AMERICAN OIL CHEMISTS' SOCIETY

Notes and Correspondence

Oil Chemists' Golf Tournament

N. C. Hamner, Chairman of the Golf Committee of The American Oil Chemists' Society Twentieth Anniversary Convention at New Orleans, May 13th and 14th, announces that the golf tournament to be held in connection with the convention will be a large and important event, with prizes offered in all handicap classes and a blind bogey handicap as well, which will give each participant the opportunity to win a prize. All members of the Society are urged to be sure to bring their golf clubs to New Orleans with them and take part in this tournament.

"Official" Cotton Seed Analysis

By LEHMAN JOHNSON

THE consensus of opinion among chemists who are called upon to make complete analysis of cottonseed, which includes, 1—Moisture. 2—Oil, 3—Ammonia and 4—Free fatty acids in the oil; is that the present "Official cottonseed analysis," as provided for in Rule 269 of the Interstate Cotton Seed Crushers' Association, must be discarded and a better method found and adopted in its place. The method is so poor and gives such discordant results that it is hardly worth while discussing except to point out its faults for the bearing they may have on finding a better method.

The faults of the "official" method are:—

1st Three different portions of the sample to be tested must be taken to secure the four analyses, a very decided objection and prolific source of error in material as irregular as cottonseed.

2nd The oil and ammonia tests are dependent for correctness upon two different tests for moisture on different portions of the sample, that is upon a test which at present is the least satisfactory and least uniform among chemists, namely the moisture test.

3rd A preliminary treatment of the seed by a chemical, HCl, is required before the analysis is begun, a decided disadvantage even if, as some chemists contend, increased solubility of something in the seed is not caused thereby, which would vitiate the oil test and certainly prevent the possibility of the free fatty acid test being made on the same portion on which the oil test is made.

4th "The eating of the pudding," the use of the analytical methods in practice on varying conditions of seed and by different chemists, shows that they are neither chemist nor fool proof. Complaint is loud and long against them.

Keeping these faults in mind and profiting by them it will certainly be a great gain if

A—We can simplify and render less expensive the over-elaboration of the cottonseed test.

B—We can carefully take one *and one only* portion of the sample of sufficient quantity to be fairly representative and make from that the four required tests.

C—We can use more of the chemist's inexpensive chemicals and thereby save more of the chemist's expensive time.

I suggest the procedure below and ask all chemists interested to set to work immediately on it to that we may present it or something better for adoption at our annual convention of the American Oil Chemists' Society in May.

Suggested Procedure for Simplified Seed Analysis

1—Take with all proper precautions a single portion of ten grams plus a leeway of one or two seed of the cleaned cotton seed as nearly representative of the sample as received as possible and make all four determinations on this single portion as follows:-

2—Crack, without grinding or separating, the entire portion in a mortar.

3—Weigh out exactly ten grams into a tared or balanced moisture dish.

4—Dry exactly four hours at 102-3 degrees C. for MOISTURE.

5—Immediately, without absorption of moisture, grind in an iron mortar (ten inch best with good heavy pestle) the whole after adding 2.5 grams of ground glass to the uniform mixture which is easily possible.

6—Place the whole in filter papers, using a Butt tube and a 50 cc. extraction flask having a file mark on the next showing 66 cc. contents when filled to this mark.

7—Add 30 cc. of the standard petrolic ether and extract four hours without regrinding.

8—Without evaporating the ether fill with more ether to the 60 cc. mark.

9—Mix thoroughly till all fat is dissolved. Remove and set aside for the free fatty acid test 30 cc. of the mixture.

10—Evaporate off the ether from the half portion remaining in the flask and weigh for OIL.

11—Remove the entire residue from the filter into an 800 cc., Kjeldahl flask which has a file mark on the neck to show when filled to 900 cc.

12—Add 1 gram of mercuric oxide, 15 grams of postassium sulfate and 50 cc. of sulfuric acid.

13—Digest in the usual way (the previous removal of the oil and moisture makes this fairly easy).

14—Fill with water to the 900 cc. mark. Pour off 600 cc., preserving in case duplicate or triplicate test for ammonia is wanted. Add the usual reagents, distill as usual and calculate AMMONIA.

15—Return to the 30 cc. petrolic ether oil solution. Add 15 cc. of neutral alcohol, 0.5 cc. of 1% phenolphthalein solution and titrate with tenth-normal alkali. The weight of the oil is known from the other half evaporated off for oil and the calculation is easy for—FREE FATTY ACID.

I happen to have a large sample of uniform cottonseed on which much cooperative work is being done and of which I will send a portion to any chemist applying who will send 10 cts. in stamps for container and postage and will report his results to me.
Memphis, Tenn.

Goldsboro, N. C.

The Editor,
Oil & Fat Industries,
New York, N. Y.

Sir:

Your readers may be interested in the following modification of the method for determining ammonia in cottonseed, which contains nothing new except the large quantity of seed taken for the analysis. I have tried out this method pretty thoroughly and have found it very satisfactory. The method is as follows:-

Weigh 17 grams of cottonseed into a Kjeldahl flask containing 2.5 grams metallic mercury, or its equivalent in mercuric oxide, and 50 grams anhydrous sodium or potassium sulphate. Add 125 ml concentrated sulphuric acid and digest for two hours. Cool. Make up to 500 ml and pipette 50 ml aliquot into the usual distillation flask. Add about 300 ml water and sufficient sodium or potassium sulphide solution to precipitate the mercury (half the quantity usually used is sufficient, since the aliquot employed contains only 0.25 grams of mercury). Add slightly more than enough sodium hydroxide solution to neutralize the acid present—the aliquot used contains 12.5 ml acid. Add zinc and distil in the usual manner, calculating the results on the basis of 1.7 grams sample. It is better to use an 800 ml Kjeldahl flask for the digestion because when such a large sample is used serious frothing sometimes occurs if the smaller flask is used. It will be found convenient to have a mark on the digestion flask at the 500 ml level so that the melt may be diluted to the proper volume without transferring to a regular volumetric flask. Distillations should be done in duplicate.

Very truly yours,
W. B. BYERS

19, Lockwood St.
Driffield.
Yorks. E.
England.

The Editor,
"Oil and Fat Industries"
136, Liberty St.
New York.
U. S. A.

Sir:

I am very sorry to see from the Editorial Note on Page 43, Vol. VI, No. 1, of the *"Oil and Fat Industries"* that I have not made myself clear on the question of heating with either hot water or with steam at the same temperature.

Your note refers to the amount of heat given up by saturated steam when heating another medium, being itself condensed at the same pressure in so doing. My remarks in the first paragraph that you asterisk refer neither to the amount of heat nor to the available heat on condensation.

You will see on re-reading the paragraph that my remarks refer entirely to the subject of rate of heat transference and the only reference to amount of heat is in reference to the furnace heating the two media. Unfortunately in paragraphing, a device not adopted by me in my original paper, you have separated the statement "the furnace is only called upon (in the case of the hot water closed circuit) to make good the loss" from its context. Moreover you have lost sight of the fact that rate of

transference is the subject of the sentence and *not* quantity of heat transmitted.

In the second statement that you asterisk I state that the "Sensible Heat" is liable to be lost. Since the "Total Heat" of the steam is this "Sensible Heat" plus the "Latent Heat" it follows that if the latent heat is used, as stated in the note, that the sensible heat is liable to be lost and thus my statement and your note on it are only different ways of saying the same thing. As you go on to remark, even this sensible heat may be largely recovered and I, in my paper, carefully covered this aspect by saying that the sensible heat is *liable* to be lost.

Under any given set of conditions it is the temperature of the heating medium which determines the actual rate of transference of heat. Now the question which I set myself to answer was "What is the comparison between the heat which must be supplied to cold water in order to use it as a heating medium in the form of (a) Hot water under pressure; (b) Steam at the same pressure. You will notice that the quantity of heat available for heating from the media did not enter into the question at all.

The answer to the question is that the hot water will require less heat than the steam to the extent of the latent heat of the steam for the pressure. (Note;—Owing to slight differences in the specific heats of the steam and of the hot water this answer is not *theoretically* accurate, but for all practical purposes it is.)

You will thus see that the statements as read are in order and therefore must stand as they were read.

You will pardon the length with which I have dealt with this matter but if the result is that a little less confusion exists regarding the matters of heat transference and quantity of heat transmitted the discussion will have been worth while.

Thanking you for the opportunity you have given me for replying to your Editorial Note, I am,

Yours truly,
THOMAS ANDREWS.

Louis M. Roeg, since 1925 chief chemist of Brewer & Company, Inc., Worcester, Mass. and recently reappointed Chairman of the Olive Oil Committee of The American Oil Chemists' Society, has become Sales Manager of Lucidol Corporation, Buffalo, N. Y., manufacturers of organic peroxides, which are used for bleaching oils, fats and waxes, as well as other substances.

Referee Applicant

Mr. Harry M. Bulbrook, Industrial Laboratories, Fort Worth, Texas, has applied for Referee Chemist's Certificate of the American Oil Chemists' Society on all products covered by the Rules of the Interstate Cottonseed Crushers' Association.

Conventions Scheduled

The thirty-third annual meeting of the Interstate Cotton Seed Crushers Association will be held May 15 to 17 at the Roosevelt Hotel, New Orleans. The rules committee will be in session May 13 and 14, also at the Roosevelt.

Arrangements have been made for reduced railroad rates on the certificate plan.

The program for the convention will include many important subjects for discussion and problems to be solved, among them the code of trade practice, unification or reorganization, seed grading and the like.

The thirty-fifth annual convention of the Texas Cotton Seed Crushers' Association will be held at El Paso June 5 to 7. The rules committee will meet June 3 and 4.

Swift & Co. has filed a complaint with the Interstate Commerce Commission seeking lower freight rates on shipments of fertilizer

Exports of China wood oil from Hankow and fertilizing compounds from its plant in Baltimore to points on Long Island.

Tunis Boosts Oils Duties

The duty on olive oil, pure or mixed, exported from Tunis to all destinations has been increased from 35 francs to 40 francs per 100 net kilos. The decree also increases the duty on olive husk oil exported to France or Algeria from 2.50 francs to 7.50 francs per 100 net kilos, effective on the same date. Another decree, effective January 1, increases the export surtax on olive husk oils originating in the fourth and fifth regions of Tunis from 1 franc to 1.50 francs per 100 net kilos. The duty on olive husk oil exported to foreign countries remains 15 francs per 100 net kilos.

V. H. Hunter, broker in vegetable and fish oils and New York representative of the Werner G. Smith Co., has removed his offices from the Woolworth Building to Room 3102, Chanin Building, 42nd St. and Lexington Ave.