cinellid beetles which was unique in my experience. The summit of Pisgah—altitude 5,750 feet— is covered by a dense growth of laurel which was still in bloom. There is also a variety of other shrubbery and herbaceous vegetation, and no evident connection between the beetles and any special type of plant was noted. The day was comfortably warm—about 80°; the sky was about three fourths overcast by strato-cumulus clouds and there was a gentle breeze. The hour was about noon.

At several points on the very summit the beetles occurred in masses on the ground and covering the stems of the bushes. They clung to each other in such a way as to completely cover the surface they were on and several layers in depth. For the most part they were quiescent but moved about actively when disturbed. They did not readily take flight. I have identified the species as *Hippodamia convergens*.

J. I. HAMAKER

RANDOLPH-MACON WOMAN'S COLLEGE

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A LOW TEMPERATURE SEMI-MICRO STILL

WHILE condensing some acetylated sugars, it was decided that the removal of one of the reagents (dihydroxyacetone monoacetate) could best be accomplished by distillation.

The thermo-fragility and high boiling point of this monoacetate (96° at 1 mm), as well as the small amount of the condensation product produced, demanded of the still certain characteristics which were embodied in the design shown in the figure.

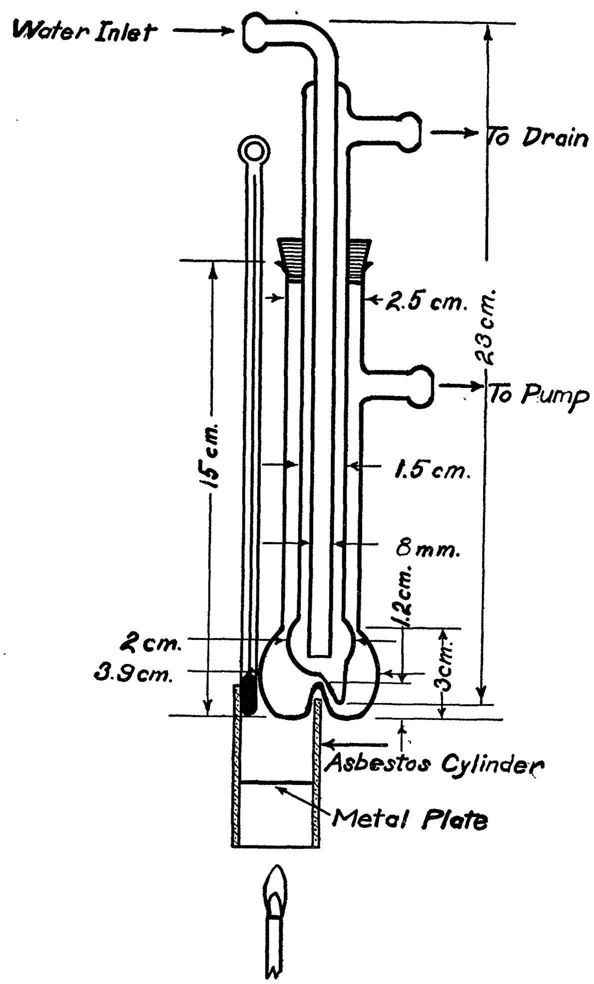


FIG. 1

The still consists essentially of a two-lobed glass flask. One lobe is for the material which is to be distilled, and the other is for the distillate. The vapors condense on the internal condenser, and the condensate drips off the teat into the receiving lobe.

When the still was used, the lobes were thermally separated by a thin strip of asbestos paper which encircled the distilling lobe and a thermometer bulb. A small metal plate was fastened in the center of this asbestos cylinder. An air-bath was constructed in this way, and the metal plate was heated by a micro burner. The receiving lobe was cooled by a wrapping of cloth wick which was kept moist by placing one end into a beaker of water. Cold water was run through the condenser. The distilling lobe was filled by the use of a pipette, and at the end of the distillation, the residue, which was a viscous liquid, was dissolved in water and removed by the use of a pipette.

An oil pump which produced a pressure of less than 1 mm was employed for distilling the monoacetate, and found to work well with a temperature difference of about 25° between the lobes.

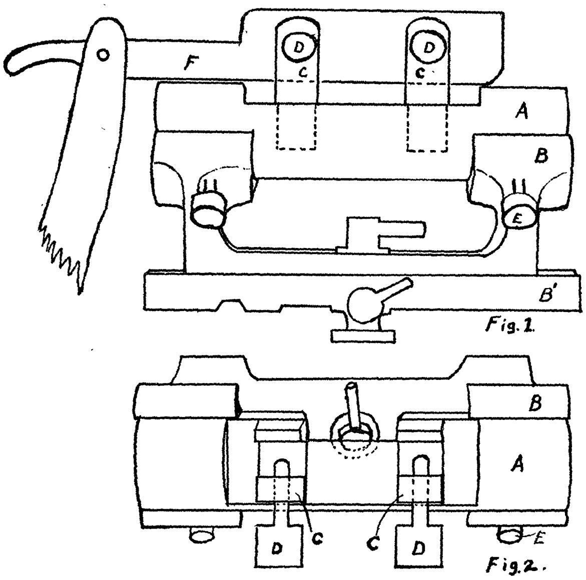
If more involatile substances are encountered, the distillation may be facilitated by the use of a mercury or butyl phthalate pump backed by the oil pump, and a greater temperature difference attained by surrounding the receiving lobe with a freezing mixture held in a tin vessel bent to the proper shape. The condenser can be cooled better by circulating cold brine through it, or by vacuum-evaporating ether in it.

CHARLES L. BERNIER

THE OHIO STATE UNIVERSITY

NEW TYPE RAZOR HOLDER FOR ROTARY MICROTOME

THE razor holder here described was designed for use on the Spencer rotary microtome. The ordinary heavy microtome knife has been objectionable because of the time required and the difficulty of honing it properly for good paraffin sections. Safety razor blades have been used in various types of holders with only partial success. The razor (Fig. 1, F) has



FIGS. 1 and 2

been used by the author for more than two years with excellent success. It can be stripped and honed on a good quality slate hone in six to eight minutes, thus causing very little delay where a large number of preparations are to be turned out.

The razor holder (A), designed by the author and made by a student in the mechanical engineering department at a very nominal cost, replaces the microtome knife clamps in the base (B). It was made from $1\frac{1}{4}$ inch bar steel turned down to fit in the base (B), with sufficient play for electroplating. One side was leveled off to lower the height of the razor edge and give a base for the razor clamps (C). The clamps were made from flat steel $\frac{7}{8}'' \times \frac{1}{2}''$, one end turned down to $\frac{3}{8}''$, threaded and screwed into (A) $1\frac{1}{2}''$ apart. The opening in the clamp is $\frac{3}{8}''$ and just deep enough to keep the edge of the razor above the clamp (Fig. 1). Loosening the set screws (D) permits shifting of the razor, thus giving a maximum of cutting surface. Where a two-part base is used (B and B^1) the clamps could be spaced farther apart, making it easier to handle the ribbon and still secure the maximum cutting surface of the razor edge. A section of the bar (A) was cut out between the clamps as shown in the top view (Fig. 2) to allow the paraffin block to pass.

The type of razor and holder shown here is especially adapted for the investigator who has small material to work with and who wishes to get a large number of good sections in a limited time. Sections of fruit up to $\frac{3}{4}$ inch in diameter have been cut by the author. For larger sections the regular microtome knife would perhaps be more satisfactory.

This type of holder is also adapted for use in large classes in technique where each student is held responsible for the condition of his own razor.

G. F. GRAY

MICHIGAN STATE COLLEGE

A SIMPLE PUMP FOR INFLATING BALLOONS

THE science teacher occasionally needs a buoyant balloon for demonstration purposes, but he may find no apparent means at his disposal for securing it. The pressure in the gas mains is much too low to inflate a rubber balloon, and few laboratories are equipped with pressure tanks of hydrogen. The writer suggests the use of a second balloon to serve as pump for the balloon to be inflated. The only requirements are a T-tube, one or two stopcocks or pinchcocks, a little rubber tubing and patience.

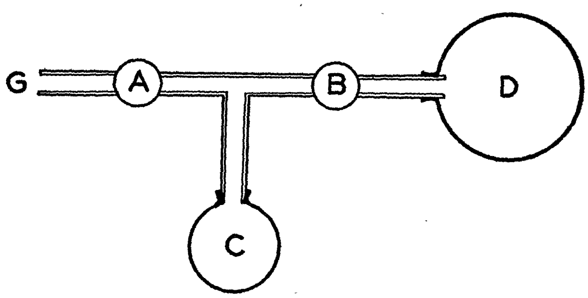


FIG. 1

Attach the T-tube through stopcock A to the gas main at G. Fasten the balloon D beyond the second stopcock B. The "pump balloon" C, similar to D, is attached to the arm of the T-tube by an elastic band. If only one stopcock is available, the gas-outlet valve itself may serve for A. Now, with B closed, open A to admit gas to balloon C. Close A, open B and squeeze the gas from C to D by applying pressure to C with the hands. Then close B, release C and open A. Repeat this cycle of operations until D is inflated to the desired size. This pumping action may be accomplished rapidly, once the rhythmic operation of valves is learned.

As is well known, two or three such floating balloons, fastened to a common mooring by threads of the same length, make a remarkably effective "electroscope" for demonstrating the presence of ionization in the air. When charged by friction, the balloons stand far apart, but ionization of the air produced by x-rays or a neighboring flame causes them to approach one another rapidly.

RICHARD M. SUTTON

HAVERFORD COLLEGE