foil in the tube ahead of the stopcock to stop the tip, and later adopted a large bore stopcock so that the tip would pass through. Since large bore stopcocks are in general not as gas tight as the small bore, the author several years ago suggested the use of a simple inner seal in the tube placed ahead of

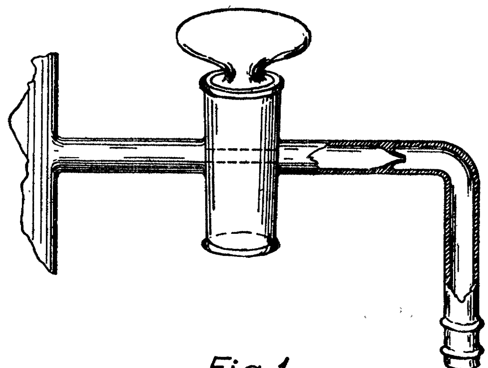

Fig. 1.

the stopcock (Fig. 1.). This method was adopted by the Radium Station of the United States Bureau of Mines, of which Dr. Lind was at that time director, and is being made. Certain objections have been raised to the small hole necessitated by the inner seal, with the result that an alternative model which has cross pieces of glass rods in the tube, as shown in Fig. 2, has been placed on the market.

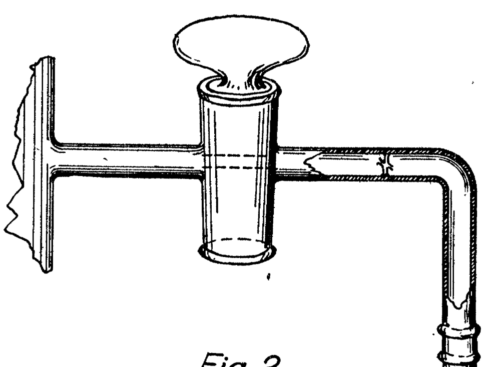

Fig. 2.

Both these types involve rather fragile parts unless well annealed and would be rather difficult for the amateur to make. The device indicated in Fig. 3 is simple to make and will effectually stop all glass tips, since they are carried naturally in a straight line and will drop back to the flask after spending their energy in the trap A. The angle is given in order to increase the difficulty of the tip passing the point A and arriving at the stopcock. The bulb at A is made short enough to insure the possibility of completely removing all gases from it during the boiling-off process. It is made by sealing off one leg of a T-tube close up to the joint.

The importance of allowing the emanation to grow in a glass sealed vessel is better realized when we remember that, even though we seal the flask under reduced pressure (easily done by inserting the stopper while the solution is still steaming) a very minute leak in the stopper may, in the course of several days or weeks, allow the pressure in the flask to become equal to the pressure outside. Thus far no emanation will have been lost, but if the flask now stands for

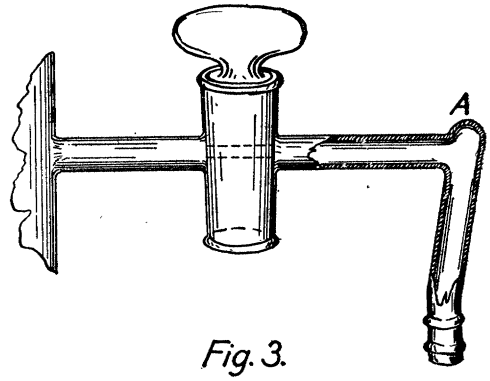

Fig. 3.

several days more, the barometric pressure may vary from day to day, and the temperature of the flask from day to night. The combined effect of these two may cause an excess of pressure of as much as ten centimeters of mercury within the flask. Such a pressure would in certain cases be sufficient to actually raise the stopper from the flask and allow the free passage of the gases to the outside. These conditions actually exist and become evident when we attempt to calibrate a beta-ray electroscope by means of standardized pitchblende, carnotite or radium solutions. With rubber stoppers and tubes closed with pinchcocks the most erratic results are obtained. When we resort to sealing the solutions in glass, the discrepancies disappear.

We are, therefore, forced to resort to breaking a glass tip, and, as a result, to eliminate the possibility of the tip obstructing the stopcock. The device described above does this successfully without involving a constriction, an air trap or fragile apparatus.

Frank E. E. Germann
Department of Chemistry,
University of Colorado

USE OF THE BINOCULAR MICROSCOPE FOR MOLD AND YEAST COUNTS

The undersigned, while applying the Howard count for molds and yeasts and spores to frozen and canned berries, jams and tomato products, found that the use of a binocular compound microscope, preferably the built-in model, rather than the attachable one, was admirably adapted for this work. With mold counts eye-strain was reduced to a minimum and the stereoscopic effect, producing a greater depth than a monocular microscope, made it much easier to discern the mold in masses of fruit pulp.

As a field of 1.382 mm diameter is specified, it was found that a Bausch & Lomb binocular microscope of 163 mm tube length, with $\times$ 10 eyepieces and 16 mm objective, gave a field of 1.422 mm diameter. Therefore, for all practical purposes, a binocular microscope of this type can be used. It is recognized that a small error in the diameter of the field exists. This error amounts to 0.04 mm or less than 3 per cent. Considering this slight increase in diameter of the field in addition to the greater ease of distinguishing mold filaments in masses of pulp, it is probable that slightly higher counts will be recorded by the use of this instrument. The error is so small, however, that for ordinary laboratory or commercial work it may be disregarded, particularly so since the mold count itself is subject to considerable variation.

With yeast and spore counts as well as bacteria, both the built-in and attachable binoculars are being used by us, as it is not imperative that any particular magnification be used. For this reason the error just discussed relative to the mold count is irrelevant in this case.

Daylight was found to be preferable for mold counts, but checks with daylight counts were secured with electric light and the use of a disc of cobalt glass below the condenser. For yeast and spore counting the writers prefer artificial light, as it can be better controlled than daylight. It may be noted here that no particular form of light is designated in the latest edition of the "Methods of Analysis," of the Association of Official Agricultural Chemists.

George H. Needham
Carl R. Fellers
University of Washington

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

AUDITED FINANCIAL REPORT OF THE PERMANENT SECRETARY FOR THE FISCAL YEAR, 1923

(October 1, 1922, to September 30, 1923)

Approved by the council at the third Cincinnati meeting and ordered printed in Science

Dr.

To balance from last account:			
Checking account		$1,078.40	
Savings account:			
Emergency	$4,497.68		
Publication fund (for Proceedings)	1,500.00	5,997.68	$7,076.08
To receipts from members:			
Annual dues, previous to 1922		$ 82.00	
Annual dues for 1922		840.00	
Annual dues for 1923		51,755.00	
Annual dues for 1924 (paid in advance		290.24	
Entrance fees		935.00	
Life membership fees		2,695.00	
Associate fees		65.00	56,662.24
To other receipts:			
From Treasurer's Office:			
For life members' journal subscriptions		$2,151.00[1]	
Sales of publications		67.65	
Postage, overpayments, etc.		294.16	
Interest on bank account		276.30	
Unexpended balance from New York (1916) Meeting		97.53	
Gift from Newcomb Cleveland		500.00	3,386.64
Total			$67,124.96

Cr.

By publications:			
Publishers Science			$33,199.78
By divisions, local branch and academy allowances:			
Divisions		$1,357.00	
State College (Pa.) local branch		29.00	
Affiliated academies		1,440.00	2,826.00
By Expenses, General Secretary's Office			98.45
By Expenses, Washington Office:			
Salaries		$8,779.35	
Office and addressograph		230.40	
Printing and stationery		1,346.14	
Telephone and telegraph		175.57	
Postage, correspondence and billing		756.12	
Exchange		15.86	
Express, freight and drayage		36.68	
Notary fees		2.75	
Miscellaneous		333.10	11,675.97
By circularization expenses			1,469.54
By miscellaneous expenditures:			
Refunds on account of overpayments		$ 23.80	
Life membership fees, to treasurer		2,700.00	
Newcomb Cleveland gift, to treasurer		500.00	
Contribution to American Institute of Sacred Literature		100.00	
Contribution to International Annual Tables of Physical, Chemical and Technological Data		200.00	
Boston (1923) Meeting:			
General expenses	$1,099.41		
Preliminary announcement	1,490.00	2,589.41	
Los Angeles (summer, 1923) meeting		219.75	
Travel expenses		2,365.68	
Section expenses		165.21	
Grants committee expenses		36.44	8,900.29
			$58,170.03
By new balance:			
Checking account		$ 180.95	

[1] Includes $1,107.00 on 1924 account.