neers who are familiar with the use of the stereoscopic plotting instruments for photographic mapping.

These, then, are briefly the conclusions reached by the congress of the International Federation of Surveyors regarding what were considered as the two most outstanding topics in the field of improvements in the instruments and methods of surveying.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

BUTYL ALCOHOL AND CYTOLOGICAL TECHNIQUE

SEVERAL years ago the writer[1] described the advantages of *n*-butyl alcohol in dehydration and clearing specimens for paraffin embedding. Hemenway,[2] Earl,[3] LaCour,[4] Waterman[5] and Stiles[6] among others have extended and modified the technique so that now *n*-butyl alcohol is used in preparing many different types of material for embedding, and most cytological laboratories have a supply on hand. The purpose of this note is to call attention to some minor uses that can be made of this reagent.

A fluid composed of two parts of ethyl alcohol and one of butyl can dissolve both water and xylene and keep them in solution at the same time. Thus a mixture of

water	1 part
xylene	1 "
n-butyl alcohol	1 "
ethyl alcohol	2 " s

forms a single clear liquid. This solution is useful for cleaning slides as it will soften and remove both water-soluble substances (glycerine, glucose, etc.) and those which are fat soluble (immersion oil, balsam, etc.). Dilute ammonium hydroxide can be substituted for the water and carbon-tetrachloride for the xylene. This latter combination forms a very potent cleanser.

Another and perhaps more useful application of *n*-butyl alcohol to the cytological technique occurs in the hydration and dehydration of cut sections. The usual procedure is to place the slides containing the paraffin ribbons into a Coplin jar filled with xylene. When the paraffin is dissolved, the slides are transferred to absolute ethyl alcohol and then through several successive dilutions of alcohol to water. When the sections are stained they are passed back through the series of Coplin jars and mounted in balsam. Unfortunately, some xylene adheres to the slides and is carried on them into the absolute alcohol, where it soon appears as a milky precipitate as the alcohol absorbs moisture from the air. Likewise some alcohol and water are carried into the xylene, which also becomes clouded. In the moist atmosphere of seaside laboratories it is particularly difficult to prevent water from contaminating the absolute alcohol and the xylene. A few drops of *n*-butyl alcohol, however, added to these clouded fluids will clear them immediately, as the butyl alcohol will take both water and xylene back into solution. If the original series is made up as follows, no precipitate should occur.

(1) xylene 100 per cent.
(2) xylene 95 per cent., *n*-butyl alcohol 5 per cent.
(3) absolute ethyl alcohol 90 per cent., *n*-butyl alcohol 10 per cent.
(4) absolute ethyl alcohol 100 per cent., etc.

The writer has often passed more than a hundred slides through a single series of Coplin jars without renewing any of the solutions or obtaining any precipitate.

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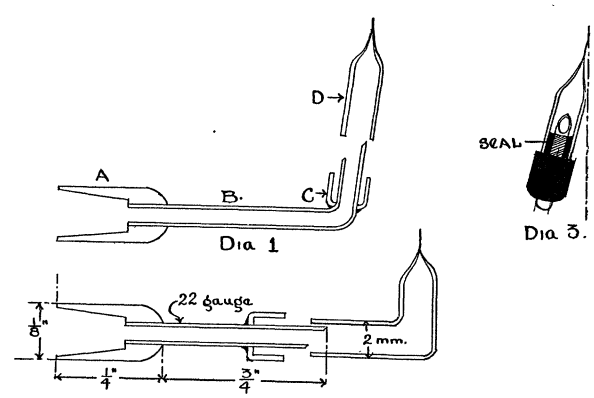
[1] SCIENCE, 71: 103–104, 1930.
[2] SCIENCE, 72: 251–252, 1930.
[3] SCIENCE, 72: 562, 1930.
[4] *Jour. Roy. Mic. Soc.*, 51: 119–126, 1931.
[5] *Stain Tech.*, 9: 23–31, 1934.
[6] *Stain Tech.*, 9: 97–100, 1934.

A MICROPIPETTE ADAPTER

MICROPIPETTES used for single cell isolation and dissection can be made from capillary glass tubing on a machine designed to pull them to a certain size.[1] Mechanically made pipettes require a special mounting or adapter before they can be used satisfactorily in a manipulator. Once mounted, however, they offer the advantages of being in a certain position and can be easily changed.

The adapters described herein are improvements over devices previously described.[1, 2] Diagram 1



Dia 1. Dia 2. Dia 3.

[1] J. Arthur Reyniers, *Jour. Bacteriology*, 23: 2, February, 1932, pp. 183–192.
[2] *Ibid.*, 26: 3, September, 1933, pp. 251–287.