

MAKING FORMAL PRESENTATION SLIDES

A Practical Guide for Students of the Sciences.

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A handwritten signature in black ink that reads "Robert D. Keys". The signature is written in a cursive style and is positioned in the bottom left corner of the page, extending diagonally upwards and to the right.

*..... dedicated to those
students who strive to be the very best that their
potential will allow.*

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I. INTRODUCTION

This document has been assembled into a simple, yet practical guide to the necessary processes and procedures that any faculty member or student should have at his or her grasp. It is not meant to be all inclusive of the various ways in which suitable formal seminar presentation slides can be made, but it will serve as at least the minimum guide to easy and practical ways in which good slides can be made.

The various processes, procedures, hints and formulas have been gathered over the course of many years. Some of the bits of information date to the early years of this century, but they are none-the-less valid today. Learn them well, and they will serve you faithfully for many years.

Most of the emphasis of this guide is on the manual art and craft of slide production, and not on the computerized form. At the present time (1990), computers are beginning to be used as slide generators. Some of the programs that directly generate slides are useful and properly run, can produce effective slides. This writer's opinion is that too many people have been enamored with the pretty colors of such slides, and not the content of the slides. Too often a slide that is multi-colored will not show well in a large auditorium. They may work well in small seminar rooms, but, the slide maker should beware of the pitfalls of such overly colored slides. Remember --- IF the information content does not "slap your audience up 'side the head good and hard", you WILL have lost them by slide number three! (... ancient seminar curse!).

With such caveats in mind, let us begin to see just what it takes to make a good formal presentation slide.

II. GENERAL ARTWORK MASTER PROCEDURES

The production of suitable masters is **THE** most important aspect of making formal presentation slides. The conceptual processes preceding the production of masters (i.e., the content of the presentation) is, practically, of secondary importance. Why is this so? Simply put, poor slide masters make poor slides, that regardless of the lofty glory, well-meaning intentions and masterful content, will cause your audience to lose interest. Your presentation is **NEVER** better than the quality of your presentation artwork masters! This is fundamentally true, irrespective of the manner in which the slides are produced.

A. Methods Available

There are several methods to make good slide artwork masters. They range from the very simple, entirely manual methods (e.g., pen and ink, or press-on lettering) to the very complex (e.g., computer driven typesetters, or computer driven direct imaging systems). Each method has its own set of perks and idiosyncrasies. Each has its own merit, for particular types of slides or types of effect on a slide. Each has at least some problems that need to be overcome to be fully utilized. Each has its own learning curve and rate at which proficiency is gained. What one does in assessing or choosing a particular method is to carefully consider the type of slide required, the type of information to be placed on a given slide, and the time allotted to the production of the slides. Equipment is of secondary importance, at least around a major facility such as a university or corporation. If one is on one's own, then equipment availability may be a major constraint.

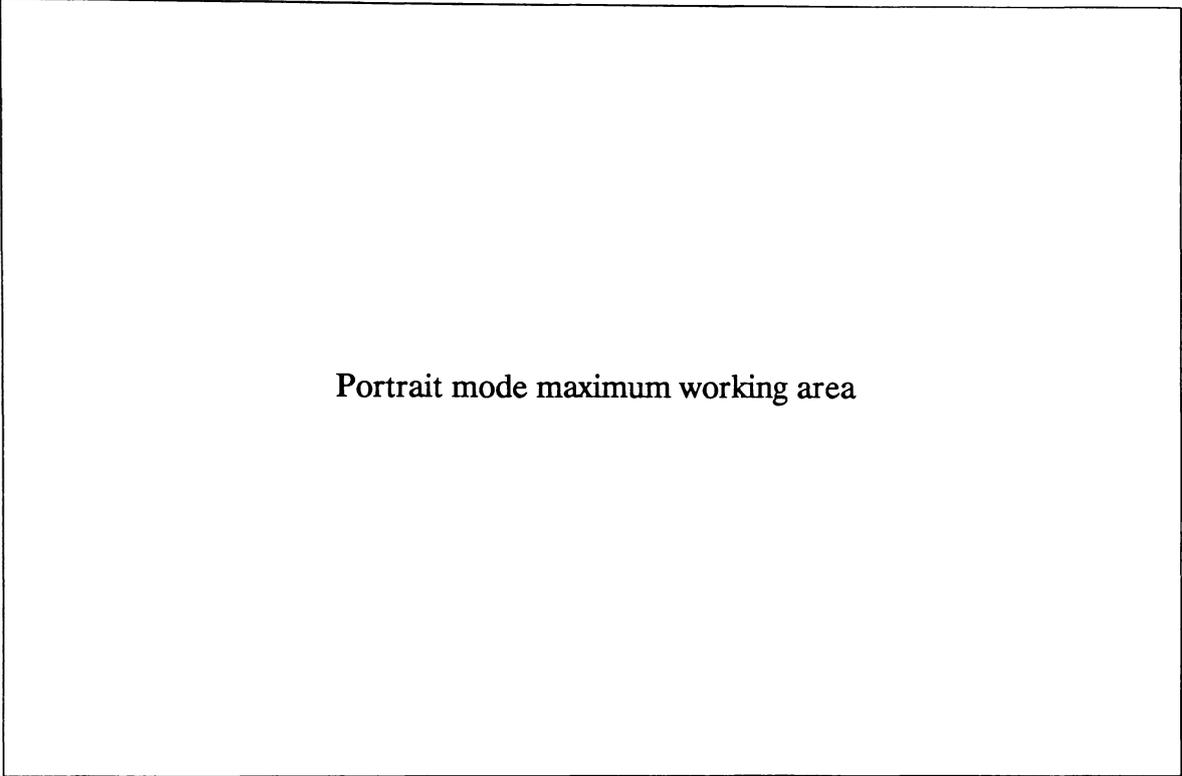
B. The Format of a Slide

It is a reasonable assumption to make, these days, that all slides will be in a 35mm film size. In earlier decades, especially prior to World War II, it was not uncommon to use 2-1/4 x 2-1/4, 2-1/4 x 2-3/4, or 3-1/4 x 4-1/4 inch sized slides. Such slides required a lantern slide projector, and a competent projectionist to handle the large and heavy slides that were usually assembled as a glass sandwich in a metal frame. A presentation using 30 or 40 slides could weigh several kg, and be rather sluggish to have to carry around to meetings. But, such slides gave, by far, the sharpest and crispest images that you could imagine. Unfortunately, the lantern slide projectors are extremely scarce, now, and not generally available at any professional meetings or seminars.

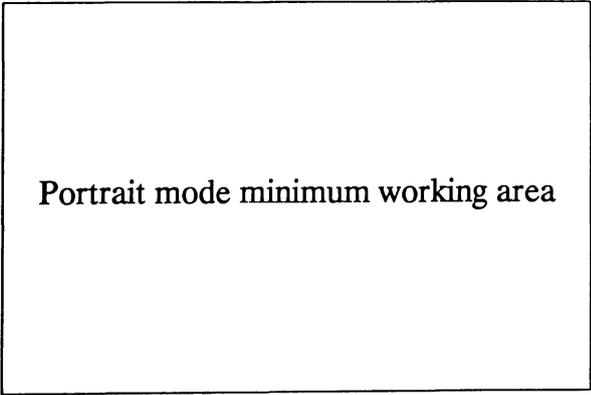
The dimensions of the frame of a 35mm camera are 24mm x 36 mm. Note that the film is 35mm *wide*, not long, from whence the name comes. That is precisely a 2 x 3 frame format. That ratio is important. You should keep firmly in mind, conceptually, that the form and texture of the slide content should fill-to-fit that 2 x 3 frame format.

It is convenient, when making artwork masters, to use a standard 8-1/2 x 11 inch page size. Note that 8-1/2 x 11 inches is NOT a perfect 2 x 3 frame format. It is wise to have approximately 1-1/4 inch margins (at least) on the master, so that the edges of the master do not show when photographing them. Hence, the *working area* on the master is approximately 6 x 9 inches maximum.

There are two modes of presentation of information on an artwork master. One is portrait (i.e., across the page, as you are reading this text). The other is landscape (i.e., sideways across the length of the page). The maximum working area in portrait mode is 4 x 6 inches across the page. The maximum working area in landscape mode is 6 x 9 inches down the page. The smallest practical working area, in either mode, is approximately 2 x 3 inches in size. See example working area grids on the following pages.



Portrait mode maximum working area



Portrait mode minimum working area

Landscape mode maximum working area

C. *The Information Content of a Slide*

The amount of information presented on a slide is important. It is good, conceptually, to present no more than three or four points per slide. Also, the density of characters on a slide should not exceed, as a general rule-of-thumb, *8 lines of 40 characters* per line.

One may have to exceed that density, occasionally, on certain slides, and that is perfectly fine. But, keep the following firmly in mind, when you do. First, if your presentation is in a large auditorium, seating over approximately 200 people, the more dense your slide beyond 8 lines by 40 characters per line, the more people you will lose in the back rows because they cannot even read the slide. This is especially bad at job interview seminars and professional meetings.

Second, the more densely packed the slide, the more difficult it is to get good photographic reproduction, and the more likely it is for small defects to occur, that look absolutely *horrible* when blown up room sized (..... ancient seminar curse!).

If your presentation is in a *small* seminar room or conference room, you probably should not worry too much, since the images are bright enough to show satisfactorily in most instances. In a pinch, in small rooms, you can push your slide character density to a maximum of 12 lines of 60 characters per line. But, *only* in a pinch. It is much better to break up such dense slides into several less-dense slides, in sequence.

D. *The Relative Visual Impact of Different Media of Slide*

The medium upon which the 35mm slide is made can have a tremendous visual impact upon the presentation of a seminar. This includes not only the type of film used, but also whether or not the film is color or black and white. Factors additionally affecting this presentation are the relative intensity of background lighting and the size of seminar room. To a limited extent, the texture of the projection screen is also important.

The background texture of a slide can be stark, i.e., clear bright white or deep black. Less stark yellows to oranges or more subdued greens, reds, blues, and greys can be effective, visually. Contrasting letter texture is usually best, from the visual impact point of view. The following table illustrates the most visually impressive combinations. If the seminar room is small and not totally darkened, one might successfully use any combination with relative impunity, so long as it can be quickly and easily read. Conversely, if the room is large and/or very dark, subdued mixes of colors *will* have insufficient contrast to be easily read beyond the front few rows of seats. Add to this the problem of various degrees of color insensitivity (i.e., "color blindness") that affect a non-too-small percentage of the male human population. Compound it even further with the great propensity for wondrous multi-colored slides easily generated by computer, and the slide will become severely muddled and generally unreadable! Caveat! (..... a modern professional meeting presentation curse!)

The relative effect of the texture of a slide on the visual impact of that slide to an audience is shown in Table 1. The effect for three types of slides (i.e., black lettered slides, black background slides, and blue background) is shown.

Table 1. Effect of Slide Texture on Visual Impact

Background Texture	Lettering Texture	Contrast	Visual Impact
white	black	high	brilliant
yellow	black	high	brilliant
orange	black	medium	clear
grey	black	low	muddy
red	black	low	muddy
green	black	low	muddy
blue	black	low	muddy
black	white	high	brilliant
black	yellow	high	brilliant
black	orange	medium	clear
black	grey	low	muddy
black	red	low	muddy
black	green	low	muddy
black	blue	low	muddy
blue	white	high	brilliant
blue	yellow	medium	clear
blue	grey	low	muddy

The relative intensity of visual impact of a slide is affected not only by the texture of the slide itself, but also by the texture of the projection screen. Most standard screens have good light reflectance. If a standard screen is not used and a wall or "whiteboard" writing board is used instead, the light reflectance may be significantly less than expected. In such case, starker, more contrasty slides should be used, *not* subdued multi-colored slides.

E. Putting Slides Together Into an Actual Presentation

A very important part in the overall production of a seminar is the putting together of the slides into an actual sequence representing the talk to be given. Hopefully, thought has gone into this well before you reach the stage of actually making slide masters. The entire talk should have been sketched out, at least roughly, on a slide by slide basis. It is helpful to put one sketch of one slide on a separate piece of paper. This will allow you to easily modify the order of sketches as the talk builds in rough form.

The format and style of a talk is generally dependant upon the audience to which the talk is addressed. For departmental seminars, job interviews, and professional meetings, the format will usually approximate that of a scientific manuscript. It will have sections of an introductory, a materials and methods, a results and discussion, and a summary nature. The only real difference between a 12 minute talk at a professional meetings and a 45 minute talk at a departmental seminar or a job interview seminar is in the depth of the sections. If the talk is of a review or informational nature, the format may be changed into, perhaps, an introductory, a chronological, and a summary sections. As you can see, the general format remains somewhat the same, but the details of the format will change to fit the audience.

Depending upon the audience, you might wish to include one or two specialty slides for certain types of effect. For, instance, to draw the attention of the audience *to* your talk, at the beginning, a pleasant photo picture slide or tastefully done cartoon slide can be used to effect. Alternatively, as perhaps between sections of the talk, a pleasant colored blank slide or one with just a section title, can be used to effect. Although the use of specialty slides is *not* generally accepted practice for talks at professional regional or national meetings, they are very well accepted for commodity group or trade group talks. Use them only with discretion at job interview seminars.

Another type of slide that is often used in departmental seminars or review informational talks is the reproduction-of-published-work slide. Here, a particular picture, graph, figure, or table from the published literature is used to illustrate particular points in your talk. If a reprint of the work is available, use that for the slide master, since it usually will give the best reproduction. If reproduction from a book is necessary, it is often helpful to copy the page(s) needed, and use the copies as the masters. When using these types of slides in your talk, make *sure* to properly cite the work. On each master, or on the back of each master (i.e., *not* behind the information to be reproduced), it may be helpful to write the full citation. That way, it is always handy for your reference.

As you begin to bring the masters together, it may be helpful to group them together, by section. It is easier to work up each section to completion, and make a folder to contain the masters of each section, than to try to bring the whole talk together all at once, at this stage. Then put the folders together into a hanging folder for the complete set. Once you have the complete set together, it will be useful to find a large table and lay out *all* the masters *together* by section, to check and see that all is well. At this time, minor changes in the ordering of the slides in the talk can easily be made to optimize the flow and content (i.e., the "fluidity") of the talk. Little things, such as these, can go a long way towards making a polished, well-flowing, professional talk. With practice, it becomes second nature.

When all of the masters are together, and in the correct sequence, it is useful to make a copy of each master, in sequence, and to put them into a notebook. Then, if you have some space left at the bottom of each copy page, you can add such notes as may be desirable, and use the notebook *as your reference set of notes for the talk*.

When the masters have been made into slides, it is of value to have two sets of slides made. One set should be put into your slide tray, for the talk. The other set should be put into plastic page holders (the kind that hold 20 slides per page in little clear pockets). The page holders should be put into the back of your notebook, for emergency use, should the master set be lost.

When ordering the sets of slides, after they have been made, it is a good idea to set them up on a light table, in sequence. Using a fine-tip felt pen, number each slide in sequence, and, place an orientation dot in the *lower* left corner of each slide. Then, when loading the slides into the empty slide tray, take the tray up in your left hand, and look across the top of it towards an imaginary screen. Grasp the orientation dot under your right hand thumb. Then drop each slide, in sequence, into its appropriate numbered slot in the tray, making sure the orientation dot is in the *upper* right corner. If you follow this loading procedure *exactly* you will *never* have upside down or backwards slide in your talks.

When all is done, file the masters away in a safe place for future reference. Then, the notebook and slide tray are everything that you need for your talk.

III. TYPEWRITTEN MASTERS

Typewritten masters are the simplest of all to make. Why is this so? The main reason is that you have *complete control* over the positioning of the type on the page. Wherever a character is desired, it can be put, albeit manually, of course. Of secondary importance is that typewriters abide like flies upon the earth --- they are everywhere. Note also that typewritten masters usually have non-proportionally spaced characters (i.e., each character takes up the same amount of horizontal space on the page), for that "typewriter" look. Only recently, have some electronic typewriters begun to have proportionally spaced characters (i.e., characters that take up varying amounts of horizontal space), for that "printed book" look.

A. Advantages of Typewritten Masters

1. They are relatively quick to prepare.
2. Good electronic typewriters are quite common.
3. One can see, immediately, what the final output looks like.

B. Disadvantages of Typewritten Masters

1. Perfect alignment of special characters such as superscripts and subscripts may be difficult to obtain.
2. Print impression quality can be variable, giving light and dark regions.
3. Mistakes are usually disastrous, because of the critical alignment, and require starting over on a master.

C. Hints on Preparing Typewritten Masters

1. Make sure that the ribbon is of the carbon film type, to give the sharpest and crispest letters.
2. Check each character typed with the typing element to make sure there are no broken or chipped characters.
3. Use heavy coated paper (e.g., glossy plotter paper) to give the best quality letter impressions.
4. Use a stack of 2 papers to even out platen imperfections.

IV. TYPESET MASTERS

Typeset masters are, by far, the preferred type of master for textual, and most graphical material. The masters are computer generated with output on paper. They are output to a plotter or a high resolution laser printer at 300dpi (dots per inch) resolution, which *always* gives crisp sharp letters and graphs. Note that typeset masters usually have proportionally spaced characters for that "printed book" look. Although some word processors attempt to rudimentarily do typesetting, it is best to use a computer program *designed* for the task of typesetting or graphing. Such designer programs will produce both text and graphic output, although some are better at text while others are better at graphics. Good programs for text material on the IBM PC and clones, include such programs as Troff, TeX/LaTeX, PageMaker, and Ventura Publisher. Good programs for graphics on the IBM PC and clones, include such programs as Harvard Graphics and Sigma Plot, with Sigma Plot being by far the best, in this writer's opinion. On the Mackintosh computer, MacDraw is a good program for both text and graphics. There are many other programs that are useful, and in the future, many new programs with lots of bells and whistles will be available. But, the point to remember is that whichever program you choose to use, make *sure* that it will do what you want it *exactly* to do, then *learn it well*.

A. Advantages of Typeset Masters

1. The print quality is extremely good, with very high resolution.
2. Great control over font size, style, and type can be obtained.
3. A professional appearance is easily obtained.

B. Disadvantages of Typeset Masters

1. It usually requires a somewhat exotic and expensive program/computer/printer combination.
2. The program is usually not easy to learn, and may be very cryptic in nature.
3. Output is usually not immediate, but may take several steps or several runs to get it right.
4. Laser printers and plotters are not plentiful, yet, hence you may have to que up in line with others waiting for the use of the equipment.

C. Hints on Making Typeset Masters

1. ALWAYS make sure your laser printer or plotter is CLEAN!
2. Make sure a spare toner cartridge or plotter pens are available, and that you know how to install them.
3. Make sure you have plenty of the right kind of paper handy. *Paper* is cheap, your *time* is not cheap.
4. Make sure you have sufficient disk space available, since some intermediate output files generated by the program can be huge.

V. MANUALLY PRODUCED MASTERS

Manually produced masters are a world unto themselves, and are mostly a forgotten art and craft. But, you can do some wonderful things with such masters that computer generated masters just will not be able to be compared to. For example, three dimensional drawings are all but impossible to do on a computer, unless you are running sophisticated CAD (Computer Aided Design) programs that are *not* commonly available. Some graphics programs can do three dimensional graphs, but not drawings. Also, specialty masters, such as cartoons, are not generally possible on computers that are commonly available. For these types of masters, freehand drawing or pen-and-ink drawing is just about the only way for them to be produced. Note that some graphics or drawing programs on personal computers can do some types of drawings of flow charts or line figures of a text/boxy diagram nature, but they are very hard pressed to do even the simplest illustration, of, for example, a plant or a flower, or a piece of laboratory apparatus.

Few students, today, know how to work a set of pen-and-ink or drafting instruments. It is perhaps a shortcoming of our educational system. If you should have the time to learn some of the simple techniques of text lettering or simple scientific illustration, it is *highly* to be recommended. The drawing pens and lettering templates tend to be a bit expensive, but are well worth the money spent and the time put in to learn their use. This is true, even if you should use them only a few times in your professional career. The instruments will last a lifetime, if properly cared for, and you *should* sequester them away carefully to prevent unknowing individuals from damaging them through mis-use.

A. Tools for Manually Lettered Masters

The tools required for pen-and-ink manual masters are listed in Table 2. This set represents about the minimum set necessary to effectively produce both text and graphic masters. The cost should be approximately \$100.00 for the set, less ink and paper.

Table 2. Tools for Making Pen-and-Ink Manual Slide Masters

Tool	Description
drafting board	18x24" with parallel square
T-square	to fit drawing board
pen stylus holder	to hold pen and follow letter template
assorted pens	sizes 0 through 7
lettering templates	sizes 125 through 500 (1/8-1/2")
drawing templates	assorted square, circle, ellipse, etc.
spline curve	a flexible rubberized leaden one is best
lettering ruler	a cork padded 12" steel one is best

B. Advantages of Manually Lettered Masters

1. No fancy equipment (i.e., a computer and peripherals) is required.
2. Complete control over the drawing is obtained.
3. Specialty 3-D or cartoon line drawings are relatively easy to make.

C. Disadvantages of Manually Lettered Masters

1. The tools must be kept **ABSOLUTELY CLEAN!**
2. The technique tends to be a bit messy with the inks involved.
3. Mistakes are usually disastrous and require a complete remake of the master for best results. "White-out" does not work well on pen-and-ink drawings unless *very* carefully applied.
4. Time is required to make the masters (usually 1-2 hours each).
5. Letter spacing is somewhat critical, and requires some practice to get a "feel" for the correct letter spacing.

D. What about Press-On Lettering of Manual Masters?

Press-on letters, usually sold on large sheets of several hundred letters per sheet, can sometimes be used effectively in the production of manual slide masters. The letters are very crisp and sharp, and are very bold in appearance. The only real disadvantage, albeit a major one, is that critical alignment and spacing of the letters is most difficult to obtain. The eye perceives even slight discrepancies in alignment. Hence, a line of type appears wavy and uneven. Sometimes, the use of a sheet of graph paper behind the master is useful for alignment purposes, especially if the work is being done on a light table. If you choose to use press-on letters, have *patience* --- and you *will* need it.

An alternate to press-on letters are the 3-M or KROY lettering machines. These machines make a line of press-on lettering on a clear plastic tape, and can produce relatively even lines of lettering for slide masters. Even spacing is still a bit difficult to obtain, but it is much easier than with individual press-on letters. Again, the use of graph paper, behind the master, to give guide lines, is recommended. Patience will still be required, but the quality of slide masters produced with these machines can be quite good.

VI. DIRECT COMPUTER GENERATED SLIDES

Direct computer generated slides are a relatively new, but important means of generating slides. In this method, *no slide master is generated*. The computer generates an image directly onto an auxiliary "screen", to which a camera is attached. The camera photographs the "screen" directly. The equipment for making these slides is expensive, and not commonly available, yet, although large departments may have a unit or two.

Two basic types of systems are available for direct computer generated slides. One system uses the image that is sent to the operator's console screen as its image. Hence, the resolution is only as good as what is displayed on the console screen, which is usually *not* very good, or only marginally acceptable. This type of system is usually satisfactory for simple text, simple table, or simple bar chart slides. It is usually *not* satisfactory for complex graphics slides, since diagonal lines or curves will tend to look like a series of jagged steps. If this is not a problem for your particular slides, then this type of system may be of use in the preparation of your talks. An example of this type of system is the Polaroid Palette. Note that as computer screen resolution has improved from the "rocks and marbles" CGA image to the better resolution EGA image, so has the resolution of the Polaroid Palette improved. The other basic type of system uses a self contained secondary imaging system *not* part of the console operator's screen. This type of system has much higher resolution, and will produce the highest quality slides. It tends to be very expensive, though. An example of this type of system is the Presentation Graphics ImageMaker. The major drawback with this other type of system is that you may be tied to using only that software that the manufacturer has interfaced to the unit. Not *all* types of software may be supported. If your favorite software is not supported, then you are entirely *out of luck* and will have to use different software that *is* supported.

A. Hints on Making Direct Computer Generated Slides

1. Use contrasting colors rather than subtle mixes of colors, so that your slide is readable from the back of a room. *This is extremely important.*
2. Do not use more than two colors of letters or lines on a slide. It will be difficult to read, if you do.
3. Leave plenty of time for film processing and re-shooting of film. It is not uncommon to have the film ruined due to poor film handling at the photo processor's shop. Remember --- *film* is cheap, your *time* is not cheap.

VII. GENERAL PHOTOGRAPHIC PROCEDURES

The following is a series of odds and ends of notes of a general nature. They concern the basic equipment necessary to make suitable formal presentation slides, and some hints that have been found of value.

A. *Equipment*

1. Camera and lens - use a good 35mm camera with macro or closeup lenses.
2. Film - as required by each procedure.
3. Camera stand with lights - make sure you have a good solid one. "A jittery stand maketh not goode slides!" (..... ancient seminar proverb).
4. Light meter - if desired, but not necessary. It may be built into the camera as a through-the-lens meter.
5. Chemicals for film development - as required for each particular procedure.
6. Darkroom with safelight - as required for some procedures but not others.

B. *General Hints on Lighting*

1. ALWAYS use the VARIAC on the light stand, if the stand is so equipped, to *slowly* turn the lights on and *slowly* turn the lights off. This will increase the normally short life of the bulbs by as much as 500% !!!!
2. Make sure that the baseboard on the camera stand is *clean!* It will *always* show up in the final seminar presentation if the baseboard is *not* clean (... ancient seminar curse).
3. Use an 18% neutral gray card for obtaining light meter readings, otherwise you *will* obtain incorrect meter readings. (Some people just divide the ASA of the film by 5, and then use the meter with this much reduced ASA film speed rating. This procedure has not been verified, locally.)
4. Some people use a clean glass plate over the copy to make sure that it lies flat. Other people use a coin at each corner of the copy. Use whatever suits your requirements.....just keep the copy flat.

5. Make sure the copy is properly aligned *squarely* in the view-finder. Tilted slides always appear "real funny looking" when blown up wall-sized in front of an audience (...ancient seminar curse, again).
6. If you are using a through-the-lens light meter, make sure that the view-finder is covered with something (e.g, the lens cap), to prevent stray room light from entering the back of the optical path, giving you false meter readings.
7. If available, use a stand with four lights rather than two, as the lighting will usually be more uniform with four lights than with two.
8. If the angle of the lighting relative to the baseboard is adjustable, try to keep the light angle at approximately 45 degrees. This will reduce the possibility of unwanted light reflections.
9. If uneven lighting is unavoidable, then keep the size of the master small to minimize the unevenness of lighting across the master.
10. If you are using color film, make sure that all of the bulbs in the stand are of a correct color temperature (usually 3200 K), to prevent a color shift. This gives rise to off-white or deep-blue colored slides. (...another ancient seminar curse.)

C. Other Hints

1. ALWAYS leave yourself sufficient time to re-shoot and re-develop shots that do not come out just right. This is the most frequently occurring problem in getting that \$%#&!! seminar together.
2. ALWAYS make sure that you have *fresh* chemicals available. If you are in doubt as to the state of the chemicals, mix up fresh chemicals, and sequester them away from all intruders in a cool, dark place, just for yourself. The chemicals are cheap, and that way, if they do not work, you have only yourself to blame.

D. Film Dispenser Loading

If you have not loaded 35mm film cassettes before, see someone who has for some first-hand training. It will usually be much easier than just trying to read instructions. You may have to load not only the film cassettes, but also the film dispenser (known as a bulk film loader). They are not difficult procedures, but they are extremely unforgiving of improper loading.

The film is handled in a dark room, but, since it is orthochromatic (i.e., is not sensitive to red light, but only to blue and green), it may be loaded into the film reloader dispenser in safelight. Use a Kodak Safelight Filter No. 1A (light red), with not more than a 15 watt bulb, no closer than 1.2 m (4 ft) from the film. Be quick in loading the dispenser, since the total safelight exposure to the film should not be greater than 8 minutes for all procedures, including loading *and* development.

Follow the particular instructions for loading the dispenser with the 150 foot film roll. Each manufacturer's instructions are slightly different from every other's. Generally, the roll cover is rotated, a safety lever is pushed, and then the nut securing the cover is removed. The cover may or may not be attached to the nut. The film roll is inserted, making sure the end of the film goes through the light trap and into the cassette loading chamber. Replace the cover, making sure the appropriate levers and nuts are positioned correctly. Make sure the light trap is closed, to prevent ruining the whole roll, from stray light.

If you are in doubt about the light-tightness of the film dispenser, perform the cassette loading under safelight. Also, you may want to do this the first few times you are loading a cassette (i.e., until you are sure the cassettes are loading properly, and without light leaks).

E. Film Cassette Loading

The cassette is loaded by unscrewing or popping off an end cap, and removing the reel. The reel is attached to the end of the film with a piece of masking or clear "cellophane" tape approximately 2.5 cm (1 in) long. The cassette can is then re-assembled around the reel, and placed into the cranking assembly in the cassette loading chamber. After closing all appropriate covers, the light trap may be opened (usually by rotating the dispenser cover).

While rotating the crank in the proper direction to wind film onto the cassette reel, count off between 20 or 30 clicks. Each click indicates one frame of film loaded into the cassette. Finally, after making sure the light trap is closed, the cassette loading chamber may be opened, the film cut with scissors, and the cassette removed.

As a general hint, pull approximately 7.5 cm (3 in) of film from the cassette, to preclude the possibility of your turning the reel of the cassette accidentally and losing the end of the film into the cassette (a very annoying experience).

F. Departmental Facilities

The department has facilities for film shooting (assorted copy stands) and film processing (a student and a research darkroom complex). Check with the departmental seminar committee or the front office for their use. If you choose to use these facilities, please use them *carefully* and keep them *clean* at all times.

VIII. BLACK BACKGROUND KODALITH SLIDES

The KODALITH process for making slides with a black background and white letters is simple, and quick. In experienced hands, slides can be made in approximately two hours, start to finish. In inexperienced hands, figure about 4 hours minimum time.

A. Materials

The film is standard Kodak KODALITH film. It comes in 100 foot rolls and must be loaded into 35mm film cassettes from a bulk film loader. If you have not loaded 35mm cassettes before, see someone who has. It is not a difficult procedure, but it is extremely unforgiving of improper loading. The film has an ASA film speed rating of 8. Usually a light meter is not required. The usual setting is a 100% manual camera override of any built-in light meter, with a lens aperture of f11 and a shutter speed of 1 second. It is highly recommended that you shoot a through-series of 3 exposures for each copy, if you are not expert in the process of arriving at the correct exposure, every time. Use aperture settings of f8, f11, and f16, each at 1 second exposure. Then you are essentially guaranteed that one of the exposures will be correct.

The developer is standard KODALITH two part developer (parts A and B). The developer is mixed up into one gallon stock solutions of A and B. These stock solutions keep for approximately 6 months if they are kept in a cool, dark place and are tightly capped. Equal parts of A and B are mixed at the time of use to make the developer. The developer is good only for several hours after mixing parts A and B. The best and most reliable practice is to mix fresh parts A and B just before developing a roll, and discarding the mix after EACH roll. If you have time to experiment, you can usually push several rolls through on mixed developer, but BE CAREFUL. If the development time starts to increase more than 25%, as each additional roll of film is processed in a given tank of developer mix, throw the developer away and mix fresh A and B together. DON'T TAKE CHANCES. *Film* and *developer* are CHEAP, YOUR *time* is NOT CHEAP.

B. Procedure

Expose the film using an exposure time of 1 second at an aperture setting of f8, f11, f16.

Develop the film in a safe-lit darkroom using the KODALITH A+B developer, a stop bath, and standard Kodak fixer. The development time is approximately 3 to 5 minutes. You may look at the film using backlight from the safelight after about 2 minutes of development, to check and see if the development is sufficient. If you always use fresh developer, develop exactly 3 minutes for best and most consistent results.

Stop the development by immersing the film in a stop bath for approximately 30 seconds to 1 minute.

Fix the film by immersing the film, with gentle agitation, in the fixer. The time required for fixing the image is usually at least 5 minutes, but seldom longer than 10 minutes. If more than 10 minutes are required to clear the image, your fixer is NO GOOD. Use fresh fixer. You may now safely move the film into normal room light, it is cleared.

Wash the film in running water for at least 15 minutes, but not generally longer than 30 minutes.

Rinse the film for 30 seconds in Kodak Photo-Flo solution (one capful to a quart of water), then hang up the film to dry. You may *carefully* remove excess water from the film by folding several laboratory wipers into a rectangular towel of 3 cm x 10 cm, and gently rubbing the film *once* from top to bottom as it is hanging. Move the towel slowly and without stopping from top to bottom across the film.

Dry the film for approximately 30 minutes to 1 hour, and cut out the best slides for mounting. If desired, color the slides with marking pens of any contrasting color (yellow or light blue work well), then mount.

IX. BLACK BACKGROUND TECHNICAL PAN SLIDES

Technical Pan slides are very similar to the KODALITH slides, but the procedure requires a bit more care. The timing of the exposure and the development is more critical, it requiring much more exact timing.

A. Materials

The film is Kodak Technical pan TP-135 film. It comes in ready to shoot 36 exposure 35mm cassettes. It has an ASA rating that is variable, about ASA 100. The usual exposure is 1/60 second using a through-series of f8, f11, and f16. This corresponds to an ASA rating of about 125. If using a light meter, take the reading on the 18% neutral grey card.

B. Procedure

Load the film (in a darkroom or in a changing bag) into a standard 35mm reel film development tank. Shoot at 1/60 second with an aperture of f8, f11, f16.

Develop the film in D19 developer (mixed per instructions on the developer bag) for exactly 4 minutes to obtain the best contrast. You may have to play around with the exposure to get the best development at 4 minutes, but stick to a 4 minute development time. Use the developer only once, and then throw it away.

Stop the development by immersing the film in standard stop bath for 30 seconds to 1 minute.

Fix the film by immersing the film, with gentle agitation, in the fixer. The time required for fixing the image is usually at least 5 minutes, but seldom longer than 10 minutes. If more than 10 minutes are required to clear the image, your fixer is NO GOOD. Use fresh fixer. You may now safely move the film into normal room light, after it is cleared.

Wash the film in running water for at least 15 minutes, but not generally longer than 30 minutes.

Rinse the film for 30 seconds in Kodak Photo-Flo solution (one capful to a quart of water), then hang up the film to dry. You may *carefully* remove excess water from the film by folding several laboratory wipers into a rectangular towel of 3 cm x 10 cm, and gently rubbing the film *once* from top to bottom as it is hanging. Move the towel slowly and without stopping from top to bottom across the film.

Dry the film for approximately 30 minutes to 1 hour, and cut out the best slides for mounting. If desired, color the slides with marking pens of any contrasting color (yellow or light blue work well), then mount.

X. WHITE BACKGROUND LPD4 SLIDES

A method for making high quality direct positive black lettered white background slides involves the use of lithographer's precision line film, processed in high contrast developer. This type of film is very high resolution, has high contrast, and has low background fog. This renders blacks a deep rich black, with sharp edges, and whites a clear white with no grey cast.

A. Materials

The film to use is Kodak Precision Line film, type LPD4. This film is supplied in 150 foot rolls, and hence, must be loaded into cassettes for use. If you have not loaded 35mm cassettes before, see someone who has. It is not a difficult procedure, but it is extremely unforgiving of improper loading. The speed of the film is quite slow. The ASA rating, in non-lithographic development is 3.1, based upon a reflected light reading from an 18% grey card. For use on a 4-light copy stand, a good starting exposure is one second at f5.6, or bracket at f4.5, f5.6, f6.3.

B. Procedure

Processing the film requires the developer, Kodak DEKTOL, at a 1:1 dilution. Recommended development time is one minute at 20C, with continuous agitation. If a tank is used, it should be used open, without a lid, since it is usually not possible to fill and drain the tank in the allotted one minute development time and not have uneven development. My recommendation is that you do develop using a film reel, but use simple laboratory beakers as containers (i.e., 600 or 1000 ml size). A wire hook or long forceps are used to manipulate the reel into and out of the containers. Set up the beakers in a row in the darkroom.

Load the film (in the darkroom) under safelight into a standard 35mm developing reel. Keep the safelight at least 1.2 m (4 ft) from the film at all times. The total amount of time that the film can be exposed to safelight during all handling (i.e., loading both the film dispenser and the cassette, loading the development reel, and the time of development) is a maximum of 8 minutes, as recommended by KODAK. Do not waste time in handling the film under safelight.

Develop the film in DEKTOL developer for approximately one minute. Use slow, even, continuous agitation. Note that the one minute development time is not absolute. A range of 0.75-4.0 minutes is entirely satisfactory. Use whatever time works for you, but try the one minute development time first. As a rule of thumb, the longer the development time of the film, the softer is the contrast, and the greater is the background fog.

After development, rinse the film, with continuous agitation, in stop bath at 20C for 10 seconds. Any stop bath will work. If no stop bath is available, use running water at 20C for 15 seconds.

Fix the film by immersing the film, with continuous agitation, in standard fixer at 20C. Recommended fixation time is two to five minutes. If Kodak Rapid Fixer is available, fix for one to two minutes with continuous agitation. Use fresh fixer.

Wash the film in running water at 20C for at 10-15 minutes, but not generally longer than 30 minutes.

Rinse the film for 30 seconds in Kodak Photo-Flo solution (one capful to a quart of water), then hang up the film to dry. You may *carefully* remove excess water from the film by folding several laboratory wipers into a rectangular towel of 3 cm x 10 cm, and gently rubbing the film *once* from top to bottom as it is hanging. Move the towel slowly and without stopping from top to bottom across the film.

Dry the film for approximately 30 minutes to 1 hour, and cut out the best slides for mounting.

XI. WHITE BACKGROUND E-6 PROCESS EKTACHROME SLIDES

A simple method for making black lettered white background slides involves the use of standard Ektachrome film processed in the standard Ektachrome E-6 process chemistry. In essence, one makes a full color positive reproduction of artwork, but, since the artwork is in only two colors (black letters on a white background) the full color reproduction is still black on white.

A. Materials

The film to use is Kodak Ektachrome 160 ASA *tungsten* film. It comes in ready to shoot 36 exposure 35mm cassettes. On a 4 light copy stand, the starting exposure should be approximately 1/125 second at f11. If using an exposure meter, the meter is set using an 18% grey card. As a rule of thumb, shoot a 3 shot set of exposures at half stop increments, to bracket the suggested exposure (e.g., f9.5, f11, f13.5). The latitude of the exposure is not great, so it must be essentially exact, to get the best rendition of thin lines or letters.

B. Procedure

Process the film as normal for Ektachrome film (E-6 chemistry).

As a modification of this method, to obtain black letters on a pastel yellow background, use a yellow filter. The exposure is approximately the same as above. Alternatively, make your masters on canary yellow paper and do not use a filter.

XII. BLUE BACKGROUND C-41 PROCESS EKTACHROME SLIDES

The C-41 process is used to make a very beautiful slide with a blue background with white letters. Many people like this type of slide.

A. Materials

The film is Kodak Ektachrome EK-135 film. It comes ready to use in 35 mm cassettes of 24 or 36 exposures. The film is obtained with an ASA film speed of ASA 160 tungsten.

The color of blue background is controlled by the color of the filter used to shoot the slides. An Orange G filter will yield a slide with white letters on a medium blue background. A yellow Y[K2] filter will yield a slide with white letters on a dark blue background. Whichever filter you use is usually mounted on the front lens of the camera. It can be readily obtained from any photographic supplier, locally. If not in stock in the size required for your camera, it may take several weeks for it to arrive, after an order is placed. So, plan ahead and order your filter early, if necessary.

B. Procedure

Shoot the film with an appropriate ASA rating using a through-the-lens light meter, if possible. Set the meter on the 18% neutral grey card for the correct reading. Alternatively, shoot a through-series of 3 exposures of f11, f16, and f22 at 1/60 or 1/125 second. It has been my experience that f16 or f19.5 at 1/125 second is usually correct for a 4 light camera stand.

Process the film locally at Positive Results Photo Lab, 541 Pylon Drive, out near the state fairgrounds (832-9339). It requires 3-4 hours for processing. If the film is dropped off before noon, it can be picked up at 4:30 in the afternoon, the same day, or leave anytime for overnight service. *Make sure that you specify that the film needs to be developed in C-41 process chemistry. It WILL not work if it is not so developed.* To speed things up a bit, if you do not mind mounting the slides, specify that the film is to be developed but not mounted. You can then mount the slides yourself in PAKO brand slide mounts, obtainable from most photographic supply stores.

You can also process the film in any of the 1-hour photo-finishing shops at the malls around the town. They can usually turn the film around in approximately 1 hour. But, be sure that they will process C-41 for you, and that they understand this ahead-of-time.

XIII. MISCELLANEOUS FORMULAS WORTH NOTING

The following are a collection of miscellaneous formulas that should be in every handy photographic information guide. *Believe-it-or-not* --- they really do work.

A. *Emergency Stop Bath*

If you are out of stop bath, and really think that you need to use a stop bath, try the following emergency stop bath formulae:

1. *Emergency non-stop-bath stop bath*

Rinse the film in water (running water, if available) for approximately 30 seconds, then proceed with the film to the fixer.

2. *Emergency semi-stop-bath stop bath*

Mix 80-100 ml glacial acetic acid into 900 ml (just shy of a quart) of water. The volumes are not, by any means, critical. This is real stop bath, but without the usual hardening agent. It works fine!

3. *Emergency real stop bath*

Stir 100 g potassium aluminum sulfate (potassium alum to you old timers) into 900 ml (just shy of a quart) of water. Then, stir in 80 to 100 ml glacial acetic acid. This is the *real* stop bath! It does really, really work.

Dip the film into the stop bath for approximately 30 seconds, then proceed with the film to the fixer.

B. *Emergency Photo-Flo Wetting Agent Rinse*

If you find that you have run out of real Photo-Flo solution for your final rinse wetting agent, mix 1/4 teaspoon Ivory liquid, gently, into one gallon of water. Use as normal Photo-Flo solution.

XIV. EXAMPLES OF SLIDES OF VARIOUS TYPES

The following pages contain examples of slides of various types that have been gathered from various sources over the years. Some of the slides are hand drawn. Others are composed by typewriter. Still others have been generated by means of computer graphics or computer typesetting (as has been this document).

If you wish, they may be copied using a xerox machine and used as trial slide masters for the various photographic processes described previously.

The examples are:

1. A simple title slide generated by the Troff typesetter.
2. A complex text slide generated by the Troff typesetter.
3. A simple table slide generated by the Troff typesetter.
4. A complex table slide generated by the Troff typesetter.
5. A complex graphics slide generated by the Troff typesetter.
6. A complex equation slide generated by the Troff typesetter.
7. A complex graphics picture slide generated by the Troff typesetter.
8. A simple TeX/LaTeX text slide.
9. A simple TeX/LaTeX table slide.
10. A complex TeX/LaTeX equation slide.
11. A simple typewriter text slide.
12. A complex typewriter table slide.
13. A simple hand drawn lettering set text slide.
14. A complex hand drawn lettering set graphics slide.
15. A simple text slide generated from the Harvard Graphics software.
16. A complex graph slide generated from the Harvard Graphics software.
17. A simple text slide generated from the Sigma Plot software.
18. A complex graph slide generated from the Sigma Plot software.
19. A simple text slide generated from the MacDraw software.
20. A complex graph slide generated from the MacDraw software.
21. A complex picture slide generated from the MacPaint software.

Example 1. A simple title slide generated by the Troff typesetter.

This example uses a 14 point font size.

MAKING FORMAL PRESENTATION SLIDES

A Practical Guide

for

Students of the Sciences.

by

**Robert D. Keys
Associate Professor
Department of Crop Science
North Carolina State University
Raleigh, NC 27695-7620.**

If one does not like the font sizing, then larger font sizes can be used. Normally, font sizes up to 36 point are standard. As an example, the next page is set up with an 18 point font size, as opposed to the 14 point font size directly above.

Example 1a. A simple title slide generated by the Troff typesetter.

This example uses an 18 point font size to enlarge the text slightly.

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As one can see, the size is somewhat larger. This may be better suited to photography, if a macro lens or closeup lens does not have quite sufficient magnification to give a full frame image.

Since the layout of this title slide is more square than the rectangular 2 x 3 layout of a standard 35mm slide, one might change the format slightly to fit better into the frame field of view. This can be done by folding the three subtitle lines into one line. Also, let us try an even larger 24 point font size.

Example 1b. A simple title slide generated by the Troff typesetter.

This example uses a 24 point font size to enlarge the text even more.

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In the above example, the size may be just a bit on the large side. It may show the side borders if one is not careful to make sure that the text fills the field of view fully. You will have to test this using your camera to be sure. Each camera has a slightly different field of view from any other camera. What you see in the viewfinder may not be what you see on the finished slide.

Notice that several font styles and sizes were used in order to emphasize the title (bold 24 point) and subtitle (bold 18 point) from the by-line (standard 18 point) and address (standard 14 point). By adjusting the font style and size, one can make a very effective title slide.

The following page shows the input file used to generate the title slide using the computer typesetting program Troff.

Example 1b --- This is the actual input for slide example 1b.

Invoke as: troff slidename

```
.po 0.5i
.ft R
.ps 7
.nf
.sp 0.25i
Example 1b --- This is an example of a Troff typeset title slide.
.br
.sp 2.0i
.ft B
.ps 24
.ce
MAKING FORMAL PRESENTATION SLIDES
.br
.sp 0.5i
.ft B
.ps 18
.ce
A Practical Guide for Students of the Sciences.
.br
.sp 0.5i
.ft R
.ps 18
.ce
Robert D. Keys
.br
.sp
.ft R
.ps 14
.ce
Associate Professor
.br
.sp
.ce
Department of Crop Science
.br
.sp
.ce
North Carolina State University
.br
.sp
.ce
Raleigh, NC 27695-7620.
.br
.bp
```

As one can see, the input file is very simple, and it can be edited as a plain ASCII text file, by almost any editor or word processor. On UNIX systems, the usual editor is VI. On MS-DOS systems, EDLIN or your favorite editor/word processor can be used. Just make sure that the edited file is output in plain ASCII format using only printable characters. Control characters and graphics characters used by some word processors can wreak havoc on text formatters such as Troff. If your slides are highly erratic in form, such characters may be hidden in your input file. Beware!

In the next example, let us try changing the font style from the usual Times Roman font to the Helvetica font. All else is the same.

Example 1c. A simple title slide generated by the Troff typesetter.

This example uses Helvetica rather than Times Roman fonts.

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In the above example, the font has been changed from Times Roman to Helvetica. This change can sometimes give a greater clarity to the slide by using a font without serifs (i.e., *sans serif* --- without the hanging doodads at the ends of the letters r, y, etc.). Also, the thickness of each letter is more constant than with serifs.

The following page shows the input file used to generate the title slide using the computer typesetting program Troff. Note that the only changes required were the changing of the .ft lines from B or R to HB or H.

Example 1c --- This is the actual input for slide example 1c.

Invoke as: troff slidename

```
.po 0.5i
.ft R
.ps 10
.nf
.sp 0.25i
Example 1b --- This is an example of a Troff typeset title slide.
.br
.sp 2.0i
.ft HB
.ps 24
.ce
MAKING FORMAL PRESENTATION SLIDES
.br
.sp 0.5i
.ft H
.ps 18
.ce
A Practical Guide for Students of the Sciences.
.br
.sp 0.5i
.ft H
.ps 18
.ce
Robert D. Keys
.br
.sp
.ft H
.ps 14
.ce
Associate Professor
.br
.sp
.ce
Department of Crop Science
.br
.sp
.ce
North Carolina State University
.br
.sp
.ce
Raleigh, NC 27695-7620.
.br
.bp
```

As one can see, the changes to the input file were minor, and the effect of the change in font style is clearly evident in the even bolder presence of the master than with the previous font.

In the next example, a simple text slide is generated. This represents just about the minimum sort of text slide. The header is in a 24 point font size while the body of text is in an 18 point font size.

Example 2. A simple text slide generated by the Troff typesetter.

The header is 24 point font size while the body of text is 18 point.

The Six Stages of a Project:

Wild enthusiasm...

Disillusionment...

Total confusion...

The search for the guilty...

The punishment of the innocent...

The promotion of the nonparticipants...

In the above example, the size is just about right for average use. It fills the page well, and is easy-to-shoot camera-ready copy.

The following page shows the input file used to generate the simple text slide using the computer typesetting program Troff.

Example 2 --- This is the actual input for slide example 2.

Invoke as: troff slidename

```
.po 0.5i
.ft R
.ps 10
.nf
.sp 0.25i
Example 2 --- This is an example of a simple Troff typeset text slide.
.br
.sp
The header is 24 point font size while the body is 18 point.
.br
.sp 2.0i
.ft B
.ps 24
    The Six Stages of a Project:
.br
.sp 2
.ft B
.ps 18
    Wild enthusiasm...
.br
.sp
    Disillusionment...
.br
.sp
    Total confusion...
.br
.sp
    The search for the guilty...
.br
.sp
    The punishment of the innocent...
.br
.sp
    The promotion of the nonparticipants...
.br
.bp
```

As one can see, the input file is again, very simple. The lines are typed in as free text but spaced relative to each other as they would appear if typed on a typewriter.

In the next example, let us try changing the font again for effect.

Example 2a. A simple text slide generated by the Troff Typesetter.

The font has been changed from Times Roman to Helvetica, for effect.

The Six Stages of a Project:

Wild enthusiasm...

Disillusionment...

Total confusion...

The search for the guilty...

The punishment of the innocent...

The promotion of the nonparticipants...

Again, did you notice the change in presence of the slide with the change in font?

The following page shows the input file used to generate the simple text slide using the computer typesetting program Troff.

Example 2a --- This is the actual input for slide example 2a.

Invoke as: troff slidenam

```
.po 0.5i
.ft R
.ps 10
.nf
.sp 0.25i
Example 2a --- This is an example of a simple Troff typeset text slide.
.br
.sp
The font has been changed from Times Roman to Helvetica, for effect.
.br
.sp 2.0i
.ft HB
.ps 24
    The Six Stages of a Project:
.br
.sp 2
.ft HB
.ps 18
    Wild enthusias...
.br
.sp
    Disillusionment...
.br
.sp
    Total confusion...
.br
.sp
    The search for the guilty...
.br
.sp
    The punishment of the innocent...
.br
.sp
    The promotion of the nonparticipants...
.br
.bp
```

Notice that to change the font, only the .ft lines were changed from B to HB in two places. Simple, yes?

In the next example, a simple table slide is generated. This represents just about the minimum sort of table slide. The font size is 10 point (i.e., slightly less than normal text line size). The top table is a plain table without boxing. The bottom table is a plain table with boxing. The top table uses the Helvetica font while the bottom table uses the Times Roman font.

Example 3. A simple table slide generated by the Troff typesetter.

The top table is without boxing, and uses the Helvetica font.

The bottom table is boxed, and uses the Times Roman font.

Invoke as: `tbl slidename | troff`

Blue Chip Pork Belly Common Stock		
Year	Price	Dividend
1971	41-54	\$2.60
1972	41-54	\$2.70
1973	46-55	\$2.87
1974	40-53	\$3.24
1975	45-52	\$3.40
1976	51-59	\$0.95*

*(first quarter only)

Blue Chip Pork Belly Common Stock		
Year	Price	Dividend
1971	41-54	\$2.60
1972	41-54	\$2.70
1973	46-55	\$2.87
1974	40-53	\$3.24
1975	45-52	\$3.40
1976	51-59	\$0.95*

*(first quarter only)

Example 3 --- This is the actual input for slide example 3.

```
.po 0.5i
.ft R
.ps 10
.fi
.sp 0.25i
Example 3 --- This is an example of a simple Troff typeset table slide.
.br
.sp
The top table is without boxing, and uses the Helvetica font.
The bottom table is boxed, and uses the Times Roman font.
.br
.sp
.nf
Invoke as:  tbl slide3.tro | troff
.br
.sp 2.0i
.ft H
.ps 10
.TS
center tab(%);
c s s
c c c
n n n.
```

Blue Chip Pork Belly Common Stock

Year%Price%Dividend

```
1971%41-54%$2.60
1972%41-54%$2.70
1973%46-55%$2.87
1974%40-53%$3.24
1975%45-52%$3.40
1976%51-59%$0.95*
```

```
.TE
.ce
*(first quarter only)
.br
.sp 2.0i
.ft R
.ps 10
```

```
.TS
allbox center tab(%);
c s s
c c c
n n n.
Blue Chip Pork Belly Common Stock
Year%Price%Dividend
1971%41-54%$2.60
1972%41-54%$2.70
1973%46-55%$2.87
1974%40-53%$3.24
1975%45-52%$3.40
1976%51-59%$0.95*
.TE
.ce
*(first quarter only)
.br
.bp
```

This is a more complicated input file that uses a preprocessor for Troff known as TBL (short for 'table'). The TBL preprocessor changes simple commands between the .TS (table start) and .TE (table end) lines into a table and passes the information along to Troff.

Also, note the difference in presence of the slide between the font styles.

Example 4. A complex table slide generated by the Troff typesetter.

Invoke as: `tbl slidename | troff`

Composition of Foods			
Food	Percent by Weight		
	Protein	Fat	Carbohydrate
Apples	.4	.5	13.0
Halibut	18.4	5.2	...
Lima beans	7.5	.8	22.0
Peanuts	25	50	20
Soybeans	40	21	34
Milk	3.3	4.0	5.0
Mushrooms	3.5	.4	6.0
Rye bread	9.0	.6	52.7

Composition of Foods			
Food	Percent by Weight		
	Protein	Fat	Carbohydrate
Apples	.4	.5	13.0
Halibut	18.4	5.2	...
Lima beans	7.5	.8	22.0
Peanuts	25	50	20
Soybeans	40	21	34
Milk	3.3	4.0	5.0
Mushrooms	3.5	.4	6.0
Rye bread	9.0	.6	52.7

In the above examples, the top table uses the Helvetica font, while the bottom table uses the Times Roman font. As a general rule-of-thumb, the Helvetica font will usually be a better font for use in the making of slides, than the Times Roman font. Note the difference in presence between the two tables due to font style. Bold type is used for the header and sub headings are set off by lines and/or boxes. The information content of the table is average, and it approximately fills a 2 x 3 aspect ratio box.

Example 5. A complex graphics slide generated by the Troff typesetter.

Invoke as: `grap slidename | pic | troff`

**THIS IS AN EXAMPLE OF Troff GRAPHICS OUTPUT
USING THE Grap PREPROCESSOR:**

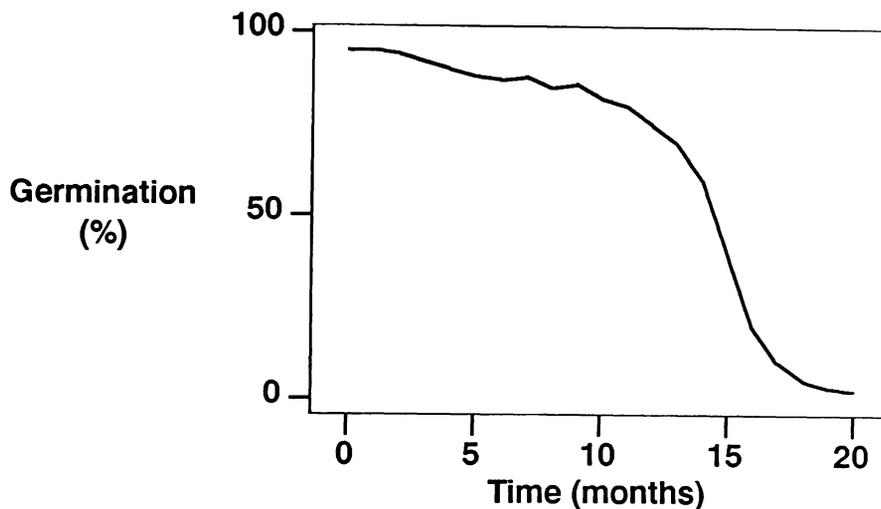


Figure 1. Effect of seed age upon the germination of peanut seed stored at ambient temperature.

In the above, example, a typeset graph was generated. This requires the use of the Grap preprocessor which sets up the graph for Pic and Troff. Although Grap is a bit cumbersome to use, and is not easily modified, it is capable of producing very good graphics that make good slides. Note that one drawback of Grap is that vertical axes must be labelled with horizontal lettering.

Example 6. A complex equation slide generated by the Troff typesetter.

Invoke as: `eqn slidename | troff`

**THIS IS AN EXAMPLE OF Troff EQUATION OUTPUT
USING THE Eqn PREPROCESSOR:**

$$\begin{aligned}
 G(z) &= e^{\ln G(z)} = \exp\left(\sum_{k \geq 1} \frac{S_k z^k}{k}\right) = \prod_{k \geq 1} e^{S_k z^k / k} \\
 &= \left(1 + S_1 z + \frac{S_1^2 z^2}{2!} + \dots\right) \left(1 + \frac{S_2 z^2}{2} + \frac{S_2^2 z^4}{2^2 \cdot 2!} + \dots\right) \dots \\
 &= \sum_{m \geq 0} \left[\sum_{\substack{k_1, k_2, \dots, k_m \geq 0 \\ k_1 + 2k_2 + \dots + mk_m = m}} \frac{S_1^{k_1}}{1^{k_1} k_1!} \frac{S_2^{k_2}}{2^{k_2} k_2!} \dots \frac{S_m^{k_m}}{m^{k_m} k_m!} \right] z^m
 \end{aligned}$$

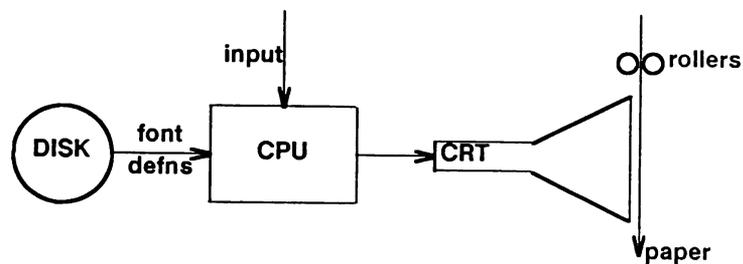
Figure 1. Complex mathematical equations can be typeset with relative ease using the Eqn preprocessor to the Troff typesetter.

In the above, example, a typeset equation was generated. This requires the use of the Eqn preprocessor which sets up the equation for Troff. Although Eqn is a bit cumbersome to use, it is capable of producing very good typeset mathematical equations that make good slide masters. Forget even trying this on your favorite word processor!

Example 7. A complex graphics picture slide generated by the Troff typesetter.

Invoke as: `pic slidename | troff`

THIS IS AN EXAMPLE OF Troff PICTURE OUTPUT
USING THE Pic PREPROCESSOR:



Basic Digital Typesetter

In the above example, a typeset picture was generated. This requires the use of the Pic preprocessor which sets up the picture for Troff. Although Pic is a bit cumbersome to use, when mastered, it is capable of drawing extremely nice picture drawings that make good slides.

In all of the previous examples, the slides were produced using the Troff text processing software commonly found on mini-computers using the Unix operating system. This software is available for use on DOS, but it is expensive, and not too commonly found. In the following example, the TeX/LaTeX text processing software was used. This also originated on minicomputers, but has been ported to DOS. It is a public domain software package that is an extremely powerful typesetting system. Commercial publishing houses even use it. Although it is a bit cumbersome to learn to use, its flexibility and portability will make it a very worthwhile system to consider for your use.

Example 8. A simple TeX/LaTeX text slide.

This is a plain and simple text slide typeset with LaTeX. Two fonts and two type sizes with ruled lines were used.

A SIMPLE TEXT SLIDE USING L^AT_EX¹

1. Keep your text slides simple.
2. Use no more than 8 lines per slide.
3. Use no more than 40 chars. per line.
(the above line is exactly 40 chars. long.)
4. Leave yourself plenty of time.
5. Have fun making your slides!

¹L^AT_EX is a special version of the T_EX typesetting system.

Example 9. A simple TeX/LaTeX table slide.

This is a plain and simple table slide typeset with LaTeX. It is roughly comparable to the Troff table slide in example 4. This example is patterned after one by J. B. Wang in a TeX/LaTeX guide thesis example from the University of Pittsburg.

Table 1: Text Formatting and Word Processing Packages

Text Formatters (command driven)	Scribe	VMS, UNIX
	TeX	VMS, UNIX, MSDOS
	LaTeX	VMS, UNIX, MSDOS
	troff	UNIX, MSDOS
Word Processors (menu driven)	WordStar	MSDOS
	Word Perfect	MSDOS, Macintosh
	Ms Word	MSDOS, Macintosh
	MacWrite	Macintosh

Example 10. A complex TeX/LaTeX equation slide.

This example is patterned after one by J. B. Wang in a TeX/LaTeX guide thesis example from the University of Pittsburg. It clearly demonstrates the power of the TeX/LaTeX technical typesetting system when typesetting mathematical material. Forget even trying this one on your favorite word processor!

$$\begin{aligned} \left(\int_{-\infty}^{\infty} e^{-x^2} dx \right)^2 &= \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} e^{-(x^2+y^2)} dx dy \\ &= \int_0^{2\pi} \int_0^{\infty} e^{-r^2} r dr d\theta \\ &= \int_0^{2\pi} \left(-\frac{e^{-r^2}}{2} \Big|_{r=0}^{r=\infty} \right) d\theta \\ &= \pi \end{aligned} \tag{1}$$

Example 11. A simple typewriter text slide.

This example is patterned after one by Dr. E. J. Dunphy.

If you can't afford
to Lime it,
you can't afford
to rent it!

Example 12. A complex typewriter table slide.

This example is patterned after one by Dr. E. J. Dunphy.

ROTATION and FERTILIZATION	
Crop and lbs. 0-10-20	Yield *
Corn (500) after Corn (500)	104.6
Corn (500) after Soybeans (500)	117.3
Corn (1000) after Soybeans (0)	124.5
Corn (500) after Soybeans (0)	120.6
* Bu/A yields, 1972-86.	

Example 13. A simple hand drawn lettering set text slide.

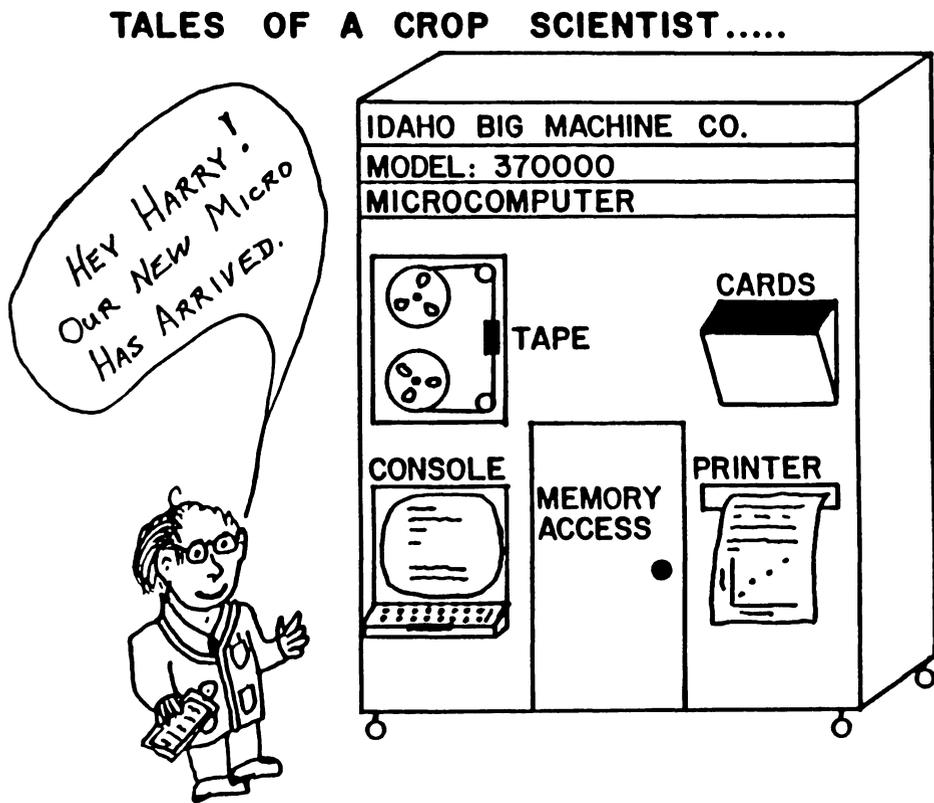
FIELD & LAB DATA ACQUISITION & CONTROL

DATA—FIELD MICRO—TUCC

DATA—FIELD MICRO—LAB MICRO—TUCC



Example 14. A complex hand drawn lettering set graphics slide.



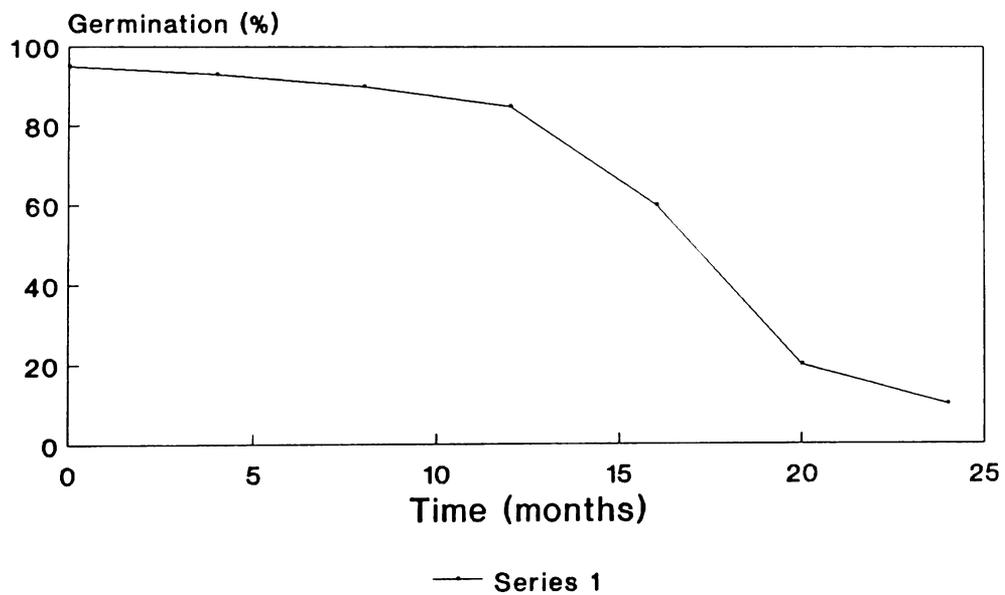
Example 15. A simple text slide generated by the Harvard Graphics software.

A SIMPLE TEXT SLIDE (Harvard Graphics)

- **Keep your text slides simple**
- **Use 8 lines maximum per slide**
- **Use 40 chars. maximum per line**
- **Leave yourself plenty of time**
- **Have fun making your slides**

Example 16. A complex graph slide generated by the Harvard Graphics software.

SEED AGE EFFECT ON GERMINATION (Harvard Graphics)



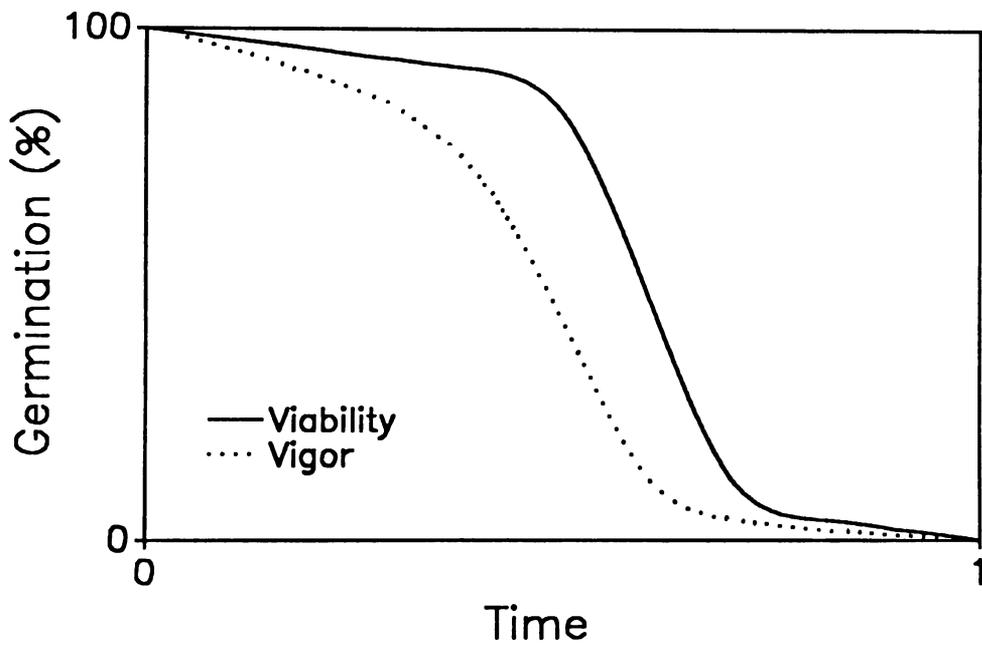
Example 17. A simple text slide generated by the Sigma Plot software.

A SIMPLE Sigma Plot TEXT SLIDE

- 1. Keep your text slides simple.**
- 2. Use 8 lines maximum per slide.**
- 3. Use 40 chars. maximum per line.**
- 4. Leave yourself plenty of time.**
- 5. Have fun making your slides.**

Example 18. A complex graph slide generated by the Sigma Plot software.

THEORETICAL RELATIONSHIP BETWEEN VIGOR AND VIABILITY



Example 19. A simple text slide generated by the MacDraw software.

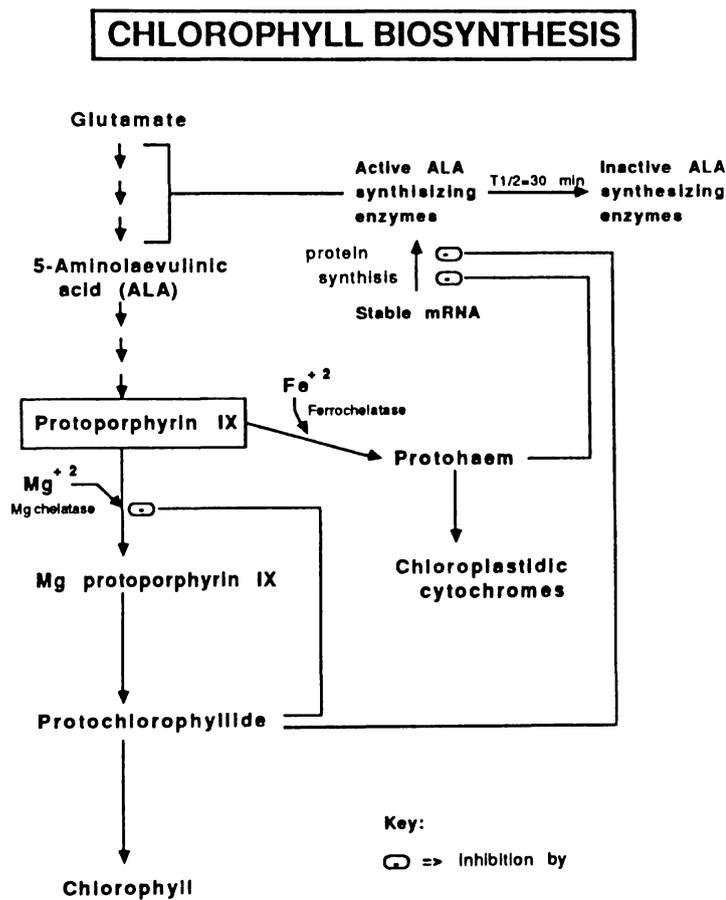
This example is patterned after one by Mr. Dan Westberg.

A SIMPLE MacDraw TEXT SLIDE

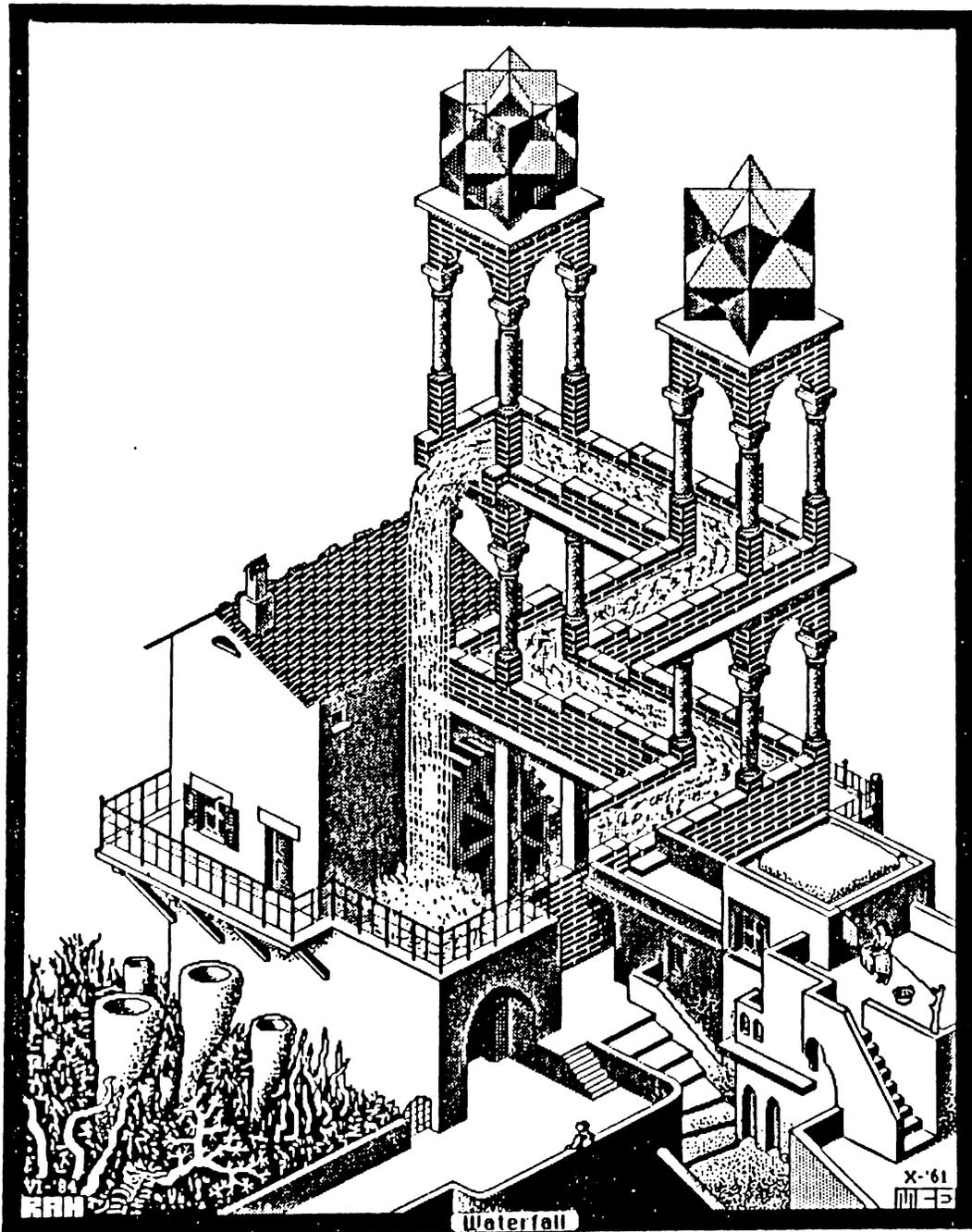
- 1. Keep your text slides simple.**
- 2. Use 8 lines maximum per slide.**
- 3. Use 40 chars. maximum per line.**
- 4. Leave yourself plenty of time.**
- 5. Have fun making your slides.**

Example 20. A complex graph slide generated by the MacDraw software.

This example is patterned after one by Mr. Dan Westberg.



Example 21. A complex picture slide generated by the MacPaint software.



XV. A SIMPLE SET OF SLIDE MASTERS

For your practice, a set of simple slide masters follows. These masters are sufficient to make a complete 30 minute slide seminar on the art and craft of making formal presentation slides. Although they are not intended to be used as an actual seminar presentation, they could be useful as a test practice seminar for students. They are intended to be useful as a test set of slide masters for trying out some of the photographic techniques covered in the previous chapters.

Good Luck, and Good Slides!

Sample Slide Master Number 1.

**HANDY DANDY GUIDE
to
BETTER SLIDES
by
Studentus Studentus
B.S., B.S., B.S., etc.**

Sample Slide Master Number 2.

OBJECTIVES

- 1. To prepare the student for making a peer group acceptable high-quality presentation suitable for any seminar or professional meeting.**
- 2. To introduce the student to techniques and tricks of the trade.**

Sample Slide Master Number 3.

WE WILL DISCUSS

- 1. General format of a slide presentation.**
- 2. Layout of slide masters.**
- 3. Making slides.**
- 4. Departmental facilities.**

Sample Slide Master Number 4.

**The Format
of a
Slide Presentation**

Sample Slide Master Number 5.

THE INTRODUCTION

- 1. Lead-in slides.**
- 2. Problem slides.**
- 3. Objectives slide.**

Sample Slide Master Number 6.

MATERIALS AND METHODS

- 1. Use one or more slides (one for each major method) (one or more parts).**
- 2. It may be helpful to show schematic diagrams or flow charts of a method.**

Sample Slide Master Number 7.

RESULTS AND DISCUSSION

- 1. Use one or more parts (one for each experiment).**
- 2. You will probably have the majority of your slides in this section.**
- 3. Remember to organize this section well.**

Sample Slide Master Number 8.

SUMMARY

- 1. Use one or more slides, but keep the number to a minimum.**
- 2. Be concise (i.e., direct and to the point).**

Sample Slide Master Number 9.

HELPFUL HINTS

- 1. Between each part or each major section, you might use a lead-in slide effectively.**
- 2. Use a pleasant picture or a plain unobtrusive color, with or without a title.**

Sample Slide Master Number 10.

**Layout
of
Slide Masters**

Sample Slide Master Number 11.

THE FORMAT OF SLIDE MASTERS

- 1. The basic format for most slide masters is a 2 x 3 ratio.**
- 2. Use a horizontal format if possible, or a vertical format once in a while.**

Sample Slide Master Number 12.

CHARACTER DENSITY OF MASTERS

- 1. As a rule, use no more than 8 lines of 40 characters per line on *ANY* slide.**
- 2. If more information needs to be displayed, break up the original into several related slides in sequence.**

Sample Slide Master Number 13.

LETTERING A SLIDE MASTER

- 1. Typewriter with good carbon ribbon.**
- 2. Press-on letters.**
- 3. Drafting pen-and-ink set (the good 'ol workhorse).**
- 4. Computer generated graphics (like this very slide).**

Sample Slide Master Number 14.

ON USING COMPUTER GRAPHICS

- 1. Choose your computer graphics program
*CAREFULLY.***
- 2. Not all programs produce line widths of
sufficient density.**
- 3. A typesetting program or pen-and-ink may
be better for text material.**
- 4. Make sure your program will actually *DO*
what you want it to do.**

Sample Slide Master Number 15.

Making Good Slides

Sample Slide Master Number 16.

TO MAKE GOOD SLIDES

- 1. Make *GOOD* quality masters (this is *MOST* important).**
- 2. Leave yourself *PLENTY* of time to remake slides if necessary.**
- 3. Be prepared to *BOMB* slides the first few rounds.**

Sample Slide Master Number 17.

TO MAKE GOOD SLIDES

- 4. Use plenty of film (*FILM* is CHEAP, your *TIME* is NOT).**
- 5. Some slides may be hand colored for enhancement or highlighting (use pastel colors --- yellows, oranges, greens).**

Sample Slide Master Number 18.

DEPARTMENTAL FACILITIES

- 1. The departmental photographic darkroom.**
- 2. A typical copy stand facility.**

..... and Good Luck !

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