INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1} OF HAMSTERS UNTREATED AND TREATED WITH 5mg. CORTISONE WHICH WERE INOCULATED APRIL 18, 1951 WITH LANSING VIRUS

PURPOSE — To determine if hamsters which had previously been inoculated with Lansing virus 1:20 or 1:100, some of which were cortisone treated, and which did not show signs of disease or which showed transient paralysis are resistant to intracerebral challenge with Lansing virus 10^{-1}.

PROCEDURE — Hamsters from the experiment of 4/18/51 were used in this experiment. The following animals were inoculated with Lansing virus 10^{-1}.

1 - Cortisone treated, Lansing 1:20 (transient paralysis)

6 Untreated, Lansing 1:100

3 Cortisone treated, Lansing 1:100

VIRUS: Lansing virus: Pool III of 2/15/51. 10% suspension in saline. Centrifuged 2000 rpm for 10 minutes to remove flocculent ppt.

HAMSTERS — Lakeview Hamster Colony hamsters from experiment of 4/18/51.

JUN 13 1951

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1}
OF HAMSTERS (UNTREATED AND TREATED WITH 5mg. CORTISONE)
WHICH WERE INOCULATED APRIL 18, 1951 WITH LANSING VIRUS

CORTISONE - 5mg. - I.M. - LANSING 1:20

HAMSTER NO. Previously Ill		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Yes	* 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

UNTREATED - LANSING 1:100

No	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CORTISONE - 5mg. - I.M. - LANSING 1:100

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
No	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Previously showed transient paralysis

JUN 26 1957

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1} OF HAMSTERS (UNTREATED AND TREATED WITH 5 mg. CORTISONE) WHICH WERE INOCULATED MAY 25, 1957 WITH LANSING 1:100

PURPOSE — To determine if hamsters which had previously been inoculated with Lansing virus 1:100, one of which was cortisone treated, and which showed transient paralysis or no signs of disease are resistant to intracerebral challenge with Lansing 10^{-1}.

PROCEDURE — Hamsters from the experiment of 5/25/57 were used in this experiment. The following animals were inoculated with Lansing virus 10^{-1}.

7 - Untreated, Lansing virus 1:100
One of these had transient paralysis

1 Treated with 5 mg. Cortisone, Lansing 1:100
This animal had transient paralysis

VIRUS — Lansing virus: Pool II of 2/5/57. 10% suspension in saline. Centrifuged 10 minutes at 2000 rpm to remove flocculant ppt.

HAMSTERS — Lakeview Hamster Colony hamsters from experiment of 5/25/57

Summary

Hamsters	No. tested	Paralyzed	Mortality of Paralyzed	Incubation Period Average days
Untreated - previously had virus 1:100; remained well	17	9 (53%)	4/9 (44%)	6.1
Normal - Same Weight	10	7 (70%)	3/7 (43%)	4.7

See over for χ^2 test

See, however, test of 6/13/57 in which 6/6 untreated + 3/3 treated resisted 10^{-1} virus

	Par.	Not Par	Total	Expected Par	Expected Not Par
Previously inoc.	9	8	17	10	6.8
Normal	7	3	10	6	4
	16	11	27		Yates

$$\chi^2_{\text{Yates}} = \frac{\left[(8\times7) - (9\times3) - \frac{27}{2}\right]^2 \times 27}{17\times10\times16\times11} = \frac{\log 3.81202}{\text{ll } 4.47596} = \sqrt{4}$$

(15.5)

56	1.19033	1.23045
27	1.19033	1.00000
290	1.43136	1.20412
13.5	3.81202	1.04139
15.5		4.47596
		3.81202
		.66394

Not statistically significant

STANDARD B & P "NOTEAR"

JUN 26 1951

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1} OF HAMSTERS (UNTREATED AND TREATED WITH 5 mg. CORTISONE) WHICH WERE INOCULATED MAY 25, 1951 WITH LANSING 1:100

"SHWARTZMAN" (BREEDING AND LABORATORY INSTITUTE) HAMSTERS

UNTREATED – LANSING VIRUS 1:100

HAMSTER NO.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	
*6	– –	
8	– P P P P D	2
9	– –	
10	– –	
17	– – – P W P P P P P P P P D	4
18	– – – – P P P P P P P W W W – – – – – – – – – – – – – –	
19	– P P P P P	23

TREATED – 5 mg. CORTISONE (one dose) + LANSING 1:100

*99	– –	

* These animals developed paralysis and then recovered

For Simultaneous Controls see Titration in Mature Hamsters on 6/26/51

CHALLENGE OF HAMSTERS (UNTREATED AND TREATED WITH 5mg CORTISONE) (ORIGINAL TEST OF 5/25/51)

"CINCINNATI" (LAKEVIEW HAMSTER COLONY) HAMSTERS

UNTREATED - LANSING VIRUS 1:100

HAMSTER NO.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	
6		
7		4
8		2
*9		
12	D	
13		7
14		5
15		8
16		
17		
18		
19		
20		

TREATED - 5mg. CORTISONE + LANSING 1:100

*2		
19		

* These animals developed paralysis and then recovered

STANDARD B&P "NOIEAR"

STANDARD B&P "NOIEAR"

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1} OF HAMSTERS (PREVIOUSLY INOCULATED WITH LANSING 10^{-2}) WHICH FAILED TO SHOW SIGNS OR DEVELOPED ONLY TRANSIENT SIGNS.

PURPOSE: TO determine if hamsters which were previously inoculated with Lansing virus and failed to show signs of disease or developed transient paralysis are now resistant to challenge with 1000 mouse LD_{50} (10^{-1}) The purpose is to determine if the effect which certain agents depends upon the animal being infected, i.e. does it act only to convert inapparent and apparent infection into the severe fatal type, or is it capable of decreasing the resistance of the hamster by decreasing the minimal amount of virus necessary to initiate infection.

PROCEDURE: Hamsters from the experiment of Jan 14, 52 were used for challenge. As controls 18 hamsters from the same experiment which had received only ACTH were used. All hamsters were inoculated with Lansing 10^{-1} (0.05 ml)

VIRUS: Lansing virus - Pool VII of 1/11/52. 10% suspension in saline. Centrifuged 10 minutes to remove flocculent ppt.

HAMSTERS: BREEDING AND LABORATORY INSTITUTE LAKEVIEW HAMSTERS.

FEB 25 1952

LANSING 10^{-1} - CONTROLS - NO VIRUS PREVIOUSLY

ADULT MALE HAMSTERS USED PREVIOUSLY AS CONTROLS ON ACTH

A

	HAMSTER NO.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	
	37	— — — — — P P P P P P P P P P P P P P P P P P P P P	6
	55	— — — — — — — ? E P P P P P P P P D	10
✓ no tag	63	— — — — — — — — — — — E E E E E E E E — — — — — — — —	
	76	— — P P P P P P D	3
✓ no tag	83	— — P P P P P P P P P P P P P P P P P P P P P P P P D	3
	49	— D	2
	89	— —	
no tag	105	— —	
	52	— — — — — — E ? W W T TY D	9
	480	— — — ehe h P P P P P P P P P P P P TY TY TY TY TY P P P P P TY TY D	4
	482	— — — — — — SAL T SAL T T T T T D	7
	485	— — — — — — — — — — — — — — — E — — — — — — — — —	
	486	— —	
	487	— — — — — — — P D	8
no tag	491	— —	
	494	(D)	
	495	— D	2
	496	— —	

MORBIDITY = 10/17 = 59%
MORTALITY = 9/17 = 53%
AVERAGE INC. PER = 5.4 DAYS

B ♂ HAMSTERS PREVIOUSLY TREATED FOR 8 DAYS WITH ACTH (80 UNITS) AND CORTISONE 5 MG. + LANSING VIRUS 10^{-2}
CHALLENGED WITH LANSING 10^{-1}

HAMSTER NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

452 -

458 -

C ♂ HAMSTERS PREVIOUSLY TREATED WITH ACTH FOR 8 DAYS (80 UNITS) (1/11/52) + LANSING VIRUS 1:100
CHALLENGED WITH LANSING 10^{-1} (42 days, after inoc.)

*460 - - - - - - - - E E E E E E E E E E E E E E E E E E E

*469 - - WW -

342 - - PPPPPPP PPPPPPPPP D
TY TY TY

476 - WPPPPPPP PPPPPP P P P P P P P P P P P P P P P P P
TY TY TY TY TY TY TY

477 - D

478 - - P P P D

D ♂ HAMSTERS WHICH PREVIOUSLY WERE INJECTED WITH LANSING VIRUS 10^{-2} ONLY
CHALLENGED WITH LANSING 10^{-1}

384 - - P D

519 -

E ♀ HAMSTERS PREVIOUSLY INJECTED WITH LANSING VIRUS 10^{-2} ONLY
CHALLENGED WITH LANSING 10^{-1}

522 -

530 (D)

531 -

536 - - PPPPPPPPPPPPPPPPPP PPPPPPPPPPPP PPPPPPPPPPP PPP

538 (D)

540 -

* These animals developed only transient signs. All others showed no signs of infection.

MAY 26 1952

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10 OF HAMSTERS PREVIOUSLY INOCULATED WITH LANSING 1:100.

PURPOSE: To determine if inapparent infection against Lansing virus occurs in hamsters after inoculation with $\sqrt{100}$ LD_{50} OF virus. The purpose is to find out if cortisone merely converts inapparent infection and apparent infection into a fatal disease or if it is also capable of decreasing the amount of virus necessary to initiate infection since under its influence both morbidity and mortality are significantly increased

PROCEDURE: The hamsters were divided into the three following groups and inoculated with 0.05 ml of a 10% suspension of Lansing virus:

GROUP A: NORMAL ADULT ♂♂ - 20

GROUP B: 16 ♂ HAMSTERS INOCULATED ON 4/21/52 WITH 0.05ml OF 10^{-2} SOSPENSION OF LANSING VIRUS - NO SIGNS OF DISEASE.

GROUP C: 14 ♂ HAMSTERS WHICH RECEIVED ACTH 10 MG DAILY (IN 3 DIVIDED DOSES) FOR 8 DAYS + LANSING VIRUS 1:100 ON THE 4TH DAY OF ACTH - NO SIGNS OF DISEASE

VIRUS: LANSING VIRUS - Pool VII of 1/11/52. 10% suspension in saline. Centrifuged at 2000 rpm x 10 minutes.

STANDARD B & P "NOTEAR"

NORMAL ADULT HAMSTERS (♂)

LANSING VIRUS — 1:10

A

HAMSTER NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

48 —

282 — — — — — — P P P P P P P P P P P P P P P P P P P P P P 7

535 —

73 —

64 — — — — — P P D 6

85 — — — — — — — — — — P PPPPPPPPPPPPPPPPPPPPPPPPPPPPPP PR D 11

602 —

589 —

597 — — — — — — SAL P SAL P SAL P SAL P P P P P PPR D 7

596 —

594 — — — — — P P PPPPPPPPPPPPPPPPPPPPPPPPPP D 6

188 — — — — — — — ? ? CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS 9

601 —

592 — — — PPPP P D 4

600 — — CNS D 3

593 —

588 —

595 —

102 — — — — P PPPPPPPD 5

591 — — — — PPPPW PW PW P P W W W W — — — — — — — — — — — — — — 5

6.3

% P, CNS, D 0 0 5 10 20 25 40 40 45 45 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50

% DEAD 0 0 0 5 5 5 15 15 20 20 20 20 20 20 20 20 25 25 25 25 30 30 30 30 30 30 30 30 35

16 ♂ ADULT HAMSTERS ORIGINALLY INOCULATED ON 4/21/52 WITH LANSING VIRUS 1:100 ONLY
NO SIGNS OF LANSING INFECTION.

B

LANSING VIRUS - 1:10

HAMSTER NO.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	
71	- - PP D	3
223	- - - - - - - - - - - - CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS CNS	13
650	- -	
198	- CNS P P P P P P D	2
653	- CNS D	2
644	- - P P P PPPPPP PPPPP PPPPPPPPPP D	3
656	- -	
649	- -	
673	- CNS CNS CNS PPPP PR PR PR PR PR D	2
668	- PPPPPPPPPPPP P D	2
682	- -	
667	- - ? PPP D	4
663	- -	
664	- -	
665	- - - - - - - - - - - - P P P P P P P P P P P W W W - - - -	11
72	- - P PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	3
		4.5
% P, CNS, D	0 25 44 50 50 50 50 50 50 50 56 56 62 62 62 62 62 62 62 62 62 62 62 62 62 62 62 62	
% DEAD	0 0 6 12 12 25 25 25 31 37 37 37 37 37 37 44 44 44 44 44 44 44 44 44 44 44 44 44	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	

MAY 26 1952

14 ADULT ♂ HAMSTERS ORIGINALLY INOCULATED WITH ACTH 10 MG DAILY (IN 3 DIVIDED DOSES) FOR 8 DAYS — LANSING VIRUS 1:100 ON 7th DAY - NO SIGNS OF DISEASE

C

LANSING VIRUS — 1:10

HAMSTER NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
56	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
702	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
691	–	–	–	–	–	–	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	E	P	P	P
700	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
49	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
709	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
52	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
720	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
75	D																											
707	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
189	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
711	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
710	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
79	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
% P, CNS, D	0	0	0	0	0	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
% DEAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

SUMMARY OF TEST OF SEPTEMBER 23, 1952

INTRACEREBRAL CHALLENGE WITH LANSING 10^{-1} OF HAMSTERS PREVIOUSLY INOCULATED WITH LANSING 1:100 - TO TEST FOR DEVELOPMENT OF IMMUNITY

HAMSTERS	NUMBER TESTED	PERCENT MORBIDITY	PERCENT MORTALITY	INCUBATION PERIOD
NORMAL ADULTS	25	28	21	4.8
PARALYZED - PREVIOUSLY INOCULATED WITH LANSING ONLY	8	37.5	*	6.0
PARALYZED - PREVIOUSLY INOCULATED WITH LANSING AND CORTISONE	2	0	0	0
PREVIOUSLY INOCULATED WITH LANSING ONLY - NO SIGNS	21	52	29	4.7
PREVIOUSLY INOCULATED WITH LANSING CORTISONE (5 MG) 10 DAYS LATER - NO SIGNS	17	35	18	3.8

* 2 OF THESE ANIMALS BECAME PARALYZED AND WERE SACRIFICED ON THE DAY OF ONSET OF SIGNS TO DETERMINE TITER OF VIRUS.

SEP 23 1952

INTRACEREBRAL CHALLENGE WITH LANSING VIRUS 10^{-1} OF HAMSTERS PREVIOUSLY INOCULATED WITH LANSING 1:100

PURPOSE: To determine if inapparent infection against Lansing virus occurs in hamsters after inoculation with 1/100 more LD_{50} of virus. Previous experiments have indicated that when these animals are challenged with 100 more LD_{50} around 5 weeks after the original inoculation there is no resistance to infection. However, in one experiment in which a small number of hamsters were challenged after 8 weeks all were resistant to infection. These animals therefore are being challenged 75 days after the original inoculation to determine if a longer time interval is necessary for the development of resistance.

It has also been found that even when paralyzed hamsters were examined for neutralizing antibodies they had not occurred up to 72 days after inoculation. Therefore paralyzed hamsters are also being challenged to determine if they are susceptible to reinfection.

PROCEDURE: All hamsters from the experiment of July 10, 1952 either treated or untreated were challenged with Lansing 10^{-1}, 0.05 ml intracerebrally, 75 days after original inoculation. In addition a group of 25 normal adults of the same age (about 4 months old) were also inoculated with Lansing 10^{-1}.

VIRUS: Lansing virus - Pool VIII of 9/13/52. 10% suspension in saline.

SEP 23 1952

STANDARD B&P "NOTEAR"

A

10 ♂ ADULT HAMSTERS INOCULATED 7/10/52 WITH LANSING 1:100 ONLY. THESE ANIMALS WERE PARALYZED WITHIN 10 DAYS AFTER INOCULATION.

LANSING VIRUS 1:10

ADDITIONAL SIGNS DEVELOPING AFTER INOCULATION

	HAMSTER NO.	SIGNS AT TIME OF INOCULATION	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
1	357	P	P ← Sacrificed 10/3/52 at onset of paralysis. Bled. Cortex-Cerebellum and spinal cord-brain stem removed for filtration 7-7-8
2			
3	726*	P P	
4	734*	P P	
5	750	P P	D
6	752	P P	D Bad teeth. Hasn't been eating
7	762	—	
8	563 *	—	P ← Sacrificed 10-1-52 at onset of paralysis Cortex-Cerebellum; spinal cord-brain stem filtered
9	781	P	D
10	784*	—	
11	818	—	

STANDARD B&P "NOTEAR"

B

2 ♂ ADULT HAMSTERS INOCULATED 7/10/52 WITH LANSING 1:100. BOTH BECAME PARALYZED AND RECEIVED 5 MG CORTISONE I.M., #757 AT ONSET OF PARALYSIS AND #800 10 DAYS AFTER VIRUS INOCULATION.

LANSING VIRUS 1:10

ADDITIONAL SIGNS DEVELOPING AFTER INOCULATION

	HAMSTER NO.	SIGNS AT TIME OF INOCULATION	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
1	757	P P	
2	800	—	E E E E E E E E E E E E E E E E E E E E E E E

* No. 563 was originally 763

SEP 23 1952

21 ♂ ADULT HAMSTERS INOCULATED 7/10/52 WITH LANSING 1:100. THESE ANIMALS SHOWED NO SIGNS OF INFECTION UP TO 75 DAYS AFTER INOCULATION.

LANSING VIRUS 1:10

HAMSTER NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
319	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
380	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
388	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
405	–	–	–	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
766	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
770	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	E	E	E	–	–	–	–	–
773	–	–	–	P	P	P	P	P	P	D																							
343	–	–	–	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
387	–	–	–	–	P	P	P	D																									
778	–	–	P	P	P	D																											
779	–	–	–	–	SAL	P	P	P	P	P	P	P	D																				
						T	T	T	T	T	T	T																						
785	–	–	–	–	–	–	–	P	P	P	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
787	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
788	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
101	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
353	–	–	P	P	P	D																											
555	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
775	–	–	–	–	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
786	–	–	–	–	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
789	–	–	P	P	D																												
819	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

% P, CNS, D	0	9	14	24	38	48	48	48	48	48	52	52	52	52	52																		
% DEAD	0	0	5	9	14	14	24	24	29	29	29	29	29	29																			

D

17 ♂ ADULT HAMSTERS INOCULATED 7/10/52 WITH LANSING 1:100. THESE ANIMALS WERE ALSO INOCULATED WITH 5 MG CORTISONE I.M. 10 DAYS AFTER VIRUS AND HAVE SHOWN NO SIGNS OF INFECTION UP TO 75 DAYS POST INOCULATION

SEP 23 1952

LANSING VIRUS 1:10

HAMSTER NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
178	- -
193	- - - D
791	- -
792 (N 355)	- -
794	- -
797	- - P P D
798	- - - P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
801	- -
803	- -
191	- - - P P P P P P P P P P P P P P P P P P* (IMP) P P P P P P P P P P
805	- -
807	- P P P D
810	- -
811	- -
813	- -
814	- -
815	- - - - - P P P -

% P, CNS, D. 0 6 12 29 29 35 35 35 35 35 35 35 35 35 35 35

% DEAD 0 0 0 18 18 18 18 18 18 18 18 18 18 18

*IMP = IMPROVING

25 ♂ NORMAL ADULT HAMSTERS SEP 23 1952

LANSING VIRUS 1:10

HAMSTER NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
826	-	-	-	-	-	-	-	-	-	-	-	-	-																				
827	-	-	-	-	-	-	-	-	-	-	-	-	-																				
828	-	-	-	-	-	-	-	-	-	-	-	-	-																				
829	-	-	-	-	-	-	P	P	P	P	P	P	P																				
830	-	-	-	-	-	-	-	-	-	-	-	-	-																				
831	-	-	P?	P	P	P	P	P	P	PR	D																						
832	-	-	-	-	-	-	-	→	-	-	-	-	-	-	-																		
833	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
834	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
835	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	E			
836	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
837	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
838	-	-	?	D																													

E

SEP 23 1952

NORMAL ADULT MALE HAMSTERS

LANSING VIRUS 1:10

HAMSTER NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
839	–	–	PP	PR	D																												
840	–	–	–	–	–	–	SAL	–	–	?	?	?	?	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
841	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
842	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
843	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
844	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
845	–	–	–	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	P	SAL	PR	D															
846	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
847	–	–	–	–	P	P	P	P	D																								
848	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
849	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
850	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

% P, CNS, D 0 0 8 16 20 20 24 28 28 28 28 28 28 28 28 28 28

% DEAD 0 0 0 4 8 8 8 12 12 12 16 16 16 16 16 21

Oct 2, 1952

SPECIMEN	VIRUS	NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	MORTALITY	LD50
 CORTEX – CEREBELLUM OF HAMSTER #563	10^{-1}	1	– – – ? D		NO. VIRUS
		2	– – – – – ? ? 7 S S S S S S D		
		3	– –		
		4	– –		
		5	– –		
		6	– –		
		7	– –		
		8	– –		
		9	– –		
		10	– –		
PARALYZED IN REARS 11 DAYS AFTER INOCULATION WITH LANSING 1:100. LOST PARALYSIS BY 22ND DAY. CHALLENGED 75 DAYS AFTER ORIGINAL INOCULATION WITH LANSING 1:10. PARALYZED RIGHT FRONT 8 DAYS LATER SACRIFICED AT ONSET FOR TITRATION OF VIRUS.	10^{-2}	1	– – – ? ? – – D		
		2	– –		
		3	– –		
		4	– –		
		5	– –		
		6	– –		
		7	– –		
		8	– –		
		9	– –		
		10	– –		
	10^{-3}	1	– D		
		2	– – SD		
		3	– – – – – D		
		4	– – – – – – D		
		5	– ? ? ? ? ! ? – – – –		
		6	– –		
		7	– –		
		8	– –		
		9	– –		
		10	– Missing 10/4/52		

B

SPINAL CORD
BRAIN STEM

OF HAMSTER
#563

SPECIMEN	VIRUS	NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD_{50}
	10^{-1}	1	-	D																																		9/10	$10^{-1.8}$
		2	-	?	P	P	P	P	D																														
		3	-	-	-	-	D																																
		4	-	-	-	-	-	-	-	P	D																												
		5	-	-	-	-	-	-	-	-	P	P	D																										
		6	-	-	-	-	-	-	-	-	-	-	P	P	P	D																							
		7	-	-	-	-	-	-	-	-	-	-	-	-	-	P																							
		8	-	-	-	-	-	-	-	-	-	-	-	-	-	P	P	D																					
		9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	P	P	D															
		10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	10^{-2}	1	-	D																																		4/10	
		2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	D																		
		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	D																	
		4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	E	P	P	W	D													
		5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	10^{-3}	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	?	S	D								0/9	
		2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

HLA

SPECIMEN	VIRUS	NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	L D50
A CORTEX-CEREBELLUM OF HAMSTER #357	10^{-1}	1	–	S	D																																		NO VIRUS
		2																																					
		3																																					
		4																																					
		5																																					
		6																																					
		7																																					
		8																																					
		9																																					
		10																																					
PARALYZED LEFT REAR 6 DAYS AFTER INOCULATION WITH LANSING 1:100. RECOVERED COMPLETELY AFTER 8 DAYS AND ON 19TH DAY AFTER INOCULATION AGAIN BECAME PARALYZED - THIS TIME IN RIGHT REAR.	10^{-2}	1	–	S	D																																	
		2																																					
		3																																					
		4																																					
		5																																					
		6																																					
		7																																					
		8																																					
		9																																					
		10																																					
CHALLENGED 95 DAYS AFTER ORIGINAL INOCUL. WITH LANSING 1:10 WHILE STILL PARALYZED. RIGHT FRONT BECAME PARALYZED ON 10TH DAY. SACRIFICED AT ONSET OF PARALYSIS	10^{-3}	1	–	S	D																																	
		2																																					
		3																																					
		4																																					
		5																																					
		6																																					
		7																																					
		8																																					
		9																																					
		10																																					

B

SPINAL CORD

BRAIN STEM

OF HAMSTER

#357

SPECIMEN	VIRUS	NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD_{50}
	10^{-1}	1	–	CNS	D																																	2/10	$< 10^{-10}$
		2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	P	D																					
		3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
	10^{-2}	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	P	D																			2/10	
		2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
	10^{-3}	1	–	–	D																																	1/10	
		2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		5	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					
		10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–																					

MA+

SUMMARY OF TESTS OF JUNE 18 - JULY 19, 1951

TITRATION IN MICE OF CORTEX AND CEREBELLUM, AND SPINAL CORD AND BRAIN STEM FROM "NORMAL" AND CORTISONE TREATED HAMSTERS INFECTED WITH LANSING VIRUS

HAMSTER NUMBER	SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS 1.0	2.0	3.0	4.0	5.0	6.0	L D_{50}
#11 27 (NO CORTISONE) Days Paralyzed = <1	CORTEX AND CEREBELLUM	9/10	8/10	3/10	0/10	0/9	0/10	2.5
	SPINAL CORD AND BRAIN STEM	10/10	7/10	4/10	1/9	0/10	0/10	2.7
#12 28 (NO CORTISONE) Days Paralyzed = <1	CORTEX AND CEREBELLUM	7/10	4/10	2/8	1/10	0/9	0/10	1.8
	SPINAL CORD AND BRAIN STEM avl = 2.5	9/10	7/10	2/10	0/10	0/10	0/9	2.35
#15 35 (NO CORTISONE) Days Paralyzed = 5	CORTEX AND CEREBELLUM 7/5/51	0/10	—	—	—	—	—	—
	SPINAL CORD AND BRAIN STEM 7/5/51	10/10	—	—	—	—	—	—
	SPINAL CORD AND BRAIN STEM 7/19/51	9/10	2/10	1/10	1/10	0/10	0/9	1.7
5th day #9 40 (CORTISONE TREATED) Days Paralyzed = <1 avl = 2.6	CORTEX AND CEREBELLUM	9/9	10/10	5/10	4/10	0/10	1/10	3.5
	SPINAL CORD AND BRAIN STEM avl = 3.45	9/10	10/10	8/10	5/10	0/9	1/8	3.8
6th day #10 39 (CORTISONE TREATED) Days Paralyzed = <1	CORTEX AND CEREBELLUM	10/10	10/10	6/10	0/9	0/8	0/9	3.9
	SPINAL CORD AND BRAIN STEM	10/10	10/10	9/10	7/10	2/10	0/9	4.2
8th day #11 41 (CORTISONE TREATED) Days Paralyzed = <1	CORTEX AND CEREBELLUM	2/10	0/10	0/9	0/10	0/10	0/9	<1.0
	SPINAL CORD AND BRAIN STEM	10/10	8/10	5/10	0/10	0/10	0/10	2.8
#18 44 (CORTISONE TREATED) Days Paralyzed = 20	CORTEX AND CEREBELLUM	0/10	—	—	—	—	—	—
	SPINAL CORD AND BRAIN STEM	0/10	—	—	—	—	—	—
Signs - 2 days 1 Died #46 (13) (CORTISONE TREATED) Days Paralyzed = 2	CORTEX AND CEREBELLUM	8/10	9/10	1/10	1/10	1/10	0/10	2.5
	SPINAL CORD AND BRAIN STEM	10/10	10/10	2/9	1/9	0/10	0/10	2.7
Signs 5 days #47 (17) (CORTISONE TREATED) Days Paralyzed = 5	CORTEX AND CEREBELLUM	1/9	0/10	0/10	0/10	0/10	0/10	<1.0
	SPINAL CORD AND BRAIN STEM	1/10	0/10	0/10	0/10	0/10	0/9	<1.0

JUN 12 1951

EFFECT OF CORTISONE ON LEVEL OF LANSING VIRUS MULTIPLICATION IN "LAKEVIEW" HAMSTERS

PURPOSE: To determine if increased susceptibility of cortisone treated hamsters is due to an increased level of viral multiplication induced in these animals.

VIRUS: Lansing virus: Pool VI of 2/15/51. 10% suspension in saline. Centrifuged 10 minutes at 2000 rpm to remove flocculant ppt.

CORTISONE: Cortone acetate - Merck Lot No. 1398. 25 mg. per ml. Contained suspending agents and 1.5% benzyl alcohol. 0.2 ml or 5 mg. given i.m.

PROCEDURE: 10 hamsters were inoculated i.m. into the left hind leg with 0.2 ml (5 mg.) of cortisone. Immediately thereafter these animals plus ten uninoculated hamsters were inoculated intracerebrally with 0.05 ml of Lansing virus 1:100 dilution.

Each hamster was sacrified on the first day of paralysis. The spinal cord and brain stem were removed separately; as were the cortex and cerebellum and both ground to a 10% suspension in saline for titration in mice. Some hamsters were allowed to become prostrate before they were sacrificed.

HAMSTERS: Lakeview Hamster Colony hamsters. Male. from 17 to 24 gm. Arrived 6/11/51

JUN 1 2 1957

LAKEVIEW HAMSTER COLONY HAMSTERS

UNTREATED — LANSING VIRUS 1:100

HAMSTER NO. A 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

CAGE # 74

26 19 22* D

27 17 17 20 24 26 28 28 — — — — P+

28 18 20 22 24 25 24 P 23 — — — — P+

29 21 24 25 29 30 33 35 37 39 42 44 46 48 52 53 56 59 62 66 67 68 71 72 72 73 75 77 75 77 78

30 21 21 23 27 29 31 33 35 36 39 41 44 45 48 50 53 54 57 60 61 61 64 64 65 66 67 70 70 71 73

31 20 22 25 27 30 33 36 39 41 44 46 48 49 53 54 57 59 62 65 68 68 70 71 72 75 75 79 81 82 80

32 21 21 22 26 28 30 32 33 34 34 36 38 39 42 43 45 46 48 51 52 52 54 54 54 55 56 58 58 58 59

35 18 21 22 25 27 29 32 34 36 37 39 41 43 46 46 49 50 53 53 52 48 44 41 36 35 P P P P P P P P P P P P P P P P P sacrificed

36 23 23 25 29 30 29 23 22 20 17 16 — — — — GNS CNS CNS CNS CNS D**

38 18 21 23 26 27 30 33 35 35 39 41 41 43 46 47 50 51 53 55 57 57 61 61 63 63 64 67 66 69 68

Average WT. 18.7 21.2 23.0 26.3 28.0 29.6 30.4 33.6 34.4 36.0 37.5 43.0 44.5 42.8 48.8 51.7 53.1 55.8 58.5 59.5 59.6 60.7 60.5 60.3 61.1 67.4 70.2 70.0 71.6 71.8

CORTISONE — 5 mg. (0.2 ml.) I.M. - ONE DOSE - LANSING 1:100

CAGE #36

39 17 20 19 19 19 20 20 20 — — — — + P

40 17 17 19 21 21 21 21 — — — — PP +

41 23 23 25 27 27 28 28 30 30 31 — — — — — — P +P

42 17 18 18 18 19 20 — — — D**

44 20 23 22 24 24 25 26 28 28 28 28 30 31 33 33 34 37 38 41 43 44 47 49 49 50 51 48 48 52 52 — — — — — — — P P P P P P P P P P P P P P P P P P P P P

45 24 27 26 28 29 29 — — — — D**

46 18 18 19 20 21 22 22 22 22 21 17 — — — — — SAL P ←D used for titration — Dead — how long? No longer than 2-3 hours

47 19 21 21 23 23 22 23 24 25 24 20 17 16 15 14 — — — — — P P P P SAL SAL SAL P P P R — sacrificed — almost dead

48 17 17 19 21 21 22 — — — — D**

50 19 19 D*

Average Wt. 18.7 20.3 20.9 22.3 22.6 23.2 23.3 24.8 25.0 25.1 24.0 23.5 23.5 24.0 23.5 23.4 37.0 38.0 41.0 43.0 44.4 47 49 49 50 51 48 48 52 52

\+ Sacrificed on first day of paralysis. Grd + stm, and cortex + Cerebellum passed into mice

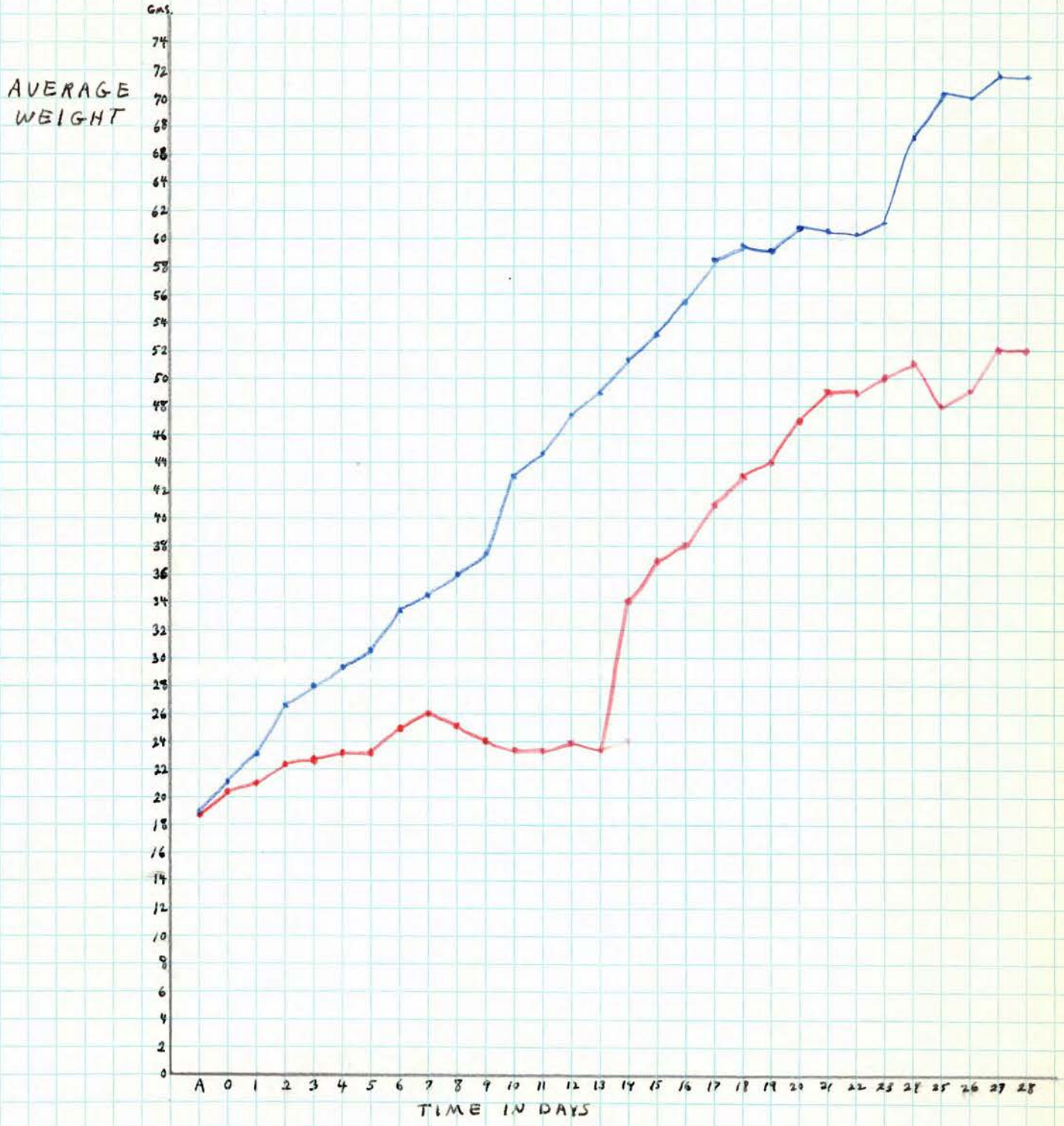
* Died at [illegible] station

** Died and were eaten — only tibiae and tags left

WEIGHT OF HAMSTERS USED IN EXPERIMENT ON EFFECT OF CORTISONE ON LEVEL OF LANSING VIRUS MULTIPLICATION IN HAMSTERS

Expt 8 6/12/57

— untreated controls - 10 hamsters
— cortisone - 9 hamsters
} LANSING 1:100



SUMMARY OF TEST OF JUNE 18, 1951

TITRATION IN MICE OF CORTEX AND CEREBELLUM, AND SPINAL CORD AND BRAIN STEM FROM "NORMAL" AND CORTISONE TREATED HAMSTERS INFECTED WITH LANSING VIRUS

SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS						LD_{50}
	1.0	2.0	3.0	4.0	5.0	6.0	
CORTEX AND CEREBELLUM FROM HAMSTER # 27 (NO CORTISONE)	9/10	8/10	3/10	0/10	0/9	0/10	2.5
SPINAL CORD AND BRAIN STEM FROM HAMSTER # 27 (NO CORTISONE)	10/10	7/10	4/10	1/9	0/10	0/10	2.7
CORTEX AND CEREBELLUM FROM HAMSTER #40 (CORTISONE TREATED)	9/9	10/10	5/10	4/10	0/10	1/10	3.5
SPINAL CORD AND BRAIN STEM FROM HAMSTER #40 (CORTISONE TREATED)	9/10	10/10	8/10	5/10	0/9	1/8	3.8

JUN 18 1951

TITRATION IN MICE OF CORTEX AND CEREBELLUM, AND SPINAL CORD AND BRAIN STEM FROM "NORMAL" AND CORTISONE TREATED HAMSTERS INFECTED WITH LANSING VIRUS

PURPOSE: To determine if the level of Lansing virus multiplication is increased in hamsters treated with cortisone.

PROCEDURE: Two hamsters, one of which had been treated with 5 mg. of cortisone and both of which had been inoculated intracerebrally with a 1:100 dilution of Lansing virus, were sacrificed on the first day of paralysis. The cortex and cerebellum were removed together and made into a 10% suspension in saline which was centrifuged at 2000 rpm for 10 minutes. The spinal cord and brain stem were also removed together and treated in a similar manner. These suspensions were placed in ampules and stored in the CO_2 box for 24 hours.
Serial ten-fold dilutions of each preparation were made: 10^{-1} to 10^{-6}. These were then inoculated intracerebrally into groups of ten mice per dilution.

VIRUS: Lansing virus in the form of hamster CNS. Original inoculation of hamsters was 0.05 ml of 1:100 dilution of Lansing virus pool VI of 2/5/51.

MICE: 18-20 gram Mayfield albino Females.

Note: Date of original test 6/12/51

CODE	SPECIMEN	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}
A	CORTEX AND CEREBELLUM FROM HAMSTER #27	9/10	8/10	3/10	0/10	0/9	0/10
B	SPINAL CORD AND BRAINSTEM FROM HAMSTER #27	6/10	7/10	4/10	1/9	0/10	0/10
C	CORTEX AND CEREBELLUM FROM HAMSTER # 40	9/9	10/10	5/10	4/10	0/10	1/10
D	SPINAL CORD AND BRAIN STEM FROM HAMSTER # 40	9/10	10/10	8/10	5/10	0/9	1/8

#27 D-B-9 #40 D-B-9

JUN 18 1951

A

CORTEX AND CEREBELLUM FROM HAMSTER # 27 (NO CORTISONE)

INOCULATED 6/13/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN IN CO_2 BOX AS 10% suspension

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
	1	–	P	D																																		$10^{-2.5}$
	2	–	P	PP	D																																	
	3	–	–	P	D																																	
	4	–	–	P	D																																	
10^{-1}	5	–	–	–	PP	D																															9/10	
	6	–	–	–	–	–	–	–	–	–	–	–	–		D	P	D																					
	7	–	–	–	–	–		–	–	–	–	–	–																									
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		D									
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–	–	–	P E E	P P E E	D						
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1	–	–	D																																	
	2	–	–	P	D																																	
	3	–	–	P	D																																	
	4	–	–	PW	PP PP	D																																
10^{-2}	5	–	–	–	–	–		–	–	P	D																										8/10	
	6	–	–	–	–	–		–	–	–	E	PP	D																									
	7	–	–	–	–	–		–	–	–	–	P	D																									
	8	–	–	–	–	–		–	–	–	–	–	–		P	D																					
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	1	–	–	–	D																																	
	2	–	–	–	–	PP	D																															
	3	–	–	–	–	–	–	D																														
	4	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
10^{-3}	5	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	3/10	
	6	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	7	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	8	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	9	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		
	10	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–		

A (CONT.)

CORTEX AND CEREBELLUM

FROM HAMSTER # 27

(NO CORTISONE)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

Frozen in CO_2 Box as 10% suspension

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
10^{-4}	1																																					
	2																																					
	3																																					
	4																																					
	5																																				0/10	
	6																																					
	7																																					
	8																																					
	9																																					
	10																																					
10^{-5}	1				(D)				S	S	S	S	S	(D)																								
	2																																					
	3																																					
	4																																					
	5																																				0/9	
	6																																					
	7																																					
	8																																					
	9																																					
	10																																					
10^{-6}	1																																					
	2																																					
	3																																					
	4																																					
	5																																				0/10	
	6																																					
	7																																					
	8																																					
	9																																					
	10																																					

JUN 18 1951

B

SPINAL CORD AND BRAIN STEM FROM HAMSTER # 27 (NO CORTISONE)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

Frozen in CO_2 Box as 10% suspension

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
	1	–	D																																			
	2	–	D																																			
	3	–	P	E	E	E	P	P	P	F		D																											
	4	–	–	T	D			D																															
10^{-1}	5	–	–	–	–	–		D																															
	6	–	–	–	–	–		D																															
	7	–	–	–	–	–		P	P	P	D																										10/10	
	8	–	–	–	–	–		–	–	–	–	–	–		P	D																						
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–		P	P	P	D																	
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	P	D																
	1	–	–	P	P	D	P	D																															
	2	–	–	–	P	P	P	P	D																														
	3	–	–	–	–	–		–	–	–	E	E	E	P	D																								
	4	–	–	–	–	–		–	–	–	–	–	–		D																								
10^{-2}	5	–	–	–	–	–		–	–	–	–	–	–		–	E	P	P	D																				
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		P	P	P	D														
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	D											
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1	–	–	P	P	P																																
	2	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	P	P	D																	
	3	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	P	D														
	4	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	?	D												
10^{-3}	5	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4/10	
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		

LD50 $10^{-2.7}$

B (CONT.)

SPINAL CORD AND BRAIN STEM

FROM HAMSTER # 27 (NO CORTISONE)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN IN CO_2 Box

10% SUSPENSION

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
	1	D																																				
	2	—	?	?	?	?		D																														
	3	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	4	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
10^{-4}	5	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	6	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1/9	
	7	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	8	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	9	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	1	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	2	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	3	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	4	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
10^{-5}	5	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8/10	
	6	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	7	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	8	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	9	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	1	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	2	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	3	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	4	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
10^{-6}	5	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0/10	
	6	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	7	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	8	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	9	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		

JUN 18 1951

C

CORTEX AND CEREBELLUM FROM HAMSTER # 40

(CORTISONE TREATED)

INOCULATION 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN in CO_2 Box

25 10% suspension

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD_{50}
	1	–	P	D																																		
	2	–	?	D																																		
	3	–	–	?	?	?		–	–	?	P	P	D																									
	4	–	–	–	–	–		–	–	–	–	P	PPP		D																								
10^{-1}	5	–	–	–	–	–		–	–	–	–	W	P		D																								
	6	–	–	–	–	–		–	–	–	–	–	–		D																								
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	?	P	P	D																		
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	P		D																		
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			P	PPP		D												
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			TY	TY	D	TYPHOID												
	1	–	–	–	–	–		–	P	D																												
	2	–	–	–	–	–		–	P	D																												
	3	–	–	–	–	–		–	P	D																												
	4	–	–	–	–	–		–	–	–	P	D																										
10^{-2}	5	–	–	–	–	–		–	–	–	–	D																										
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	P	SP	D																			
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	E	E	E	E	D																	
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			PP	PP	D													
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			P	P	D													
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			P	P	D													
	1	–	–	–	–	–		P	D																													
	2	–	–	–	–	–		–	–	–	–	P	D																									
	3	–	–	–	–	–		–	–	–	–	P	PP		D																							
	4	–	–	–	–	–		–	–	–	–	–	–		D																							
10^{-3}	5	–	–	–	–	–		–	–	–	–	–	–		P	P	D																					
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			–	–	–	–	–			–	–	–	–	–	–		
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			–	–	–	–	–			–	–	–	–	–	–		
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			–	–	–	–	–			–	–	–	–	–	–		
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			–	–	–	–	–			–	–	–	–	–	–		
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–			–	–	–	–	–			–	–	–	–	–	–		

9/9

10/10

5/10

$10^{-3.5}$

C (CONT.)

CORTEX AND CEREBELLUM

FROM HAMSTER # 40

(CORTISONE TREATED)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN IN CO_2 BOX

AS 10% SUSPENSION

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
10^{-4}	1	–	~	–	–	–	–	–	–	–	–	–	–		P	D																						
	2	–	–	–	–		–	–	–	–	–	–	–		PP	PP	D	P																				
	3	–	–	–	–		–	–	–	–	–	–	–		?	?		D																				
	4	–	–	–	–		–	–	–	–	–	–	–		–	–	–	?	?	–		?S	?S	S	S	S	S		S	S	S	S	S	S		S		
	5	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	?	D				4/10	
	6	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	7	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	8	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	9	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	10	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
10^{-5}	1	–	–	–	–		–	–	–	–	–	–	–		–	–	–	?	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	2	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	3	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	4	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	5	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	0/10	
	6	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	7	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	8	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	9	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	10	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
10^{-6}	1	–	–	–	–		–	–	–	–	–	–	–		–	PD																					
	2	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	3	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	4	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	5	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	1/10	
	6	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	7	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	8	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	9	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		
	10	–	–	–	–		–	–	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–		

STANDARD B & P "

JUN 18 1951

D

SPINAL CORD AND BRAIN STEM

FROM HAMSTER # 40

(CORTISONE TREATED)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN IN CO2 BOX AS 10% SUSPENSION

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
	1	—	P	D																																		
	2	—	P	D																																		
	3	—	P	D																																		
	4	—	—	PP	D																																	
10^{-1}	5	—	—	—	D																																9/10	
	6	—	—	—	D																																	
	7	—	—	—	—	—		—	—	—	—	—	—		P	D																						
	8	—	—	—	—	—		—	—	—	—	—	—		—	—	—	P	D																			
	9	—	—	—	—	—		—	—	—	—	—	—		—	—	—	—	P	PR	D																	
	10	—	—	—	—	—		—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1	—	P	D																																		
	2	—	—	D																																		
	3	—	—	D																																		
	4	—	—	P	D																																	
10^{-2}	5	—	—	—	—	—		—	—	P	PP	D																										
	6	—	—	—	—	—		—	—	—	PP	D																									10/10	
	7	—	—	—	—	—		—	—	—	P	PR	D																									
	8	—	—	—	—	—		—	—	—	—	?	E		D																							
	9	—	—	—	—	—		—	—	—	—	—	—		—	P	P	P	E	D																		
	10	—	—	—	—	—		—	—	—	—	—	—		—	—	—	—	PP	D																		
	1	—	—	P	D																																	
	2	—	—	PPS	D																																	
	3	—	—	—	PP	D																																
	4	—	—	—	PP	PP		D																													8/10	
10^{-3}	5	—	—	—	P	PP		D																														
	6	—	—	—	—	—		P EE	D																													
	7	—	—	—	—	—		PP	D																													
	8	—	—	—	—	—		—	—	—	—	—	?		D																							
	9	—	—	—	—	—		—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	10	—	—	—	—	—		—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

$10^{-3.8}$

D (CONT.)

SPINAL CORD AND BRAIN STEM

FROM HAMSTER # 40

(CORTISONE TREATED)

INOCULATED 6/12/51

PARALYZED 5th day 6/17/51

HARVESTED 6/17/51

FROZEN IN CO_2 BOX

AS 10% SUSPENSION

DILUTION	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	MORTALITY	LD50
	1	–	–	P	P																																	$10^{-3.8}$
	2	–	–	–	–	PP		D																														
	3	–	–	–	–	–		–	–	–	?	E	D																									
	4	–	–	–	–	–		–	–	–	–	–	–		D																							
10^{-4}	5	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	P		D		5/10	
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	1	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	2	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	3	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	4	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
10^{-5}	5	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–		0/9	
	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–		–			
	10	–	–	–	–	–		–	–	–	–	MISSING 6/29/51																										
	1	(D)																																			
	2	–	–	–	–	–		–	–	–	–	–	–		–	D																						
	3	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	4	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	5	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1/8	
10^{-6}	6	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	7	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	8	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	9	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	10	–	–	–	–	–		–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	MISSING 7/20/51					

STANDARD B & P "NoTEAR"

SUMMARY OF TEST OF JUNE 20, 1951

TITRATION IN MICE OF CORTEX AND CEREBELLUM, AND SPINAL CORD AND BRAIN STEM FROM "NORMAL" AND CORTISONE TREATED HAMSTERS INFECTED WITH LANSING VIRUS

SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS						LD_{50}
	1.0	2.0	3.0	4.0	5.0	6.0	
CORTEX AND CEREBELLUM FROM HAMSTER # 28 (NO CORTISONE)	7/10	4/10	2/8	1/10	0/9	9/10	1.8
SPINAL CORD AND BRAIN STEM FROM HAMSTER # 28 (NO CORTISONE)	9/10	7/10	2/10	0/10	0/10	0/9	2.35
CORTEX AND CEREBELLUM FROM HAMSTER # 39 (CORTISONE TREATED)	10/10	10/10	6/10	6/9	0/8	0/9	3.9
SPINAL CORD AND BRAIN STEM FROM HAMSTER # 39 (CORTISONE TREATED)	10/10	10/10	9/10	7/10	2/10	0/9	4.2


PLASTIC BLANK
MAIL FLAT
Professional *Mail-A-Voice
RECORDING BLANK
1
INSERT INDEX PIN THROUGH OPENING MARKED A
2
PLACE GROOVED DISC ON TOP OF RECORDING BLANK
3
PLACE GUIDE STYLUS IN GROOVE NEAREST CENTER
4
HOLD MICROPHONE AT ANGLE TO MOUTH. USE CONVERSATIONAL VOICE
The Brush Development Co.
MFRS. OF *SOUNDMIRROR MAGNETIC RECORDING DEVICES
MADE IN CLEVELAND 14, OHIO, U. S. A.
*TRADE MARKS
PATENTS PENDING
A


PLASTIC BLANK
MAIL FLAT
A-1
Professional *Mail-A-Voice
RECORDING BLANK
1
INSERT INDEX PIN THROUGH OPENING MARKED A
2
PLACE GROOVED DISC ON TOP OF RECORDING BLANK
3
PLACE GUIDE STYLUS IN GROOVE NEAREST CENTER
4
HOLD MICROPHONE AT ANGLE TO MOUTH. USE CONVERSATIONAL VOICE
The Brush Development Co.
MFRS. OF *SOUNDMIRROR MAGNETIC RECORDING DEVICES
MADE IN CLEVELAND 14, OHIO, U. S. A.
*TRADE MARKS
PATENTS PENDING
A


PLASTIC BLANK
MAIL FLAT
Professional *Mail A-Voice
RECORDING BLANK
1
INSERT INDEX PIN THROUGH OPENING MARKED A
2
PLACE GROOVED DISC ON TOP OF RECORDING BLANK
3
PLACE GUIDE STYLUS IN GROOVE NEAREST CENTER
4
HOLD MICROPHONE AT ANGLE TO MOUTH. USE CONVERSATIONAL VOICE
The Brush Development Co.
MFRS. OF *SOUNDMIRROR MAGNETIC RECORDING DEVICES
MADE IN CLEVELAND 14, OHIO, U. S. A.
*TRADE MARKS
PATENTS PENDING
A

TABLE 1

Effect of Intracerebral Injection of Lansing Virus in Untreated and Cortisone-Treated Young Male Hamsters

Role of a) Dose of Virus, b) Preparation of Cortisone and c) Source of Hamsters

Date of test	Hamsters		Cortisone used	Dilution of virus	No. of hamsters	Result		
	Source	Weight-average and range Gm.				Morbidity per cent	Mortality per cent	Average incubation period days
2-23-51	A	22-27	None	1:20	12	92	42	4.5
4-18-51	A	34.6	None	1:20	10	100	50	4.0
			5 mg/ml in benzoyl alcohol - 1 ml*	"	10	100	60	5.0
		23-44	None	1:100	10	40	0	3.8
			5 mg/ml in benzoyl alcohol - 1 ml	"	10	50	40	5.4
5-25-51	A	29.0	None	1:100	20	40	20	6.6
		24-35	25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	95	80	5.2
	B	21.0	None	"	19	68	26	3.8
		15-23	25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	100	95	4.8
6-19-51	A	21.0	None	1:100	19	42	16	10.8
			25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	100	85	5.5
		14-27	5 mg/ml " " " - 1 ml	"	19	79	68	5.1
			5 mg/ml in saline - 1 ml	"	19	79	68	6.0

* Only 1 dose of 5 mg of cortisone was given; indicated volume injected intramuscularly in hind legs just before onoculation of virus.

TABLE 2

Intracerebral Titration of Lansing Virus in Cortisone-Treated Young Hamsters and in Untreated Young and Old Hamsters

Dilution of virus	13-26 Gm. male hamsters						60-86 Gm. male and female untreated hamsters		
	Morbidity		Mortality		Average incubation period		Morbidity	Mortality	Average incubation period days
	Cortisone*	Untreated	Cortisone	Untreated	Cortisone	Untreated			
10^{-1}	9/9**	9/10	9/9	0/10	3.8	4.1	7/10	3/10	4.7
10^{-2}	10/10	5/10	9/10	1/10	5.1	4.8	5/9	1/9	5.8
10^{-3}	6/10	1/10	5/10	0/10	7.7	6.0	0/10	0/10	...
10^{-4}	1/10	1/10	1/10	0/10	8.0	12.0	0/10	0/10	...
10^{-5}	0/9	0/10	0/9	0/10	...	...	0/10	0/10	...
50 per cent endpoint	$10^{-3.2}$	$10^{-2.1}$	$10^{-3.0}$	$10^{-<1.0}$	...	...	$10^{-1.8}$	$10^{-<1.0}$	...

* One dose of 5 mg. of cortisone (0.2 ml) was given intramuscularly just before the virus.
** Numerator = no. of hamsters succumbed; denominator = no. of hamsters inoculated.
The hamsters were observed for 35 days after inoculation. Equal numers of male and female adult hamsters were used.

TABLE 3

Effect of Cortisone on Intracerebral Infection with Lansing Virus in Male Hamsters of Different Size

Date of test	Average weight of hamsters Gm.	Treatment	No. of hamsters	Result		
				Morbidity per cent	Mortality per cent	Average incubation period days
7-13-51	74.8	None	10	20	0	8.5
	72.7	5 mg. cortisone on 7-13-51	9	11	11	7.0
	68.5	" " " 6-12-51	10	40	10	5.7
10-25-51	18.6	None	20	65	35	4.5
	17.7	5 mg. cortisone on 10-25-51	20	100	95	3.5
	34.7	None	20	45	15	9.2
	33.4	5 mg. cortisone on 10-25-51	20	95	90	5.6
	70.1	None	20	45	20	6.8
	67.9	5 mg. cortisone on 10-25-51	20	80	65	8.5
	68.1	25 mg. " " "	22	82	82	8.3

TABLE 4

Influence of Sex of Hamsters on Enhancing Effect of Cortisone on Experimental Poliomyelitis

All hamsters inoculated intracerebrally with Lansing virus 1:100

Sex of hamsters	Average weight of hamsters Gm.	Treatment	No. of hamsters	Result		
				Morbidity per cent	Mortality per cent	Average incubation period days
Female	20.7	None	20	50	25	4.6
	20.0	5 mg. cortisone once-just before virus	22	100	82	6.6
Male	19.9	None	19	63	26	7.2
	25.0	5 mg. cortisone once-just before virus	20	90	90	4.6

TABLE 5

Severity of Paralysis in Untreated and Cortisone-Treated Hamsters Following Intracerebral Inoculation of 1 Hamster PD_{50} of Lansing Virus

Group	No. of paralyzed hamsters in group	Per cent of hamsters exhibiting indicated score for extent of involvement*				Average score	Case fatality rate per cent
		2 or less	2.5-4.5	6-8	10		
Untreated	66	47	38	12	3	3.4	41
Cortisone-5 mg. once-just before virus	85	47	25	7	21	4.4	86

* Method of scoring: involvement of one extremity = 2; involvement of trunk, any cranial nerve (such as those supplying tongue, neck muscles, larynx), salivation or other CNS sign = 2; transitory paralysis = 0.5. Maximum score = 10.

TABLE 6

Neutralizing Antibody in Untreated, Clinically Unaffected and Paralyzed Hamsters Following Intracerebral Inoculation of Approximately 1 Hamster PD_{50} of Lansing Virus

Hamster sera tested	Days after inoculation	Hamster No.	Neutralization index of undiluted serum
Uninoculated controls	—	1	6
	—	2	2
	—	3	1
Lansing virus 1:100; no clinical signs	37	1	80
		2	63
		3	6
		4	1
Lansing virus 1:100; hamsters paralyzed	37	1	8
		2	6
		3	2
		4	2
	71	5	400
		6	25
		7	3
		8	2
		9	2

TABLE 7

Resistance to Intracerebral Challenge of Surviving Hamsters Previously Inoculated Intracerebrally with 1 Hamster PD_{50} of Lansing Virus

0.05 ml of 10 per cent suspension of Lansing virus (5 to 10 hamster PD_{50}) was the challenge dose for all hamsters

Test no. and date	Prior inoculation	Prior treatment	Prior clinical signs	Interval between prior inoculation and challenge days	No. of hamsters tested	Result of challenge		
						Morbidity per cent	Mortality per cent	Average incubation period days
1. 6/13/51	Lansing 1:100	None	None	56	6	0	0	—
	" "	Cortisone 12/18/51	"	"	3	0	0	—
2. 6/26/51	None	—	—	—	10	70	30	4.7
	Lansing 1:100	None	None	32	17	53	24	6.1
	" "	"	Transitory paralysis	"	2	0	0	—
	" "	Cortisone 5/25/51	"	"	2	0	0	—
3. 2/25/52	None	ACTH-10 mg./day 1/11/52-1/18/52	None	—	17	59	53	5.4
	Lansing 1:100	None	"	42	6	33	17	3.0
4. 5/26/52	None	None	—	—	20	50	35	6.3
	Lansing 1:100	"	None	35	16	62	44	4.5

TABLE 8

Level of Viral Multiplication in Individual Untreated and Cortisone-Treated Hamsters

All hamsters inoculated intracerebrally with Lansing virus 1:100 - 1 hamster PD_{50}

Group	Days after onset of CNS signs hamster killed	Hamster No.	Days after inoculation CNS signs first observed	Clinical involvement when tissues were removed	Titer* of virus in Spinal cord and brainstem	Titer* of virus in Cortex and cerebellum
Untreated		1	3	LF, just died	3.4	2.2
		2	4	" " "	2.1	2.4
		3	4	LR, RR, " "	3.4	1.2
		4	11	LF, RF, " "	2.7	2.3
	< 1	5	2	LR	2.8	2.7
		6	2	LF	3.1	2.8
		7	3	RF	2.5	2.8
		8	3	RF	1.5	1.6
		9	3	RF	2.4	1.5
		10	4	RF	2.8	1.5
		11	4	LF	1.4	1.5
		12	5	LF	2.7	2.5
		13	5	LF	2.3	1.8
	2	14	18	LF	< 1.0	< 1.0
	5	15	19	LF, RF, LR, RR	1.7	0
	9	16	11	RF	1.2	0
	13	17	7	LF	0	0
Cortisone 5 mg. once just before inoculation of virus	< 1	1	3	None observed; found dead	4.0	4.0
		2	2	RR	4.1	3.9
		3	2	LR	3.4	3.2
		4	3	RR	4.5	4.2
		5	4	HR	4.4	4.5
		6	4	LR, CNS	3.4	3.6
		7	4	Circling	2.6	2.5
		8	4	HR	3.5	2.9
		9	5	LR, RR	3.8	3.5
		10	6	RF	4.2	3.9
		11	8	LF, RR	2.8	< 1.0
	1.2	12	3	LF, RF, just died	4.2	2.8
	2	13	7	RF " "	2.7	2.5
	3	14	7	RF, RR	2.0	1.0
	3	15	10	LF	1.4	1.3
	4	16	6	LF	2.3	1.0
	5	17	9	LR, RR, SALIV.	< 1.0	< 1.0
	20	18	9	LF	0	0

* Each tenfold dilution inoculated into 10 mice; the titers given are the reciprocals of the LD_{50} for the 0.03 ml dose. 1.0 = few mice died after inoculation of 10 per cent suspension, but titer is less than 10^{-1}. 0 = all mice inoculated with 10 per cent suspension survived.

Abbreviations: LF - left front; RF - right front; LR - left rear; RR - right rear; HR - head turned right; SALIV. - salivation; CNS - signs of involvement of central nervous system other than distinct, localized paralysis, e.g., ataxia, lethargy.

TABLE 9

Analysis of Data on Level of Viral Multiplication at Onset of Paralysis in Individual Untreated and Cortisone-Treated Hamsters Inoculated with Lansing Virus 1:100

Group	No. of hamsters tested individually	Spinal cord and brain stem			Cerebral cortex and cerebellum		
		Range of titers*	Median titer	Average titer	Range of titers	Median titer	Average titer
Untreated	13	1.4-3.4	2.7	2.5	1.2-2.8	2.2	2.1
Cortisone 5 mg. once-just before virus	11	2.6-4.5	3.8	3.7	<1.0-4.5	3.6	3.4
Log difference between groups	—	—	1.1	1.2	—	1.4	1.3

* Reciprocal of log of LD_{50} per 0.03 ml.

TABLE 10

Effect of Single Dose of Cortisone (5 mg.) Administered Shortly After Onset of Paralysis

102 male hamsters weighing 14-20 Gm. inoculated intracerebrally with Lansing virus 1:100. During the first 10 days after inoculation, the hamsters which developed paralysis were alternately either untreated or inoculated with cortisone.

Group	Hamster No. in order of selection	Involvement at onset	Subsequent maximum involvement	End result	
				Death days after onset	Survival extent of residual paralysis
Untreated controls	1	LF	LF,RF	2	
	2	RF	RF,LF,RR		RF,RR
	3	LF	LF,RF	2	
	4	RF,LF		1	
	5	RF,LF	RF,LF,RR,LR	18	
	6	RF	RF,LF		RF,LF
	7	RF	RF,LF	17	
	8	LF	LF,RF	14	
	9	LF	LF,RF,RR,LR	12	
	10	RF,LF	RF,LF	2	
	11	RR,LR	RR,LR,RF,LF	13	
	12	SALIV.		1	
	13	RF	RF,LF	4	
	14	RF	RF,LF		RF,LF
	15	RF	RF,LF		RF,LF
	16	LF	LF	6	
	17	LR	LR transitory; then RR		RR
	18	CNS		1	
	19	RF	transitory; lasted 13 days		None
	20	LR	LR,RR - only 10 days		None
Cortisone	1	LF	LF	2	
	2	LF	LF,RF	3	
	3	LR	LR,RR,RF	2	
	4	RF,LF	RF,LF	2	
	5	LF	LF transitory; then LR	15	
	6	RF	RF,LF	5	
	7	RF,LF	RF,LF	2	
	8	LF	LF,RF	2	
	9	LF	LF	4	
	10	RF	RF,LF,CNS	2	
	11	RF	Prostrate	4	
	12	RF,LF	RF,LF	2	
	13	LF	Prostrate	8	
	14	RF	RF,LF	4	
	15	SALIV.	Prostrate	1	
	16	RR,LR	RR,LR	11	
	17	RF	RF,LF	6	
	18	RF	RF,LF		RF,LF
	19	RF	RF,LF	12	
	20	CNS	CNS	5	

Abbreviations: LF - left front; RF - right front; LR - left rear; RR - right rear; HR - head turned right; SALIV. - salivation; CNS - signs of involvement of central nervous system other than distinct, localized paralysis, e.g., ataxia, lethargy.

TABLE 11

Analysis of Data on Effect of Single Dose of Cortisone Administered Shortly after Onset of Paralysis in Hamsters

Group of paralyzed hamsters	No. in group	Severity of paralysis at onset Average score	Case fatality rate at indicated no. of days after onset			Incidence of transitory paralysis
			5	15	25-30	
			per cent	per cent	per cent	per cent
Untreated	20	2.5	35	55	65	10
Cortisone-5 mg.	20	2.4	70	95	95	0
Significance of difference between groups	—	—	$\chi^2 = 4.9$ P = 0.03	$\chi^2 = 8.5$ P = 0.004	$\chi^2 = 3.9$* P = 0.05	—

* This χ^2 value was computed with Yates correction for small numbers.

TABLE 12

Effect of Cortisone Administered to Clinically Unaffected Hamsters 10 Days after Intracerebral Injection of 1 Hamster PD_{50} of Lansing Virus

102 hamsters inoculated with 1:100 dilution of virus; 10 days later the 54 hamsters, which as yet had exhibited no signs of infection, were divided in 2 groups.

Group	No. of hamsters in group	No. died without CNS signs	No. developed paralysis	Days after inoculation of virus, paralysis appeared	Subsequent course in paralyzed hamsters
Untreated	27	2* (11,16)	3	12, 18, 20	All 3 survived, and paralysis disappeared
5 mg. of cortisone 10 days after virus	27	5* (12,16,18,19,25)	5	11†,14,19†,25†,33†	4 died; 3 survived with residual paralysis

* It is not possible to say whether any of these hamsters died of Lansing virus infection. The spinal cord and medulla, and the cortex and cerebellum from one hamster in each group were cultured for bacteria and inoculated in mice with negative results. The figures in parenthesis refer to the days after inoculation of virus that the hamsters died.

† These hamsters died; the intervals between onset of paralysis and death were 4, 6, 18 and 26 days.

TABLE 13

Effect of Large Doses of ACTH on Poliomyelitis in Hamsters Following Intracerebral Injection of One Hamster PD_{50} of Virus (Lansing 1:100)

Date of test	Weight of hamsters just before first dose of ACTH Gm.	Treatment	No. of hamsters	Morbidity at indicated no. of days after inoculation of virus				Mortality at indicated no. of days after inoculation of virus				Average incubation period days
				7	14	21	28	7	14	21	28	
1-11-52	20.7 (16-25)	None	19	42	53	58	63	16	26	26	26	7.2
		ACTH for 8 days*	20	45	60	60	60	5	20	25	25	5.8
4-18-52	14.5 (11-17)	None	20	30	40	40	40	5	10	10	10	5.1
		ACTH for 8 days	19	68	79	79	79	16	21	26	37	4.5
	34.0 (29-41)	None	20	45	55	60	60	20	30	30	30	5.9
		ACTH for 8 days*	20	35	40	50	50	25	30	30	30	5.3

† $\chi^2 = 6.1$; $P = 0.013$.

* Total dose = 10 units per day subcutaneously; 3 units at 8 AM and 4 PM, and 4 units at midnight. Virus given on the morning of the 4th day.

TABLE 14

Effect of Single Dose of 3 Units of ACTH (150 units/kilo)

on Circulating Eosinophiles in 20 Gm. Male Hamsters

Blood for eosinophile counts obtained by cardiac puncture

Treatment prior to first count Group	Hamster No.	Eosinophiles per cu.mm. at indicated time	
		First count	Second count 44 hours after first
A None	1	84	70
	2	101	131
	3	132	128
	4	57	46
	Average	93	94
B 0.3 ml of physiologic salt solution subcutaneously 4 hours before first count	5	41	40
	6	14	33
	7	37	44
	8	52	86
	Average	36	51
C ACTH - 0.3 ml subcutaneously 4 hours before first count	9	23	29
	10	16	24
	11	16	18
	12	14	6
	Average	17	19
Per cent difference between groups A and B	—	61	46
Per cent difference between groups A and C	—	82	80
Per cent difference between groups (A + B) and C	—	—	73

TABLE 15

Effect of ACTH on Body and Organ Weights of Male Hamsters

Date of test	Treatment	Weight of hamsters used Gm.	Body weight (Gm.) - average*			Weight of organs* - 18 hrs. after last dose mg./100 Gm. of body weight			
			Just before 1st dose	18 hrs. after last dose	Average gain per day	Adrenals	Spleen	Thymus	Liver
2-27-52	Saline — 4 days	37,39,48,54,56	46.8	58.6	2.95	20.7	204.9	341.2	6,856.0
	ACTH — 4 days total dose = 37 units	39,40,47,50,61	47.4	53.0	1.40	35.9	163.4	337.9	7,119.0
	Per cent difference between ACTH and saline groups				-52.5	+73.5	-20.2	-0.8	+3.8
4-18-52	None	12,15,17,18,18	16.0	37.2	2.65	16.0	258.1	264.8	5,615.0
	ACTH — 8 days total dose = 80 units	12,13,13,14,14	13.2	28.4	1.90	31.2	192.9	335.9	6,098.0
	Per cent difference between ACTH and untreated groups				-28.3	+95.0	-25.3	+26.8	+8.6
	None	30,34,38,38,39	35.8	53.2	2.18	18.8	192.1	244.2	5,767.0
	ACTH — 8 days total dose = 80 units	35,37,38,41,42	38.6	50.0	1.43	33.0	125.8	215.8	5,940.0
	Per cent difference between ACTH and untreated groups				-34.4	+75.5	-34.5	-11.6	+3.0

* Average values for 5 hamsters constituting each group.

TABLE 16

Toxicity of Single Dose of Cortisone for Mice

Weight of mice Gm.	Dose mg.	No. of mice inoculated	No. of mice survived 35 days	Days after inoculation on which individual mice died
16-20	40	4	0	<1, <1, <1, <1
	30	4	1	<1, 1, 6
	20	4	4	
	10	17	16	6
	5	30	28	2, 4
	0	23	23	
10-11	5	40	31	
	0	40	38	

TABLE 17

Effect of Single Dose of Cortisone (5 mg.) Given Just Before Intracerebral Inoculation of Virus on Infection Resulting from Different Doses of Lansing or MEF_1 Virus in Mature Nonpregnant Female Mice

Effect	Strain of virus	Treatment	Per cent of mice died at indicated dilution of virus*					LD_{50}
			10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-}
Mortality Per cent	Lansing	None	100	100	84	40	5	3.8
		Cortisone	100	100	95	68	40	4.6
	MEF_1	None	100	100	95	65	25	4.4
		Cortisone	100	100	100	68	69	5.0
Incubation period average days	Lansing	None	5.3	8.3	9.4	18.0	5	
		Cortisone	5.5	6.0	7.3	12.6	15.9	
	MEF_1	None	4.8	8.5	12.0	16.1	12.8	
		Cortisone	5.0	7.0	7.3	16.3	13.5	
Interval between first signs and death average days	Lansing	None	1.1	1.4	1.3	1.4	1.0	
		Cortisone	0.8	1.3	1.2	0.9	1.0	
	MEF_1	None	0.8	1.0	1.1	1.1	1.4	
		Cortisone	0.8	0.5	1.3	1.6	0.7	

* Each dilution of virus was inoculated into 20 mice, which were observed for 35 days. Only mice dying within 24 hours after inoculation or with obvious enteric infection were eliminated from calculation.

TABLE 18

Effect of Single Dose of Cortisone (5 mg.) Given Just Before Intracerebral Inoculation of MEF_1 Virus

Role of a) Dose of Virus, b) Age of Mice, and c) Sex of Mice

Basis of analysis	Dilution of virus	Mortality						Average Incubation Period - Days					
		18-20 Gm. females		10-11 Gm. females		10-11 Gm. males		18-20 Gm. females		10-11 Gm. females		10-11 Gm. males	
		Untreated	Cortisone	Untreated	Cortisone	Untreated	Cortisone	Untr.	Cortis.	Untr.	Cortis.	Untr.	Cortis.
Excludes only mice dying within 24 hrs. or of obvious bacterial infection	10^{-1}	20/20	20/20	20/20	20/20	19/20	20/20	4.9	5.0	4.8	4.2	5.7	5.3
	10^{-2}	20/20	20/20	20/20	20/20	19/20	20/20	8.5	7.1	4.5	6.7	6.6	7.1
	10^{-3}	19/20	17/17	19/20	20/20	18/18	20/20	12.0	7.3	5.8	7.5	13.8	7.5
	10^{-4}	13/20	13/19	17/20	20/20	7/18	17/18	16.1	16.3	15.1	12.9	16.7	11.2
	10^{-5}	5/20	11/16	6/20	11/19	7/17	5/19	12.8	13.5	19.3	10.5	15.1	14.6
	LD_{50}	$10^{-4.4}$	$10^{-5.0}$	$10^{-4.6}$	$10^{-5.1}$	$10^{-4.1}$	$10^{-4.6}$						
Excludes mice dying without observed paralysis	10^{-1}	12/12	10/10	17/17	12/12	14/15	11/11	5.8	6.6	5.2	4.8	5.7	5.3
	10^{-2}	15/15	7/7	16/16	14/14	16/17	9/9	8.9	8.7	4.6	6.5	7.3	5.6
	10^{-3}	14/15	15/15	15/16	13/13	13/13	11/11	12.6	7.4	6.5	6.3	14.0	7.3
	10^{-4}	9/16	11/17	14/17	12/12	3/14	7/8	14.8	18.1	15.0	15.7	16.0	14.6
	10^{-5}	4/19	5/10	4/18	5/13	4/14	1/15	13.3	18.0	16.7	11.8	12.5	32.0
	LD_{50}	$10^{-4.3}$	$10^{-4.6}$	$10^{-4.5}$	$10^{-4.8}$	$10^{-3.7}$	$10^{-4.5}$						

Each dilution of virus originally inoculated into 20 untreated and 20 treated mice of each category. Frozen aliquots of same lot of virus used, but 18-20 Gm. mice tested on 10-30-51, 10-11 Gm. females on 1-8-52, and 10-11 Gm. males in 1-9-52. Mice observed for 35 days.

TABLE 19

Effect of Single Dose of Cortisone (5 mg.) on Incidence of Infection and Incubation Period in Large Numbers of Half-Grown and Mature Mice of Different Sex Following Intracerebral Injection of Minimal Amounts of Lansing or MEF_1 Viruses

Strain of virus	Dilution of virus	Date of test	Mice used		Treatment	No. of mice inoculated	Analysis excluding mice dying without observed paralysis			Analysis excluding only mice dying within 24 hrs. or of obvious bacterial infection		
			Weight Gm.	Sex			Mortality		Average incubation period days	Mortality		Average incubation period days
							No.	Per cent		No.	Per cent	
Lansing	10^{-4}	7-17-51	20	F	None	19	7/15	47	24.0	11/19	58	18.7
			21	M	"	20	3/15	20	9.7	7/19	37	13.8
			21	M	Cortisone	20	9/14	64	13.9	13/18	72	14.6
MEF_1	10^{-4}	12-10-51	20	F	None	30	14/25	56	14.4	19/30	63	11.8
			20	F	Cortisone	30	13/23	52	14.8	19/29	66	13.6
		2-19-52	20	F	None	50	22/38	58	20.9	28/44	64	22.0
			10	F	"	50	34/39	87	13.6	43/48	90	13.3
			10	M	"	50	38/43	88	14.0	45/50	90	14.4
			10	M	Cortisone	50	25/25	100	12.6	43/43	100	10.3
	10^{-5}	12-10-51	20	F	None	30	7/29	24	13.3	8/30	27	14.4
			20	F	Cortisone	30	7/28	25	15.9	7/28	25	15.9
		2-19-52	20	F	None	50	10/48	21	13.5	12/50	24	15.8
			10	F	"	50	15/39	38	20.2	23/47	49	17.9
			10	M	"	50	8/38	21	13.1	18/48	38	14.3
			10	M	Cortisone	50	10/33	30	15.2	22/45	49	15.4

TABLE 20

Effect of Cortisone on Intracerebral Infection of Mice with Minimal Amounts of Lansing and MEF_1 Viruses

Summary of all tests on half-grown and mature mice

Strain of virus	Dilution of virus	Treatment	No. of mice inoculated	Analysis excludes mice dying without observed paralysis			Analysis excludes only mice dying within 24 hrs. or of obvious bacterial infection		
				Mortality		Average incubation period days	Mortality		Average incubation period days
				No.	Per cent		No.	Per cent	
Lansing	10^{-4}	None	59	16/48	33	19.5	26/58	45	17.2
		Cortisone†	40	19/30 *	63	13.5	26/37 **	70	13.6
MEF_1	10^{-4}	None	240	134/192	70	15.3	172/230	75	15.3
		Cortisone†	140	68/88	77	14.7	112/129	87	12.1
	10^{-5}	None	240	52/205	25	15.5	79/232	34	15.9
		Cortisone†	140	28/99	28	15.9	56/127	44	14.0

† 5 mg. of cortisone, administered just before the virus, was the standard dose.
* $\chi^2 = 6.7$; $P = 0.01$.
** $\chi^2 = 5.9$; $P = 0.014$.

TABLE 21

Effect of Single Dose of Cortisone on Relative Resistance of Newborn Mice to Poliomyelitis Virus (Lansing Strain)

Adult, as well as newborn, mice inoculated with 0.01 ml of indicated dilution of virus intracerebrally

Dilution of virus	Mice used	Treatment	No. of mice inoculated	Incidence of paralysis*	
				No.	Per cent
10^{-2}	18-20 Gm. females	None	60	50/52	96
	2-3 days old average wt. = 1.8 Gm.	None	35	13/28	46
		Saline	75	31/49	63
		0.25 mg. cortisone	54	11/16	69
		0.5 mg. "	80	23/24	96
10^{-3}	18-20 Gm. females	None	60	30/55	55
	2-3 days old average wt. = 1.8 Gm.	None	37	5/22	23
		Saline	80	15/50	30
		0.25 mg. cortisone	55	2/7	29
		0.5 mg. "	83	12/17	71

* Mice dying without observed paralysis were excluded from analysis.

Controls for mortality of newborn mice not inoculated with virus:

Test No. 1 — No control intracerebral inoculation
29 mice — saline subcutaneously — all survived
35 mice — 0.5 mg. cortisone subcutaneously — 9 died

Test No. 2 — 0.01 ml saline intracerebrally
45 mice — 0.25 mg. cortisone subcutaneously — 36 died
39 mice — 0.5 mg. " " — 37 died

No intracerebral inoculation
28 mice — saline subcutaneously — 19 died.
There was a high mortality from intercurrent enteric infection in this test.

TABLE 22

Effect of Single Dose of Cortisone (0.5 mg.) Administered to Mice at 2 to 3 Days of Age on Subsequent Gain in Body Weight

Treatment	No. of mice in group	No. of mice died	Average weight (6 Gm.) at indicated no. of days after inoculation					
			0	6	13	20	27	34
Saline	29	0	1.7	3.8	5.7	9.5	14.7	17.9
Cortisone	35	9	1.9	3.2	5.0	7.6	12.2	16.4

TABLE 23

Effect of Cortisone on Level of Multiplication of Lansing Virus in Spinal Cord and Brainstem of Adult Mice

Dilution of virus inoculated	Time of removal of CNS tissue from mice	No. of mice in pool	Treatment of mice	Titer of virus
10^{-1} (1000 LD_{50})	Only paralyzed mice used; sacrificed at onset of paralysis	9	None	$10^{-3.9}$
		10	Cortisone	$10^{-3.6}$
10^{-2} (100 LD_{50})	All mice killed 2 days after inoculation; only small proportion of mice paralyzed	19*	None	$10^{-3.2}$
		15**	Cortisone	$10^{-3.5}$

TABLE 1

Effect of Intracerebral Injection of Lansing Virus in Untreated and Cortisone-Treated Young Male Hamsters

Role of a) Dose of Virus, b) Preparation of Cortisone and c) Source of Hamsters

Date of test	Hamsters		Cortisone used	Dilution of virus	No. of hamsters	Result		
	Source	Weight-average and range Gm.				Morbidity per cent	Mortality per cent	Average incubation period days
2-23-51	A	22-27	None	1:20	12	92	42	4.5
4-18-51	A	34.6	None	1:20	10	100	50	4.0
			5 mg/ml in benzoyl alcohol - 1 ml*	"	10	100	60	5.0
		23-44	None	1:100	10	40	0	3.8
			5 mg/ml in benzoyl alcohol - 1 ml	"	10	50	40	5.4
5-25-51	A	29.0	None	1:100	20	40	20	6.6
		24-35	25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	95	80	5.2
	B	21.0	None	"	19	68	26	3.8
		15-23	25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	100	95	4.8
6-19-51	A	21.0	None	1:100	19	42	16	10.8
			25 mg/ml in benzoyl alcohol - 0.2 ml	"	20	100	85	5.5
		14-27	5 mg/ml " " " - 1 ml	"	19	79	68	5.1
			5 mg/ml in saline - 1 ml	"	19	79	68	6.0

* Only 1 dose of 5 mg of cortisone was given; indicated volume injected intramuscularly in hind legs just before onoculation of virus.

TABLE 2

Intracerebral Titration of Lansing Virus in Cortisone-Treated Young Hamsters and in Untreated Young and Old Hamsters

Dilution of virus	13-26 Gm. male hamsters						60-86 Gm. male and female untreated hamsters		
	Morbidity		Mortality		Average incubation period		Morbidity	Mortality	Average incubation period days
	Cortisone*	Untreated	Cortisone	Untreated	Cortisone	Untreated			
10^{-1}	9/9**	9/10	9/9	0/10	3.8	4.1	7/10	3/10	4.7
10^{-2}	10/10	5/10	9/10	1/10	5.1	4.8	5/9	1/9	5.8
10^{-3}	6/10	1/10	5/10	0/10	7.7	6.0	0/10	0/10	...
10^{-4}	1/10	1/10	1/10	0/10	8.0	12.0	0/10	0/10	...
10^{-5}	0/9	0/10	0/9	0/10	...	...	0/10	0/10	...
50 per cent endpoint	$10^{-3.2}$	$10^{-2.1}$	$10^{-3.0}$	$10^{-<1.0}$	...	...	$10^{-1.8}$	$10^{-<1.0}$	...

* One dose of 5 mg. of cortisone (0.2 ml) was given intramuscularly just before the virus.
** Numerator = no. of hamsters succumbed; denominator = no. of hamsters inoculated.
The hamsters were observed for 35 days after inoculation. Equal numers of male and female adult hamsters were used.

TABLE 3

Effect of Cortisone on Intracerebral Infection with Lansing Virus in Male Hamsters of Different Size

Date of test	Average weight of hamsters Gm.	Treatment	No. of hamsters	Result		
				Morbidity per cent	Mortality per cent	Average incubation period days
7-13-51	74.8	None	10	20	0	8.5
	72.7	5 mg. cortisone on 7-13-51	9	11	11	7.0
	68.5	" " " 6-12-51	10	40	10	5.7
10-25-51	18.6	None	20	65	35	4.5
	17.7	5 mg. cortisone on 10-25-51	20	100	95	3.5
	34.7	None	20	45	15	9.2
	33.4	5 mg. cortisone on 10-25-51	20	95	90	5.6
	70.1	None	20	45	20	6.8
	67.9	5 mg. cortisone on 10-25-51	20	80	65	8.5
	68.1	25 mg. " " "	22	82	82	8.3

TABLE 4

Influence of Sex of Hamsters on Enhancing Effect of Cortisone on Experimental Poliomyelitis

All hamsters inoculated intracerebrally with Lansing virus 1:100

Sex of hamsters	Average weight of hamsters Gm.	Treatment	No. of hamsters	Result		
				Morbidity per cent	Mortality per cent	Average incubation period days
Female	20.7	None	20	50	25	4.6
	20.0	5 mg. cortisone once-just before virus	22	100	82	6.6
Male	19.9	None	19	63	26	7.2
	25.0	5 mg. cortisone once-just before virus	20	90	90	4.6

TABLE 5

Severity of Paralysis in Untreated and Cortisone-Treated Hamsters Following Intracerebral Inoculation of 1 Hamster PD_{50} of Lansing Virus

Group	No. of paralyzed hamsters in group	Per cent of hamsters exhibiting indicated score for extent of involvement*				Average score	Case fatality rate per cent
		2 or less	2.5-4.5	6-8	10		
Untreated	66	47	38	12	3	3.4	41
Cortisone-5 mg. once-just before virus	85	47	25	7	21	4.4	86

* Method of scoring: involvement of one extremity = 2; involvement of trunk, any cranial nerve (such as those supplying tongue, neck muscles, larynx), salivation or other CNS sign = 2; transitory paralysis = 0.5. Maximum score = 10.

TABLE 6

Neutralizing Antibody in Untreated, Clinically Unaffected and Paralyzed Hamsters Following Intracerebral Inoculation of Approximately 1 Hamster PD_{50} of Lansing Virus

Hamster sera tested	Days after inoculation	Hamster No.	Neutralization index of undiluted serum
Uninoculated controls	—	1	6
	—	2	2
	—	3	1
Lansing virus 1:100; no clinical signs	37	1	80
		2	63
		3	6
		4	1
Lansing virus 1:100; hamsters paralyzed	37	1	8
		2	6
		3	2
		4	2
	71	5	400
		6	25
		7	3
		8	2
		9	2

TABLE 7

Resistance to Intracerebral Challenge of Surviving Hamsters Previously Inoculated Intracerebrally with 1 Hamster PD_{50} of Lansing Virus

0.05 ml of 10 per cent suspension of Lansing virus (5 to 10 hamster PD_{50}) was the challenge dose for all hamsters

Test no. and date	Prior inoculation	Prior treatment	Prior clinical signs	Interval between prior inoculation and challenge days	No. of hamsters tested	Result of challenge		
						Morbidity per cent	Mortality per cent	Average incubation period days
1. 6/13/51	Lansing 1:100	None	None	56	6	0	0	—
	" "	Cortisone 12/18/51	"	"	3	0	0	—
2. 6/26/51	None	—	—	—	10	70	30	4.7
	Lansing 1:100	None	None	32	17	53	24	6.1
	" "	"	Transitory paralysis	"	2	0	0	—
	" "	Cortisone 5/25/51	"	"	2	0	0	—
3. 2/25/52	None	ACTH-10 mg./day 1/11/52-1/18/52	None	—	17	59	53	5.4
	Lansing 1:100	None	"	42	6	33	17	3.0
4. 5/26/52	None	None	—	—	20	50	35	6.3
	Lansing 1:100	"	None	35	16	62	44	4.5

TABLE 8

Level of Viral Multiplication in Individual Untreated and Cortisone-Treated Hamsters

All hamsters inoculated intracerebrally with Lansing virus 1:100 - 1 hamster PD_{50}

Group	Days after onset of CNS signs hamster killed	Hamster No.	Days after inoculation CNS signs first observed	Clinical involvement when tissues were removed	Titer* of virus in Spinal cord and brainstem	Titer* of virus in Cortex and cerebellum
Untreated		1	3	LF, just died	3.4	2.2
		2	4	" " "	2.1	2.4
		3	4	LR, RR, " "	3.4	1.2
		4	11	LF, RF, " "	2.7	2.3
	< 1	5	2	LR	2.8	2.7
		6	2	LF	3.1	2.8
		7	3	RF	2.5	2.8
		8	3	RF	1.5	1.6
		9	3	RF	2.4	1.5
		10	4	RF	2.8	1.5
		11	4	LF	1.4	1.5
		12	5	LF	2.7	2.5
		13	5	LF	2.3	1.8
	2	14	18	LF	< 1.0	< 1.0
	5	15	19	LF, RF, LR, RR	1.7	0
	9	16	11	RF	1.2	0
	13	17	7	LF	0	0
Cortisone 5 mg. once just before inoculation of virus	< 1	1	3	None observed; found dead	4.0	4.0
		2	2	RR	4.1	3.9
		3	2	LR	3.4	3.2
		4	3	RR	4.5	4.2
		5	4	HR	4.4	4.5
		6	4	LR, CNS	3.4	3.6
		7	4	Circling	2.6	2.5
		8	4	HR	3.5	2.9
		9	5	LR, RR	3.8	3.5
		10	6	RF	4.2	3.9
		11	8	LF, RR	2.8	< 1.0
	1.2	12	3	LF, RF, just died	4.2	2.8
	2	13	7	RF " "	2.7	2.5
	3	14	7	RF, RR	2.0	1.0
	3	15	10	LF	1.4	1.3
	4	16	6	LF	2.3	1.0
	5	17	9	LR, RR, SALIV.	< 1.0	< 1.0
	20	18	9	LF	0	0

* Each tenfold dilution inoculated into 10 mice; the titers given are the reciprocals of the LD_{50} for the 0.03 ml dose. 1.0 = few mice died after inoculation of 10 per cent suspension, but titer is less than 10^{-1}. 0 = all mice inoculated with 10 per cent suspension survived.

Abbreviations: LF - left front; RF - right front; LR - left rear; RR - right rear; HR - head turned right; SALIV. - salivation; CNS - signs of involvement of central nervous system other than distinct, localized paralysis, e.g., ataxia, lethargy.

TABLE 9

Analysis of Data on Level of Viral Multiplication at Onset of Paralysis in Individual Untreated and Cortisone-Treated Hamsters Inoculated with Lansing Virus 1:100

Group	No. of hamsters tested individually	Spinal cord and brain stem			Cerebral cortex and cerebellum		
		Range of titers*	Median titer	Average titer	Range of titers	Median titer	Average titer
Untreated	13	1.4-3.4	2.7	2.5	1.2-2.8	2.2	2.1
Cortisone 5 mg. once-just before virus	11	2.6-4.5	3.8	3.7	1.0-4.5	3.6	3.4
Log difference between groups	—	—	1.1	1.2	—	1.4	1.3

* Reciprocal of log of LD_{50} per 0.03 ml.

TABLE 10

Effect of Single Dose of Cortisone (5 mg.) Administered Shortly After Onset of Paralysis

102 male hamsters weighing 14-20 Gm. inoculated intracerebrally with Lansing virus 1:100. During the first 10 days after inoculation, the hamsters which developed paralysis were alternately either untreated or inoculated with cortisone.

Group	Hamster No. in order of selection	Involvement at onset	Subsequent maximum involvement	End result	
				Death days after onset	Survival extent of residual paralysis
Untreated controls	1	LF	LF,RF	2	
	2	RF	RF,LF,RR		RF,RR
	3	LF	LF,RF	2	
	4	RF,LF		1	
	5	RF,LF	RF,LF,RR,LR	18	
	6	RF	RF,LF		RF,LF
	7	RF	RF,LF	17	
	8	LF	LF,RF	14	
	9	LF	LF,RF,RR,LR	12	
	10	RF,LF	RF,LF	2	
	11	RR,LR	RR,LR,RF,LF	13	
	12	SALIV.		1	
	13	RF	RF,LF	4	
	14	RF	RF,LF		RF,LF
	15	RF	RF,LF		RF,LF
	16	LF	LF	6	
	17	LR	LR transitory; then RR		RR
	18	CNS		1	
	19	RF	transitory; lasted 13 days		None
	20	LR	LR,RR - only 10 days		None
Cortisone	1	LF	LF	2	
	2	LF	LF,RF	3	
	3	LR	LR,RR,RF	2	
	4	RF,LF	RF,LF	2	
	5	LF	LF transitory; then LR	15	
	6	RF	RF,LF	5	
	7	RF,LF	RF,LF	2	
	8	LF	LF,RF	2	
	9	LF	LF	4	
	10	RF	RF,LF,CNS	2	
	11	RF	Prostrate	4	
	12	RF,LF	RF,LF	2	
	13	LF	Prostrate	8	
	14	RF	RF,LF	4	
	15	SALIV.	Prostrate	1	
	16	RR,LR	RR,LR	11	
	17	RF	RF,LF	6	
	18	RF	RF,LF		RF,LF
	19	RF	RF,LF	12	
	20	CNS	CNS	5	

Abbreviations: LF - left front; RF - right front; LR - left rear; RR - right rear; HR - head turned right; SALIV. - salivation; CNS - signs of involvement of central nervous system other than distinct, localized paralysis, e.g., ataxia, lethargy.

TABLE 11

Analysis of Data on Effect of Single Dose of Cortisone Administered Shortly after Onset of Paralysis in Hamsters

Group of paralyzed hamsters	No. in group	Severity of paralysis at onset Average score	Case fatality rate at indicated no. of days after onset			Incidence of transitory paralysis
			5	15	25-30	
			per cent	per cent	per cent	per cent
Untreated	20	2.5	35	55	65	10
Cortisone-5 mg.	20	2.4	70	95	95	0
Significance of difference between groups	—	—	$\chi^2 = 4.9$ P = 0.03	$\chi^2 = 8.5$ P = 0.004	$\chi^2 = 3.9$* P = 0.05	—

* This χ^2 value was computed with Yates correction for small numbers.

TABLE 12

Effect of Cortisone Administered to Clinically Unaffected Hamsters 10 Days after Intracerebral Injection of 1 Hamster PD_{50} of Lansing Virus

102 hamsters inoculated with 1:100 dilution of virus; 10 days later the 54 hamsters, which as yet had exhibited no signs of infection, were divided in 2 groups.

Group	No. of hamsters in group	No. died without CNS signs	No. developed paralysis	Days after inoculation of virus, paralysis appeared	Subsequent course in paralyzed hamsters
Untreated	27	2* (11,16)	3	12, 18, 20	All 3 survived, and paralysis disappeared
5 mg. of cortisone 10 days after virus	27	5* (12,16,18,19,25)	5	11†,14,19†,25†,33†	4 died; 3 survived with residual paralysis

* It is not possible to say whether any of these hamsters died of Lansing virus infection. The spinal cord and medulla, and the cortex and cerebellum from one hamster in each group were cultured for bacteria and inoculated in mice with negative results. The figures in parenthesis refer to the days after inoculation of virus that the hamsters died.

† These hamsters died; the intervals between onset of paralysis and death were 4, 6, 18 and 26 days.

TABLE 13

Effect of Large Doses of ACTH on Poliomyelitis in Hamsters Following Intracerebral Injection of One Hamster PD_{50} of Virus (Lansing 1:100)

Date of test	Weight of hamsters just before first dose of ACTH Gm.	Treatment	No. of hamsters	Morbidity at indicated no. of days after inoculation of virus				Mortality at indicated no. of days after inoculation of virus				Average incubation period days
				7	14	21	28	7	14	21	28	
1-11-52	20.7 (16-25)	None	19	42	53	58	63	16	26	26	26	7.2
		ACTH for 8 days*	20	45	60	60	60	5	20	25	25	5.8
4-18-52	14.5 (11-17)	None	20	30	40	40	40†	5	10	10	10	5.1
		ACTH for 8 days	19	68	79	79	79†	16	21	26	37	4.5
	34.0 (29-41)	None	20	45	55	60	60	20	30	30	30	5.9
		ACTH for 8 days*	20	35	40	50	50	25	30	30	30	5.3

* Total dose = 10 units per day subcutaneously; 3 units at 8 AM and 4 PM, and 4 units at midnight. Virus given on the morning of the 4th day.

† $\chi^2 = 6.1$; $P = 0.013$.

TABLE 14

Effect of Single Dose of 3 Units of ACTH (150 units/kilo)

on Circulating Eosinophiles in 20 Gm. Male Hamsters

Blood for eosinophile counts obtained by cardiac puncture

Treatment prior to first count Group	Hamster No.	Eosinophiles per cu.mm. at indicated time	
		First count	Second count 44 hours after first
A None	1	84	70
	2	101	131
	3	132	128
	4	57	46
	Average	93	94
B 0.3 ml of physiologic salt solution subcutaneously 4 hours before first count	5	41	40
	6	14	33
	7	37	44
	8	52	86
	Average	36	51
C ACTH - 0.3 ml subcutaneously 4 hours before first count	9	23	29
	10	16	24
	11	16	18
	12	14	6
	Average	17	19
Per cent difference between groups A and B	—	61	46
Per cent difference between groups A and C	—	82	80
Per cent difference between groups (A + B) and C	—	—	73

TABLE 15

Effect of ACTH on Body and Organ Weights of Male Hamsters

Date of test	Treatment	Weight of hamsters used Gm.	Body weight (Gm.) - average*			Weight of organs* - 18 hrs. after last dose mg./100 Gm. of body weight			
			Just before 1st dose	18 hrs. after last dose	Average gain per day	Adrenals	Spleen	Thymus	Liver
2-27-52	Saline — 4 days	37,39,48,54,56	46.8	58.6	2.95	20.7	204.9	341.2	6,856.0
	ACTH — 4 days total dose = 37 units	39,40,47,50,61	47.4	53.0	1.40	35.9	163.4	337.9	7,119.0
	Per cent difference between ACTH and saline groups				-52.5	+73.5	-20.2	-0.8	+3.8
4-18-52	None	12,15,17,18,18	16.0	37.2	2.65	16.0	258.1	264.8	5,615.0
	ACTH —8 days total dose = 80 units	12,13,13,14,14	13.2	28.4	1.90	31.2	192.9	335.9	6,098.0
	Per cent difference between ACTH and untreated groups				-28.3	+95.0	-25.3	+26.8	+8.6
	None	30,34,38,38,39	35.8	53.2	2.18	18.8	192.1	244.2	5,767.0
	ACTH — 8 days total dose = 80 units	35,37,38,41,42	38.6	50.0	1.43	33.0	125.8	215.8	5,940.0
	Per cent difference between ACTH and untreated groups				-34.4	+75.5	-34.5	-11.6	+3.0

* Average values for 5 hamsters constituting each group.

TABLE 16

Toxicity of Single Dose of Cortisone for Mice

Weight of mice Gm.	Dose mg.	No. of mice inoculated	No. of mice survived 35 days	Days after inoculation on which individual mice died
16-20	40	4	0	<1, <1, <1, <1
	30	4	1	<1, 1, 6
	20	4	4	
	10	17	16	6
	5	30	28	2, 4
	0	23	23	
10-11	5	40	31	
	0	40	38	

TABLE 17

Effect of Single Dose of Cortisone (5 mg.) Given Just Before Intracerebral Inoculation of Virus on Infection Resulting from Different Doses of Lansing or MEF_1 Virus in Mature Nonpregnant Female Mice

Effect	Strain of virus	Treatment	Per cent of mice died at indicated dilution of virus*					LD_{50}
			10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-}
Mortality Per cent	Lansing	None	100	100	84	40	5	3.8
		Cortisone	100	100	95	68	40	4.6
	MEF_1	None	100	100	95	65	25	4.4
		Cortisone	100	100	100	68	69	5.0
Incubation period average days	Lansing	None	5.3	8.3	9.4	18.0	5	
		Cortisone	5.5	6.0	7.3	12.6	15.9	
	MEF_1	None	4.8	8.5	12.0	16.1	12.8	
		Cortisone	5.0	7.0	7.3	16.3	13.5	
Interval between first signs and death average days	Lansing	None	1.1	1.4	1.3	1.4	1.0	
		Cortisone	0.8	1.3	1.2	0.9	1.0	
	MEF_1	None	0.8	1.0	1.1	1.1	1.4	
		Cortisone	0.8	0.5	1.3	1.6	0.7	

* Each dilution of virus was inoculated into 20 mice, which were observed for 35 days. Only mice dying within 24 hours after inoculation or with obvious enteric infection were eliminated from calculation.

TABLE 18

Effect of Single Dose of Cortisone (5 mg.) Given Just Before Intracerebral Inoculation of MEF_1 Virus

Role of a) Dose of Virus, b) Age of Mice, and c) Sex of Mice

Basis of analysis	Dilution of virus	Mortality						Average Incubation Period - Days					
		18-20 Gm. females		10-11 Gm. females		10-11 Gm. males		18-20 Gm. females		10-11 Gm. females		10-11 Gm. males	
		Untreated	Cortisone	Untreated	Cortisone	Untreated	Cortisone	Untr.	Cortis.	Untr.	Cortis.	Untr.	Cortis.
Excludes only mice dying within 24 hrs. or of obvious bacterial infection	10^{-1}	20/20	20/20	20/20	20/20	19/20	20/20	4.9	5.0	4.8	4.2	5.7	5.3
	10^{-2}	20/20	20/20	20/20	20/20	19/20	20/20	8.5	7.1	4.5	6.7	6.6	7.1
	10^{-3}	19/20	17/17	19/20	20/20	18/18	20/20	12.0	7.3	5.8	7.5	13.8	7.5
	10^{-4}	13/20	13/19	17/20	20/20	7/18	17/18	16.1	16.3	15.1	12.9	16.7	11.2
	10^{-5}	5/20	11/16	6/20	11/19	7/17	5/19	12.8	13.5	19.3	10.5	15.1	14.6
	ID_{50}	$10^{-4.4}$	$10^{-5.0}$	$10^{-4.6}$	$10^{-5.1}$	$10^{-4.1}$	$10^{-4.6}$						
Excludes mice dying without observed paralysis	10^{-1}	12/12	10/10	17/17	12/12	14/15	11/11	5.8	6.6	5.2	4.8	5.7	5.3
	10^{-2}	15/15	7/7	16/16	14/14	16/17	9/9	8.9	8.7	4.6	6.5	7.3	5.6
	10^{-3}	14/15	15/15	15/16	13/13	13/13	11/11	12.6	7.4	6.5	6.3	14.0	7.3
	10^{-4}	9/16	11/17	14/17	12/12	3/14	7/8	14.8	18.1	15.0	15.7	16.0	14.6
	10^{-5}	4/19	5/10	4/18	5/13	4/14	1/15	13.3	18.0	16.7	11.8	12.5	32.0
	ID_{50}	$10^{-4.3}$	$10^{-4.6}$	$10^{-4.5}$	$10^{-4.8}$	$10^{-3.7}$	$10^{-4.5}$						

Each dilution of virus originally inoculated into 20 untreated and 20 treated mice of each category. Frozen aliquots of same lot of virus used, but 18-20 Gm. mice tested on 10-30-51, 10-11 Gm. females on 1-8-52, and 10-11 Gm. males in 1-9-52. Mice observed for 35 days.

TABLE 19

Effect of Single Dose of Cortisone (5 mg.) on Incidence of Infection and Incubation Period in Large Numbers of Half-Grown and Mature Mice of Different Sex Following Intracerebral Injection of Minimal Amounts of Lansing or MEF_1 Viruses

Strain of virus	Dilution of virus	Date of test	Mice used		Treatment	No. of mice inoculated	Analysis excluding mice dying without observed paralysis			Analysis excluding only mice dying within 24 hrs. or of obvious bacterial infection		
			Weight Gm.	Sex			Mortality		Average incubation period days	Mortality		Average incubation period days
							No.	Per cent		No.	Per cent	
Lansing	10^{-4}	7-17-51	20	F	None	19	7/15	47	24.0	11/19	58	18.7
			21	M	"	20	3/15	20	9.7	7/19	37	13.8
			21	M	Cortisone	20	9/14	64	13.9	13/18	72	14.6
MEF_1	10^{-4}	12-10-51	20	F	None	30	14/25	56	14.4	19/30	63	11.8
			20	F	Cortisone	30	13/23	52	14.8	19/29	66	13.6
		2-19-52	20	F	None	50	22/38	58	20.9	28/44	64	22.0
			10	F	"	50	34/39	87	13.6	43/48	90	13.3
			10	M	"	50	38/43	88	14.0	45/50	90	14.4
			10	M	Cortisone	50	25/25	100	12.6	43/43	100	10.3
	10^{-5}	12-10-51	20	F	None	30	7/29	24	13.3	8/30	27	14.4
			20	F	Cortisone	30	7/28	25	15.9	7/28	25	15.9
		2-19-52	20	F	None	50	10/48	21	13.5	12/50	24	15.8
			10	F	"	50	15/39	38	20.2	23/47	49	17.9
			10	M	"	50	8/38	21	13.1	18/48	38	14.3
			10	M	Cortisone	50	10/33	30	15.2	22/45	49	15.4

TABLE 20

Effect of Cortisone on Intracerebral Infection of Mice with Minimal Amounts of Lansing and MEF_1 Viruses

Summary of all tests on half-grown and mature mice

Strain of virus	Dilution of virus	Treatment	No. of mice inoculated	Analysis excludes mice dying without observed paralysis			Analysis excludes only mice dying within 24 hrs. or of obvious bacterial infection		
				Mortality		Average incubation period days	Mortality		Average incubation period days
				No.	Per cent		No.	Per cent	
Lansing	10^{-4}	None	59	16/48 *	33	19.5	26/58 **	45	17.2
		Cortisone†	40	19/30 *	63	13.5	26/37 **	70	13.6
MEF_1	10^{-4}	None	240	134/192	70	15.3	172/230	75	15.3
		Cortisone†	140	68/88	77	14.7	112/129	87	12.1
	10^{-5}	None	240	52/205	25	15.5	79/232	34	15.9
		Cortisone †	140	28/99	28	15.9	56/127	44	14.0

† 5 mg. of cortisone, administered just before the virus, was the standard dose.
* $\chi^2 = 6.7$; $P = 0.01$.
** $\chi^2 = 5.9$; $P = 0.014$.

TABLE 21

Effect of Single Dose of Cortisone on Relative Resistance of Newborn Mice to Poliomyelitis Virus (Lansing Strain)

Adult, as well as newborn, mice inoculated with 0.01 ml of indicated dilution of virus intracerebrally

Dilution of virus	Mice used	Treatment	No. of mice inoculated	Incidence of paralysis*	
				No.	Per cent
10^{-2}	18-20 Gm. females	None	60	50/52	96
	2-3 days old average wt. = 1.8 Gm.	None	35	13/28	46
		Saline	75	31/49	63
		0.25 mg. cortisone	54	11/16	69
		0.5 mg. "	80	23/24	96
10^{-3}	18-20 Gm. females	None	60	30/55	55
	2-3 days old average wt. = 1.8 Gm.	None	37	5/22	23
		Saline	80	15/50	30
		0.25 mg. cortisone	55	2/7	29
		0.5 mg. "	83	12/17	71

* Mice dying without observed paralysis were excluded from analysis.

Controls for mortality of newborn mice not inoculated with virus:

Test No. 1 — No control intracerebral inoculation
29 mice — saline subcutaneously — all survived
35 mice — 0.5 mg. cortisone subcutaneously — 9 died

Test No. 2 — 0.01 ml saline intracerebrally
45 mice — 0.25 mg. cortisone subcutaneously — 36 died
39 mice — 0.5 mg. " " — 37 died

No intracerebral inoculation
28 mice — saline subcutaneously — 19 died.
There was a high mortality from intercurrent enteric infection in this test.

TABLE 22

Effect of Single Dose of Cortisone (0.5 mg.) Administered to Mice at 2 to 3 Days of Age on Subsequent Gain in Body Weight

Treatment	No. of mice in group	No. of mice died	Average weight (6 Gm.) at indicated no. of days after inoculation					
			0	6	13	20	27	34
Saline	29	0	1.7	3.8	5.7	9.5	14.7	17.9
Cortisone	35	9	1.9	3.2	5.0	7.6	12.2	16.4

TABLE 23

Effect of Cortisone on Level of Multiplication of Lansing Virus in Spinal Cord and Brainstem of Adult Mice

Dilution of virus inoculated	Time of removal of CNS tissue from mice	No. of mice in pool	Treatment of mice	Titer of virus
10^{-1} (1000 LD_{50})	Only paralyzed mice used; sacrificed at onset of paralysis	9	None	$10^{-3.9}$
		10	Cortisone	$10^{-3.6}$
10^{-2} (100 LD_{50})	All mice killed 2 days after inoculation; only small proportion of mice paralyzed	19*	None	$10^{-3.2}$
		15**	Cortisone	$10^{-3.5}$

TABLE 1

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of 64 PD_{50} of a Strain of High Virulence (Hof.)

Date of test	Treatment	Rhesus No.	Incubation period days	Paralytic score*	Outcome of infection
7-15-51	None	1	—	Remained well	No polio lesions
		2	—	" "	" " "
		3	5	10	Survived
		4	7	8	"
		5	7	10	"
		6	8	10	"
		7	9	10	"
		8	9	10	"
		9	10	5	"
		10	13	2	"
		Average	8.5	8.1	
	Cortisone	11	5	10	Dead 8 days after onset of paralysis
		12	6	10	" 4 " " " " " "
		13	6	8	Survived
		14	7	10	Dead 2 days after onset of paralysis
		15	8	10	" 12 " " " " " "
		16	8	10	Survived
		17	8	10	"
		18	9	10	"
		19	9	10	"
		20	12	2	"
		Average	7.8	9	
11- 8-51	None	21	6	10	Dead 8 days after onset of paralysis
		22	6	10	" 10 " " " " " "
		23	6	10	Survived
		24	7	10	Dead 4 days after onset of paralysis
		25	8	10	" 9 " " " " " "
		26	8	10	Survived
		27	8	6	"
		28	10	10	"
		29	10	10	"
		30	11	5	"
		Average	8.0	9.1	

* Paralytic score is designed to express numerically the severity of paralysis. Maximum score = 10. Severe or complete paralysis of one extremity = 2; partial paralysis = 1; slight or transitory paralysis = 0.5. Paralysis of back and/or muscles supplied by cranial nerves = 2 for marked or complete involvement, 1 for partial, and 0.5 for slight or transitory.

TABLE 2

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of a Strain of Low Virulence (Vaughan)

Date of test	Dilution of virus 0.5 ml	Untreated monkeys: Day of paralysis, death or other result in individual monkeys	Untreated monkeys: Paralytic score, Individual monkeys	Untreated monkeys: Paralytic score, Average	Cortisone-treated monkeys: Day of paralysis, death or other result in individual monkeys	Cortisone-treated monkeys: Paralytic score, Individual monkeys	Cortisone-treated monkeys: Paralytic score, Average
5-14-48	10^{-2}	$\frac{20}{S}$*, NP**, 0	3	3			
	10^{-3}	0 , 0 , 0					
	10^{-4}	0 , 0 , 0					
6-15-51	10^{-2}	$\frac{25}{S}$, NP, NP, 0, 0	4	4	$\frac{10}{S}$, $\frac{11}{S}$, $\frac{13}{S}$,	5, 4, 3	3.7
7-25-51	10^{-2}	$\frac{15}{S}$, NP, NP, 0, 0	0.5	0.5	$\frac{7}{20}$*, $\frac{9}{S}$, $\frac{10}{S}$, $\frac{10}{11}$†, $\frac{11}{S}$	10, 8, 10, ?, 10	9.5
	10^{-3}	$\frac{8}{S}$, $\frac{13}{S}$, NP, 0, 0	1, 2	1.5	$\frac{10}{23}$, $\frac{16}{S}$, $\frac{23}{S}$, 0 , 0	10, 3, 2	5.0
All tests	10^{-2} and 10^{-3}	21 monkeys tested		2.1	15 monkeys tested		6.4
		Paralytic.....24 per cent Nonparalytic.....29 " " No polio lesions.....48 " " Case fatality..... 0 " " Average incubation period.16 days			Paralytic 73 per cent Nonparalytic 0 " " No polio lesions 27 " " Case fatality 20 " " Average incubation period.12 days		

* $\frac{20}{S}$ = monkey paralyzed 20 days after inoculation survived; $\frac{7}{20}$ = monkey paralyzed 7 days after inoculation died 20 days after inoculation.

** NP = nonparalytic poliomyelitis based on finding of typical "old" polio lesions in central nervous system of monkey which exhibited no clinical evidence of paralysis.

† This monkey died with severe hemorrhagic enteritis, and exhibited extensive acute polio lesions in cervical and thoracic cord.

TABLE 3

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of Strains of Low Virulence

Strain of virus	Date of test	Dilution of virus	Untreated monkeys			Cortisone-treated monkeys		
			Day of paralysis, death of other result in individual monkeys	Paralytic score		Day of paralysis, death or other result in individual monkeys	Paralytic score	
				Individual monkeys	Average		Individual monkeys	Average
Petty	4-25-48	10^{-2}	11*, NP, NP	4	4			
		10^{-3}	0, 0, 0					
		10^{-4}	0, 0, 0					
	6- 8-51	10^{-2}	17 (S), 19 (S), 19, NP, 0	2, 0.5, 10	4.2	10 (S), 10 (S), 13 (S), 14 (S), 14 (S)	6, 10, 10, 6, 3	7.0
Hopping	6- 8-51	10^{-1}	10 (S), 13 (S), NP**, 0, 0	3.5, 4	3.8	10, 11 (S), 17 (S), 0, 0 (14)	10, 10, 4	8.0
All tests		10^{-1} and 10^{-2}	13 monkeys tested		4.0	10 monkeys tested		7.4
			Paralytic 46 per cent Nonparalytic 31 " " No polio 23 " " Case fatality 0 " " Average incubation period..15 days			Paralytic 80 per cent Nonparalytic 0 " " No polio 20 " " Case fatality 12 " " Average incubation period..12 days		

* This monkey was killed 2 days after appearance of paralysis.

** This monkey died of an intercurrent pneumonia 17 days after inoculation, and exhibited "old" focal polio lesions in the central nervous system.

TABLE 4

Summary of Tests with 3 Strains of Poliomyelitis Virus of Low Virulence in Untreated and Cortisone-Treated Rhesus Monkeys

Response to infection	Untreated monkeys		Cortisone-treated monkeys		Significance of difference	
	No.	Per cent	No.	Per cent	χ^2	P
Paralytic	11/34	32	19/25	76	11.0	0.001
Nonparalytic	10/34	29	0/25	0	9.7*	0.002
No polio lesions	13/34	38	6/25	24	1.3	0.33
Case fatality rate among paralyzed monkeys	0/11	0	3/18	17	—	—
Average paralytic score	3.1		6.8			
Average incubation period	15.5 days		12.1 days			

* Calculated with Yates correction for small numbers on basis of frequency of nonparalytic infection among total number developing poliomyelitis, i.e., 10/21 among untreated monkeys vs. 0/19 among cortisone-treated monkeys.

TABLE 1

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of 64 PD_{50} of a Strain of High Virulence (Hof.)

Date of test	Treatment	Rhesus No.	Incubation period days	Paralytic score*	Outcome of infection
7-15-51	None	1	—	Remained well	No polio lesions
		2	—	" "	" " "
		3	5	10	Survived
		4	7	8	"
		5	7	10	"
		6	8	10	"
		7	9	10	"
		8	9	10	"
		9	10	5	"
		10	13	2	"
		Average	8.5	8.1	
	Cortisone	11	5	10	Dead 8 days after onset of paralysis
		12	6	10	" 4 " " " " " "
		13	6	8	Survived
		14	7	10	Dead 2 days after onset of paralysis
		15	8	10	" 12 " " " " " "
		16	8	10	Survived
		17	8	10	"
		18	9	10	"
		19	9	10	"
		20	12	2	"
		Average	7.8	9	
11- 8-51	None	21	6	10	Dead 8 days after onset of paralysis
		22	6	10	" 10 " " " " " "
		23	6	10	Survived
		24	7	10	Dead 4 days after onset of paralysis
		25	8	10	" 9 " " " " " "
		26	8	10	Survived
		27	8	6	"
		28	10	10	"
		29	10	10	"
		30	11	5	"
		Average	8.0	9.1	

* Paralytic score is designed to express numerically the severity of paralysis. Maximum score = 10. Severe or complete paralysis of one extremity = 2; partial paralysis = 1; slight or transitory paralysis = 0.5. Paralysis of back and/or muscles supplied by cranial nerves = 2 for marked or complete involvement, 1 for partial, and 0.5 for slight or transitory.

TABLE 2

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of a Strain of Low Virulence (Vaughan)

Date of test	Dilution of virus 0.5 ml	Untreated monkeys: Day of paralysis, death or other result in individual monkeys	Untreated monkeys: Paralytic score, Individual monkeys	Untreated monkeys: Paralytic score, Average	Cortisone-treated monkeys: Day of paralysis, death or other result in individual monkeys	Cortisone-treated monkeys: Paralytic score, Individual monkeys	Cortisone-treated monkeys: Paralytic score, Average
5-14-48	10^{-2}	$\frac{20}{S}$*, NP**, 0	3	3			
	10^{-3}	0 , 0 , 0					
	10^{-4}	0 , 0 , 0					
6-15-51	10^{-2}	$\frac{25}{S}$, NP, NP, 0, 0	4	4	$\frac{10}{S}$, $\frac{11}{S}$, $\frac{13}{S}$,	5, 4, 3	3.7
7-25-51	10^{-2}	$\frac{15}{S}$, NP, NP, 0, 0	0.5	0.5	$\frac{7}{20}$*, $\frac{9}{S}$, $\frac{10}{S}$, $\frac{10}{11}$†, $\frac{11}{S}$	10, 8, 10, ?, 10	9.5
	10^{-3}	$\frac{8}{S}$, $\frac{13}{S}$, NP, 0, 0	1, 2	1.5	$\frac{10}{23}$, $\frac{16}{S}$, $\frac{23}{S}$, 0 , 0	10, 3, 2	5.0
All tests	10^{-2} and 10^{-3}	21 monkeys tested		2.1	15 monkeys tested		6.4

Paralytic	24 per cent	Paralytic	73 per cent
Nonparalytic	29 " "	Nonparalytic	0 " "
No polio lesions	48 " "	No polio lesions	27 " "
Case fatality	0 " "	Case fatality	20 " "
Average incubation period	16 days	Average incubation period	12 days

* $\frac{20}{S}$ = monkey paralyzed 20 days after inoculation survived; $\frac{7}{20}$ = monkey paralyzed 7 days after inoculation died 20 days after inoculation.

** NP = nonparalytic poliomyelitis based on finding of typical "old" polio lesions in central nervous system of monkey which exhibited no clinical evidence of paralysis.

† This monkey died with severe hemorrhagic enteritis, and exhibited extensive acute polio lesions in cervical and thoracic cord.

TABLE 3

Effect of Cortisone on Poliomyelitis Produced in Rhesus Monkeys by Intracerebral Injection of Strains of Low Virulence

Strain of virus	Date of test	Dilution of virus	Untreated monkeys			Cortisone-treated monkeys		
			Day of paralysis, death of other result in individual monkeys	Paralytic score		Day of paralysis, death or other result in individual monkeys	Paralytic score	
				Individual monkeys	Average		Individual monkeys	Average
Petty	4-25-48	10^{-2}	11*, NP, NP	4	4			
		10^{-3}	0, 0, 0					
		10^{-4}	0, 0, 0					
	6- 8-51	10^{-2}	$\frac{17}{S}$, $\frac{19}{S}$, $\frac{19}{26}$, NP, 0	2, 0.5, 10	4.2	$\frac{10}{S}$, $\frac{10}{S}$, $\frac{13}{S}$, $\frac{14}{S}$, $\frac{14}{S}$	6, 10, 10, 6,3	7.0
Hopping	6- 8-51	10^{-1}	$\frac{10}{S}$, $\frac{13}{S}$, $\frac{NP}{**}$, 0, 0	3.5, 4	3.8	$\frac{10}{14}$, $\frac{11}{S}$, $\frac{17}{S}$, 0, 0	10, 10, 4	8.0
All tests		10^{-1} and 10^{-2}	13 monkeys tested		4.0	10 monkeys tested		7.4
			Paralytic 46 per cent Nonparalytic 31 " " No polio 23 " " Case fatality 0 " " Average incubation period..15 days			Paralytic 80 per cent Nonparalytic 0 " " No polio 20 " " Case fatality 12 " " Average incubation period..12 days		

* This monkey was killed 2 days after appearance of paralysis.

** This monkey died of an intercurrent pneumonia 17 days after inoculation, and exhibited "old" focal polio lesions in the central nervous system.

TABLE 4

Summary of Tests with 3 Strains of Poliomyelitis Virus of Low Virulence in Untreated and Cortisone-Treated Rhesus Monkeys

Response to infection	Untreated monkeys		Cortisone-treated monkeys		Significance of difference	
	No.	Per cent	No.	Per cent	χ^2	P
Paralytic	11/34	32	19/25	76	11.0	0.001
Nonparalytic	10/34	29	0/25	0	9.7*	0.002
No polio lesions	13/34	38	6/25	24	1.3	0.33
Case fatality rate among paralyzed monkeys	0/11	0	3/18	17	—	—
Average paralytic score	3.1		6.8			
Average incubation period	15.5 days		12.1 days			

* Calculated with Yates correction for small numbers on basis of frequency of nonparalytic infection among total number developing poliomyelitis, i.e., 10/21 among untreated monkeys vs. 0/19 among cortisone-treated monkeys.