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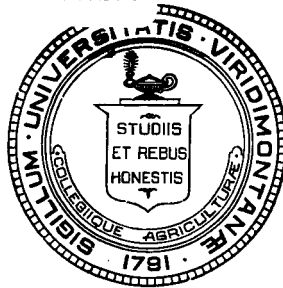
LIGHT AND TEMPERATURE AS FACTORS  
IN THE METHYLENE BLUE  
REDUCTION TEST

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GIPE-PUNE-047274



of oxygen to active bacteria in milk, handled under certain conditions with a varying bacterial flora, will be less than in the case of milk that has been cooled to and is held at a low temperature. Under these later conditions the psychrophiles are likely to be passing through a period of readjustment or lag phase of their growth. Under such conditions the spread between the amount of dissolved oxygen and the actively growing bacteria is likely to increase for a time and thereby retard the reduction of the methylene blue dye, at the very time when the numbers of bacteria are slowly increasing. Oxygen—other than that consumed in bacterial growth—may be evolved to a greater or less degree, depending upon the temperature of the milk. Furthermore, during this period of readjustment the ratio of bacteria using relatively large amounts of oxygen may be narrowing. Hence it is that the reduction time may actually increase until the stage has been reached where normal balance is restored between oxygen which is being freed from solution, oxygen which is dissolved in the milk and oxygen which is used by growing bacteria." Although this factor is not within the control of the operator of the test, it should be understood in any appraisal of quality.

#### CONCLUSIONS

1. Light, either artificial or natural, exerts a pronounced reducing action upon the dye methylene blue in market milk as a substrate. This is within control of the operator. The test should be conducted in reduced light or in the dark.

2. Holding milk at a low temperature in some way retards the reduction of methylene blue, a fact which every operator of the test should appreciate.

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APPENDIX TABLE 1.—REDUCTION TIMES OF 82 SAMPLES OF RAW MILK WITH 410  
MADE UNDER THE FOLLOWING

Sample number	Held under 100-watt light + reflector + room light					Held in	
	Fresh	At once after being cooled to 40° F.	After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.	Fresh	At once after being cooled to 40° F.
		Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.		Hrs. Min.
11	7:30	7:20	7:25	8:20	8:30	8:15	10:05
12	7:00	7:05	7:10	9:05	8:30	8:30	10:05
13	6:50	7:35	8:05	8:45	10:10	7:50	9:50
14	6:50	5:55	6:35	8:30	9:47	8:50	10:05
15	6:35	6:45	7:20	10:05	7:55	9:50	11:00
16	7:05	7:30	7:05	8:50	7:25	7:28	8:15
17	3:20	3:45	3:35	3:05	1:55	4:05	4:15
18	10:35	10:22	10:50	10:50	14:25	13:57	14:08
19	1:50	2:05	2:05	1:35	1:25	2:20	2:30
20	6:12	6:30	7:35	6:05	8:10	13:05	13:22
21	6:20	5:45	7:40	8:30	10:00	8:50	10:15
22	4:50	5:45	6:10	5:15	4:45	5:50	6:30
23	3:05	3:45	4:10	3:00	1:00	3:35	4:00
24	5:20	5:45	6:25	5:15	4:00	5:20	5:15
25	12:05	11:30	10:10	12:45	11:00	13:12	13:30
26	5:50	6:00	8:25	8:10	8:45	13:05	15:15
27	6:15	6:15	6:30	7:45	7:30	8:52	9:15
28	6:00	6:00	6:15	8:00	7:30	7:30	8:45
29	1:15	1:00	0:30	0:30	0:15	1:15	1:00
30	1:30	1:30	1:15	0:45	1:00	2:00	1:45
31	7:00	8:30	11:00	10:15	10:30	8:30	8:38
32	6:00	6:30	6:30	6:30	3:38	10:52	12:00
33	8:30	7:38	9:00	9:30	10:30	9:22	9:15
34	6:30	7:00	7:30	7:45	8:45	8:30	8:30
35	2:45	3:00	3:15	2:45	1:00	3:45	3:45
36	7:38	9:00	8:00	9:30	8:15	8:30	7:45
37	7:45	9:45	11:00	10:15	11:00	11:15	12:00
38	3:45	5:38	6:30	8:00	9:08	11:15	12:15
39	8:30	8:45	7:45	7:00	10:00	8:45	9:45
40	6:30	6:15	6:15	7:00	8:45	7:00	7:30
41	5:00	5:00	5:15	6:00	5:30	5:00	5:45
42	5:30	5:15	6:30	7:30	8:22	5:30	6:15
43	10:45	11:00	11:00	10:00	10:00	11:30	10:15
44	5:00	4:45	6:30	8:45	8:52	9:30	11:45
45	7:15	8:45	7:15	7:45	7:00	9:00	7:15
46	6:15	6:45	6:45	7:15	7:00	7:22	7:45
47	3:45	4:45	5:45	6:00	4:00	5:00	6:45
48	7:00	7:15	6:45	6:45	6:30	6:45	6:45
49	11:00	10:30	10:45	11:45	13:08	10:15	10:00
50	3:45	4:38	5:45	7:15	7:08	5:30	9:08
51	6:45	6:30	8:00	6:15	9:00	9:45	8:45
52	3:30	3:45	6:00	5:45	7:00	4:45	5:15
53	3:30	3:30	3:30	3:30	1:15	3:30	3:45
54	4:00	3:52	4:30	5:45	6:15	4:45	5:30
55	11:15	10:30	10:15	10:45	11:30	9:45	10:30
56	3:52	3:00	3:15	5:45	5:52	8:15	9:45
57	6:45	6:45	7:00	7:30	8:15	11:00	10:15
58	3:30	5:45	5:45	6:15	7:00	7:15	7:15
59	3:30	4:15	5:15	6:15	4:00	6:15	6:45
60	2:30	2:45	3:15	2:30	3:00	3:00	2:45
61	9:00	10:00	10:08	11:00	10:30	9:30	9:45
62	1:00	1:15	2:00	2:00	3:00	1:30	1:30
63	7:15	6:45	7:45	8:00	6:45	9:15	9:45
64	7:15	7:30	7:30	7:00	6:45	7:30	8:30

LIGHT AND TEMPERATURE IN METHYLENE BLUE REDUCTION TEST 23

OBSERVATIONS—THE TESTS OF MILK HELD FOR VARIOUS PERIODS AS INDICATED BEING TEMPERATURE AND LIGHT CONDITIONS

ordinary room light			Complete darkness				
After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.	Fresh	At once after being cooled to 40° F.	After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.
Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.
11:55	13:50	13:50	9:30	9:20	11:55	14:20	14:15
11:00	13:20	13:00	10:15	10:35	9:40	13:35	14:30
10:35	11:30	11:40	7:42	9:50	10:35	11:30	12:40
9:05	13:00	14:55	8:35	9:50	10:58	14:30	14:55
11:35	14:50	15:40	10:35	12:08	12:12	13:50	15:32
8:35	9:20	9:10	8:15	8:42	9:20	9:25	8:55
4:20	4:35	2:55	3:50	4:15	4:05	4:35	3:25
15:20	16:35	16:25	14:00	14:05	17:20	16:55	15:25
2:20	2:05	1:25	1:50	2:15	2:20	2:28	1:40
9:20	9:20	8:25	10:50	11:45	10:20	10:05	9:25
12:10	12:22	14:00	9:05	11:00	13:10	13:00	14:15
7:25	7:30	6:45	5:05	5:15	8:25	8:00	7:30
4:40	4:15	2:00	3:35	4:30	5:25	4:30	2:45
6:10	6:00	5:45	5:20	5:15	6:25	6:00	6:45
12:40	15:15	13:45	12:35	14:00	13:25	14:30	14:15
15:48	15:45	15:45	13:35	15:15	15:55	15:45	15:00
10:00	9:30	9:00	9:15	9:30	11:00	9:15	9:30
10:15	9:45	9:45	7:22	8:00	10:00	10:15	11:15
1:00	0:30	0:15	1:15	1:00	1:00	0:30	0:15
1:45	1:45	1:15	1:30	1:45	2:00	2:15	1:45
12:15	13:15	13:52	9:08	8:52	12:15	13:00	13:45
12:15	13:45	11:30	11:52	11:38	12:30	11:45	11:45
12:30	12:30	13:00	10:30	11:15	11:15	12:30	10:52
10:00	9:22	9:22	8:30	8:15	9:00	9:30	11:30
4:15	4:00	2:15	3:45	4:15	4:00	4:00	2:00
8:00	8:15	7:22	8:30	8:00	8:45	8:30	8:00
10:52	12:08	14:00	11:30	11:45	11:15	13:15	14:00
13:00	13:30	14:15	12:30	12:45	13:45	13:30	13:30
12:00	12:15	12:22	10:15	11:00	12:00	13:00	13:00
7:30	9:00	9:00	7:15	8:00	8:22	10:00	9:52
5:45	8:45	8:00	5:15	5:45	7:15	7:45	9:00
6:30	8:15	7:53	6:30	6:15	6:15	8:30	8:15
10:45	11:00	11:15	9:30	10:15	10:22	11:15	10:22
12:15	10:45	12:08	10:30	10:00	11:08	11:30	12:22
9:08	10:45	11:15	9:30	9:00	8:45	11:08	10:15
8:30	9:45	9:45	7:45	7:45	8:38	9:15	10:38
5:30	6:00	5:00	5:15	6:15	7:30	6:00	5:30
7:15	7:30	7:30	7:15	6:45	7:30	7:15	7:15
10:52	12:00	13:22	10:30	10:15	11:00	12:38	13:30
11:30	12:15	12:45	6:00	9:15	12:00	12:15	12:45
9:30	10:45	9:00	10:30	9:45	9:30	10:45	11:00
7:45	8:15	8:45	4:45	5:00	8:00	9:00	8:30
4:30	4:30	4:30	3:30	3:45	4:00	4:00	2:30
8:00	7:30	8:52	4:45	5:00	6:30	7:15	10:00
10:15	11:00	11:00	9:45	10:00	10:08	10:45	11:15
10:00	9:15	9:30	7:45	9:30	10:45	9:45	8:45
11:15	11:00	11:45	11:00	10:30	11:15	11:15	11:45
9:15	9:30	9:45	6:45	7:45	9:30	11:00	11:00
8:30	8:30	6:00	5:15	6:45	9:00	9:45	8:00
3:30	3:30	2:45	2:45	2:45	3:45	3:45	3:00
11:00	11:00	11:30	10:15	10:45	11:15	11:15	11:45
2:30	3:30	5:30	1:30	1:30	2:30	4:15	4:15
10:30	10:45	11:30	9:15	9:15	11:15	11:00	11:15
7:30	8:30	5:30	8:00	7:30	7:45	8:00	7:15

APPENDIX TABLE 1.—REDUCTION TIMES OF 82 SAMPLES OF RAW MILK WITH 410  
 MADE UNDER THE FOLLOWING TEMPERATURE

Sample number	Held under 100-watt light + reflector + room light					Held in	
	Fresh	At once after being cooled to 40° F.	After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.	Fresh	At once after being cooled to 40° F.
	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.
65	11:45	11:15	13:30	14:45	16:30	12:45	12:45
66	8:00	6:45	10:45	11:45	10:15	10:15	10:00
67	8:00	6:45	7:15	7:15	7:45	12:00	12:45
68	8:15	7:52	7:15	7:15	7:15	7:15	7:37
69	12:45	12:15	14:00	11:22	9:45	8:00	11:30
70	6:45	7:00	6:22	6:15	6:22	7:00	7:30
71	8:07	7:45	10:15	13:45	8:30	11:30	11:15
72	7:15	7:45	6:45	7:15	10:15	7:15	7:30
73	3:45	6:45	3:30	2:45	1:30	4:30	6:22
74	6:22	7:00	8:00	8:07	12:45	10:00	10:15
75	4:45	5:45	6:45	6:15	9:15	6:15	6:45
76	5:00	6:30	7:30	7:45	6:45	10:15	10:00
77	9:15	10:15	12:00	11:30	8:45	8:45	9:15
78	4:45	6:15	5:15	4:52	5:00	5:00	5:00
79	2:30	3:00	3:30	2:45	0:45	3:00	4:30
80	8:45	8:00	7:15	9:22	9:15	11:15	10:30
81	6:30	7:15	6:15	6:52	6:15	6:30	6:45
82	5:15	6:00	6:15	6:52	6:00	6:30	7:00
83	0:30	0:30	0:30	0:15	0:15	0:30	0:30
84	4:00	4:00	3:45	4:00	4:00	5:00	5:00
85	4:15	5:00	5:15	6:00	4:22	7:30	7:30
86	9:15	9:15	12:15	9:45	12:30	10:07	9:15
87	6:45	6:45	6:15	6:30	5:15	7:00	7:00
88	3:45	5:00	5:15	4:30	6:45	5:30	6:00
89	8:30	8:45	9:07	8:15	8:45	9:00	8:45
90	5:30	5:15	6:30	6:15	3:15	6:45	6:15
91	2:15	3:45	2:15	2:00	0:30	3:00	4:00
92	3:45	4:15	4:15	3:45	3:45	4:15	4:15
Average	6:03	6:22	6:47	7:04	7:02	7:33	8:01

LIGHT AND TEMPERATURE IN METHYLENE BLUE REDUCTION TEST 25

OBSERVATIONS—THE TESTS OF MILK HELD FOR VARIOUS PERIODS AS INDICATED BEING AND LIGHT CONDITIONS—*concluded*

ordinary room light			Complete darkness				
After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.	Fresh	At once after being cooled to 40° F.	After being held 24 hours at 40° F.	After being held 48 hours at 40° F.	After being held 72 hours at 40° F.
Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.
14:22	14:07	14:15	12:45	11:30	13:30	13:15	14:15
7:15	8:45	9:45	9:30	9:15	9:30	9:45	9:15
12:00	12:37	16:00	12:30	13:00	14:45	13:22	15:30
6:45	6:30	7:30	6:22	6:45	6:45	7:15	6:30
12:52	15:15	13:45	12:30	11:15	14:37	13:45	14:30
7:45	8:30	8:52	7:30	7:45	7:00	7:15	8:22
12:45	14:45	12:15	12:30	14:00	11:52	14:45	13:45
7:30	7:15	7:00	7:45	8:00	7:15	7:15	7:30
4:45	3:45	2:00	5:00	5:00	5:15	4:30	4:00
9:07	9:22	10:45	9:45	9:15	9:22	9:45	13:00
7:00	7:15	7:07	6:15	6:30	7:00	7:15	12:00
8:45	11:00	11:45	9:45	10:15	10:45	10:45	7:15
8:45	10:15	8:22	9:15	9:07	10:07	10:52	9:45
5:30	5:00	4:45	5:00	5:00	4:45	6:00	5:00
7:00	5:45	0:45	3:15	4:00	4:52	7:30	1:15
10:30	11:45	11:00	10:45	10:30	11:15	12:22	11:37
6:15	7:00	6:30	7:15	7:15	7:00	7:07	6:45
10:07	10:30	10:30	6:30	7:15	10:00	11:30	10:30
0:30	0:15	0:15	0:30	0:45	0:45	0:15	0:15
5:00	5:00	4:30	5:07	5:15	4:30	4:45	5:00
10:15	10:45	7:30	7:30	7:45	9:45	9:45	10:52
12:00	10:15	11:15	10:15	10:00	12:07	11:30	12:15
7:00	6:30	6:45	7:15	7:15	6:30	6:15	7:30
8:00	9:15	9:00	7:30	7:00	8:30	10:45	9:30
10:15	9:22	9:22	9:45	8:52	10:00	10:45	9:00
7:45	5:45	5:15	6:15	6:15	6:30	7:15	5:45
3:15	2:15	1:15	3:15	3:45	3:15	4:00	1:45
4:30	4:15	4:45	4:45	5:00	4:30	5:15	4:45
8:38	9:06	8:53	7:47	8:05	8:51	9:22	9:16

APPENDIX TABLE 2.—REDUCTION TIMES AND PLATE COUNTS FROM SAMPLES OF RAW MILK TAKEN FROM 30 MISCELLANEOUS SOURCES WITH TIME, TEMPERATURE AND LIGHT CONDITIONS AS NOTED

Sample number	Time conditions	Reduction times			Plate count	
		100-watt	Room	Dark	Number	Logarithm
		Hrs. Min.	Hrs. Min.	Hrs. Min.		
63	Fresh milk .....	7:15	9:15	9:15	32,000	4.50
	At once after cooling to 40° F.....	6:45	9:45	9:15	31,000	4.49
	After being held 24 hours at 40° F...	7:45	10:30	11:15	29,000	4.46
	After being held 48 hours at 40° F...	8:00	10:45	11:00	31,500	4.50
	After being held 72 hours at 40° F...	6:45	11:30	11:15	30,600	4.48
64	Fresh milk .....	7:15	7:30	8:00	14,000	4.15
	At once after cooling to 40° F.....	7:30	8:30	7:30	18,700	4.27
	After being held 24 hours at 40° F...	7:30	7:30	7:45	21,000	4.32
	After being held 48 hours at 40° F...	7:00	8:30	8:00	24,000	4.38
	After being held 72 hours at 40° F...	6:45	5:30	7:15	26,000	4.42
65	Fresh milk .....	11:45	12:45	12:45	3,300	3.52
	At once after cooling to 40° F.....	11:15	12:45	11:30	3,500	3.54
	After being held 24 hours at 40° F...	13:30	14:22	13:30	4,700	3.66
	After being held 48 hours at 40° F...	14:45	14:07	13:15	4,500	3.65
	After being held 72 hours at 40° F...	16:30	14:15	14:15	5,200	3.72
66	Fresh milk .....	8:00	10:15	9:30	52,000	4.72
	At once after cooling to 40° F.....	6:45	10:00	9:15	54,000	4.73
	After being held 24 hours at 40° F...	10:45	7:15	9:30	80,000	4.90
	After being held 48 hours at 40° F...	11:45	8:45	9:45	90,000	4.95
	After being held 72 hours at 40° F...	10:15	9:45	9:15	96,000	4.98
67	Fresh milk .....	8:00	12:00	12:30	16,000	4.20
	At once after cooling to 40° F.....	6:45	12:45	13:00	21,000	4.32
	After being held 24 hours at 40° F...	7:15	12:00	14:45	24,000	4.38
	After being held 48 hours at 40° F...	7:15	12:37	13:22	21,000	4.32
	After being held 72 hours at 40° F...	7:45	16:00	15:30	22,500	4.35
68	Fresh milk .....	8:15	7:15	6:22	80,000	4.90
	At once after cooling to 40° F.....	7:52	7:37	6:45	78,000	4.89
	After being held 24 hours at 40° F...	7:15	6:45	6:45	108,000	5.03
	After being held 48 hours at 40° F...	7:15	6:30	7:15	150,000	5.18
	After being held 72 hours at 40° F...	7:15	7:30	6:30	180,000	5.26
69	Fresh milk .....	12:45	8:00	12:30	2,700	3.43
	At once after cooling to 40° F.....	12:15	11:30	11:15	3,600	3.56
	After being held 24 hours at 40° F...	14:00	12:52	14:37	3,600	3.56
	After being held 48 hours at 40° F...	11:22	15:15	13:45	4,900	3.69
	After being held 72 hours at 40° F...	9:45	13:45	14:30	1,600	3.20
70	Fresh milk .....	6:45	7:00	7:30	17,500	4.24
	At once after cooling to 40° F.....	7:00	7:30	7:45	15,500	4.19
	After being held 24 hours at 40° F...	6:22	7:45	7:00	23,700	4.37
	After being held 48 hours at 40° F...	6:15	8:30	7:15	20,000	4.30
	After being held 72 hours at 40° F...	6:22	8:52	8:22	13,000	4.11
71	Fresh milk .....	8:07	11:30	12:30	23,000	4.36
	At once after cooling to 40° F.....	7:45	11:15	14:00	19,800	4.30
	After being held 24 hours at 40° F...	10:15	12:45	11:52	25,700	4.41
	After being held 48 hours at 40° F...	13:45	14:45	14:45	27,500	4.44
	After being held 72 hours at 40° F...	8:30	12:15	13:45	17,000	4.23
72	Fresh milk .....	7:15	7:15	7:45	4,200	3.63
	At once after cooling to 40° F.....	7:45	7:30	8:00	4,700	3.67
	After being held 24 hours at 40° F...	6:45	7:30	7:15	6,800	3.84
	After being held 48 hours at 40° F...	7:15	7:15	7:15	7,600	3.88
	After being held 72 hours at 40° F...	10:15	7:00	7:30	3,700	3.57

LIGHT AND TEMPERATURE IN METHYLENE BLUE REDUCTION TEST 27

APPENDIX TABLE 2.—REDUCTION TIMES AND PLATE COUNTS FROM SAMPLES OF RAW MILK TAKEN FROM 30 MISCELLANEOUS SOURCES WITH TIME, TEMPERATURE AND LIGHT CONDITIONS AS NOTED—*continued*

Sample number	Time conditions	Reduction times			Plate count	
		100-watt	Room	Dark	Number	Logarithm
		Hrs. Min.	Hrs. Min.	Hrs. Min.		
73	Fresh milk .....	3:45	4:30	5:00	200,000	5.30
	At once after cooling to 40° F.....	6:45	6:22	5:00	190,000	5.28
	After being held 24 hours at 40° F...	3:30	4:45	5:15	320,000	5.50
	After being held 48 hours at 40° F...	2:45	3:45	4:30	360,000	5.56
	After being held 72 hours at 40° F...	1:30	2:00	4:00	450,000	5.65
74	Fresh milk .....	6:22	10:00	9:45	23,400	4.37
	At once after cooling to 40° F.....	7:00	10:15	9:15	19,000	4.28
	After being held 24 hours at 40° F...	8:00	9:07	9:22	25,700	4.41
	After being held 48 hours at 40° F...	8:07	9:22	9:45	28,000	4.45
	After being held 72 hours at 40° F...	12:45	10:45	13:00	23,000	4.36
75	Fresh milk .....	4:45	6:15	6:15	5,600	3.75
	At once after cooling to 40° F.....	5:45	6:45	6:30	3,000	3.48
	After being held 24 hours at 40° F...	6:45	7:00	7:00	5,900	3.77
	After being held 48 hours at 40° F....	6:15	7:15	7:15	7,400	3.87
	After being held 72 hours at 40° F...	9:15	7:07	12:00	14,500	4.16
76	Fresh milk .....	5:00	10:15	9:45	40,000	4.60
	At once after cooling to 40° F.....	6:30	10:00	10:15	42,000	4.62
	After being held 24 hours at 40° F...	7:30	8:45	10:45	44,000	4.64
	After being held 48 hours at 40° F...	7:45	11:00	10:45	52,000	4.72
	After being held 72 hours at 40° F...	6:45	11:45	7:15	36,000	4.56
77	Fresh milk .....	9:15	8:45	9:15	1,000	3.00
	At once after cooling to 40° F.....	10:15	9:15	9:07	600	2.78
	After being held 24 hours at 40° F...	12:00	8:45	10:07	1,100	3.04
	After being held 48 hours at 40° F...	11:30	10:15	10:52	800	2.90
	After being held 72 hours at 40° F...	8:45	8:22	9:45	600	2.78
78	Fresh milk .....	4:45	5:00	5:00	24,000	4.38
	At once after cooling to 40° F.....	6:15	5:00	5:00	20,000	4.30
	After being held 24 hours at 40° F...	5:15	5:30	4:45	52,000	4.72
	After being held 48 hours at 40° F...	4:52	5:00	6:00	120,000	5.08
	After being held 72 hours at 40° F...	5:00	4:45	5:00	132,000	5.12
79	Fresh milk .....	2:30	3:00	3:15	315,000	5.50
	At once after cooling to 40° F.....	3:00	4:30	4:00	275,000	5.44
	After being held 24 hours at 40° F...	3:30	7:00	4:52	490,000	5.69
	After being held 48 hours at 40° F...	2:45	5:45	7:30	600,000	5.78
	After being held 72 hours at 40° F...	0:45	0:45	1:15	1,600,000	6.20
80	Fresh milk .....	8:45	11:15	10:45	12,500	4.10
	At once after cooling to 40° F.....	8:00	10:30	10:30	13,200	4.12
	After being held 24 hours at 40° F...	7:15	10:30	11:15	14,700	4.17
	After being held 48 hours at 40° F...	9:22	11:45	12:22	32,000	4.50
	After being held 72 hours at 40° F...	9:15	11:00	11:37	52,000	4.72
81	Fresh milk .....	6:30	6:30	7:15	25,000	4.40
	At once after cooling to 40° F.....	7:15	6:45	7:15	30,000	4.48
	After being held 24 hours at 40° F...	6:15	6:15	7:00	37,000	4.57
	After being held 48 hours at 40° F...	6:52	7:00	7:07	48,000	4.68
	After being held 72 hours at 40° F...	6:15	6:30	6:45	53,000	4.72
82	Fresh milk .....	5:15	6:30	6:30	93,000	4.97
	At once after cooling to 40° F.....	6:00	7:00	7:15	70,000	4.84
	After being held 24 hours at 40° F...	6:15	10:07	10:00	102,000	5.01
	After being held 48 hours at 40° F...	6:52	10:30	11:30	110,000	5.04
	After being held 72 hours at 40° F...	6:00	10:30	10:30	120,000	5.08



APPENDIX TABLE 2.—REDUCTION TIMES AND PLATE COUNTS FROM SAMPLES OF RAW MILK TAKEN FROM 30 MISCELLANEOUS SOURCES WITH TIME, TEMPERATURE AND LIGHT CONDITIONS AS NOTED—*concluded*

Sample number	Time conditions	Reduction times			Plate count	
		100-watt	Room	Dark	Number	Logarithm
		Hrs. Min.	Hrs. Min.	Hrs. Min.		
83	Fresh milk .....	0:30	0:30	0:30	252,000	5.40
	At once after cooling to 40° F.....	0:30	0:30	0:45	230,000	5.36
	After being held 24 hours at 40° F..	0:30	0:30	0:45	1,260,000	6.10
	After being held 48 hours at 40° F...	0:15	0:15	0:15	2,500,000	6.40
	After being held 72 hours at 40° F...	0:15	0:15	0:15	2,600,000	6.42
84	Fresh milk .....	4:00	5:00	5:07	15,000	4.18
	At once after cooling to 40° F.....	4:00	5:00	5:15	13,500	4.13
	After being held 24 hours at 40° F..	3:45	5:00	4:30	22,000	4.34
	After being held 48 hours at 40° F...	4:00	5:00	4:45	35,000	4.54
	After being held 72 hours at 40° F...	4:00	4:30	5:00	46,000	5.66
85	Fresh milk .....	4:15	7:30	7:30	35,500	4.55
	At once after cooling to 40° F.....	5:00	7:30	7:45	34,000	4.53
	After being held 24 hours at 40° F..	5:15	10:15	9:45	40,000	4.60
	After being held 48 hours at 40° F...	6:00	10:45	9:45	50,000	4.70
	After being held 72 hours at 40° F...	4:22	7:30	10:52	200,000	5.30
86	Fresh milk .....	9:15	10:07	10:15	56,000	4.75
	At once after cooling to 40° F.....	9:15	9:15	10:00	40,000	4.60
	After being held 24 hours at 40° F..	12:15	12:00	12:07	60,000	4.78
	After being held 48 hours at 40° F...	9:45	10:15	11:30	62,000	4.79
	After being held 72 hours at 40° F...	12:30	11:15	12:15	70,000	4.84
87	Fresh milk .....	6:45	7:00	7:15	33,000	4.52
	At once after cooling to 40° F.....	6:45	7:00	7:15	30,000	4.48
	After being held 24 hours at 40° F..	6:15	7:00	6:30	50,000	4.70
	After being held 48 hours at 40° F...	6:30	6:30	6:15	56,000	4.75
	After being held 72 hours at 40° F...	5:15	6:45	7:30	180,000	5.26
88	Fresh milk .....	3:45	5:30	7:30	40,000	4.60
	At once after cooling to 40° F.....	5:00	6:00	7:00	36,000	4.56
	After being held 24 hours at 40° F..	5:15	8:00	8:30	47,000	4.67
	After being held 48 hours at 40° F...	4:30	9:15	10:45	48,000	4.68
	After being held 72 hours at 40° F...	6:45	9:00	9:30	64,000	4.81
89	Fresh milk .....	8:30	9:00	9:45	60,000	4.78
	At once after cooling to 40° F.....	8:45	8:45	8:52	45,000	4.65
	After being held 24 hours at 40° F..	9:07	10:15	10:00	120,000	5.08
	After being held 48 hours at 40° F...	8:15	9:22	10:45	148,000	5.17
	After being held 72 hours at 40° F...	8:45	9:22	9:00	208,000	5.32
90	Fresh milk .....	5:30	6:45	6:15	52,000	4.72
	At once after cooling to 40° F.....	5:15	6:15	6:15	45,000	4.65
	After being held 24 hours at 40° F..	6:30	7:45	6:30	160,000	5.20
	After being held 48 hours at 40° F...	6:15	5:45	7:15	420,000	5.62
	After being held 72 hours at 40° F...	3:15	5:15	5:45	508,000	5.71
91	Fresh milk .....	2:15	3:00	3:15	730,000	5.86
	At once after cooling to 40° F.....	3:45	4:00	3:45	560,000	5.75
	After being held 24 hours at 40° F..	2:15	3:15	3:15	780,000	5.89
	After being held 48 hours at 40° F...	2:00	2:15	4:00	2,160,000	6.33
	After being held 72 hours at 40° F...	0:30	1:15	1:45	4,200,000	6.62
92	Fresh milk .....	3:45	4:15	4:45	40,000	4.60
	At once after cooling to 40° F.....	4:15	4:15	5:00	25,000	4.40
	After being held 24 hours at 40° F..	4:15	4:30	4:30	36,000	4.56
	After being held 48 hours at 40° F...	3:45	4:15	5:15	38,000	4.58
	After being held 72 hours at 40° F...	3:45	4:45	4:45	47,500	4.68
Averages						
	Fresh milk .....	6:21	7:27	7:47	29,200	4.46
	At once after cooling to 40° F.....	6:42	7:48	7:48	26,500	4.42
	After being held 24 hours at 40° F..	7:06	8:11	8:22	41,000	4.61
	After being held 48 hours at 40° F...	7:06	8:24	8:47	51,000	4.71
	After being held 72 hours at 40° F...	6:51	7:59	8:32	69,000	4.84