Method for the determination of iodine value

SIR,—We have discovered that certain peroxides have an abnormally enhancing effect on the addition of bromine to sterically hindered double bonds. Using this we propose a method for the determination of unsaturation in oils and fats.

The procedure was tried on several oils and fats and the results, obtained after only 1 min contact between the oil or fat and the reagent, were identical with those obtained by using the method of Hanus (1901).

Reagent. To 500 ml of chloroform, add 4·5 g of dioxan and 6 ml of bromine, mix thoroughly and make up to 1 litre with chloroform. Store in a cool place in well-stoppered dark containers.

Procedure. Weigh accurately a suitable weight of the oil or fat in a dry glass-stoppered Erlenmeyer flask of about 500 ml capacity, Add 25 ml of the reagent, insert the stopper, previously moistened with potassium iodide solution, and swirl the contents. Allow to stand for 1 min, add 10 ml of 20% potassium iodide solution, mix, wash the stopper and the neck of the flask with water and dilute to about 200 ml. Titrate the liberated iodine with 0·1 N sodium thiosulphate solution, using starch as an indicator.

Carry out a blank and calculate the iodine value in the usual manner.

We find that samples weighing about 1 g for a fat, 0·3–0·4 g for a non-drying oil, 0·2–0·3 g for a semi-drying oil and 0·1–0·2 g for a drying oil were the most suitable.

Results. The results obtained by applying the above procedure to different oils and fats are given in Table 1.

TABLE 1. COMPARISON OF IODINE VALUES

Oil	Proposed method	Hanus	Wijs	Kaufmann
Linseed	180·9	182·6	183·4	181·2
	181·2	185·2	184·8	181·6
Cod liver	138	138·2	140·1	139·2
	138	140	140·3	140·1
Safflower	138·6	139·7	140·3	138·6
	140·2	140·2	140·7	139·4
Lettuce seed	127·0	126·7	127·8	125·9
	127·3	128·1	128·5	126·4
Maize	107·5	107·2	107·6	107·3
	107·7	107·7	108·2	107·4
Sesame	108·7	107·8	108·2	107·4
	108·7	108·1	108·6	107·8
Cotton seed	101·4	102·8	103·5	101·5
	102·2	103·4	104·1	103·2
Archis	75·3	74·6	74·9	73·8
	74·9	75·3	75·1	75·1
Olive	80·6	81·7	81·5	80·0
	81·3	82·8	82·3	81·1
Butter fat	32·9	33·4	33·7	33·1
	33·7	33·9	34·1	33·4
Depot fat	37·5	38·2	37·9	37·6
	38·2	38·5	38·5	38·3
Coconut fat	8·4	8·6	8·7	8·3
	8·5	9·0	9·0	8·7
Tung	154·3	154·2	—	—
(I.V. by hydrogenation = 229)	155·1	154·9	—	—

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Book Reviews

CHEMISTRY OF THROMBOLYSIS: HUMAN FIBRINOLYTIC ENZYMES. By Kurt N. von Kaulla. Pp. xvi + 333 (including Index). Charles C. Thomas, Springfield, Ill., U.S.A., 1963. $12.75.

Although the phenomenon had been recorded before, Denis is usually credited with being the first to describe in 1838 the spontaneous dissolution of a fibrin clot on storage. This phenomenon was termed fibrinolysis by Dastre in 1893, but remained a relatively neglected field of research. The attentions of haematologists were chiefly confined to the mechanisms of clot formation rather than the subsequent history of the fibrin clot. The past few decades have seen renewed interest in fibrinolysis and thrombolysis (the latter term denoting the intra-vascular dissolution of a thrombus). The current theory of fibrinolysis holds that circulating blood contains an enzyme precursor, plasminogen, which may be activated by a variety of activators or activating procedures to produce the enzyme, plasmin. The proteolytic enzyme, plasmin, then hydrolyses the polymer, fibrin, into fibrinopeptides and fibrinolysates, thus the fibrin meshwork of a clot is broken down. In the circulating blood under normal conditions there is an excess of an anti-plasmin which inhibits plasmin so that when blood is shed the normal prothrombin-thrombin-fibrin mechanism produces a clot.

Dr. von Kaulla of the University of Colorado School of Medicine has written the first comprehensive monograph on the physiological and pathological aspects of fibrinolysis. His own research work in this field, covering many aspects, such as the measurement of the excretion of urokinase in man or an extensive investigation into non-enzyme compounds which increase fibrinolysis, makes him well qualified for the authorship of such a book.

After an interesting account of the historical development of the study of fibrinolysis, the text proper begins with a consideration of the basic components of the fibrinolytic system which is a very clear account of current fact and theory backed up by a comprehensive bibliography.

The next three chapters are devoted to methods of measuring fibrinolytic activity and its component factors; there is a mixture of the description of principles of methods with detailed technical procedures. The plasminogen activator urokinase, which can now be extracted from human urine, is given a chapter on its own which includes a full account of the author's technique for urokinase estimation and a consideration of the significance of the results, with case history illustrations. There is a comprehensive tabular review of diseases, observations and references, in the chapter on fibrinolysis and diseases, which will prove to be an invaluable reference list. The account of maternal and neo-natal fibrinolytic systems is shorter than the importance of this aspect of fibrinolysis would seem to warrant.