Differential Halogen Absorptions

IT IS claimed that the bromine vapor method of determining the degree of unsaturation of fats and oils compares favorably with the Wijs iodine method, is more rapid and often more complete. The chlorine, bromine and iodine absorptions of the following fats and oils were determined: tung oil and eleostearic acid, linseed oil, rubberseed oil, soy bean oil, coconut oil, corn oil, olive oil, almond oil, whale oil, cod-liver oil, castor oil and ricinoleic acid, peanut oil, fatty acids from peanut oil, oleic acid, fatty acids from parsley seeds, crotonic acid, tiglic acid, maleic acid, fumaric acid, cinnamic acid, cinnamic alcohol, croton oil and the fatty acids from croton oil.

Castor oil and ricinoleic acid absorb more chlorine or bromine than corresponds to the iodine absorption of the Wijs method, probably because of the halogen being substituted for hydrogen as well as absorbed at double bonds. It is suggested that the difference between the values obtained by one hour's absorption by the Wijs and bromine vapor methods may help to indicate the position of the unsaturated bond in the fatty acids of the oleic series. The experiments with substances not oils or fats showed, in general, that the chlorine vapor and bromine vapor methods gave results agreeing closely with the theory except with maleic and fumaric acids, which were very inert under this treatment. *Analyst* 54, 445-53 (1929).

An attempt to establish a factorial relationship between the titer and the refractive coefficient of oils has been unsuccessful, hence it is concluded that hydrogenation cannot be controlled by the refractive index determination, *Maslob, Zhir. Delo* 1928, No. 7, 27-9.

An unconditional most-favored-nation treaty signed between France and Turkey on August 29 carries a reduction in existing rates of twenty percent on coconut oil imports from the former to the latter country. The United States will also receive the benefit of the decrease as this country is a party to the treaty.

Russell Acree, Secretary of the South Carolina Division of the National Cottonseed Products Association, died at his home in Columbia, South Carolina, on October 16. He was a prominent and esteemed member of the Association, formerly engaged in the oil milling business at Darlington, South Carolina.

New Books

THE Fourteenth Annual Edition of the Chemical Engineering Catalog has just been issued by its publishers, The Chemical Catalog Company, 419 Fourth Avenue, New York City. This catalog has become the standard text for equipment purchase reference among chemical manufacturers generally, and the current issue surpasses all previous numbers in variety of equipemnt and chemicals listed. The catalog is mailed free of charge, on the understanding that it is to be returned upon publication of the succeeding edition, to chemists, chemical engineers, works managers, superintendents and others actually engaged in executive work in the chemical industries.

A prominent firm of chemical manufacturers in New York is offering the trade a complete line of anti-oxidants, for the retardation of oxidation in fats, oils, soaps and other products. It is claimed that these products retard the development of the properties of rancidity, which in some cases are attributable to oxygen absorption. The anti-oxidant materials are oil soluble and may be incorporated directly with the fat or oil to be treated. If desirable they may be used in the form of a solution in a suitable organic solvent. In the case of soaps, it is preferable to add the anti-oxidant to the fat before saponification because subsequent decoloration is minimized by this procedure.

The following data obtained with cottonseed oil and cottonseed oil soap are typical as showing retardation or prevention of oxidation by means of anti-oxidants. After exposure of the samples to pure oxygen observations and determinations were made of the volume of oxygen absorbed, the increase if any in free fatty acid, the odor and the color.

Test No. 1—Cottonseed Oil

A—Control—No anti-oxidant
B—Control plus 0.2% anti-oxidant B
Exposed to pure oxygen at 80°C. for 72 hours.

	Oxygen Absorbed	Acidity (% oleic acid) Initial	Final	Gain	Odor After Test	Color After Test
A	1000 cc.	0.15	1.76	1.61	Rancid	Dark
B	110	0.15	0.62	0.47	Trace of Rancidity	No change

Test No. 2—Cottonseed Oil Soap

C—Control—No anti-oxidant
D—Control plus 0.2% anti-oxidant A
E—Control plus 0.2% anti-oxidant B
Exposed to pure oxygen at 50°C. for 24 hours

	Oxygen Absorbed	Acidity (mg. KOH per gm.) Initial	Final	Gain	Odor After Test	Color After Test
C	1050 cc.	0.0	11.2	11.2	Rancid	Very Dark
D	0	0.0	0.0	0.0	Sweet	No change
E	0	0.0	0.0	0.0	Sweet	No change