

that shown by sodium aquopentacyanoferrite under the same conditions. A little higher value of K in the presence of the aquo-salt (II) (Tables 2-4) as opposed to those obtained in the presence of the aquo-salt (III) (Tables 7-9) may be due to some alkali produced ini-

TABLE VII

Ferrocyanide = M/1066.7

<i>t</i> (minutes)	<i>a-x</i>	<i>K</i> ·10 ⁴
0	15.05	..
11.5	12.00	86
30	9.70	64
57	7.25	56
83	5.40	54
108	4.30	50

TABLE VIII

Ferrocyanide = M/533.3

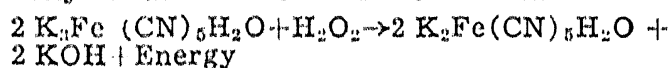
<i>t</i> (minutes)	<i>a-x</i>	<i>K</i> ·10 ⁴
0	14.50	..
11	11.60	88
27	8.80	80
52	5.60	80

TABLE IX

Ferrocyanide = M/320

<i>t</i> (minutes)	<i>a-x</i>	<i>K</i> ·10 ⁴
0	14.10	..
11	10.10	132
24	7.20	122
42.5	3.65	138

tially in accordance with the reaction



This extra alkali is not present in the reaction involving the aquo-salt (III) and ferrocyanide. The significance of the results recorded in Table 1 and 6 will be discussed later.

Experiments have also been performed by restoring in the dark in the original concentration the hydrogen peroxide decomposed in the pre-illuminated H₂O₂-K₃Fe(CN)₅ mixture after various time intervals from the moment of complete decomposition. It has been observed that such a mixture after complete decomposition retains for several hours the ability to decompose fresh hydrogen peroxide added in the dark in a qualitatively similar fashion as the photochemical after-effect. This behaviour, which may be called the "Secondary After-effect"¹⁵ has been traced to the presence of unchanged potassium aquopentacyanoferrite at the end of the reaction. In the presence of air aqueous solutions of the aquo-salts (II) undergo a slow spontaneous change on standing in the dark at room temperature (35° C.)

with a concomitant decrease in the reactivity as measured by the rate of hydrogen peroxide decomposition. Since the decomposition in an insolated mixture is complete in less than an hour, the activity can be detected by the addition of fresh hydrogen peroxide, and the catalyst, aquopentacyanoferrite (II), can be identified in the end solutions by characteristic colour reactions with *p*-nitrosodimethylaniline or nitrosobenzene. These are very sensitive reagents for the aquo-salt (II).

Fuller details will be published elsewhere.

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1. Lal, B. B., *Curr. Sci.*, 1947, 16, 118. 2. Hofman, K. A., *Annalen.*, 1900, 312, 31. 3. Lal, B. B., *J. Indian Chem. Soc.*, 1939, 16, 7, 323-24. 4. — *Curr. Sci.*, *Ibid.* 5. MacMahon, P. S., and Lal, B. B., *J. Indian Chem. Soc.*, 1940, 17, 429.

UNSAPONIFIABLE MATTER IN SHARK LIVER OILS

THE vitamin A content of Shark liver oils has been extensively studied in India. But the limits of variation of other physical and chemical characteristics of the oil are not available. The Indian pharmacopœial List¹ gives the following limits: Acid value > 2, saponification value > 200, unsaponifiable matter > 2 per cent.; and Iodine value < 90.

Forty-seven samples of genuine shark liver oil from different provinces have been analysed in this laboratory; and the data of 17 representative samples are given in Table I.

TABLE I

Chemical constants of Shark Liver Oils

	Acid value	Per cent. unsaponifiable matter	Blue value ⁴
Bengal	0.62	2.1	30
	0.61	14.5	50
	0.60	15.0	60
	1.1	3.0	550
	2.0	8.6	40
	0.0	8.9	75
Madras	15.8	3.2	50
	1.2	3.9	32
	1.4	4.5	140
	1.6	2.5	34
Bombay	0.35	1.0	23
	6.8	1.66	176
Karachi	2.6	4.5	330
	0.62	6.7	380
	1.9	3.3	900
	1.4	1.5	17
Orissa	7.2	1.84	40

Out of seventeen samples tested, the unsaponifiable matter in 14 samples is consider-