

patient's privacy. Automation is also required for the mass screening of human chromosomes, obtainable at birth from blood of the umbilical cord. The development of scanning devices, which five years ago were expected to be operational in five years, has progressed rapidly according to Dr A. D. Bloom (University of Michigan), but will probably not be operational for another ten years.

Electrophoretic mass screening of blood proteins for new mutations (rare variants) would be formidable on both theoretical and practical grounds, in the view of Dr L. R. Weitkamp (University of Rochester). Screening of blood proteins by immunological reactions may offer rather more hope. The overall message of the conference, however, was that effective systematic mass screening for congenital anomalies does not seem to be imminent.

SLIDES

Away with the Fuzz

LECTURERS will be spared the embarrassment of showing fuzzy, unreadable slides if Mr Haydn Bywater, of the Weed Research Organization, Oxford, has his way. He and his colleagues have standardized a procedure for producing readable slides without the aid of a technical illustrator and elaborate equipment.

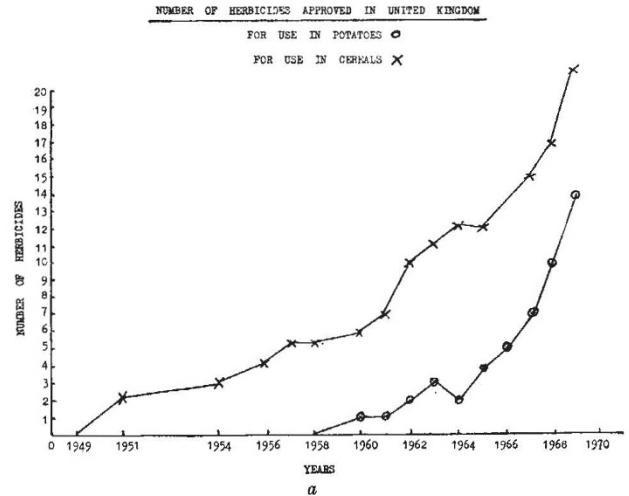
Mr Bywater writes: From a black original on white paper a finished slide is produced with white lines against a coloured background. The most critical stage is the drawing of the table or graph, which should have the minimum of lettering. Lower case lettering is easier to read.

The size of the lettering is also vital. A useful standard relates size of lettering to size of screen. Thus the height of the lower case risers (that is the total height of the letter h) should be at least 1/50th of the width of the projected screen. For example, if the original drawing is 20 cm wide, the smallest lettering which can be used is $20/50=4$ mm tall. Therefore if a 4 mm pen stencil is used, the graph should not be larger than $4 \times 50=200$ mm wide. Pen stencils are easy to use, although "instant" transfer letter systems give a better result.

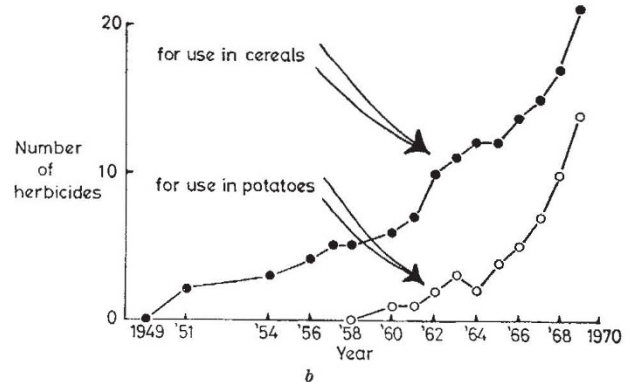
For solid lines black chart tapes give an even, sharp result and are easier to use than a ruling pen. A reasonable thickness of line is 1/200th of the width of the drawing, so that for a graph 20 cm wide the coordinates and other lines should not be narrower than 1 mm. The illustration shows a graph before and after redrawing for use as a slide.

The drawing is next photographed on high contrast, Kodak type 3 Kodalith film, which is available in 35 mm form as well as cut films. It can be handled in a red safelight, Wratten No. 1 or 1a. With 35 mm film the drawing must be framed correctly; a single lens reflex camera is most useful for this because the alignment can be seen through the viewfinder. Exposure should be timed accurately—with two No. 2 (500 W) Photoflood lamps 5 feet from the drawing, exposure time is 3–6 seconds at $f/22$.

The film is processed in Kodak fineline developer, with continuous agitation, for 2.5–3 minutes at 20°C, and fixed and washed as usual. Spotting, if necessary, is done on the rear (shiny) side of the film. The negatives are printed in contact with Technifax Diazo-chrome material KBL (blue) (Admel International,



Number of herbicides approved in U.K.



(a) Example of an unsuitable drawing for a slide; (b) the graph adapted and simplified.

Weybridge, Surrey). Because this material is only sensitive to ultraviolet light, a darkroom is not needed. A contact printing frame can be used to expose the foil, in contact with the negatives, to direct sunlight for about 2.5 minutes. An ultraviolet printing box can also be used. Overexposure produces a weak colour background, and underexposure causes the letters to be tinted instead of transparent.

Processing is done in ammonia vapour. A dye line processing machine can be used, or the foils can be suspended in a closed container with a little 0.880 ammonia liquid; a fume chamber should be used. At normal room temperature the colour develops in 2 or 3 minutes; if the room is cold the container can be placed in warm water to speed up the development.

During printing the face of the diazo foil must be in contact with the dull side of the negative. The foil sheets are notched at the top right hand corner when facing the operator, as with photographic film. But when the full sheets are cut for printing it is impossible to tell which side is which unless care is taken to keep all pieces the same way up after cutting. When the colour has ceased to darken, the foil is cut to size and is ready for binding in a slide frame. Other colours are available, but the blue type seems to be the most acceptable to audiences. These slides have the added advantage that both the stick pointer and the illuminated pointer can be used effectively, for they are both visible against the coloured background.