My suggestions for the procedure for the other determinations follow:

Moisture:

Weigh eight to ten grams of the whole beans and dry three hours at 130° C. in a Freas Forced Draft Oven.

Pre-Drying:

Dry 60 grams for two hours in a Freas Forced Draft Oven at 130° C.

Grinding:

Grind the 60 grams of partially dried beans as fine as possible, putting through the Bauer Brothers' Mill a second time unless the new 3,600 r.p.m. mill is used.

Second Moisture:

Five grams are heated two hours in Freas Oven at 130° C.

Oil:

Extract two gram portions wrapped in filter paper as a seed for two hours, regrind in a mortar and re-extract three hours' additional.

Ammonia:

Use 1.4 or 1.7 grams and follow the method for cottonseed meal.

Free Fatty Acid:

If this determination is desired it can be made by following the procedure for cottonseed by partially drying and grinding through the official food chopper. It may be necessary, however, to run the beans two or three times through the food chopper to get them fine enough so that the official 7.05 grams of oil will be obtained.

Calculation of Results:

Recalculate oil and ammonia to the original moisture basis. Report moisture and oil to the first decimal, ammonia to the second decimal.

Calculation of Yields:

For uniformity I suggest the use of definite fixed moisture and oil percentages left in the cake. The average is probably about 7.5 per cent moisture and 5.0 per cent oil. The yield of cake and available oil from the beans can then be calculated from the analysis as follows:

Add together the pounds of moisture and the pounds of oil in a ton of beans. Subtract this figure from 2,000 lbs. The result is pounds of dry, oil-free cake. Assuming the above moisture and oil percentages will be left in the cake this dry, oil-free cake is 87.5 per cent of the total cake.

The oil left in the cake is 5.0 per cent of this total cake and the oil yield the difference between the pounds of total oil and the oil in the cake. The ammonia in the cake is calculated by dividing the pounds of total ammonia by the weight of cake and multiplying by 100. The moisture and manufacturing loss of the beans is the difference between the sum of the cake and available oil and 2,000 lbs.

Example of Calculation of the Yields:

Assuming beans analyze—
Moisture — 12.5
Oil — 17.3
Ammonia — 7.20
250 lbs. Moisture
346 lbs. Oil

2,000—596 = 1404 lbs. dry, oil-free cake = 87.5% of total cake.
1404 ÷ 87.5 % × 100 = 1604 lbs. total cake.
1604 × 5.0% = 80 lbs. oil in cake.
346 total oil — 80 = 266 lbs. of Available Oil. 144 lbs. ammonia ÷ 1604 × 100 = 8.97% ammonia in cake. 2000 lbs.—(cake 1604 plus oil 266) = 130 lbs. manufacturing loss.

Report of Color Glass Development Committee

BRIEFLY reviewing the past work of this committee it will be recalled that its efforts were directed toward sounding out the possibilities of readjusting the glasses as at present furnished by the Lovibond establishment to conform more closely to the N″ scale developed by the Bureau of Standards and accepted by the Society as standard.

During the early part of last year this problem was brought to the attention of the Electrical Testing Laboratories of New York City by the committee. They were immediately interested and after a preliminary investigation by their Dr. Roger S. Estey, agreed to undertake the work.

The necessary equipment was purchased and installed. This was described in a lantern slide lecture given by Dr. Estey before the members of the Society in attendance at the Memphis meeting last year.

The method of readjusting the glasses depends upon reduction of their thickness by polishing with cloth and rouge. The amount of polishing required for any given glass is estimated from a preliminary calibration. The glass is then polished for a given time at a given pressure and recalibrated. In order to arrive at an accurate N″ value, the glass must be repolished and rechecked several times.

Since it is of necessity a "cut and try" process it is obviously time-consuming and requires a high degree of technical skill. The actual change in thickness of the glass is of the order of magnitude of a few thousandths of a millimeter.

To date the Electrical Testing Laboratories have received and readjusted

From Referee Laboratories, 43 glasses

From Refineries, 68 glasses
or a total of 111 glasses.

When this committee was first organized it was thought it might be possible to interest one of the manufacturers of colored or optical glass in producing Lovibond slides conforming to the N″ scale without readjustment. All possible sources have been investigated without success. The various glass companies declined to attempt their manufacture on the ground that it would be economically unsound. The cost of the development and research involved would far overshadow the maximum returns that could be expected.

The present solution of the problem, while it may not be ideal, is at least practical and a great improvement over what existed before. It is now possible for both referee and refinery chemist to work with glasses having no practically significant difference in N″ value.

Respectfully submitted,
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Dr. Roger S. Estey,
Dr. T. G. Richert,
Mr. Arthur Schroder,
Mr. P. E. Ronzone,
Mr. W. A. Welch.
L. M. Gill, Chairman.