



Invoice No. 5300

**LOUISIANA STATE UNIVERSITY**  
AND AGRICULTURAL AND MECHANICAL COLLEGE  
School of Veterinary Medicine Library

Baton Rouge, Louisiana 70803-8414  
FAX 504/346-3295 PHONE 504/346-3173

**TELEFACSIMILE COVER SHEET**

DATE: 25 May 1992

TO: MATTHEW MURKINSON

DEPARTMENT/ADDRESS: BIOCHEMISTRY / HARVARD

FAX NUMBER: 1 - 617 - 495 - 8308

Country Code                      City Code                      Area Code                      Phone Number

COUNTRY: CAMBRIDGE, MA

FROM: MARTIN HUGH-JONES

DEPARTMENT: KEH

MESSAGE:

(BARBARA - I TOLD YOU THAT THE 'OLD  
WAR SCHOOL' DOES NOT CELEBRATE  
MEMORIAL DAY

4)

TOTAL PAGES TO BE TRANSMITTED, INCLUDING COVER: 9

PAGE COST: \$ \_\_\_\_\_

FOREIGN CALL COST: \$ \_\_\_\_\_

TOTAL COST: \$ \_\_\_\_\_

CHARGE: \_\_\_\_\_ DEPARTMENT

\_\_\_\_\_ PERSONAL

PAID: \_\_\_\_\_ CASH

\_\_\_\_\_ RECEIPT NUMBER

166-70-0000

~~166-70-0000~~

Acct # \_\_\_\_\_

Department of Epidemiology & Community Health,  
School of Veterinary Medicine,  
Louisiana State University,  
Baton Rouge, LA 70803, USA  
[Tel: 504-346-3335]  
[FAX: 504-346-3295]

25 May, 1992

Prof. Mathew Meselson,  
Department of Biochemistry & Molecular Biology,  
HARVARD UNIVERSITY,  
7 Divinity Avenue,  
CAMBRIDGE, MA

[FAX: 1 - 617 - 495 8308]

Dear Mathew,

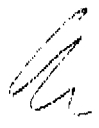
Please find attached a rapid review of incubation periods. I lucked into a pile of old Soviet papers on enteric anthrax (all but one were before 1969), and copies of which I am FedExing to Alexis.

I have transcribed the met reports; see attached. Copies will be prepared to go with us. I was unable to decipher what the terminal column [labelled? 'CTS'] represented. So for want of anywhere else I have chucked the data into the visibility column. Have you any decipherment/codes for WCPres for the higher values, ie over 19? I presume that it somehow relates to precipitation. I am confused by the sudden, low barometric pressure claimed for 00Z on April 1st. It is very odd. The air does get momentarily warmer soon after. May be Sverdlovsk caught the corner of a warm front. But it is clear that their weather during late March and early April was cold and dry, very stable with blue skies; typical anticyclonic weather.

If all goes well we will [this pm] FedEx to you two disks of anthrax references in ASCII format. The current total is around 3,600 references; one (2200 refs) is our reprint collection and the other is just titles of what we don't have.

Best wishes,

Yours sincerely,



Martin Hugh-Jones

## ANTHRAX INCUBATION PERIODS

A rapid search through a mass of articles reveals the following

### Bradford Disease/Woolsorters' Disease

According to a German paper of 1894 the normal range is 2-6 days. The problem with this form of anthrax is that there is an "insidious onset" phase of the clinical disease which can last for 2-5 days to be followed by the (terminal) acute toxic phase of 7-25 hours but sometimes it is longer. The medical services of Bradford recognised that the onset for severe cases was 2 to 4 days to define themselves with sporadic cases taking up to 8 days; as far as I can tell Eurich was using "onset" in the same way as Plotnik used "insidious onset". The literature is full of cases that were merely off-colour until the toxic phase started and/or the patient died.

There is an anecdotal case by Bell of a mill-worker in Bradford who went home for ten days with a sprained shoulder. The evening before he was due back at work he got into a fight at the local pub and was dead in twelve hours of pneumonic anthrax.

Brachmann's cyanomolgus monkeys exposed to spores at Detrick were claimed by him to have had incubation periods of 7-17 days (presumed exposure to death) but the data indicates a sporadic, low level pattern of deaths over prolonged periods of exposure.

### Enteric Anthrax

#### Man

Soviet authors claim an incubation period of 2-3 days with some resulting from exposure from eating with filthy hands and without eating meat. The initial symptoms were of fever and headaches; latterly with vomiting, diarrhoea, and abdominal extension and pain.

Thailand outbreaks from eating moribund buffalo had incubation periods of 1-10 (median 3) days and 2-7 days.

#### Ruminants

4-7 days with a median of 6 days; but dose dependent.

#### Cutaneous

CDC claims a range of 1-8 days; the literature indicates a median of 5-7 days and a maximum of 21 days.

SVERDLOVSK METEOROLOGICAL REPORTS 24.3 TO 7.4.79 (1/5)

Date	Time	W/Dir	W/Spd m/sec	Temp 'C	Dwpt 'C	ClCvr 7/8	Vis m	WC Pres	WC Past	BarPres mb	Comment WW/W
15.3 Thurs	00Z	130	2	-10	-12	0	9	2	0	1016.9	/clouds <1/2
	03Z	NA									
	06Z	130	6	-5	-10	5	9	3	1	1012.3	Clouds dev
	09Z	120	6	+1	-7	7	9	2	2	1009.0	/clouds >1/2
	12Z	130	4	-2	-1	8	4	22	7	1008.9	Snow
	15Z	130	4	-2	-3	8	9	22	2	1008.9	
	18Z	120	3	-2	-4	8	5	2	2	1007.7	/clouds >1/2
	21Z	110	3	-4	-6	8	5	2	2	1006.2	/clouds >1/2
16.3 Fri	00Z	110	4	-5	-7	8	5	2	2	1003.9	/clouds >1/2
	03Z	NA									
	06Z	110	6	-3	-5	8	4	71	7	996.5	Snow
	09Z	120	4	-3	-5	8	4	71	7	994.8	Snow
	12Z	130	5	-2	-3	8	4	73	7	992.9	Snow
	15Z	100	4	-3	-4	8	3	71	7	992.5	Snow
	18Z	120	2	-2	-4	8	3	10	7	991.2	Mist/snow
	21Z	030	6	-3	-4	8	2	77	2	990.3	
17.3 Sat	00Z	230	5	-6	-7	8	2	86	7	989.9	Snow
	03Z	NA									
	06Z	310	5	-12	-14	8	9	73	8	992.4	(Showers)
	09Z	310	5	-9	-12	8	9	73	7	993.0	Snow
	12Z	300	6	-8	-11	8	9	73	7	994.9	Snow
	15Z	280	9	-6	-11	8	9	71	7	996.9	Snow
	18Z	270	9	-12	-14	8	9	71	7	999.6	Snow
	21Z	280	8	-14	-17	8	4	71	7	1002.1	Snow
18.3 Sun	00Z	270	9	-16	-19	8	9	71	7	1004.3	Snow
	03Z	NA									
	06Z	280	7	-15	-19	7	9	38	7	1009.6	Snow
	09Z	270	6	-12	-17	8	9	36	3	1011.0	/blowing snow
	12Z	270	7	-11	-17	8	9	36	3	1012.9	/blowing snow
	15Z	270	3	-10	-17	7	9	2	3	1014.9	/blowing snow
	18Z	240	3	-11	-13	8	9	71	7	1015.7	Snow
	21Z	130	3	-10	-12	8	9	22	7	1014.6	Snow
19.3 Mon	00Z	150	4	-10	-21	8	9	71	7	1012.8	Snow
	03Z	140	3	NA	NA	8	0	71	7	NA	Snow
	06Z	120	3	-5	-6	8	4	22	7	1010.9	Snow
	09Z	130	4	-1	-2	8	4	73	2	1009.2	
	12Z	130	3	0	-3	8	4	2	7	1008.5	Snow
	15Z	120	3	NA	NA	7	5	10	2	1008.3	Mist
	18Z	130	3	-2	NA	8	NA	10	1	1007.5	Mist
	21Z	140	4	-2	-2	8	9	10	2	1005.7	Mist

Time: 00Z 0400H local 12Z 1600H local time  
 03Z 0700H 15Z 1900H  
 06Z 1000H 18Z 2200H  
 09Z 1300H 21Z +0100H next day

SVERDLOVSK METEOROLOGICAL REPORTS 24.3 TO 7.4.79 (2/5)

Date	Time	W/Dir	W/Spd m/sec	Temp 'C	Dwpt 'C	ClCvr ?/8	Vis m	WC Pres	WC Past	BarPres mb	Comment
20.3 Tues	00Z	190	5	0	-2	6	5	10	2	1006.1	Mist
	03Z	220	4	+2	-2	8	5	71	2	1007.3	
	06Z	220	5	+2	-2	8	5	26	7	1008.5	Snow
	09Z	210	6	+2	-3	8	5	85	2	1009.6	
	12Z	230	5	+2	-3	8	5	85	8	1010.3	Showers
	15Z	270	10	+1	-3	6	5	1	8	1012.3	Showers
	18Z	280	10	-7	-11	2	5	26	8	1918.6	Showers
	21Z	270	5	-10	-14	0	9	2	0	1022.5	/clouds <1/2
21.3 Wed	00Z	280	4	-12	-15	0	9	2	0	1025.8	/clouds <1/2
	03Z	240	2	-14	-17	0	9	1	0	1028.4	Clouds dis
	06Z	280	3	-7	-13	0	9	2	0	1029.6	/clouds <1/2
	09Z	200	3	-1	-12	3	9	3	0	1-28.9	Clouds dev
	12Z	160	3	+1	-10	5	9	3	1	1027.9	Clouds dev
	15Z	180	4	-2	-10	0	9	1	1	1027.8	Clouds dis
	18Z	200	3	-6	-12	0	9	2	1	1028.3	/clouds <1/2
	21Z	360	0	-9	-14	0	9	2	0	1028.2	/clouds <1/2
22.3 Thurs	00Z	360	0	-13	-5	5	9	3	1	1030.6	Clouds dev
	03Z	NA									
	06Z	250	4	-3	-12	2	9	1	1	1030.7	Clouds dis
	09Z	210	3	+3	NA	2	10	3	0	NA	Clouds dev
	12Z	180	1	+4	-15	7	9	3	1	1029.1	Clouds dev
	15Z	NA									
	18Z	360	0	-2	-5	6	9	10	2	1029.4	Mist
	21Z	120	1	-6	-8	5	9	10	1	1029.9	Mist
23.3 Fri	00Z	360	0	-7	-9	3	9	10	1	1028.4	Mist
	03Z	110	2	-6	-8	7	9	10	1	1029.0	Mist
	06Z	100	1	0	-5	7	9	10	1	1027.3	Mist
	09Z	NA									
	12Z	140	2	+5	-4	7	9	5	2	1024.6	Haze
	15Z	240	3	+3	-2	7	9	10	2	1024.0	Mist
	18Z	260	4	+1	-1	5	9	10	2	1024.4	Mist
	21Z	250	3	-1	-3	7	6	3	2	1024.0	Clouds dev
24.3 Sat	00Z	240	2	-3	-2	5	9	10	2	1024.1	Mist
	03Z	250	1	0	-2	8	5	10	2	1023.4	Mist
	06Z	250	5	+2	-1	7	5	10	8	1022.4	Mist/showers
	09Z	240	4	+3	-3	8	5	2	2	1021.1	/clouds >1/2
	12Z*	270	5	+3	-2	7	14K	3	2	1020.5	Clouds dev
	15Z	240	3	+1	-3	2	5K	10	1	1020.4	Mist
	18Z	300	4	+2	-1	6	5K	10	1	1020.6	Mist
	21Z	290	5	+2	-1	8	5K	3	2	1020.2	Clouds dev
Time:	00Z	0400H	local	12Z	1600H	local time					
	03Z	0700H		15Z	1900H						
	06Z	1000H		18Z	2200H						
	09Z	1300H		21Z	+0100H	next day					

SVERDLOVSK METEOROLOGICAL REPORTS 24.3 TO 7.4.79 (3/5)

Date	Time	W/Dir	W/Spd m/sec	Temp 'C	Dwpt 'C	ClCvr ?/8	Vis m	WC Pres	WC Past	BarPres mb	Comment
25.3 Sun	00Z	290	4	-1	-3	0	9	2	1	1021.1	/clouds c1/2
	03Z	290	4	-1	-3	0	9	2	1	1021.1	/clouds c1/2
	06Z	300	5	+2	-2	0	9	2	0	1021.4	/clouds <1/2
	09Z	310	5	+5	-14	0	9	2	0	1021.1	/clouds <1/2
	12Z	350	5	+6	-4	0	14K	2	0	1022.2	/clouds <1/2
	15Z	020	2	+3	-4	0	5K	2	0	1023.7	/clouds <1/2
	18Z	050	1	-2	-8	0	5K	2	0	1026.9	/clouds <1/2
	21Z	060	1	-4	-10	0	5K	2	0	1028.9	/clouds <1/2
26.3 Mon	00Z	090	1	-9	-12	0	9	2	0	1031.0	/clouds <1/2
	03Z	NA									
	06Z	110	4	-3	-10	1	9	3	0	1032.6	Clouds dev
	09Z	120	5	+1	-7	5	9	3	1	1031.7	Clouds dev
	12Z	130	4	+2	-6	6	14K	3	1	1030.8	Clouds dev
	15Z	130	5	-1	-16	7	5K	2	2	1030.8	/clouds <1/2
	18Z	130	3	-3	-5	0	5K	1	1	1030.7	Clouds dis
	21Z	NA									
27.3 Tues	00Z	360	0	-9	-10	0	9	2	0	1031.6	/clouds <1/2
	03Z	360	0	-8	-9	5	9	10	1	1030.3	Mist
	06Z	250	3	+2	-3	7	9	10	1	1028.9	Mist
	09Z	210	5	+4	-4	6	9	2	2	1027.5	/clouds >1/2
	12Z	250	6	+6	-4	3	14K	1	1	1026.4	Clouds dis
	15Z	260	3	+3	-3	0	5K	10	0	1027.5	Mist
	18Z	270	3	+0	-4	0	5K	2	0	1028.6	(Mist)
	21Z	250	1	-3	-5	0	5K	10	0	1030.5	Mist
28.3 Wed	00Z	240	1	-5	-7	0	9	10	0	1030.9	Mist
	03Z	240	1	-5	-7	0	9	10	0	1030.9	Mist
	06Z	030	3	+2	-4	0	9	2	0	1031.9	/clouds <1/2
	09Z	030	1	+4	-6	6	6	2	1	1031.9	/clouds c1/2
	12Z	030	2	+4	-6	7	14K	2	1	1032.9	/clouds c1/2
	15Z	020	1	+1	-5	7	5K	2	2	1033.8	/clouds >1/2
	18Z	130	2	-1	-4	7	5K	3	1	1035.6	Clouds dev
	21Z	110	2	-2	-5	0	5K	2	1	1035.8	/clouds c1/2
29.3 Thurs	00Z	100	1	-4	-6	0	9	2	1	1036.2	/clouds c1/2
	03Z	NA									
	06Z	120	5	-1	-4	3	9	3	0	1036.2	Clouds dev
	09Z	130	6	+2	-2	6	10	2	2	1034.8	/clouds >1/2
	12Z	130	5	+3	-1	3	14K	1	1	1032.9	Clouds dis
	15Z	130	5	+0	-2	7	5K	10	2	1031.9	Mist
	18Z	140	1	0	-3	5	5K	1	1	1030.7	Clouds dis
	21Z	140	1	-1	-3	8	5K	2	2	1029.8	/clouds >1/2
Time:	00Z	0400H	local	12Z	1600H	local time					
	03Z	0700H		15Z	1900H						
	06Z	1000H		18Z	2200H						
	09Z	1300H		21Z	+0100H	next day					

SVERDLOVSK METEOROLOGICAL REPORTS 24.3 TO 7.4.79 (4/5)

Date	Time	W/Dir	W/Spd m/sec	Temp 'C	Dwpt 'C	ClCvr ?/8	Vis m	WC Pres	WC Past	BarPres mb	Comment	
30.3 Fri	00Z	170	2	-1	-1	8	9	2	2	1028.7	/clouds >1/2	
	03Z	NA										
	06Z	190	2	+3	-2	8	9	10	2	1026.1	Mist	
	09Z	090	1	+6	-2	7	9	2	2	1024.8	/clouds >1/2	
	12Z	120	3	+8	-4	3	9	1	1	1022.8	Clouds dis	
	15Z	130	2	+3	-2	7	9	10	1	1021.7	Mist	
	18Z	120	1	+1	-2	0	5K	10	1	1021.2	Mist	
	21Z	000	0	0	-2	0	5K	10	0	1020.3	Mist	
31.3 Sat	00Z	200	5	+1	-2	0	9	0	0	1019.3	/clouds <1/2	
	03Z	250	6	+1	-4	7	9	2	1	1019.0	/clouds c1/2	
	06Z	260	4	+2	-5	6	9	1	1	1018.6	Clouds dis	
	09Z	240	6	+5	-6	0	10	1	1	1017.0	Clouds dis	
	12Z	230	6	+6	-5	0	14K	2	1	1016.3	/clouds c1/2	
	15Z	260	4	+3	-4	0	5K	2	0	1016.7	/clouds <1/2	
	18Z	270	2	+1	-6	0	5K	2	0	1017.1	/clouds <1/2	
	21Z	250	2	-1	-4	0	5K	2	0	1016.9	/clouds <1/2	
1.4 Sun	00Z	260	2	-2	-5	0	9	2	0	996.3*	/clouds <1/2	
	03Z	NA										
	06Z	290	5	+2	-3	2	9	1	1	1014.4	Clouds dis	
	09Z	350	5	+4	-8	0	9	1	0	1015.0	Clouds dis	
	12Z	330	5	0	-9	0	14K	2	0	1017.7	/clouds <1/2	
	15Z	360	5	-4	-13	0	5K	2	0	1021.1	/clouds <1/2	
	18Z	010	5	-7	-16	0	5K	2	0	1023.4	/clouds <1/2	
	21Z	360	5	-9	-16	0	5K	2	0	1024.7	/clouds <1/2	
2.4 Mon	00Z	320	4	-10	-19	0	9	2	0	1025.2	/clouds <1/2	
	03Z	NA										
	06Z	330	6	-9	-14	0	9	2	0	1025.4	/clouds <1/2	
	09Z	320	5	-5	-11	0	9	2	0	1024.8	/clouds <1/2	
	12Z	350	5	-3	-10	0	14K	2	0	1025.0	/clouds <1/2	
	15Z	350	4	-4	-10	0	5K	2	0	1025.0	/clouds <1/2	
	18Z	040	2	-8	-13	0	5K	2	0	1026.3	/clouds <1/2	
	21Z	070	1	-11	-16	0	5K	2	0	1027.5	/clouds <1/2	
3.4 Tues	00Z	360	0	-13	-15	0	9	2	0	1028.2	/clouds <1/2	
	03Z	NA										
	06Z	030	1	-7	-15	0	9	2	0	1026.7	/clouds <1/2	
	09Z	030	3	-1	-14	0	9	2	0	1025.4	/clouds <1/2	
	12Z	050	2	-3	-14	0	14K	2	0	1024.7	/clouds <1/2	
	15Z	130	2	-6	-14	0	5K	1	1	1025.0	Clouds dis	
	18Z	090	1	-9	-12	0	5K	2	1	1025.6	/clouds c1/2	
	21Z	000	0	-12	-14	0	5K	2	0	1026.0	/clouds <1/2	
Time:	00Z	0400H	local	12Z	1600H	local	time	<b>Note: *</b> The BarPres of 996.3 for 00Z Sunday 1st April is as given.				
	03Z	0700H		15Z	1900H							
	06Z	1000H		18Z	2200H							
	09Z	1300H		21Z	+0100H	next	day					

SVERDLOVSK METEOROLOGICAL REPORTS 24.3 TO 7.4.79 (5/5)

Date	Time	W/Dir	W/Spd m/sec	Temp 'C	Dwpt 'C	ClCvr 7/8	Vis m	WC Pres	WC Past	BarPres mb	Comment
4.4 Wed	00Z	360	0	-14	-16	0	9	2	0	1026.4	/clouds <1/2
	03Z	NA	NA	-15	-16	2	9	10	0	1026.0	Mist
	06Z	240	1	-5	-12	0	9	10	0	1024.3	Mist
	09Z	270	4	-2	-12	0	9	2	0	1022.6	/clouds <1/2
	12Z	270	5	0	-11	2	14K	3	0	1021.0	Clouds dev
	15Z	250	5	-3	-14	1	5K	2	0	1019.8	/clouds <1/2
	18Z	270	5	-6	-13	0	5K	2	0	1021.4	/clouds <1/2
	21Z	270	3	-8	-13	0	5K	2	0	1022.5	/clouds <1/2
5.4 Thurs	00Z	300	2	-8	-14	0	9	2	0	1022.0	/clouds <1/2
	03Z	250	1	-11	-15	0	9	10	0	1023.5	Mist
	06Z	180	1	-5	-14	0	9	2	0	1023.2	/clouds <1/2
	09Z	170	2	-4	-16	0	9	2	0	1023.8	/clouds <1/2
	12Z	030	2	-2	-12	0	14K	2	0	1023.3	/clouds <1/2
	15Z	040	2	-4	-13	0	5K	2	0	1023.7	/clouds <1/2
	18Z	100	2	-7	-13	0	5K	2	0	1024.3	/clouds <1/2
	21Z	120	1	-11	-13	0	5K	2	0	1025.1	/clouds <1/2
6.4 Fri	00Z	120	1	-13	-13	0	9	2	0	1025.8	/clouds <1/2
	03Z	NA	NA								
	06Z	120	4	-5	-9	0	9	2	0	1024.0	/clouds <1/2
	09Z	NA	NA								
	12Z	130	4	-2	-8	3	14K	2	0	1020.7	/clouds <1/2
	15Z	110	3	-5	-10	3	5K	1	1	1020.2	Clouds dis
	18Z	090	2	-9	-13	2	5K	2	1	1020.3	/clouds <1/2
	21Z	040	1	-12	-13	0	5K	2	0	1019.6	/clouds <1/2
7.4 Sat	00Z	010	1	-14	-14	0	9	10	0	1019.4	Mist
	03Z	010	1	-14	-14	0	9	10	0	1019.4	Mist
	06Z	050	1	-5	-14	0	9	2	0	1019.4	/clouds <1/2
	09Z	320	1	-2	-15	0	9	2	0	1019.0	/clouds <1/2
	12Z	360	2	0	-12	0	14K	2	0	1018.4	/clouds <1/2
	15Z	270	2	-2	-11	1	5K	1	1	1019.1	Clouds dis
	18Z	280	6	-3	-9	0	5K	2	1	1020.6	/clouds <1/2
	21Z	270	4	-6	-11	0	5K	2	0	1021.9	/clouds <1/2

Time: 00Z 0400H local 12Z 1600H local time  
 03Z 0700H 15Z 1900H  
 06Z 1000H 18Z 2200H

09Z 1300H

21Z +0100H next day