

REPORT OF

COLOR GLASS DEVELOPMENT

COMMITTEE

A. O. C. S.

THIS committee was appointed by President Harris on July 1, last year, to locate a more reliable source of supply of Lovibond color glasses. Every member of the Society is more or less familiar with the difficulties attendant to their use, both from the standpoint of inaccuracies in grading and from inability to obtain delivery within any reasonable length of time.

Repeated efforts on the part of individual members of the Society as well as various committees to interest the Lovibond establishment in correcting these troubles have failed. While the committee holds no brief for Lovibond's apparent unwillingness to concern themselves with our problems, it is to be said that at least a partial explanation of their sustained apathy has been found.

At first glance the problem would seem to be a simple one. It would appear that most any experienced manufacturer of colored glass should be able to reproduce the Lovibond slides without the employment of special technique or apparatus. But such is far from the facts in the case.

The two principal factors upon which the accuracy of the slides depend are:

- (1) The spectral transmission of the colored stock glass used as raw material.
- (2) The precision with which the slides are ground to conform to their marking.

Discussion of the first factor with several technical men competent to speak authoritatively on the subject has elicited the information that the art or science of the manufacture of colored glass has not developed to the stage where it can be reproduced with any degree of certainty, as far as its spectral transmission characteristics are concerned. Slight qualitative or quantitative differences in chemical composition, the merest traces of impurities, as well as physical factors, temperature, rate of cooling, etc., alter to a marked degree the optical properties of the glass which determine its suitability for Lovibond slide-making.

If this state of affairs invites a question, the answer is quickly found. There has been, and is now, not enough of a market for colored glass meeting the rigid specifications demanded of Lovibond slides to warrant any manufacturer's underwriting the expense of developing a process to make it.

The solution of the problem involved in the second factor stated above offers somewhat more encouragement but it also is complicated by economic considerations. While it should be possible to evolve an at least

partially automatic machine for grinding the glasses to the thickness required to give the color indicated by their graduation, no such device exists to our knowledge. According to the best information available, this part of the manufacturing process is entirely a cut and try procedure, each glass being alternately ground by hand and compared visually with a standard until it is deemed satisfactory.

In any case, to overcome the tedium and excessive labor cost of such a primitive method of calibration will necessitate the expenditure of a considerable sum of money. Your committee is still endeavoring to find some company willing to assume this expense.

The data accumulated to date as a result of the work of this committee point strongly to the conclusion that

the only ultimately satisfactory solution of the problem of oil color determination lies in the direction of development of a colorimeter whose operation is entirely independent of the vagaries of colored glass. Such a method of color determination already exists in the form of the spectrophotometer but those commercially available today are too costly for our use. They do provide, however, a means of expressing in fundamental physical units all the data required to define specifically a color.

Even though their cost could doubtless be considerably reduced with quantity production in simplified form, there remains a gap to be bridged in devising some scheme by which these fundamental units can be translated into Lovibond units or into terms having the same practical significance to oil chemists and refiners.

As a first step in that direction, through the courtesy of Dr. K. S. Gibson, Chief of the Colorimetry Section of the Bureau of Standards, Mr. Mc-Nicholas has agreed to collate and prepare for publication a large amount of

spectrophotometric data on eighty or more vegetable oils accumulated some years ago at the Bureau. When this is ready it should be possible, by comparison of the spectral transmission curve of the individual oil itself with the curve of the combination of glasses used to express its color in Lovibond units, to arrive at a conclusion as to whether any other system of color determination can be devised which will avoid the use of glasses without sacrificing the simplicity and convenience of the Lovibond numerical scale. If the results of this investigation offer any encouragement we will at least have something concrete to present to the optical instrument manufacturer as a basis for the development of a satisfactory colorimeter.

The work of the committee is then proceeding along two lines:

(1) Investigation of possibility of correcting the glasses as now furnished by Lovibond by grinding and polishing to the proper thickness. In this connection it is to be noted that, with few exceptions, the glasses have in recent years given higher values than their original

grading after being calibrated at the Bureau of Standards. This would accordingly indicate that they could be adjusted to their correct value with a minimum of grinding and polishing.

(2) Investigation of possibility of devising a colorimeter which will function without the use of colored glass but will permit color to be expressed in terms of Lovibond units. No conclusions can be drawn regarding this phase of the work until a report on the data collected by the Bureau of Standards is available.

Your chairman has nothing further to report at this time. He wishes to express his appreciation for the assistance and worthy suggestions given by the members of this committee and Dr. K. S. Gibson at the Bureau of Standards.

If it is the wish of the Society that the Color Glass Development Committee continue to function until something more definite can be stated concerning the problem before it, we will gladly carry on.

Submitted by:
L. M. GILL, *Chairman.*

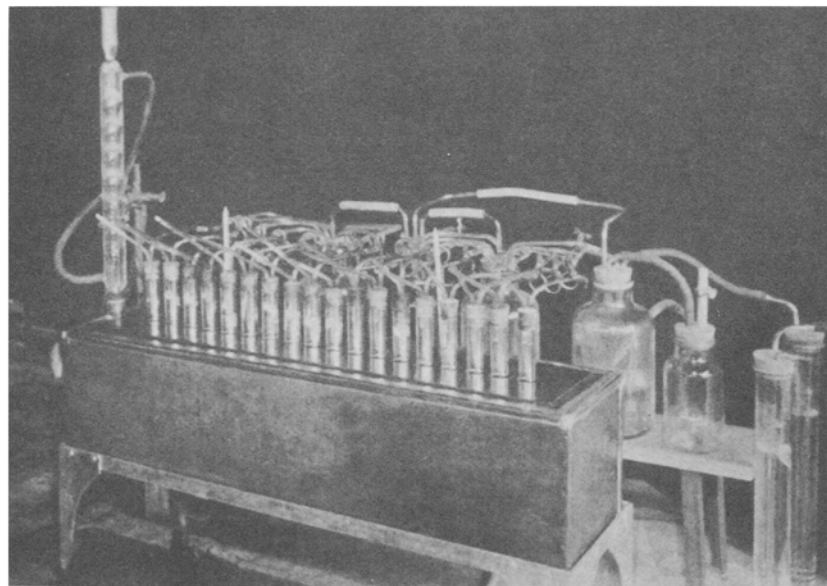
NEW DEVELOPMENTS

Improves Filler

The Hy-Speed automatic multiple spout vacuum bottle filler, one of three

new units perfected by Alsop Engineering Corporation, New York, embodies many modern improvements. All excess gadgets have been replaced

by simplified, efficient parts. The machine operates with speed, accuracy and utmost economy. All overflow containers have been eliminated; a constant vacuum is maintained at all times which means faster and more even filling; the direct driven slow speed pump will stand long wear and tear. Bottles of many sizes and shapes are filled to any desired height, but cracked or leaky ones are rejected. The automatically sealed "no drip" filling spouts insure perfect cleanliness and neatness, and enable the bottler to label his bottles before filling them, thereby eliminating any excess handling of full bottles. This new machine sells for a surprisingly low price. The new Hy-Speed revolving conveyor tables are very rigid in construction and are balanced perfectly. The one-piece top, set in bearings, is of solid aluminum, and revolves with a touch of the finger. These new units are low in price and are of extreme value in any plant in that they can be used in several ways and, in addition, conserve a great deal of floor space. Ball-bearing rubber-tired wheels make for ease and simplicity in moving the tables from place to place. The tables can be raised or lowered to any desired height, thereby adding to their adaptability in fitting in with any operating throughout the plant where an accumulating or conveying device is required.



Active Oxygen Stability Equipment for Oils and Fats