional adult education. It gives further insight into Dr. Hallenbeck's conception of himself as a teacher. Unfortunately the recording dealing with questions about the university and problems of the field of adult education did not take. The machine and tape which recorded this session were left overnight at Dr. Hallenbeck's. The next day the questioning was completed and the author did not discover the accident until he was in Washington, D.C.

H: Many professors who have considerable scope to their plans for research will enlist their doctoral students in doing their work. That gets a job done. But it always seemed to me when you're interested in this doctoral business in terms of the student, and this not as anything much more than a means to an end, that the whole process of discovering what they can research, what a research is, how to plan research, is perhaps the most important part of the whole problem. Without the necessity of working out these questions the most really educative part of the process has been cut off. I've always operated the other way. So my work in research didn't get done. One of the hazards that students run into and I think one of the greatest difficulties you have working with students is to get them to realize what is feasible to do as a Ph.D. dissertation. They all want to cover the world. You can see that in the things I've said to you about what you're trying to do. The accessibility of a professor to a doctoral student is the most crucial thing there is. . . . I would say that the overwhelming need is to be truly interested and try to share the problems of the students.

J: Along that line of discussion, Dr. Hallenbeck, do you think that there is a new breed of adult educator today?

H: You mean at Teacher's College?

J: No. Not at Teacher's College but in the whole field.

H: I think that may be right and it could constitute a present problem.

J: I was just wondering why.

H: Well, I'm not at all sure that it isn't explainable, in part at least. I don't think that it's a trend that's peculiar in the field of adult education. There has been a great deal of discussion, a great deal of effort, as a matter of fact, and one book was written in which I had a hand considering adult education as a university discipline. And this I think is part of the problem. As an area of study grows into a significant piece in a university then the primary concern is its perpetuation and development in academic respectability. Training becomes the training of those people who will perpetuate the discipline or the making of university professors. Making university professors is a vastly different thing than making adult educators.

My conception is that a school of education is not primarily in the business of making professors of education, it is in the business of equipping people to be more effective educators. That is the difference. To me, you can't in a professional school spend all your efforts in trying to train professors for professional schools. This reminds me of the bright boy up in Connecticut who I knew when I was mixed up in the WPA days who got the idea of inventorying the situation with regard to the number of secretaries there were in

Connecticut at that time. So he got the statistics and also the number of people in WPA courses studying to be secretaries. He came to the conclusion that the WPA was training girls to be secretaries so they could get the jobs that there were, so that the ones who had the jobs could become unemployed. That silly arithmetic reveals the situation. Where did the good old professors of education come from? Where did the good old school boys come from in the days when Teacher's College was the great school? Where did they come from? They came out of the classroom. Out of experience. Now they don't come out of there. They come out of the Teacher's College classes, you see. Well, this is one thing education should learn from medicine. Medicine has the majority of its professors those who are currently in practice. They call them clinical professors.

Q: Are you thinking about the internship program?

A: Yes. Where it never works very well in education, but it jolly well works in medicine. And, of course, you don't practice medicine without it.

Q: Maybe students should be selected after they've had some adult education experience.

A: Well, of course, we by-passed that problem because I would guess that over the years that I was in Teacher's College 90% of our students were people who had experienced in adult education. Maybe your selection problem is a question of timing of training, i.e., training should follow experience rather than precede it.

Q: Many professional adult educators believe that adequate funding is and has been a great problem in attaining adult education objectives. How well do you think present funding satisfies adult education needs?

A: Well, I don't know that you can answer that question because nobody knows, for example, where you would draw the line, on the one hand, where a particular institution's responsibility for paying is, where public responsibility for paying is, or where the individual's responsibility for paying is. I doubt whether you can get any hard and fast lines. I think you can get some working definitions that will by a kind of rule of thumb enable things to get on pretty well. I don't know that you want hard and fast lines. I'm a little wary of hard and fast lines because then they vitiate the responsibility for working out these problems when you get lines drawn, when you get laws made, and so on. I doubt that you live by rules and regulations. I think you live by intelligence and responsibility. They don't quite work together.

Q: Dr. Hallenbeck, what do you consider are the major problems that university adult educators face today?

H: Well, who do you mean? People like me or extension people?

J: People like you. The training people.

H: Well, I'd like them to refocus their attention on the training of adult educators. And devise ways and means where they could be more effective in training people who were actually working with people. The training programs really don't get down to that level. You see, most of the people who have been trained get into administrative positions and we need to do a better job for people--the adults that are looking for education. And so few people who teach adults have any proper concepts of what their job is. They either have teaching experience which they transplant into this job and it doesn't work very well. A great many of them are currently teaching so they're tired when they get to the adults. It takes more energy to teach adults than it takes to teach youngsters because adults are tired people and you have to infuse energy from yourself into them; into the group. Or people are people who have been successful as operators with reference to some field of operation or some craft or following some interest or something and if they've had no educational experience, no school experience, they are apt to turn out to be the best teachers. You've got a peculiar problem. On the one hand helping those people who say, "Well, gee, I haven't any teaching experience. I never taught;" to give them the confidence that what they do have as being pretty close to the right thing anyway. On the other hand, helping the professional teachers to understand why and how it's a different job. Until we find out how to do that, you see, I'll be pretty bothered about the effectiveness of adult education. This seems to me to be the present job.

J: Would you say this was the problem you were faced with?

H: Oh yes. I was very conscious of it and tried to stimulate my imagination. But I was never able to get much encouragement except for the situation that I described a while ago--the WPA. That worked because it was an extension course from the College back in the days when they operated extension courses.²⁰ They don't any more.

J: Do you think that research would be able to help in this area? Do you consider this a research need?

H: Well, this is another one of my sore points. And I don't know what the answer is. We were talking about it the other day with reference to two approaches to research in the Ph.D. It was the idea--it's the same problem basically. What proportion of research done in the field of adult education has close enough reference to the genuine problems of the operation of adult education? And if it has, how much of it gets into the stream of adult education functioning? And what good is it anyway if it doesn't do that? Morse Cartwright made one quite futile attempt to get at that. It was a little red pamphlet that he got out as a product of a conference of adult educators. It was a pretty good conference in which he made or the

group made an analysis.²¹ It was really a result of the conference and the committee of the conference that got it together and he generated it and so on. Then the Professors made a similar attempt and the Brunner book was an effort to inventory and make sense out of every kind of research that might with any possibility be applied to adult education.²² Then the Professors, after that, sort of endeavored to protect that book of Brunner's and there was a wirecrushed thing that came out.

J: Yes. I think Kevittow was mixed up in that.

H: Yes. Surt was. And it had one or two supplements.²³ Yet, nothing has really happened. They never quite got to the stage where even two or three professors sat down and said, "let's figure this out and, even if only a little bit, try to implement it--get it into operation." I pled for that even as far back as the time I was chairman of the Professors.²⁴ But nothing happened. Of course, I don't know whether the professors have ever gotten over this lingering feeling that exists among them of sensitivity--that they do not quite feel free to really open up because of their own limitations. And some of them have some pretty severe limitations which they're quite conscious of. And they are different kinds of limitations, you see, and this lingered among them.

The major thing that the professors did was a little community pamphlet that we got out as a first project.²⁵ I was chairman of the committee that did it. I did part of it and there were four or five others involved in it. We got to working together pretty well and had got a good deal of satisfaction out of producing something that was reasonably creditable. I had great hopes at that time that that would be enough of a breakdown of this feeling and we'd get on. But the project since that time has been kind of off in a corner with just a few people involved just by correspondence and so on.

Q: What do you think university adult education should be doing now?

H: Now again do you mean what the university should be doing in adult education or what kind of group should be doing?

J: I'm talking about your kind of groups.

H: Well, I don't know that I have any competence in answering that question.

Q: What do you see for university adult education for the future? I just finished reading Toffler's Future Shock in which his basic theme is that the rapidity of change is overwhelming and people are not prepared to deal with it and to accept change as a norm.

H: Sure, because they've had the wrong kind of education.

J: Yes, and I'm wondering what adult education should be doing about that problem?

H: Well, I think they should be very realistic about what it involves. Adult education at the points at which it gets done and the infusion through all kinds of adult education. Helping people to realize that they have got to become flexible. That they have to recognize that the normal is a constantly changing world not a world that stays still and things stay put. I think that must be emphasized. Adults at every possible juncture must be exposed to the understanding of this. I think that's pretty tough. It is pretty tough to get adults to become capable of understanding it themselves let alone teaching other adults. But it's the kind of a world we have. There is no question about that responsibility.

J: One of the major criticisms of the field by some people in it is that we don't know where we are going and we should sit down and decide where we are going to go.²⁶ Then the determination of how we are going to get there will be easier.

H: Yes. I would maintain that position. And, I think we'd better start, perhaps, with some frequency and think over again where it is we are going.

J: Dr. H., one of the consistent problems in adult education has centered around the training of professional adult educators in the university. Training adult educators has been your forte. Can you tell us what your ideas are with regard to the training of adult educators?

H: Yes, but I don't know at any point where something I say is not clear. Well, I've been pretty much committed to the idea in the preparation of educators that you provide them with an understanding of the elements with which they work; the nature of the job they have to do. And then turn them loose. You never really tell them how to do it. You only give them an illustration about it has been done with reasonably good success. You let them see such things when it is possible. And you try to leave them with a measure of success feeling that the thing can be done and they've got the stuff to work with to do it. It's only to give them this sense of security to start out with. They will discover that security after they've obtained a position, a job.

There are, perhaps, some few essential skills that need some practice. It's the task of the university adult education professor to provide the situation in which students can practice. There's nothing different in this, I think, from the prevailing concepts of modern education. You give them a good dose of psychology so that they understand the people. You give a good dose of sociology so that they understand the community and some social psychology so that they understand how people work within the framework of society. Then you try, with that kind of background, to give them a positive concept of

education. We had a discussion course which I think was very worthwhile and very important because I think discussion is very important in adult education. And then we had a course in adult counseling from time to time.

Q: Yes? What did you think about that?

A: I think it's very essential but it's very difficult to get somebody to teach each who has some sense of working with adults. After I left Paul and Ralph got Ester Westarvelt to do it.²⁷ She had a whole lot of sense and had a very substantial feeling for adults. But there was always a problem with our adult counseling course. It was never adequately handled but we were conscious of its desirability.²⁸

Ralph Beckett Grence

Q: Dr. G., could we spend some time now talking about the major problems facing adult educators today and those they will face in the future.

A: Yes. Yesterday we talked about the whole problem of making changes in the community. The only way where labor got where it is was in terms of people going out and people dying for what they believed in so that ideologically I accept that kind of thing. But I always pull back a little in terms of feeling that there ought to be another way. So long as adult education is concerned, in the long run, what we've got to develop are the methods of discussion and one of the things that worries me very much about the present situation is that we're moving away from the concept of discussion; from what I call the loyal opposition to a period of confrontation. Now you maintain a democratic society in which people are operating on the basis of confrontation troubles me. . . . I believe that if we really went at it we could do more to help people understand the issues. . . . So that the adult education problem is to help people see the choices which they have to make and it's at that point where I still am working in terms of trying to get people to understand the issues. If they have a clearer understanding of the choices they'll have to make, hopefully they'll make better choices. . . . So that this analysis of the power structure in the community and the efforts to deal with it are crucial. . . . I've come to feel that the heart of the whole thing must also include the political process, i.e., how to use and participate in the decision-making process. What the IFL is trying to do is a step in the direction. . . . The questions are what can you do besides this in adult education to broaden man's understanding. How and to what extent can the presentation of more adequate materials modify his position and so perhaps avoid violent confrontation? That's an area where we need much more research and understanding in the whole decision-making process.

J: It seems to me that learning and growth and change have a very high and a very close relationship.

S: Well, unfortunately they don't have as much as they should have. That's the interesting thing. Practice makes perfect but what it makes perfect is sometimes the wrong thing. This defines again this big adult education problem; this whole feeling of impotence upon the part of the individual. We were talking about the democratic approach and the possibilities of planning and so on. I think the thing that's always intrigued me is this difference that's happened in 200 years.

I always enjoyed reading Drums Along the Mohawk which is the story of Revolutionary War life on the frontier.²⁹ Here was a very unstable situation with Indians and war and uncertainties of frontier life. . . . Yet, here were families growing up with apparently a good deal of confidence in the future and themselves. Today we live in the midst of all this affluence and comfort and yet we have this terrible apprehension we can't control, i.e., those people felt the competencies to deal with the kind of situations which confronted them. They would take their packs and go out. I've always been intrigued by the ability of these frontiersmen, both Indians and whites, in what they could read in a completely non-verbal environment. So and so many people walked through here, and so on. They were carrying packs or they weren't carrying packs. It's fascinating when you think of the potentials of communication. When we get to ourselves, we've heavily lost ourselves in terms of the verbal; we've overdone the verbal side so that all of the ways of communicating that could enrich life are not there. And so almost all of us feel that lack of ability to really participate and to have a share of the responsibility to make decisions that are important to us.

J: Yes, I understand, I think. But could you focus the problem for me a little more and perhaps it may be easier to suggest solutions.

S: Well, it's the problem of what I would call a participative society, which is what I think we're hoping to move toward in the educative community, and the concept of shared responsibility. One of the things that's intrigued me is this; we're all concerned about crime and how you deal with people who commit acts which are clearly established as not within the framework. We know that punishment is not the answer and I think we've gone too far in terms of excusing people. So that in some way or other we're going to have to find ways in which we look at the situation, not in terms of retribution, not in terms of punishment, but in terms of shared responsibility. You didn't mean to run the man down with your car, but you did and so, therefore, there is no way in excusing you from a share in trying to help the people who are dependent upon the individual you ran down. There's no use putting you behind bars because that does nothing for the other persons. What are the ways

by which individuals can somehow or other maintain maximum self-respect and a feeling of some chance to grow and yet at the same time fully accept the kinds of responsibilities that ought to be theirs because they were involved in that particular situation.

So there's another of those areas that we're continually trying to identify; some kind of systematic educative exploration of those issues in our effort to identify alternatives and decide on the relative values; and to build the social action patterns that are necessary to support those choices. That's my concept of adult education or education.

Part of the solution is to involve 20-year-olds in a search for responsibility. If you're going to have much chance with 20-year-olds you ought to be doing this with 3-year-olds. . . . I think the testing of the hypothesis that if you started with kids that are around age three and really tried to plan a series of educational activities, not just their schooling but tried to look at their overall education--family and school and community combined--and were able to do it as fully as you could from three to twelve--I think the results at age twelve would really be exciting. We lost an opportunity here at the Research and Development Center to do that but because of administrative complications the Office of Education cut off our funds.³⁰ This was really a major disappointment.

So, to summarize. The systematic concern of organized adult education for the citizenship problem is still limited. This should be a major area of concern for adult educators, i.e., they should make strong efforts to coordinate activities of all groups concerned with adult learning to tackle particular problems. I think we're very strong on the vocational side and I think we've done better on the recreational side than we've done on the straight citizenship side. We've never really tackled the citizenship problem. Take the 54 decision.³¹ I think some of the best work has been done by an agency like B'nai Brith in terms of working with prejudice.³² Your social psychologists ordinarily never appear at adult education conferences or belong to adult education associations. Why not? People like that or people who have been working more systematically in terms of trying to do something with these attitudinal problems are missing from our ranks. So that here we are, you see, back at the fact that under the label of adult education is only a small segment of what the real adult education resources of the country are. How do you relate the organized labeled section to these larger resources? How do we organize TV, for example, which has tremendous potential? What do we know about the impact of TV on behavior? We've got this report on the study of violence.³³ This indicates that there's probably more impact of TV on violence than we thought that there might be. This whole problem of looking at the total educational job and looking at our resources; trying to define the kinds of things which the different groups can do so that they're all, as much as possible, working together; this is the big thing. This is why the failure of the '50 effort to bring these people together is so disappointing.³⁴ Here's a great need; change coming fast with a lot of problems on which we really need education, and yet, somehow

or other, we're still piddling along with these little separate efforts.

I think there are signs of movement. At the University of Georgia here the Adult Education Department is developing working relations with other units in the University such as Journalism and Pharmacy. Out of such efforts will come research proposals which can enlist the help of sociology, anthropology, psychology, etc. It would be a useful service for AEA-USA to conduct a survey to find out what is going on in Universities across the country.

J: Very clear. But talking about 20-year-olds and 3-year-olds, are these people of major concern to adult educators?

S: Well, that's what I was getting at. The point I'm trying to make is that in America we've convinced ourselves that in the technological areas, for example, transportation, electronic devices, radios, TV's, and things like that--we assume almost automatically that this year's model is going to be better than last year's model. And if you possibly can you should trade it in and get this year's model. Well, okay. There's a certain value in that. But how do we get the same concept, i.e., that a city government, the federal constitution, the presidency, any of these things are human inventions? How can we get kids to realize that man developed these patterns of living together which we might call inventions? Jerome Bruner is working along related lines.³⁵ Somehow or other we need to get the concept across that all of man's arrangements are somehow or other things he's worked out. I remember when daylight saving time was first introduced. Some of the people objected because we were tampering with "God's time." I guess a great many people took it for granted that these are things that God did. They weren't things that man's ingenuity modified and tampered with. So that if you could begin to get people to say--"Well, look, this constitution that we've got we did 100 years ago and look how things have changed." But we've built in bureaucratic staffs and other people have got a commitment to keep it the way it was and they tend to be more powerful than the few people who think it ought to be changed. Not enough of us are really concerned about it and identify specifically enough with it because to work with it would mean to change it. Those are the kinds of things that adult education needs to deal with. The difficulty is that you don't have a handle really to hold them. The vocational thing has a handle, i.e., a man's got to get qualifications to get a job. He knows it's identifiable and he goes to it. But there are almost no handles yet for citizenship.

J: Well, how do you organize to get handles for citizenship? How do you get and organize such an educational program so that kids can be imbued with the idea that living is continuous learning and changing?

S: That's where the community input comes in. What's all this going for? Presumably it's to help you do certain kinds of things.

When and if the elementary school could be run in such a way that it was constantly helping the pupil to do better what he wanted to do, then he'd begin to have this concept of life-long learning. Now we have the situation where the 20-year-olds and older have been brainwashed so long by the system that tells them how to learn the things that are passed out to them. I told you earlier that going abroad you see some things about your own culture that you haven't seen before. Remember? Well, when we were first in Afghanistan in '56, less than 10% of the boys or girls ever entered an elementary school. But there was a larger percentage who went to the religious schools taught by the mullahs. And you see them generally outdoors because the school rooms were bare and quite cold. It was often more pleasant out under the trees and during the summer there is no rain. So there would be a group of anywhere from ten to thirty kids under the tree with the mullah reciting the Koran in Arabic. Arabic is not their language. Their language is a variation of Persian. The pronunciation was similar between the two languages so they could learn to pronounce it very easily but they didn't know what it meant. But the mullah would recite it and recite it and recite it until the group could recite it back. And I said, "My God, there is our education system and we're still doing it." And so we still haven't learned to use books. So here was the bench and written language and the bench and books and the mullah was still out there reciting. And we recite it and assume that if students can recite it back it can have some potency for what they're doing. And instead of doing that we should say, "Well, what is it that youngsters can do in the community? Where can they find meaningful activity for community chores instead of personal chores and later they find that certain kinds of skills enable them to do it faster?" Hopefully in ways like that they will find that education paid off. I would hope that that way we'd begin to get a group of people working at things that excited them. Once in a while you find these rare individuals who are pretty much self-educated who have this kind of enthusiasm, i.e., they've learned the things they felt were necessary; they could see the relationships and at 70 or 80 some of those people were still excited.

One of the things that really hit me back there in the Albany days when I was working with the delinquency problem was what I called the "moral equivalent of chores."³⁶ Somebody ought to do an essay like William James' Moral Equivalent of War.³⁷ Farm kids gripe plenty about chores. But the interesting thing about chores was that here was a built-in community process in which the kid could prove to himself that he was growing up. Because if he could handle the axe without cutting his toe off, then his family weren't out there shouting at him, "Don't do that." They were out trying to help him. As soon as he could chop wood somebody else was free to do some other task. So they were all on his side. And when he could harness the team and get more weed out than corn out of the ground, he ran the cultivator. This is the kind of picture I see for education. The doing of things that have to be done with people

so that they can learn how to discover alternative actions, expose them, and assay their possible consequences.

J: Of course, but your illustration was vocational. There was an overabundance of work. What about today when there may be an underabundance of work? Do people try to help you?

S: Yes, it was work. But the important thing about it was that it was something that the whole group wanted done so everybody was on your side. What happens now is that you've got these boondoggling activities which you try to dream up to keep the kid busy. If he doesn't do it nobody much cares. But if you didn't milk the cows somebody else had to milk them. That was just built in. So I've wondered where to find an equivalent. I've felt, living in New York City, that Central Park is a shambles. Instead of being a beautiful park it's full of broken glass, tin cans, unkempt and dirty. If somehow or other we could have the kids on 110th to 120th streets responsible for a section of the Park and kids down in the 70's for a section of the Park near there, and if they had a little money and a little help and it was their responsibility to see that it was a beautiful and attractive place with things to do and ways of using it and so on, some significant learnings would take place. What if you could organize a series of community activities like that which really mattered whether they got done or not? And then, what if you had some ingenious people in there who gave kids insights into doing things, you'd begin to start this process of what schooling could be for.

Nobody has ever really made a careful study of the pluses and losses of the different educational interventions in the traditional school. Some of these interventions presumably make some of the students' skills higher but at the same time some of the other skills are probably going to go down. Many lose self-confidence while others lose some of the excitement that should come with learning. Others lose some of the feelings of their own worth. Illich is hitting at this thing but he's doing it with a broad sword and not in terms of a careful analysis.³⁸ But that's the problem. What do we gain by the kind of intervention that's presently done by the public schools? What could we gain? How can we make this into a kind of maximum contribution? We certainly ought to be able to do a better job. ./. So that actually I think that Illich is doing a real service in pointing out that we're not using the kind of resources that are at hand to do the job in the community.

So you see, the community can be used as an educative force. And this has important implications for life-long learning. You've asked me this question and I really can't give you a definite answer. Paul Essert and I saw the implications of this concept when we pointed to the questions--what is the functional definition of maturity? What is it that a person of fifty could have that a person of forty couldn't have by the fact that he's live ten years longer?

What are the functional characteristics of that difference?³⁹ These are critical questions for adult education.⁴⁰ How does any adult decide in terms of various activities he's involved in the quality of his educational efforts? We live too much on an ad hoc basis. Our adult education program is organized so--like the Denver "opportunity school"--if you know what you want, we'll help you get it. But what should a person want? What are the combinations of activities that make for effective living in the 1970's and 1980's? I hate to admit it but I don't have a good answer to that. The whole subject needs further study and further activity aimed at the improvement of the educational process. One of the analyses is likely to discover a new way out that wasn't seen before.

J: Activity implies concern and questioning and so on.

S: Hopefully, yes, it should. We were talking about the concept of continuous learning and the fact that you begin in these very early years to develop certain attitudes and certain approaches which are very fundamental to continued growth. . . . I think the time is coming when adult education will be the heart of the whole educational process in one way. Because it's the longer period and it's the period of crucial decisions. It'll be the focus. And the test always comes, as Dewey says, not completely because you're doing these activities for satisfactions that you get out of them but at the same time there is always the extent to which these activities are contributing to what happens over a long stretch.⁴¹

Q: Speaking of research, Dr. Spence, what research needs do you see for the field?

S: Somehow or other, if we could begin to do some research which would enable us to identify the nature of knowledge relating to actions individuals have to take so that it becomes something that's positive. This is one of the continuing education problems which is basic to all education. In other words, we must learn how to use our knowledge or information wisely, i.e., for good things.

J: Are you saying here, also, that adult education needs to ally itself with other disciplines; to become interdisciplinary?

S: Yes. It would be helpful. How it occurs, if it occurs, on a too casual basis. We depend upon the trickle theory rather than the systematic channeling of irrigation streams.

Q: One of the consequences of the search for knowledge since WW II has been the technological revolution. What implications does this revolution have for adult education? Does it constitute a current concern of yours?

S: Yes. Well, the problem is to learn how to get these things into e process. One of the beautiful educational stories to illustrate

this, I think, is one Max Corey told.⁴² He said that if we operated the way we do in much of our educational practice we would go into one of these middle African countries and identify the best witch doctors. We would get the ten outstanding witch doctors and then analyze their behavior. Then we would develop procedures for teaching the skills of the ten best witch doctors to several hundred others so as to increase their skills.

The point is, at which point do you move from trying to make some adaptation to an existing process to the fact that you've got a whole new concept about health? You've got a germ concept and it revolutionizes practice because until 100 years ago and Pasteur's time our medical practice wasn't too different from the African witch doctors'. But Pasteur came along and he completely changed the whole approach. The question is--do we quit trying to make some little changes or do we get a motor and replace the horse? So here are these technological developments. If you work on the approach of modifying your old buggy so that you've got electric headlights on it, that's one thing. If you give up the buggy and develop a completely new vehicle, it's a completely new approach. In part what Illich is trying to say is, "Is this old vehicle (schooling) just a buggy or is it a basic vehicle and how do you tell?" I don't know. But the question is, are these things which we can work into the system or are we really going to have to modify the system?

Q: Are you saying that the new technology is important only insofar as it is a means to satisfy some end, that the end is the important thing?

S: Yes. I'm hopeful that we begin to utilize our physical and social sciences to increase our understandings and then operate in terms of more freedom for people to have a variety of choices. There again, I think we can, somehow or other, begin to recognize the possibility of a variety of choices so that we really utilize the resources that we have instead of expecting everybody to be in one mold.

Q: Can we change tack a bit now, Dr. Spence, and talk somewhat about the training of professional adult educators? What specialized training and preparation should be acquired?

S: I don't feel that we've yet done the kind of careful looking at the curriculum for adult educators. We haven't provided the freedom that's desirable for the wide range of people who come in and for the wide range of activities that have to be prepared for. But I think it is clear from our conversation to date that I would be on the side of what would be called the liberal adult education rather than the narrow vocational kind. So the problem of really finding out how you work with the people who come into the field should not be confined only to that little group that's labelled officially adult education but even much more--the working with other groups. How

should we be working with the School of Journalism, for example? There ought to be a chance for an interchange there . . . and interchanges with other schools, other disciplines. . . .

We've got the same kind of problem as exists in the preparation of elementary and secondary school teachers. This whole struggle between the liberal arts faculties and the pedagogy faculties seems to me ridiculous. Both have a common concern. I think this is clearly recognized but when it comes to doing something concrete about it we do nothing. So this is clearly an adult education problem, i.e., how to find ways of increasing communication among like-minded people all over the university. Hopefully this will lead to total involvement leading to action rather than nice platitudes. . . . But when you ask me what should we be doing specifically then I would say that we've got to bring together teams of people who seem to be concerned with adults and who have the ability to consider programs. We have got to enable them to stay together long enough to come up with some theories and then fund some exploration which gives assurance that experiments can continue over a sufficient period of time so that you aren't in the usual situation where you're always worrying whether your thing is going to be continued for another year.

One other need in training is the internship. This is a step in that direction where the individual has a chance to get certain kinds of experiences; where he can bring the things he learned in the ivory tower into some connection with practice. Finding the correct balance between theory and practice is where administrative insight and skill come in, you see. To put this all together into a workable program.

Q: Dr. Spence, what is the place of modern technology in all this?

A: Well, in the last forty years that I have been in this business theory didn't make very much difference in practice. Now I think we're beginning to get some tools and, hopefully, we will begin to develop ways of really doing something about the things we learn theoretically. I've always felt that the notion of accumulated records was clearly logical and ahead of its time, but now with the computer and with devices for recording and recalling information very quickly the use of accumulated records is much more possible. The ability now to use video-tape so that actions can be recorded permanently and then played back in slow motion so that you can analyze them has tremendous possibilities. We've had the tapes in which you could record the verbal things. But what a teacher did and all of the various non-verbal aspects get lost. Now we can combine them so that you've got a tool there that will enable us to set up little units for students to work at. For example, if you get a person who has difficulty in talking easily to a newcomer, you can set up a simulated situation on a tape. This student can work at that problem as long as he wants to until he gets to the place where it

seems pretty good. Then he and his supervisors can analyze the tape together. So that I think such technological advances have enormous possibilities.

The big danger is that the new tools are so intriguing that you may give insufficient weight to the whole question of what they're for. I always remember the experiment with the chimpanzee who was observed to see to what extent it could reason. He had two sticks neither of which was long enough to reach the food object outside the cage. And he discovered that by putting the two sticks together he could make one longer stick with which he was able to pull in the banana. But he became so excited about this new tool that he went around pulling objects in and never bothered to eat the banana. So let's hope that as we get these new tools we do not become so intrigued with them that we forget what it's all about.

Q: Are there any other problems in the field of adult education you see?

S: Well, I don't know. I think I've already said enough on that subject.

Q: What should university adult education be doing now in 1972?

S: Yes. That's a major question. I think we must identify places that really need systematic intervention and they change as society changes. . . . And I've already identified those areas that I believe need systematic intervention, so there's not much more to say.

The whole notion of systematic intervention in the public schools was that if you could teach people to read and to teach them a few basic facts--the three R's; then they could learn anything they needed to. It was thought that if that job could be done properly in this little compact area from 6 to 16 or 20, then the individual could pretty much handle the situation by himself. Of course, as the world gets more complicated that is less and less likely to happen.

Q: What do you see, Dr. Spence, for adult education in the future?

S: Well, I don't think there's much that I can add to what I've already said. I don't know. It depends on a number of things. What I'm committed to is to help to clarify this whole concept of instruction. If we can begin to analyze the kinds of instruction needs which are required, then we can see to what extent they can be built into programs so that relatively painlessly and without effort the individual just grows up in the situation. One of the good things that characterizes a good teacher is his perception of when you intervene and when you leave the kid alone. A lot of times the thing to do is to keep out of the kid's way. The same is also true for adults.

Q: Are you saying, then, Dr. Spence, that you see our role in the future more oriented toward citizenship type education or liberal adult education?

S: Yes, I would say I'm sure we're going to have to do more in the citizenship area. This doesn't mean we're going to do less in other areas but somehow or other we're going to have to help people identify their kinds of responsibilities. And we're going to have to be more systematic about it. Again I'm only pointing to the door. It will be your job to go through it.

Andrew Hendrickson

Dr. Hendrickson was responding to a question I put to him about the influence of NTL and the whole group dynamics school. He mentioned something which may have present and future curriculum implications for the training of all adult educators.

H: I think the tendency to go through an experience in Bethel or in California or in Michigan or wherever it might be does something for you at the time but I think the attenuation when you get back home and try to put this in practice along with people who have not had this experience is very frustrating and discouraging. Now I think if we can get enough people--and I'm not trying to suggest that we should all get an experience of what is called sensitivity training--but I think if this business of trying to understand peoples' feelings and emotions as they get into different kinds of meetings and different kinds of experiences is important. If we could all have more training in that so that we would understand the psychological factors involved in dealing with people and with groups we'd be better off for it. But there are many ways of doing this. . . .

Q: Dr. H., pursuing this topic of curriculum, if we may. One of recurring concerns since 1927 in university adult education has been the concern for a desirable curriculum, for satisfactory and adequate training of professional adult educators. The Commission of Professors has been and still is concerned with this problem.⁴³ Have we come any way toward the establishment of a more standardized curriculum?⁴⁴

H: I don't know. I suspect that we have. I think that a survey today would show much more commonality and I think we need such a study recurrently. I would say that another problem that we all faced individually. Although we didn't sense it as a group, Cy Houle began to worry about it only he tended to worry about it from the other end. And that is recruitment. Who do we recruit? How do we recruit? What kinds of assurances can we hold out to a recruit who goes through our program that he can be placed in an appropriate position? We did spend quite a bit of time on this in the Commission of Professors to the point where Cy Houle was afraid that we'd overpopulate the field and he didn't want too many people getting into the doctoral program for fear we'd turn out dozens or maybe scores of people for

whom there'd be no place. I think there's a touch of elitism in Cy's philosophy. However, maybe there was a genuine fear that the field would not absorb those people once they went through all the travail and expense of being trained at the doctoral level. As it has turned out so far, we've been able to place all the Ph.D. graduates in very important posts.

Q: What changes, if any, would you like to see in the training of adult education administrators, or teachers, or counselors?

H: The kind of change which is going on here at FSU would be beneficial if it could be carried on all over. In the five years that I've been here I have seen more openness on the part of the professors. There's a great deal more student input and a great deal more trying to keep assessing where the student is and where he wants to go. I think we still have some ground to go in keeping up with student development because the student may be in one stage of development now and then three months later he may be on another plateau and you may not be aware of it. But there's a distinct attempt on the part of our professors here to keep the program open and flexible; to keep in contact with the student so as to give him fresh directions at this point in time so that he can best direct his efforts to help achieve his goals. . . . This openness that I see is the thing, I think, that's needed the most because as long as you're open and flexible; then, however society changes, you're ready for change.

Q: Do you think there is any place in a doctoral program for some type of internship?

H: I don't think we ought to have a doctoral program without that. I think as time goes on and life becomes more and more complex we have the problem of gearing our theoretical and ideological training to the practical needs of the field. To do this, I think you have to send people out for some time in different programs so that they have a feeling that they are in touch with the field where they can test the validity of the theories and ideas they get in the classroom. . . . I'm a strong believer in the internship program. A proper balance between the theoretical concepts which are certainly highly necessary in the field and a sense of reality which taken together with the ideologies can form a proper basis for practice. Incidentally, I had an internship program approved just a year before I left Ohio State.

Q: Dr. H., in your publication, A Review of Post War Literature on Public School Adult Education, you mention that the greatest bottleneck in the field of adult education has been the production of competent and capable teachers.⁴⁵ How far have we come since you wrote this article in the realization that capable well-trained teachers are very important?

H: I don't know how far we've come. Probably not too far. But the problem, I think, has had a lot of recognition in the last twenty-three years. There is some evidence of this. For example, I think the fact that in a great many states now there are criteria set up for certifying teachers of adult education supports this. More of this is going on all the time. Many teachers are willing to take short courses, workshops, and other university training in the summer time. So we're making progress but I wouldn't know how to measure it. But the problem is recognized and opportunities are open for teachers for training.

Q: One of the problems that many university adult educators feel is especially important to the field is the question of financial support.

H: Well, of course, budgeting is always a problem. You have perennial problems of budgeting.

Q: Have you ever been adequately funded?

H: I suppose whatever amount of money you had you could always use more. I had the satisfaction when I left Ohio State University, though, of convincing the college officials to approve the hiring of two persons to take my place so that the two people coming in would only have half as much a load as I had. And I understand they're about to hire a third person to go along with Bill Bowling and John Ohliger there. I think this indicates a change in attitude or a growth in attitude toward accepting adult education on the same kind of basis that you would accept counselling or school administration or higher education or any other aspect of education. So, in this sense, my experience would suggest that we're coming to be accepted as a full member of the family.

Q: How well do you think present funding handles adult education needs in Florida?

H: It's very irregular. I have it on very good authority that a few years ago, I think three or four years ago, that the State Department turned back large sums of unspent money which had been appropriated for migrant education and included both adults and children. I think the problem comes from the fact that the thing is so dispersed. I think if you talk about the total federal government subsidy in literacy and elementary education, secondary education, medical programs, dental programs, nursing education, the subsidy through Title I of the Higher Education Act, Administration on Aging, it is substantial.⁴⁶ In fact, I almost get scared that so much federal money is poured in because every time it happens it takes the pressure off the state or local community for doing its share. And then at the same time we kick about the strong bureaucracy in Washington. Yet we create it because we look to Washington more and more and away from our own local and state resources for more

subsidies. So this becomes a paradox. We criticize the very thing that is giving all the money.

Q: In order to conserve resources and eliminate the wastes of overlapping should the coordination of formal institutions of adult education be mandatory?

H: No. I don't think so. Mandating is inimical to our democratic system of government but I think inducements ought to be offered. There ought to be pressure created. And I think in some sense it is being created. I just came from a meeting in Tampa which was concerned about the education of adults and older people in public schools, junior colleges, and state universities. The committee came out with strong recommendations that there be a county council in each of our counties to settle matters of jurisdiction among these three levels of educational institutions. I think this may be the way to do it. When this is a voluntary thing, there can be agreement which clearly delineates what the role of each agency is and the types of activities which should be carried on so as to eliminate overlapping and trespassing on the others' rights.

Q: Dr. H., has the post-war technological revolution posed any problems for university adult education and adult educators?

H: The problem is that we have been resistant to the total and effective use of this new technology for adult education purposes. I think one of the difficulties is that we don't have the time and the energy since a great deal of our classwork and teaching is done on a part-time basis and done by people who are in a sense moonlighting. There isn't much energy left to deal with this, i.e., if you're talking about utilizing it in our programs. Now, I think the areas where the most progress has been made in trying to make technological inventions the servants of the educational process have been in the armed forces and industry. I think if you make a study of what's been done here in both of these areas of our nation, you'd be amazed at what they've done. But how do you get a schoolteacher who has worked all day and has got to work two or three hours at night to get time to know how to experiment so he feels comfortable in using this kind of thing. A great deal of our training and education, at least the routinized aspects, could be easily programmed to take the load off the teacher. This could enable the teacher to be a catalytic force or a facilitator for learning. This would put the teacher in a role which is very much more useful and which would give him much more ego satisfaction. This is the direction in which we ought to work.

Technology has had a great impact on the evolution of a new emphasis in adult education. It's always been there and inferred in the things we did both in adult and vocational education and that is the emphasis on career education. It probably embraces all those things which reinforce and encourage the retraining and helping

people if they lose their jobs to get another job or helping to become more efficient on the jobs they have so they can hold on to them. Helping them to be ready for change so that they won't be overwhelmed when they have to drop one occupation and pick up another, which happens to people many times. This is a new developing emphasis. So we keep shifting our emphasis all the time to get with the times and I think this is understandable.

I think in terms of techniques we are more and more embracing the idea of these twin principles of participation and involvement. We are experimenting--not enough--but we are experimenting with ways that you can use audio-visuals with adults to make teaching more vivid. I don't think we've come far enough. I think we are shying away from teaching machines and more adequate use of television and I suspect that this is not because we are not interested in it, but because so much of adult education is carried on on a part-time basis. So many of the teachers who teach adults teach as an overload and they don't really have energy and time to get in and spend the time they ought to to know how to handle effectively these other media.

Q: Dr. H., what are the Professors on the Commission now concerned with?

H: Oh, I think a variety of things. I think they're still concerned with research. They're concerned with promoting the field. They're concerned with such very definite things like trying to get publishers of books on educational methodology and educational history to include chapters on adult education. And they're concerned with setting up mechanics for interchange of professors among the universities. They're concerned now again with publication, e.g., there is debate about whether there should be a reissue of the black book with some new chapters or whether there should be a wholly new volume. So they're proceeding on what we may call a very broad professional front concerned with teaching, research, service, the image of university adult education, and of trying to unify the field as much as possible.⁴⁷

Q: Dr. H., in my travels and from the literature I've gotten the impression that many people think that we adult educators don't know where we're going, we don't know why we're going there, we don't know where we are, and so on. I think this is one of the functions of a historian, i.e., to kind of keep a record of the directions taken and the reasons for taking those directions. This might have been a way for the field as a whole through an AEA historian to assess itself. What do you think of this feeling?

H: I think the attitude is somewhat justified. I can illustrate this very well by what they were doing at Ohio State when I left there. The Ohio State library has an archivist section in which it keeps a record of any meeting held on the campus that has anything to do with the development of the university. They have started bringing

out a series of volumes in which they incorporate this material on a time basis with interpretative comments and chapters. And so every few years now they bring out a new volume in which they have a continuous series of articles coming out based on this archivists' material. And I think we should have done the same thing in AEA and it may not be too late to do it yet. Now, it takes some funding and I don't know where we'll get the funds from. Maybe Kellogg or maybe Carnegie or somebody will be interested in doing this because I think the material which is being accumulated at the Arents Research Library at Syracuse University will get away from them after awhile.⁴⁸ It's going to be too big for them. I don't think they can handle it unless they get a staff or maybe a dozen or fifteen people working on it continuously, i.e., if they try to collect the whole thing.

Q: Dr. H., aside from the problems you've already described what do you consider in summary are the major problems that adult educators face today?

H: Well, I think trying to keep up with all the changes that are going on in education today is certainly a problem for adult educators as well as other educators. The educational profession as a totality is certainly aware of a lot of its weaknesses and there are many efforts and experiments going on to try new formats of teaching children both in the elementary and the secondary schools. And at the university level we have a lot of experimenting going on like the open degree program and the open university.⁴⁹ I think out of this turmoil and mix that goes on our problem is to try to pick those things which are likely to turn out to be permanent and have some lasting value to us. We should put our effort in that direction. Now that's not easy. I have a hope that this kind of thing is going to break the stranglehold that the four-year college and graduate work sequence has on the educational process. If newer findings that children seem to be learning more outside of school than they ever learn in school follows through into the adult years, I think we might find evidence that our graduate students and other people in other areas of graduate work may also be learning more outside of the formal classroom than they're learning inside. Somehow I think our problem here is to learn how to incorporate this learning into our programs. Or, at least give credit for it. Of course, this is what happens in the open degree programs. Similarly, adults ought to be given credit for areas of competency from continuing experience in the professional world, the business world, travels, reading, the media, and so on. Any learning one acquires anywhere becomes an integral part of his personal and professional growth. So, I think the whole problem is to keep the whole field of education including adult education to evolve so that it becomes more viable, more appropriate to the rapidly changing world we are living in. Education must become more flexible, more inclusive, more a unifying fare rather than a separate fare off by itself in some other channel from the other parts of our living.

Q: Dr. H., you mention children. Many adult educators regard the lack of enthusiasm of the young for learning as an adult education problem. Do you agree? If yes, what can we do to inculcate or help to inculcate in the young a desire to continue to learn?

H: Yes, I do. The answer lies--and it's very simple, I think, but hard to execute--in doing everything we can to make education for children a challenge. To make it exciting. You've got to bring the outside world into the classroom.

Q: What do you see for the future, Dr. H.: Where are we going? What responsibilities do professional university adult educators have?

H: Well, this isn't a very professional expression but I think that as far as our view of the field is concerned, our preparation of people who go into the field in responsible positions, we have to "hang loose" as Satchell Paige says.⁵⁰ We've got to be in a position where we can be ready for change ourselves so as to keep our students in a position of redirecting their programs as they evolve through two or three years of training. And we've got to accept new data, new information, and new concepts about the kind of world we're living in. We must build in the feeling that change, i.e., having things tomorrow different than they are today, is a necessary and acceptable way of living. We've got to train people somehow and encourage them to get to feeling comfortable in the midst of change; of things moving. It is probably one of the hardest things to do because, especially as people get older, they seek the security of habitual ways of thinking and doing things. We have to get into our minds and get into the minds of our students that there are alternate ways of doing things; that there are a lot of options. And we need to think of more options as to how we go about our training, our programming, and our meeting of the rapidly evolving needs of the world today. We must build this tolerance for ambivalence into the training of our students.

Robert John Blakely

Q: What administrative structures and organizations have you found to be most conducive to the development and maintenance of adult education programs?

B: Those arrangements in which education called by one name or another, or not called by any name, is most integral with activity, with the attainment of goals. And this is why I was annoyed that my little booklet, Knowledge Is the Power to Control Power, was ignored. Because I grappled, I won't say successfully, but I grappled with the fact that we're trying to control power in all sorts of ways. Educational institutions have become more concerned with action. Action institutions are becoming more concerned with education as

an instrument to accomplish the goals. And I tried to trace these flows and it wasn't read much. And when it was read people said, "What the hell has this got to do with adult education?" Administrative structures and organizations that are the most conducive to the development and maintenance of effective adult education are the ones in which adult education is as integral as, let's say, research and development are considered within the military or within industry.

Q: In your lifetime of adult education experience what do you think is its greatest failure?

B: The greatest failure is to inculcate the concept and the practice of life-long self education as essential to being fully human. And is integral to all aspects of life--all aspects of life and all roles: as a husband, a wife, a lover, a friend, a parent, a citizen, a worker. All the other roles of a person as integral to all aspects of life, particularly life in a world in which the only constant is change. A failure related to this has to do with power again. Bacon said, "Knowledge is power."⁵⁴ I said, "Knowledge is the power to control power." And the core problem right now, and as far ahead as mankind is going to be around is the control of power. The failure of adult education is that insofar as it succeeds it may promote power but it's not controlling the power. It's not promoting the power to control power and it's not promoting the central concept of values, purposes, and goals. What has been called shared power, toward shared goals, with shared respect.

Q: What should the training of adult educators seek to accomplish?

B: I have only this to say. That if it is becoming a profession, it is becoming the wrong kind of a profession in my judgment. Professional adult education and professional adult educators are being passed by in every important area of continuing education in the country. Being passed by public broadcasting. Being passed by the professions. Being passed by business and industry. Being passed by the military. They're just on the wrong track. They've got the wrong conception of what a profession ought to be.

Paul Leslie Essert

Q: Would you care to describe what you feel to be the most effective administrative structure in disseminating adult education in a community?

B: In the first place, I think of adult education in the community as a total community job. And my chief concern in the structure is a well-knit adult education council that is more than simply a
 up that meets together for a group exchange. Ralph Spence and I wrote a paper, published in Adult Education, on "The Educative

Community."⁵² We have been working since then on expanding that concept. While the paper deals with other aspects than structure, this is what I would see as being the structure of the educative community. There are three systems of education that we see. One we'll call the sequential-unit system. That's the schools and colleges with their grades and units all the way to the top. The second is the family system. We believe the family has potential that hasn't been used. It has great potential for adult education; for continuing education. And the third is the complementary-functional system. It includes all of those agencies; industries, schools, colleges, and so on carrying on continuing education programs. Those that are keeping people up with needed knowledge as they become adults. When all three of these systems are operating in a community with knowledge and understanding and respect for each other, then you have what we call the educative community.

To effect this interrelated knowledge and understanding of all three systems, I would foresee the emergence of a sort of "educational planning commission" or "community educational planning council," such as now exists in a few communities like Flint, Michigan. It would be a recognized part of government structure and these would be such commissions at local, state, regional and national government levels. Its prototypes in society today are the various types of city, state and national planning commissions concerned with the physical and environmental planning for a given area, except that the educational planning commissions would be concerned with long-term educational planning. It would carry on research and propose recommendations to both public and private educational agencies for meeting changing conditions and unmet needs in all three systems. It would have little, if any, administrative authority except in recommendations, not control, for allocations of government funds for new and experimental developments in education. Thus, adult education would become an integral part of the concern of every community as is now the case with the sequential-unit system. So I see the community organized in such a way as to bring about an interplay of all the educational systems in the community.

J: Us. A kind of conservative Saul Alinsky council.

E: Sort of a missionary. I think what I'm talking about is an adult education council with a good deal more of the total community education planning function which includes all education not just adult education--the education of youth, the education of children and so on. A council that looks ahead. Not only trying to influence policy today but is also the agency for foreseeing change. And you're planning just like a city planning commission works. We look ahead fifty years in city planning. Now I can see a community planning educational council of the same kind.

Within each institution or agency carrying on adult education I see the best structure for adult education as one in which the person or persons responsible for adult education are in the line of communication and decision-making. This is seldom the case right now. In the university the Director of Extension and his staff should be square in the middle of decision-making processes, but they're usually not. In the public schools the Director of Adult Education is too often a little specialist even more remote from the decision making process than the principal of a high school is. He doesn't often come into the decision-making process except as an operating agent. This is true of libraries. It is true of industry. It's true in universities and community colleges. The structure has to include the adult education staff as a part of the decision-making process.

J: How far have we come?

E: We really haven't come very far. We've come a little way. For example, I think Paul Sheats is a Vice President in the University of California.⁵³ And Howard McClusky is in the decision-making process at the University of Michigan, not because of any structural formula, but because he's Howard.⁵⁴ And I think occasionally Cy Houle gets in somewhere now and then.⁵⁵

J: This is because they're outstanding individuals--not necessarily because the concept has been accepted? Is that what you're saying?

E: Yes.

One other thing I'd add about structure. And that is the whole problem of counseling adults. I would see ideally, and I could point out instances where this is true, that there would be facilities throughout all neighborhoods for counseling adults about education. Because with all of this ramification of resources within any community for educating adults, it's almost impossible for the little guy, who's thinking of studying and learning something, to know where and how to find what he needs. So that I would see a very important part of the structure in a community of neighborhood adult education counselors or consulting officers. . . . Now you have a welfare council. Anybody can go to the welfare office and get information and ideas. You have job counseling. Go to the State Employment Office and get all that. . . . We could use our resources twice as well as we're using them if we had good adult educational counselling service.

The nature of the adult education counselling services should not be limited to that of advising clients who seek out the office of the counsellor. The neighborhood counsellors would not be sages who sit in their offices waiting for people to come to them. The counsellor would get out to them, the people, where they are, who got out in the neighborhood; who got out in the meetings; who even get into the homes and help people learn about the resources educating themselves.⁵⁶

Q: Dr. E., in the past one of the problems which beset adult education, and your previous response seems to suggest this, was that it was considered marginal. Do you think this is still a problem?

E: Yes. I think this is true. I think it is still quite marginal. And I think that the fault is as much with the adult educator as it is with anybody else.

J: Why do you think that? How?

E: Well, simply because he sees his job too small; he doesn't see it as part of the total educational process. Take a public school Director of Adult Education. What's he? Too often peripheral. What interest does he show in the rest of the educational system? All he's fighting for is his own little niche. Until he becomes concerned with the whole, his work will remain peripheral. The first step toward integration of ideas is always empathy--putting yourself in the other fellow's place. Now I'll give you a very specific illustration. An elementary school building is going to be built. It could become with very little additional expense a great community school; a laboratory for a community school. Where's the adult education director getting his pokes in about this? He says, "Oh well, that's elementary education." On the other hand he might go to the architect and superintendent and so on, and with a gleam in his eyes say, "What can you do with these plans to make this elementary school into a community school?"⁵⁷

Does he, the Director of Adult Education, ever go and sit down with the director of the elementary curriculum and say, "Now look, I want to learn from you certain things. I think you have some things that we can learn in adult education. Take me around and show me what you're doing with kids," and vice versa.

Yes, what I'm saying is that the adult educator has often been more provincial than the academicians, you might say. And part of the reason for that is that he shrinks back into his little shell and he doesn't become a member of the team concerned with the total program and goals of his institution or agency. He therefore gets what he asks for--marginality.

J: Are you saying his isolation or partial isolation is his own fault?

E: Yes, at least in part. And I think another thing that can be useful in the coordination of various fields . . . is the use and exchange of other disciplines. Now we've got the sociologists, the psychologists, and the anthropologists, and even the economists coming into our councils and we're coming into theirs. This is Lyman Bryson's great contribution, in my estimation, at Teacher's College. Lyman held seminars--university-wide seminars. They were not always about adult education but on philosophy, science, theology, public

issues. What made his work respected, university wide, was not that he was always fighting for adult education--his department--but using adult education effectively in his colleagues' disciplines.

Q: Dr. E., what do you see in the future for adult education and adult educators?

E: In answering that I will preface my remarks by saying that I agree with Alvin Toffler in his theory that we've already left the industrial society and we are now moving rapidly into the supra industrial society. When we recognize that, I believe we will of necessity, for survival, have to come to realistic terms with life-long continued study as a way of life. In other words, I think the future is going to see, if we recognize the critical nature of the change that is coming about, in this transition that there is no other answer than to make the transition from what I now call a theoretical acceptance of adult education to a realistic acceptance of continuing education. There is no way that we're going to keep up at all; if we survive, with the rapidity of change without constantly studying and preparing ourselves for it. So that in terms of the future I see adult education, continuing education, as being even more essential for survival than it is today.

Society is even now faced with certain alternatives about adult education. I don't just mean the adult educator. I mean the whole society. There are three alternatives that I see. First, shall we continue to see adult education as remedial? Just binding the wounds that we get in our conflict with change? That's about how we looked at it in most of the past. Making up for deficiencies. Or second, shall we delude ourselves into merely preparing ourselves to meet present problems of an era that has already passed? In other words, even if you say you bring it up to date and are dealing with the problems we are facing today. Is that enough? Too often many "current" problems no longer exist by the time we get to them. Or third, shall we try to do what needs to be done in these fields, remedial and practical, continuing to do that, but, in addition, organize and implement adult education to imaginatively anticipate and plan for future change?

Now this is something education has done very little about. Can we do what we're trying to do but can we add to it? Adult education that helps people anticipate changes for the future and plan for them, not only as we talked about in terms of the aging, but also in terms of jobs, in terms of work we do, in terms of racial conflict, in terms of conflicts. For example, I've been lately carrying on a couple of seminars on Africa.⁵⁸ I don't know how I got dragged into it because I don't know much about Africa. But I've done a lot of studying about it. And I'm just amazed at the future potential of both good and evil in that new continent now. In its future are wrapped up great promise to the old world on the one hand. And the threat to everything that we now cherish, on the other hand. Make plans now to study Africa, understand her and her future potentials

and problems--not so much for Africa's sake as for our own. Naturally, in the course of mutual understanding there would be mutual benefits.

All right. Now that's what I'm seeing in the future. More necessity for adult education to get into--to continue to be remedial, it's got to be that--and continue to face present problems, like unemployment and all of that kind of thing--but it's got to become a medium by which people can look ahead of their immediate life problems. Now if we do this, I think the role of the professional adult educator will change. I've had a great experience here in Leisure Village discovering how many teachers we have who never lived by that name. Good; able people. And I think the role of the volunteer is going to become much more prominent. There aren't enough professionals to do the job. The role of the volunteer. Millions of volunteers who are going to be in this educational process will become increasingly important. So that changes the role of the professional, in a sense, to what he becomes, perhaps, a researcher of the future; becomes a student of the manifold resources in the community; becomes a student on counselling these volunteers on processes and ways of doing things. He moves out into the community and spends less time behind his desk or books. This is my feeling about it. If we do move in the direction of anticipatory change, then the role of the professional is going to change and the role of the volunteer is going to become more important.

Years ago Professor George Counts startled the nation by publishing a monograph entitled "Dare the Schools Build a New Social Order."⁵⁹ It stirred a great national debate on the issue of whether the schools should be a mirror of society or creator of society. We in adult education are not bound by the same traditions and social sanctions as the schools--yet I am afraid we tend to act as though we were.

Could it be that the future of adult education will be that we will move out of our growing up pains to a maturity of being the learning process to help society to anticipate change?

I'm old enough now not to predict that this will be the future of adult education. But I'm young enough to hope that it might be.

Problems

On the basis of the record taken it is clear that the six professors of adult education interviewed agreed that the field was suffering from some very old problems still looking for solution and some ones which require prompt attention. Responses to the first four

listed below reflected unanimous or near unanimous agreement. Response to number five showed a divergence of opinion and responses to the last four which only some interviewees mentioned. The following summarizes those responses:

(1) The absence of an explicit enunciation by the field as a whole of a clear-cut set of goals and means by and with which adult education may be guided; a philosophy which all can share in common. Among the consequences of this malaise were noted the failure of the field to become fully professionalized; the absence of a systematic method to enable the field to facilitate change; and the fear to confront the citizenship and value issues in American society;

(2) The failure to muster the research and scientific skills of the total university in solving the problems of the individual as well as the society which emerge from the forces of change, and to get the results of that research into the stream of adult education functioning;

(3) The lack of creativity and experimentation in the development of institutional forms importantly concerned with adult education;

(4) The lack of enthusiasm of the young for learning, which is construed as an adult education problem;

(5) The still peripheral and marginal value placed on adult education by most educational institutions;

(6) The failure to fully exploit the new technology for adult education purposes;

(7) The lack of sufficient resources for experimentation, training, and education of professionals;

(8) That emphasis is placed in the professional schools on the training of administrators while the training of teachers, counselors, and other practitioners is wanting; and

(9) The lack of a more creative and responsible leadership.

Recommended Action

Many solutions to the problems identified by the respondents were proposed. In order to make them more comprehensible to the reader the author has ordered them into the following categories:

(1) Efforts to establish a common philosophy for the field of adult education, and goals for which to strive in implementing that philosophy. This category includes problems one through four;

(2) Efforts to ensure that the field become an integral and accepted part of the total educational process. This category includes problem number five; and

(3) Efforts to acquire more resources and to make more efficient and effective use of available resources for adult education purposes. This category includes problems six through nine.

A more detailed synthesis of strategies to the solutions of problems with supporting comments from respondents for each problem may be referred to in Chapter IV.

Notes

1. McClusky is not alone in his lament that adult education has lacked a rationale in a free society.

Webster E. Cotton notes in On Behalf of Adult Education: A Historical Examination of the Supporting Literature (1968) that his critique of the literature of adult education (1919-61) shows the failure of rationales to make clear and undisguised their value orientation; to contain thoughtful and stimulating intellectual content; and to be developed in a well-organized and forceful manner. He urges adult educators to formulate a philosophy of adult education on the basis of which programs and actions for a free society may be deduced.

Alexander Liveright was a constant critic of the field which he characterized as lacking direction. In an article published in Adult Leadership, Vol. 17, Number 6, of December, 1968, just before his death called "Adult Education--For What? The Crucial Need for a Philosophy and a Sense of Direction," Dr. Liveright strongly attacked the field for its lack of philosophy and irrelevance of many of its goals. He complains that the field as a whole has avoided involvement in areas which are vitally concerned with contemporary value conflicts. In an attempt to redress the grievances he speaks of, he proposes that the field attempt to attract a new breed of adult educators who will confront modern society with the serious questions which divide it.

John Olson in an address delivered at the Syracuse University College Commencement dinner on May 22, 1964, said that a university must be more than a storehouse and purveyor of knowledge. It must be more than the creator of new knowledge as valuable as that might be. It must help to cultivate human values which make life worth living.

A liberal university is not neutral in these matters for it is concerned with producing responsible leaders in all worthwhile activities in its society and time, and with preserving its capacity to provide these and other leaders with the bases in knowledge, values, and wisdom to advance our way of life and enhance the moral, intellectual, and spiritual qualities of our people.

2. See Alvin Toffler, Future Shock (New York: Bantam Books, 1970).

Toffler examines the effect of rapid changes on individuals and on society; the things we buy, the communities we live in, our total life style. He pictures for us tomorrow's super industrial economic system, the future of family life, and the breaking of our social system into many competing sub-cultures.

3. See Howard McClusky, "The AEA-USA: Why and What It Must Be," Adult Leadership, XX, 4 (October, 1971), p. 126.

McClusky says:

The point is that the mere fact of change, however massive and swift is only half the argument most relevant for the adult educator. The other half is that in order to keep up with change, even better in order to master it, we can no longer trust to chance or depend on an unqualified takeover from the past however tempting that may be. It has become necessary to learn, to learn how to learn and to keep on learning as the price of survival as well as advancement in a society where the only alternative to learning is a decline into a state of regressive obsolescence. . . .

Our thesis then is simply that education becomes the generic term for the teaching learning process which in all its variety and manifold settings constitutes the major instrument which our society has devised for reducing the number and damage of dysfunctional responses and for increasing our capability in coping creatively with change.

In addressing himself to the question of what the AEA-USA must do if it is to maintain its position McClusky states:

The performance of tasks which should contribute substantially to role definition for the AEA as well as the achievement and maintenance of its identity as the spokesman for the adult education movement (are):

- "(1) the care and feeding of the troops,
- (2) acting as a gate for information,
- (3) providing subject matter for the field,
- (4) evaluation of activist approaches to social change, and
- (5) toward the development of leadership."

Who are the troops? The adult educator; the educators who work with adults; the non-educator who makes ad hoc use of educational processes to attain his goals. How can this be done? By strengthening the Sections and Commissions of AEA and by continuing training of those in leadership positions.

The AEA can act as a gate for information by keeping an inventory of the essential information for keeping up with the bare bones of the field.

It should produce literature about adult education for the academician and the practitioner; and it should compile bibliographies and arrange and edit readings covering urgent topics in the field. It should farm out jobs to allied fields.

It should evaluate all activist approaches to social change.

And its leadership should serve as a convener and reinforcer of collaborative efforts on behalf of adult education at the national level. It should encourage innovation in adult education theory and practice and greater attempts should be made to anticipate the future of the field.

We have arrived at a period when adult educators are compelled to become "futurists" . . . Accent on innovation and orientation to the future may in the minds of some involve risks but in the light of the zeitgeist of our times these risks should be taken if the adult education movement is to live up to its historic mission and ultimately fulfill its franchise in the kind of a society in which we now live.

4. McClusky is talking about a committee appointed by the top administration of the University of Michigan with responsibility to reorganize various elements of the University. For a more thorough discussion of this episode see the interviews conducted by the author with McClusky. Tapes are available at the Library of Continuing Education at Syracuse University and the Oral History Research Program, History Department, Florida State University.

5. In special Schedule #4 which was specifically given to McClusky to answer because of his presidency of the AEA-USA at its founding, I asked Dr. McClusky if he would care to comment on the following statement made by Robert Luke as it appears in Grattan's, In Quest of Knowledge (1955):

Adult education as a field will never be able to exert itself until it is led--not by program technicians as at present--but by physical scientists, political leaders, theologians, writers, economic philosophers, artists and others who are responsible for directing (or giving expression to) current influences in public opinion, moral values, and artistic standards in American life today.

6. McClusky is talking here of the National Opinion Research Center studies done at the University of Chicago by John W. C. Johnstone, called Volunteers for Learning. It was the first substantial study of the participants in adult education in the United States. John W. C. Johnstone and Ramon Rivera undertook the study during 1962 and 1963 financed by a grant from the Carnegie Corporation. The study estimated that 24,810,000 adults participated in adult education programs during 1962. The more significant findings which emerged from the study are:

(1) About 1 of every 5 adults is involved in some kind of adult education activity--and the proportion will probably increase.

(2) Despite generally high participation in adult education, low socio-economic groups are underrepresented.

(3) Adult education is no longer primarily related to rehabilitation and remedial goals. It is used more in a kind of continuing role.

- (4) Education for social and civic competence is sadly neglected.
- (5) Adult education related to "ideas and values" is also neglected.
- (6) There is considerably less emphasis on "credit" in adult education than was anticipated.
- (7) Many more adults than anticipated are involved in independent study.
- (8) Much of adult education is provided by institutions and organizations outside the traditional educational fields.
- (9) Although many adults enroll in vocational courses, recreation and hobby programs are expanding.
- (10) Motivation from participants in adult education varies, particularly within different socio-economic groups and between men and women.
- (11) Early exposure to adult education activities is a major factor in continued participation.
- (12) Much adult education participants begin in job-connected contexts or through personal influence.
- (13) While there is no dearth of facilities for certain kinds of adult education activities, they are little known in large cities and small towns, and in lower socio-economic groups.
- (14) Data gathered provide valuable information regarding motivations, needs, interests, and obstacles characterizing lower socio-economic groups.

See A. A. Liveright, A Study of Adult Education in the U.S., Research Report No. 315 (Boston: Center for the Study of Liberal Education for Adults, 1969), pp. 28-30.

7. Cable TV or community antennal television developed spontaneously and unsystematically in small American towns which were out of the range of the signals of the large broadcasters. Local businessmen set up tall antennae of nearby hills to catch distant signals which were then carried into the home by coaxial cable. The habit caught on and the possibility of opening many television channels into each home emerged. Programming horizons became limitless. For a more extensive account of Cable TV see Timothy Green's The Universal Eye: The World of Television (1972).

8. For a thorough study of the libraries at the University of Louisville see Joyce Estelle Bruner, "The History of the University of Louisville Libraries" (unpublished Master's thesis, University of Rochester, New York, 1956).

9. Early in 1968, NET, the Carnegie Corporation, the Ford Foundation, the Office of Economic Opportunity, and the United States Office of Education created the Children's Television Workshop to develop a series of programs for children three to five years old which would not only entertain them but teach them something constructive as well. Its first task was to capture the minds and the hearts of these young and at the same time teach them such things as the alphabet, numbers, time and space concepts, and problem-solving skills. The result was *Sesame Street*, a Monday through Friday hour show in color broadcast each morning over 180 public television stations throughout the United States. The show became an instant entertainment and educational success. For more details see "*Sesame Street Opens*," Saturday Review, November 15, 1969, p. 91.

For a detailed account of the establishment of the Children's Television Workshop see Stuart W. Little, "*Children's Television Workshop*," Saturday Review, February 8, 1969, pp. 60-62.

10. "*Johnny Cash*," Who's Who in America (37th ed., 1972-73, Vol. 1, Chicago: Marquis Who's Who, Inc., 1972), p. 521.

A popular entertainer, composer and recording artist; TV performer on the Johnny Cash Show, 1969-72. His specialty is country music which appeals to a wide variety of people especially those living in the Appalachian mountain areas.

11. The Adult Education Association of the USA was established in Columbus, Ohio, on May 13-15, 1951. Howard McClusky was elected its first president. The events which led up to the establishment of the AEA-USA are very well documented in Malcolm Knowles', The Adult Education Movement in the U.S. (1962).

Briefly, however, with the termination of Carnegie support, the AAEA began to flounder. It had looked upon itself as a special organization whose function was to act as a catalyst in stimulating other adult education organizations and to lend the prestige of its membership in popularizing the adult education movement. Consequently, the membership during fifteen years of Carnegie support was rather small and composed, for the most part, of people whose interest though allied with adult education, was peripheral rather than practical. Few practitioners of the education of adults were members. Such people as Charles Beard, Nicholas Murray Butler, Harold Laski, Dorothy Canfield Fisher, E. L. Thorndike, John Cotton Dana, H. A. and Bonaro Overstreet, Newton D. Baker, Hans Kohn, Alexander Meiklejohn, and others lent their prestigious names, though really not much else, to the movement. To be sure, practitioners like Eleanor Coit, Hilda Smith, Wilbur C. Hallenbeck, Howard McClusky, and a few others were members. But for the most part, the name was the game. It was not until Carnegie support ended the AAEA began to drive for membership. By 1941 membership had reached 1500. Its peak membership was 3000 in 1946.

A concurrent movement in the United States was the National Education Association's Department of Adult Education. It perceived ~~its role as an agency for the coordination of means and the study of~~ problems in the field of adult education, a role similar to that of the AAE. As a matter of fact, the same people, for the most part, were members of both organizations, though the NEA group included many more practitioners, especially those in the public schools. Tension between the two organizations began to fester in the 40s and overtures for cooperation and combination were openly manifested. Real efforts at cooperation began when in Detroit on April 23-25, 1946, the AAE participated in a joint conference with the NEA, the National University Extension Association, the Educational Film Library Association and the Board on the Library and Adult Education section of the American Library Association. The result of this meeting was the formation of a committee to study the policies, principles and practices of adult education. Pressure for closer collaboration generated a number of conferences from 1949 on throughout the United States to discuss the formation of a new national organization. Finally on May 13-15, 1951, in Columbus, Ohio, 200 persons active in adult education met and established the Adult Education Association of the U.S.A. The new association absorbed the membership of the AAE and the Department of Adult Education of the National Education Association and these organizations were formally dissolved. Howard McClusky became the new organization's first president.

For interesting anecdotes consequent with the founding of the AEA-USA taped interviews by the author of Howard McClusky, Wilbur C. Hallenbeck, Leland Bradford, Ralph Spence, and Andrew Hendrickson, all of whom were very active in the pro-AEA conferences, are available at the Library of Continuing Education at Syracuse University and the Oral History Research Program, History Department, Florida State University, Tallahassee, Florida.

Presently AEA has a membership of approximately 14,000 people. According to the Directory of Adult Education Organizations--1970, its purpose is "to further the acceptance of education as a process continuing throughout life; to afford opportunities to professional and non-professional adult educators to increase their competence; to receive and disseminate information about adult education; to promote a balanced development of educational services for adults, and to cooperate with adult education agencies internationally." It publishes two journals, Adult Education which is a quarterly, and Adult Leadership which is issued monthly except in July and August. The aforementioned taped interviews address themselves to many problems and processes of the history of AEA since its founding in 1951.

12. Almost all of the financial support which the AEA-USA received came from the Ford Foundation.

13. Francis B. Keppel's appointment in October, 1923, to the presidency of the Carnegie Corporation was an event of profound significance for the adult education movement in the United States. Prior to

that appointment he had been Dean of Teacher's College, Columbia University from 1910 through 1917 and was a member of the Administrative Board of Extension Teaching. Having some knowledge of adult education, he began to consider it as a field where Carnegie money could do some good. A stroke of good fortune for the field of adult education occurred when Keppel saw a memorandum in the Corporation's files written by a predecessor and also former president of Yale University, James Rowland Angell, that adult education be a field of Corporation support.

And so Keppel established an advisory committee to look into the needs of adult education. The committee, chaired by Dean James Earl Russell, heretofore mentioned, recommended among other things, that "some form of independent organization, composed of competent and responsible men and women, shall be set up, who shall thereafter make themselves responsible for recommendations to the Corporation, regarding grants in the field of Adult Education, and under whose direction and control such grants as may be voted by the Corporation shall be administered." (See Carnegie Corporation, Office Memorandum, Series II: Adult Education, No. 10: Tentative Program, December 8, 1924). A series of conferences ensued: New York City, December 15, 1925; San Francisco, February 8-9, 1926; Nashville, February 19, 1926; and Chicago, March 24, 1926, out of which came the unanimous vote establishing the constitution of the American Association of Adult Education.

The history of the Association from 1926 through 1951 has not been adequately done but its life falls into two phases, the first from 1926 to 1941 when it received support completely from the funds of the Corporation, and the second from 1941 to 1951 when the Association depended solely upon its membership fees for the support of its activities.

In the span of its existence the American Association for Adult Education greatly increased the literature of adult education and did much to publicize the need for adult education through the press and radio. It established a quarterly journal called the Journal of Adult Education which was published from January, 1929, to the end of 1941. Its early literature was designed to define the field. Between 1926 and 1941 the Carnegie Corporation made grants to the Association to fund its projects and programs to the total of almost five million dollars, considerable sum in those days.

Finally, at a joint meeting of the Corporation and the Association on May 6, 1941, a suggestion, which was ultimately carried out, was made that further Corporation support be discontinued. The Corporation established at Teacher's College, Columbia University, an Institute of Adult Education, which it pledged to support for ten years to carry out research and study as the successor to the Association. \$350,000 was granted for this purpose and Morse Cartwright, who had been the Executive Director of the Association, was appointed Professor of Education at Teacher's College at \$10,000 per year salary.

For a more complete history of AAAE see Malcolm S. Knowles, Adult Education Movement in the U.S. (1962), pp. 190-210; C. Hartley

Grattan, In Quest of Knowledge (1955), pp. 276-286; and taped interviews by the author of H. Y. McClusky, Wilbur C. Hallenbeck, Ralph B. Spence, Andrew Hendrickson, and Leland B. Bradford which are available at the Library of Continuing Education of Syracuse University and the Oral History Research Program, History Department, Florida State University.

14. See note #2.

15. See note #5.

16. The full report of the White House Conference on Education is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., at a cost of 40 cents per copy.

17. The author has not been able to track down this work.

18. The Miller Analogies Test is a power test designed for the selection of graduate students. It consists of complex analogies whose subject matter is taken from many academic fields.

19. Much has been written on the subject of university involvement with social change and its consequent risks politically. See the following:

Thomas Cummings, Jr. ed., Political Backgrounds of Adult Education (1967). The monograph includes papers of five panelists who participated in a conference at Syracuse University in October, 1966. Each was asked to be concerned with two questions concerning the university in urban society: What is the extent and kind of university involvement in education for urban life? and, What are the implications of this involvement?

The papers reflect conference agreement on four points. First, the university will be unable to withstand the pressures for involvement in urban society even if it wanted to avoid that involvement. The result will be a growing tension between the university and the community in which it is located.

Second, the university is responsible for training to prepare individuals for more effective urban public service.

Third, all agreed that the application of knowledge, which the university generates, to the immediate conflicts of urban life is not incongruent with the scholar's obligation to search for the truth. The issue of academic freedom is very relevant here.

And, finally, there should be a practical relationship between long-range research goals of social scientists and ad hoc urban problems.

In short, all agreed that the university must take the lead educationally if we are to be successful in affecting urban environment. Although this means moving in where the action is, the authors see that

this is not in contradiction with the university's traditional search for truth.

Dr. Benjamin Fine in an article in the Syracuse Herald-Journal, March 13, 1972, p. 17, entitled "Universities Move Into the Inner Cities" shows how some universities--Wayne State University, Michigan State University, The State University of New York at Buffalo, The University of Wisconsin--Milwaukee, and Rutgers University--have turned their attention to inner city problems much as they did in earlier years to improve the lot of farmers with their rural extension programs.

In Frank Riessman's Essays on New Careers; Social Implications for Adult Educators (1970) we are apprised of the challenge which the field of adult education faces in assisting the urban disadvantaged develop useful paraprofessional careers in service type occupations.

Harold Taylor in Today and Tomorrow: Three Essays on Adult Education in the Future (1961) suggests that the modern American university's role is to enhance the lives of all citizens within its walls and without by confronting them with issues, questions, value judgments, knowledge, experience in all the fine arts, political controversy, historical fact, and an understanding of the necessities and possibilities of a new society. He notes that education in the future will entail searching for new meanings in a realistic setting of contemporary thought and this will force a new modus operandi between the community and the university.

James Whipple and Doris Chertow (eds.) in The University and Community Service: Perspectives for the Seventies (1970) examine the questions: What is education for public responsibility? What is the relationship of liberal education to education for public responsibility? and, What kinds of institutional arrangements are needed to provide effective education for public responsibility? In answering these questions it becomes evident that one response may involve the university in conflict and it may also require faculty to work in non-academic, action oriented situations. The acceptance of this alternative demands clarification of the concept of academic freedom.

Another interesting exposition of this question is The University at the Service of Society which is a summary of a discussion by the trustees of the Carnegie Foundation for the Advancement of Teaching, Annual Meeting, New York, November 16, 1966. Many of the possible consequences of university involvement in public service are faced: administration, academic freedom, legal and moral responsibility for participating faculty members, among others.

See also The College and Its Community--A Conference on Purpose and Direction in the Education of Adults. Occasional Papers, 16. Boston: Center for the Study of Liberal Education for Adults, 1968.

Boyd, Robert D. ed. Beyond the Four Walls; Adult Educators as Urban Change Agents. Madison: University Extension, University of Wisconsin, 1969.

Whipple, James B.; Haygood, Kenneth; Goldman, Freda H.; and Siegle, Peter E. Liberal Education Reconsidered. Reflections on Continuing Education for Contemporary Man. Notes and Essays on Education for Adults, 60. Syracuse: Publications Program in Continuing Education, 1969.

20. The first plans for extension course work were made by the Board of Columbia College in 1830 in response to the popularity of the local lyceum movement. The course, called the Literary and Scientific Course, stressing the modern languages and science, was offered to all students as well as to "young men employed in mercantile and industrial establishments." Though this course attracted few students and had to be abandoned in 1843, the idea that the College needed to broaden its educational influence in New York City persisted. Mr. William Betts, a trustee of Columbia College from 1842 to 1884, said that it was the obligation of the College to "extend the benefits of education to as large a number as possible." So, in spite of a poor start, the program grew until it became very comprehensive embracing all branches of what was to become Columbia University. For further historical data see John Angus Burrell, A History of Adult Education at Columbia University (New York: Columbia University Press, 1954).

21. I believe Hallenbeck is referring here to a pamphlet that Morse Cartwright and Glen Burch put out together called Adult Adjustment (New York: Institute of Adult Education, 1945).

22. The Commission of the Professors of Adult Education was established in 1956 by the Adult Education Association of the USA to:

- (1) crystallize a definition of adult education as a field of work,
- (2) develop a systematic theory of graduate education for professional adult educators,
- (3) identify the elements required for a graduate curriculum in adult education,
- (4) systematize existing knowledge and identify needed new knowledge required for adequate graduate education for adult education, and
- (5) evaluate results of graduate study in adult education.

The W. K. Kellogg Foundation granted \$26,500 for a five-year period to enable the Commission to work toward these ends.

The first formal meeting of the Commission was held at Ann Arbor, Michigan, in April, 1957. Twenty professors representing fifteen institutions were in attendance. Subsequent meetings were held at Purdue University, The University of Wisconsin, Michigan State University and in 1961 at the University of Indiana. After the completion of its mission in 1961, the Commission was not disbanded, though it received no further foundation support for the continuance of its deliberations. As far as the author knows there has been no formal motion accepted by the AEA-USA which continues the life of the Commission, yet its present membership is well over one hundred persons.

For a more detailed history of the first five years of the Commission with an evaluation of its work see Adult Education: Outlines of an Emerging Field of University Study (1964), pp. 327-34.

At the 1958 Commission meeting held at Purdue University Professor Edmund de Schweinitz Brunner, of the Bureau of Applied Social Research at Columbia University, reported on the status of research in adult education. Brunner's study was conducted at the request of the Adult Education Association--USA and may be seen in its entirety under the title An Overview of Adult Education Research (1959).

23. See Kreitlow, Burton W. Educating the Adult Educator, Part I--Concepts for the Curriculum (Washington, D.C.: U.S. Department of Agriculture, Bulletin No. 573, 1965). This report was sanctioned by the Commission of Professors of Adult Education. It was prepared at the University of Wisconsin and summarizes and shows how the research contributions of other fields and disciplines lead to a better understanding of the concept of continuous learning.

See also _____, Educating the Adult Educator, Part II--The Taxonomy of Research (Washington, D.C.: U.S. Office of Education, 1965). The second part of the U.S. Office of Education Research Project No. E-012 provides a framework for research in adult education and identifies the areas needing research. Kreitlow indicates, also, those areas he feels have priority importance.

24. Hallenbeck was Chairman of the Commission of Professors for the third annual meeting held at the University of Wisconsin's Wisconsin Center in Madison, Wisconsin from March 18-21, 1959. Some of the members and visitors in attendance were:

Wilbur C. Hallenbeck--Chairman

Burton Kreitlow

Irving Lorge

Howard McClusky

Gale Jensen

Harold Dillon

Wilson Thiede

Paul Bergevin

Coolie Verner

Cyril Houle

Andrew Hendrickson

Robert Smith

Jack London

John Carr Duff

Paul Essert

Rose Cologne

A. A. Liveright

Alan Thomas

Roy Minnis

Roger De Crow

25. One of the first projects of the Professors of Adult Education was presented at the March, 1958, meeting at Purdue University. It was published in June, 1962, in the series, Adult Education: Theory and Method under the title "Community and Adult Education" by Wilbur C. Hallenbeck, Coolie Verner, Jack London, Paul Bergevin, and Robert M. Smith. The series was printed by the Adult Education Association of U.S.A. in June, 1962.

26. In my travels throughout the eastern part of the United States while conducting interviews this was a major criticism heard. It bears out Webster E. Cotton's assertion that the "malaise which currently afflicts our profession is due, in large part, to our failure to confront these questions effectively" . . . the questions: "Where are we going? Why? How best can we get there? On Behalf of Adult Education; A Historical Examination of the Supporting Literature. Notes and Essays on Education for Adults, 56. Brookline, Massachusetts: Center for the Study of Liberal Education for Adults, 1968, p. 79.

27. Ester Westerwelt is a Ph.D. in Student Personnel. At that time she was a clinical professor in the guidance department. She had been in one or two of Hallenbeck's classes and he describes her as an extremely able, energetic and effective professional. She has had wide experience, e.g., she was one of the girls who flew the big bombers from the factories to the field for departure to Europe during World War II. She was, at the time of the Hallenbeck interview, April, 1952, with an organization helping to extend the opportunities of women and is now a Distinguished Professor at Simmons College. Her husband and she are close friends of the Hallenbecks.

28. Kreitlow identifies educational guidance and counselling as an area of research that is developing rapidly.

29. See Walter D. Edmonds, Drums Along the Mohawk (Boston: Little, Brown and Company, 1936).

30. The Research and Development Center at Georgia was one of a group funded by the Office of Education in the middle '60s. It aimed to see whether with a carefully planned sequential program from three years to twelve it would be possible to increase the scores of children on verbal ability tests. One of the problems it experienced was to get first and second grade curricula adapted to children who came "with a lot." Teachers tended to teach the special children just like any other entering pupil. The Center was slow getting into effective operation and was closed out by the Office of Education when the total funds for the Research and Development centers was reduced.

31. For a complete account of the circumstances surrounding the 1954 Supreme Court of the United States decision prohibiting segregation of Negro children in public schools see:

Keessing's Contemporary Archives, Vol. IX, 1952-54 (London: Keessing's Publications Limited, 1954), pp. 13593-95.

32. The B'nai Brith (Sons of the Covenant) has shown great interest in the use of discussion groups to combat the problem of prejudice. It was founded in New York City in 1843 and is the largest Jewish service organization in the world. It carries on a broad program of community service including adult education activities.

33. On June 10, 1968, by Executive Order #11412 President Johnson established a National Commission on the Causes and Prevention of Violence.

34. I believe Spence is referring here to the establishment in 1952 of the National Association of Public School Adult Educators (now the National Association for Public Continuing and Adult Education).

The original plan establishing the Adult Education Association of the U.S.A. provided that public school adult educators would be absorbed into the general membership. However, provision was made for them to meet separately and propose solutions for problems afflicting the public schools through an autonomous organ of the AEA called the Council of Public School Adult Education Administrators. Gradually NAPSAE became freer of the AEA. It became free to establish affiliations with other organizations, it assessed membership dues, it became a department of the National Education Association, it sought and received grants for aid independent of the AEA, and so on.

This special relationship of NAPSAE or NAPCAE made it difficult to place this public school group of adult educators in an appropriate and realistic position in the organization of the field. It has served to weaken the total impact of the field rather than strengthen it.

For a more detailed account of NAPSAE see Malcolm S. Knowles, The Adult Education Movement in the United States. New York: Holt, Rinehart and Winston, Inc., 1962, pp. 230-232.

35. Jerome Bruner is at Harvard University studying the way elementary school children learn. What he is doing is basic to "continuous learning." Among his books dealing with this subject are:

The Process of Education (Cambridge: Harvard University Press, 1960).

Toward a Theory of Instruction (Cambridge: Harvard University Press, 1966),

and a book he published jointly with Jacqueline J. Goodnow and George A. Rustin called A Study of Thinking (New York: Wiley, 1956).

36. Dr. Spence was education consultant to the New York State Department of Education from 1943 to 1949 and was education consultant to the New York State Youth Commission from 1949 to 1952. These duties kept him in Albany, New York, a good deal of his time. This is what he refers to when he talks about his Albany days. Most of this time was spent as Acting Chief of the Bureau of Adult Education and it was his job to establish and carry out a program of adult education in the State of New York. Later he was given the responsibility of developing a more extensive program of research in adult education. This new thrust pushed him into a continuing investigation of the needs for adult education and also into evaluating local programs in New York State that seemed promising. One of the spin off results of these years in Albany

was to give Dr. Spence an intimate knowledge of the educational problems besetting New York State one of which was the problem of juvenile delinquency.

37. See William James, The Moral Equivalent of War (New York: American Association for International Conciliation, 1910).

38. See note #75, Chapter II.

39. See Paul L. Essert and Ralph B. Spence, "Continuous Learning Through the Educative Community: An Explanation of the Family-Educational, the Sequential Unit, and the Complementary-Functional Systems," Adult Education Journal, XVIII, 4 (1968), 268-269. They state:

We need to extend the productive beginnings of developmental studies of growth of children and youth to similar research in the adult era. Can we evolve some useful measures of maturity? . . . We need research that will construct new theories of continuity for adult learning based on more reliable measures of adult development and anticipated maturity stages rather than grade level achievement.

40. Margaret Mead in Today and Tomorrow; Three Essays on Adult Education in the Future (1961) is also concerned with these questions. She calls for a new definition of education with distinctions between that part which is related to phases of maturation and the kind that is related to knowledge and skill. She calls for a reexamination of our attitude toward education throughout the life span of the individual with all of its compartmentalization and segmentation in terms of subject matter and chronological age. Like Blakely she is against adjectives.

41. One can see the same theme in Malcolm Knowles chapter "Strategy for the Future" in De Crow, ed. Growing Time (1964). Knowles suggests that cultural revolutions will occur very often during an individual's lifetime vitiating, therefore, the purpose of contemporary education. It is no longer enough for the schools to transmit culture for the individual in the future must know how to discover knowledge and conduct inquiry. The learner in the future must be exposed at each stage of his growth to all of the tensions in his society. Primary among the concerns of formal schooling must be the development of a continuous desire to learn. This, in turn, requires a mastery of the tools of inquiry. Adult educators should lead in this process; in reorganizing knowledge and developing a curriculum to provide for lifelong learning. The adult educator he sees as the professional leader in the total field of education.

42. See Robert C. Cook and Mary A. Smith, eds., Who's Who in American Education (Vol. XIV, Nashville, Tennessee: Who's Who in American Education, Inc., 1949-50), p. 261.

Steven Maxwell Corey was Professor of Education and Executive Officer for the Horace Mann-Lincoln Institute of School Experimentation at Teacher's College, Columbia University. His field of expertise was educational psychology.

43. The Commission of Professors of Adult Education--AEA has been concerned with curriculum for master and doctoral candidates since its inception.

44. Elvin V. Svenson, "A Study of Professional Preparation Programs Offered by Schools of Education" (Unpublished D.Ed. dissertation, University of California at Los Angeles, June, 1954).

Svenson reports that Teacher's College, Columbia University, was the first school of education in the United States to begin offering training of professional adult educators. A single course was introduced in the summer session curriculum in 1929 supported by Carnegie Corporation funds and the American Association of Adult Education.

Since then the question of curriculum for the training of professional adult educators has been uppermost in the minds of professional adult educators. This has been a concern in the United States at least since 1926 when the old AAE discussed it.

45. Andrew Hendrickson, A Review of Post-War Literature on Public School Adult Education (Columbus, Ohio: The Bureau of Special and Adult Education, Ohio State University, 1949), p. 12.

46. Hendrickson is referring here to Public Law 89-329, Title I--Higher Education Act of 1965.

47. The Commission of Professors of Adult Education--AEA met last at Minneapolis on November 16, 1972. Approximately 75 professors attended. Graduate programs are still a concern of the Commission. Present concerns are professor exchange, criteria for commission membership, history of the commission, the writing of a small book on Graduate Research in Adult Education, efforts to increase publications output of the commission, to develop closer relations with ERIC-AE, to develop closer relations with part-time professors of adult education, to develop new programs, to protest the phasing out of the Adult Education graduate program at Boston University, and to protest the phasing out of ERIC-Adult education.

See the Commission of Professors of Adult Education--AEA, Report of the 1972 Annual Meeting held in Minneapolis, November 16, 1972 (Typewritten).

48. The George Arents Research Library of the Syracuse University Libraries system has been active for many years in obtaining historical and archival materials particularly in the field of continuing education. It serves as a repository for correspondence files, manuscripts of

articles, speeches, and books; reports; photographs and public relations files; minutes of professional meetings; proceedings of conferences and annual meetings; subject files; financial reports and statements; printed publications including newspapers and reports; and the Continuing Education Oral History Project.

The Library is keen to acquire research collections relating to adult education.

49. See Peter J. Smith, "Britain's Open University: Everyman's Classroom," Saturday Review (April 29, 1972), pp. 40-42, 47-50, for an excellent description and evaluation of the open university system in Great Britain.

50. Paige, Leroy Robert (Satchel)," Encyclopedia Britannica, 1972, 17.)

One of the great black baseball players in the U.S. He pitched for 22 years in minor leagues before he went on to the major leagues. He began his career pitching for the Black Lookouts of Chattanooga, Tennessee in 1926. Because of his race Paige did not get into the major leagues until 1948 when Bill Veeck signed him to a contract to pitch for the Cleveland Indians. Paige then was past his prime years but the team went on to win the American League pennant with his support as a relief pitcher. He was universally popular and drew an attendance of 200,000 people in three games. One reason for his success was that he was able to remain calm, "hang loose" as he called it, under periods of stress during games.

51. See John Spedding, Robert Leslie Ellis, and Douglas D. Heath, The Works of Francis Bacon, new edition, 1872, vii (New York: Garrett Press, Inc., 1968), p. 253.

I believe this comes from Bacon's Of Heresies--"The third degree is of those who limit and restrain the power of opinion to human actions only, which partake of sin . . . and who give a wider range to the knowledge of God than to his power; or rather to that part of God's power (for knowledge itself is power) . . .

52. Op. cit., pp. 260-271.

53. See "Paul Henry Sheats," Who's Who in America (37th ed. 1972-73, Vol. 2, Chicago: Marquis Who's Who, Inc., 1972), p. 2875.

Dr. Sheats has had very broad and strong impact on the adult education movement in the United States. His program in adult education at UCLA is very well known in the field. Aside from his professorial role at UCLA he has been an administration assistant for the Federal Forum Demonstration, U.S. Office of Education, 1937-39; research assistant to the Federal Radio Education Commission, 1939; assistant professor of education at the University of Wisconsin, 1939-42; head of the adult

education section of the Office of War Information, 1942-43; director of New Tools for Learning, New York City, 1943-44; educational director of Town Hall, Inc., New York City, 1944-46; consultant for the Ford Foundation's Fund for Adult Education; has been on the Board of Directors of NTL, 1961-64; president of the AEA-USA from 1953-54.

54. At the moment, Howard McClusky is at the University of Nebraska, Lincoln, Nebraska, as Visiting Professor.

55. "Cyril Houle," Who's Who in America (37th ed., Vol 1, Chicago: Marquis Who's Who, Inc., 1972), p. 1501.

Dr. Houle has been at the University of Chicago since 1939 where he became full professor in 1952. He was Dean of the University College from 1945 to 1952; State Director of WPA Adult Education, Coordinator of wartime training for the CAA, director of the UNESCO seminar in Sweden, and president of the Illinois Association for Adult Education. In 1950-51 Dr. Houle was a Fulbright Fellow in England. He is the author of many books and articles in professional journals on adult education. His impact on the adult education movement has been substantial.

56. Royce S. Pitkin addressed himself to this situation in his The Residential School in American Adult Education (1956). His essay discussed the potential educational and psychological advantages of small residential adult schools to the American public. Included as a service to the adult he discusses counselling. The accomplishments of the Danish folk schools and the achievements of similar programs in North America are cited.

57. Such an episode did in fact occur when a community school was constructed in Elizabeth, New Jersey. The author was a longtime resident of Elizabeth and is very familiar with the area in which the George Washington School No. 1 is located. It is truly a community school being operated as an elementary school and as a school for adults of the community. An interview with the school principal, Mr. Richardson, and the School Community Coordinator, Mr. Howard J. McKenzie, was held on Wednesday, September 13, 1972, at the school. The facilities are excellent and provide the best opportunities that money can buy for a clientele which spans all those people from the pre-schooler to the senior citizen. Among the programs available for adults who are residents of Elizabeth are: Beginning Sewing, Party Foods, Cake Decorating, Crocheting, Beginning Knitting, Photography for Students, Advanced Photography, Arts and Crafts, Ceramics, First Aid--Basic, Drama for Adults, Woodworking, Instrumental Music, Folk Guitar, Senior Citizens Swim, Family Swim, Learn to Swim for Adults, Open Splash Adults, Junior and Senior Lifesaving, Slimnastics for Women, and Tennis for Beginners.

One popular program has been the adult community concert band which had given two concerts for its community audience. Total registration for the community program was about 1770 and Mr. McKenzie expected that this figure would be surpassed during the school's second

year of operation. For anyone wishing information relative to the school program, philosophy, and related material, the School Community Coordinator, Mr. Howard McKenzie may be contacted at George Washington School No. 1, 250 Broadway, Elizabeth, New Jersey, 07208.

For further information on this interesting experiment see "School for All Seasons," The Daily Journal (Elizabeth, New Jersey), September 8, 1972, p. 17. Reference to article in a daily paper, paged consecutively throughout.

58. Dr. Essert and his wife reside in a community of senior citizens in Lakewood, New Jersey, called "Leisure Village." Prior to my interviewing Dr. Essert I wondered how an adult educator even beyond retirement age could sit it out in a retirement community. Not so Dr. Essert. He doesn't sit it out by any stretch of the imagination. In addition to organizing the citizens of "Leisure Village" into a respected political force he had taken on running seminars on Africa.

59. George Counts, Dare the Schools Build a New Social Order? (New York: Arno Press, 1969).

CHAPTER IV

RECAPITULATION, RECOMMENDATIONS FOR FURTHER STUDY, AND CONCLUSION

Purposes

This project collected through taped interviews the recollections and reminiscences of several of the early twentieth century university adult educators. The two major purposes were:

- (1) to capture the experience of selected early leaders of graduate programs in adult education and
- (2) to analyze a portion of that experience relevant to a philosophy of adult education.

This dissertation was conceived to accomplish in great part the second purpose mentioned above.

It was hoped that payoff in two major areas might accrue from this study; namely,

- (1) to identify whether or not the field as viewed by these men is mirroring one or more philosophical schools; and,
- (2) to give impetus to an attempt to identify the ends and means-- a modus operandi--for the field of adult education.

This study may have further particular significance because the process through which it has been conducted may serve as a model for the Oral History Project at the Library of Continuing Education of Syracuse University.

Methodology

The discipline through which these recollections and reminiscences were collected was that of oral history. Oral history is the technique of capturing the remembrances and interpretations of those participating in contemporary life who are judged to be knowledgeable about the subject under study, whether it be an individual, individuals, or a topic area.

The purpose of the oral historian is to accumulate and generate data for the historical record that other institutions can use in the future usually through the use of taped interviews. The intention is not to replace traditional historical source material but to increase the quantity and quality of that material; the interviews produced being a supplement to and not a substitute for them. The evidence collected is valuable because it provides information which one cannot easily get elsewhere for it makes available to the historian a source of natural living expression.

Careful preparation is very important in the production of useful oral history interviews. The author constructed a typology of seven steps to which he conformed which hopefully have led to valuable taped interviews for the historical record. Those steps were:

(1) doing advance preparation, i.e., studying the field of adult education history between 1919 and 1972 which yielded valid historical questions and problems;

(2) selecting respondents in accordance with criteria established and found in Chapter I;

(3) obtaining the agreement of the respondents to be interviewed

to permit the products to be placed in the archives of some

research library for the use of qualified scholars;

(4) doing preliminary research on each respondent--the interviews of four respondents were arranged only after the author had conducted as exhaustive a study as possible on their work and lives. Two of the respondents interviewed were added later during the process and only a cursory research was done on them;

(5) preparing for recording sessions;

(6) recording sessions which were made usually in surroundings where the respondent was at ease and at times when he felt best; and

(7) typing transcripts of the tapes--the interviews were edited by the author and the respondent. In order to make each interview complete the transcripts include prepared notes, appendices exposing all correspondence relevant to the oral history project, vitae on each respondent, bibliographies of material written by each interviewee and other literature in general.

The tapes produced are on file at the archives of the George Arents Research Library of the Library of Continuing Education at Syracuse University and the Oral History Research Program of Florida State University.

Synthesis of Belief Themes

Seven basic themes seem to undergird the philosophy of the respondents. Each will be listed below together with several comments by the respondents supporting the idea in each theme. They are:

(1) that change is a constant, i.e., change is continuous.

It is better from my point of view to talk about direction rather than purpose or purpose in the sense of direction rather than purpose in the sense of clear cut goal. Five years from now it'll be this; ten years from now it'll be that;

Education is a right because of the rapid change in our society. The only way a person can keep up is through education;

Change is expected. Change is a part of life;

Adults at every possible juncture must be exposed to the understanding that the normal is a constantly changing world.

(2) that values are relative.

We must develop a span of tolerance and increase it to acceptance of conflict and difference to the point that if there were not conflict this might signal that something was wrong.

What we in America had was a very rich country with too few people to really utilize the resources. So if anybody came along and said, "I can help you with that job," you didn't ask who his father was or what college he'd been to. You just said, "Come on aboard and give us a hand." The opportunities were tremendous. Over in India you've got a raft that's got more people on it than it really can hold and if somebody comes swimming along and says, "I can help you," you kick him in the teeth and say, "Get away!" And we're beginning to have that kind of approach. Instead of this helping hand we're turning people away and we're asking questions about their antecedents. How do we move back to this concept of cooperation?

As far as I can read the picture Labor had to move to confrontation in order to get anything. If the other side controls the power structure, there comes a time when you have to decide that you're getting nowhere with attempts at rational persuasion. Then you have to decide how important it is. And if it's critical, you have no alternative.

One of the things that has intrigued me is the fact that in our culture we have two strands in relation to the concept of work. We have the Puritan strand in which work is conceived as a good . . . and on the other hand we have the Greek tradition that the citizen doesn't work--that's what slaves do.

There is talk about liberalizing education. I like liberalizing. Liberalizing makes a person freer from as well as to. It's different for different people, for different situations, for different times.

One of the curious things that happened in the last twenty years was the movement toward centralization. Now we're moving toward decentralization but it's a different kind of decentralization. It's a decentralization within national patterns . . .

(3) that man is a social as well as a biological creature.

The goal is the individual and the community is the means or the instrumentation or the school for the development of the individual. . . . I'm strong on the social approach because I don't think one can become a human being unless he is a social being first.

I would say that the democratic society is an instrument in the unfolding process and the community helps to bring this about.

My concept of the individual is that he cannot be a good individual unless he is in very effective reciprocal relationships.

I'd say the goal is to create a good human being and he gets his humanity by his ability to relate to and cooperate with and contribute to the welfare of others.

Education is a cooperative learning process.

Fundamental to my concept of education is the notion that the needs of the two parties--the individual and his society--are often not identical. . . . The purpose of systematic intervention at any age, which is the way I use the term "education" is to help each person achieve the best possible combination of activities which will contribute to his group and will enrich his own personal development.

When you educate individuals and make them better individuals, you're making better groups.

(4) that living is concerned with being oneself and becoming oneself.

My purpose is to help; to create as favorable a climate as possible for everybody to be the kind of person he wants to be. Maybe I reflect the American zeitgeist of the individual fulfillment, not in the competitive aggressive dog-eat-dog sense, but in the sense of fulfillment and becoming. . . . My purpose is to help the individual to become in his way; to achieve his potential.

If you have a society that is properly operating ~~for~~ the proper purposes, there's never any conflict because the society operates to provide the environment in which the individual can become--can meet his greatest potential.

Education is the process by which you assist a person to develop himself in ways nature designed him to be developed.

(5) that each individual is important.

The ability to empathize with what you might call the human condition. I think I have quite a bit of that. . . . I think that's terribly important for adult education because if we believe that adult education should be built upon the needs of people you have to be very patient and very accepting. . . . I discovered I give a humanitarian zest.

There has never been in the history of the world a time when the welfare of the whole machinery of people depended upon individuals as it does today.

There must be no blocks imposed by society between the desire of an individual to learn and the resources available for him to do so.

I have an unideological belief in people. Call it my belief in democracy and freedom.

Education is education or it's not education. I think it's education in terms of organisms. Coping. Not adjusting. Adjusting is a passive word. Coping with life. Human life. This is my concept of education.

I was talking to adult educators. And I said, "The real question is when you look at these students--these deprived, call them what you want--are you seeing things or people?"

(6) that democracy and learning are inextricably related.

Adult education is a means of equalizing opportunity . . . we live in a knowledge society where you've got to have a maximum of information and you ought to have access to this just like you have access to water, light, and a right to live.

If a condition of unfolding is to have a democratic society, then by all means, therefore, a very large part of adult education should be devoted to helping a person to develop a free state. And, of course, the democratic society is the means.

Without democracy in education you don't have any education.

The public school is the basis almost of our whole social system, a democratic society.

All levels of education are becoming more like good adult education in regard to learning as an internal, personal aspiration rather than a socially imposed discipline.

Increasingly I come to the conclusion that the learning institution, the learning community, the learning society is the only kind of social organization that can mature. It is the core of a free society.

A free society has got to put learning, continued learning, right at the center of the picture if its going to be free.

Only people learn and if they don't learn there isn't education. And if they learn they participate and that means helping it set the goals. It means the motivations, the objectives, the means, the assessment of what they've done, and whether they want to continue.

(7) that human affairs should be conducted with critical intelligence.

The field of professional education left its mark on me. . . . I've been interested in community change through the educational process. This is defined as the liberal outlook of bringing about guided change rather than just holding on to the status quo.

There is something in the human tradition where people begin to move on an idea, i.e., the idea carries some weight. The idea of more equality for individuals is a rational idea and you can see its influence in history.

I'm more interested in using more rational types of persuasion to bring about change.

I think it is important in the democratic tradition to be open to all ideas without losing objectivity. If we have a tradition that does not allow us to look at other ideas, then we are in bad shape.

I believe in freedom but I think it has to be earned, it has to be justified, it has to be retained, and I believe in paying the price for it.

Extrapolation of Goals for Adult Education

On the basis of the aforementioned premises the author extrapolated nine goals for the field of adult education. They are:

- (1) Encourage and abet the ability of each individual to adjust, adapt, or cope with change, and promote the idea that the adult personality can change;
- (2) Stress, however it can, that values are not a product of the nature of things but rather that they arise out of social needs, and thus change as social conditions change;
- (3) Permit each adult to plan, conduct, and evaluate each learning experience with his fellow students and all others involved in the program;
- (4) Encourage the adult educator to consider himself not as a teacher imparting knowledge but as a participant in the learning transaction;

- (5) Provide community situations where adults can learn how to be and become more responsible and productive citizens;
- (6) Emphasize in as many ways as possible that continuing learning is necessary for the maintenance of a free democratic society and, thus, continuing education must be encouraged by broad support from all elements of society and be made available everywhere to any adult, free if necessary;
- (7) Make manifest the importance of critical intelligence in all human affairs and illustrate the ethic that freedom together with its requisite need for discipline and responsibility will help all individuals to discover their talents and enable them to put their talents to productive use;
- (8) Recognize that the individual personality with its affective and emotional aspects is very important and very potent and, thus, must find ways to permit its students to express themselves emotionally and creatively and to have opportunities for individual achievement; and
- (9) Experiment with a multitude of teaching methods together with individuals to assuage the individual needs of adults.

Synthesis of Problems

Enumerated below are nine general problematic conditions or areas of concern perceived by the respondents. In conformity with the pattern established previously comments of respondents regarding these problematic areas are included. There was nearly unanimous agreement with respect to the first four problems listed.

- (1) The absence of an explicit enunciation by the field of a clear-cut set of goals and means by which adult education may be guided.

Among the consequences of this malaise were noted the failure of the field to become fully professionalized; the absence of a systematic method to enable the field to facilitate change; and the fear to confront the issues of citizenship and values.

I would maintain that the field has no conception of its goals.

I think the attitude is somewhat justified that adult educators lack a guiding set of goals and means.

The other thing we should come to grips with is the problem of conflict and controversy.

The greatest failure of adult education has been and is its inability to inculcate the concept and the practice of life-long self-education as essential to being fully human. And is integral to all aspects of life and all roles, particularly life in a world in which the only constant is change.

A failure related to this has to do with power again. The core problem right now, and as far ahead as mankind is going to be around, is the control of power. The failure of adult education is that insofar as it succeeds it may promote power but it is not controlling the power. It's not promoting the power to control power and it's not promoting the central concept of values, purposes, and goals. What has been called shared power, toward shared goals, with shared respect.

The field has been too ad hoc. It has no systematic plan for conceptualizing programs, developing programs, innovating programs, and validating programs. Little time was spent in asking why programs were activated, in evaluating programs with a view toward continuing that which was good and terminating that which was undesirable, in determining what was learned which could have been generalized and transferred, in accumulating a record of achievement which could have provided a solid basis as a rationalization for activity in the field, in accumulating a record of activities which could have provided cues and clues as to desired future activity.

The field must look at itself in greater depth so that it can identify all of the possible implications and consequences of its actions. We must be more thoughtful students of this now.

Your social psychologists ordinarily never appear at adult education conferences or belong to adult education associations. Why not? People like that or people who have been working more systematically in terms of trying to do something with these attitudinal problems

are missing from our ranks. So that you see, back at the fact that under the label of adult education is only a small segment of what the real adult education resources of the country are? How do you relate the organized labeled section to those larger resources? . . . This whole problem of looking at the total educational job and looking at our resources; trying to define the kinds of things which the different groups can do so that they're all, as much as possible, working together; this is the big thing.

(2) The failure to muster the research and scientific skills of the total university in solving the problems of the individual as well as society which emerge from the forces of change, and to get it into the stream of adult education functioning.

Well, this is another one of my sore points. And I don't know what the answer is. What proportion of research done in the field of adult education has close enough reference to the genuine problems of the operation of adult education? And if it has, how much of it gets into the stream of adult education functioning? And what good is it anyway if it doesn't do that?

How and to what extent can the presentation of more adequate materials modify man's position and so perhaps avoid violent confrontation? That's an area where we need much more research and understanding in the whole decision-making process.

How do we organize TV, for example, which has tremendous potential (on the solution to the citizenship problem)? What do we know about the impact of TV on behavior?

(3) The lack of creativity and experimentation in the development of institutional forms importantly concerned with adult education.

My chief concern in the structure is a well-thought adult education council that is more than simply a group that meets together for a group exchange.

We need skill and learning centers all over the place.

(4) The lack of enthusiasm for learning among the young. The stress on competition is partially responsible for this lack of enthusiasm.

I regard the lack of enthusiasm for learning as an adult education problem.

How can we get kids to realize that man developed patterns of living together which we might call inventions. Somehow or other we need to

get the concept across that all of man's arrangements are somehow or other things he's worked out.

How can we make education for children a challenge; make it more exciting?

I'd like to be a little mouse and wander around the school system and see what's happening. I know that this is not typical but I heard that a fifth grade teacher or principal was marking the class according to the normal curve of distribution. When I heard this, I was horrified.

In school we recite learning to the kids and assume that if kids can recite it back it can have some potency for what they're doing. And instead of doing that we should say, "Well, what is it that youngsters can do in the community? Where can they find meaningful activity for community chores instead of personal chores and later they find that certain kinds of skills enable them to do it faster?"

I didn't have enough sense to be intelligently bored as students have now.

Of course, there was no question even through my college days but that education consisted in the accumulation of information. But I can't conceive of anyone who has intelligently looked at education that would accept this today. And yet there are an amazing number of people, a good many of whom are a good deal younger than I am, whose education of schooling, which I prefer to call it, consisted largely in the information approach, which I'm afraid schooling still does. Many have their criteria of education in that pattern. And it seems to me that that is one of the great difficulties in the reconstruction of education in this day and age. And that is important because if the adults think that with reference to the education of children and young people how much more do they think of it in relation to their education which is adult education, you see.

(5) The still peripheral and expendable value placed on adult education by most educational institutions is considered a problematic area by half of the respondents.

I think a problem is that adult education is still quite marginal.

In the public schools the Director of Adult Education is too often a little specialist even more remote from the decision-making process than the principal of a high school. He doesn't often come in to the decision-making process except as an operating agent. This is true of libraries. It is true of industry. It is true of universities and community colleges. The structure has to include the adult education staff as a part of the decision-making process.

The responses which follow are problems identified by some of the interviewees. Others didn't mention them at all or felt they were not problematic.

(6) The failure to fully exploit the new technology for adult education purposes.

I think we have not anywhere exploited the new technology for educational purposes.

(7) The lack of sufficient resources for experimentation, training, and education of professionals.

The field needs more resources. Our big job is resource to implement this new interest and I certainly think we need about as much creativity at this point so we just won't beat the old kettle. We are in a creative period, of new concepts in time patterns. What we need is creativity, innovation and new resources. We need more money and more staff.

I don't know that you can answer that question because nobody knows, for example, where you would draw the line, on the one hand, where a particular institutions' responsibility for paying is, where public responsibility for paying is, or where the individuals responsibility for paying is.

I think trying to keep up with all the changes that are going on in education today is certainly a problem for adult educators. A lot of experimentation is taking place but the problem is to learn how to incorporate this learning into our programs.

One problem is that there aren't enough professionals to handle the job for the future.

(8) Emphasis is placed in the professional schools on the training of administrators while the training of teachers, counselors, and other practitioners is wanting.

I'd like the universities to refocus their attention on the training of adult educators. And devise ways and means where they could be more effective in training people who were actually working with people. The training programs really don't get down to that level. Most of the people who have been trained get into administrative positions and we need to do a better job for people--the adults that

are looking for education. And so few people who teach adults have any proper concepts of what their job is. I don't know what the solution is.

I think the business of trying to understand people's feelings and emotions as they get into different kinds of meetings and different kinds of experiences is important. If we could all have more training in that (WTL type) so that we would understand the psychological factors involved in dealing with people and with groups, we'd be better off for it.

We probably have not come too far in the training of competent and capable teachers.

(9) The lack of a more responsible and creative leadership.

I think the AEA should have gotten more deliberately to the source of power in government. It probably should have kept beating the door of some other foundation besides Ford or Carnegie. It probably and possibly should have gotten closer to the sources of power. I don't know whether it could have been more aggressive in retaining and cultivating membership. It might have recruited in and cultivated that kind that belonged to the old AAEE like the Newton Bakers, the John Finlays, the Wielsens, and the Dorothy Carrington Fishers.

Synthesis of Recommended Action

The respondents, in the great majority of cases, recommend that action be taken by the field of adult education or by adult educators. In such instances the author has assumed that the respondents would permit him to urge action by the Committee of Adult Education Organizations since this is the only group which the author knows about that has the greatest national focus. In the other instances where the Adult Education Association of the U.S.A. is the subject of discussion and it specifically has not been urged to act, then the author has inferred that the respondents believe it ought to act to solve particular problems within its focus. Actions are recommended in the order in which problems were posed previously; namely, numbers one through nine.

(1a) The Adult Education Association is urged to sponsor programs on what is to be the role of adult education in society.

Now this is kind of romantic but I kind of felt that I would have liked to have seen more programs in the AEA on what is to be the adult education role on dissent.

Shall we get into politics and so on to help us achieve our goals? Shall we take a stand? What is the role of adult education in conflict, in dissent, in a society where so much has happened by violence? I think we can be more creative in response in that field. We can make a more constructive and positive contribution to the process there and to meeting some of the problems that give rise to violence.

(1b) The Commission of Professors of Adult Education of the Adult Education Association of the U.S.A. should recommend inclusion in the curriculum of professional schools of adult education courses in history, particularly comparative history, so that the field can examine where it has been and thereby help it to decide where it should go.

Professional education has got to make room for comparative history and history in general. That's one reason why I think the project you're in right now grows on me. And today it seems more significant for almost the same reason it would have been five years ago.

(1c) The Adult Education Association--USA should establish the position of an official historian whose role would be to keep a record of the development of the field.

I think the AEA should establish an archivist section in which it keeps records of any meeting held that has anything to do with the development of the field. A series of volumes should be brought out in which this material is incorporated with interpretative comments and chapters. So every few years new volumes can be brought out in which they have a continuous series of articles based on this archivists' material. It may not be too late to do it yet. It takes funding and maybe Kellogg or Carnegie or somebody else will be interested in doing this because the material which is being accumulated in Arents Research Library at Syracuse University will get away from them after awhile.

(1d) The Committee of Adult Education Organizations, hereinafter known as CAEO, should make strong efforts to coordinate the activities of

all groups concerned with adult learning to solve particular problems regarding citizenship education. Community education planning councils might be one structure through which this may be accomplished. Youth must be involved in this task.

Part of the solution to the problem is to involve twenty-year-olds in a search for responsibility. If you're going to have much chance with twenty-year-olds, you ought to be doing this with three-year-olds . . . Adult educators should make strong efforts to coordinate activities of all groups concerned with adult learning to tackle particular problems regarding the straight citizenship side.

(1e) The CAEO should establish task forces to organize important community activities in which the very young can be involved.

The citizenship stress in education comes in through the community. What's all this learning for? Presumably it's to help you to do certain kinds of things. When and if the elementary school could be run in such a way that it was constantly helping the pupil to do better what he wanted to do, then he'd begin to have this concept of life-long learning. Where can they find meaningful activity for community chores instead of personal chores and later they find that certain kinds of skills enable them to do it faster? What if you could organize a series of community activities like that which really mattered whether they got done or not? And then, what if you had some ingenious people in there who gave kids insights into doing things, you'd begin this process of what schooling could be for?

(1f) The CAEO should seek ways to encourage education at the undergraduate level to train people to learn to transfer for the future and to anticipate change.

General education at the literary college level has simply got to train people for the future, to learn to transfer for the future, to anticipate change.

(2a) It is recommended that the Committee of Adult Education Organization establish a task force to secure funds and allocate the following research:

(1) Duplicate the National Opinion Research Center studies done 1962-63 by John Johnstone and Ramon Rivera on adult education.

(2) Establish knowledge about the resistances in adult learning.

(3) Study the flow of communication in the inner city.

(4) Study ways in which Departments of Adult Education in universities throughout the United States and Canada could develop working relations with other university units so as to enable them to make a concerted attack uncovering knowledge on the process in depth of adult education. At the same time fund AEA-USA to conduct a survey to find out the extent of cooperation occurring now in all American and Canadian universities where Adult Education departments are in existence.

University adult education should be leading in the substantive field. I would pull in a larger section of the university than we have before. I would get more people in a partnership relationship. I would try to get a nice big hunk of money, not to set up a research division of my own, but to farm out research to the relevant agencies. To be specific, I would ask the Institute of Social Research to duplicate the NORC studies that were done ten years ago. I would ask the boys in motivation to do everything we know about the resistances in adult learning. I would ask the social workers, the social psychologists, the sociologists to help me understand a little bit more of the flow of communication in the inner city. In other words, I would make more use of our existing resources to get at the process in depth.

I think that a survey examining curricula in adult education is a recurrent need.

Adult education needs to ally itself with other disciplines; to become interdisciplinary. Now it occurs, if it occurs, on a too casual basis. We depend upon the trickle theory rather than the systematic channeling of irrigation streams.

(2b) The CAEO should encourage research among university adult educators and practitioners to determine the goals of adult education, its roles, and the means it will use to achieve its goals. It must seek to identify all the possible implications and consequences of its actions.

The whole fact of change and the profoundness of this change are my favorite themes. Change and the necessity of continuing education

for everybody puts the whole problem of education at any stage of life in a different light. It changes the whole thing.

Our preoccupation with methodology has made us a little more innocuous than we should be. We can be more inventive and more aggressive. I would even recommend that we study how Cesar Chavez and how Martin Luther King--not the Students for a Democratic Society--not how do you blow up the place--but, how can you, this side of violence bring about constructive change? Let's say the Ghandi approach, the coercion by non-violent means which is a little bit more than the educative approach; the legitimate use of non-violent techniques to get the society to the basic issues more.

So long as adult education is concerned, what we've got to develop are the methods of discussion. What NTL is trying to do is a step in that direction. We must discover ways by which individuals can somehow or other maintain maximum self-respect and a feeling of some chance to grow and yet at the same time fully accept the kinds of responsibilities that ought to be theirs because they were involved in that particular situation.

(2c) The CAEO should make a careful study of the gains and losses of different educational interventions in the traditional schools to such questions as: What is gained by the kinds of intervention that is presently done by the public schools? What is lost? What could we gain? And how can this be made into a maximum contribution?

Nobody has ever made a careful study of the pluses and losses of different educational interventions that are presently done by the public schools. We have a society in which the school intervenes at about age six to deliver intervention of a certain kind. Presumably some of the skills become more complex as the student advances. But the interesting thing is that probably some of the other skills are going to go down. When you put a kid in the traditional school, he may lose self-confidence. He loses some of the excitement that he had; some of the feelings of his own worth. I think Illich is doing a real service in pointing out that we're not using the kind of resources that are at hand to do the job in the community. So you see, the community can be used as an educative force. And this has important implications for life-long learning.

(2d) The CAEO should encourage research aimed at answering the following questions:

(a) What is the functional definition of maturity?

- (b) What is it that a person of fifty could have that a person of forty couldn't have by the fact that he's lived ten years longer?
- (c) What are the functional characteristics of that difference?
- (d) How does an adult decide in terms of various activities he's involved in the quality of his educational efforts?
- (e) What should a person want; what should he value?
- (f) What are the combinations of activities that make for effective living in the 1970s and 1980s?

Somehow or other if we could begin to do some research which would enable us to identify the nature of knowledge relating to actions individuals have to take so that it becomes something that's positive. In other words, we must learn how to use our knowledge or information wisely, i.e., for good things.

(2e) In an effort to ensure the rapid dissemination of research findings it is further recommended that CAEO establish a sub-committee whose task would be to search for ways in which present information centers and clearinghouses could cooperate to that end.

(3) The CAEO should explore ways in which appropriate governmental agencies, through local skill and learning centers, may support continuing education activities.

The concept of skill and learning centers placed all over the place.

Adults at every possible juncture must be exposed to the understanding that the normal is a constantly changing world. It is pretty tough to get adults to become capable of understanding it themselves let alone teaching other adults. But it's the kind of a world we have. There is no question about that responsibility.

The educative community consisting of the schools, the family and the complementary-functional system which includes all those agencies; industries, schools, colleges, and so on carrying out continuing education programs. Those that are keeping people up with needed knowledge as they become adults. When all three of these systems are operating in a community with knowledge and understanding and respect for each other, then you have the educative community.

To effect this interrelated knowledge and understanding of all three systems, I would foresee the emergence of a sort of educational planning commission or "community educational planning council" such as now exists in a few communities like Flint, Michigan. It would be a recognized part of government structure and there would be such commissions at local, state, regional and national government levels. Its prototypes in society today are the various types of city, state, and national planning commissions concerned with the physical and environmental planning for a given area, except that the educational planning commissions would be concerned with long-term educational planning. It would carry on research and propose recommendations for meeting changing conditions and unmet needs in all three systems. It would have little, if any, administrative authority except in recommendations, not control, for allocation of government funds for new and experimental developments in education. Thus, adult education would become an integral part of the concern of every community. So I see the community organized in such a way as to bring about an interplay of all the educational systems in the community.

I think what I'm talking about is an adult education council with a good deal more of the total community education planning function which includes all education not just adult education--the education of youth, the education of children and so on. A council that looks ahead. Not only trying to influence policy today but is also the agency for foreseeing change. And you're planning just like a city planning commission works. We look ahead fifty years in city planning. Now I can see a community planning educational council of the same kind.

One other thing I'd add about structure. And that is the whole problem of counseling adults. I would see ideally that there would be facilities throughout all neighborhoods for counseling adults about education. Because with all of this ramification of resources within any community for educating adults, it's almost impossible for the little guy, who's thinking of studying and learning something, to know where and how to find what he needs. So that I would see a very important part of the structure in a community of neighborhood adult education counselors or consulting officers. . . . Now you have a welfare council. Anybody can go to the welfare office and get information and ideas. You have job counseling. Go to the State Employment Office and get all that. . . . We would use our resources twice as well as we're using them if we had good adult education counseling service.

The nature of adult education counseling services should not be limited to that of advising clients who seek out the office of the counselor. The neighborhood counselors would not be sages who sit in their offices waiting for people to come to them. The counselors would get out to them, the people, where they are. Who got out in the neighborhood; who got out in the meetings; who even

got into the homes and help people learn about the resources for educating themselves.

(4) It is recommended that the CAEO appoint a sub-committee whose responsibility it would be to do whatever necessary to inculcate an enthusiasm for learning among the young. It should stress cooperation rather than competition as a motivation for learning.

K-12, plus K-14 plus K-16 should be conceived of as preparatory for life-long learning. This means, therefore, that an education should be in terms not only of the immediate product but also of the later product; not only what is it going to do to him now but also to what extent it will equip him or stimulate him or ignite him to want to keep on. So learning becomes open-ended; never complete. Everything is introductory.

The problem of evaluation should be followed in those terms. We ought to be very careful not to evaluate him (the young person) in such a way as to give him the idea that he is no good as a learner. Even though the person may flunk the course, the teacher ought to do a superb job of counseling; rearranging things to explain to the person that this is not the end for him.

Now let's take grading. Eliminate it. Let's forget CRE and Miller's Analogies for standing. Let's look at the profiles which show where individuals are good. This makes all the difference in the world; to look at profiles rather than grade point averages in the attitudes teachers have towards grading and in the attitudes teachers and administrators have toward promotion and counseling. Our attitude toward screening should be revised and our direction toward elimination should be abandoned. We should deemphasize competition and reemphasize cooperation. And let's eliminate grades.

(5) The CAEO should explore ways by which the still peripheral and expendable value placed on adult education by most educational institutions may be altered.

Within each institution or agency carrying on adult education, I see the best structure for adult education as one in which the person or persons responsible for adult education are in the line of communication and decision-making. In the university the Director of Extension and his staff should be square in the middle of decision-making processes, but they're usually not.

And I think the fault for the marginality is as much with the adult educator as it is with anybody else simply because he sees

his job too small; he doesn't see it as part of the total educational process. Take a public school Director of Adult Education. What's he? Too often peripheral. What interest does he show in the rest of the educational system? All he's fighting for is his own little niche. Until he becomes concerned with the whole, his work will remain peripheral.

The first step toward integration of ideas is empathy--putting yourself in the other fellow's place. Now I'll give you a very specific illustration. An elementary school building is going to be built. It could become with very little additional expense a great community school; a laboratory for a community school.-- Where's the adult education director getting his pokes in about this? He says, "Oh well, that's elementary education." On the other hand he might go to the architect and superintendent and so on, and with a gleam in his eyes say, "What can you do with these plans to make this elementary school into a community school?"

Does he, the Director of Adult Education, ever go and sit down with the director of the elementary curriculum and say, "Now look, I want to learn from you certain things. I think you have some things that we can learn in adult education. Take me around and show me what you're doing with kids." And vice versa.

What I'm saying is that the adult educator has often been more provincial than the academicians, you might say. And part of the reason for that is that he shrinks back into his little shell and he doesn't become a member of the team concerned with the total program and goals of his institution or agency. He therefore gets what he asks for--marginality.

(C) The CAEO should investigate ways by which adult education might become familiar with the use of new educational technology.

The new technology is important only insofar as it is a means to satisfy some end; that the end is the important thing.

The problem is to learn how to get these things into the process. The question is, are these things which we can work into the system or are we really going to have to modify the system.

Now with the computer and with devices for recording and recalling information very quickly the use of accumulated records is much more possible. Now we've got a tool that will enable us to set up little units for students to work at.

Cable TV is around the corner. We've got the technology to get the answers back for some central information or knowledge center.

(7) The CAEO should in direct cooperation with the Adult Education Association--USA seek financial support from public and private sources for experimentation, selection, training, and education of professionals and paraprofessionals.

The future of adult education depends upon whether we can get the resources to get the talent to do the job. There is need for more professionals and especially paraprofessionals.

Adult education has got to become a medium by which people can look ahead of their immediate life problems. Now if we do this, I think the role of the professional adult educator will change. I think the role of the volunteer is going to be much more important. There aren't enough professionals to do the job. Millions of volunteers who are going to be in this educational process will become increasingly important. So that changes the role of the professional, in a sense, to what he becomes, perhaps, a researcher of the future; becomes a student on counseling these volunteers on processes and ways of doing things. He moves out into the community and spends less time behind his desk or books. If we do more in the direction of anticipatory change, then the role of the volunteer is going to be more important.

We should be much more free in the selection and training of adult educators than we have been in the past. Performance should be the big criterion for selection. Let's forget credentials and choose those also who show talent and interest, commitment and style that would fit in.

I think the personal dimension is very important in selection. I don't have too much faith in the average test to be too definitive about selection. I think you can get some good clinical personality assessments to give you a sense of probability but not a firm assurance. I would do that, perhaps, to screen out the extreme cases, which I think you can pick up sometimes. But I also believe we should counsel the person along the line.

We haven't provided the freedom that's desirable for the wide range of people who come in and for the wide range of activities that have to be prepared for.

There is one thing education can learn from medicine. This is the internship program. Where it never works very well in education, it jolly well works in medicine. And, of course, you don't practice medicine without it. Maybe your selection problem is a question of timing of training, i.e., training should follow experience rather than precede it.

I don't think we ought to have a doctoral program without an internship. A proper balance between the theoretical concepts which are certainly highly necessary in the field and a sense of reality when taken together with ideologies can form a proper basis for practice.

One other thing about medicine. Medicine has the majority of professors who are currently in practice. They call them clinical professors.

With regard to experimentation we've got to bring together teams of people who seem to be concerned with adults and who have the ability to consider programs. We have to enable them to stay together long enough to come up with some theories and then fund some exploration which gives assurance that experiments can continue over a sufficient period of time so that you aren't in the usual situation where you're always worrying whether your thing is going to be continued for another year or not.

(9) It is recommended that the Adult Education Association of the U.S.A. move toward the professionalization of the field by exerting whatever pressure it can with state governments to require certification for the teaching of adults. Further, the Commission of Professors of Adult Education, a commission of the Adult Education Association of the U.S.A., is urged to consider programs in the universities leading to trained teachers and counselors of adults.

Certification requirements for teaching adults ought to be set up in all of the states.

The stress in the professional schools has been on the training of administrators rather than teachers and counselors of adults.

(2) It is recommended that the Adult Education Association of the U.S.A. reorganize in such a way as to strengthen its sections; to recruit to its membership a larger number of intellectuals; and to be more creative, innovative and daring in its leadership.

The AEA should be strengthening the sections in order to take care of specialized interests. Adult educators from now on must be futurists. We've got to rerelease the past to the future. And this is all the more reason why we should look at the past of the

Recommendations for Further Study

Research needs identified during the course of the investigation just completed cover an area broadly defined as the Adult Education Field. In order to make this whole more comprehensible the author has isolated research needs in the following three categories:

- (1) Purposes and Goals of Adult Education
- (2) Questions of Process
- (3) Questions of Content

Purposes and Goals of Adult Education

The literature of adult education is replete with all kinds of testimony on its purposes or goals. Yet no coherent statement accepted by the field as a whole has been made which provides a useful base of operations for the preacher and the practitioner. What is adult education all about? Where is it going? What is the mission of adult education? and so on. These are questions which cropped up often in the literature since 1923. They are appearing today in an ever increasing crescendo.

Since that time much has developed in the field in confused haphazard fashion. This profusion of productivity may be and may have been more debilitating than constructive and it is suggested that self-examination is the first step in righting a possible imbalance. Self-study, of course, implies the past as well as the present and future and accordingly the author recommends historical research with a particular emphasis on comparative historical research used in conjunction with questions which arise out of other disciplines. For example, it was mentioned earlier that the respondents interviewed

believe that the adult personality can change. A series of questions emerge from this premise. What has been the influence of adult education in a variety of cultures in effecting change in personality? Which individuals have resisted change? What methods have been most successful in encouraging change? What has been the role of the adult educator in the facilitation of change? What has been the role of the university as a change agent? In which cultures has the adult educator been the freest to encourage change? These are but only a few in which the historian can work in conjunction with the students of sociology, psychology, and anthropology. Many opportunities for fruitful collaboration among historians and scholars from psychology, social psychology, economics, political science and other disciplines exist toward the solution of many pressing problems. Together the questions why, and to what extent may be answered.

Specifically, this oral historical study has addressed itself to the need identified by Kreitlow for more normative and descriptive studies of adult education's goals and purposes. Similar studies need to be made for this one represents only a start.

Questions of Process

The literature and testimony make clear a need to solve problems regarding educational process. Questions like how and what need to be answered. For example, how can the practice of adult education in the United States be effectively developed? Clearly an adult education concern is the problem of motivating the young to learn. How can the young be imbued with a desire to continue to learn throughout life? How

can this goal be operationalized? How can the adult educator contribute his expertise to other institutionalized segments of education? How can elementary, secondary, and higher education contribute their expertise to the service of adult education? How can the total resources of education be organized to contribute to an integrated attack on the need of society to continue to learn and grow and change? What administrative structures are the most conducive to the effective dissemination of adult education? How can the educative process be so structured as to permit maximum effectiveness with maximum participation of all those involved in it? Obviously, history can be very helpful by providing clues as to how these questions were answered in the past.

Questions of Content

Insufficient study has been done, in the purview of the author, to ascertain the efficacy of formal education and its content, particularly of adults, on changes in attitudes, beliefs, and values. In what ways has the content of adult education been an obstacle to change? Has it been a force used by power groups to continue the status quo? Has its content been instrumental in bringing about change? Has the graduate adult education program been instrumental in training effective adult education leaders? Are there identifiable characteristics of "good" adult educators which may be inculcated in the professional schools of adult education by "proper" curricula or programs? History here can also provide us with clues for future action by looking at the past.

Specific Research Recommendations

Recommendations for further study in previous paragraphs have been oriented toward general research questions. The paragraphs which follow recommend specific research topics which lend themselves readily to the techniques of oral history. They are not listed in any order of priority or preference though they should be done as soon as possible since many of the people needing to be interviewed and taped are very old. They are:

(1) A study of the first organized adult education association in the United States, the American Association for Adult Education, which was founded in 1926. Some of the very early members are still alive and their recollections of the establishment and meetings of this group need to be recorded not only for the sake of posterity but also because their wisdom might suggest solutions to current and future problems of adult education. Some of the people suggested for interview who were still alive at this writing are Morse Cartwright, Bonaro Overstreet, Hilda Smith, Eleanor Coit, Robert Luke, Jean and Jess Ogden, Winifred Fisher, Edmund de Schweinitz Brunner, Glen Burch, and others;

(2) A study of the early "opportunity schools" established by Emily Griffith in Denver and the "lay by" schools in South Carolina founded by Wil Lou Gray. Dr. Gray is now in her eighties but she is still a very active woman. Together with this should be included a study of the Folk Schools of North Carolina, Tennessee, Pennsylvania, Colorado, New York, and Wisconsin;

(3) A study of the experiences of the oldest living practitioners of the field;

(4) A study of the establishment of the National Training Laboratory which has been characterized by many as the most successful and meaningful experiment in the adult education movement in the United States;

(5) A continuation of this study of Professors which is to interview in depth the oldest living university adult educators in the United States and Canada;

(6) A history of the Test-Cities Project;

(7) A history of the Flint, Michigan, Community Development Council or other similar councils;

(8) A history of the community school movement in the United States;

(9) A history of the Institute of Adult Education established at Columbia University in 1941; and

(10) A history of the Commission of Professors of the Adult Education Association of the U.S.A.

Recommendations for Studies Based on Raw Data Collected
on the Project but Not Used in the Dissertation

Much of the material collected for this oral history project was not used for this dissertation. The raw data which are left suggest a number of other research topics. Some examples are identified below.

The author took care to collect data on the family background and early education of five of the respondents with a view toward determining if there are any particular environmental or personality characteristics and educational skills which might predict success as an adult educator. More data using additional successful adult educators might need to be obtained. If such a study were possible and brought

to successful completion, it would have considerable importance for selection of students for graduate programs.

A great deal of material have been assembled which could be useful in a sociological study of the role of the University in the United States since 1932. Questions were asked such as:

(1) What is your definition of a university? What do you consider to be its functions? What do you see as the role of the university in terms of its society? How has your concept of the university changed over the years?

(2) What is (are) the public(s) of the university? How does a university serve its public(s)?

(3) How has the perception of the university changed from the point of view of

--the general public?

--the government; local, state, and federal?

--professors?

--students?

--administrators?

--the trustees?

(4) What is the university best qualified to do? Should it be an instrument of change?

(5) What are the limits to the university engagement in community conflict?

(6) How do you see universities meeting the needs of inner city residents?

The literature made it clear that teachers of adults have been and still are insecure regarding instructional techniques to be used with their clientele. The group from which the teacher of adults comes is still the teacher of youth. And such teachers continue to use the same methods and techniques of teaching adults as they use teaching the young. Little wonder that they may achieve little success.

What are the conditions in which teaching adults are the most successful? Should volunteer teachers be used and how? What does

the clientele of the adult educator expect from him? What should be the relationship of the adult teacher to his client? What teaching techniques seem to be most successful? How can the resources of the community be used in teaching adults? In short, how can the teacher of adults be effective in his attempts to stimulate and communicate with his audience? Much of the testimony elicited from the respondents deal with these important questions.

It was also clear from the literature that graduate programming of adult education is still a problematic area for the field. Though the six respondents did not identify this as a serious problem they did say much about the graduate programs in the professional schools. The author believes that more study needs to be done, i.e., the question of what elements are essential in the graduate curriculum in adult education for preparing leaders in adult education needs much more examination.

Raw data was also collected which would be very useful for studies 1, 2, 4, 9 and 10 identified in the previous section--

Specific Research Recommendations.

Conclusion

In conclusion the author fully realizes that little, if any, new knowledge has been added by this study to the total array of knowledge of the field of adult education. Yet, its purposes have been met; namely,

- (1) to capture the experience of selected early leaders of graduate programs in adult education; and,

(2) to analyze a portion of that experience relevant to a philosophy of adult education.

Forty-five hours of tape recording, and thousands of pages of transcription should be sufficient evidence to support the accomplishment of the first.

And as to the second, the author has tried to lay bare the underlying beliefs of six eminent leaders of adult education concerning the purposes and goals of the field. These educators have identified problems with which adult education is presently concerned. And they have recommended strategies for their present and future solution which are in conformity with their basic philosophic assumptions heretofore mentioned. Specifically, this oral historical study has attempted to be a first step in defining the purposes and goals of the field. Hopefully, shared aspirations, visions and missions congruent with shared methods and means will enable adult education as a field to be a more effective agent for "better living."

APPENDICES

APPENDIX A

ETHICAL AND PROCEDURAL STANDARDS FOR
THE PRODUCTION OF ORAL HISTORY MATERIAL

ETHICAL AND PROCEDURAL STANDARDS FOR THE PRODUCTION OF ORAL HISTORY MATERIAL

- 1) Typed transcripts and/or tapes should bear the following identification:
 - a) name of person interviewed,
 - b) name, age, and occupation of person interviewing,
 - c) date and time of each section of the interview,
 - d) specific place where each interview was conducted, and
 - e) names of persons editing and typing the manuscript.
- 2) At the beginning of the typed manuscript should be placed a brief, factual, and preferably chronological survey of important activities and accomplishments of the person interviewed.
- 3) At the front of each typed manuscript should be placed a statement indicating why the person was contacted originally. The statement should indicate whether the person interviewed was informed beforehand of the portion of his career of major interest to the oral-history project. Early questions in the interview should be: "Will you please state, simply for the guidance of historians in coming generations, what, if any, scrapbooks, newspapers, books, or other materials you consulted to refresh your memory in preparation for the interview?" And, "What persons did you question in order to refresh your memory since consenting to this interview?"
- 4) At the conclusion of the interviewing sessions, the interviewer should write describing the manner in which the interview progressed, the attitude of the person being questioned, his evasiveness, forcefulness, friendliness, hesitations, and so forth, as well as his physical appearance and clothes.
- 5) Final typed interviews should include both the questions and the answers. Without the questions an otherwise important interview will lose much of its value to historical researchers of later generations. The questions and interjections of the interviewer must appear on final typed interviews. The historian will not be able to discern the full story of the interview without them.
- 6) Persons to be interrogated should be asked to agree before being interviewed at length that they will not print as memoirs or autobiography - or in any other form for profit - the final transcript or a reasonable facsimile thereof for a period of at least 5 years. While interviewees may, in most cases, be given the first carbon copy of the interview, the text itself shall, by signed, formal agreement, become the property of the oral history organization or some other individual. Subject to any limitations placed on its use, the original transcript shall be open on an agreed date to all qualified researchers on an equal basis.
- 7) Persons interviewed should be requested to sign a release granting to all researchers the legal right to quote from their transcript. This agreement should state that the interviewees intent is that its provisions be binding on his heirs and descendants. Permission should also be granted to photostat, microfilm, or otherwise reproduce part or all of the transcript for purposes of convenient research. Yet in no case should the text or chapter-length extracts be reproduced for profit without the consent of the interviewee or his heirs.

APPENDIX B

LETTER OF INTRODUCTION TO DR. ALEXANDER CHARTERS

November 30, 1971
2775 Jewel Drive, Lot 346
Tallahassee, Florida 32304

Dr. Alexander Charters,

Though I know Dr. Aker has spoken with you and Stan Grabowski about me, permit me via this letter to introduce myself formally. This is the beginning of my fourth year on a Ph. D. program at Florida State University, not all of which, however, has been spent on study. Before this I earned a B. A. from Rutgers University, an M. A. from the University of Illinois, and studied for one year each at Northwestern University and the University of Florence, Italy. Presently, at 46 years of middle age, I am at the dissertation stage of my work.

As I think you know, I propose in my project to collect through taped interviews the recollections of a number of early 20th century leaders in the United States who considered themselves primarily adult edycators and whose work was done primarily through the universities. Believing that the recollections of these people needed to be recorded for posterity, I set about to determine whether such an undertaking was feasible. In the search I discovered that the Library of Continuing Education at Syracuse, performing an archival function for a number of adult education groups, had already collected manuscripts, personal papers, and taped interviews of several adult educators. It seemed to me, then, that the Library of Continuing Education would be the logical repository for the data which I aimed to collect and also the logical base or headquarters from which my study should be made. Hence, my talks with George Aker. The rest you know.

This project will be a fairly costly one requiring as it does high personal expenses, travel, tapes and equipment, and typed transcripts. These last are very expensive. I will seek financial support from the Office of Education - Small Grants and also from the American Council of Learned Societies who offer grants-in-aid to advance specific programs of research in progress by contributing to the scholar's personal expenses for that purpose. Whatever aid contributed to me might spell the difference between a poor job and a good one. The History Department at Florida State will contribute a tape recorder and tapes. And in subsequent conversations with Dr. Aker I learned that your offices (Library of Continuing Education and ERIC AE) offered to supply tapes and also to pay my transportation up to Syracuse. My sincerest thanks.

I would be coming by car since I anticipate that I may be in Syracuse 6 or more months. Dr. Charters, are there any other ways in which your office and Mr. Grabowski's might supply collaborative assistance? For my part, I would see to it that each respondent agrees that the Library of Continuing Education at Syracuse be the repository for the transcripts and one set of tapes.

At this point, I expect to leave for Syracuse early in January. Perhaps I will be able to stay with friends who live in Clay - not far from you. Your office could be helpful if it could let me know which adult educators you have information on and in what form, i.e., tapes, personal papers, manuscripts, etc. This would be useful to know in the selection of respondents.

Trusting that you will do all possible to assist me in this endeavor I am with sincerest gratitude

Joseph W. Jacques

cc: Mr. Schroeder

APPENDIX C

SCHEDULES 1, 2 and 3. SPECIAL SCHEDULES 4 AND THE LIBRARY
OF CONTINUING EDUCATION SCHEDULE

SCHEDULE # 1

FAMILY BACKGROUND, EDUCATION, EARLY CAREER

- 1) As you think about your life and career what were the influential factors (people, events, etc.) that you feel affected your development - - ?
 - family background
 - elementary and secondary education
 - undergraduate education
 - graduate education
 - community, communities
 - your personal goals
 - friends, neighbors, associates
 - societal forces (economic, religious, political, cultural, etc.)
- 2) Was yours a calculated decision to become an adult educator? If yes, how did you decide? What considerations were part of that decision? If no, how did you become involved with the movement?
- 3) Can you tell us which areas of your formal educational experience were important in preparing you as an adult educator? How have they been important?
- 4) What kinds of out of school experiences were especially important? (learned a new language, hobbies, useful friends, etc.)
- 5) Who or what has had the greatest influence in your professional service?
 - philosophically
 - administratively
 - pedagogically
 - research wise
 - other
- 6) What has been the importance of other people in the field on your development and success - - ?
 - personal association
 - literature
- 7) Can you describe your extra professional activities: memberships and offices in associations, etc.?
- 8) Which personal qualities have been most significant and useful in your career? Which personal qualities may have hindered you?
- 9) Has your social and political ideology affected your career? If yes, how?
- 10) Has there been any conflict in your life between your role as a worker and your role as a citizen? Explain. Has there been any support in your life between your role as a worker and your role as a citizen? Explain.
- 11) What have you seen as the chief purpose of your work? Lesser purposes?

- 12) Can you describe for us what you consider to be your greatest contribution to the field of adult education? Lesser, but still important.
Lesser, but still important.
- 13) What disappointments have you had in your career? (ideas ignored, misunderstood, other)
- 14) What has been the importance of social approval and self approval in the course of your career?
- 15) What specifically (work setting) have you done that you have enjoyed the most?
- 16) Has your work been fun? Which experiences have been most pleasant?
- 17) What would you do if you could do it all over again?

SCHEDULE # 2

PHILOSOPHY

- 1) What is your concept of education? How has your concept of education undergone change during your lifetime as an educator? Can education be democratic? Explain. Is it a right or a privilege - for youth, for adults?
- 2) Are there alternative institutions to schooling as dominant educational institutions; alternative institutions which deemphasize "schooling" as institutionalized process? Explain.
- 3) Should the responsibility for developing an educational program be shared by the learner, teacher, and program planner? If yes, how can this be operationalized? If no, why not?
- 4) What is your concept of adult education? What does it "mean to you"?
- 5) What do you see as the appropriate goal or goals of adult education in a democratic society?
- 6) In the education of youth there is one dominant institution. In adult education there are many. What do you feel about this? If one institution should be dominant, which one? Why?
- 7) What do you believe is the appropriate institutional medium for the dissemination of adult education?
- 8) To whom should adult education programs be responsive?
 - the local community
 - the administrative needs of the college or university
 - the faculty and academic traditions of the university
 - its colleagues, i.e., other adult educators
 - the recipients (students)
 - other
- 9) Who are the people you feel you have served?
- 10) What is your definition of academic freedom? Does the concept of academic freedom have any application for all adult educators - for university adult educators?
- 11) Should the coordination of formal institutions of adult education - public and private - be voluntary or mandatory? Why? Why not?
- 12) What administrative structures and organizations have you found to be most conducive to the development and maintenance of effective adult education programs? i.e., professional adult education programs in the university and adult education programs outside the university in the community.
- 13) What do you consider to be the appropriate role of government in adult education?
- 14) How can the power and support of government be best organized to support adult education?

- 15) How should adult education be funded? How well does present funding handle adult education needs? What would you consider to be adequate funding? How well has funding in your university handled your adult education needs?
- 16) Do you believe that all adult education should be tuition free? If no, what extent should be borne by student fees?
- 17) Do you believe adults should be paid to go to school? If yes, why and by whom - business and industry, government (state, federal, local)? If not, why not?
- 18) Describe an "ideal" adult educator.
 - personal qualities or characteristics
 - personal competencies
 - personal values and attitudes
 - other
- 19) What should the training of the adult educator seek to accomplish? What kinds of competency (skill) should it seek to impart?
- 20) What specialized training and preparation should be acquired and what are the sources of this preparation?
 - preservice
 - continuing
 - graduate
 - non credit
- 21) If you can envision an undergraduate curriculum in adult education, what might it consist of?
- 22) What elements are essential in a program of study leading to the doctorate in adult education which will produce leaders for the kinds of continuing education programs suitable to the needs of the coming decade and beyond?
- 23) What changes, if any, would you like to see in the training of adult administrators, adult teachers, and adult counselors?
- 24) In your lifetime of adult education experience what do you think was the greatest single success of the adult education enterprise in our country?

Failure?

SCHEDULE # 3

PURPOSES OF THE UNIVERSITY

- 1) What is your definition of a university? What do you consider to be its functions? What do you see as the role of the university in terms of its society? How has your concept of the university changed over the years?
- 2) What is (are) the public (s) of the university? How does a university serve its public (s)?
- 3) In your experience what has been the attitude of the various segments of the university toward academic departments of adult education or continuing education and their adult education personnel and programs? the attitude toward the practice of adult or continuing education by extension divisions, evening colleges, centers, etc.?
- 4) Has the perception of the university changed from the point of view of
 - the general public
 - the government; local, state and federal
 - professors
 - students
 - administrators
 - the trustees
- 5) What is the university best qualified to do? Should it be an instrument of change?
- 6) Are there any limits to the university engagement in community conflict?
- 7) To what extent are universities inhibited from possible involvement in local politics?
- 8) Can you evaluate for us the relationship between your university and the community in which it is located? What has been the community's effect on the program of the university? (How does it shape the university's program?)
- 9) Have you been aware of any pressures to shape programs and program objectives? If yes, from which groups?
- 10) Have any aspects of Federal or State program requirements imposed any unreasonable burdens upon your activities? If yes, briefly identify and suggest alternatives which might satisfy governments and thereby eliminate those burdens.
- 11) There are a number of ways in which program objectives are identified. What have been the primary ways in which this has been in your experience at your university and also at other universities with which you might be familiar?
- 12) Has the participant had any role in the determination of the objectives of your program?
- 13) What changes have occurred in the communities your university serves which can be attributed to your (the university's) adult education programming?

- riots or civil disorders
- model cities projects

- ascendancy of Black Power
- urban renewal or significant dislocation
- public school policies or personnel
- un or underemployment crises
- environmental studies, proposals, ordinances, etc.
- transportation, public, traffic patterns, etc.
- other

- 14) How do you see universities meeting the needs of inner city residents?
- 15) As you reflect upon your past would you identify for us those periods which you would consider crisis periods for our country where university adult education has responded? where university adult education has not responded? Would you evaluate the responses of the field of adult education to these crises? Would you evaluate your responses to these crises?
- 16) What has been and what should be the role of university adult education in bringing peoples of the world closer together; in helping to eliminate national rivalries? What has been the role of your university in achieving this purpose? What has been your role in achieving this purpose?
- 17) What have we learned from our history of university adult education? What have we failed to learn?
- 18) What do you consider are the major problems that university adult educators face today? What were the major problems that university adult educators faced during your active association with the field? What were the major problems that you faced in your university adult education experience?
- 19) What should university adult education -- in 1972 -- be doing?
- 20) What do you see for university adult education in the future?

SCHEDULE # 4

H. Y. McClusky

1. Dr. M.; the AAAE was founded in 1926. Its first president, Dean James Earl Russell, who served until 1930, was succeeded by Newton D. Baker, Felix M. Warburg, Dorothy Canfield Fisher, Edward L. Thorndike, Charles A. Beard, Everett D. Martin, William A. Neilson, John H. Finlay, Alvin Johnson, Harry A. Overstreet, Harry W. Chase, Alexander Meiklejohn, Austin H. McCormick, Lyman Bryson, Alan Locke, Harvey N. Davis, Hans Kohn, and Morse Cartwright. These are formidable names, not to mention some of the other members like E. C. Lindemann, Edmund Schweinitz Brunner, Ralph MacAllister, Nicholas Murray Butler, W. H. Kilpatrick, and Harold Laski. If my research is correct you were a member of AAAE at least since 1941. What can you tell us about these people? What were their interests? Which ones did you feel closest to? How important was Morse Cartwright?
2. At a meeting held on May 6, 1941 the Carnegie Corporation decided to withdraw its financial support from the AAAE and to subsidize for the coming decade instead the Institute of Adult Education which it established at Teacher's College, Columbia University. Can you describe for us the circumstances out of which the Carnegie Corporation made this decision? In retrospect, did the Corporation make a mistake?
3. Beginning in 1949 conferences were held throughout the United States to discuss the foundation of a new national association. At the same time, however, in your appraisal at the annual business meeting of AAAE in 1949 you said that you were convinced that although the Association was entering a critical period, it was "as close to achievement as to death." Yet it died. Why? Can you give us an assessment of the AAAE when you made that statement?
4. In May, 1951, at Columbus, Ohio, you were elected AEA-USA's first president. What are your recollections of that event? Why do you think you were chosen? Did you electioneer for the office?
5. Grattan in *In Quest of Knowledge* (1955) quotes Robert Lukes statement: "Adult education as a field will never be able to exert itself until it is led - not by program technicians as at present - but by physical scientists, political leaders, theologians, writers, economic philosophers, artists and others who are responsible for directing (or giving expression to) current influences in public opinion, moral values, and artistic standards in American life today." Would you care to comment on that statement?

6. Can you recollect for us the circumstances under which the National Association of Public School Adult Educators (as they came to be known) split off from AEA-USA? Would you care to comment on their action? What attempts have been made since then to persuade them to rejoin AEA? Why have they remained a separate entity?
7. Dr. McClusky, what is the Commission of Professors of Adult Education? Can you describe for us the circumstances under which it was established? Why was it set up? What are its functions? What were its aims? What improvements in adult education have emanated from its decisions? Has it ever blocked improvement? How influential has Malcolm Knowles been in its activities?
8. As you look upon AEA's past can you describe for us what you consider to be its successes? its failures? What might it have done better?
9. Can you tell us about the leaders of AEA? What kinds of people in general have they been? Scholars or practitioners? To what extent is the success of AEA attributable to its leadership? failures? In what general direction has it been led? How influential is the president? the Executive Director? Where is the real power?
10. Dr. McClusky, why has the decision to establish a political action committee - a lobby - been so long delayed?
11. What should the AEA in 1972 be doing?
12. What is your conception of community development?
13. What changes in the organizational structure of the AEA would you like to see come about? Why?
14. How did you become interested in community development?
15. What have been the principal elements of your community development program? Has your University established a community development committee? If yes, what is its composition? Has your University permitted greater involvement of faculty and students in policy oriented and action oriented programs? Describe one.
16. What distinctions, if any, have you seen between the community approach and the continuing education approach to problem solving?
17. How have we drawn upon the various disciplines in an interdisciplinary approach to adult education in general? to professional university adult education especially in adult education doctoral programs?

18. What has been the contribution of the field of psychology to the education of an adult education leader?
19. How can children and youth be helped to develop attitudes, habits, and skills conducive to life-long learning?
20. Are there any further comments you would like to make?

Schedule # 4

W. C. Hallenbeck

1. The AAAE was founded in 1926. Its first president was Dean James Earl Russell who served until 1930. Many eminent scholars were his successors. They were formidable names. If my research is correct you were a member of AAAE at least since 1938. An article of yours, "Historical Antecedents" appears in the April, 1938 issue of its Journal of Adult Education. What can you tell us about these people? Webster Cotton in his On Behalf of Adult Education characterizes many of them as social reformers, idealists, and visionaries who believed that a "comprehensive system of adult education was crucial to the survival of a free society" and who as a result "aimed at a national audience in attempting to generate public support for adult education." Are you in agreement with Cotton? What were their interests? Which members did you feel closest to?
2. In the same monograph Cotton notes the emergence of a professional tradition beginning at about 1926. He says, "This tradition, at least partially, seems to have arisen in reaction against the social reformist tradition. It has perceived the function of adult education in more purely educational terms. The emphasis has been on establishing adult education as a fourth level of education, or at least on achieving some parity with the other levels of education. As a means towards this end, the individuals associated with this tradition have been primarily concerned with the professionalization and institutionalization of adult education. . . The most notable representatives of the professional orientation are Lyman Bryson and Wilbur Hallenbeck. Accordingly, the rationales authored by these two men exhibit the main characteristics associated with this orientation. For example, these rationales seem to be directed to a more limited audience and have a more restricted purpose . . . in terms of their tone, content, and mode of publication, it would appear that Professors Bryson and Hallenbeck have intended their rationales, mainly, for fellow workers in the field of adult education. And they seem primarily concerned with delineating and classifying the reasons which support the need for adult education for this particular audience. . . Finally, these rationales are geared to an empirical type of argument. That is, the emphasis is placed on empirical data - social, economic, and scientific facts - to point up the need for adult education. This type of approach is most clearly seen in Professor Hallenbeck's article, 'The Function and Place of Adult Education in American Society.' " Would you care to comment on Dr. Cotton's analysis?

3. At a meeting held on May 6, 1941 the Carnegie Corporation decided to withdraw its financial support from the AAAE and to subsidize instead for the coming decade the Institute of Adult Education which it established at Teacher's College, Columbia University. Can you describe for us the circumstances out of which the Carnegie Corporation made this decision?
4. On May 1, 1951 at Columbus, Ohio the AEA-USA was established. What are your recollections of that event?
5. Can you recollect for us the circumstances under which the National Association of Public School Adult Educators split off from the AEA-USA? Would you care to comment on that action? What attempts, if any that you are aware of, have been made since then to persuade them to rejoin AEA? Why, in your opinion, have they remained a separate entity?
6. What is the AEA Commission of Professors of Adult Education? Why was it established? What are its functions and aims? What improvements in adult education have emanated from its decisions?
7. As you look upon AEA's past can you describe for us what you consider to be its successes? its failures? What might it have done better?
8. Can you tell us about the leaders of AEA? What kinds of people in general have they been? To what extent is the success or failure of AEA attributable to its leaders?
9. Grattan in In Quest of Knowledge (1955) quotes Robert Luke as saying, "Adult education as a field will never be able to exert itself until it is led - not by program technicians as at present - but by physical scientists, political leaders, theologians, writers, economic philosophers, artists and others who are responsible for directing (or giving expression to) current influences in public opinion, moral values, and artistic standards in American life today." Would you care to comment on that statement?
10. What can you foresee for the AEA? What should it be doing now in 1972?
11. What do you believe should be the role and function of guidance and counseling services for adults? What aspects of the graduate curriculum in adult education are most useful for leadership in the field of guidance and counseling?
12. Do you believe that the field of adult education at this point has an adequate content based upon research? What areas do you believe are deficient?

13. What research competencies should adult educators have and what kinds of research ought they to produce?
14. What have been your recruitment procedures of students for graduate study in adult education? How are graduate students selected?
15. Should practical experience be a required part of the professional training of an adult educator?

Schedule # 4

R. B. Spence

1. When you first embarked on your career as an adult educator, can you describe the decision-making process employed at the institution where you worked?
2. How has that process changed during your career?
3. While you were an administrator what decision-making process did you employ?
4. To what extent, if any, were adult education departments including extension, involved in the total overall decision-making process of the university?
5. Which people were involved in decisions regarding programs, program objectives, evaluation, teaching methods, etc.?
6. What should the training of the adult educator seek to accomplish? What kinds of competency should it seek to impart?
7. What specialized training and preparation should be acquired and what are the sources of this preparation?
8. What are the key concepts which should be covered in any adult education graduate program?
9. What elements are essential in a program of study leading to the doctorate in adult education?
10. What criteria should form the basis for the selection of adult education students?
11. What changes, if any, would you like to see in the training of adult education administrators, adult education teachers, and adult education counselors?
12. In your lifetime of adult education experiences what do you think was the greatest single success of the adult education movement? failure?

DECISION-MAKING PROCESS, EVENTS, MISCELLANEOUS

- 1) When you began your career as an adult educator in the university, can you describe the decision making process employed there at that time?
- 2) How has that process changed during your career?
- 3) While you were an administrator what decision making process did you employ?
- 4) To what extent, if any, were adult education departments (extension & continuing, centers, etc.) involved in the overall decision making process of the total university?

In answering the above questions I am interested in knowing which peoples were involved in decisions regarding curricula and programs, program objectives, evaluation of all types, teaching methods employed, hiring of staff, etc.

- 5) The AAEA was founded in 1926. Its first president was Dean James Earl Russell who served until 1930. Many eminent scholars were his successors - not to mention some of the other members. They were formidable names. I have not found any evidence that you were a member of the AAEA but I do know that you were acquainted with people who were. What are your recollections of these people? Webster Cotton in his ON BEHALF OF ADULT EDUCATION characterizes them as social reformers, idealists, and visionaries who believed that a "comprehensive system of adult education was crucial to the survival of a free society" and who as a result "aimed at a national audience in attempting to generate public support for adult education." Are you in agreement with Cotton? What were their interests? Which ones did you feel closest to? Why? How important was Morse Cartwright to the Association?
- 6) What do you feel has been the contribution of W. C. Hallenbeck to the adult education movement?
- 7) At a meeting held on May 6, 1941 the Carnegie Corporation decided to withdraw its financial support from the AAEA and to subsidize for the coming decade instead the Institute of Adult Education which it established at Teacher's College. Do you have any recollections of that meeting? In retrospect, did the Corporation make a mistake?
- 8) Beginning in 1949, conferences were held throughout the United States to discuss the foundation of a new national association. One of those conferences was the Sarah Lawrence conference which I believe you attended. What are your recollections of that event? Can you recall the people who were there?
- 9) According to some people it was at this conference that Morse Cartwright and Malcolm Knowles engaged themselves in a public controversy over the demise (coming) of the AAEA and the birth of a new organization. What do you remember about this alleged conflict?

- 10) Why did the AAAE die?
- 11) In May, 1951 in Columbus, Ohio the AEA-USA was established. You were a leader at this conference. What are your recollections of that event? Who was there? Why was Howard McClusky chosen to be the first president of the new association?
- 12) Can you recollect for us the circumstances under which the National Association of Public School Administrators split off from the AEA-USA. What attempts, if any, have been made since then to persuade that group to rejoin AEA? Why, in your opinion, has that group remained a separate entity?
- 13) What are your recollections of the conference held in 1956 which decided to establish the AEA Commission of Professors of Adult Education? What are your recollections of its first meeting at Ann Arbor, Michigan?
- 14) What improvements in professional adult education do you see as having emanated from the decisions of the Commission? Has it ever blocked improvement? What was the influence of Sandy Liveright in its early deliberations? Who have been the most influential personalities in its 15 year history?
- 15) In July of 1953 you spent the Spring Quarter away from Ohio State University working for the Fund for Adult Education with Robert Blakely in setting up a 2 week training program for the West Cities Project of the Fund. What is your evaluation of that project? What are your impressions of Robert Blakely?
- 16) As you look upon AEA's past can you describe for us what you consider to be its successes? its failures? What might it have done better? What actions did AEA take to help facilitate the desegregation aims of the 1954 Supreme Court decision?
- 17) Can you tell us about the leaders of AEA? What kinds of people in general have they been? (Scholars, practitioners, politicians) To what extent is the success or failure of AEA attributable to its leadership? In what general direction has the AEA been led?
- 18) What changes in the organizational structure of the AEA would you like to see come about? Why? How influential is the President? Why was the AEA Constitution amended in 1956 defining the term of the president as one year? Where does the real power of the AEA reside?
- 19) What happened to the proposal for an AEA Historian?
- 20) What should the AEA - in 1972 - be doing?
- 21) Dr. H., how did you become interested in education for the Aging?
- 22) Dr. H., you have been both a teacher of youth and a teacher of adults. Can you tell us how children and youth can be helped to develop attitudes, habits, and skills conducive to life-long learning?

- 23) Dr. H., your personal correspondence show extensive communication with Robert Luke, especially between 1946 and 1966. Apparently you know him well. Grattan in "IN QUEST" of KNOWLEDGE (1955) quotes Robert Luke as saying: "Adult education as a field will never be able to exert itself until it is led - not by program technicians as at present - but by physical scientists, political leaders, theologians, writers, economic philosophers, artists and others who are responsible for directing (or giving expression to) current influences in public opinion, moral values, and artistic standards in American life today." Would you care to comment on that statement?
- 24) Dr. H., in October, 1952, while editor of the Ohio Adult Observer, you made the following comment about the adult education boom: "The boom can cause adult education as a movement to go in either one of two directions. If we meet the influx of enrollees with adequately prepared teachers and good teaching material and are able to solve adequately our administrative problems, we will be able to consolidate our gains and move our profession forward to the point where it is equated with the fields of elementary, secondary, and higher education. If we fail in these important ways, we may give adult education a black eye from which it will be a decade recovering. The responsibility for meeting this challenge lies with colleges and universities." What do you think now - in 1972 - 20 years later with regard to the above statement?
- 25) What do you see for the future? Have we discovered yet where we are going, why we are going there, and how to get there?
- 26) Any further comments? What questions do you think should still be asked and answered?

SCHEDULE FOR ORAL HISTORY PROGRAM OF LIBRARY OF CONTINUING EDUCATION
AT SYRACUSE UNIVERSITY

Interviewer Historian - Joseph Jacques

- 1) Was yours a calculated decision to become an adult educator? If yes, how did you decide? What considerations were part of that decision? If no, how did you become involved with the movement?
- 2) Will you review for us your professional experience in the field of adult education?
- 3) Will you tell us in broad terms what you view as the highlights of your career?
- 4) What has been your specific area of interest in the field? Why?
- 5) What is your concept of adult education? How has your concept changed over the years? How has this change been reflected in changed curricula, programs, teaching methods, skill requirements, etc. of yourself and those within your immediate professional environment?
- 6) What do you see as appropriate goals of adult education in a democratic society?
- 7) What do you consider to be the appropriate role of government in adult education? How can the power and support of government be best organized encourage adult education?
- 8) What do you consider to have been the most significant development in the field of adult education during your career?
- 9) What can you see for adult education and adult educators in the future?
- 10) Can you name some people whom you feel we ought to contact for taping?

APPENDIX D

LETTERS OF INTRODUCTION, PREFACE AND NOTE, AND FIRST
NINE PAGES OF PROSPECTUS



THE FLORIDA STATE UNIVERSITY TALLAHASSEE 32306

College of Education
Department of Adult Education

This is to introduce Joseph Jacques who is embarked on a rather unique dissertation project and one which we recommend very highly. This is the beginning of Joe's fourth year at Florida State University. Prior to that Joe received his B.A. in 1950 from Rutgers University, the M.A. from the University of Illinois in 1951, and he spent a year each in further graduate study at Northwestern University and the University of Florence, Italy.

He aims to do an oral history project the purpose of which is the collection through taped interviews the recollections of a number of the early 20th century leaders of adult education; recollections which impinge upon their public activity in the adult education movement in the United States. The overriding purpose of the study is the collection of data for the historical record; the generation of additional and supplementary sources of material which other historians can use; and the accumulation of the responses of early leaders in the field of adult education whose contributions would in all probability not be recorded for posterity. Joe's expertise is in the field of history.

Together we have selected several people who fit within the parameters of his study. You were one of our choices and would be grateful if you would give Joe your cooperation in his project. He is sending along with this letter the first third of his prospectus which embodies his conception of oral history.

Best regards,

George F. A. K.
Professor of Adult Education
Head, Department of Adult
Education

Walter J. Smith
Professor of Adult Education
Major Faculty Advisor

February 25, 1972
107 Roney Lane,
Syracuse, New York 13210

Dear Dr.

Permit me via this letter to introduce myself formally. This is the beginning of my fourth year on a Ph'D program at Florida State University, not all of which, however, has been spent on study. Before this I earned a B.A. from Rutgers University, an M.A. from the University of Illinois, and studied for one year each at Northwestern University and the University of Florence, Italy. Presently, at 46 years of middle age, I am at the dissertation stage of my work.

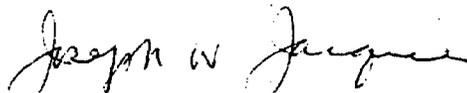
I propose in my project to collect through taped interviews the recollections of a number of early 20th century leaders in the United States in the field of professional adult education. For further information on this oral history proposal please refer to the enclosed letter from Drs. Aker and Schroeder and the first 9 pages of my dissertation proposal.

Convinced that you are one of the early leaders in the field of adult education, I believe that your ideas about the field and your professional experiences in it ought to be preserved for the use of posterity. You would do me and others a great service if you would permit me to conduct a series of 3 or 4 interviews, no longer than 2 hours each in length, covering your career in general; your professional interests in particular, and your philosophy with regard to the concept of adult education. Of course, you would have the right to edit my edited copies of the transcripts. If you agree, I request that you sign the enclosed release and mail it to me at the

Library of Continuing Education
107 Roney Lane,
Syracuse, New York 13210

Subsequent to the receipt of the release I will contact you by phone arranging for the taping sessions to occur at the place and time of your convenience. At that time, also, I will be happy to answer any questions which you may have regarding procedures to be followed in the oral history process. It is a relatively simple procedure. In any case, I hope that you will be able to participate in this project and I anticipate that our conversations will be pleasant experiences for both of us as well as productive of invaluable material for use by the field. Thank you.

Sincerely yours,


Joseph W. Jacques

PREFACE

This manuscript is the result of one or more tape recorded interviews. The reader should bear in mind, therefore, that he is reading a transcript of the spoken, rather than the written word.

I agree that the tapes and the transcript text themselves shall become the property of Joseph W. Jacques. Mr. Jacques has agreed to make the tapes and transcripts available at Florida State University and Syracuse University. The above is agreed, however, subject to the following restrictions:

That this transcript may be used by qualified scholars in such places as are made available for purposes of research by the Programs in Oral History of the Florida State University and/or the Library of Continuing Education at Syracuse University, and Joseph W. Jacques, interviewer and historian, with the understanding that permission is granted to photostat, microfilm, or otherwise reproduce part or all of the transcript for purposes of convenient research. In no case, however, should the text or any extracts thereof be produced for profit without my consent or the consent of my heirs.

The project shall remain closed to all researchers until it is completed by Mr. Joseph Jacques or until such date as agreed upon by myself and Mr. Jacques.

I for my part agree that I will not print as memoirs or autobiography - or any other form for profit - the final transcript or a reasonable facsimile thereof for a period of 10 years. It is my intention that the above provisions be binding upon my heirs and descendants.

Signed _____

Date _____

Address _____

Understood and Agreed To

_____ Date _____

Interviewer - Historian

Gentlemen:

The aim of this agreement is to protect the interviewee against indiscriminate and improper use of the resultant tapes and transcripts. The interviewee is free to write his memoirs without any restrictions; the last paragraph simply forbids the use of the final transcript for publication by the interviewee for profit. No distrust on the part of the interviewer historian is intended or implied.

Please forward a curriculum vitae if one is available.

Thank you,

I propose in this project to collect through taped interviews the recollections of a number of several of the early 20th century adult educators from the University milieu; recollections which impinge upon their public activity in the adult education movement in the United States. Questions asked will be designed to elicit information of a biographical nature, i. e., testimony regarding the why and the how each devoted his life to adult education and how each arrived at these decisions; together with the vicissitudes of his experiences in all aspects of that public life. The overriding purpose of the study is the collection of data for the historical record; the generation of additional and supplementary sources of material which other historians can use; and the accumulation of the responses of early academic leaders in the field of adult education whose contribution would in all probability not be recorded for posterity. The primary concern of this project, thus, is with individuals but one chapter will be included containing comments on the process they used in reaching their important personal vocational decisions. This chapter will not deal with specific decisions but rather will attempt to extract from the decisions all respondents made some common characteristics of the decision-making process. Indeed, I may conclude that the data do not yield common characteristics of decision-making. The discipline through which the recollections will be collected will be that of oral history.

History and its study connote for most people the examination

and interpretation of the written record. But history can be and has been presented by means of other media. Perhaps the oldest has been the interview used by Herodotus, the "first historian" - the first oral historian, at that - who traveled around much of his world asking questions. When Professor Louis Starr describes oral history as "simply the record of what someone told someone else", he is describing a method as old as Herodotus, at least, and used by historians since then. It seems probable that the use of this method will increase substantially in the future. The modern works of William Manchester, Cornelius Ryan, Barbara Tuchman and Forrest Pogue, to name only a few, serve as prominent examples of oral history. Each, in his own way, captured his present precisely because he knew it would become a valuable past.

One of the earliest forms of oral history, autobiography, is broadly considered the contribution of the field of literature. Yet, oral history has been instrumental in other disciplines for a long time. The anthropologist who collects through interview tradition and folklore; the musicologist who attempts to capture the rhythm of an era through its song; the psychiatrist who isolates the seed of his clients' trauma through conversation; the medical doctor questions his patient's present and past as part of the diagnostic procedure; the sociologist, the psychologist, and others. All have been and are still using oral history techniques toward the solution of their own particular tasks.

But the written language is a static tool more useful for recording that which is no longer moving. It has problems

in recording process - movement. It does an inadequate job at articulating and synthesizing; it oversimplifies well.

Consider, for example, an attempt to portray the life style of a resident of Appalachia through the spoken word on tape and the typewritten record of that tape. Which is more candid, more lucid, more accurate? Which one moves?

And so the written word is always incomplete. Take a look at today's life style where the telephone and the informal lunchtime chat has closed out the written word in getting history down. Who bothers today to keep a diary or to write lengthy personal letters? We respond, as expected, to the suggestions of A T & T and use the phone. The vast majority of letters written today, I suspect, are the formal "Dear Sir - Gentlemen - Very truly yours" type dictated to a secretary of some kind, more often machine than not, and are thus poor sources from which the historian can reconstruct a vibrant, living, sensitive experience.

The inner thoughts, the private revelations, the reactions of one man to another, the undercurrents of the times as reflected in our personal lives - these will be lost to him simply because we no longer confide in one another in writing. Instead, today we 'contact' one another by car, plane, or phone, and we talk. 1

Perhaps the first modern historian to realize this and to do something about it was Professor Allan Nevins. In 1938 he wrote,

(there should be) ...some organization which made a systematic attempt to obtain from the lips and papers of living Americans who have led significant lives, a fuller record of their participation in the political, economic and cultural life of the last 60 years... 2

ence oral history. From very simple beginnings at Columbia

University on May 18, 1948 oral history has become an ever growing movement. The oral history collection at Columbia University today - mostly biographical - is a prodigious one. Even the New York Times is getting into the act. And many other oral historical enterprises have been established throughout the world. There are basically 3 types of oral history programs: those that are autobiographical (usually called biographical) and are essentially reminiscences such as Felix Frankfurter Reminiscences, Recorded in Talks with Harlan B. Phillips, New York, Reynal, 1960, 310 p. and Saul Benison's, Tom Rivers: Reflections on a Life in Medicine and Science, Cambridge, Massachusetts, MIT Press, 1967, 682 p.; those that concentrate on the life of one person such as Pogue's, George C. Marshall Project (in process), Cowl's, John Foster Dulles Project (in process), Thomas Harry William's, Huey Long, New York, Knopf, 1969, 884 p.; and those that focus on special subjects - Louis Harkel's, Hard Times, an Oral History of the Great Depression, New York, Pantheon, 1970, 462 p., and Lawrence S. Ritter's, The Glory of Their Times: the Story of the Early Days of Baseball, Told by the Men Who Played it, New York, Macmillan, 1966, 300 p.; special events - William Manchester's, The Death of a President; November 20-25, 1963, New York; Harper, 1967, 710 p., and Paul Bullock's, Watts: the Aftermath; An Inside View of the Ghetto by the People of Watts, New York, Grove Press, 1969, 285 p.; and special developments - John A. Garraty's, Interpreting American History: Conversations with Historians, New York; Macmillan,

1970 and Guy R. Lyle's, The Librarian Speaking: Interviews with University Librarians, Athens, University of Georgia Press, 1970, 206 p.

Oral history had been defined in a variety of ways.

Peter Olch notes:

Oral history is looked upon as a technique to capture the recollections and interpretations of those participating in contemporary (life) who are judged to be knowledgeable about the subject under study, whether it be an individual or a subject area. It is a process with a unique ability to supplement the written record with candid commentary, to create a collection of information about a subject in those areas where a prior record does not exist, and to capture a sample of the personality of the person being interviewed by the preservation of the (tape). 3

Elwood Maunder defines it as:

Part of the human need to communicate. . . It is a means of communicating how we remember our times, our part in those times, our observations of our contemporaries, and perhaps something of our notions of how our story relates to the mainstream of history of which we are a part, and how it in turn has been molded. 4

The purpose of the oral historian is to accumulate and generate data for the historical record that other institutions can use in the future. He does this usually through taped interviews, though other audio-visual equipment has been used in the past and probably will become increasingly useful as our technology improves. In carrying out this task he must be as objective as possible, though to be sure, absolute detachment is hopeless of achievement. Yet, the "bare" facts can be filed with a minimum to no comment. It is the task of the historian who later uses the "facts" to assess and evaluate them. The purpose is not to replace traditional historical source material but to increase the quality and quantity of that material. The interviews produced by the oral historical

techniques are a supplement to and not a substitute for them.

The evidence collected is immensely valuable because it provides information which one cannot easily get elsewhere; thus the effort and cost in acquiring it is eminently justified. This is especially true when documentary resources for particular subjects or individuals is either inadequate or non-existent. It is possible also for vast numbers of participants to get their stories down on the record. Such testimony will be very useful in making available to the historian as a writer a source of natural living expression - the conversation that the interview generates is bound to be replete with anecdotes, feelings, and all sorts of human details. The more spontaneous the discussion the more incisively can the attitudes, perceptions, and emotions of the subjects be explored giving, therefore, to posterity some glimpse into the personalities of those individuals interviewed - a product of enormous value. The physical voice (s) of the subject (s) interviewed will add a dimension that the typed page will never communicate - hints of open or closed mindedness pride or prejudice, and so on. Such information can only be exposed for the analysis of the later historian by the taped interview.

One last comment is perhaps appropriate here, lest I be accused of overemphasizing the value of this technique while making no reference to its faults. All oral historians recognize its shortcomings - the failure of the inadequate interviewer; the attempts of the respondents to mislead interviewers; the uncertain memory of respondents; the inclination to exaggerate;

the understandable tendency to be mixed up in dates, names, events, and places; the inaccessibility while the interviewing takes place of all documentary material; and the impossibility of any one individual to know the complete picture in any event in which he has been involved. No doubt there are other defects but many of these can be minimized by an interviewer who does his homework well, who makes a thorough search into the papers and other evidence of the person on whom he is gathering material. Procedures as explained in the section of this proposal on the techniques of oral history will show how these discrepancies can be kept to the barest minimum.

The scope of this project is to record the experiences and reflections of individuals who have had instrumental influence as professors of adult education in bringing about social change in the United States from the early 20th century onward. Its parameters will fall within two limitations:

- 1) it will be subject (topic) oriented, and
- 2) it will be toward and around a series of interviews.

This format has value for a variety of reasons:

- 1) it enables the future historian who uses this collection to authenticate data contain therein because he is able to check them out against other reminiscences of the period;

- 2) certainly, another aid to accuracy, is to compare the recollections of each respondent against those of the others. Interviews conducted by the same interviewer with individuals of the same period of history may serve to erase discrepancies

which might go unerasad into recorded history;

3) a series of interviews generates more information by providing stimuli to the interviewer to prod the memories of all the respondents, and thus, recall to memory more than normally could be expected;

4) when concentrating upon a particular field, it is more likely that the interviewer will develop more effective skills because he doesn't have to spread himself over many different topics and because he can learn from each prior interview experience;

5) this method also enables the interviewer to use his research time more efficiently. It is less time consuming thereby allowing the interviews to be conducted over a period of days at a leisurely pace rather than in one or two all day sessions. It would seem that the most favorable results would be achieved under the most unstressful conditions as possible;

6) this method should also yield comprehensive information from all the interviews, i.e., it should be useful in uncovering trends during the period examined, as well as bringing to light its important people and events; and

7) in reconstructing a period, confirmation by as large a sample as possible is essential.

The program will be concerned about interviewing people who are older for the following reasons:

1) they have a range of observation that goes back in some cases 60 years or more, and obviously their memory is a connection to the events which occurred during that period.

I am concerned, thus, primarily with age since I want to establish the record of these people while they are still alive and still mentally and physically virile. It would be a severe loss to posterity if their experiences were not recorded. And the probability is that they would not be recorded unless a specific effort such as this one aimed to do so;

2) the older person is no longer as actively involved in his field as a participant. He is generally more than not an observer, though perhaps not always a silent one. As such he is more accessible to be interviewed and more willing to be interviewed; and

3) perhaps most important of all, the older less active observer-participant will more readily be candid in his thoughts, opinions, and beliefs.

In the selection of respondents, I will look to the faculty of the Adult Education Department of Florida State University for guidance in identifying those individuals in accordance with the following criteria:

- 1) that they consider themselves primarily adult educators;
- 2) that they be older so that their range of observation goes back to the early 20th century;
- 3) that their major institutional association has been the university;
- 4) that they be mentally and physically competent;
- 5) that they be relatively inactive professionally or being on the whole an observer participant in the field of adult education; and
- 6) that they be accessible, i.e., within the boundaries of the United State and Canada.

APPENDIX E

LETTER CONFIRMING SESSIONS FOR TAPING

Dear Dr.

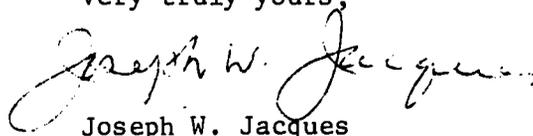
This is to confirm our telephone conversation on
in which we established the week of
for our interviewing sessions. I should arrive in
on the evening of _____ at which time I will call you
to establish the precise time and place of our first taping session.

Enclosed are the first 3 schedules of questions which I feel you should
have beforehand so that you may collect your thoughts and accumulate whatever
scrapbooks, newspapers, diaries, books, or other materials which you may want
to consult to refresh your memory in preparation for the interviews. I will
bring along with me copies of as much literature that you have written which
I have been able to find. This material will be readily available for your
use should the need arise. A fourth schedule of questions dealing more
specifically with your particular interests and activities is not yet ready.
The general thrust of questioning, however, will deal with your interest in

As you read the schedules you may feel that there are additional questions
which ought to be asked; and at the same time there may be some questions to
which you may not wish to respond. We can discuss this before the actual taping
sessions begin.

Needless to say, I am looking forward to our meeting certain that it will
be for me a most rewarding experience.

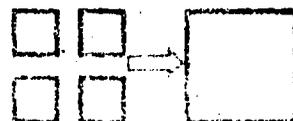
Very truly yours,



Joseph W. Jacques

APPENDIX F

SYRACUSE ORAL HISTORY PROJECT LETTER
OF INTRODUCTION AND PREFACE



March 17, 1972

Mr. Arthur P. Crabtree
Carteret Arms Apartment
Apartment 9E
355 West State Street
Trenton, New Jersey 08618

Dear Mr. Crabtree:

The Library of Continuing Education is in the midst of an Oral History Program. This program has a new lease on life with the services of Joseph Jacques. Mr. Jacques is a graduate student at Florida State University and is in the process of doing an Oral History Project for his doctoral dissertation. He has been working at the Library of Continuing Education for the past few weeks in preparation for his own interviews. As he travels, he has said he is willing to do some tape interviews for the Library of Continuing Education program.

We hope that you would look favorably upon being identified as an adult educator we would like to have represented in this program and that you can spare the time for an interview with Mr. Jacques. He will be in New York City March 23-26.

I have enclosed a copy of a description of the Oral History Program and a copy of the kinds of statements and questions you will be asked to respond to for the interview.

The second enclosure is a release to place your interview in the Library of Continuing Education collection for use of students, researchers, and scholars.

I hope you agree to assist us. Mr. Jacques will call you on the phone on Tuesday, March 21, to set up a convenient time to interview you.

Sincerely,

Bett, Jane Vaughn, Director
Library of Continuing Education

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enclosures

Please return to the Library

I agree that the tapes and the transcript text themselves shall become the property of the Library of Continuing Education, where they will be available for use by students, scholars and others.

Signed _____

Date _____

Address _____

The above is agreed, however, subject to the following restrictions:

Signed _____

Date _____

Address _____

APPENDIX G

VITA OF RESPONDENTS

Howard Yale McClusky

Professor McClusky was born in Whitesboro, New York on February 20, 1900 the son of Frederick William and Lillian Dean. He was a student at Blackburn Academy from 1913 to 1917 and attended Blackburn College from 1917 to 1918. He received his A.B. from Park College in 1921 and the Ph. D. from the University of Chicago in 1929. He spent the year 1933-34 at the University of London and was an Eddy European Seminar summer student in 1931. He married Helen Hazel Hartman on August 26, 1930 and had five children - Edith Lillian, William (dec.); Samuel (dec.), Frederick Yale, and John Evans. He was a Commonwealth Fund Fellow in visual education at the University of Chicago from 1923 to 1924.

His career in education began at the University of Michigan at Ann Arbor where he was first instructor in Educational Psychology from 1924 to 1927, assistant professor from 1927 to 1934, associate professor from 1934 to 1939 and has been professor since 1939. He was assistant to the Vice-President in charge of University Relations in the field of Adult Education from 1938 to 1945. He was visiting assistant professor of Educational Psychology at the University of Chicago in the summer of 1928 and visiting professor of Educational Psychology in the summer of 1937 at Northwestern University.

During the World War II years Dr. McClusky was the Associate Director of the American Youth Commission of the American Council on Education from 1940 to 1942; chief of the National Organizations Sect and Associate Director of the Civilian Mobilization Branch of the Office of Civilian Defense and Office of War Information in 1943; Commission Chairman of the White House Conference on Rural Education in 1944; on the Commission of Rural Education of the Farm Foundation from 1940 to 1943; Consultant to the Michigan Youth Guidance Commission in 1945; Vice-Chairman of the Planning Committee of the Youth Conservation Committee of the General Federation of Women's Clubs in 1945; and was a post doctoral fellow of the National Council of Religion in Higher Education in 1945.

He was a member of the United States National Commission to UNESCO in 1953; a member of the advisory committee on education of the Department of Defense in 1956; visiting lecturer at Barnard College, Columbia University, June, 1945; director of the Bureau of Studies and Training in Community Adult Education at the University of Michigan from 1947 to 1949; was a member of the Board of Directors of the Kingswood School (Cranbrook), Park College; a member of the editorial board of the Adult Education Bulletin since 1943; was president of the Michigan Council of Churches from 1945 to 1948; a member of the research committee of the Commission on Community Inter-relationships of the American Jewish Congress.

He was a recipient of the Delbert Clark award in adult education in 1956. He is a member of the American Psychological Association, the National Society for the Study of Education, the American Educational Research Association, the National Society of College Teachers of Education, the Adult Education Association of the USA (charter - first president) in 1951-1952, the National Education Association, Phi Beta Kappa, Phi Kappa Phi, Phi Delta Kappa, Alpha Kappa Lambda, and Phi Kappa Delta. He is a member of the University Club at Michigan.

A number of his publications may be seen in the Bibliography. Presently he is visiting professor of Adult Education at the University of Nebraska - Lincoln. His permanent address is 1421 West Liberty Road, Ann Arbor, Michigan.

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Wilbur Chapman Hallenbeck

Professor Hallenbeck was born in Brooklyn, New York on December 9, 1892. He is married and has one son Edwin Forrest Hallenbeck II. His preliminary education occurred in schools at Binghamton, New York, New York City, and San Diego, California. He received his B. A. from Occidental College in Los Angeles, California in 1915. He attended the Princeton Theological Seminary in Princeton, New Jersey in 1918. Dr. Hallenbeck received his B.D. from the San Francisco Theological Seminary in San Francisco, California in 1931, his M. A. from Teacher's College, Columbia University in New York City in 1934; and his Ph. D. in Adult Education (the first granted in the United States) from Columbia University, New York City in 1935.

He was Chaplain of the United States Army from 1918 to 1919; Pastor of the Presbyterian Church of Selma, California from 1920 to 1923; director of research of the Home Missions Council of Northern California from 1924 to 1925; executive secretary of the Oakland, California Council of Churches from 1926 to 1927; field worker to Director of Urban Studies, Institute of Social and Religious Research in New York City from 1925 to 1934, and was associate to professor at Teacher's College, Columbia University, from 1934 to 1958. Presently he is consultant to the University Without Walls at Roger Williams University in Providence, Rhode Island.

Professor Hallenbeck's vocational interests were Training of Adult Educators and Sociology of Cities. He retired from Columbia University in 1958 as Professor Emeritus. He is an avid stamp collector and enjoys carving sea gulls.

Dr. Hallenbeck was a member of the American Association of Adult Education and was a founder of the Adult Education Association of the USA. He has been a member of that organization ever since and was an active participant in its Commission of Professors of Adult Education. He has also been a member of the Adult Education Association of Massachusetts. A number of his publications may be seen in the Bibliography.

Dr. Hallenbeck is most proud of an award - a Medal for Democracy - which he received in 1952. The inscription reads:

"Award of the Adult Student Council of the Board of Education of the City of New York to Wilbur C. Hallenbeck for Outstanding Contribution to the Education of Adults in the City of New York."

Dr. Hallenbeck's present address is 36 Seapit Road, Waquoit, East Falmouth, Massachusetts, 02536.

Ralph Beckett Spence

Professor Spence was born in La Crosse, Wisconsin on April 1, 1901, the son of Harry and Lottie Beckett. He received his B. A. degree from the University of Wisconsin in 1922, his M.A. in 1924, and his Ph. D. in 1927 from Columbia University. He married Rita Ellen Pond on November 27, 1924 and has one son Donald Pond and one daughter, Carol Brown.

He began his career as an educator in 1922 as a science teacher in high school and was employed in that position for one year. From 1925 on Dr. Spence has been on the staff of Teacher's College, Columbia University from instructor to professor retiring in 1966 as Professor Emeritus. During that period he was on leave of absence from 1943 until 1949. It was then that he was Acting Chief of the Bureau of Adult Education, New York State Education Department. During a sabbatical in 1955 and 1956, Dr. Spence was on a Fulbright Research Fellowship in Pakistan. From 1956 through 1961 Dr. Spence was Chief of Party for Teacher's College Program in Afghanistan under AID. In 1966 and 1967 he was Research Associate for a Title III Educational Project for the Alexandria-Arlington-and Falls Church schools in Virginia. He came to the University of Georgia in 1967 as Visiting Professor and since that time has been on a part-time basis as a research associate in the Research and Development Center for Early Educational Stimulation. A number of his publications may be seen in the Bibliography.

Dr. Spence has been a member of many organizations among which are: The Adult Education Association of the USA, the American Sociological Society, the American Psychological Association, the American Education and Research Association, the John Dewey Association, and others. His club and fraternity memberships include Phi Beta Kappa, Phi Kappa Phi, Phi Lambda Upsilon, Scabbard and Blade, Alpha Chi Sigma, Phi Delta Kappa, and Kappa Delta Pi. His hobbies include music, gardening, and cooking.

Professor Spence's present home address is 355 Beechwood Drive, Athens, Georgia.

Andrew Hendrickson

Professor Hendrickson was born on November 17, 1899 in Pedrickstown, New Jersey. He earned an A.B. in English from Bucknell University in 1925, an M. A. in English from Columbia University in 1935 and the Ph. D. from Columbia University in 1943. He is married to Norejane Johnstone and has one daughter Dorothy Ann.

Dr. Hendrickson has served as head of the English Department in Cliffside Park, New Jersey High School and in Bogota, New Jersey High School. He has also been a teacher of Social Studies in the Westfield, New Jersey High School and the New York City Regents Evening High School. He has served as assistant and associate in Adult Education as well as instructor in Sociology at Teacher's College, Columbia University. He was Assistant Professor of Adult Education as well as Director of Cooperative Education and Assistant Dean of Cleveland College of Western Reserve University. In 1947 Professor Hendrickson went to Ohio State University as Professor of Education. In 1957 he was appointed Director of the Center for Adult Education at that University. Retiring from Ohio State University in 1967, Dr. Hendrickson is now the Director of the Institute of Senior Adults and Professor of Adult Education in the Department of Adult Education at Florida State University.

Dr. Hendrickson is a member and past Vice-President of the National Education Association. He has served on the Executive Committee and as a member of the Delegate Assembly of the Adult Education Association of the USA. A past Secretary-Treasurer of the Ohio Association for Adult Education, Dr. Hendrickson was editor of the journal of that organization, the Ohio Adult Observer, from 1948 to 1960. He was also one of the founders and first president of the Adult Education Council of Greater Columbus, Ohio. A number of his publications may be seen in the Bibliography.

Professor Hendrickson presently resides with his wife and daughter at 1121 Mercer Drive, Tallahassee, Florida.

Robert John Blakely

Professor Blakely was born near Ainsworth, Nebraska on February 24, 1915, the son of Percy Lee and Mary Frances Watson. He graduated with a B. A. with highest distinction from the State University of Iowa in 1937. He was a scholar at Harvard Graduate School between 1937 and 1938.

His career as a journalist began with the Register and Tribune of Des Moines, Iowa where he worked between 1938 and 1942 and 1946 and 1948. He was editorial page editor of the St. Louis Star Times between 1948 and 1951. He was editorial writer for the Chicago Daily News between 1964 and 1967. He has been the editor of the school page there since 1967.

His interest in adult education showed itself when he became an executive committee member of the Adult Education Council of Des Moines, Iowa between 1939 and 1941. He was a member of the executive committee of the Adult Education Council of St. Louis between 1948 and 1951. During the World War II years 1942 and 1943, he was assistant to the director of the domestic branch of the Office of War Information where he was in charge of the Bureau of Special Operations. He was affiliated with the Fund for Adult Education between the years 1951 and 1961 and was the manager of the Central Regional Office between 1951 and 1956 and its Vice-President between 1956 and 1961. While with the Fund for Adult Education, he was the director of two scholarship-fellowship programs, the director of the Test-Cities Projects which were experiments in the coordination of adult education in 12 middle sized communities. He was liaison officer with colleges and universities, public schools, libraries, labor and farm organizations, Blacks, and government. He attended the International UNESCO Conference in Montreal in 1960 where he planned and ran a workshop on the uses of the mass media. He was also an attendant in the International Pugwash Conference on Adult Education in Nova Scotia in 1960. He has planned and conducted national conferences including several at Arden House for such groups as the American Law Institute and the National Association of Public School Adult Educators.

In 1961 he became Dean of Extension at the State University of Iowa and remained there for one year. At the moment when the interview was recorded Professor Blakely was working on a Health and Manpower Project at the Library of Continuing Education at Syracuse University, Syracuse, New York. He has appeared on numerous radio and television broadcasts and has been an author for scripts for a number of plays. A number of his publications may be seen in the Bibliography.

Paul Leslie Essert

Professor Essert was born in Salida, Colorado on August 7, 1900 of Frank H. and Hester Leda Shaw. He earned an A. B. in 1922 from the University of Wyoming, his M. A. from Colorado State Teacher's College of Education in 1930 and his Ed. D. from Columbia University in 1940. He married Pearl Cammer on December 8, 1923 and has 3 children, Eleanor Sue, Mrs. Larry Williams; Bonnie Ruth, Mrs. Charles Bast; and Robert Dale. He has been a high school teacher in Willard, Colorado from 1922 through 1924; Superintendent of Schools in La Crook, Colorado from 1924 to 1926 and at Grosse Point, Michigan from 1941 through 1947; principal of a Junior High School in Sterling, Colorado from 1926 through 1930; and principal of a High School at Fort Collins, Colorado from 1930 through 1931. He was supervisor of secondary education for the public schools of Denver, Colorado from 1931 through 1933; principal of the Emily Griffith Opportunity School in Denver from 1933 through 1940 and has been Professor of Education at Teacher's College, Columbia University in New York City since 1947. In 1949 he was Executive Officer of the Institute of Adult Education. He was a member of the President's Council on Education Beyond High School in 1956 and 1957 and he was a consultant on adult education in 1943 in New York City, 1944 at Boston, 1948 at Montclair, New Jersey, 1949 and 1950 in Puerto Rico, 1951 in Buffalo, and an advisor at Kabul, Afghanistan on University Administration between 1957 and 1959.

He became Professor Emeritus of Columbia University in 1965. Between 1966 and 1967 he served as Executive Director of the New England Institute of Education for the Aging established by the Adult Education Association of the USA and which serviced 6 New England States. In 1968 and 1969 he was consultant to the Pennsylvania Department of Education in developing a plan for public school adult education in Pennsylvania. In 1969 and 1970 he participated in taping a series of 20 tapes on education for the aging called Zest for Living with Station WFRM at Riverside Church in New York City. He has been a member of the New York Adult Education Council for many years and its president in 1963-1964. In the last 3 or 4 years Dr. Essert has been involved with adult education programs at Leisure Village in Lakewood, New Jersey for community understanding and development and was the Chairman of the Internal Affairs Committee which was a committee on self-government.

Professor Essert has been a member of the following organizations: the Adult Education Association of the USA and was its president during the year 1954-1955; the American Association of School Administrators; the American Association of University Professors; the American Educational Research Association; Phi Delta Kappa; Alpha Tau Omega; and Delta Sigma Rho. He has been a member of the American College Quill and the Men's Faculty of New York City. A number of his publications may be seen in the Bibliography. His present residence is 450 Cheshire Court, Lakewood, New Jersey.

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VITA

Joseph William Jacques was born in Bridgeport, Connecticut on March 19, 1925. He attended elementary school and high school in Elizabeth, New Jersey. Following three years in the Armed Forces during the World War II years, he received a Bachelor's Degree in History and Political Science from Rutgers University in 1950 and a Master's of Arts in Teaching the Social Sciences from the University of Illinois in 1951. Following an eight year period during which he was employed as an auditor at Chemical Bank and Trust Company of New York, a Purser at Grace Line, Inc., of New York City, and Assistant to the Vice-President at Verona-Pharma Chemical Corporation of Union, New Jersey, he studied for a year at the University of Florence, Italy from which he received a Diploma in the Humanities. Between the years 1960 and 1968 he was a teacher of the Social Sciences at Lafayette School, Chatham Township, New Jersey and Watchung Hills Regional High School in Warren New Jersey. In 1965 he was awarded a John Hay Fellowship as an outstanding teacher of the Humanities in the United States. During the year 1965-1966 he studied at Northwestern University in Evanston, Illinois. In the Fall of 1968 he entered Florida State University to pursue the Ph. D. degree in Adult Education. From September, 1962 to February, 1963 was Assistant Director of Academic Affairs at Mountain

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He has arranged and led his own tours of students to Western and Eastern Europe every summer except two since 1961. He speaks Italian with fluency and French and German with fair fluency. He has been or is a member of the following organizations: Merchant Marine Staff Officer's Association, Chatham Township Educational Association, Watchung Hills Regional High School Education Association, Somerset County Education Association, New Jersey Education Association, American Historical Association, Adult Education Association of the USA, United European American Club, Lutheran Student Center Florida State University, John Hay Fellowship Association, and the International Club Florida State University. His hobbies are reading, gardening, and cooking.

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