perature inside the cottonseed was measured during the dielectric heat treatment. Temperatures above 100°C. were attained in less than one minute.

Acknowledgment

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Report of the Referee Board

FOR the year 1947-8 28 referee certificates were issued, including 26 renewals. The full list has been published in the Journal of the American Oil Chemists' Society except for the name of Dan L. Henry of Law and Company in Atlanta. There are also pending four new applications for appointment as referee chemist.

The only thing unusual in the experience of the Referee Board during the past year has been a large number of inquiries regarding new referee certificates and the fact that most of these are not resulting in actual filing of an application. Official analysis and grading of oil bearing seeds and derived products has become a very complicated subject. We have federal government supervision of seed grading, with a system for cottonseed which evolved from a system concerned with grading the cotton fiber, and with another system for soybeans which is in course of evolving from the grading system on grains. Then we have separate trade associations which appoint official chemists, each having its own routine for making appointments. Both the N.C.P.A. and the N.S.P.A. require official chemists to be referee chemists of our Society. Imagine the state of mind of a young chemist who first is urged by a soybean crusher to become an official chemist on soybean products, then writes to N.S.P.A. headquarters, is then referred to the chairman of the N.S.P.A. Technical Committee, is next referred to the chairman of the Referee Board of the A.O.C.S. (of which the young chemist may or may not be a member), and still faces the problem of dealing with the Department of Agriculture on beans even if he masters the intricacies of the A.O.C.S. and N.S.P.A. literature concerned with official analysis and grading of the oil and of meal.

The Referee Board is in a better position to observe than to correct this complicated situation. At present, we merely call it to the Society's attention.

G. W. AGEE
J. P. HARRIS
R. R. KING
R. T. MILNER
A. S. RICHARDSON, chairman

Report of the Cellulose Yield Committee, 1947-48

DURING the past year four sets of linter samples of three grades were sent out to 11 laboratories. One laboratory, number 4, reported only two sets of results so these results are omitted from the report. The average yield results for the three types of linters sent out are given below:

Lab. No.	No. Sets Samples Tested	Samples			Overall Average for Year
		A Linters	B Linters	C Fiber	
1	4	77.2	72.6	72.2	74.0
2	4	77.0	72.7	72.7	74.1
3	4	76.3	72.2	71.8	73.4
5	4	76.1	72.1	71.5	73.2
6	4	76.9	72.6	72.1	73.9
7	4	76.9	72.5	71.7	73.7
8	4	77.3	72.4	73.1	74.3
9	4	76.9	71.8	71.1	73.3
10	4	77.4	72.7	71.9	74.0
11	4	77.2	72.9	72.7	74.3
Average	....	76.9	72.5	72.1	73.8

As seen from the above table, the average results show very good agreement between laboratories.

Recommendations

It is recommended that samples be sent out to all laboratories which request the samples during the next year at least four times, as it has been shown that a frequent checking of the method and equipment is necessary for consistent agreement of results between laboratories.

E. C. AINSLIE
M. G. BOULWARE
C. H. COX
W. S. HUDE
E. H. TENENT
L. N. ROGERS, chairman

Report of the Gossypol Analysis Committee, 1947-48

WHEN solvent extraction plants first began to process cottonseed in 1947, there was an urgent need for a quantitative analytical method for gossypol which would give concordant results when used by laboratory technicians and would require a minimum of time and cost. To meet these requirements this committee chose for study the established spectrophotometric method of F. H. Smith, Industrial and Engineering Chemistry, analytical edition, vol. 18, 43-45 (1946) and the modification, unpublished, proposed by W. T. Coleman. The latter uses a single mixture of isopropanol and water in place of the several ethanol mixtures required by the Smith method and is therefore simpler, quicker, and less expensive.

As a variety of photoelectric instruments were being used by the several committee members, it was considered advisable to have data on the instruments in use and the readings as found, as well as the translation of readings to per cent gossypol. An isopropanol extract of cottonseed meal and an aniline developed solution of the same were sent out to each committee member to be read on the same day. Re-

TABLE 1

Name	1 Type and Model of Colorimeter or Spectrophotometer	2 Filter Used	3 Cell or Tube Used	4 Scale Reading A	5 Scale Reading B	6 Per cent Gossypol Reported on B with A as Blank
Rettger	Klett	No. 44	Cell 20 x 40 mm.	67	222	.068
Mehlenbacher	Beckman	445 mμ wave length	0.998 cm. cell	85.3	52.0	.075
Mehlenbacher	Coleman Model 11	PC-4	1 cm. cell	82	57	.056
Sewell	Beckman	445 mμ wave length	0.999 cm. cell	.074	.256	.064
Sewell	Klett	No. 44	2 cm. depth cell	.061	.218	.066
Lyman	Beckman	440 mμ wave length	1.000 cm. cell	.075	0.275	.070
Coleman	Beckman	445 mμ wave length	0.998 cm. cell	.077	.292	.075
Woodson-Tenent	Beckman	445 mμ wave length	1.000 cm. cell	.073	.283	.074

(B is 2 g. meal extracted with 100 ml. isopropanol from which a 10-ml. aliquot was diluted to 50 ml.)

sults as tabulated in Table 1 show good agreement except for one instrument. Certain photoelectric colorimeters, cheaper and simpler to operate than the Beckman spectrophotometer, can be used satisfactorily after calibration.

Four samples of cottonseed meal, two of high and two of low gossypol content were analyzed by the committee members during the year. Results are tabulated in Table 2. For control purposes gossypol should be reported only to the second decimal. It will be seen that to this degree of precision the two methods are in fair agreement and that a majority of the analysts obtained concordant results on each of the samples.

TABLE 2

Collaborators	Samples No. 1		Samples No. 2		Samples No. 3		Samples No. 4	
	Coleman	Smith	Coleman	Smith	Coleman	Smith	Coleman	Smith
No. 1	.050	.065	.048	.061	.482	.440	.438	.428
No. 2	.051	.055	.054	.060	.493	.441	.457	.423
No. 3	.082	.077	.048	.066	.551	.491	.427	.386
No. 4	.045	.064	.040	.....	.468	.483	.413	.....
No. 5	.050	.060	.044	.60	.410	.410	.394	.390
No. 6	.058	.....	.076	.....	.527	.....	.471	.....
Average	.056	.064	.051	.061	.488	.453	0.427	0.415

Examination of the data shows that relative to the Smith method results, the Coleman results are lower on low gossypol content meal and higher on high gossypol meal. This unexplained difference in the two procedures was also established by one of the collaborators on several hundred determinations. The results of analyst No. 6, however, who reported only on the Coleman method, were generally higher than those by the other members on either method.

A 100-mg. sample of pure gossypol was sent to each committee member from the Southern Regional Research Laboratory through the courtesy of Dr. Charlotte Boatner. Results by the two methods as reported by the collaborators were so non-uniform that no conclusions could be drawn except that a high degree of precision is required in preparing pure gossypol for colorimetric analysis.

The committee has found that the Coleman method gives results in fair agreement with the Smith method for gossypol and has the advantages of simplicity and economy.

It is recommended that collaborative work be continued and that the reason be sought for the above mentioned differences in results by the two methods. Data should be accumulated on feeding tests so that the gossypol content as found by these analytical methods may be correlated with toxicity. The Coleman modification should be published.

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