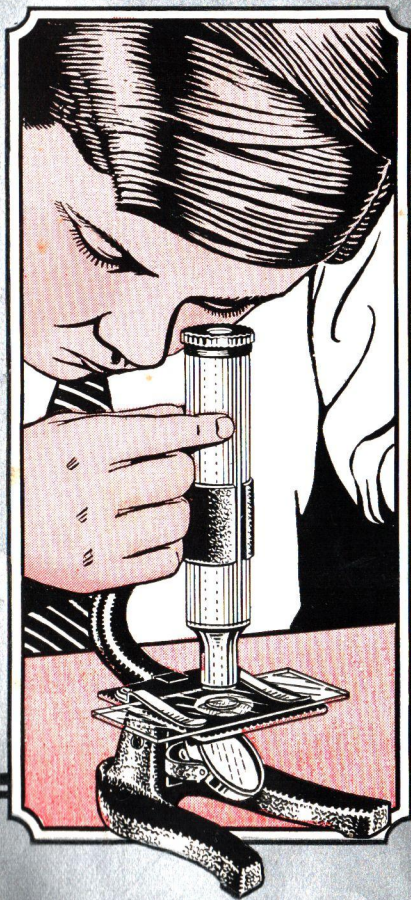


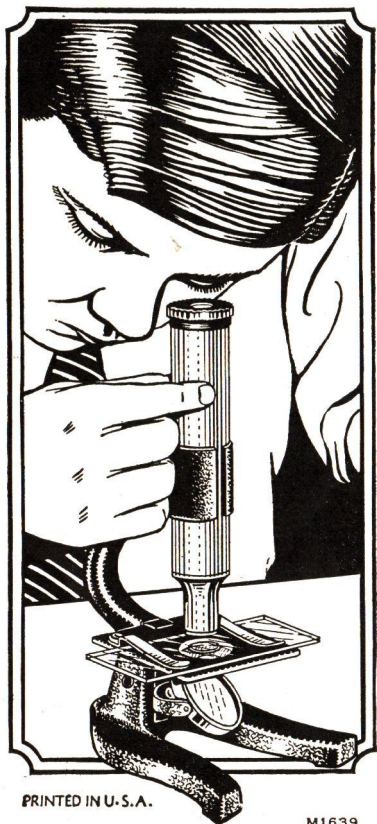
MICROSCOPE



MANUAL *of*
INSTRUCTIONS



MICROSCOPE



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M1639

MANUAL OF INSTRUCTIONS



Mysterious Views
through the Magic Lens

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FOREWORD

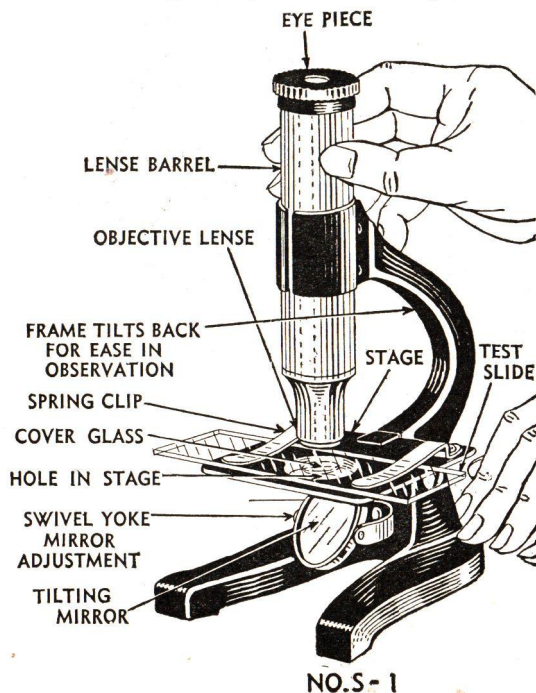
Your Microscope is the key with which to open the door to a new world. Borden Hall, in *Popular Science Monthly* said: "Touring the sub world with an inexpensive eye-piece is the most exciting pleasure that one can contemplate."

To obtain best results from the use of your microscope read the instructions which follow carefully.

This Microscope magnifies to about 200 diameters and has a high resolving power. Magnification alone is not sufficient. A good microscope must show the minute particles clearly when they are magnified. There must be sharp definition or resolving power. Your Microscope meets this exacting requirement.

PLACING THE MICROSCOPE IN POSITION FOR USE

Place the scope and yourself in such positions that you will be comfortable



when making observations. Either natural or artificial light may be used. Do not have the object brilliantly illuminated. A north light is better than direct sunlight, making sure that nothing comes between the mirror and the source of light. If an electric light is used, a frosted bulb is preferable. If an oil lamp is used, the narrow edge of the flame toward the mirror, gives best results.

Having placed the microscope in position so that the mirror receives the light directly, rotate and swing the mirror until the lens seems to glow with light.

PLACING A SLIDE IN POSITION AND FOCUSING

Take a slide you have prepared (see paragraph "How to Make Slides") and place it on the stage underneath the spring clips, with the prepared side of the slide on top. Move the slide on the stage under the spring clips so that the specimen will come as nearly as possible over the center of the hole in the stage. Be careful to keep the specimen section away from contact with the spring clips to avoid damaging the specimen.

Lower the lens barrel until the objective lens is about an eighth of an inch above the slide. To raise or lower the lens barrel, hold the scope steady with one hand, being careful not to cover the mirror. Grasp the lens barrel with the other hand and turning it gently with a squeezing movement, raise or lower the barrel slowly, taking care not to force the objective lens against the slide. See illustration of microscope. You are now ready to focus the lens on the specimen. In looking through the lens keep both eyes open and use either eye in making observations. This method may seem hard at first, but it is the method used by most great microscopists.

The object may not be directly under the center of the lens and the slide may have to be moved about gently until it is centered.

Moving the lens barrel in the manner outlined above and at the same time looking through the lens, by trial you will find that the specimen will soon appear sharp and clear or in other words, in focus. During this operation do not touch the mirror or cover it so that light can not reach it from the source of supply. Be most careful not to force the eye-piece down on the slide as by so doing you may easily damage the specimen, and may even damage the lens itself.

HOW TO MAKE SLIDES

Many objects may be mounted on slides without preparation, while others require great care. The first essential is cleanliness. Wash your hands and be sure that slides, slide covers, forceps and needle are dry and clean. Remove one of the sheets of cover material from the envelope and cut it into squares $\frac{1}{2}$ " across. Take a small peel from a potato and scrape off a small bit from the inside with a knife or spoon. Put the scraping in the middle of the slide, add one drop of water to the scraping and using the forceps, place one edge of the cover material at the edge of the water on the slide. Gently lower the cover over the water until it is flat against the slide. By so doing you have excluded the air from the cover and should have a smooth field. Examine the slide under the lens. Notice the small objects floating about, they are grains of starch which you scraped from the potato. Try this same experiment with other vegetables.

Place a drop of iodine on a clean slide, allowing it to spread out in a thin

film. No cover is necessary. As it dries tiny crystals will form, like dots at first, and then begin to grow before your eyes, like homes in a magic city. Repeat using a pinch of salt or sugar dissolved in a teaspoonful of water in place of iodine. A drop of listerine will show beautiful crystals. Many salts may be examined in this way and each will show the natural crystalline structure. Fibres of silk, cotton, wool, linen, hairs from various animals, bits of feathers from various birds or different parts of the same bird, all show nature's handiwork under the microscope.

Keep all the old match boxes or pill boxes you can find. In them you can place all kinds of dead insects and bits of material you wish to examine. Label these boxes so that you will know their contents. Anything which can be placed under the microscope and which light will show through will probably tell a most interesting story.

Keep the lens free from dirt and dust by wiping it, using a small bit of absorbent cotton twisted on a toothpick moistened with alcohol. Do not rub hard but dry thoroughly.

Many useful suggestions may be obtained from books on the microscope or Microscopy which may be obtained from any library or book shop.

