TABLE I.

Sample (plasma)	Rotation				
	Observed (degrees)				Calculated (degrees)
	1st day	2nd day	3rd day	4th day	
Beef	0.10	0.11	0.12	0.11	0.11
Beef	0.10	0.08	0.08		0.10
Beef	0.15	0.15	0.16		0.16
Rabbit	0.13	0.13	0.14		0.14
Rabbit	0.12	0.13	0.12	0.12	0.16
Beef (acidified)	0.14	0.15	0.14		0.16
Beef (acidified)	0.11	0.10	0.11		0.12
Rabbit (acidified)	0.15	0.14	0.16		0.17
Beef: 35 cc. plasma, 5 cc. 20 per cent Na_2WoO_4, 5 cc. 1.3 N H_2SO_4	0.12	0.14	0.13		0.17
Rabbit: 25 cc. plasma, 3 cc. 20 per cent Na_2WoO_4, 3 cc. 1.3 N H_2SO_4	0.10	0.09	0.10		0.13

In no case have we observed any appreciable change from the initial rotation, and in general there has been substantial agreement between the observed and calculated rotations.

When we consider the extreme instability of gamma glucose,[2] it seems unlikely that its presence in normal blood can be detected by such experiments as these or by those of Winter and Smith.[3] The development of theories of carbohydrate metabolism based on ethylene oxide blood sugar would seem to be premature.

107 (2339)

Studies on the cholesterol and fatty acid content in the blood of normal and icteric infants.

By G. F. NORMAN (by invitation).

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Cholesterol and fatty acid studies on blood were undertaken primarily to determine the relation of these substances, if any,

2 Irvine, J. C., Fyfe, A. W., and Hogg, T.P., *J. Chem. Soc.*, 1915, cvii, 524.
3 Winter, L. B., and Smith, B. A., *J. Physiol.*, 1922, lvii, 100.

to icterus neonatorum, and to establish average values for infants.

The method which was employed was that which has been described by Bloor.[1] About one hundred determinations were made on the blood of infants and of older children varying in age from one to four and one-half years. Table I shows the results of these determinations in a number of average cases.

TABLE I.
Icteric Infants

No. in series	Cholesterol per 100 cc.		Fatty acids per 100 cc.
	Saponification values	Nonsaponification values	
	mg.	mg.	mg.
4	59	....	385
8	55	....	313
42	44	78	.....
46	50	63	290
49	49	74	310
53	63	194	333
56	72	181	333
58	5[illegible]	108	310
	Non-icteric Infants		
31	53	....	308
32	46	....	217
40	26	42	283
43	81	106	375
44	46	52	200
45	31	53	300
47	43	66	400
48	42	69	270
54	66	175	333
55	59	125	320
62	69	80	240
69	66	149	166
76	64	93	.....
77	84	94	.....
78	65	83	.....

Non-saponification values were difficult to read in some cases due to the development of a brownish-green color probably caused by the presence of bile derivatives. It will be observed that there are no marked differences in the amounts of fatty acid and of cholesterol in the two series of infants, but the values for blood cholesterol are markedly lower than those which have been given for normal adults. (The effects of the alimen-

[1] Bloor, W. R., Pelkan, K. F., and Allen, D. M., *J. Biol. Chem.*, 1922, lii, 191.

tary lipemia persisting, as is usually stated, from 8 to 12 hours, were obviated as far as possible by obtaining blood specimens before feeding. Cholesterol values, however, would probably be very little influenced.—Bloor, Studies on Blood Fat, II.)

Table II shows a few values which were obtained on normal older children.

TABLE II.

No. in Series	Age	Cholesterol per 100 cc.		Fatty acids per 100 cc.
		Saponification values.	Nonsaponification values	
		mg.	mg.	mg.
74	4 Mo.	54	179	220
75	6 "	74	107	.....
72	7 "	54	125	240
68	8 "	96	134	300
73	13 "	113	171	233
61	2 Yr.	151	191	330
63	2 "	110	217	275
51	4½ "	150	344	438

Cholesterol and fatty acid values were obtained in one case of severe anemia, first before transfusions of blood and then during the course of treatment. This infant showed marked improvement clinically, and the hemoglobin rose rapidly from 15 per cent to 68 per cent. The following are the results of the investigation:

Date	Cholesterol per 100 cc.		Fatty acids per 100 cc.
	Saponification values	Nonsaponification values.	
	mg.	mg.	mg.
March 23, 1922	9	17	111
April 25, 1922	87	100	240
May 2, 1922	117	169	390

The low cholesterol reading on the first examination in the saponified portion was rendered difficult due to the development of a brown discoloration, but did not exceed the value given.

SUMMARY AND CONCLUSIONS

1. Cholesterol or fatty acid content of the blood bears no relation to icterus neonatorum.

2. Low values for cholesterol seem quite constant in the blood of infants. This is in agreement with the results of previous workers reported elsewhere, although in the present in-

vestigation the figures which were obtained are somewhat lower than those which have been reported by others. A gradual rise to normal adult values is observed before the second year of life.

3. Adult fatty acid values obtain throughout infancy.

108 (2340)

The relationship of virulence of hemolytic streptococcus to heat resistance.

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The Department of Bacteriology and Experimental Pathology of the University of California possesses a strain of hemolytic streptococcus which has been maintained constantly for a period of years by culture upon blood agar in test tube and by passage *in vivo* through rabbits. Intrapleural injection is used and the organism has been stored in the pleural exudate produced. This fluid exudate between passages is kept at icebox temperature. Injections are made from the previous pleural fluid after three to five weeks. To date this *in vivo* strain has passed through sixty-five animals or "generations".

The virulence of the passage portion of this strain is such that 1/100,000 to 1/1,000,000 cc. of this fluid is lethal to a 3,500 gm. rabbit. On the other hand, one cubic centimeter of the portion which has been propagated in test tube culture does not induce death in an animal of similar weight. The numbers of organisms per cubic centimeter in each inoculated fluid are comparable.

An interesting difference in heat resistance has developed between these two portions of this strain of *S. hemolyticus.* Using exposure to heat in a water bath and with all conditions as nearly similar as are experimentally possible, including numbers of organisms in the inoculum, the diluting medium and with properly controlled thermometers it has been determined that the more virulent organisms are more susceptible to the lethal