

MIDDLE
EAST
VIRUS
CHARTS

TITRATION OF LYOPHILIZED ACUTE EXPERIMENTAL SANDFLY

FEVER SERUM AT LONGVIEW HOSPITAL, CINCINNATI, O.

HISTORY OF SERUM - obtained from HERBSTER on first day of fever (Aug. 2, 1943), which developed after being bitten by Phlebotomus papatasi which had been infected on other human volunteers. The serum was lyophilized on the day it was drawn and stored at low temperature ever since then.

Oct. 11, 1943 (10 weeks after drawing) - A lyovae ampule containing 5cc dried serum was reconstituted with 5cc of distilled water. Dilutions were prepared in saline

Total Dose - 1cc. - 0.1cc. i.cut.; 0.9cc subcut.

[REDACTED] - White Male - Age 40
- " " - " 42
- Colored " - " 49

Total Dose - 0.1cc - 0.1cc undiluted serum i.cut.

[REDACTED] - White Male - Age 45
- " Female - " 25
- " " - " 48

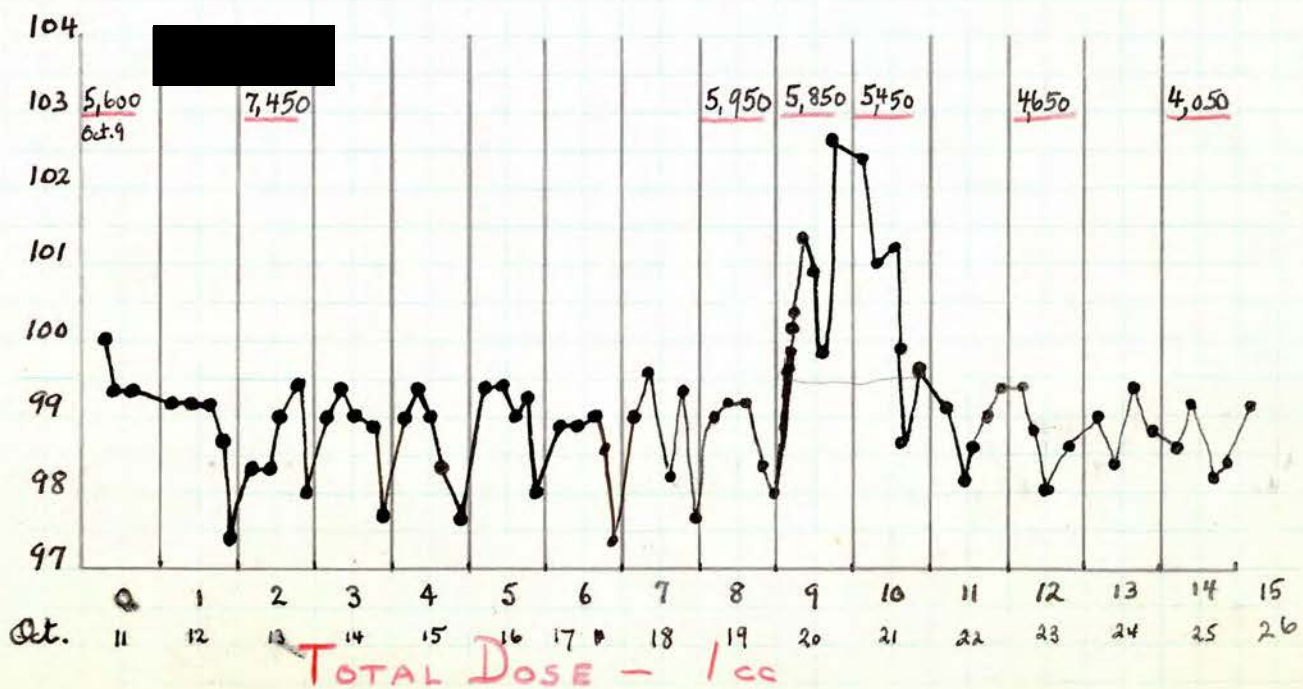
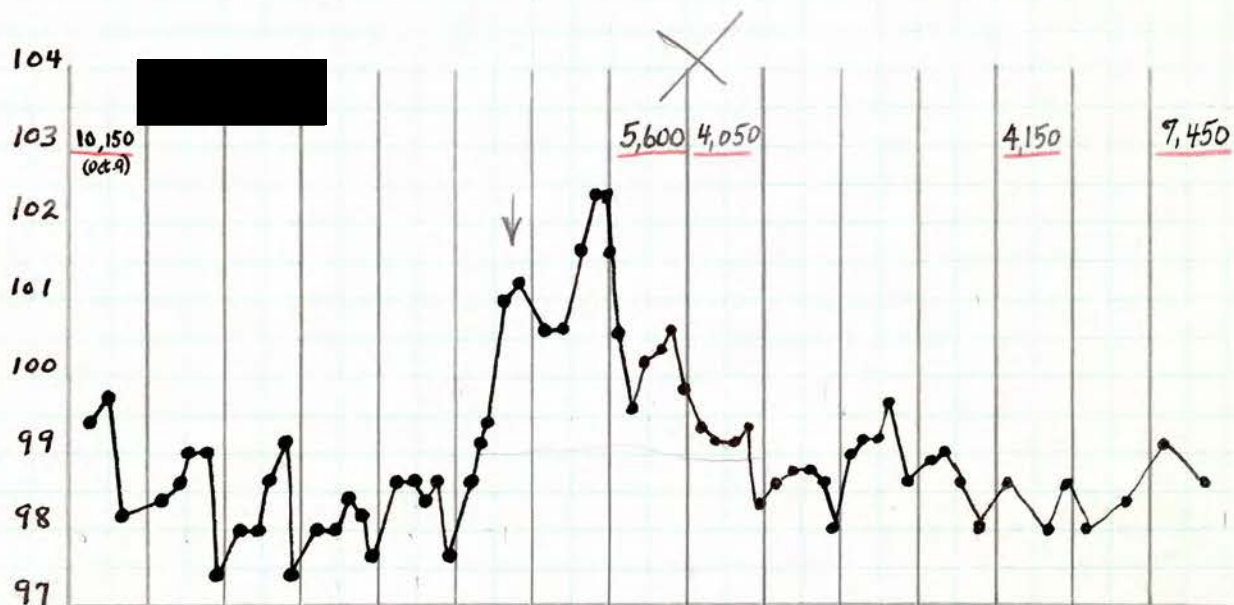
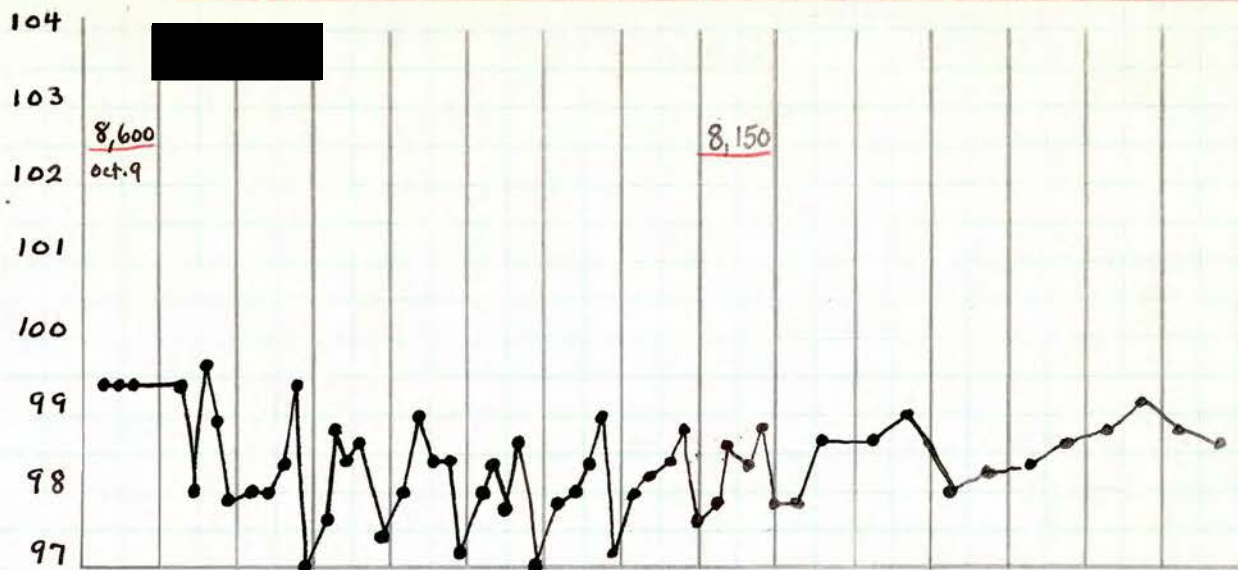
Total Dose - 0.01cc - 0.1cc serum 1:10 i.cut.

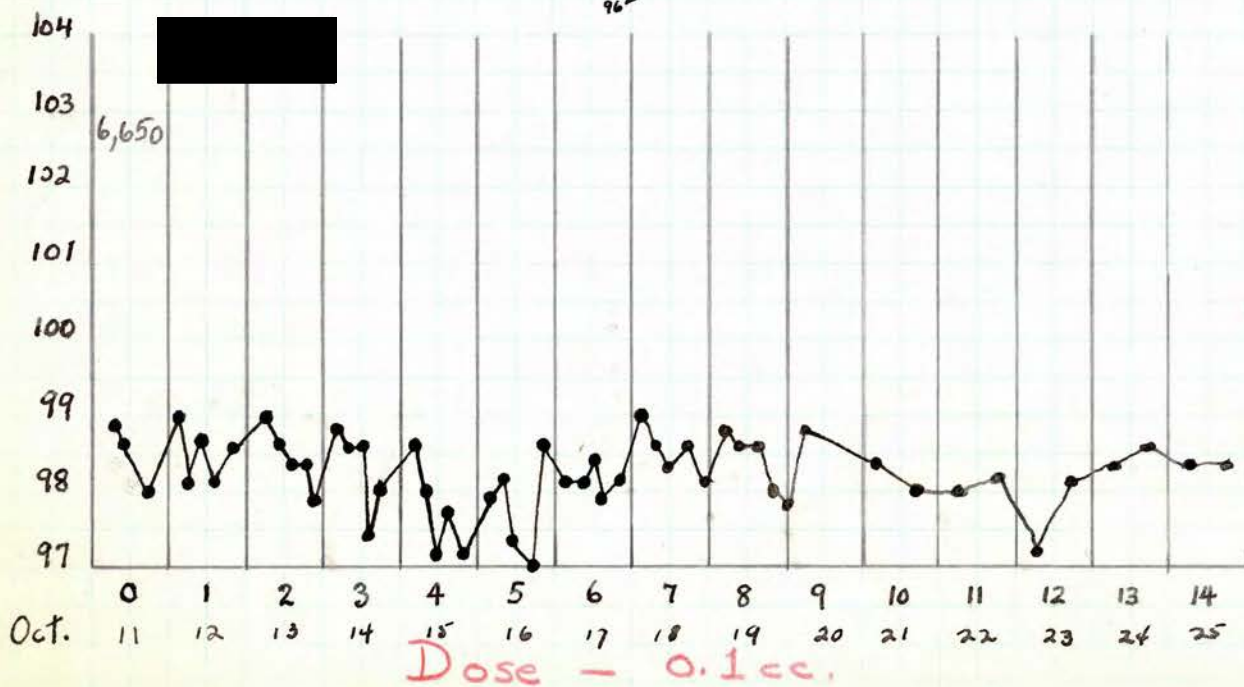
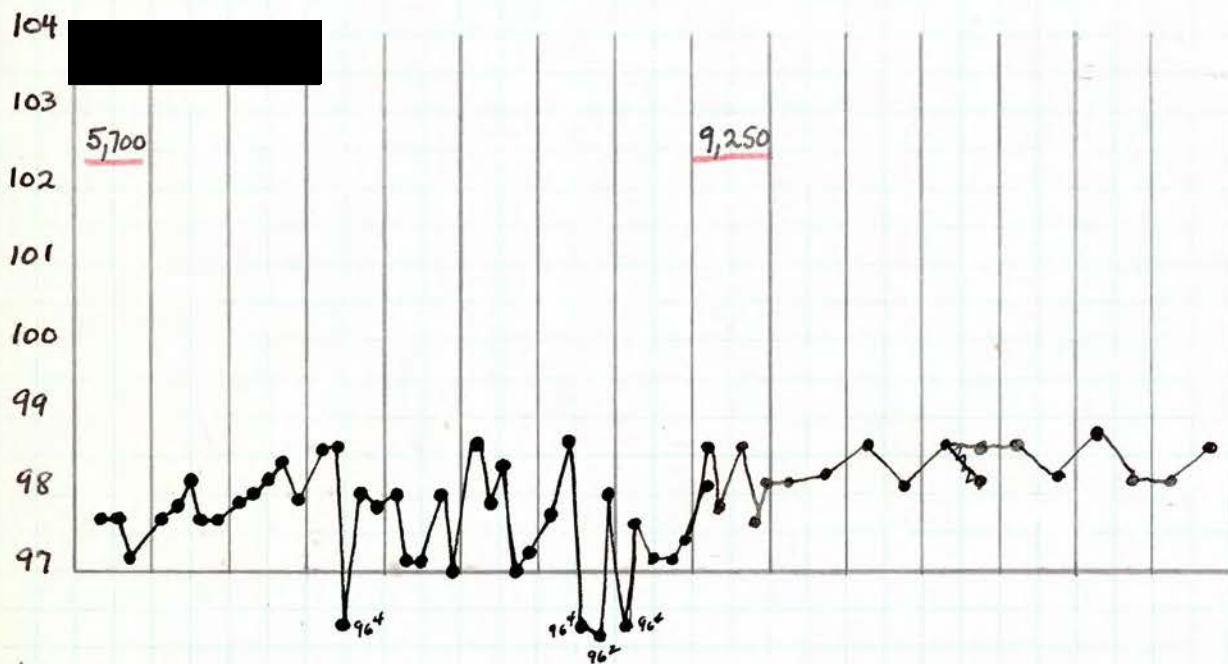
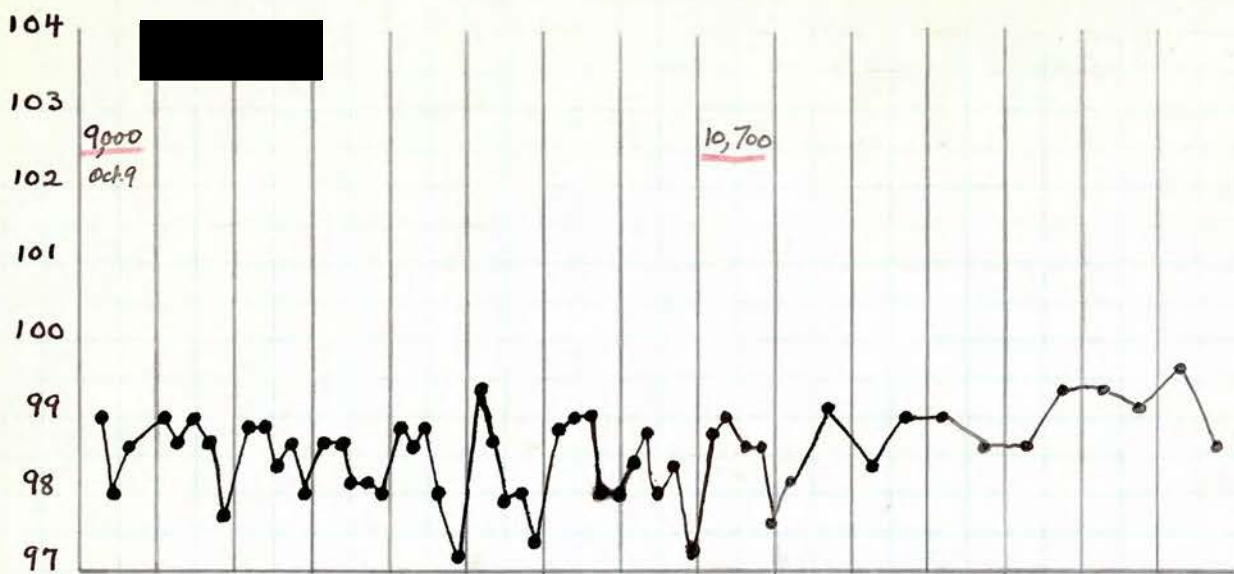
[REDACTED] - White male - Age 46
- Colored female - " 40
- White " - " 42

Total Dose - 0.001cc - 0.1cc serum 1:100 i.cut.

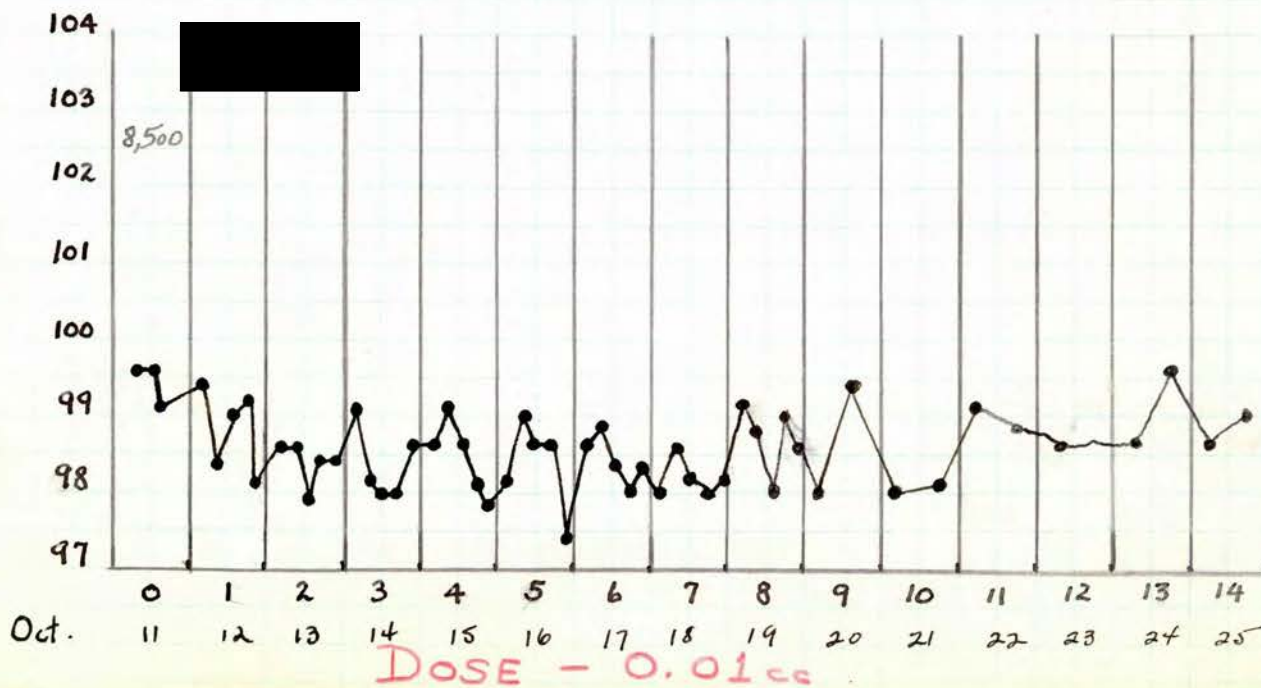
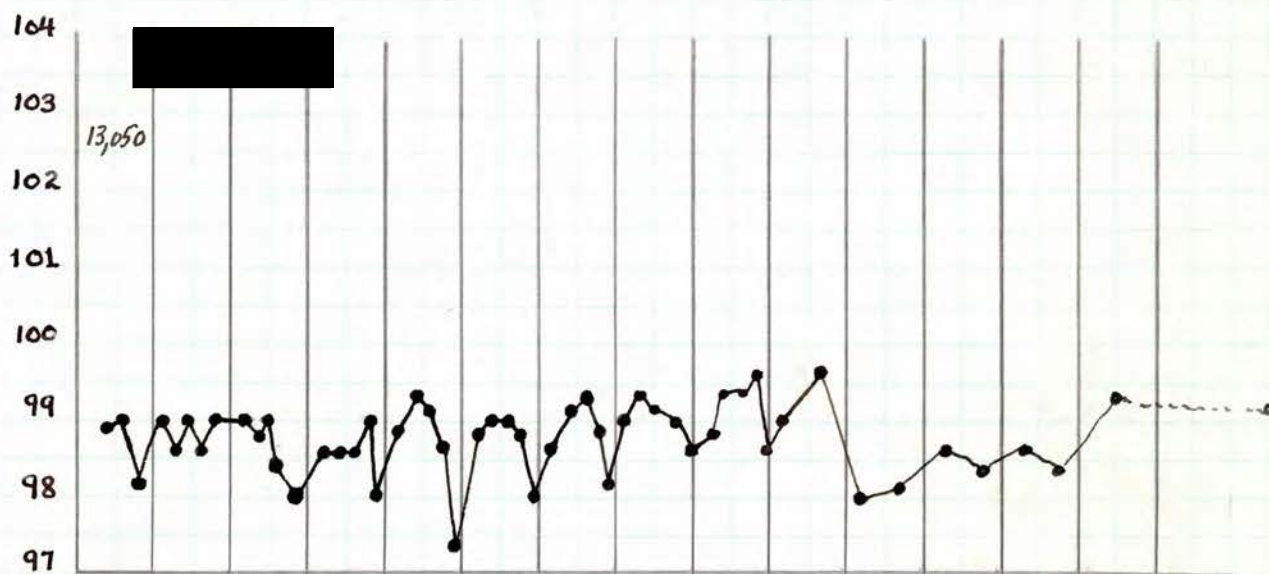
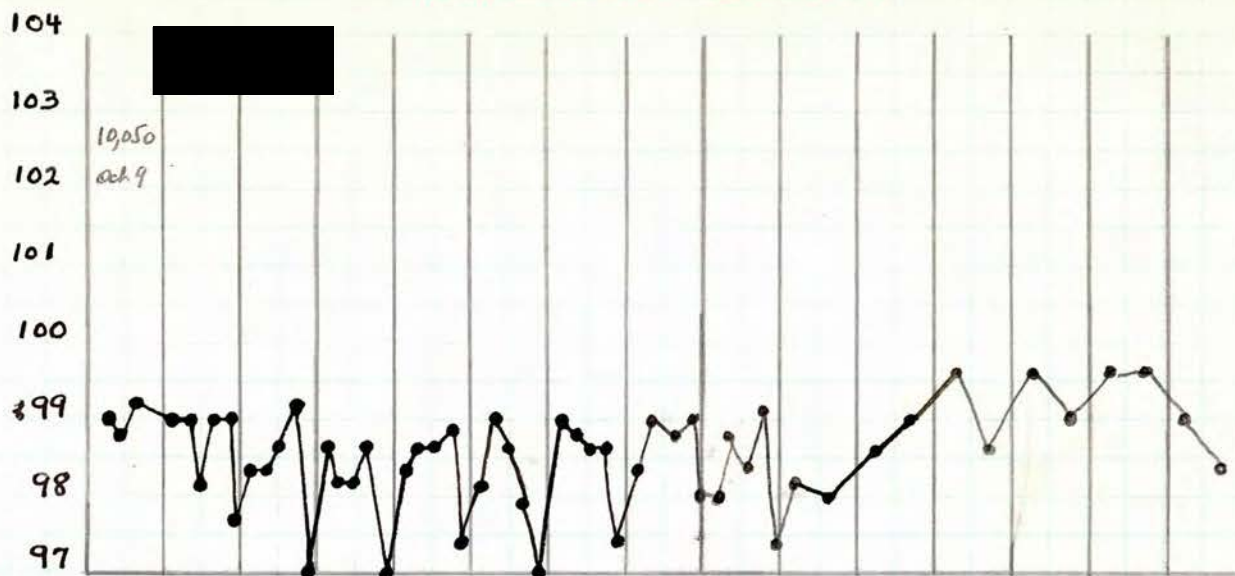
[REDACTED] - Colored male - Age 43
- White Female - " 42
- " " - " 50

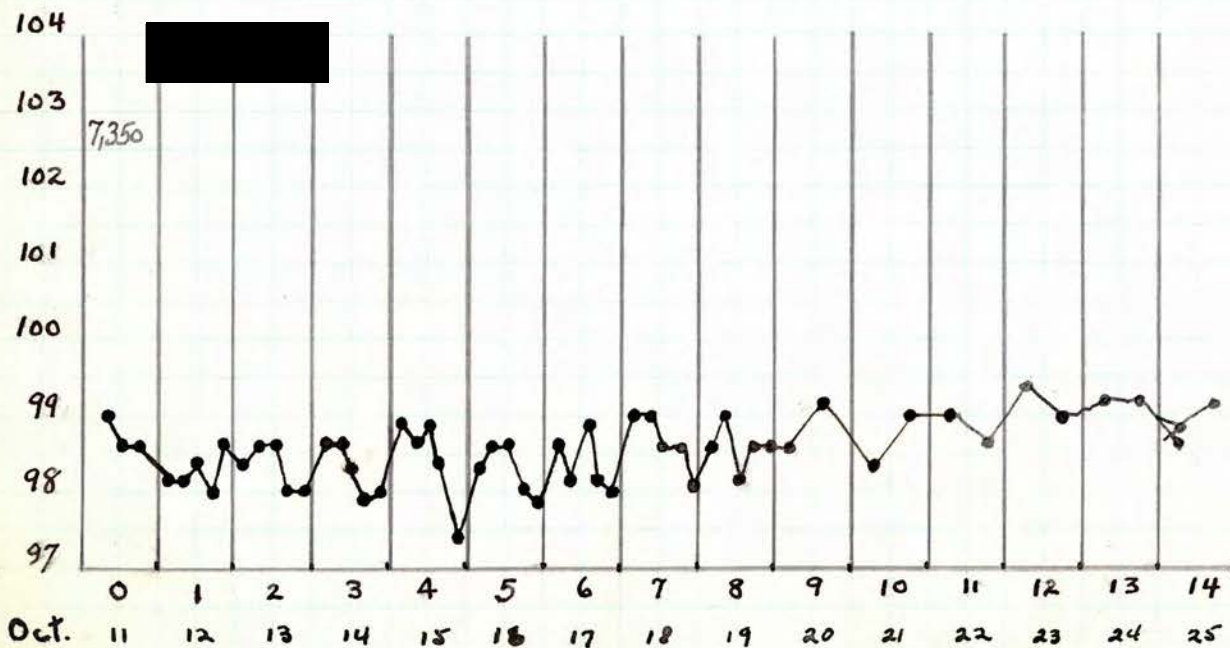
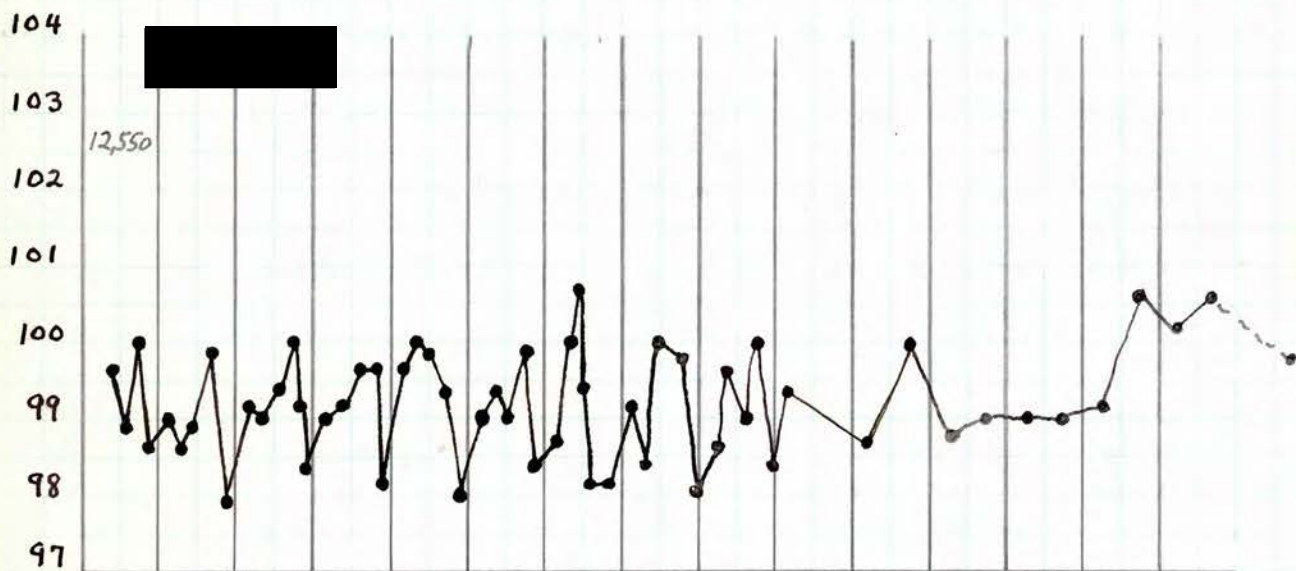
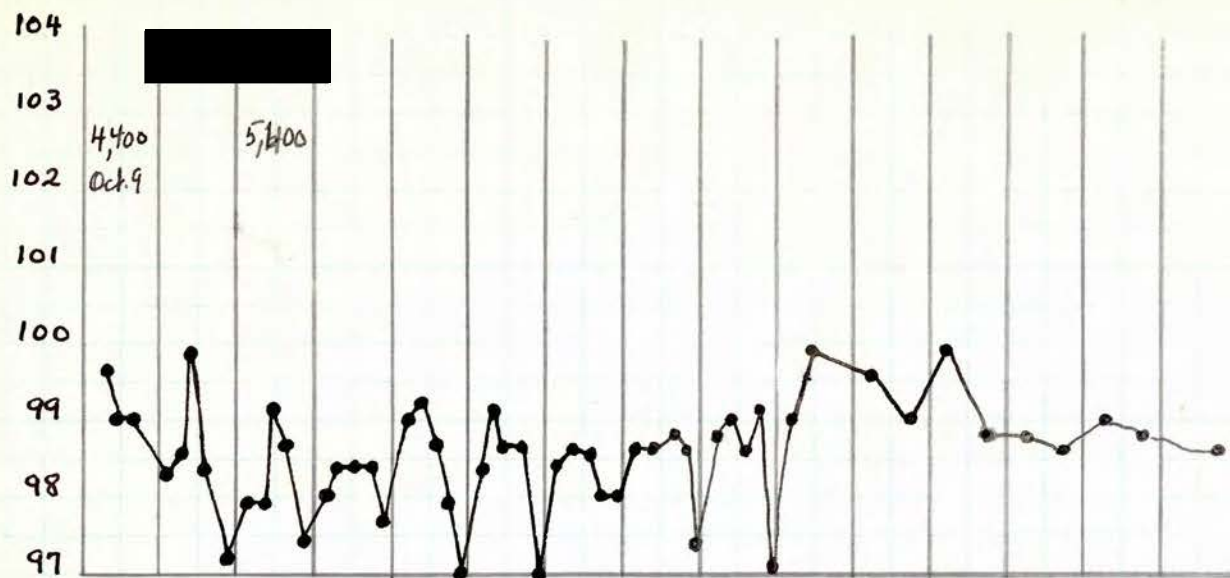
MIDDLE EAST EXPERIMENTAL PAPPATACI FEVER SERUM - HERBSTER





HERBSTER SERUM





DOSE - 0.001cc

PASSAGE of MIDDLE EAST VIRUS - CARROL SERUM

History of Serum - Bled Oct. 16 ^{28:30 AM.} in refrigerator overnight.
Centrifuged and frozen (CO₂) on Oct. 17
Oct. 19 - 1 ampoule (4.5 cc) thawed
and serum used for
inoculation

History of Virus - Natural disease in Middle East
↓
Human volunteers (by serum inoculation)
↓ by bite of Phlebot. papatasi
Human volunteer (Herbster)
↓ by serum inoculation
Human subject (Carrol)

Inoculations - Oct. 19 - 2:30 P.M.

Total Dose - 1 cc - 0.1 cc i. cut.; 0.9 cc subcut.

[REDACTED] - White male - Age 44

[REDACTED] - Colored " - " 50

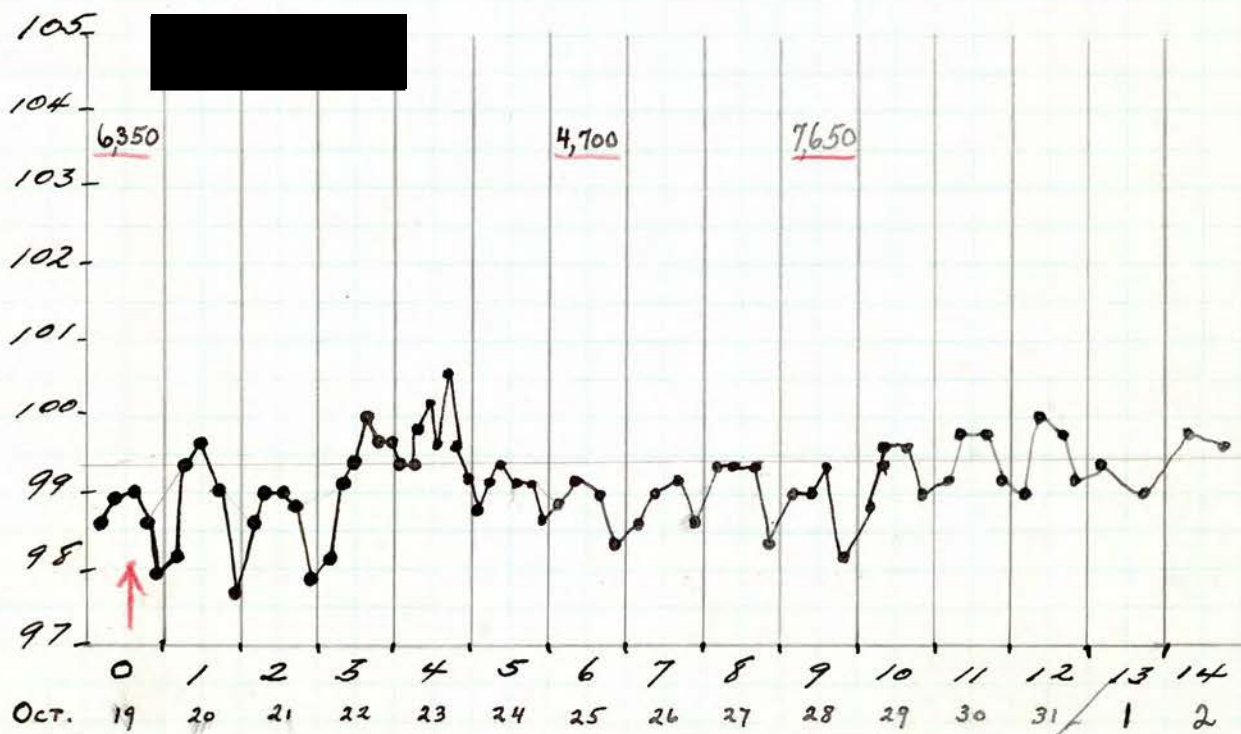
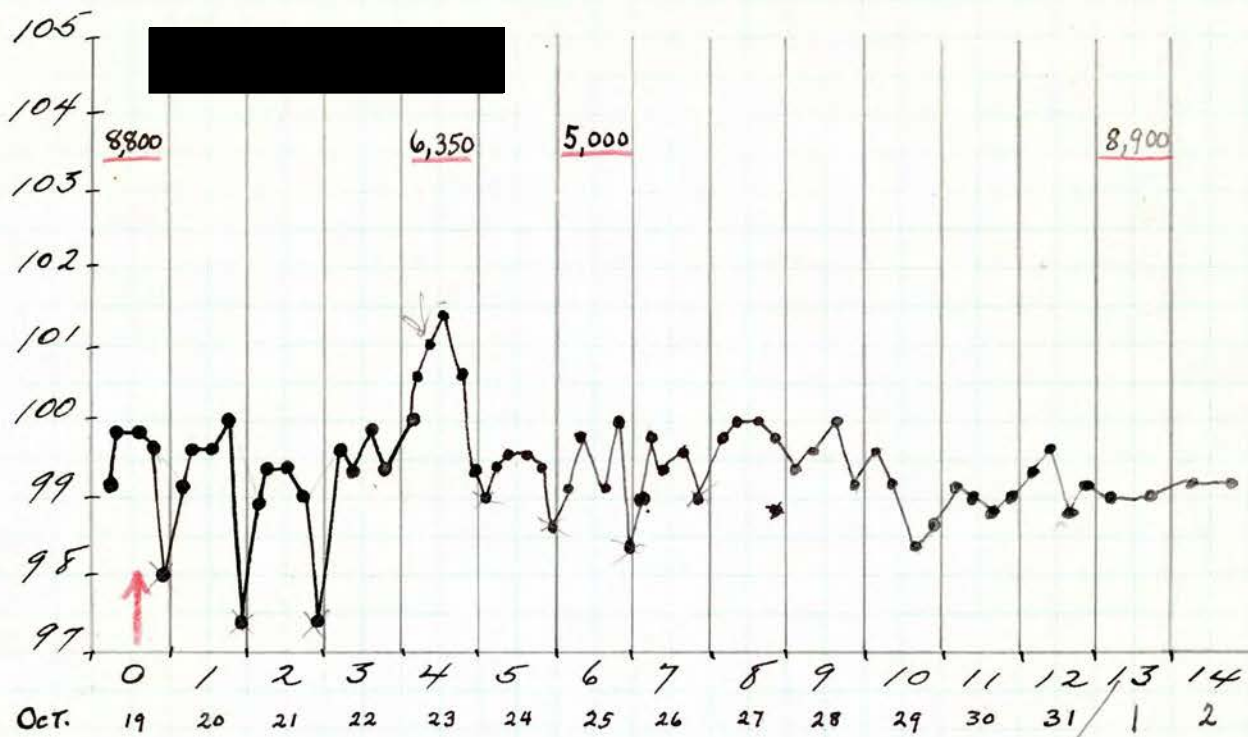
Total Dose - 0.1 cc - i. cut.

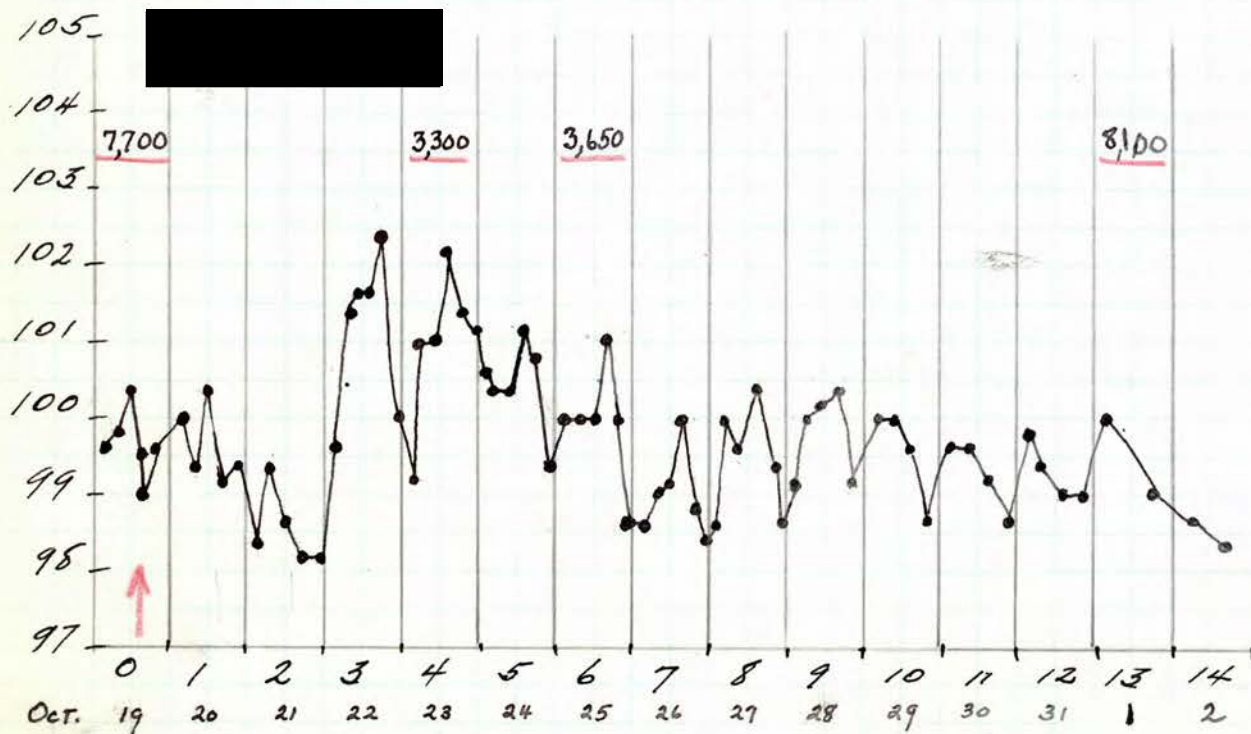
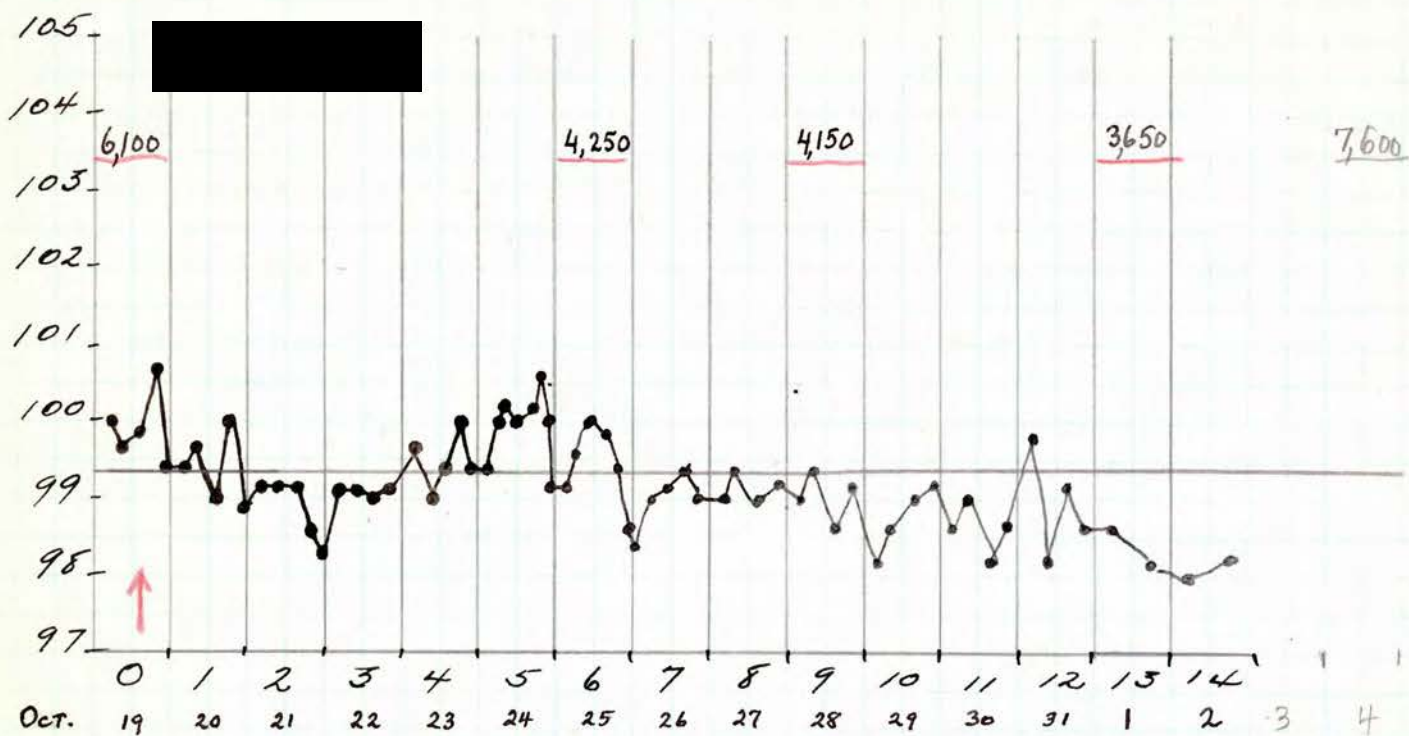
[REDACTED] - White female - Age 48

Total Dose - 0.01 cc - 0.1 cc of serum 1:10 i. cut.

[REDACTED] - White female - Age 43

PASSAGE OF MIDDLE EAST VIRUS - CARROL SERUM





Further TESTS with MIDDLE EAST VIRUS

Nov. 3, 1943

1. Question of attenuation on passage
vs. individual differences in response
2. Amt of virus in active serum?

So. AFRICAN Pool - FROZEN SERUM

1cc - 0.2cc i.cut. ; 0.8cc subcut	—	W.M. - Age 46
0.1cc - i.cut.	—	W.F. - Age 36
0.01cc - 0.1cc of 1:10 i. cut.	—	W.F. - Age 39

CARROL SERUM

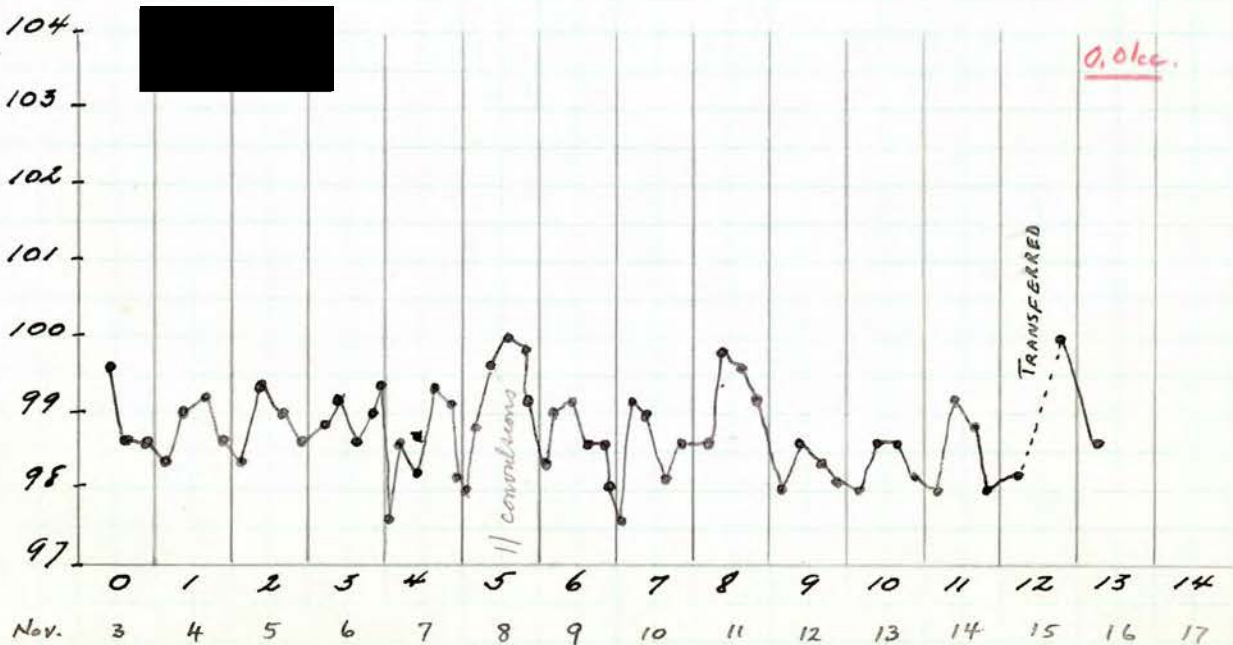
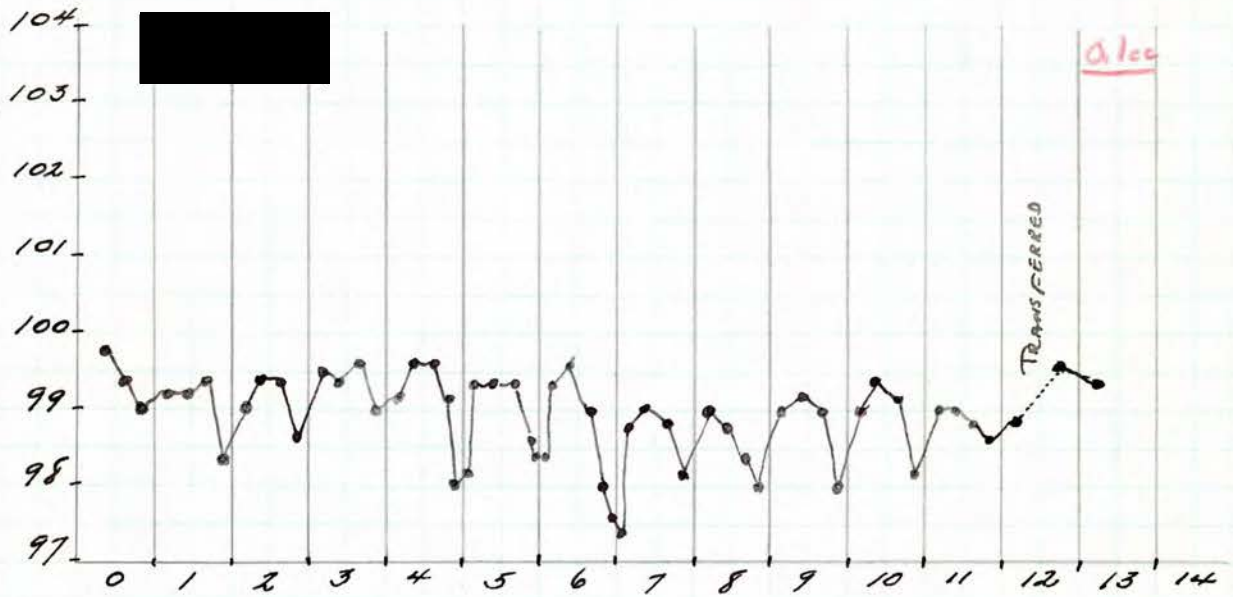
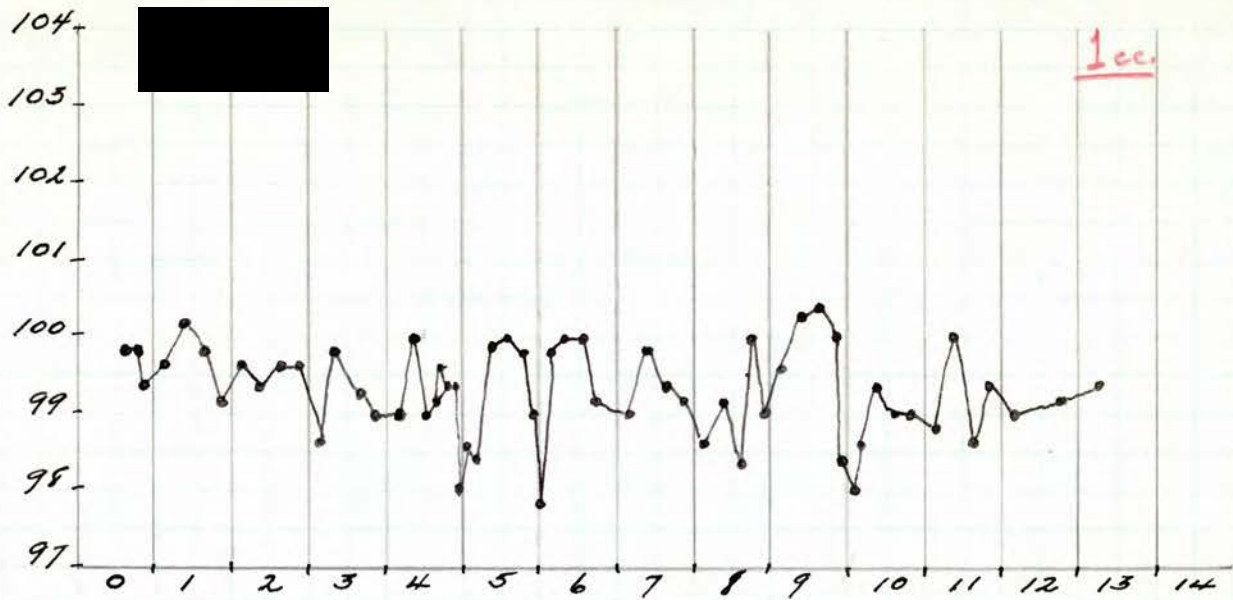
1cc - 0.1cc i.cut ; 0.9cc subcut.	—	W.M. - Age 42
	—	W.F. - Age 46
0.01cc - 0.1cc of 1:10 i. cut	—	W.F. - Age 39
0.001cc - 0.1cc of 1:100 "	—	C.F. - Age 45
0.0001cc - 0.1cc of 1:1000 "	—	C.F. - Age 39

WOODMANSEE

1cc - 0.2cc i.cut. - 0.8cc subcut	—	C.M. - Age 55
	—	W.M. - " 50

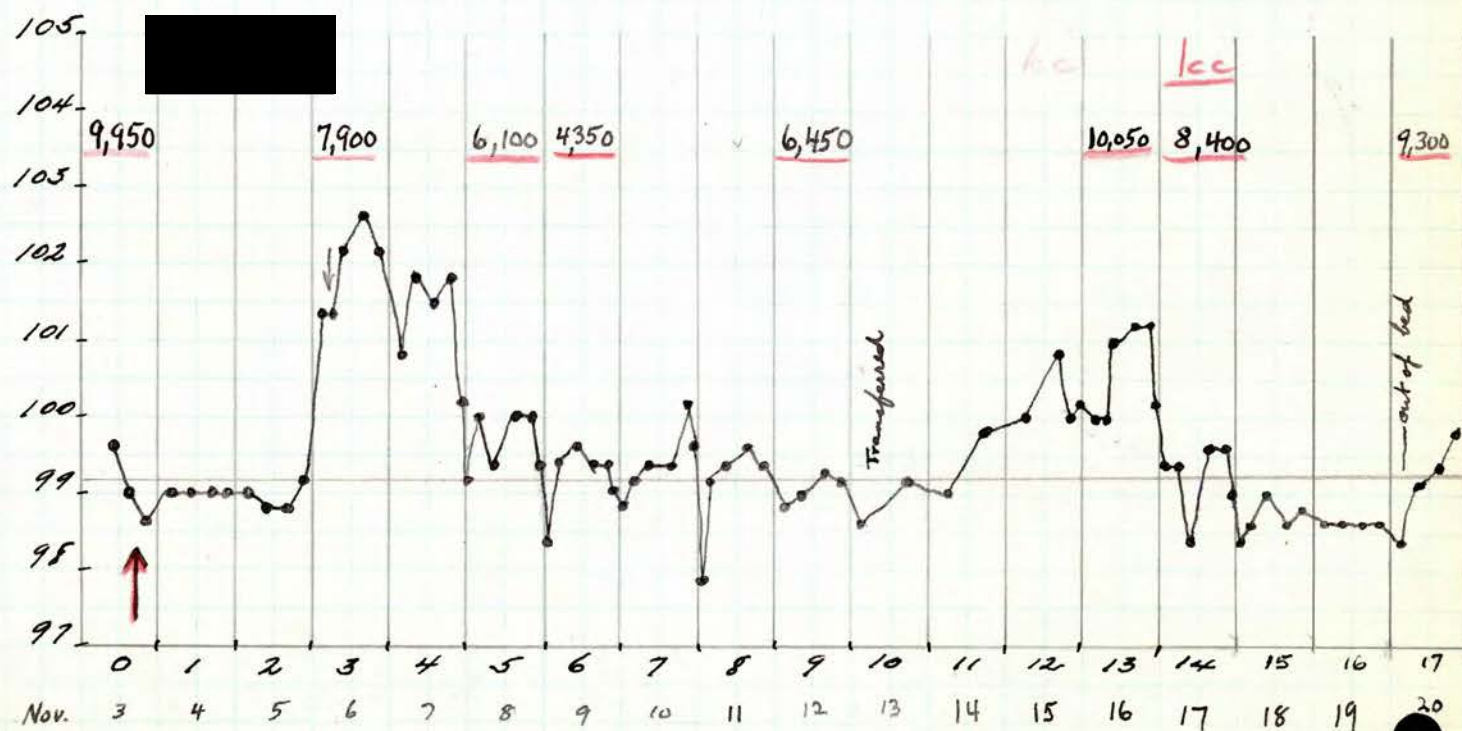
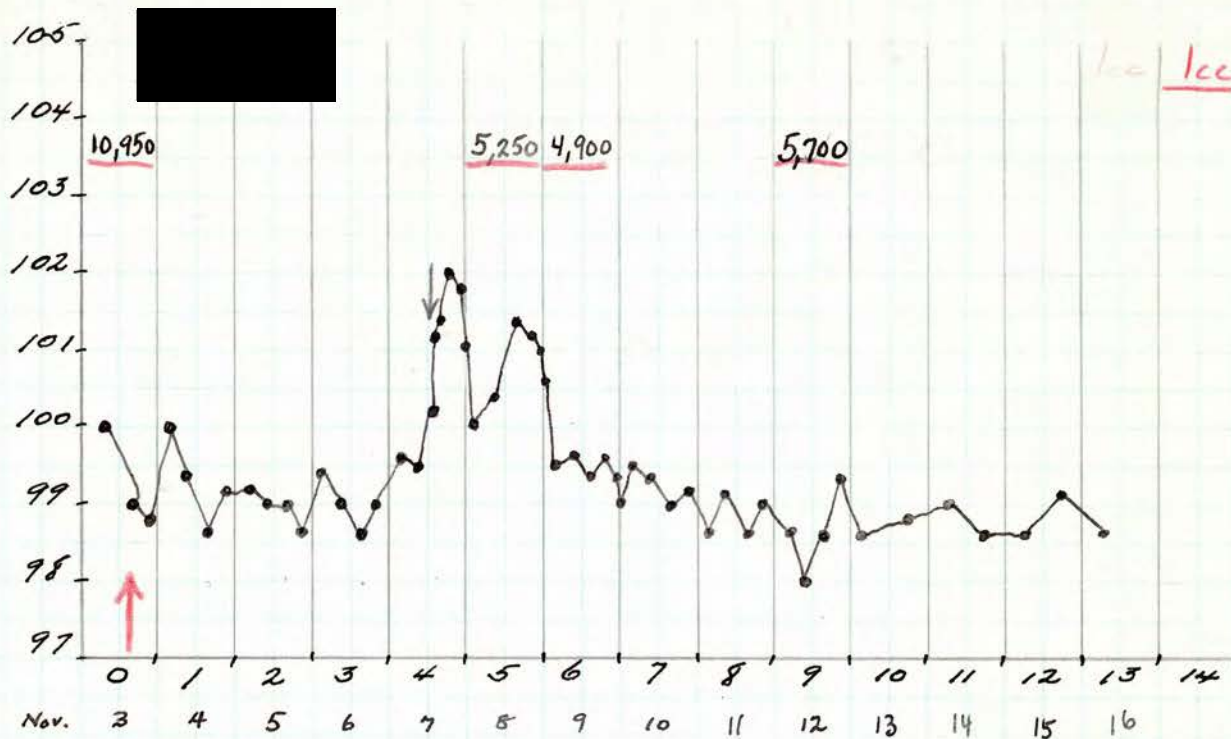
400 - 430 AM

MIDDLE EAST VIRUS - SOUTH AFRICAN POOL

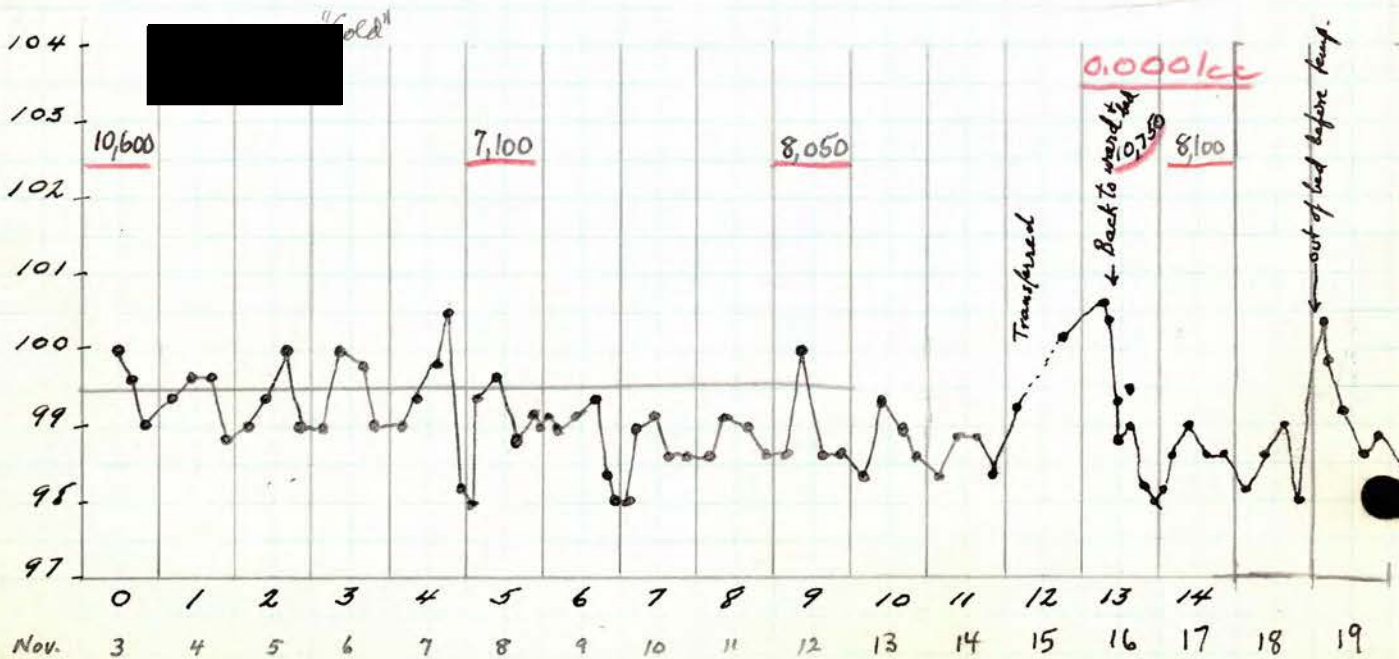
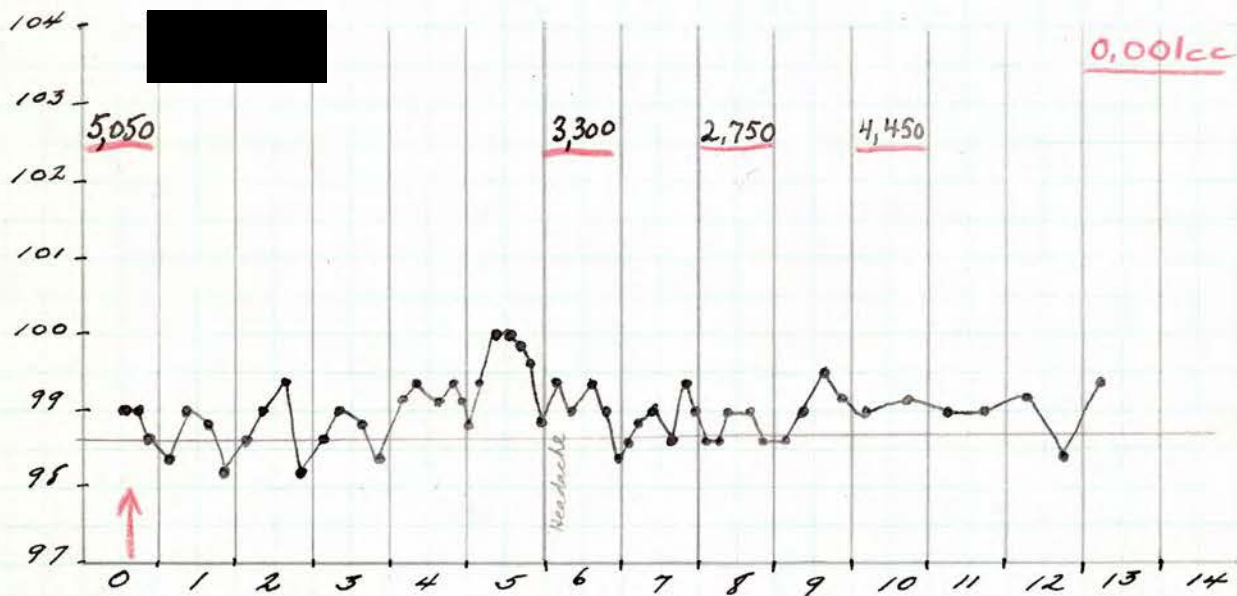


Nov. 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

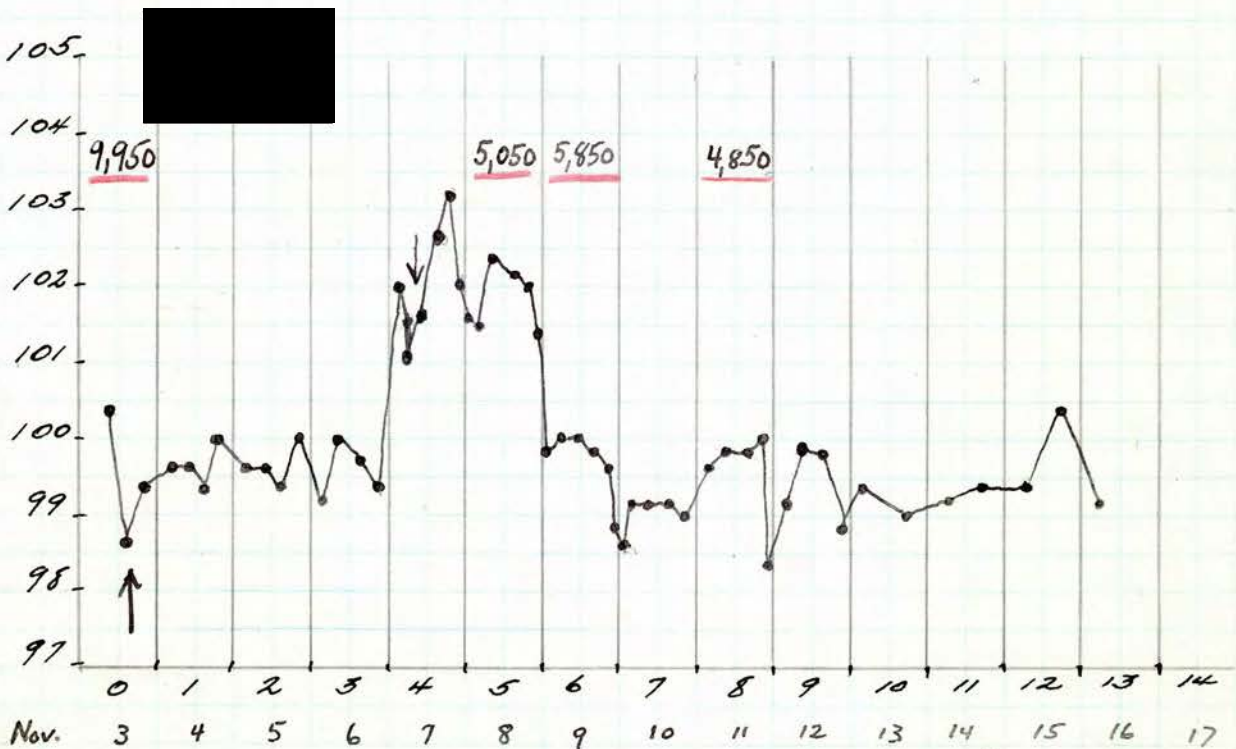
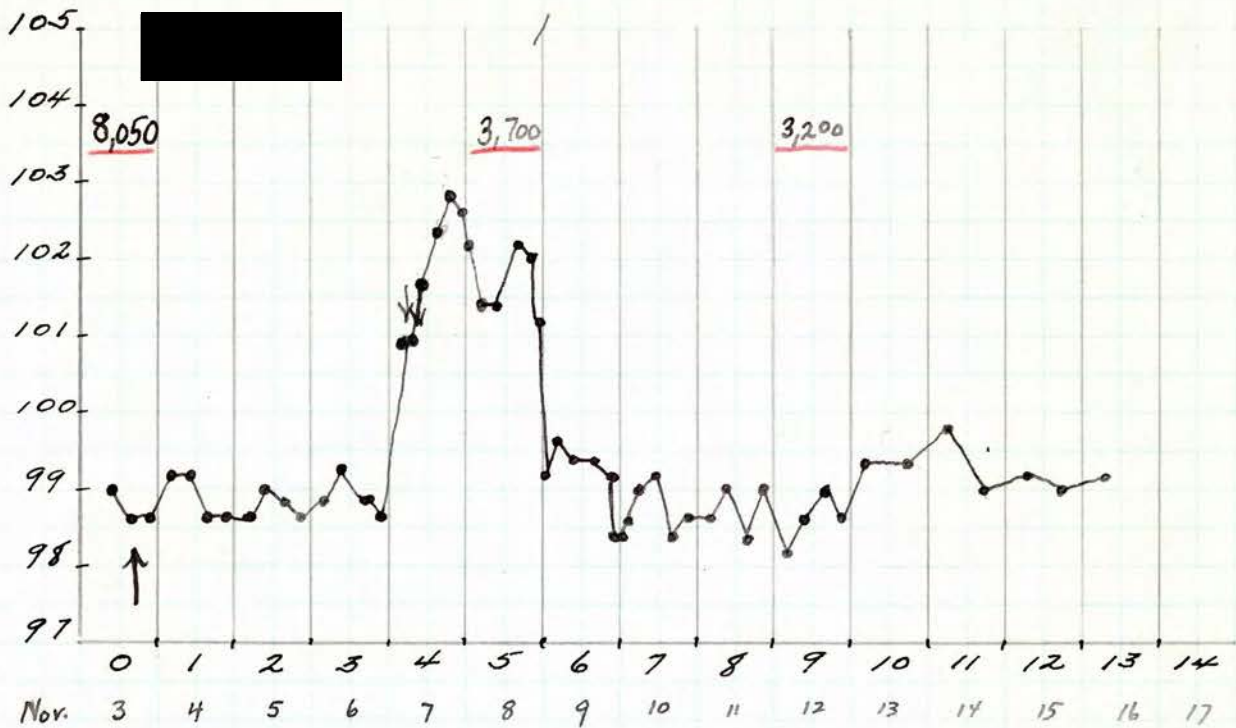
MIDDLE EAST VIRUS - CARROL SERUM



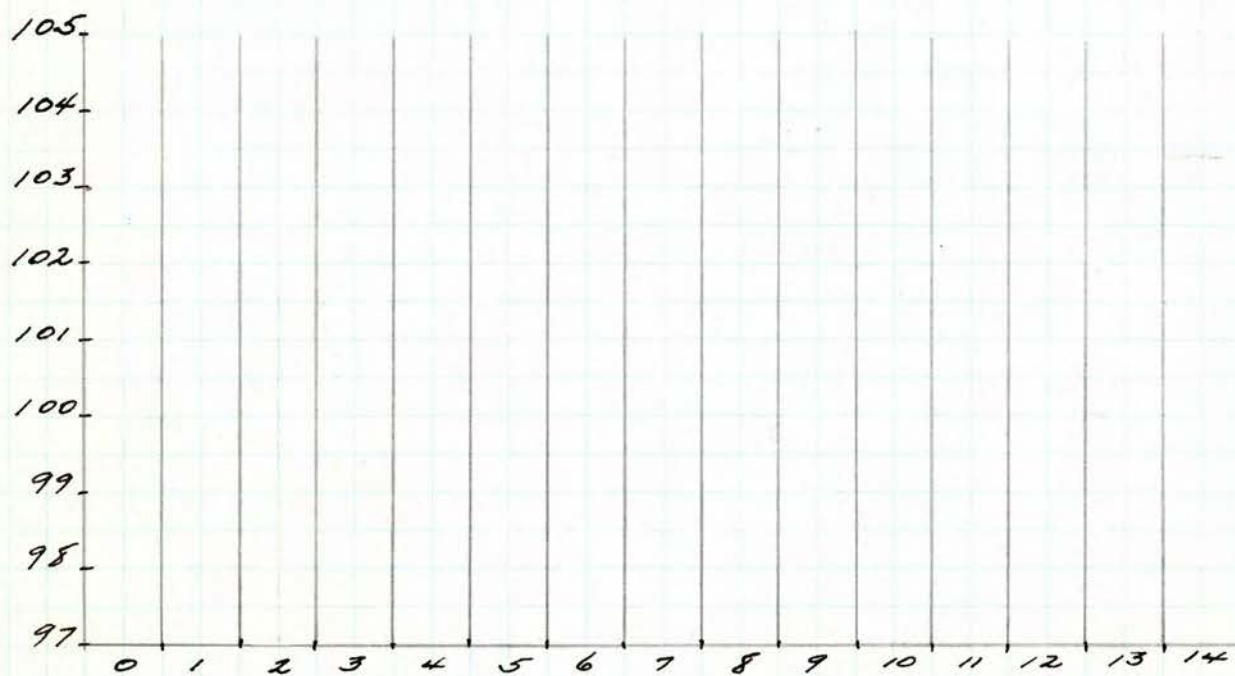
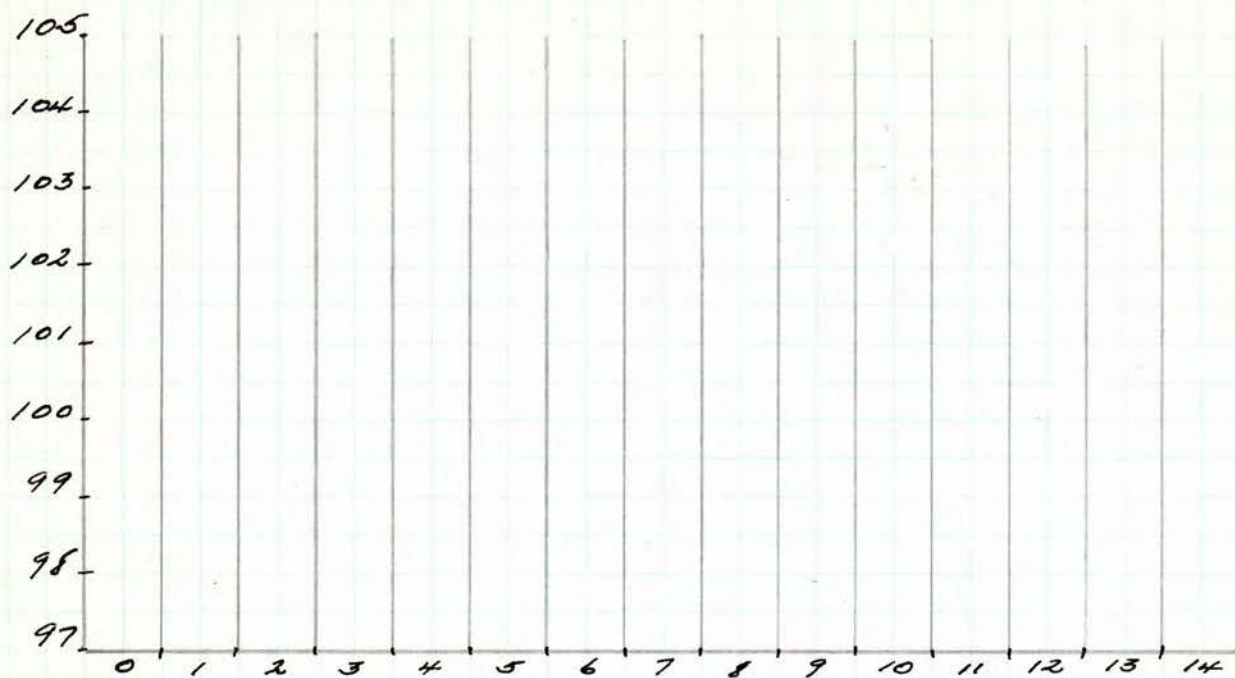
CAROL SERUM



MIDDLE EAST VIRUS - MULTIPLE PASSAGE



WOODMANSEE SERUM - 0.2cc INUT.
0.8cc SUBCUT.



MIDDLE EAST VIRUS - IMMUNITY TEST

Nov. 15, '43

1. Immunity to homologous virus 3 to 4 weeks after onset of experimental disease
2. Presence or absence of immunity following inoculation of subinfective doses of virus
3. Presence of immunity in people recovered from the natural disease - many years after the attack and in the absence of further exposure to the virus.

VIRUS USED - WOODMANSEE SERUM - (Oct. 23) - produced typical disease in 2/2 subjects inoculated with 1cc.

Inoculum - 1cc of serum - 0.2cc intracutaneously into each of 5 sites on left forearm.

NAME

Date of first fever

[REDACTED]

Oct. 16, 1943

" 20, "

" 23, "

" 22, "

[REDACTED]

Inocul. Oct. 11

" "

" "

" "

[REDACTED]

1932, 1937?

1934, 1938?

[REDACTED]

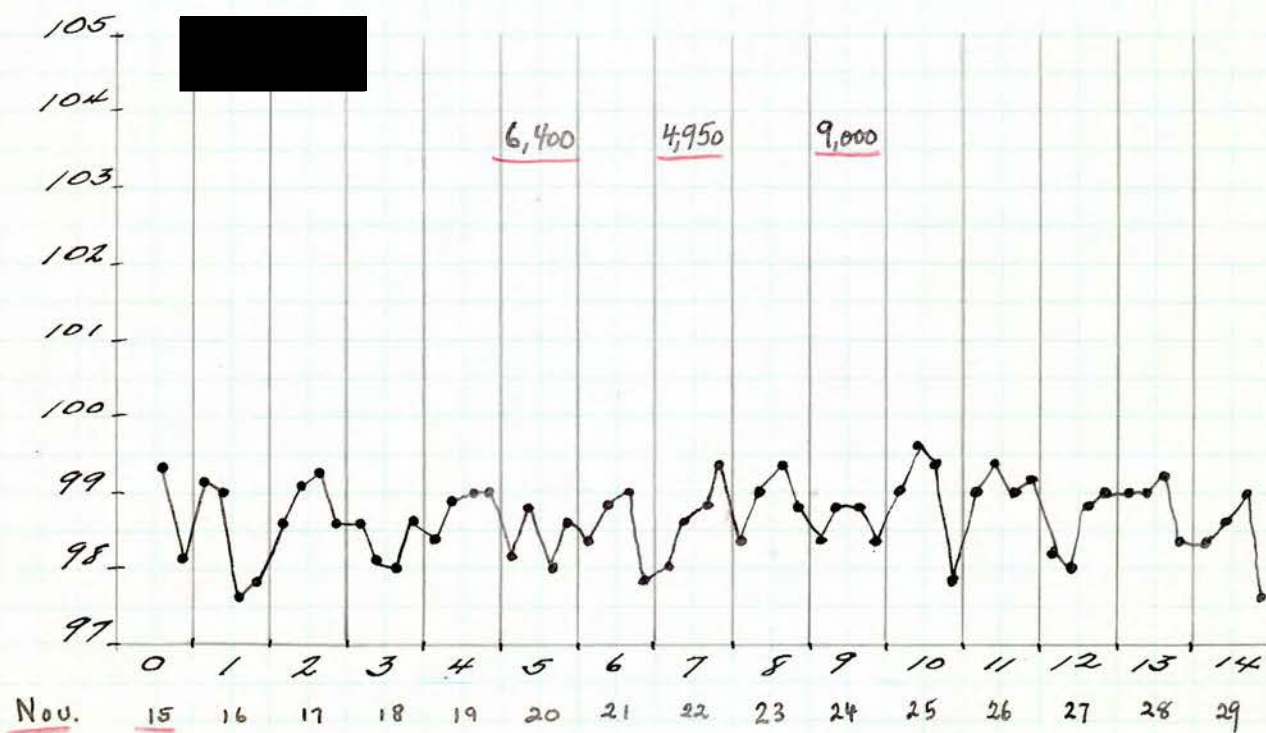
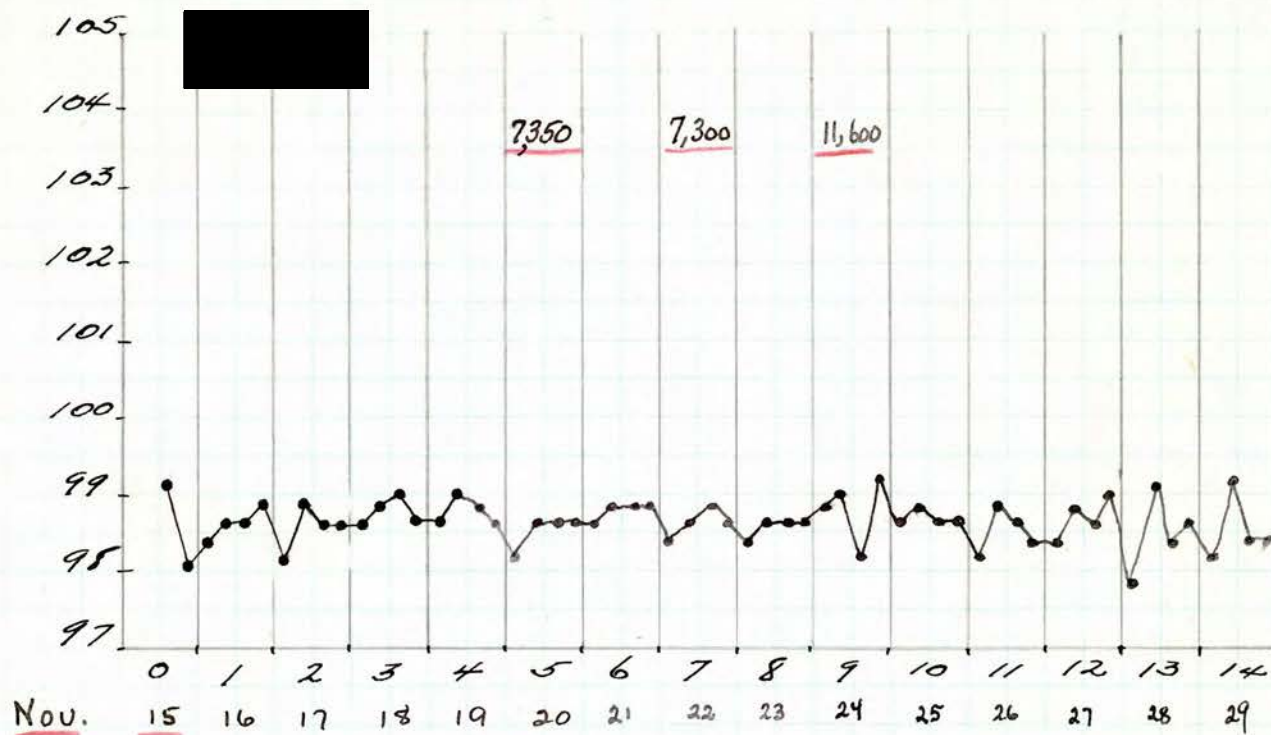
- W.M. - Age 31

- W.F. - " 41

- C.F. - " 37

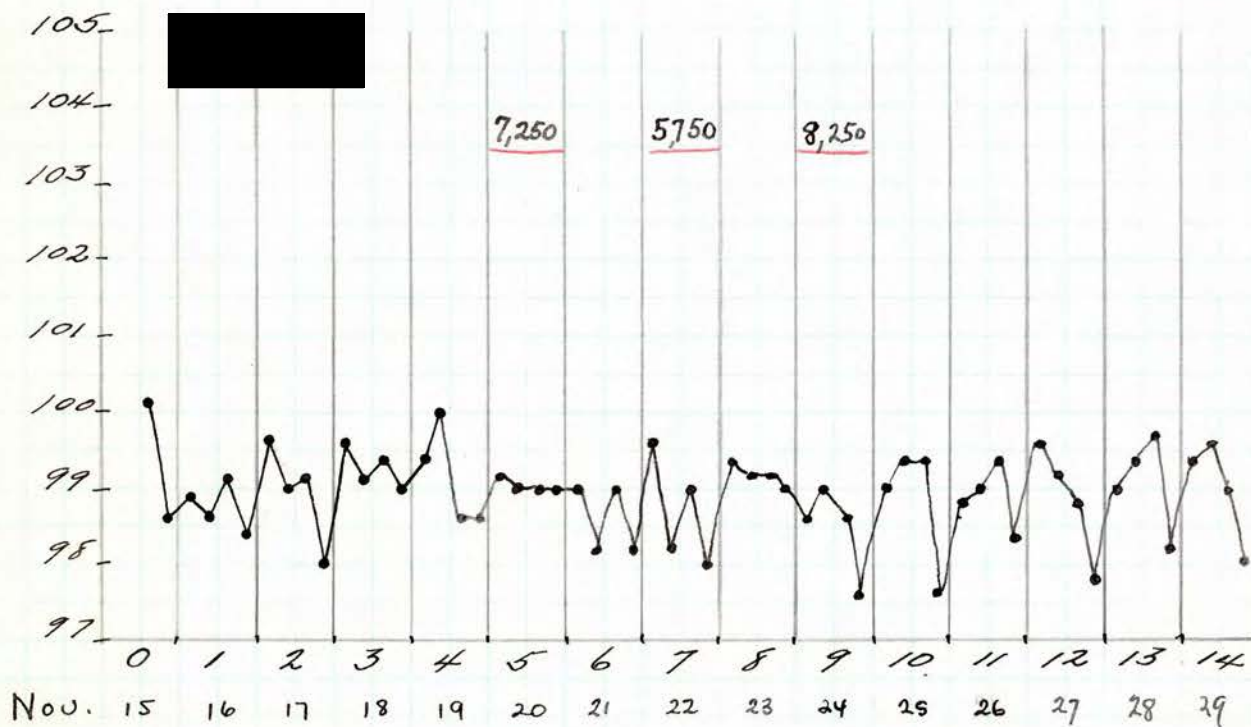
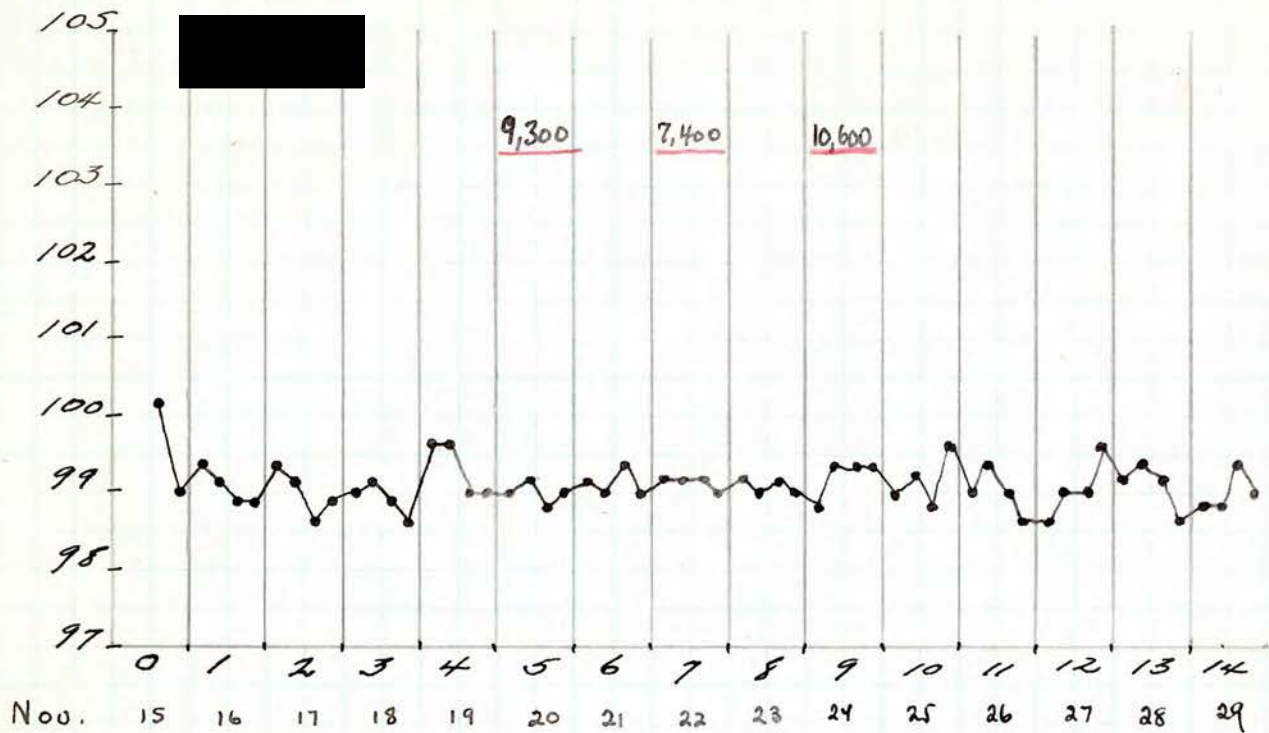
MIDDLE EAST VIRUS - IMMUNITY TEST

BOTH HAD EXPERIMENTAL SANDFLY FEVER ABOUT 4 WEEKS AGO



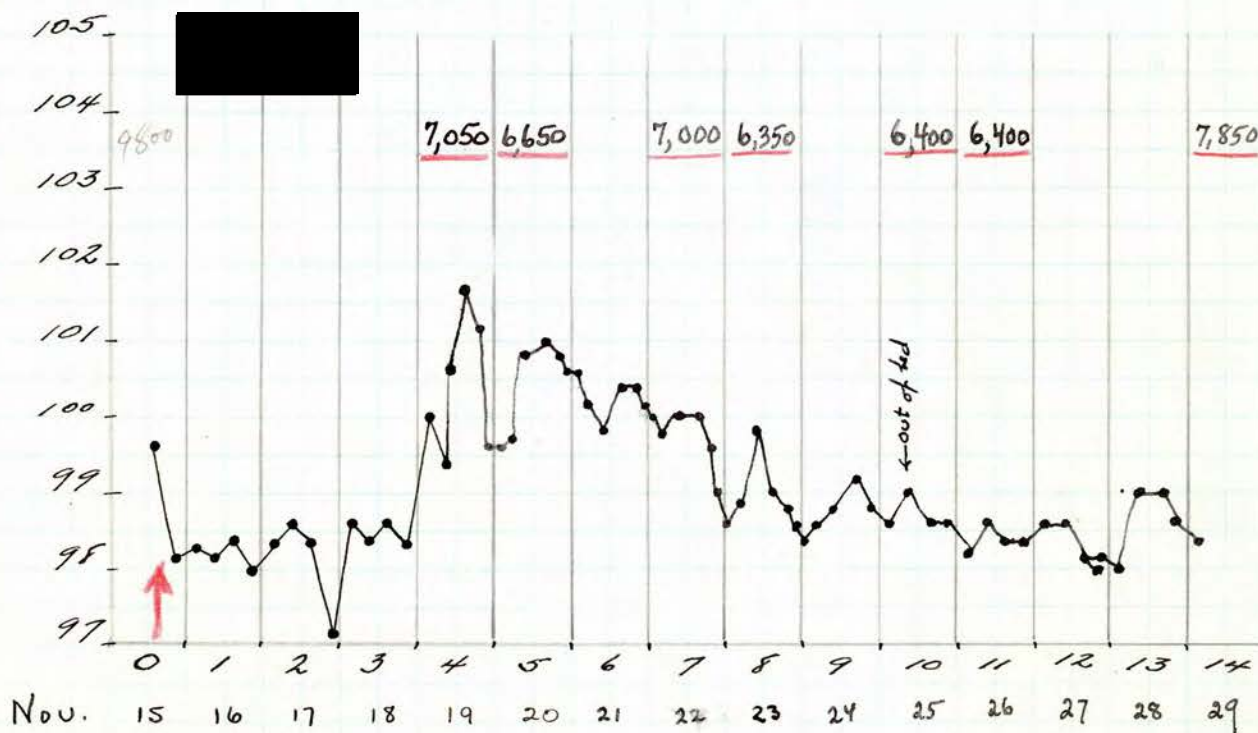
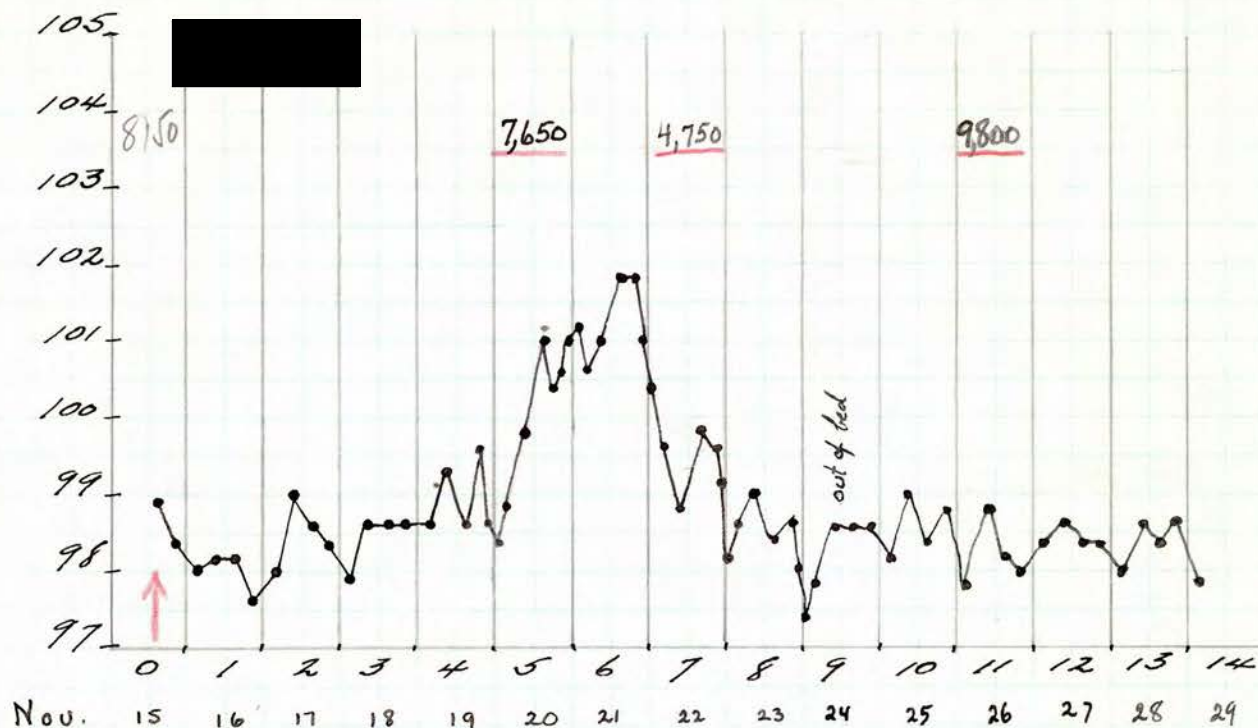
MIDDLE EAST VIRUS - IMMUNITY TEST

BOTH HAD EXPERIMENTAL SANDFLY FEVER 23 to 24 DAYS AGO



MIDDLE EAST VIRUS - IMMUNITY TEST

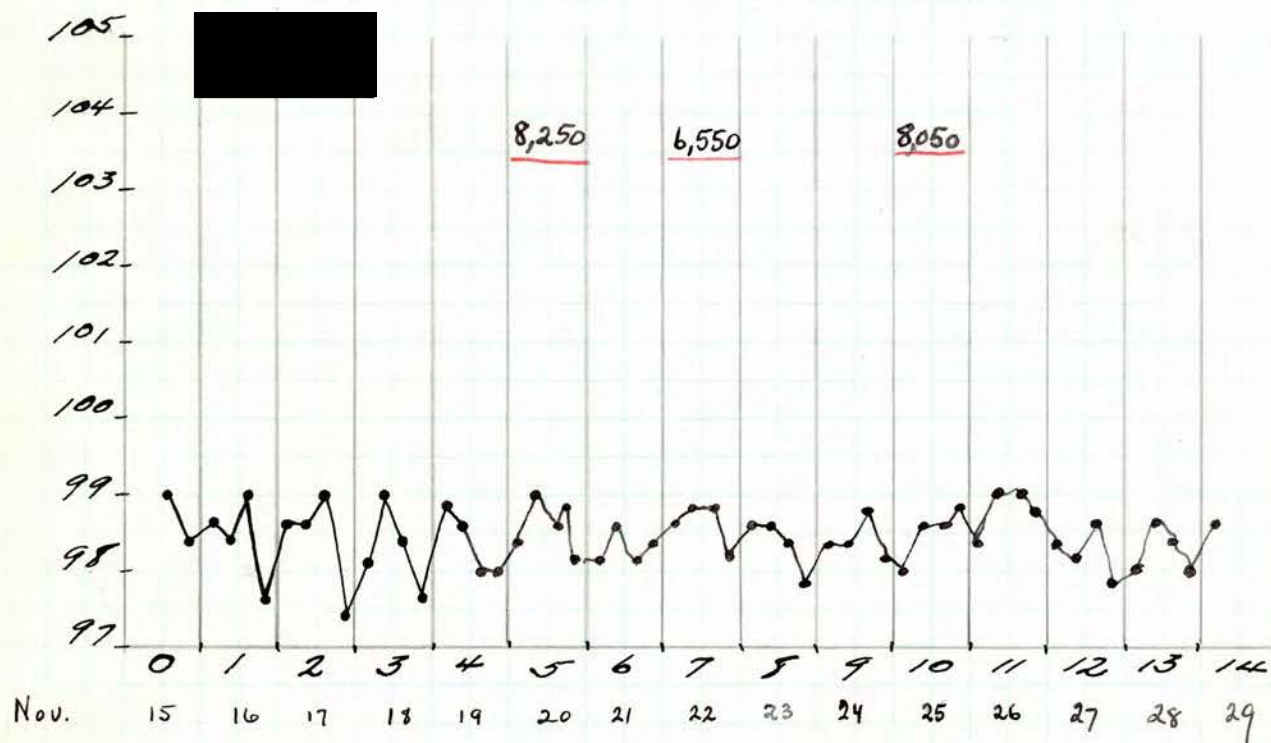
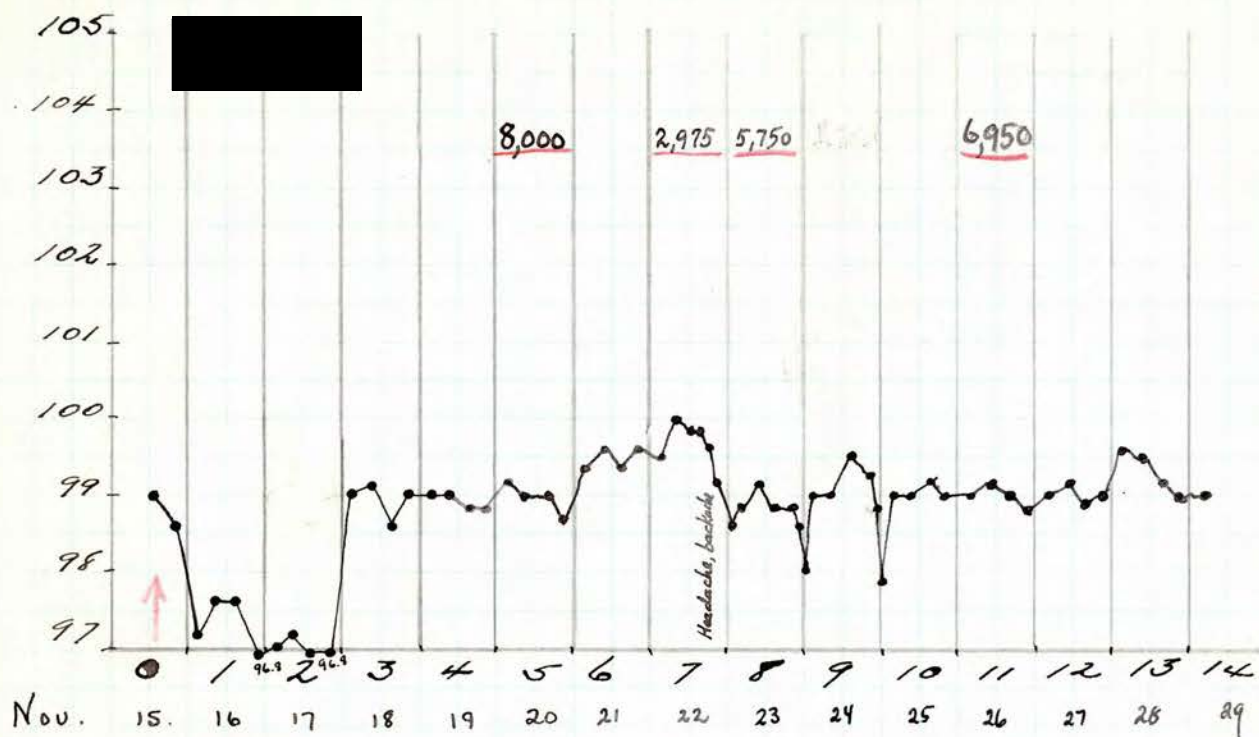
BOTH HAD SUBINFECTION DOSES OF VIRUS 1 MONTH AGO



Generalized urticaria during febrile period

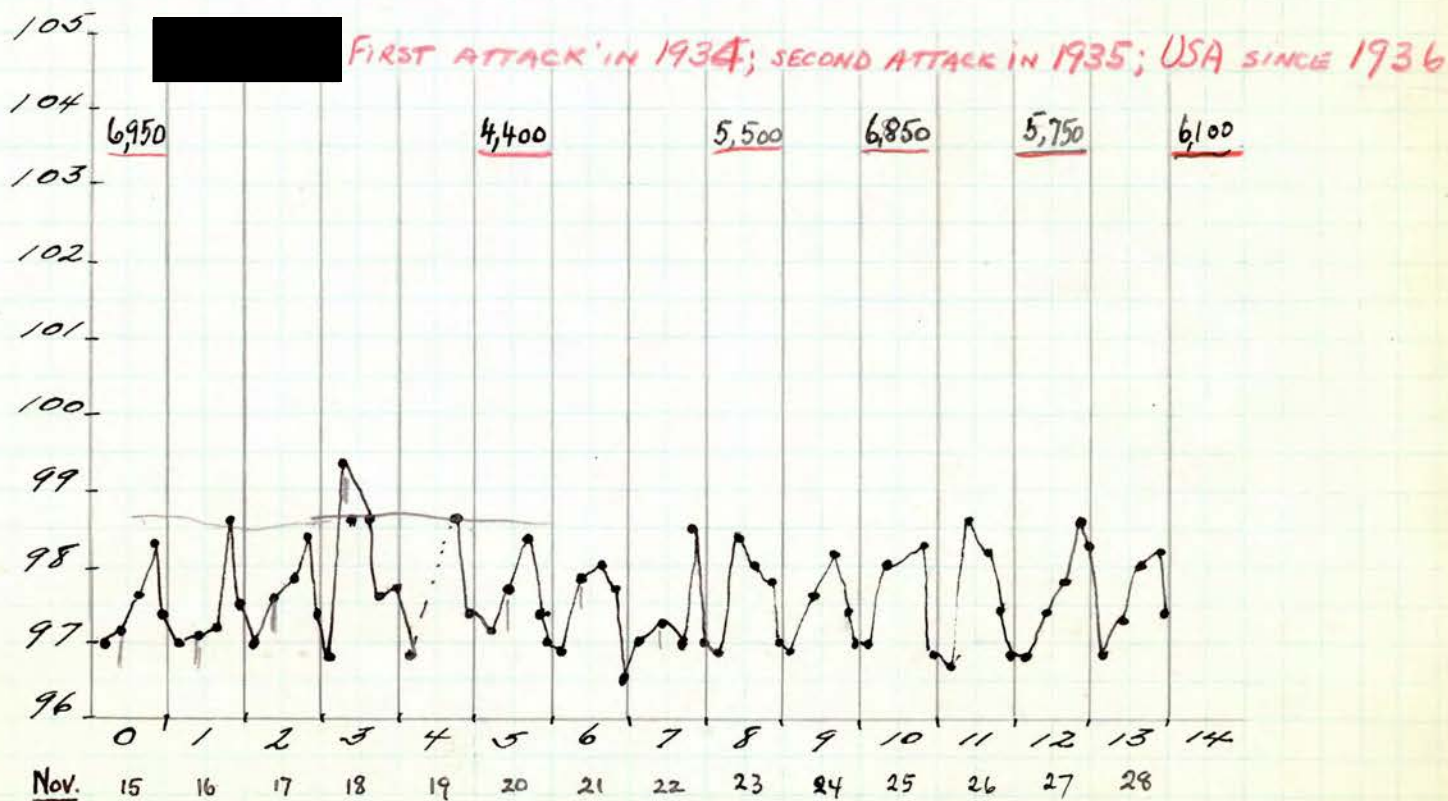
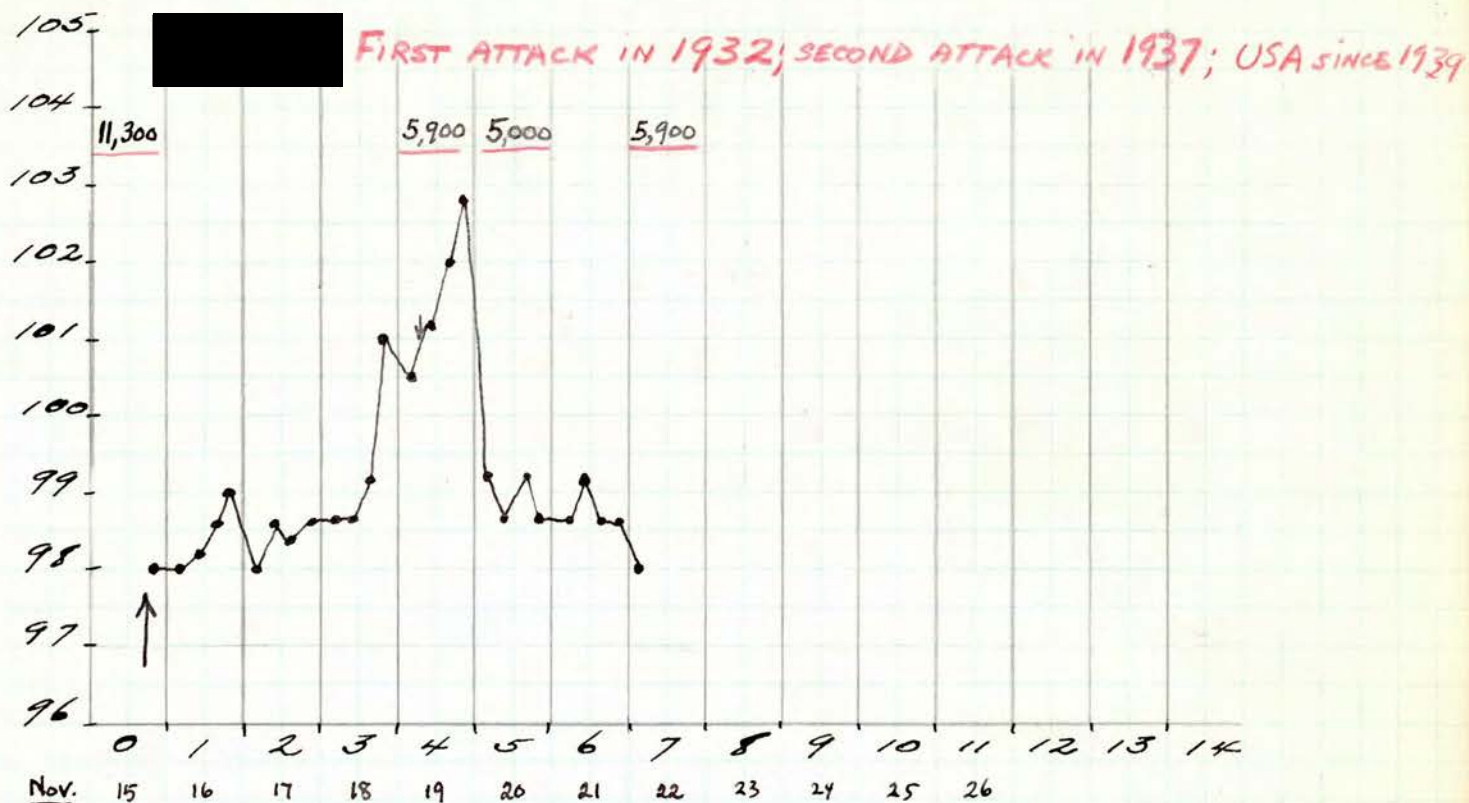
MIDDLE EAST VIRUS - IMMUNITY TEST

BOTH HAD SUBINFECTIVE DOSE OF VIRUS / MONTH AGO



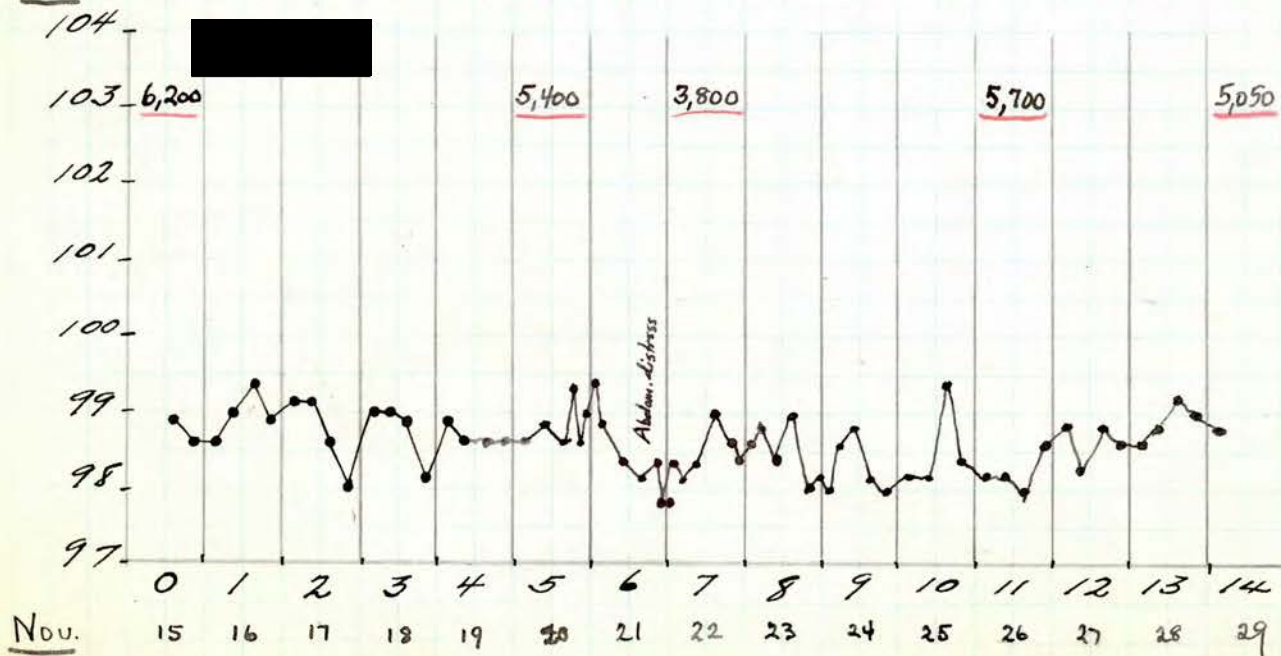
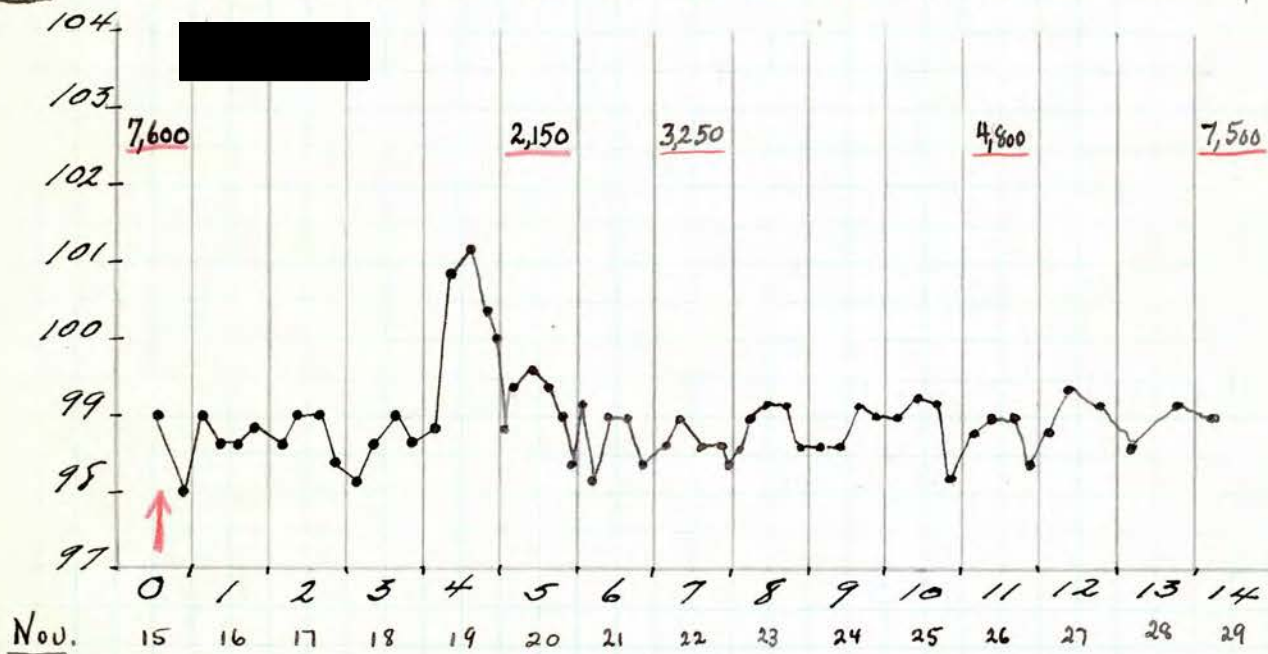
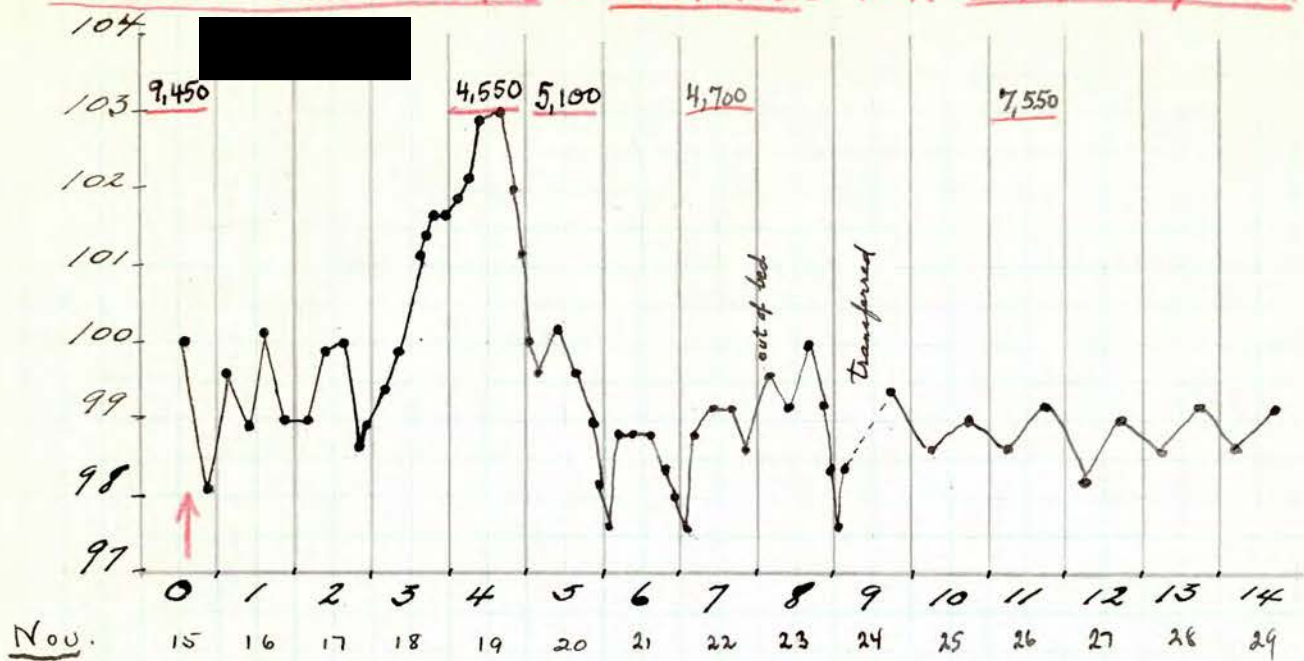
MIDDLE EAST VIRUS - IMMUNITY TEST

BOTH VOLUNTEERS GIVE HISTORIES COMPATIBLE WITH SANDFLY FEVER IN PALESTINE



Note: The temperatures on this page are oral temperatures

MIDDLE EAST VIRUS - CONTROLS FOR IMMUNITY TEST



EFFECT OF ULTRAVIOLET IRRADIATION

1. Resistance of individuals recovered from and proved to be immune to the Sicilian Virus to inoculation with the MIDDLE EAST VIRUS
2. EFFECT OF IRRADIATION WITH ULTRAVIOLET LIGHT
 - a) as regards inactivation of the virus
 - b) " " immunity engendered by inactivated virus

VIRUS USED - Pool of sera representing the 5th consecutive experimental passage of the virus in human subjects. The following donors' sera, all of whom succumbed after inoculation with the WOODMANSEE serum were used:

	- 17.0 cc
	- 15.7 "
	- 14.0 "
	- 21.6 "
	- 11.0 "
	<u>79.3 "</u>

11 ampules of 5cc each and one 2.6cc. - frozen and stored

6.4cc of untreated serum set aside for inoculations
13 cc used for irradiation

Ultraviolet Irradiation - Hanovia Chemical Co. spiral quartz-mercury resonance lamp used - @ 85% 2,537 angstroms
The lamp was on for about an hour before the serum was exposed.

Note: The pooled serum was somewhat opalescent due to lipoids in it.

13 cc in quartz tube - 1st period 15 minutes - @ 6.4cc removed
2nd " 15 " - irradiation stopped.

About 4cc ^{each} of 15 min. and 30 min. irradiated specimens was frozen and the rest inoculated within one hour -

Immune to Sicilian Virus	{	[REDACTED]	-	1cc	in. cut.	right	forearm
			-	"	"	"	"
			-	"	"	left	"
			-	"	"	"	"

CONTROLS	1	[REDACTED]	- W.F. - 38 "	"	"	"
	2	[REDACTED]	- W.M. - 18 lcc	"	right	"

Ultraviolet 15 min.	[REDACTED]	1cc. in. cut.	left	forearm
		1cc	"	"

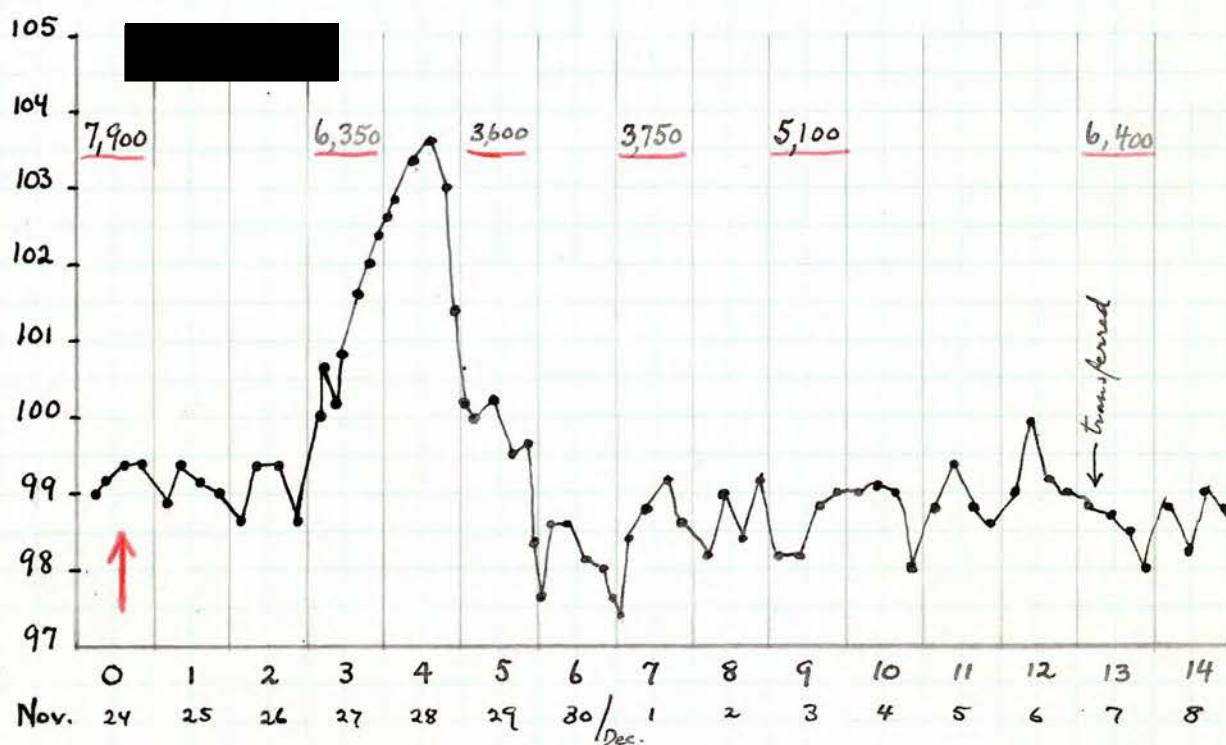
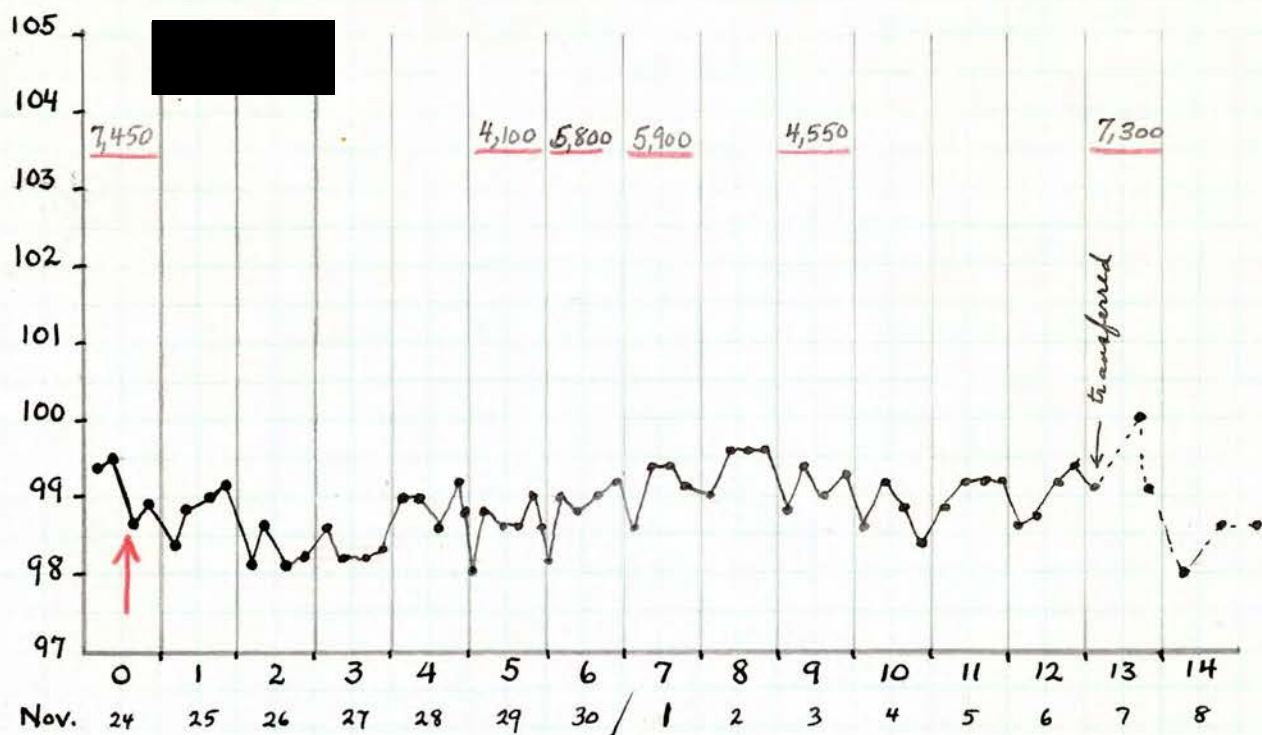
Ultraviolet 30 min.	67 [REDACTED]	1cc	"	
		1cc	"	right forearm

ALL INOCULATIONS 2³⁰ - 3⁰⁰ P.M.

Nov. 25 - All inoculated sites negative except in Rodgers in whom 1 site shows area of erythema 10x10 mm.

Nov. 26 - As above except in Rodgers - 3 sites show indurated erythematous papules 10x10 mm.

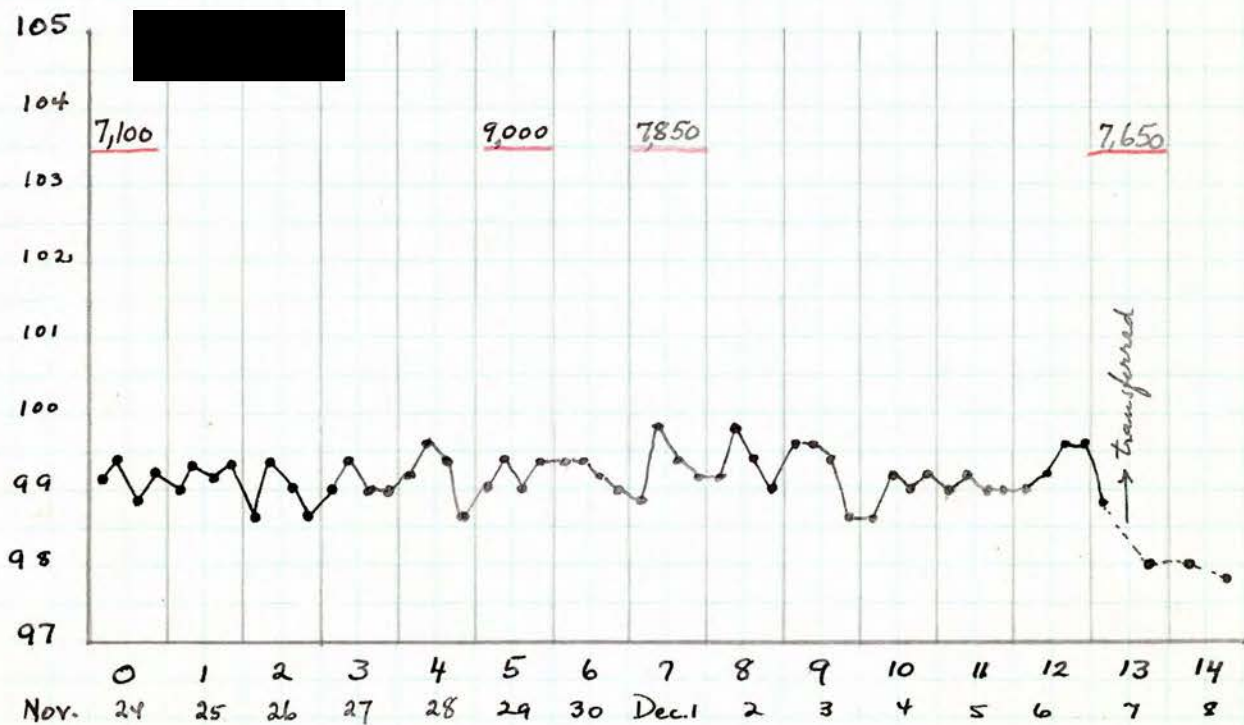
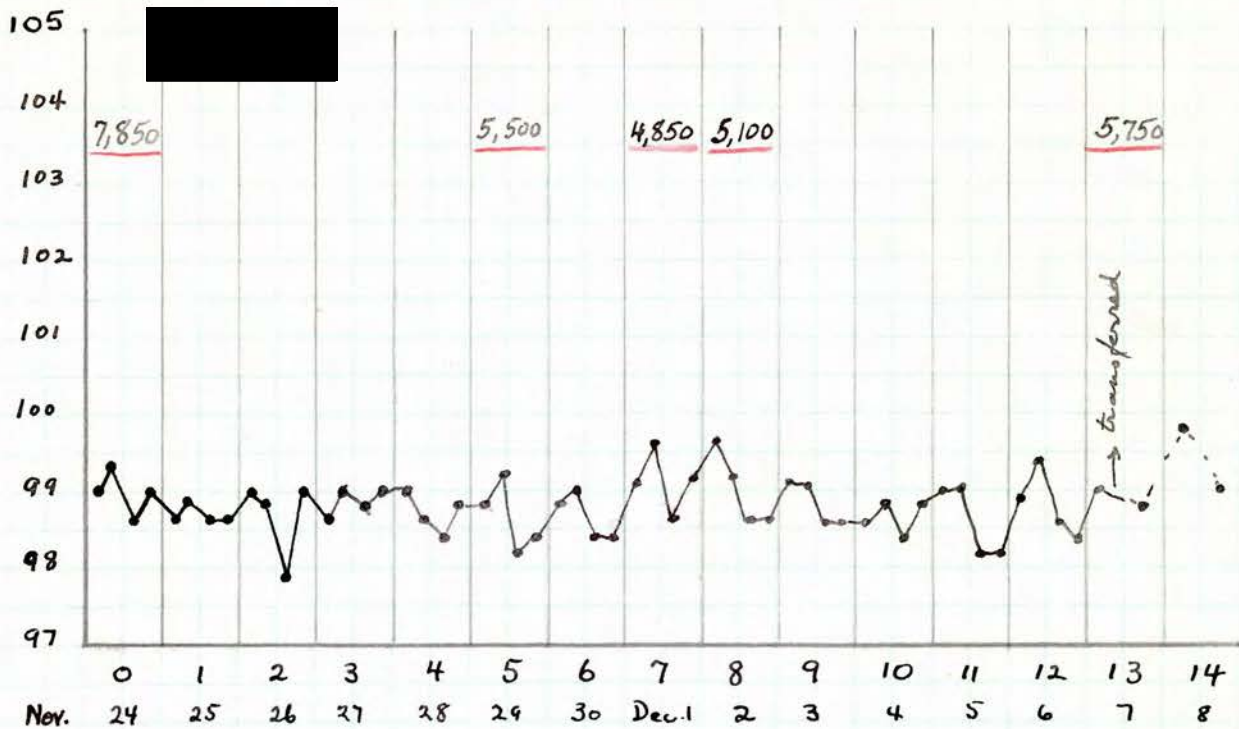
MIDDLE EAST VIRUS - CONTROLS FOR IMMUNITY TEST AND IRRADIATED VIRUS



1cc. 5TH PASSAGE ~~VIRUS~~ ^{POOL} INTRACUTANEOUSLY

MIDDLE EAST VIRUS - CROSS IMMUNITY TEST

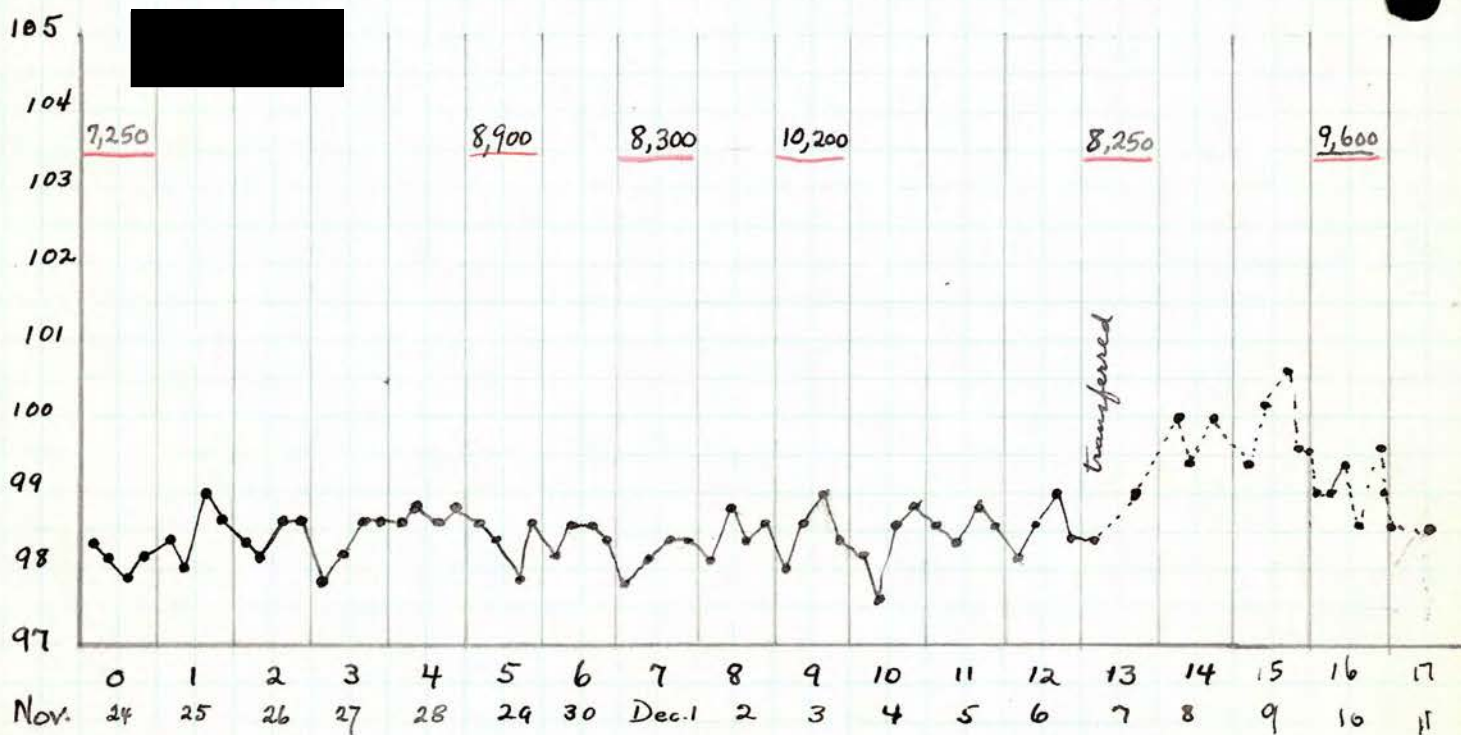
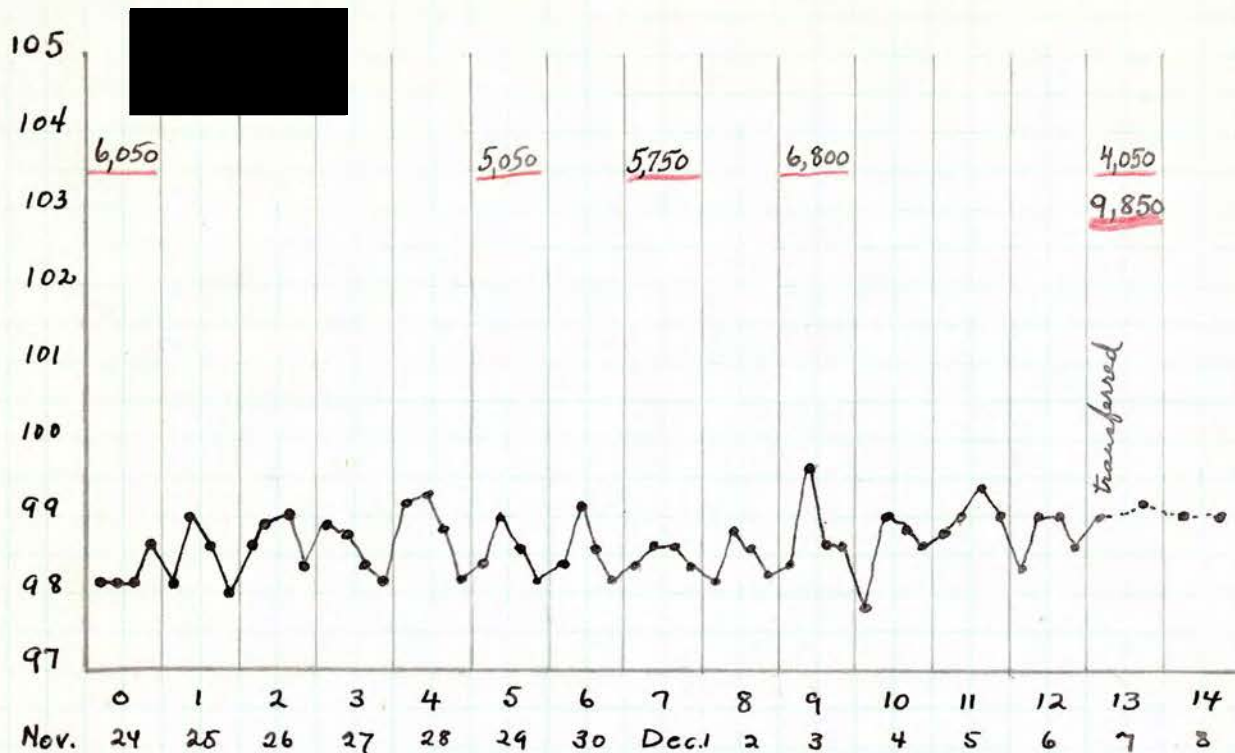
SUBJECTS RECOVERED FROM AND PROVED IMMUNE TO SICILIAN VIRUS



1cc 5TH PASSAGE POOL VIRUS INTRACUTANEOUSLY

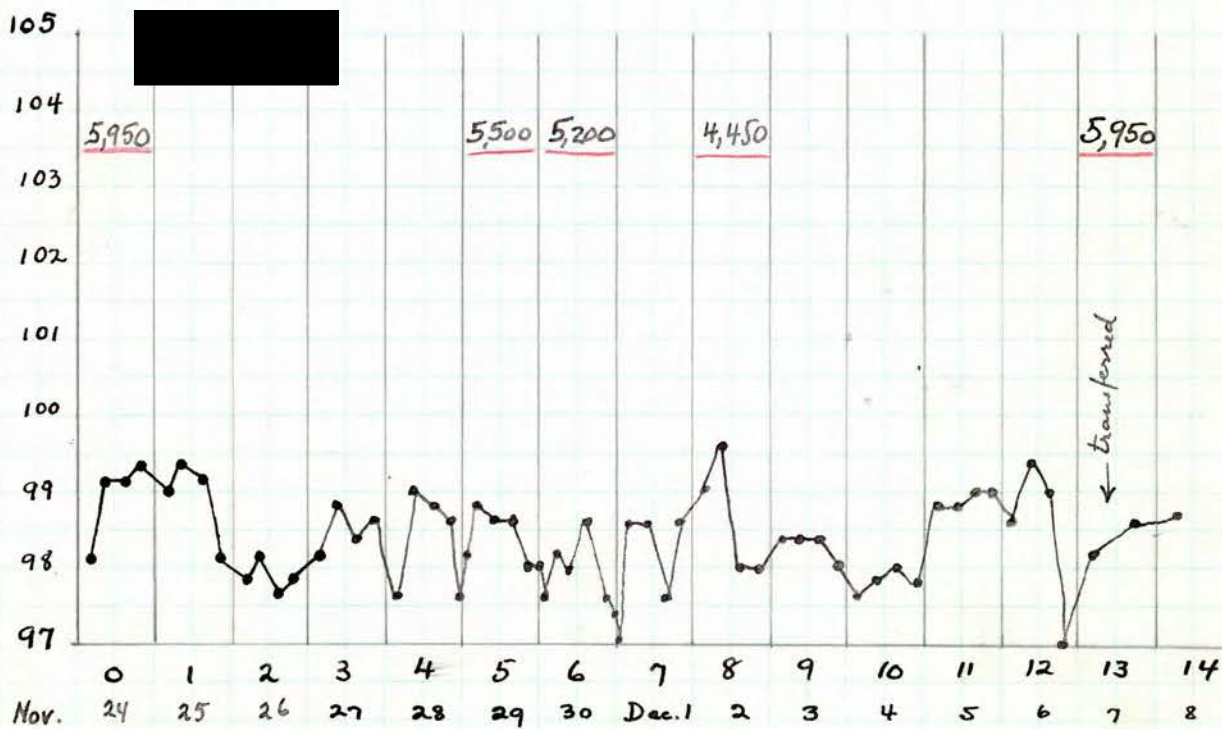
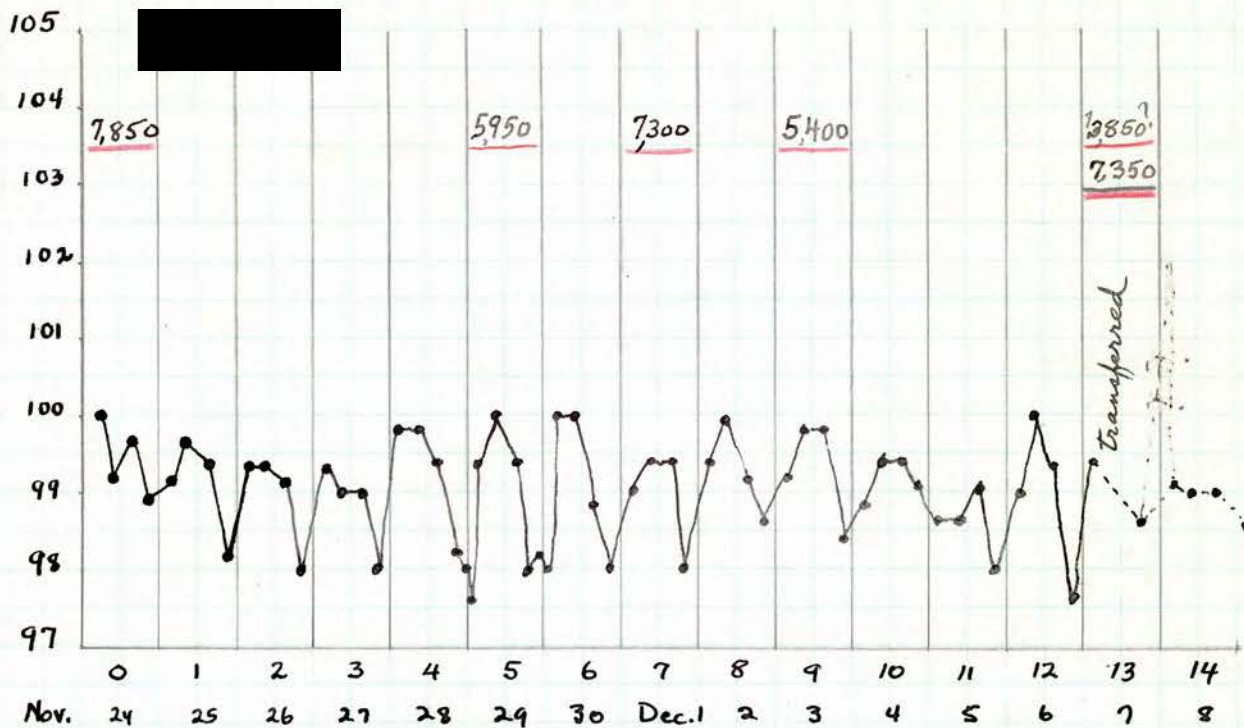
MIDDLE EAST VIRUS - CROSS IMMUNITY TEST

SUBJECTS RECOVERED FROM AND PROVED IMMUNE TO SICILIAN VIRUS



1cc 5TH PASSAGE POOL INTRACUTANEOUSLY

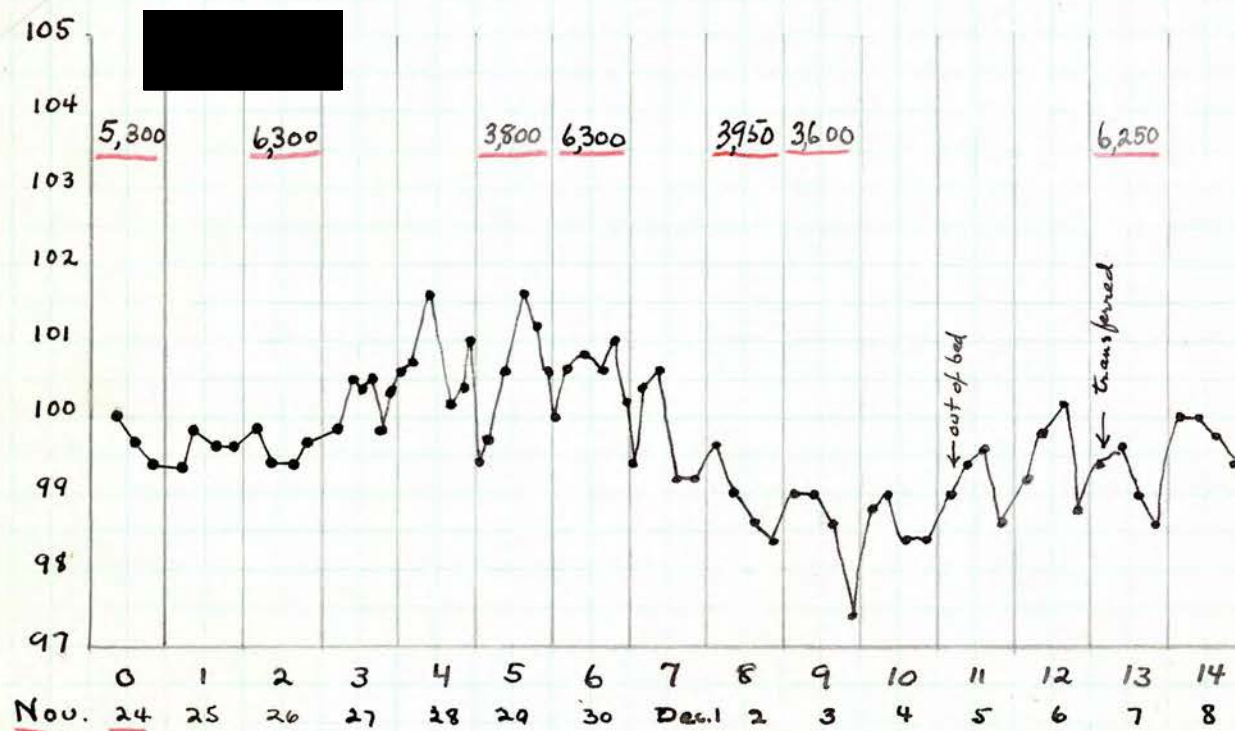
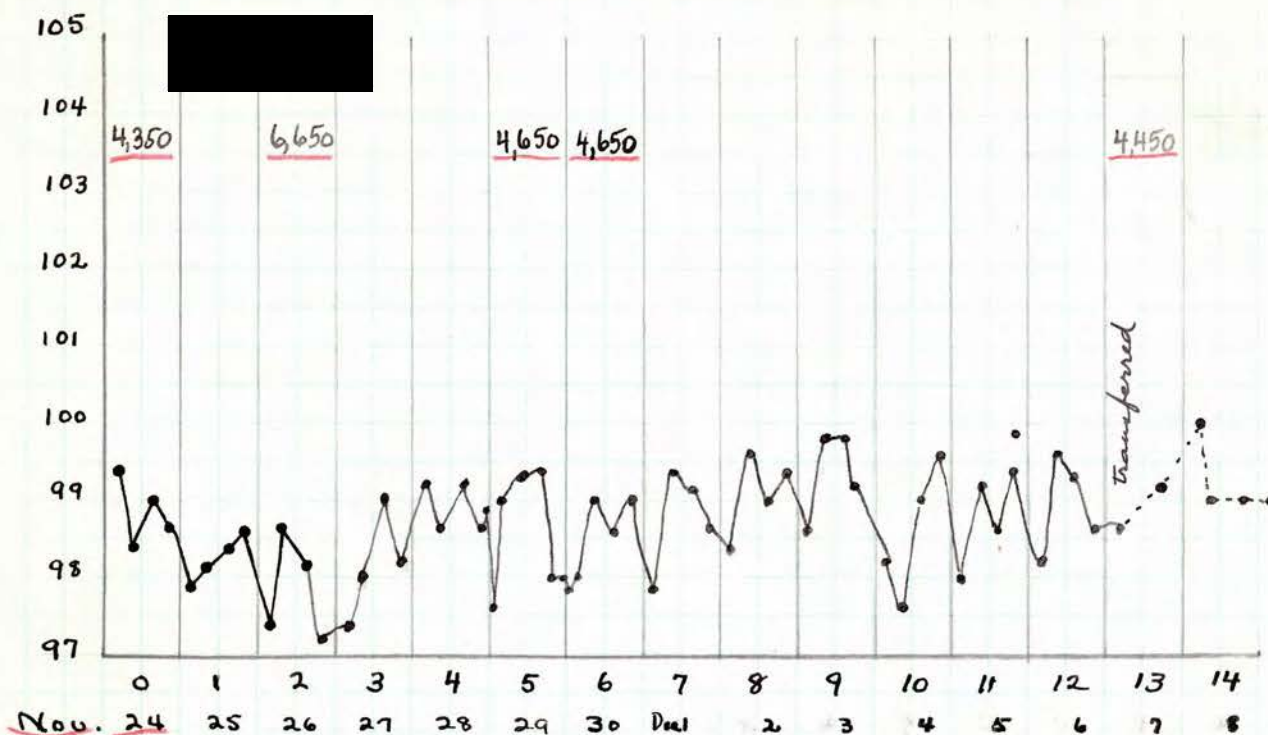
MIDDLE EAST VIRUS - 5TH PASSAGE POOL - IRRADIATED WITH
ULTRAVIOLET LIGHT FOR 15 MINUTES



ICC IRRADIATED VIRUS INTRACUTANEOUSLY

MIDDLE EAST VIRUS - 5TH PASSAGE POOL - IRRADIATED WITH

ULTRAVIOLET LIGHT FOR 30 MINUTES



Note: [redacted] had malaria therapy in Jan. 1943

1cc IRRADIATED VIRUS INTRACUTANEOUSLY

Dec. 8, '43

MIDDLE EAST VIRUS - a) Further tests on influence of route of inoculation

b) " " " ultraviolet irradiated virus

- a) 1) Establish regularity with which diluted virus can be injected subcutaneously without giving rise to clinical infection and yet inducing immunity
- 2) What determines inhibition of clinical infection - route of inoculation or dilution of virus?

- b) Establish whether or not exposure to ultraviolet light for 15 minutes actually inactivates the virus - use preparation of Nov. 24 - if no evidence of clinical infection subjects are to be tested for immunity at later date.

VIRUS - 5TH Passage Pcd prepared and frozen Nov. 24

1 cc. ^{undiluted} intracutaneously - [redacted] - white male - age 44
 0.2 cc in 5 sites on left forearm [redacted] - colored " - " 50

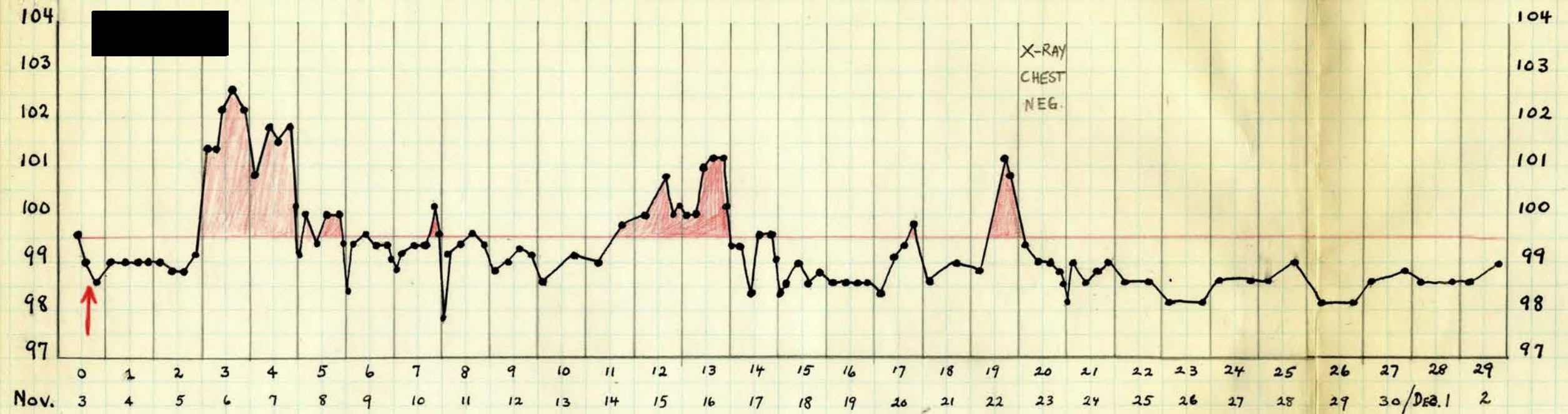
1 cc. of U.V. irradiated 15 min (1/24) - [redacted] - white " - " 47
 undiluted serum i. cut. l. forearm [redacted] - colored " - " 43

1 cc undiluted subcutaneously - [redacted] - white " - " 49
 rt. arm - above olecranon [redacted] - colored " - " 44
 [redacted] - " " - " 47

1 cc serum + 4 cc. saline subcutaneously - [redacted] - white " - " 37
 Serum diluted 1:5 - 5 cc injected as above [redacted] - colored " - " 30
 [redacted] - " " - " 43

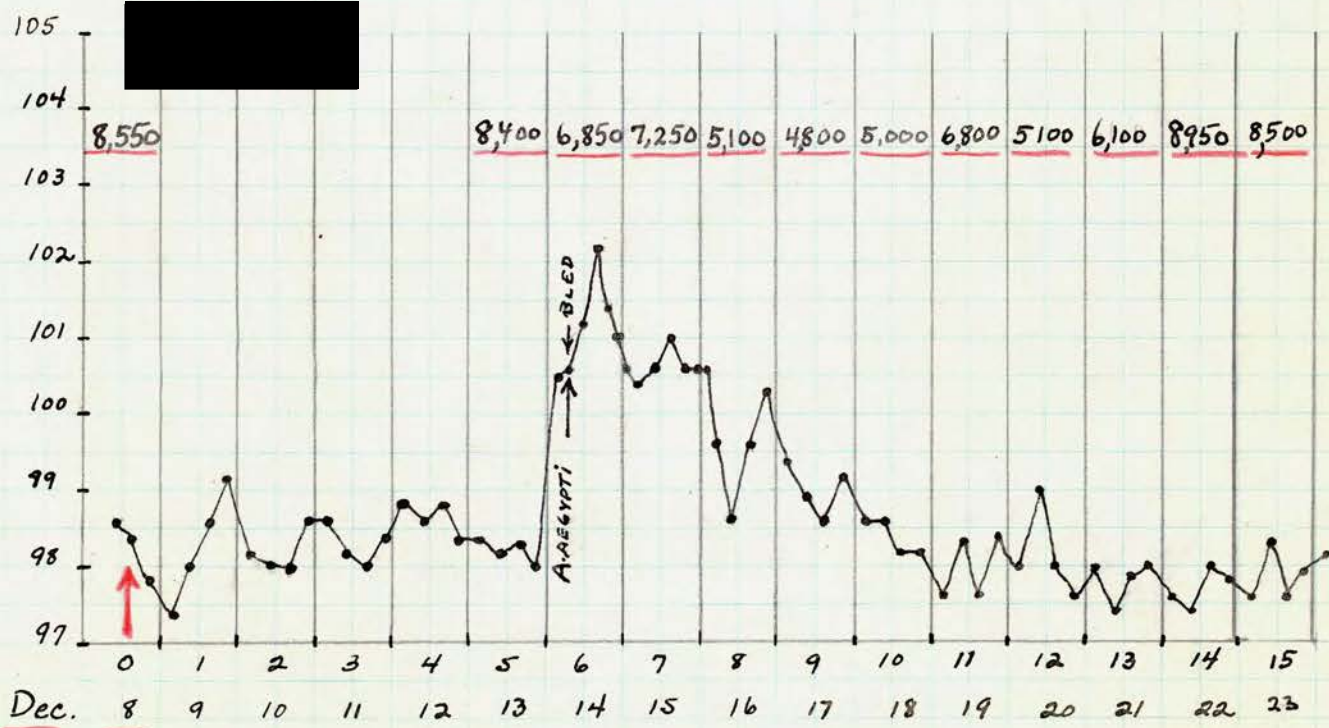
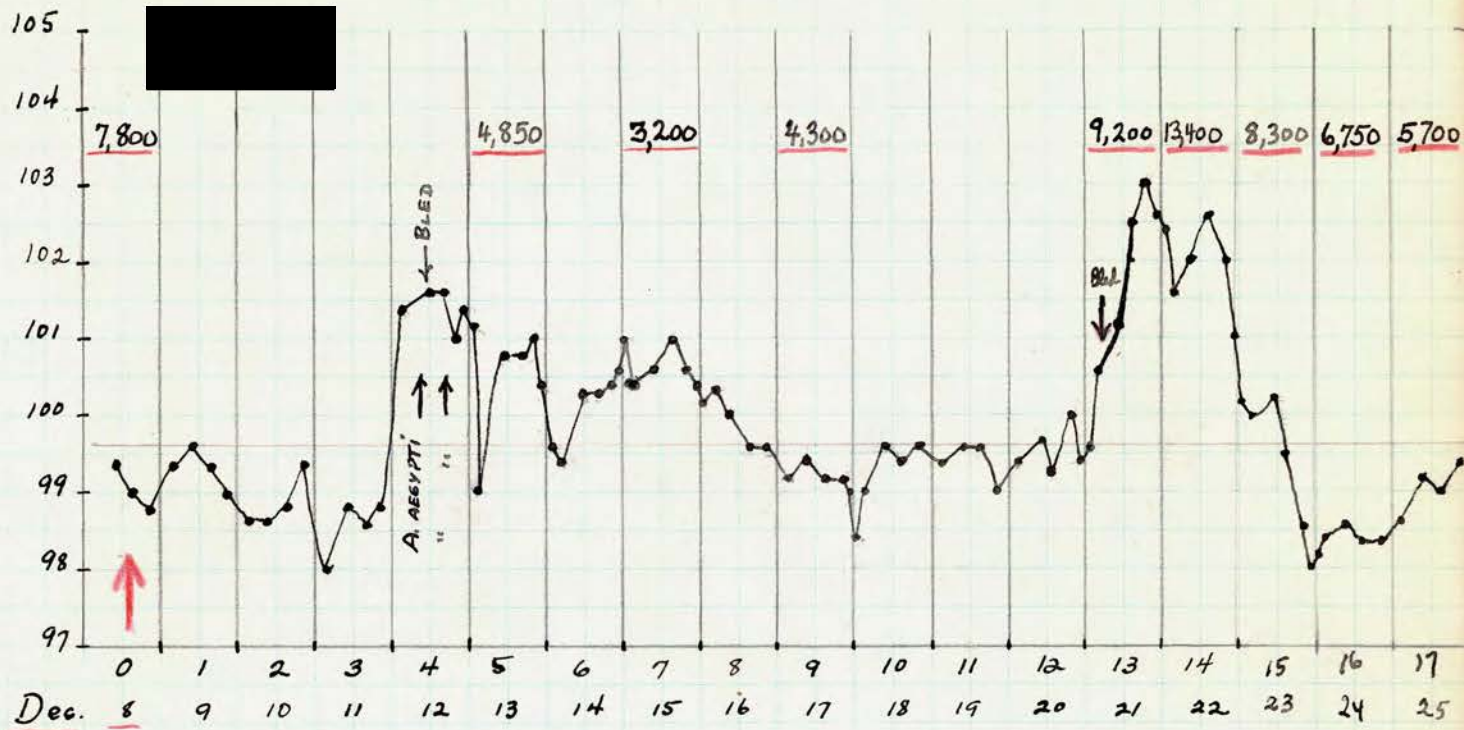
Inoculations 2³⁰ - 2⁴⁰ P.M.* In Marksberry and Schmitt there was slight capillary bleeding upon withdrawing ^{needle}.Dec. 9 - No reaction at any inoculated site.

" 10 - " " " " " " except Marksberry who exhibits some yellowish discoloration at site



TOTAL WBC	9,950	7,900	6,100	4,350	6,450	10,050	8,400	9,300
IMMAT. NEUTR.	4	12.5	18	25	13	10	10	5
SEGM. NEUTR.	42	63	33	29	45	60	51	59
LYMPH.	32	17.5	36	41	30	16	22	31
MONOC.	7	5.5	12	1	9	13	14	4
EOSIN.	1		4		3	1	3	1
BASOPH.	12?	7.5?	1					

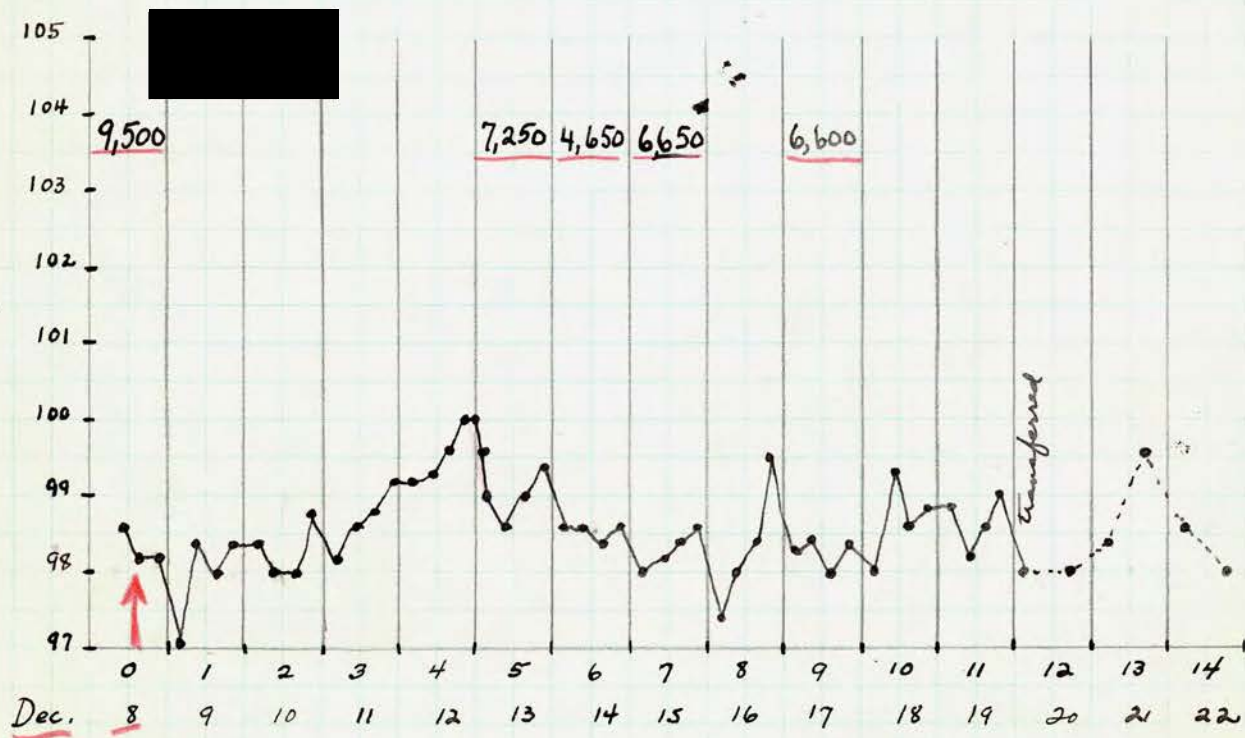
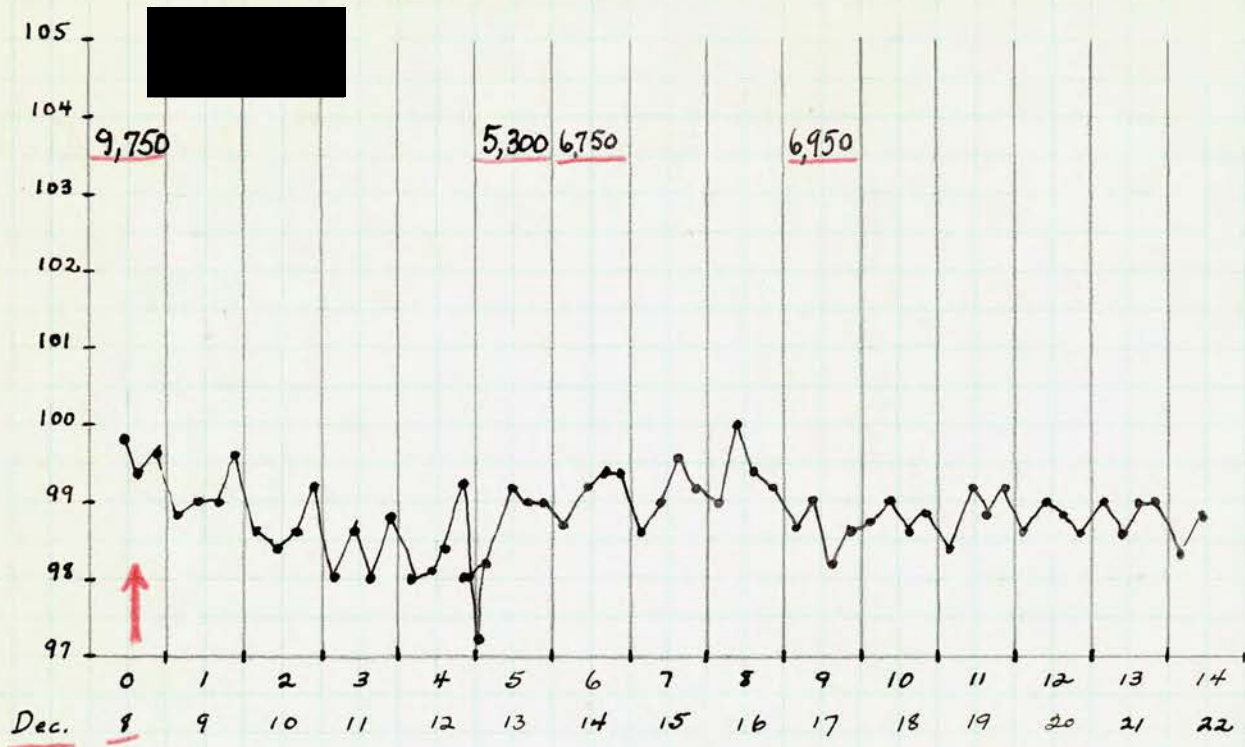
MIDDLE EAST VIRUS - 5TH PASSAGE POOL



1cc. INTRACUTANEOUS - (0.2cc undiluted serum in 5 sites)

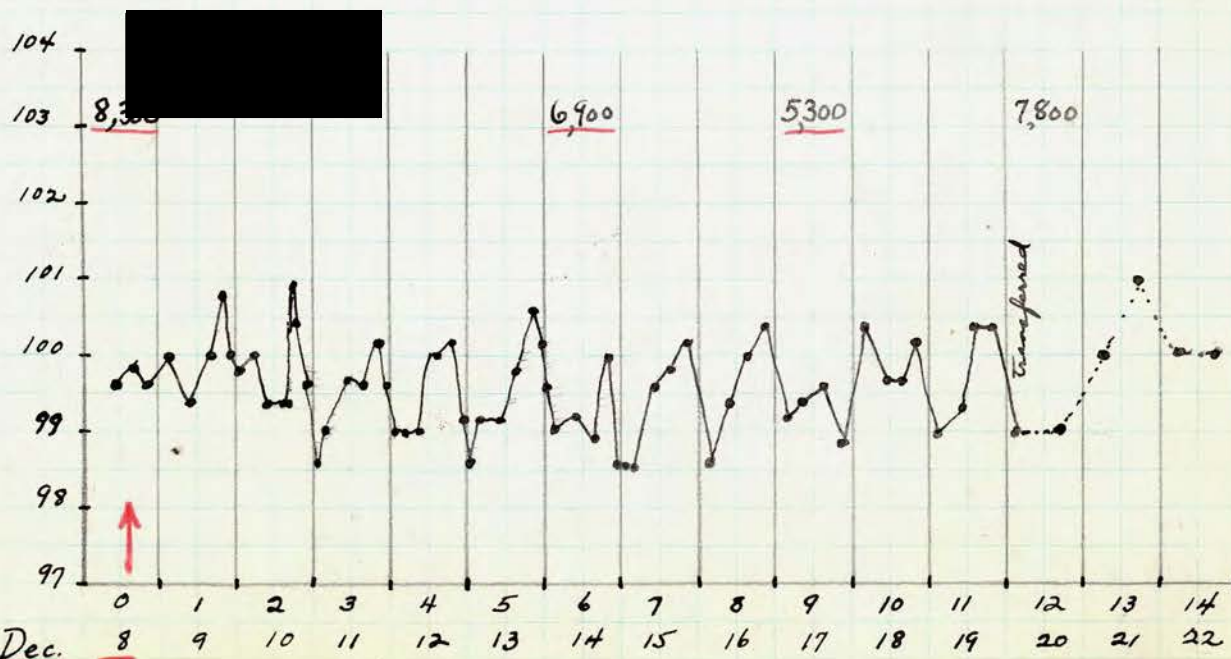
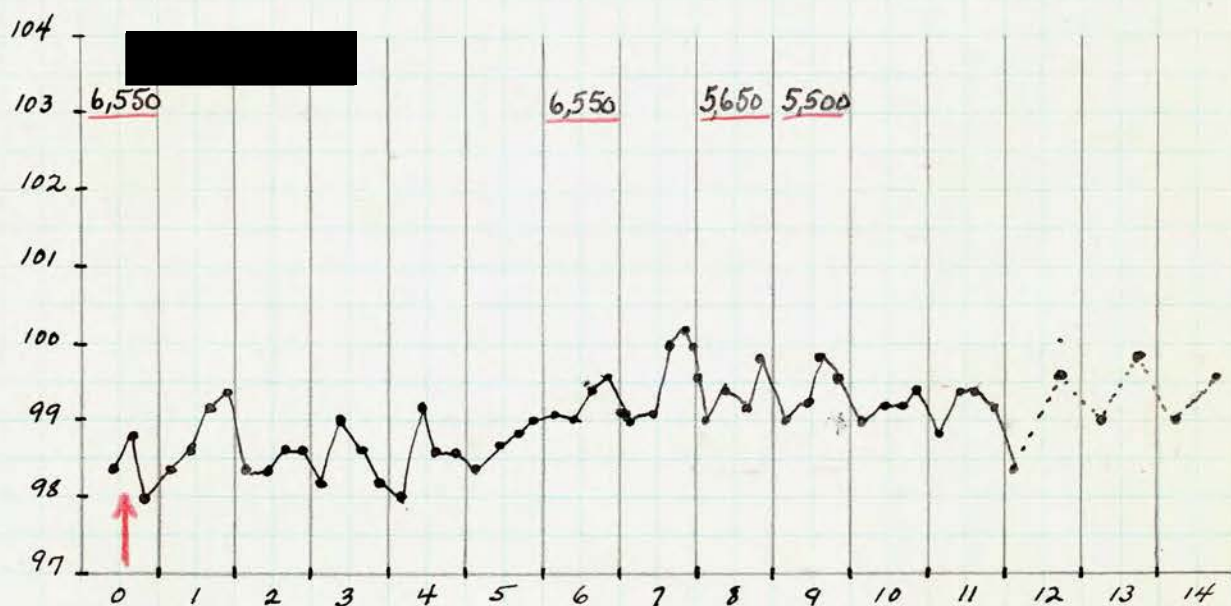
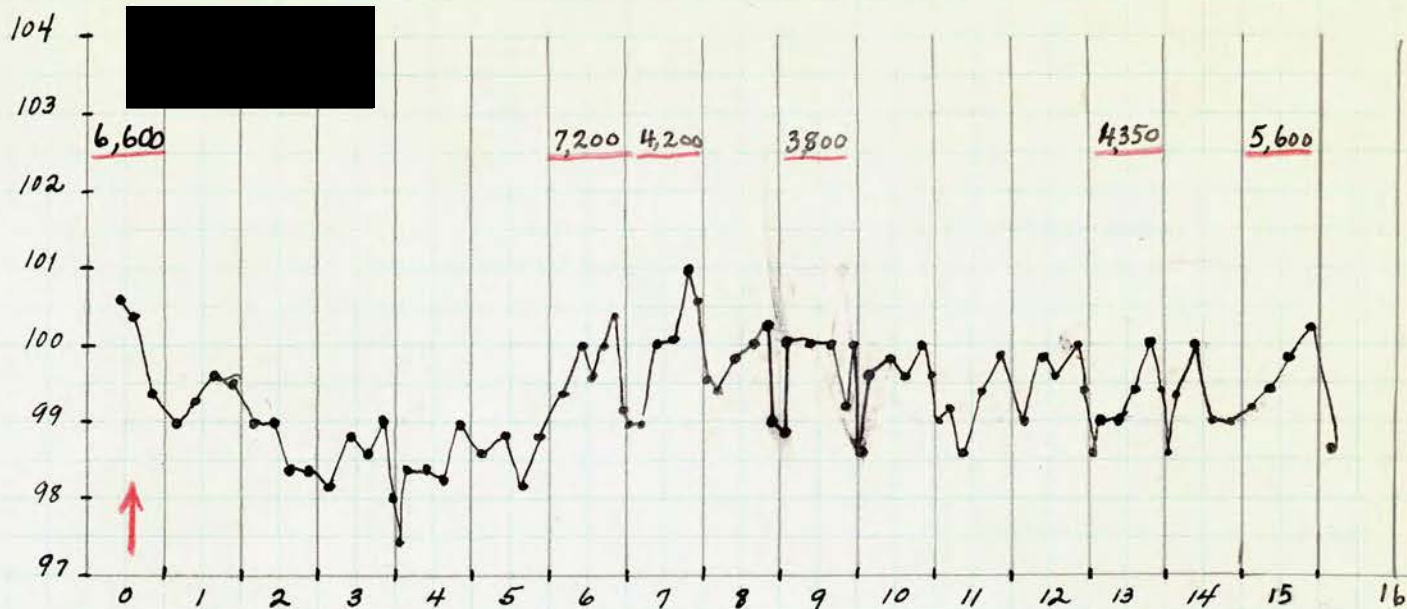
MIDDLE EAST VIRUS - 5TH PASSAGE POOL

IRRADIATED WITH ULTRAVIOLET LIGHT FOR 15 MINUTES (24 Nov, '43)



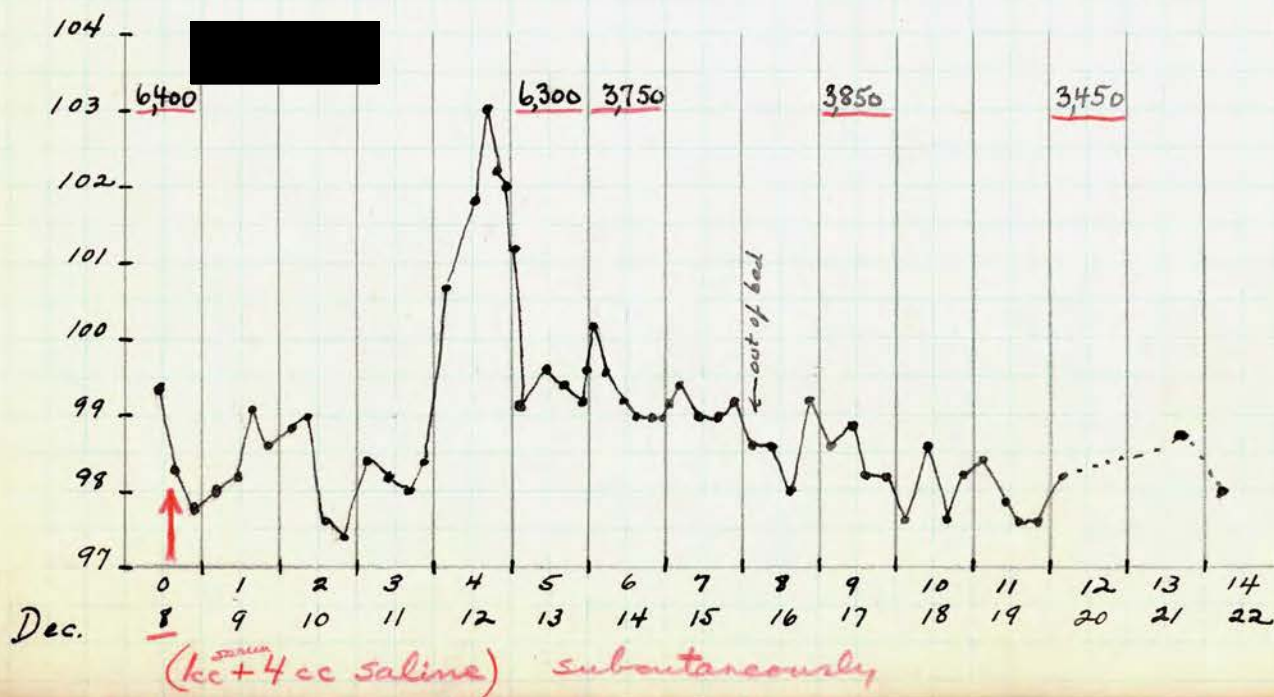
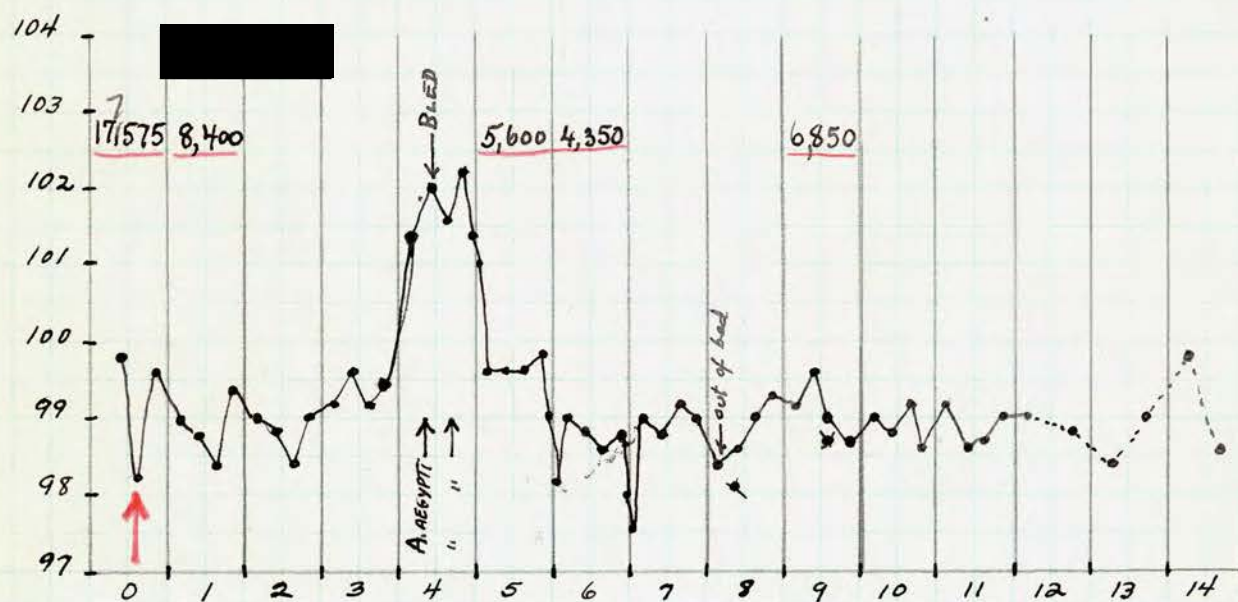
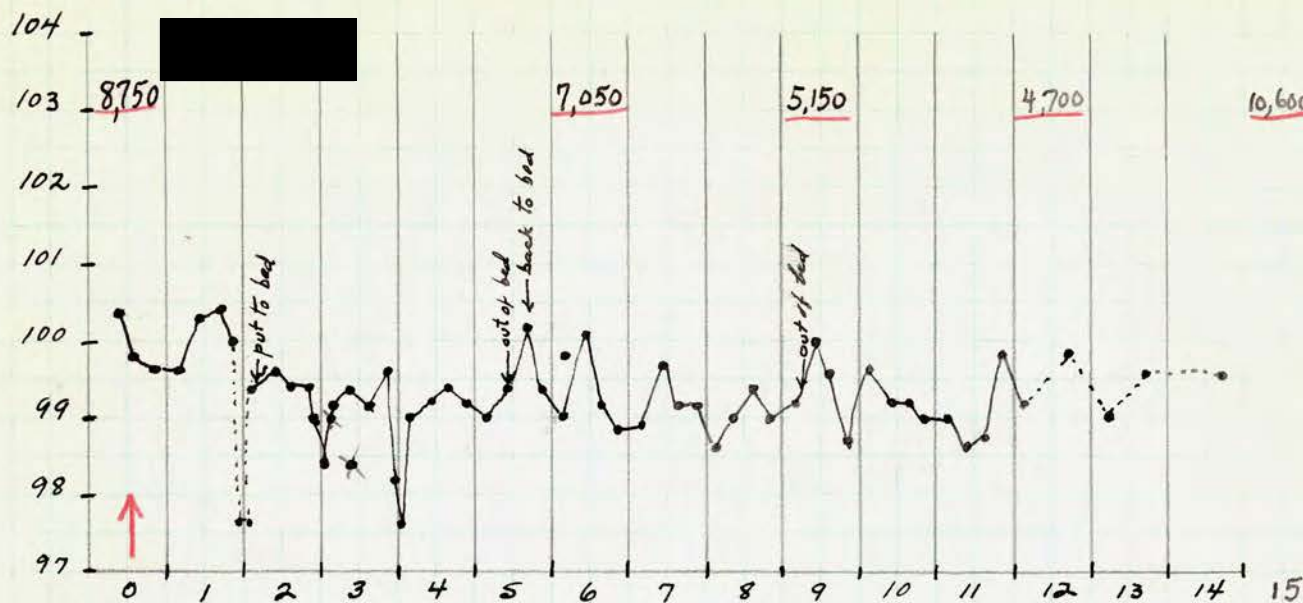
1cc of undiluted serum intracutaneously - 0.2cc in 5 places

MIDDLE EAST VIRUS - 5TH PASSAGE POOL - UNDILUTED SERUM SUBCUTAN.



1 cc undiluted serum subcutaneously

MIDDLE EAST VIRUS - 5TH PASSAGE POOL - DILUTED SERUM SUBCUTANEOUSLY



1. Capacity of Aedes aegypti mosquitoes which fed on Dec. 12 (Scott, Kallmeyer) and Dec. 14 (GRANT) to transmit infection

Subjects -

- white male - age 39

- " " - " 38

(see over)

2. Test for infectivity of serum (obtained from Scott, Kallmeyer and Grant) at the time the mosquitoes engorged - to establish that the blood of the donors was infective at the time the mosquitoes fed.

1cc of pool of Kallmeyer, Scott, and Grant sera injected intracutaneously ~~into~~ at 12:50 P.M. into:

Subjects -

- white female - age 45

- " male - " 43

3. TEST FOR NEUTRALIZING ANTIBODY in serum of recovered immune individuals.

Source of Immune Serum

[REDACTED]

(pool of all 4 used)

- Oct. 6, 1943 - Sicilian Virus - all infected

Nov. 9, " - " " - " immune

Nov. 24, " - MIDDLE EAST " - " "

Dec. 7 " - all bled ; serum frozen

2. 2cc virus (Kallmeyer, Scott, Grant pool used above) + 2.2cc immune serum

Mixture prepared at 11²⁰ A.M. - left at room temperature

Inoculated at 12:50 P.M. - 2cc. i. cut. each into

Subjects -

- Colored female - Age 44

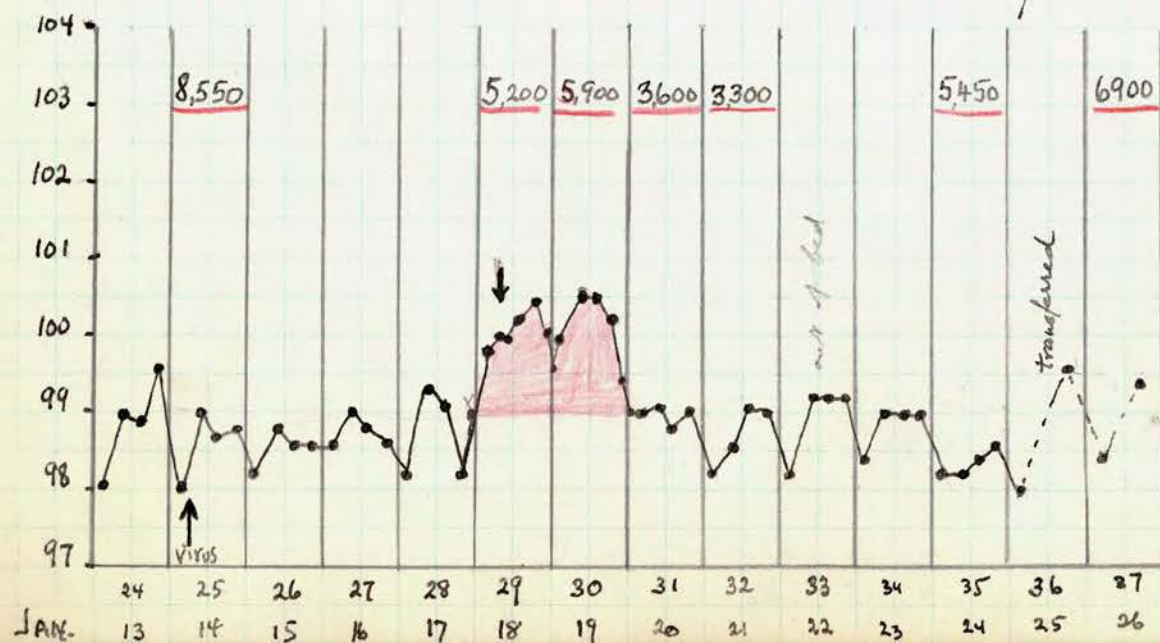
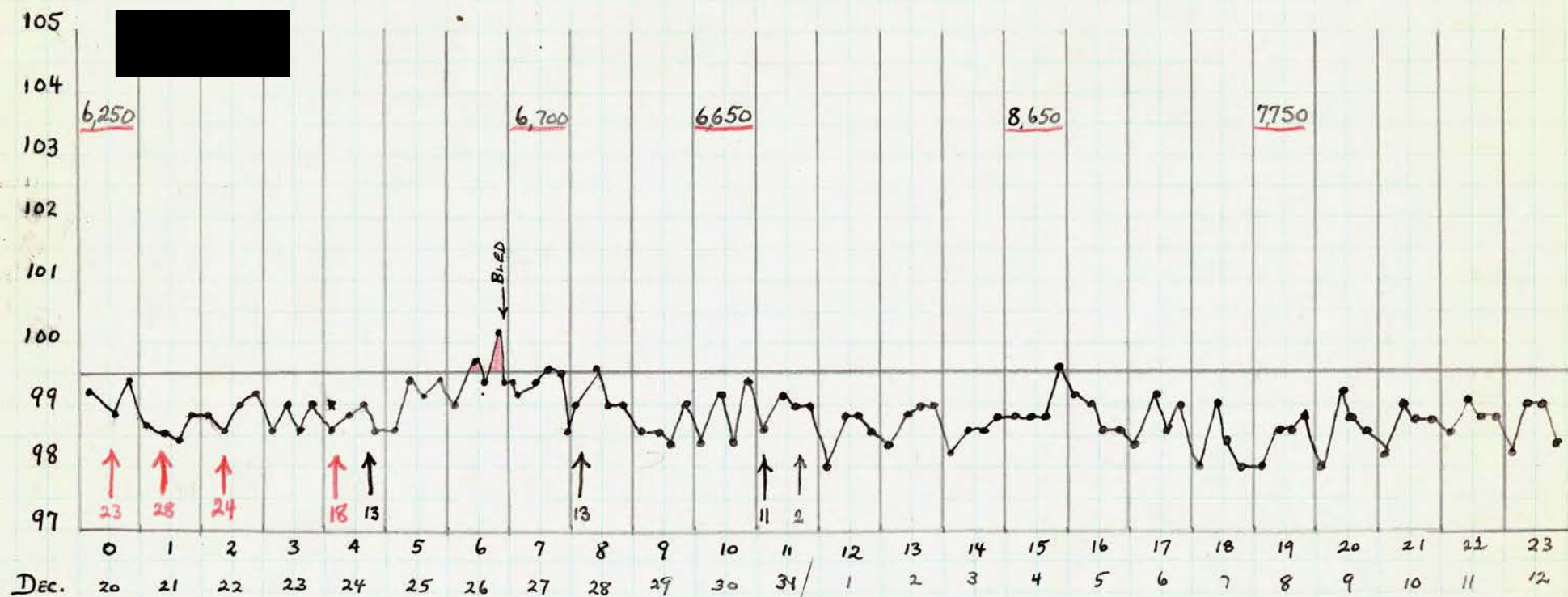
- White " - " 43

JAN. 14 - TEST OF [REDACTED] FOR SUSCEPTIBILITY TO
SANDFLY FEVER VIRUS

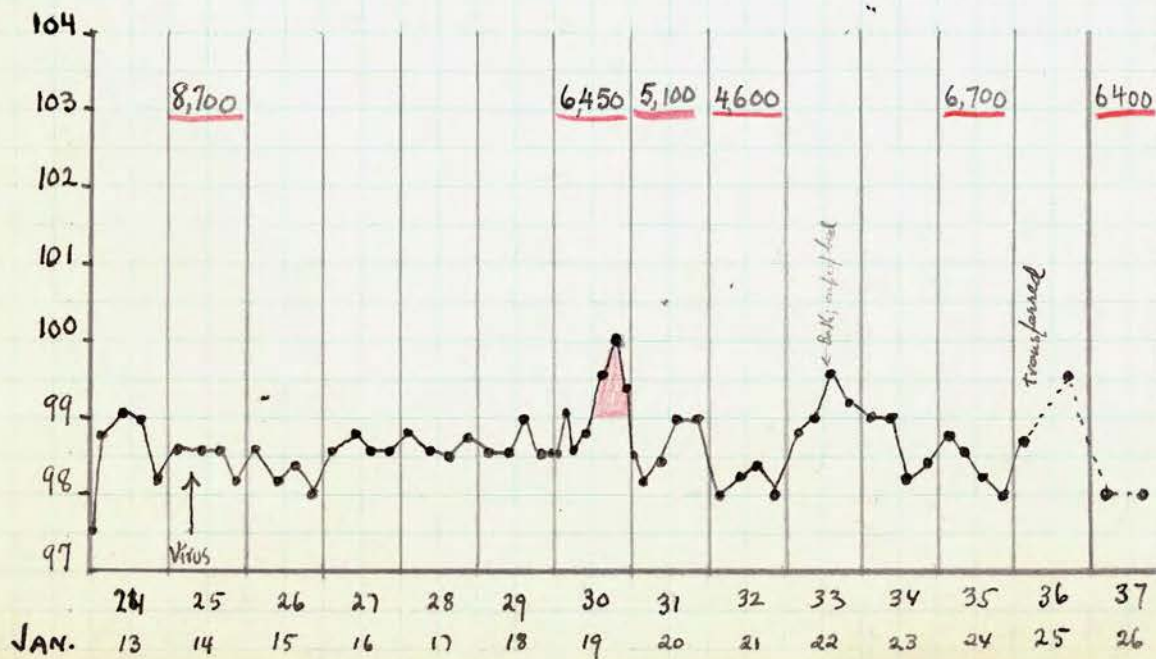
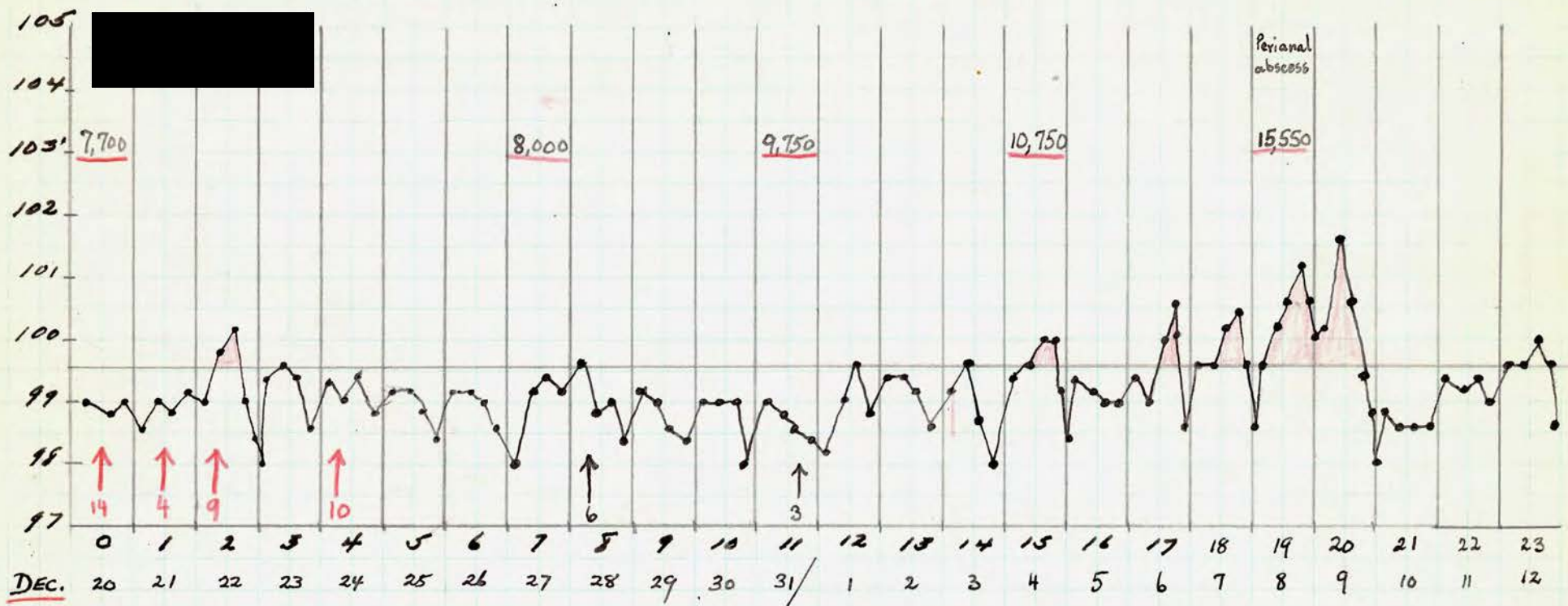
FROZEN KALLMEYER SERUM OF DEC. 12 used

1cc intracutaneously (0.25cc in 4 sites) injected
in each one at 10 A.M.

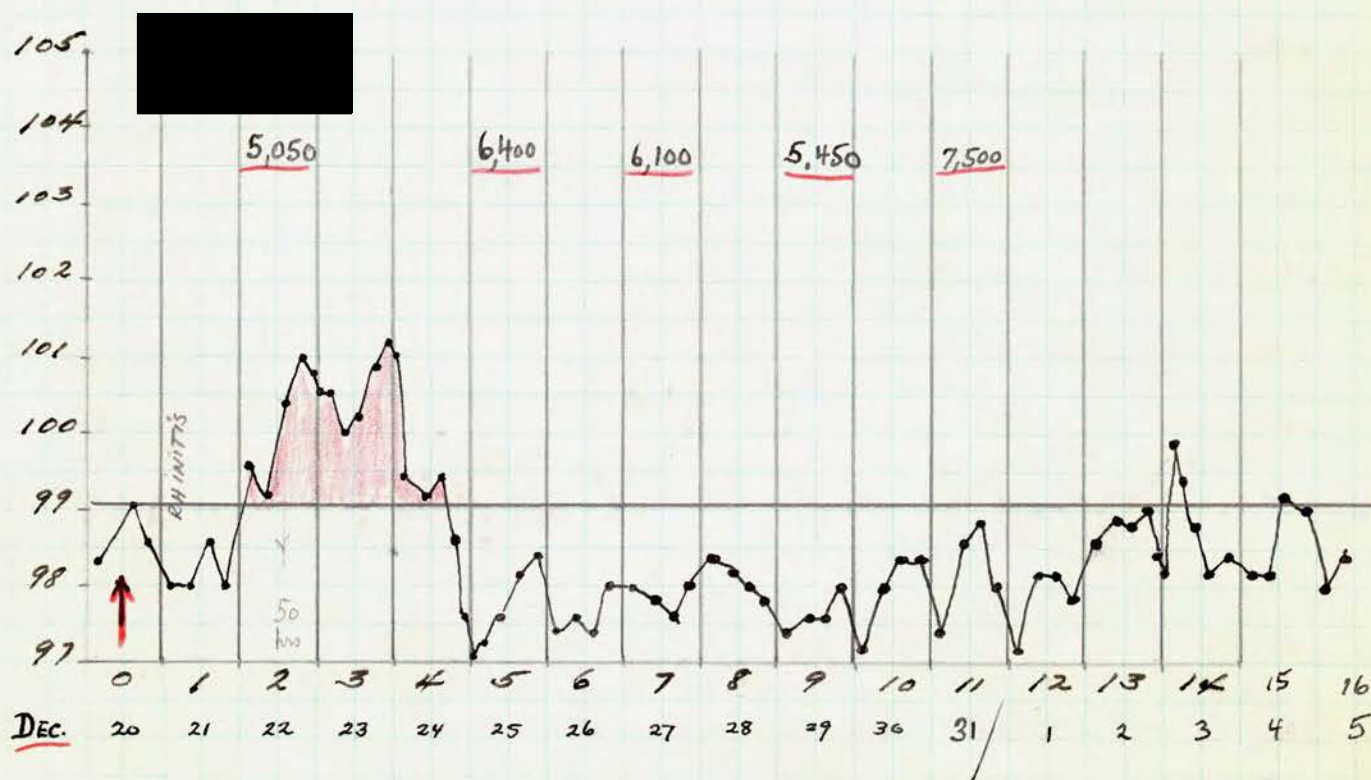
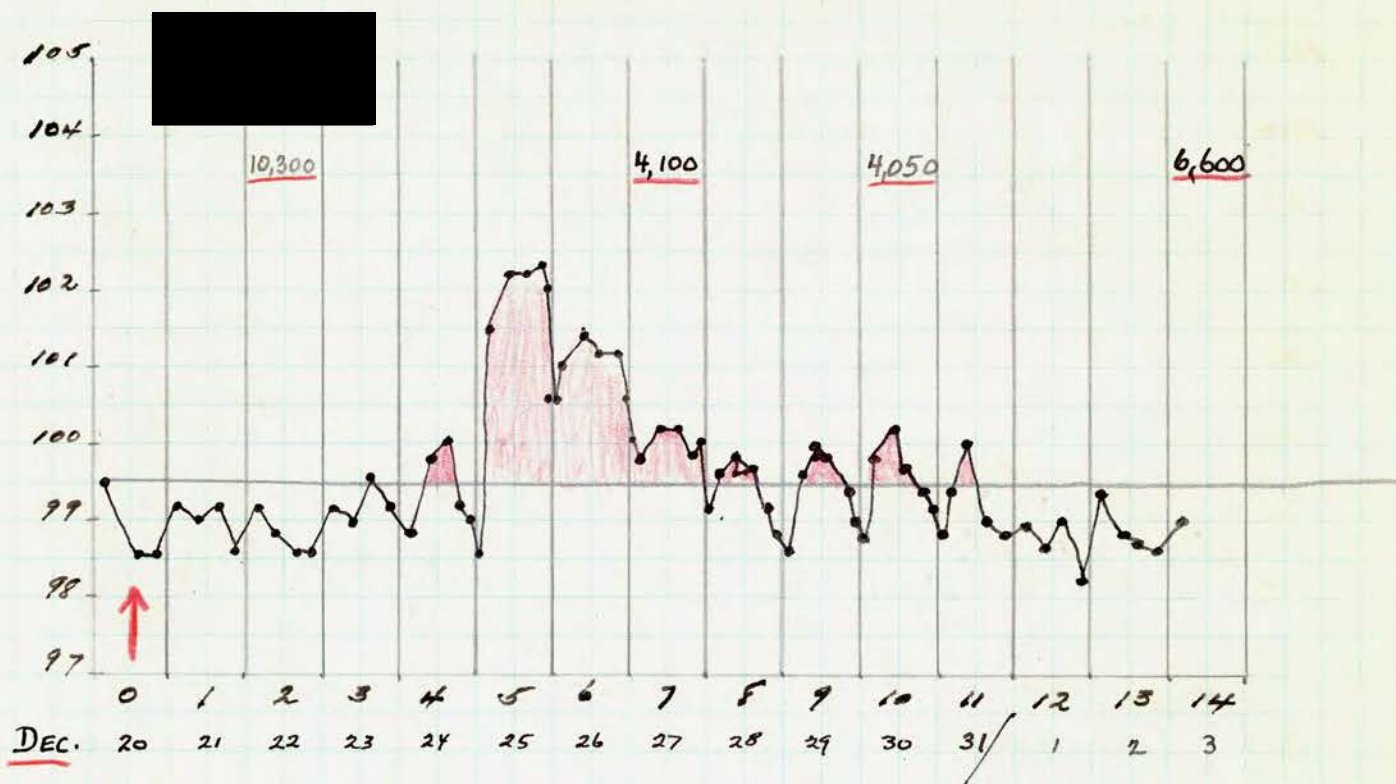
MIDDLE EAST VIRUS - ATTEMPTED TRANSMISSION BY Aedes Aegypti



MIDDLE EAST VIRUS - ATTEMPTED TRANSMISSION BY AEDES AEGYPTI

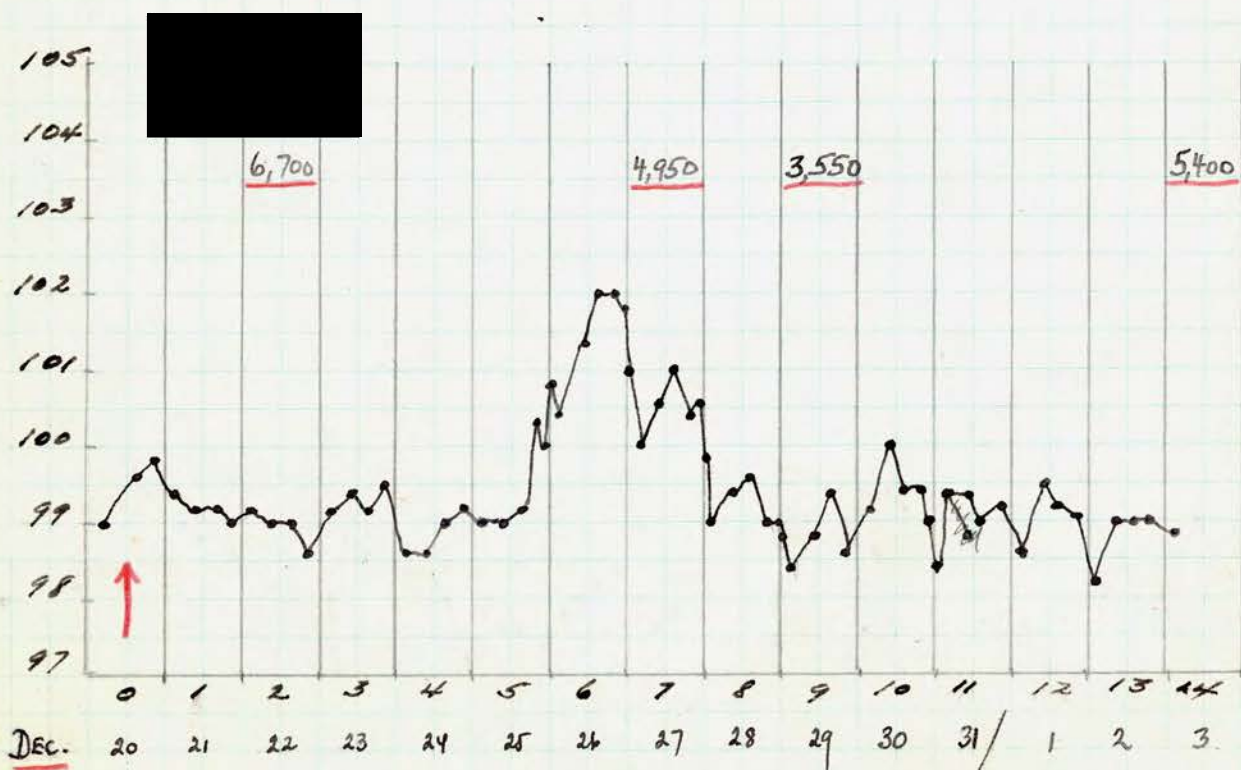
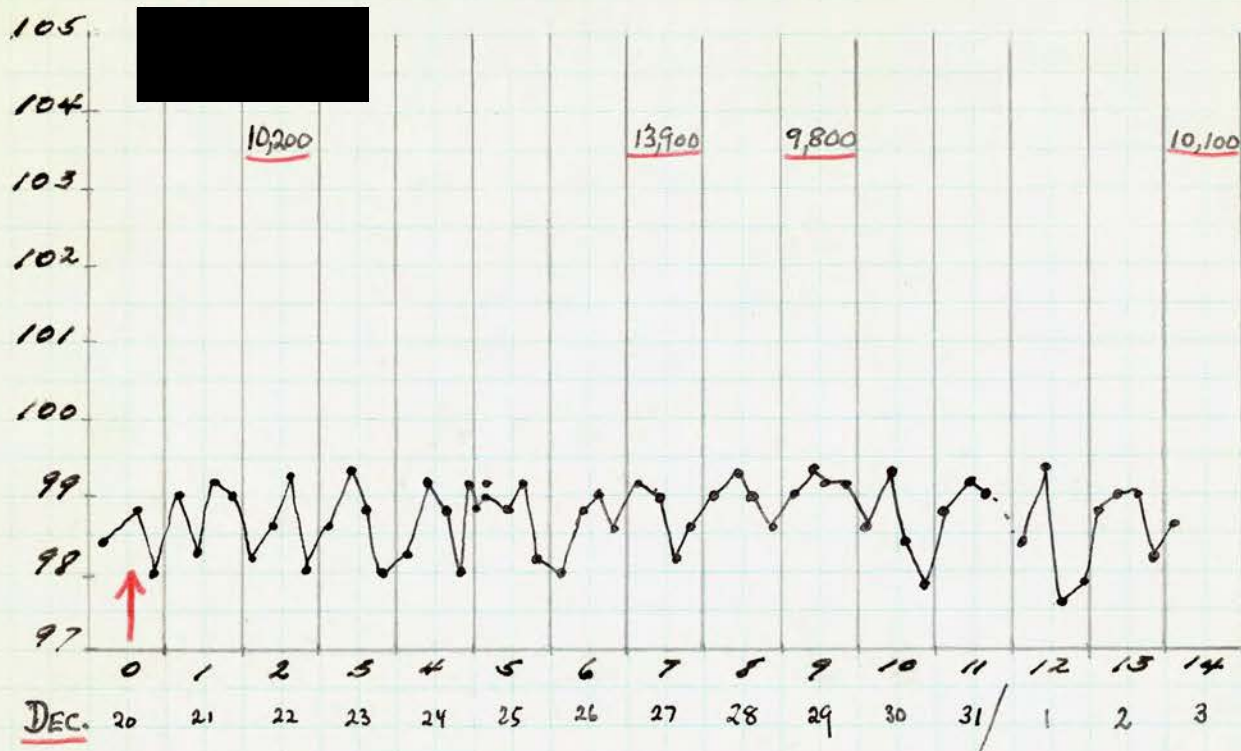


MIDDLE EAST VIRUS - CHECK ON INFECTIVITY OF BLOOD OF DONORS
CONTROL FOR NEUTRALIZING ANTIBODY TEST



1cc of KALLMEYER, SCOTT, GRANT POOLED SERUM INTRACUTANEOUSLY

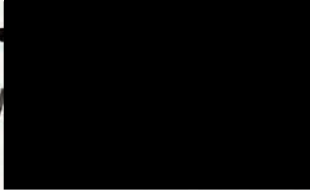
TEST FOR NEUTRALIZING ANTIBODY



2cc. of immune serum - virus mixture intracutaneously

1. Propagation of virus in chick embryo

4th passage culture consisting of equal parts of chick embryo and distilled water was frozen on Dec. 26 and cultured. On 12/27, 10cc of above was thawed out, mixed with 15cc saline and "blended" to yield @ 20% suspension. This was centrifuged on the horizontal centrifuge at @ 2000 rpm. for 15 minutes. The slightly opalescent supernatant liquid was used for inoculation — 2cc intracutaneously (8 sites of 0.25cc each) into each of the following two Subjects:

 white male — age 52

— " female — " 37

2. To determine whether virus is demonstrable in the blood during recurrence of fever

KALLMEYER serum obtained 12/21 at beginning of recurrent fever — 2cc intracutaneously (0.25cc in 8 sites) into each of the following 2 subjects:

 — white male — age 52

— " female — " 39

INOCULATIONS COMPLETED 2:30 P.M.

DEC. 28 — No reaction at sites of serum inoculation

Chick embryo suspension — BOWE — 8 red papules — 9x9mm.

KINDLE — " " " — 1.2x1.2cm.

DEC. 29 Chick embryo reactions still present in both Bowe and Kindle red papules — 8x8mm.

JAN. 10, 1944 REINOCULATION - 1. TEST FOR SUSCEPTIBILITY

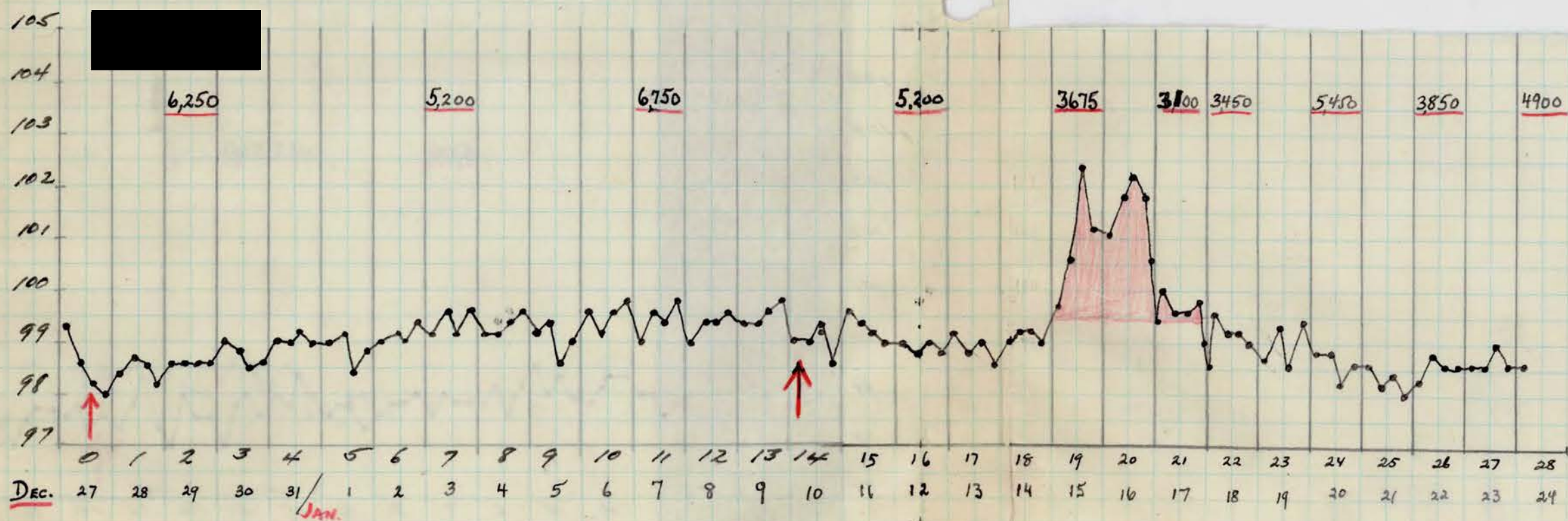
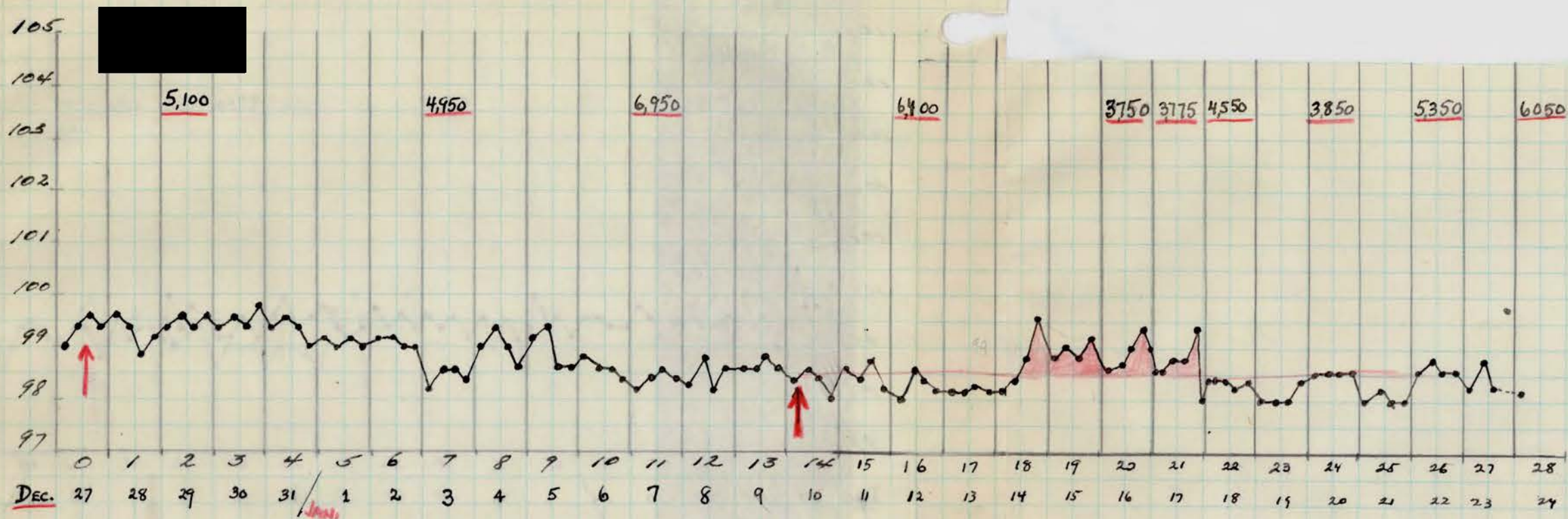
2. TEST FOR PERSISTENCE OF INFECTIVITY

IN SERUM USED FOR INITIATING
CHICK EMBRYO CULTURES.

[REDACTED]
were each inoculated with frozen WOODMANSEE
serum of Oct. 23, 1943 at 11 A.M.

JAN. 11 - No reaction to inoculation

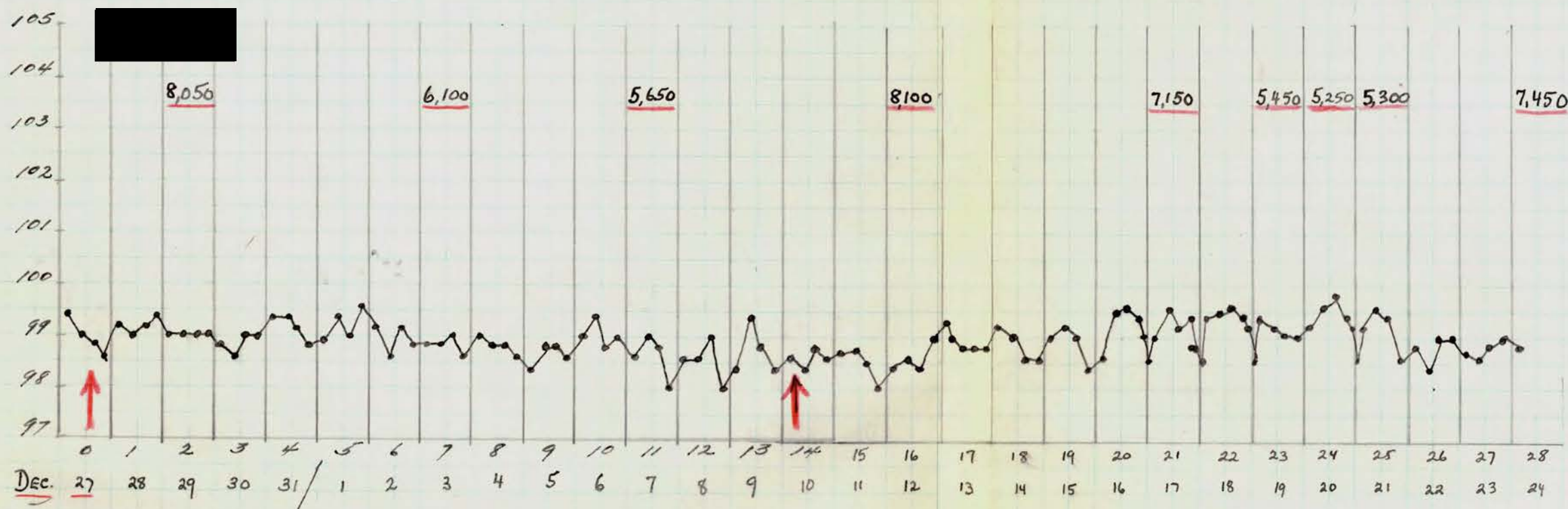
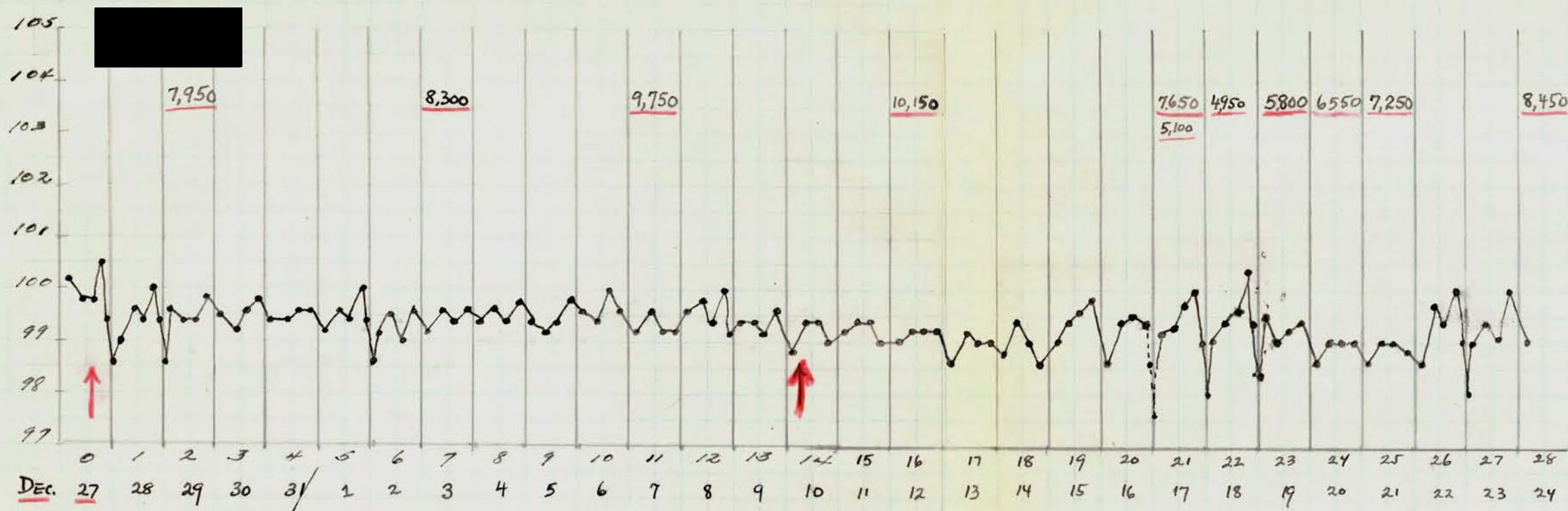
MIDDLE EAST VIRUS - TEST FOR PRESENCE OF VIRUS IN BLOOD AT ONSET
OF RECURRENCE OR RELAPSE OF FEVER



DEC. 27 - 2cc of KALLMEYER (DEC. 21) SERUM INTRACUTANEOUSLY

JAN. 10 - 1cc WOODMANSEE (OCT. 23) SERUM INTRACUTANEOUSLY

MIDDLE EAST VIRUS - TEST FOR PRESENCE OF VIRUS IN 4TH PASSAGE
CHICK EMBRYO CULTURE



Dec. 27 - 2cc of 20% suspension (centrifuged) of whole chick embryo
 intracutaneously

JAN. 10 - 1cc of WOODMANSEE (Oct 23) serum INTRACUTANEOUSLY

1. Immunity of Subjects Inoculated with Virus Inactivated by Ultraviolet Light

Each of the following was injected intracutan. with 1cc. of frozen 5th passage pool virus - 0.25cc in 4 sites

[REDACTED] V. inactiv. virus DEC. 8, 1943

" " " " "

" " " Nov. 24, "

" " " " " "

" " " " " "

2. Effect of virus injected intravenously

Some of the serum used above and also in the normal controls was diluted 1:4 with saline, centrifuged at a 2,000 rpm on the horizontal for 15 min. and sn. liquid used for intravenous inoculation. Each of the following received 4cc of the diluted serum (equival. to 1cc undiluted)

[REDACTED] - white male - age 45

- " female - " 49

3. CONTROLS FOR IMMUNITY TEST AND INTRAVENOUS ROUTE

Each of the following was inoculated intracutaneously with 1cc of 5th passage pool virus - 0.25cc in 4 sites

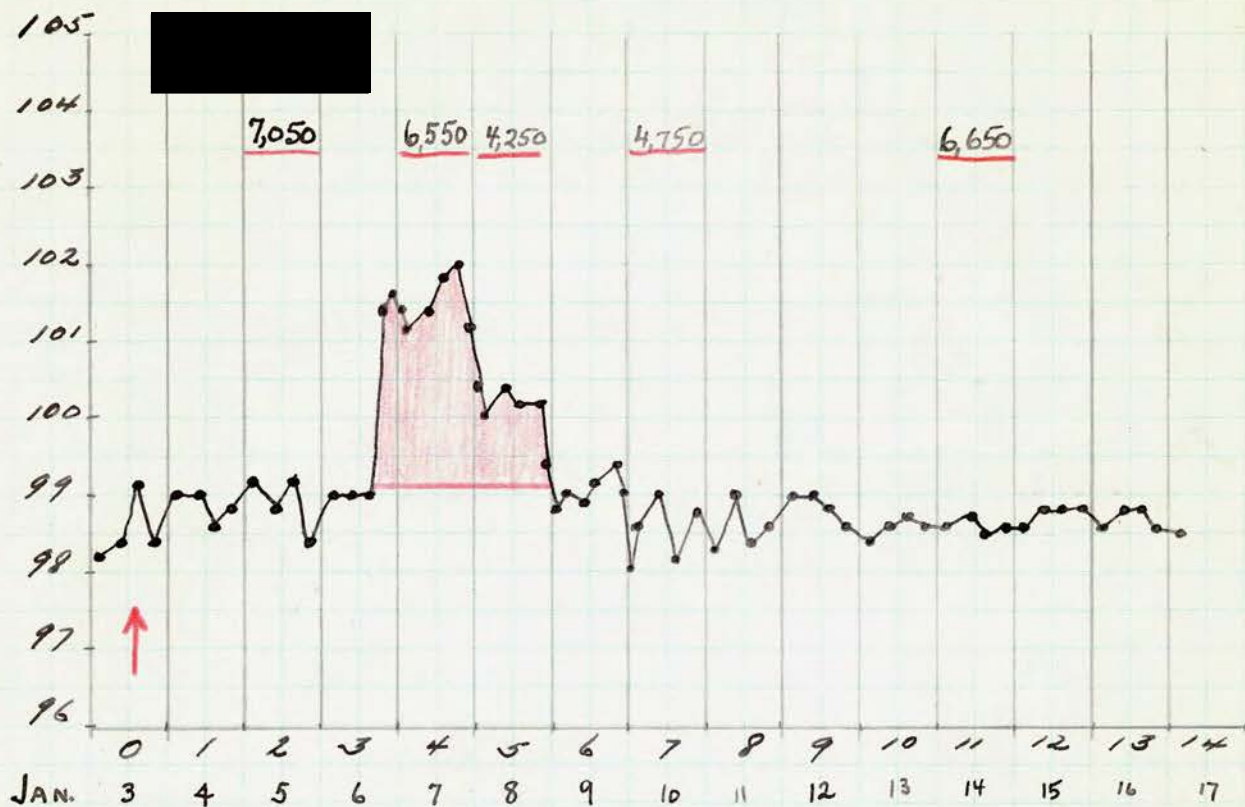
[REDACTED] - white male - age 45

- " female - " 38

ALL INOCULATIONS about 3 P. M.

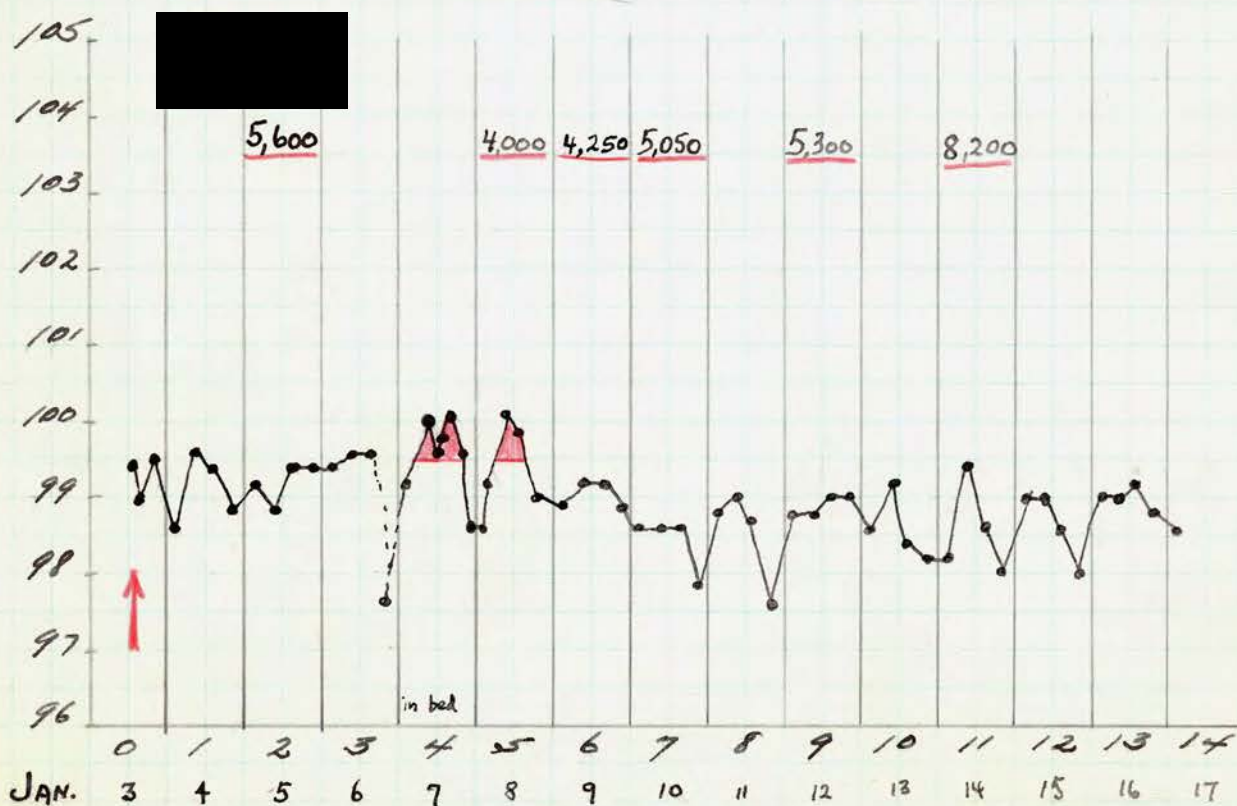
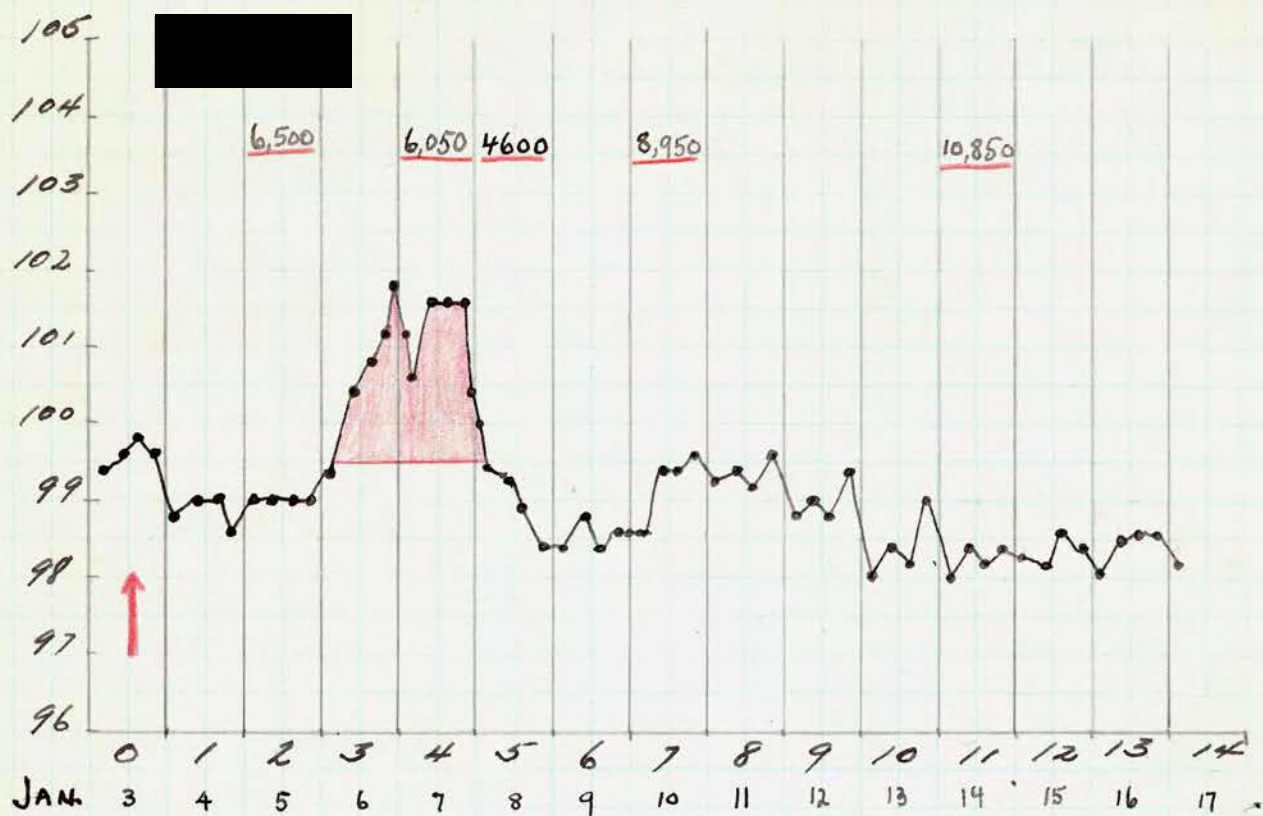
JAN. 4 - No local reactions to i. cut. inocul. or system. react. to i. venous

MIDDLE EAST VIRUS - CONTROLS FOR a) IMMUNITY TEST
b) INTRAVENOUS INOCULATION



1cc. 5TH PASSAGE POOL INTRACUTANEOUSLY

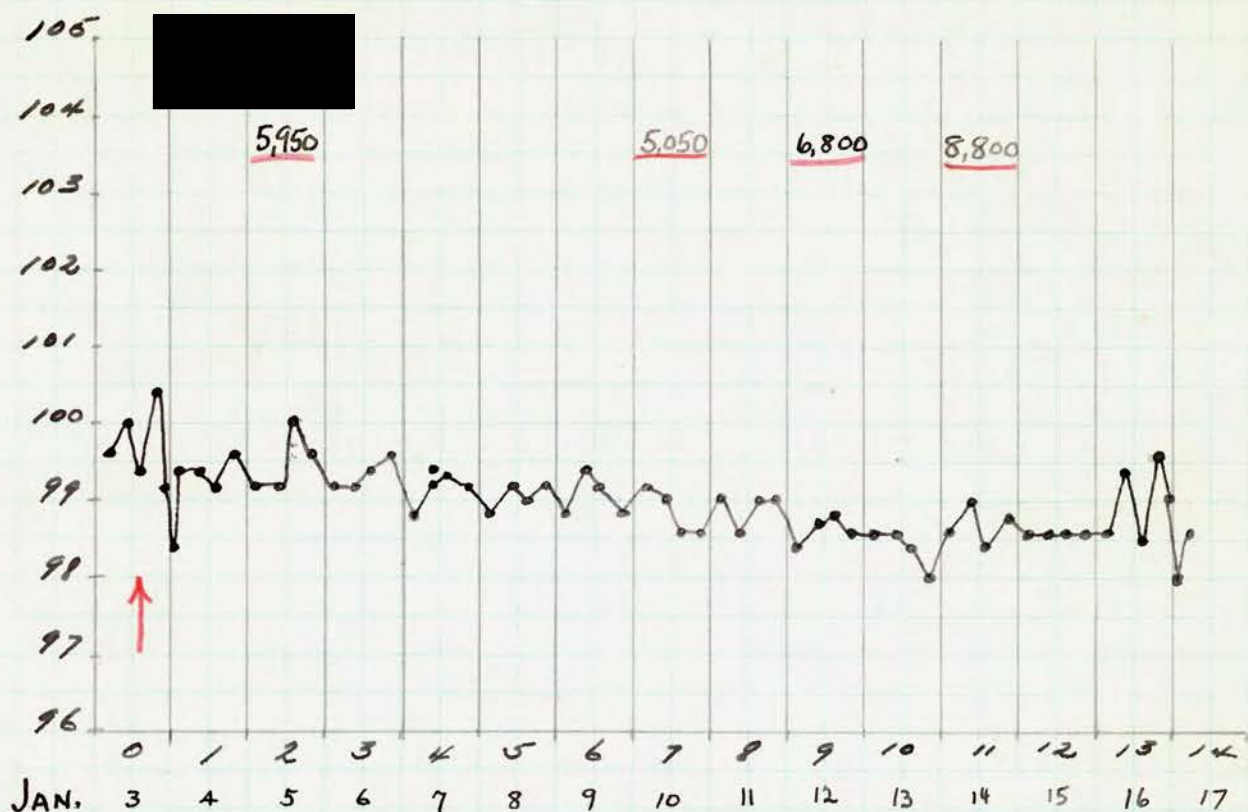
MIDDLE EAST VIRUS - Effect of intravenous inoculation



4cc. diluted 5th passage pool virus (=1cc undiluted) intravenously

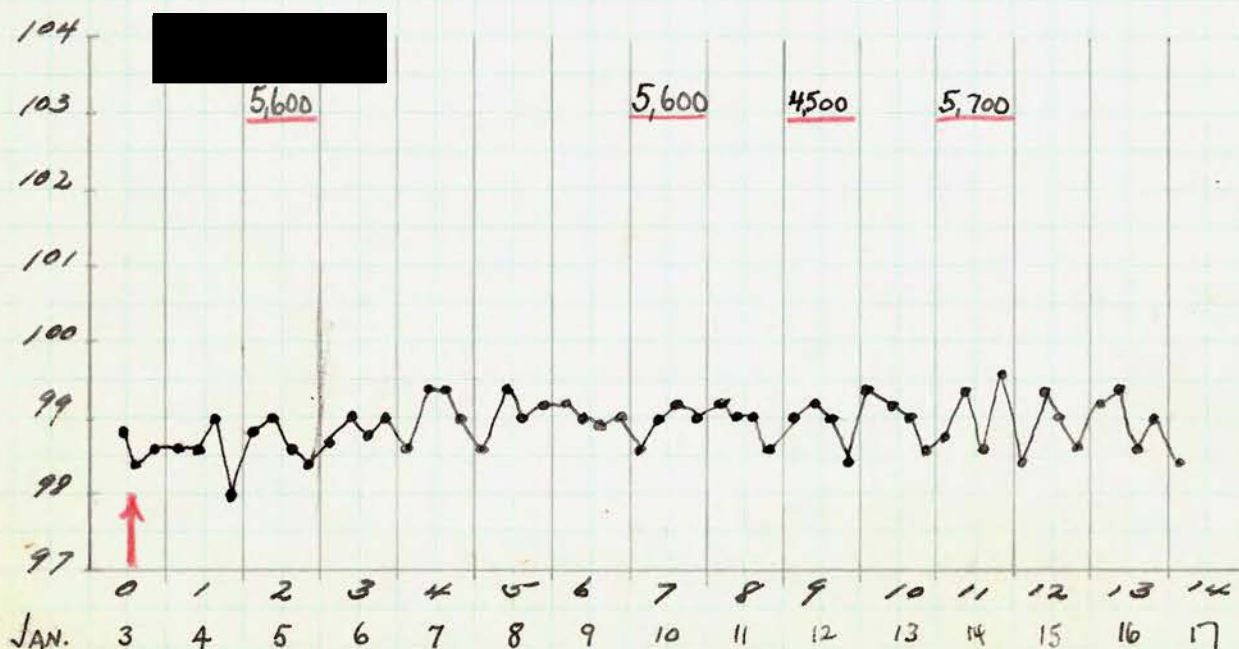
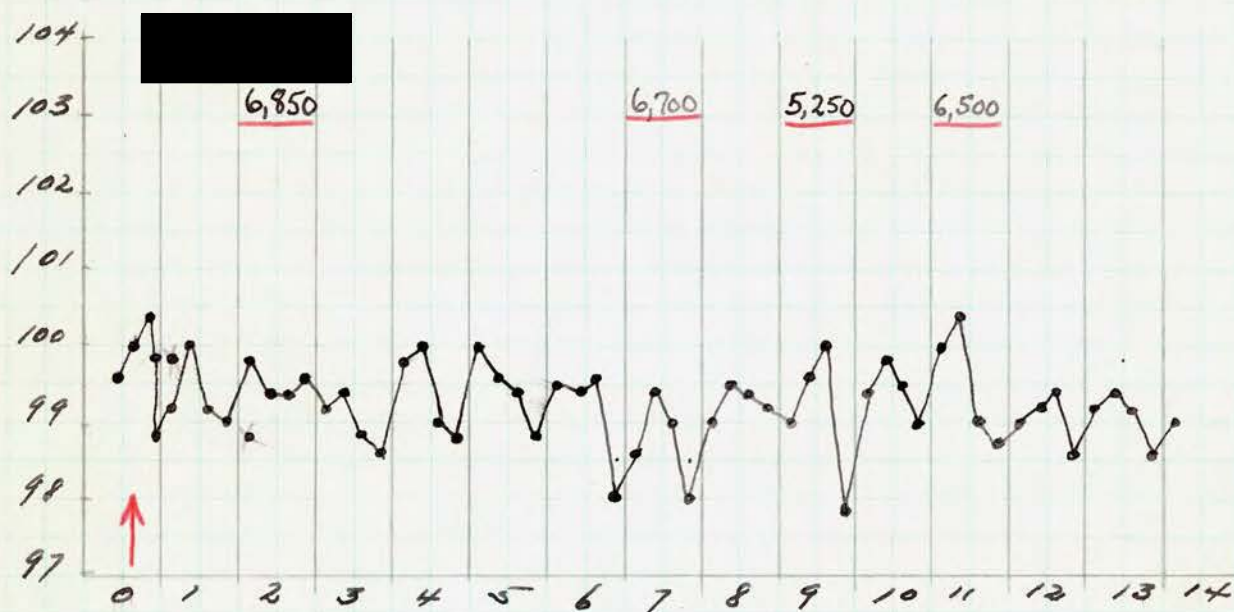
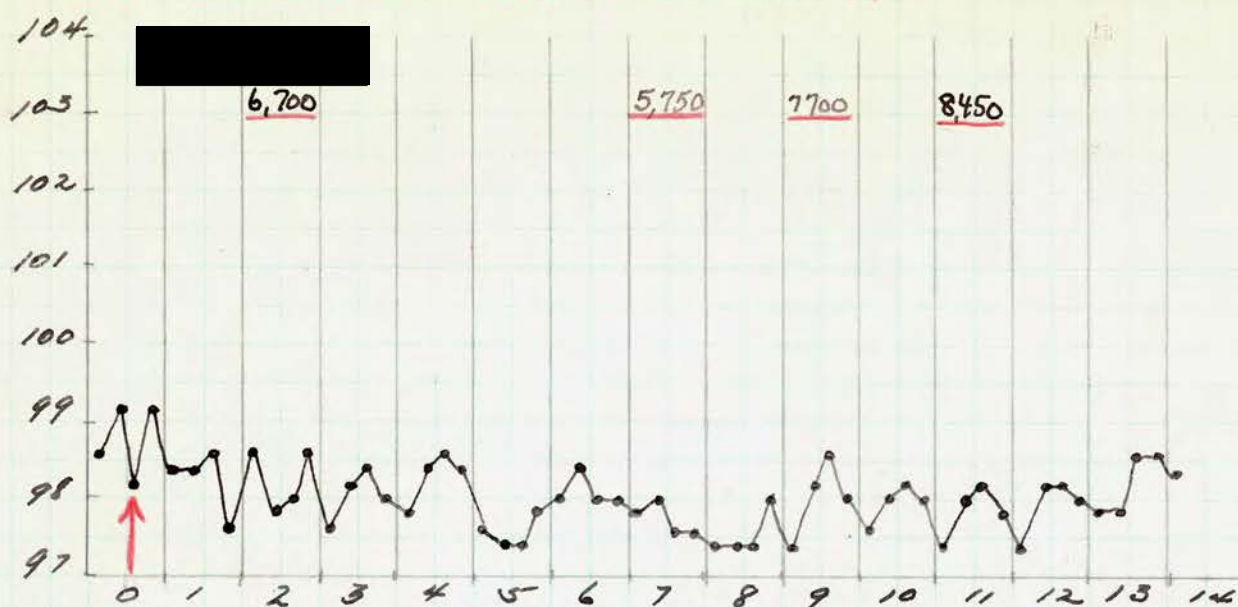
MIDDLE EAST VIRUS - IMMUNITY FOLLOWING INOCULATION WITH VIRUS
INACTIVATED BY ULTRAVIOLET LIGHT

U.V. irradiated virus on DEC. 8



1cc 5TH PASSAGE POOL VIRUS INTRACUTANEOUSLY

U.V. IRRADIATED VIRUS ON Nov. 24



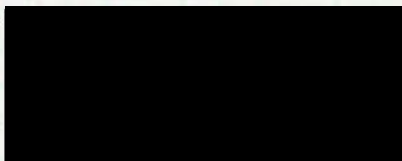
1cc 5th PASSAGE VIRUS POOL INTRACUTANEOUSLY

REPEAT TEST ON CHICK EMBRYO CULTURE

In the first test of the 4th chick embryo culture on Kindle and Bowe — there was no "fever" following the inoculation, but when they were tested with the original serum virus at the end of two weeks they again developed no "fever or other evidence of experimental infection" while two others (Mitchell and Berthol) inoculated simultaneously with the same serum exhibited evidence of experimental infection.

It was clear therefore that either Kindle and Bowe were originally resistant or developed an immunity as a result of inoculation with the chick embryo culture — or that the serum virus had diminished in potency to such an extent that it just failed to produce infection in these two — while producing it in two others. ~~At~~ any rate it was essential that the test be repeated.

Procedure — Some of the same culture used on 12/27 was thawed out (it had been thawed once before for repeat culture — which was negative). 9cc was "blended" with 13.5cc saline (to yield approximately a 20% suspension) and centrifuged at ≈ 2000 rpm for 15 min. The sn. liquid was inoculated

2cc intracutan. {  — white male — age 39
0.25cc in 8 sites
close together on left forearm — " female — " 41

JAN. 19 — Both subjects show an extensive, confluent area of inflammation about 7x5 cm at the inoculated site

JAN. 20 — Area of inflammation still extensive — no lymphangitis or lymphadenitis

JAN. 21 -

- local reaction less marked
- about same as '10

JAN. 22 -

Local reaction almost cleared except for papules in ANDERSON

JAN. 23 -

Paps. still in ANDERSON
SNAPP - all negative

JAN. 31

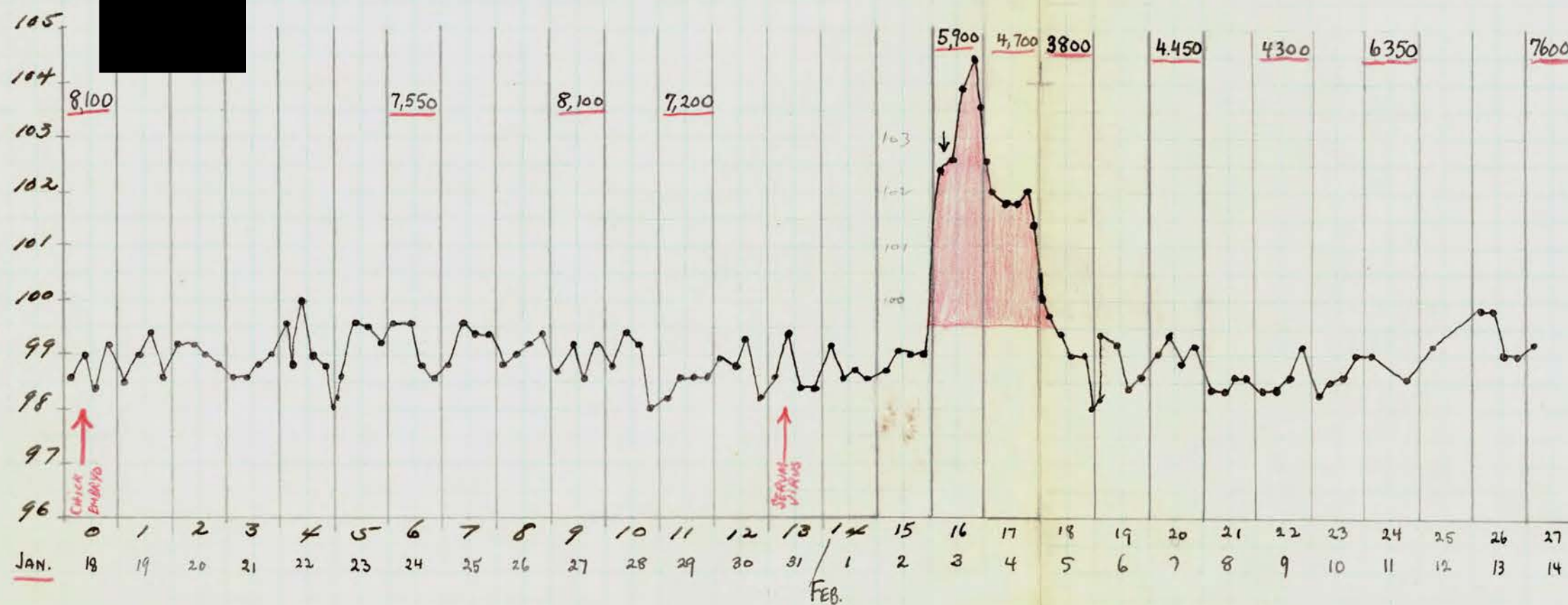
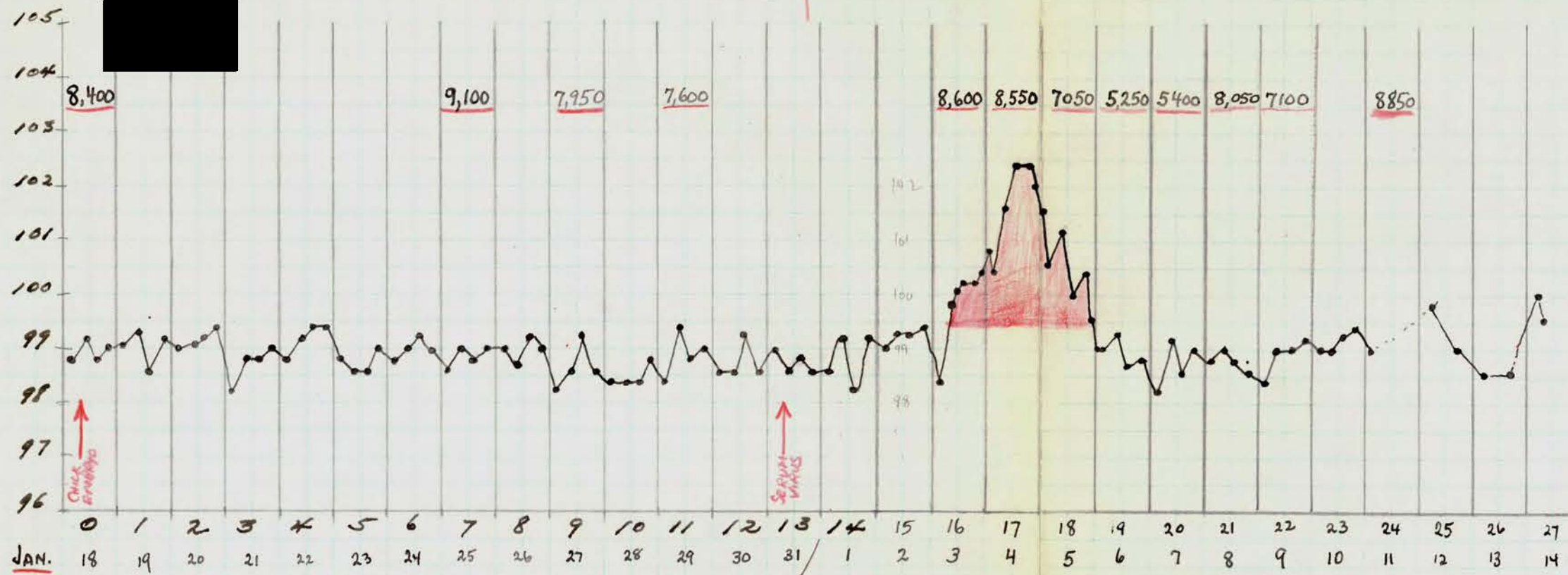
TEST FOR IMMUNITY WITH SICILIAN VIRUS

POOL OF LAKEMAN-BOGART SERUM

1cc INTRACUTANEOUSLY

MIDDLE EAST 4TH PASSAGE CHICK EMBRYO CULTURE

TESTED FOR IMMUNITY WITH
SICILIAN VIRUS



1. Does the virus remain infective after storage in the frozen state ^(CO₂) for about 6 months?

Pool of [redacted] sera (MIDDLE EAST VIRUS)
frozen since 8-24-1943.

2. ~~TEST~~ Does the virus remain infective after storage in the lyophilized state at ordinary refrigerator temperature about 5°C for about 6 months?

Two 1cc amp's. of Pool II (MIDDLE EAST VIRUS -
containing Bernard, Rogoz, Dempsey, Prince, Berry)
reconstituted with dist. H₂O and inoculated.

3. TEST for presence of virus in cerebrospinal fluid obtained from [redacted] on first day of fever and from [redacted] on 2nd day of fever - part lyophilized and remainder frozen (CO₂).

Inoculations - intracutaneous - first day CSF of Bernard & Rogoz

material available - 5cc. of pool of B & R
lyophilized

9.4cc of Rogoz - frozen

Frozen CSF of Bernard - ampule broken

2cc of pool of lyophilized + frozen CSF injected i.cut. into 2 subjects

Remaining CSF mixed with that of 2ND day material from Dempsey, Prince & Berry, centrifuged at low speed on horizontal and

INTRAVENOUS - injected intravenously in 15cc amounts

4. TEST for presence of virus in serum drawn 48-54 hours after onset of fever ~~from~~ Lakeman, Bogart and THOMAS - ~~MIDDLE~~ SICILIAN VIRUS. NOTE - serum from Lakeman & Bogart taken on the first day was proved infectious.

5. TEST FOR PRESENCE of transmissible agent in serum of patients who developed intercurrent fever during the course of mosquito tests - [redacted]

Inoculations - Feb. 8, 1944 - 2 to 2³⁰ P.M.

BERNARD-ROBOZ SERUM

frozen since Aug. 24, 1943

1 cc intracut

C.M. - age 40

W.F. - " 52

LYOPHILIZED (Pool II) SERUM

SINCE AUG. 25, 1943

CONTAINS BERNARD, ROBOZ, PRINCE
DEMPSEY, BERRY

1 cc intracut.

W.M. - " 27

C.F. - " 35

LAKEMAN, BOGART, THOMAS Pool

48-54 hours after onset

1.5 cc intracut

C.M. - " 54

W.F. - " 40

QUENSON, WILHOITE, GILBERT Pool

1.5 cc intracut

C.M. - " 43

C.F. - " 37

CEREBROSPINAL FLUID

1ST DAY - ^{BERNARD, ROBOZ}
~~POOL OF FROZEN~~ - 2 cc i.cut
AND LYOPHILE

1ST DAY AND 2ND DAY - 15 cc i.v.en.
(PRINCE
DEMPSEY
BERRY)

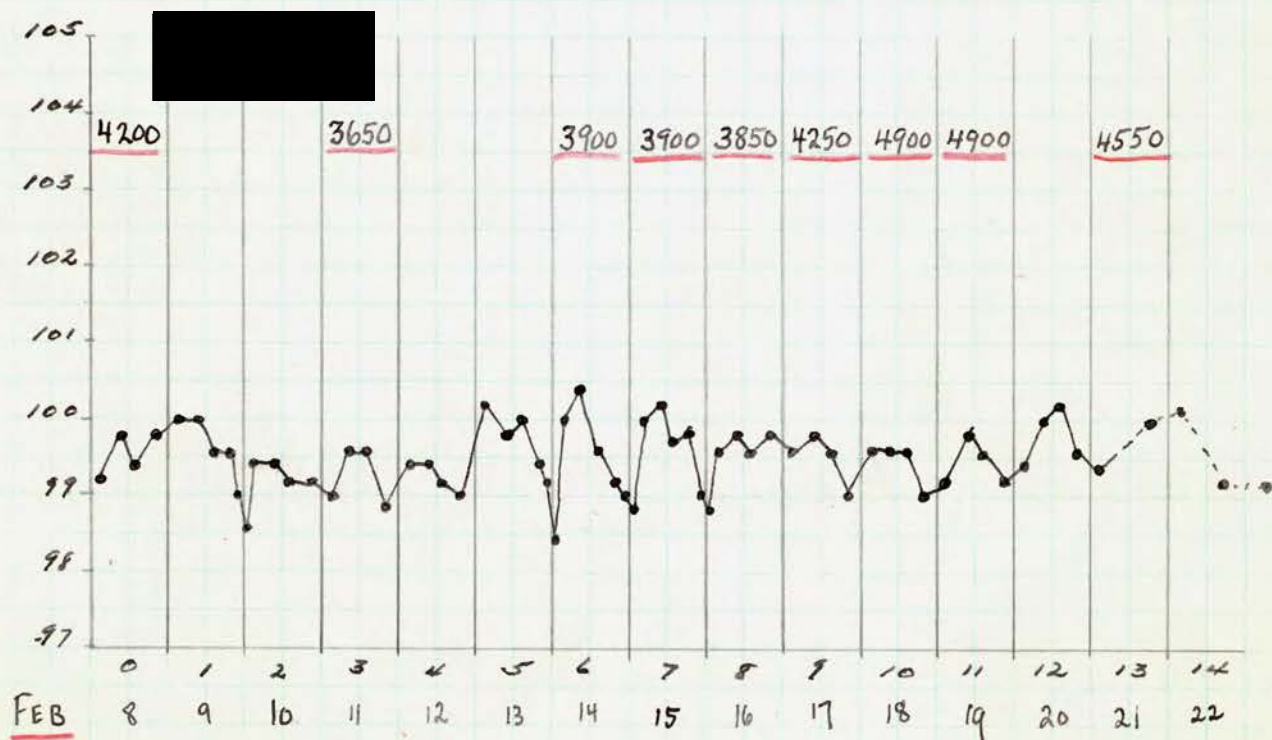
W.M. - " 41

C.F. - " 35

Feb. 9 -

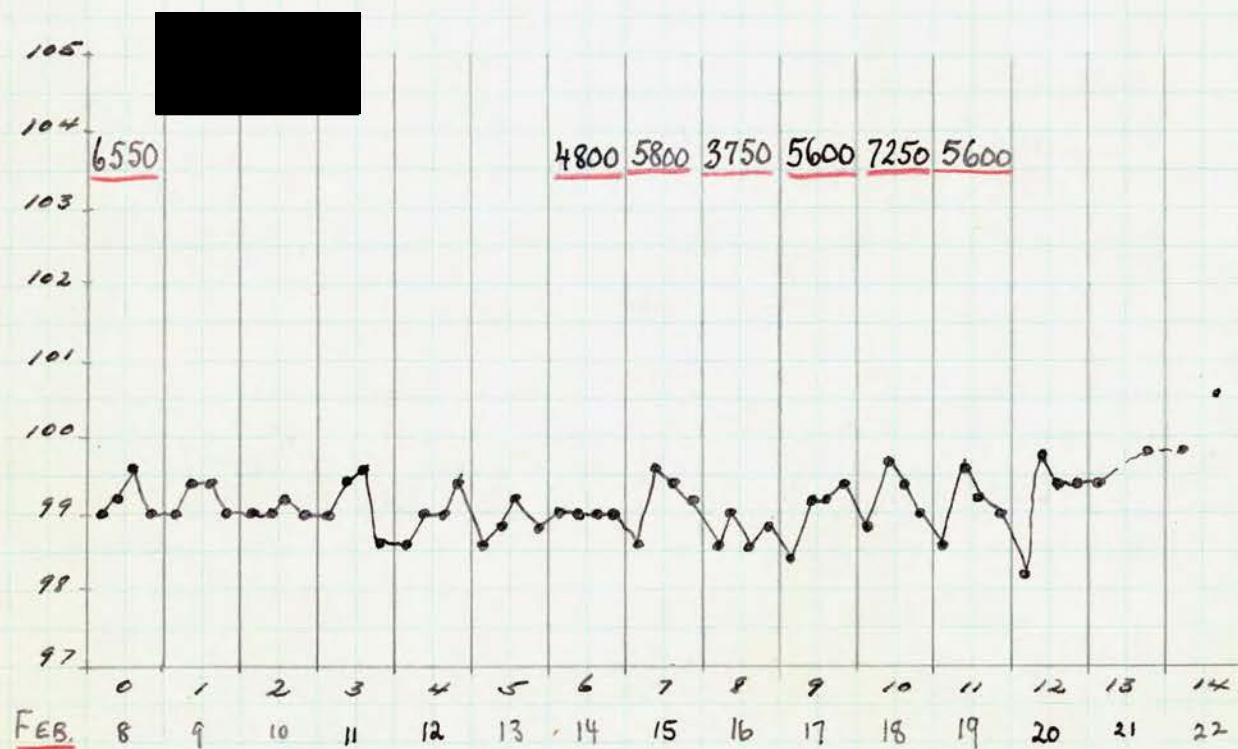
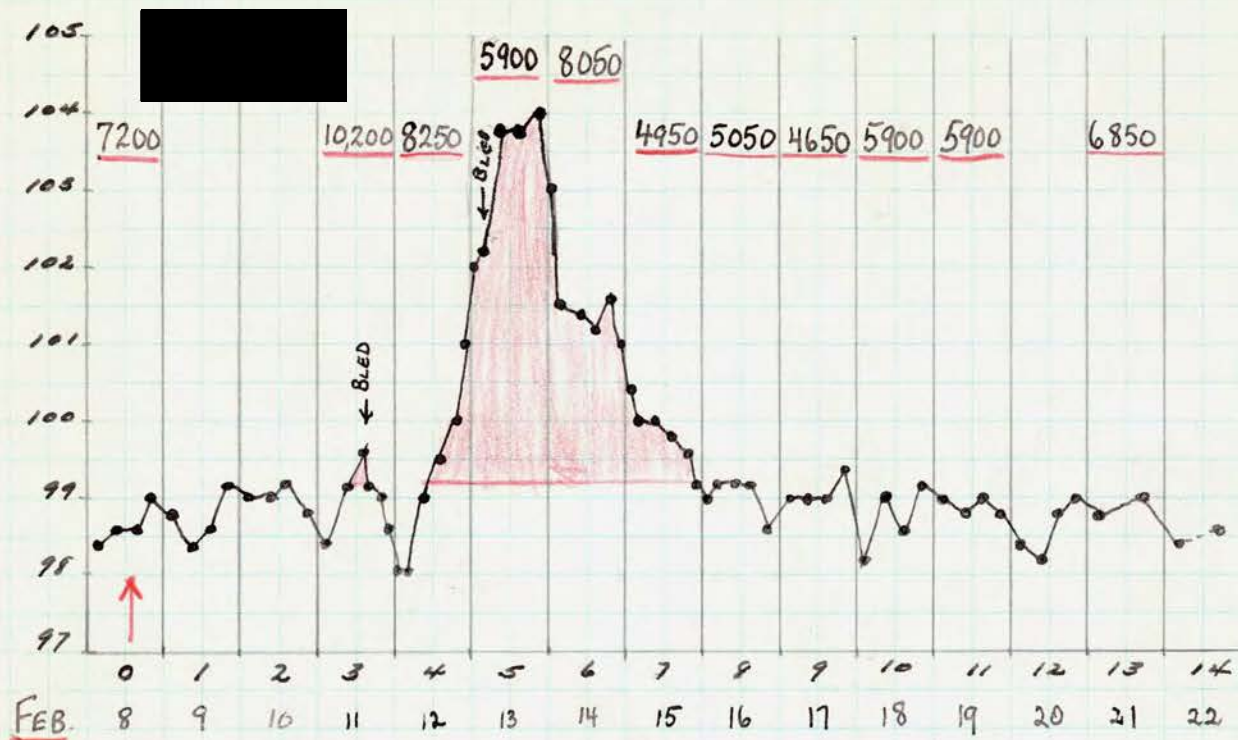
papules 3x3 mm.

MIDDLE EAST VIRUS — FROZEN SERUM STORED ABOUT 6 MONTHS



1cc BERNARD-ROGOZ INTRACUT.

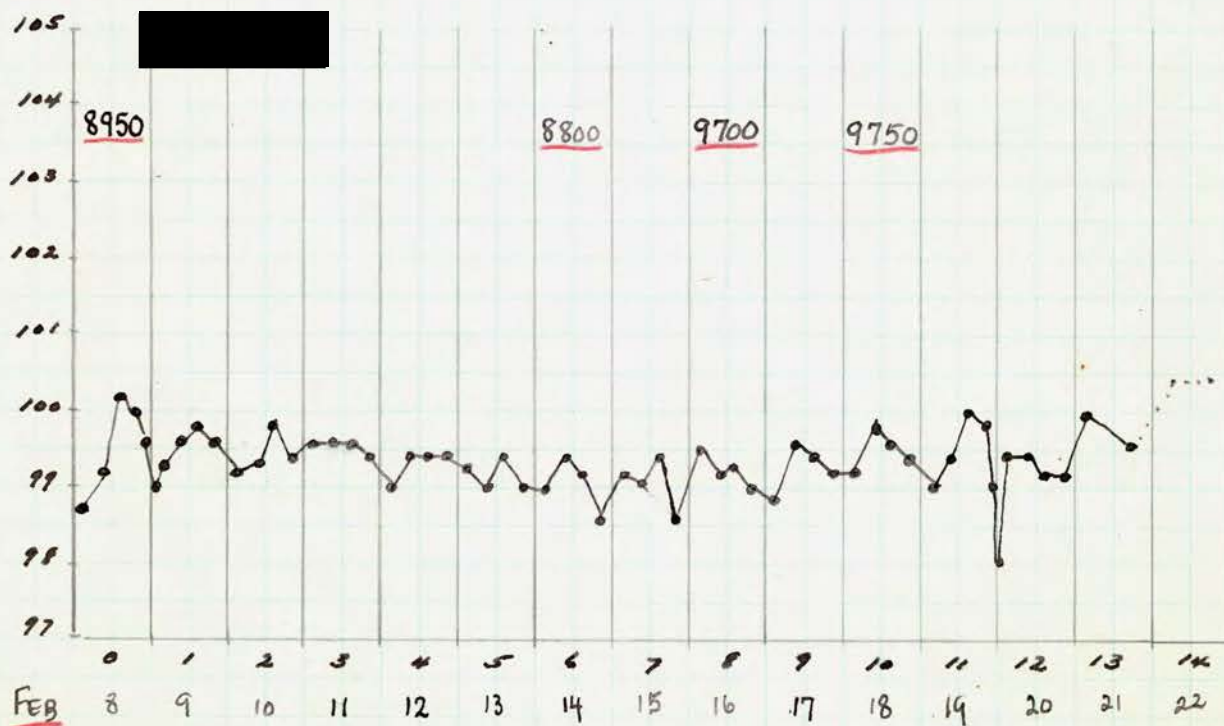
MIDDLE EAST VIRUS - LYOPHILIZED VIRUS STORED ABOUT 6 MONTHS



1cc OF LYOPHILIZED POOL II (BERNARD, ROGOZ, PRINCE, DEMPSEY, BERRY)

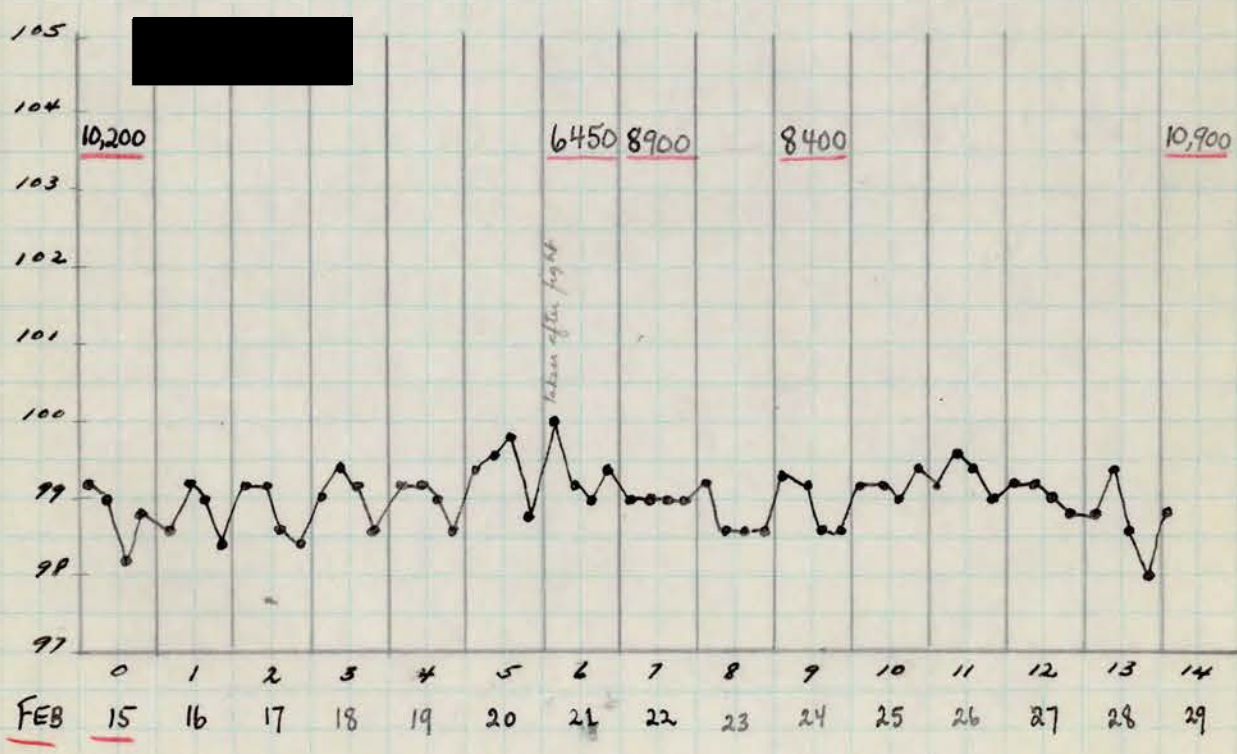
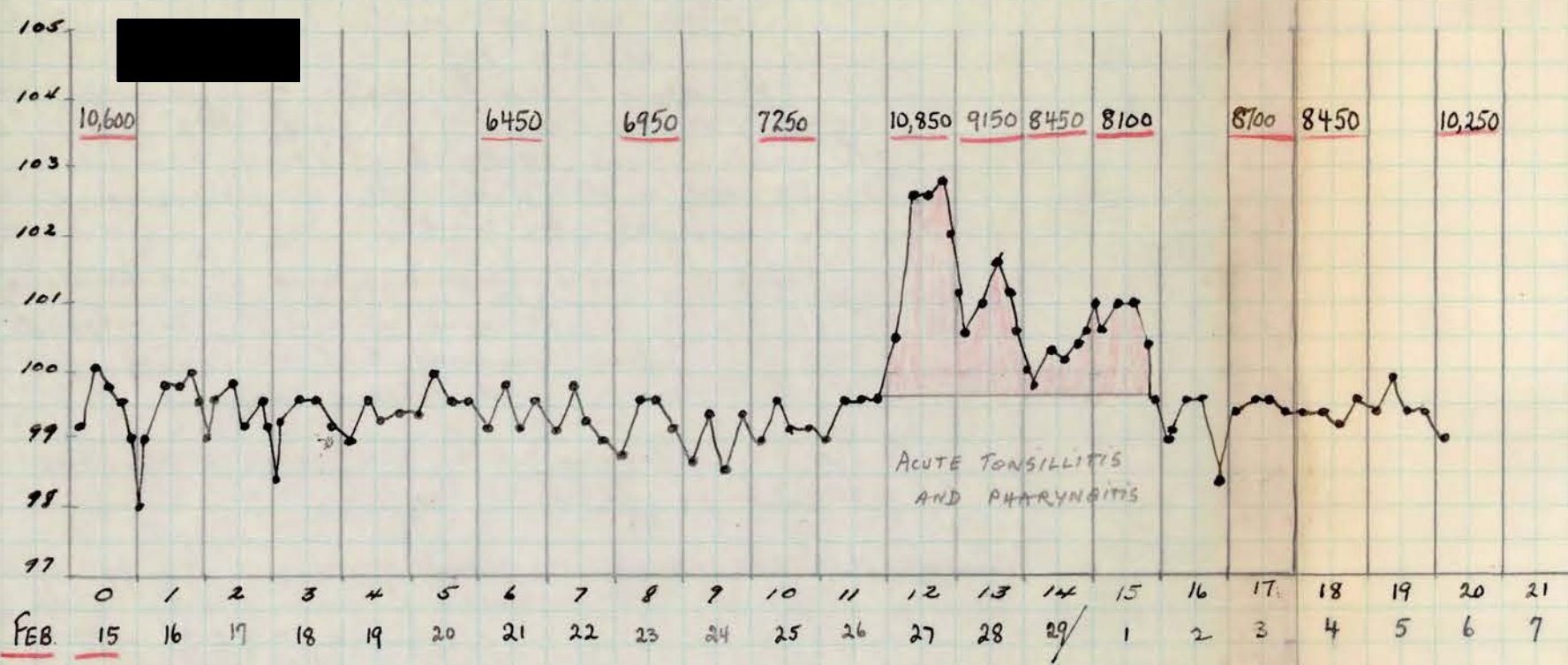
Hand-drawn line graph showing a time series from February 8 to February 22. The y-axis ranges from 97 to 105. The graph shows a fluctuating line with two red arrows pointing to local minima on Feb 8 and Feb 21. Four values are labeled above the line: 7700, 10,400, 11,150, and 7100.

Date	Value (approx.)
FEB 8	98.5
FEB 9	98.8
FEB 10	98.5
FEB 11	99.0
FEB 12	98.8
FEB 13	98.2
FEB 14	97.8
FEB 15	98.5
FEB 16	99.0
FEB 17	98.5
FEB 18	99.0
FEB 19	98.8
FEB 20	99.0
FEB 21	97.5
FEB 22	98.5



2cc 1. CUT. OF FROZEN + LYOPHILIZED 1st DAY CSF (Bernard)
15cc 1. VEN. " " " " " "
+ 2ND " " (Prince
BERRY)

MIDDLE EAST VIRUS — 3RD PASSAGE CHICK EMBRYO CULTURE



2cc of 20% SUSPENSION INTRACUTANEOUSLY

Ford - FEB. 27 - About 12 days after inoculation of chick embryo culture temperature suddenly rose to 102.5°F

Patient has no complaints - only wants his clothes so he can get out of bed.

He appears comfortable - no hyperpnea, no cough, or evidence of rhinitis. Neck not stiff. No rash - no evidence of any reaction (urticarial or other) at site of intracut. injections.

Eyes - not injected

Throat - right tonsillar area is oedematous and red and presents yellowish white patches, ~~and~~ which are easily wiped away, and cheesy deposits

No lymphadenopathy in neck or elsewhere.
Abdomen etc. - neg.

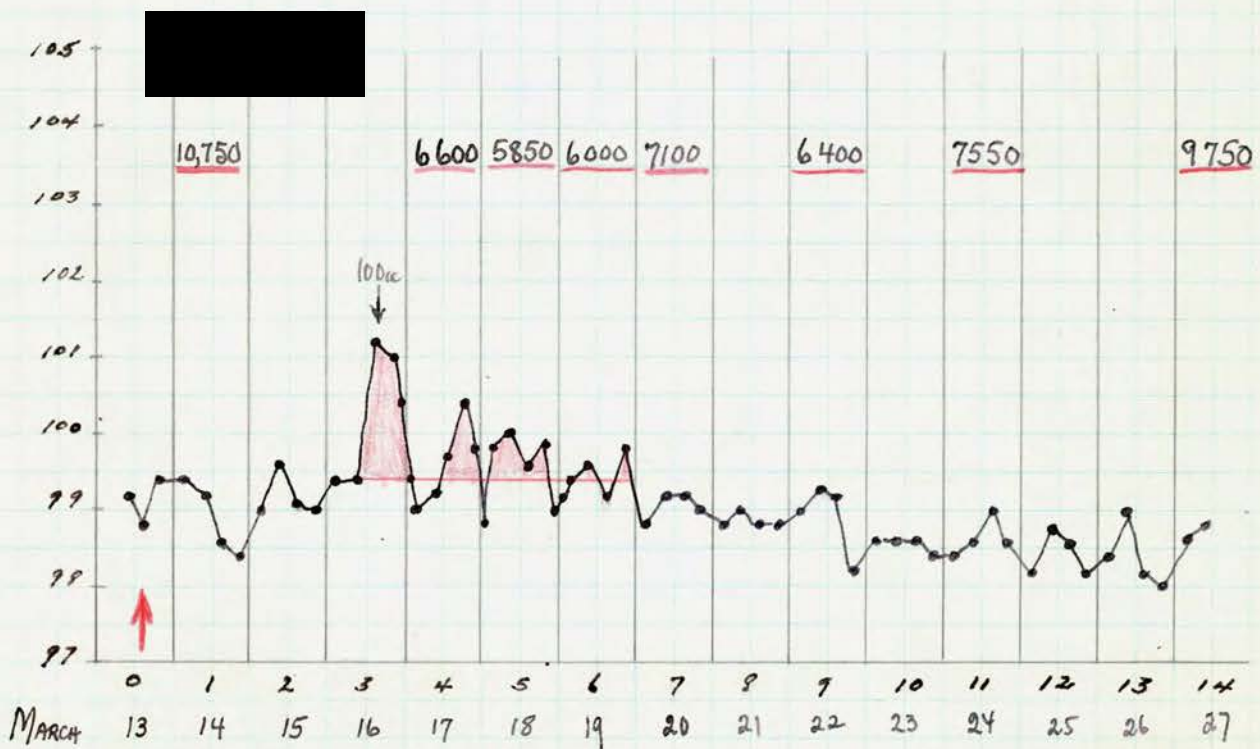
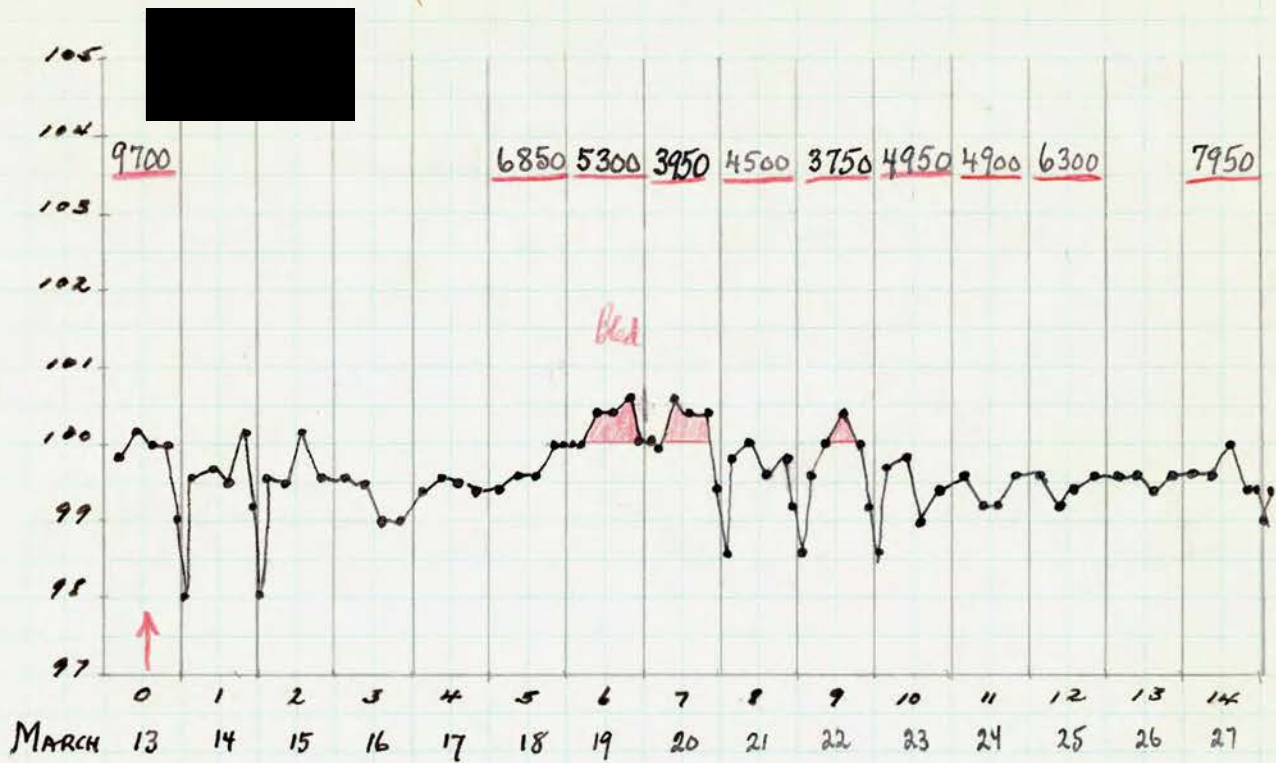
Smear of Throat Swab - usual variety of gm. pos. and gm. neg. cocci and bacilli, as well as fusiform organisms. Nothing predominating

Culture of throat swab - on blood agar -

Blood taken at 1:45 p.m.

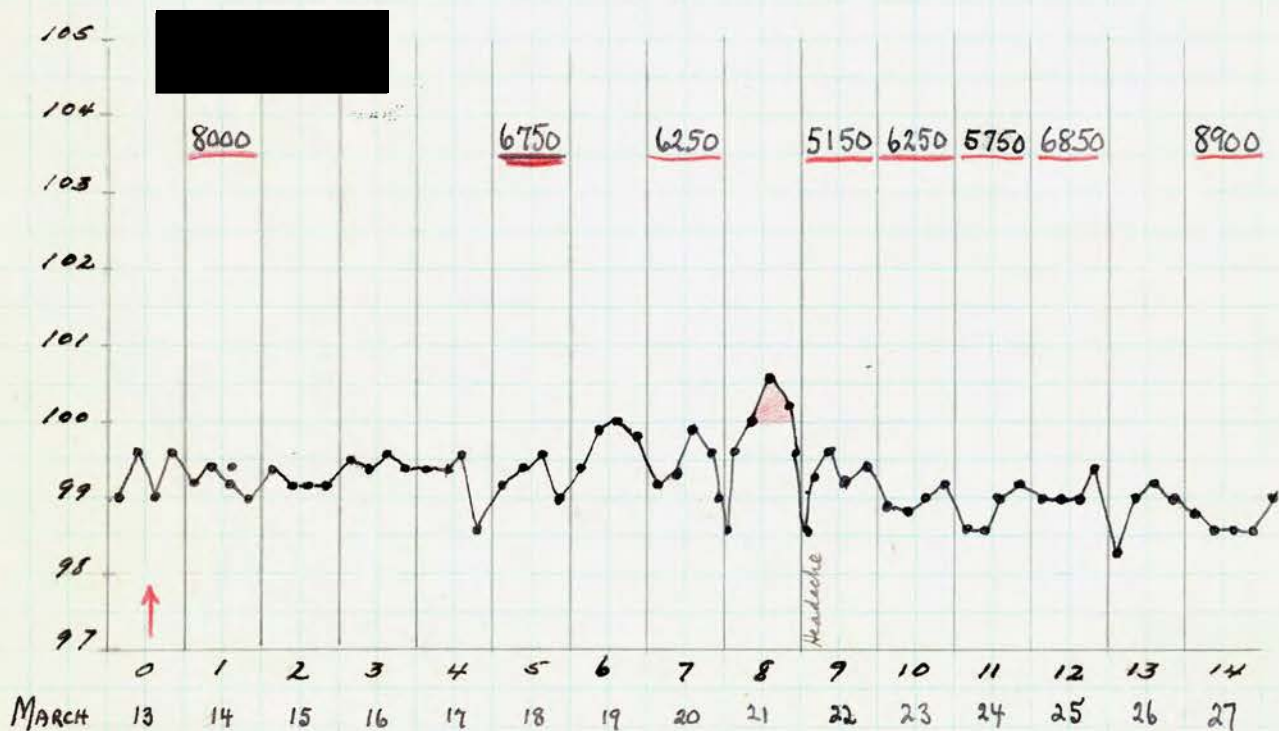
MIDDLE EAST VIRUS -

IMMUNITY OF SUBJECTS INOCULATED WITH
3RD PASSAGE CHICK EMBRYO CULTURE
4 WEEKS AGO



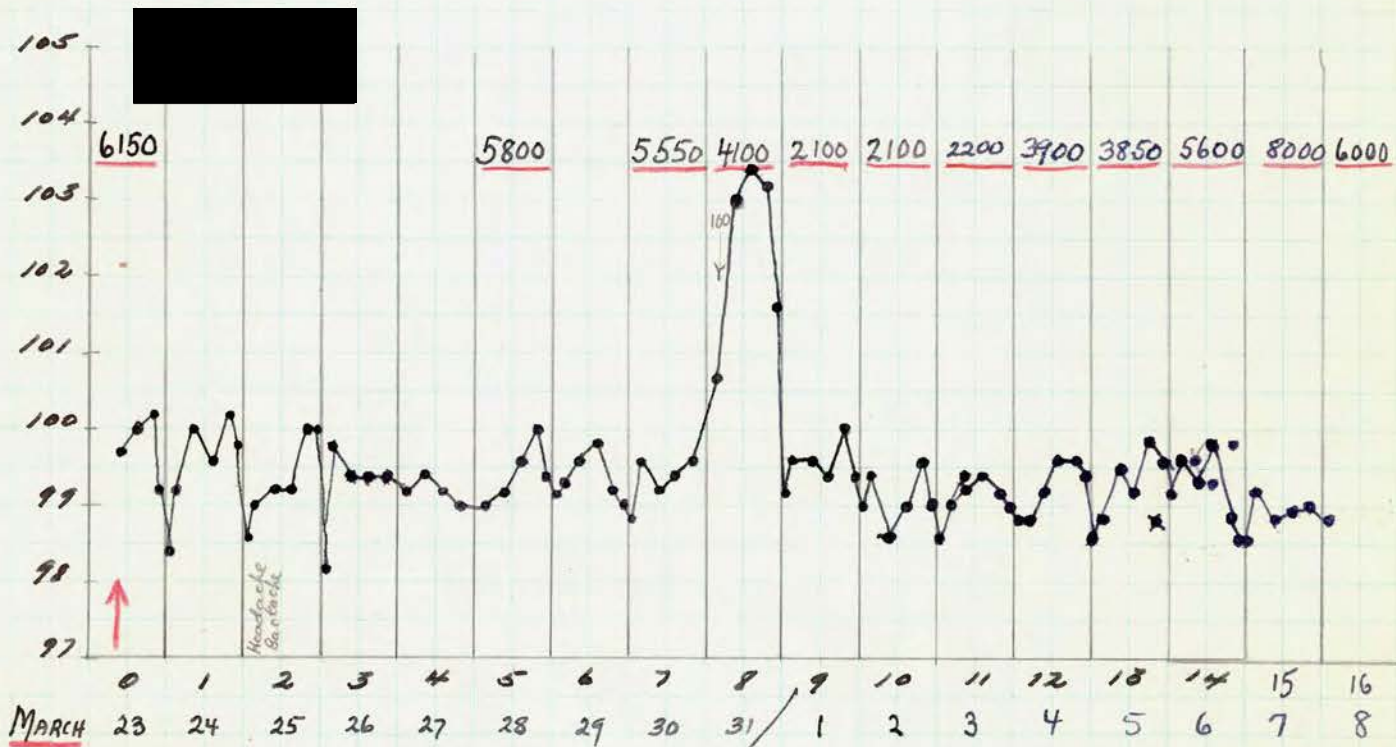
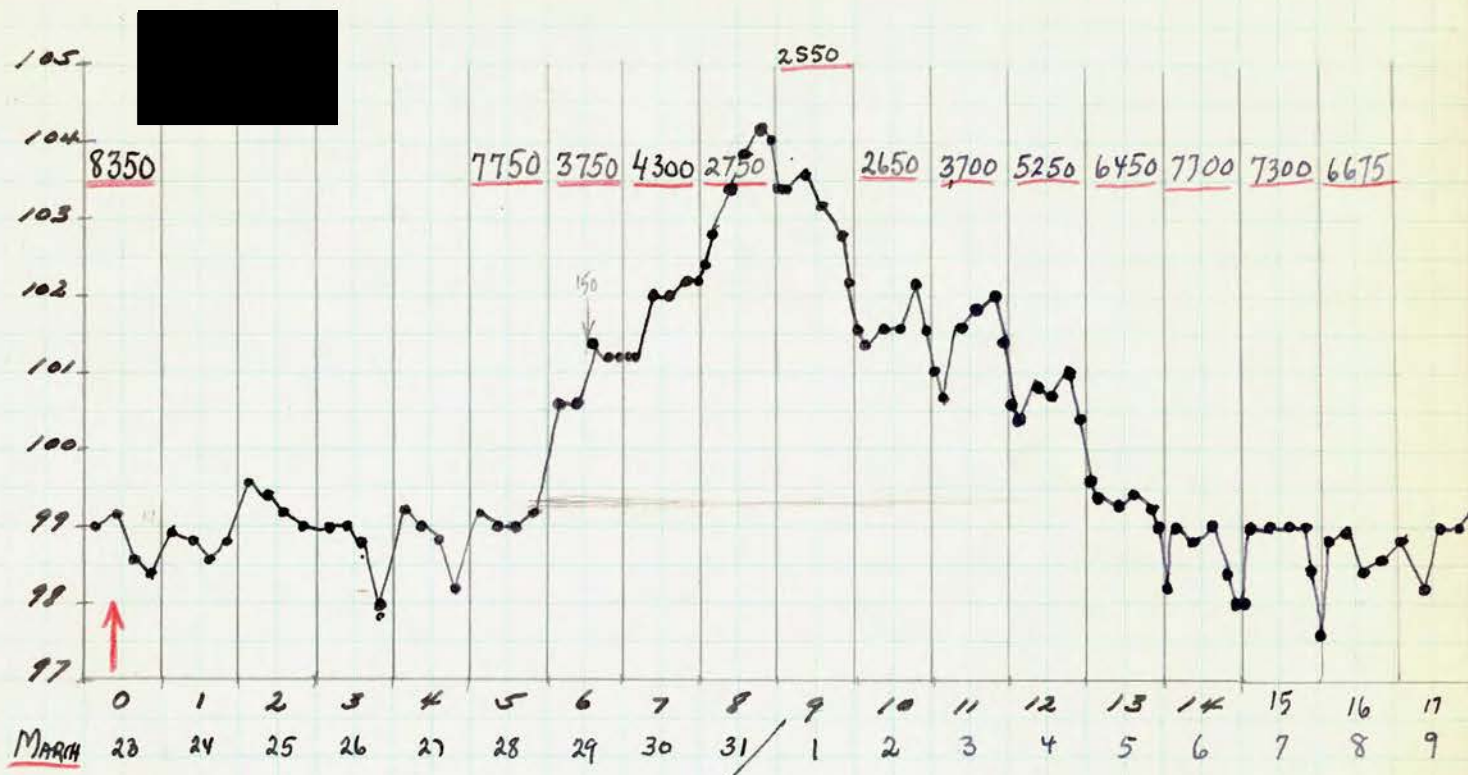
1cc of 6TH PASSAGE VIRUS (LUNSFORD + WARREN) INTRACUTANEOUSLY

- a) TEST FOR SUSCEPTIBILITY OF SUBJECTS PREVIOUSLY INOCULATED WITH SUBINFECTIVE DOSE
- b) CONTROLS FOR IMMUNITY TEST ON SUBJECTS INOCULATED WITH CHICK EMBRYO

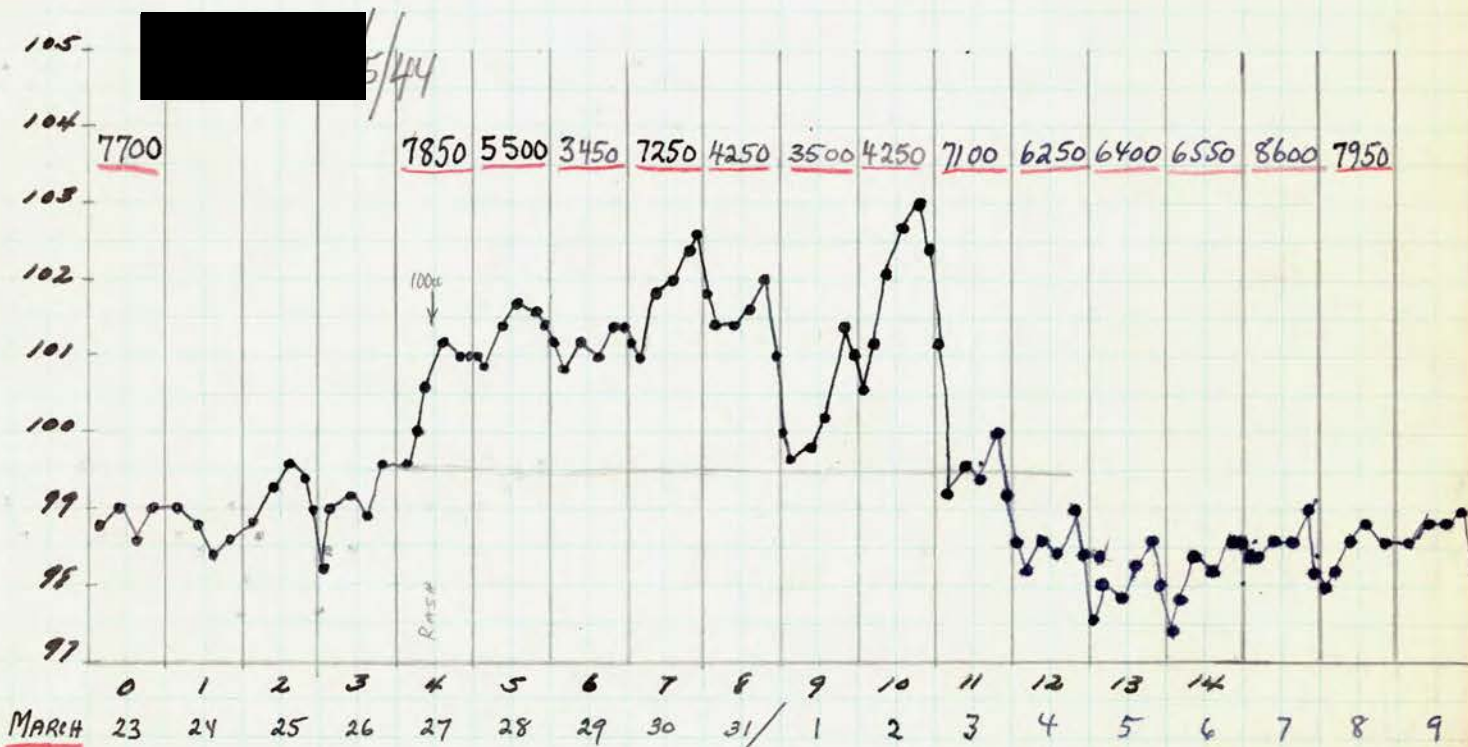
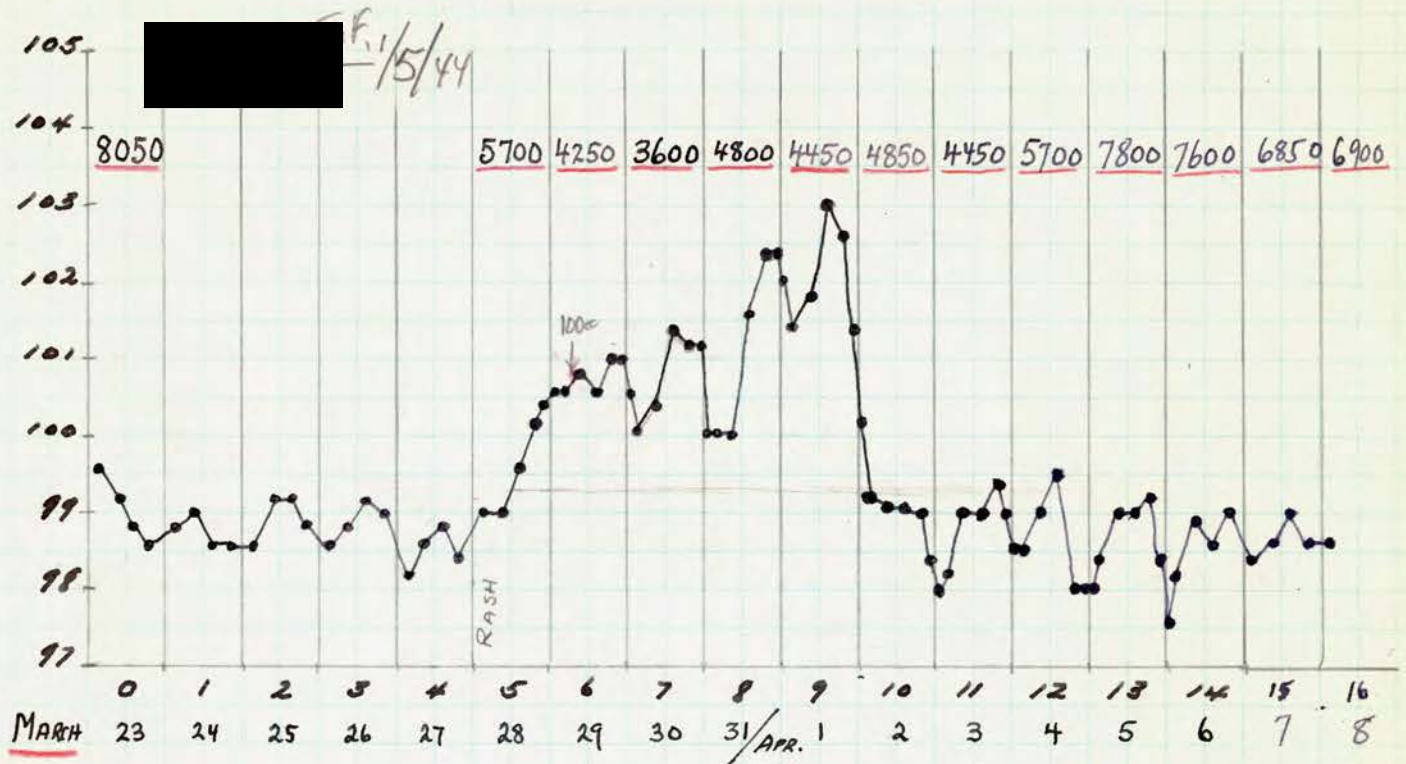


1 cc of 6th PASSAGE VIRUS (LUNSFORD + WARREN) INTRACUTANEOUSLY

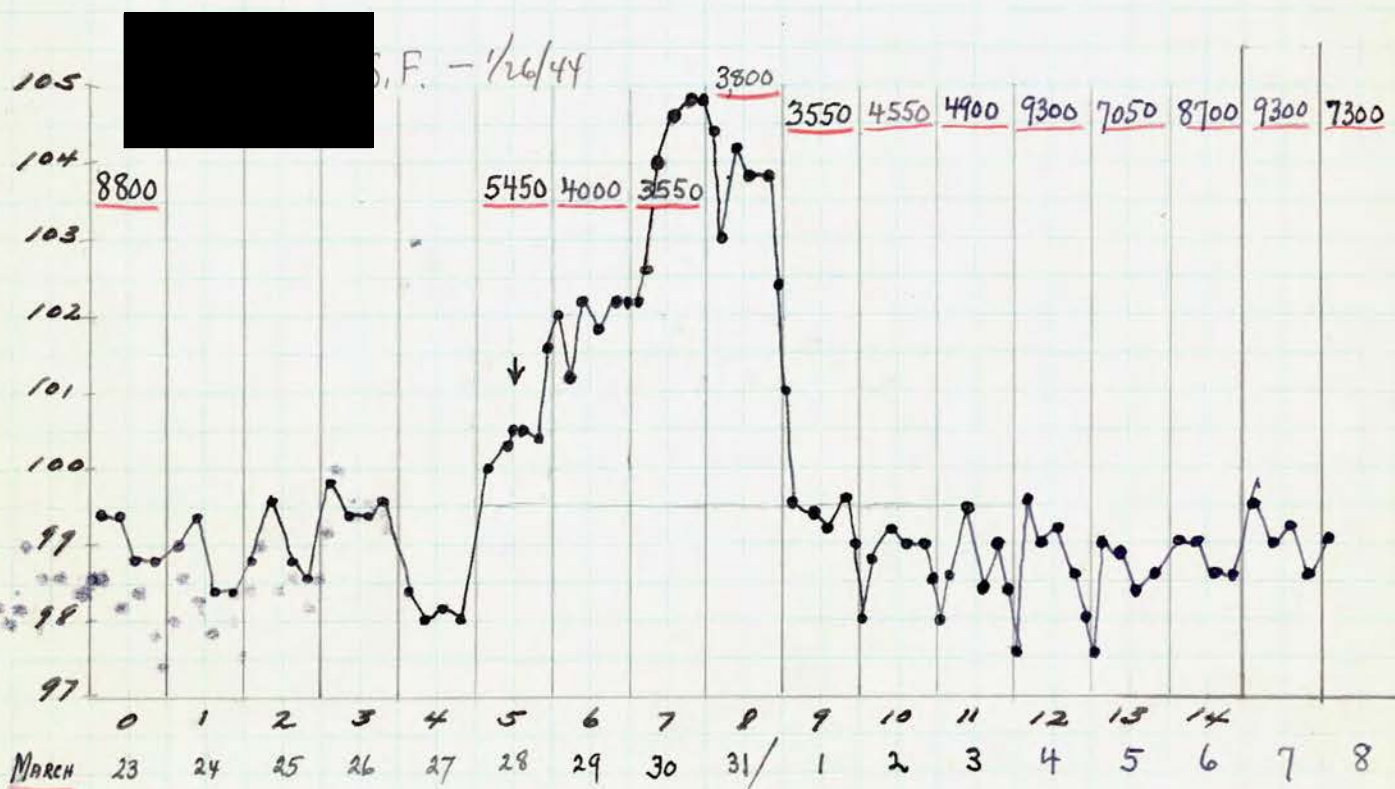
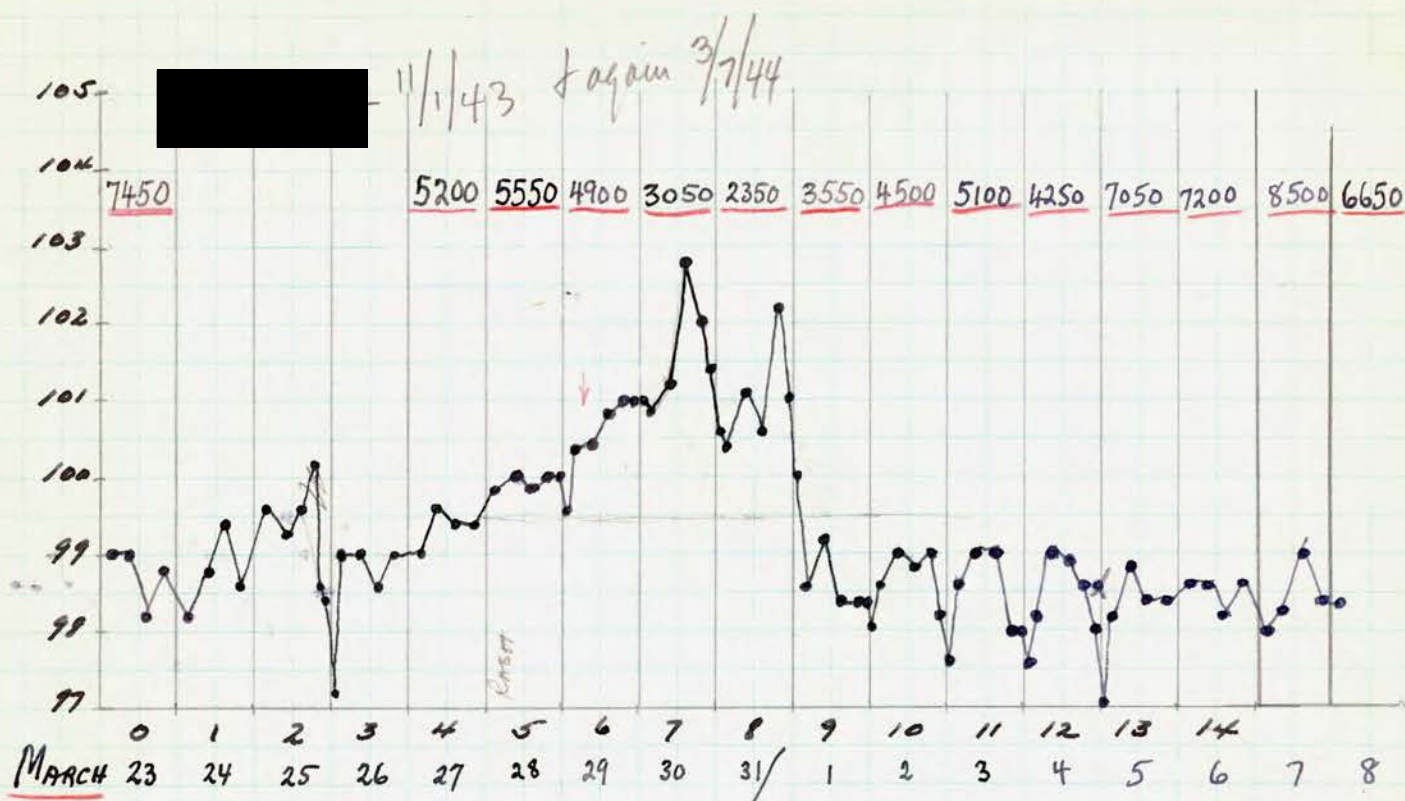
TEST FOR DENGUE VIRUS - "NEW" SUBJECTS



TEST FOR DENGUE VIRUS ~~IN~~ SUBJECTS HAD PALEBOTOMUS FEVER (MIDDLE EAST STRAIN)



TEST FOR DENGUE VIRUS - SUBJECTS HAD PHLEBOTOMUS FEVER (SICILIAN STRAIN)



Further Test of Pathogenicity of Infectious Phlebotomus Fever

SERUM FOR HAMSTERS

FEB. 11, 1944

VIRUS USED - SICILIAN STRAIN - Pool of sera from



- freshly drawn - 2.5cc
 - frozen since 1/22/44 - 2.5 "
 - " " " - 2.0 " }
- proved infectious in human

HAMSTERS - 1 MALE - 56 Gm.; 5 females - 51, 56, 56, 57, and 58 Gm.

ROUTE OF INOCULATION - 0.06cc intracerebrally
1.0cc part i.c. and rest i.p.
0.2cc into right testis of male

FEB. 12 - all ex.; skin sites negative. One shows swollen post. extremity over metatarsal region

1

0-822
mm 222
1427/20

Jan 30
Jan 31
Jan 31
Jan 30
98/8
130/12
60/15

FEB. 11, 1944

PASSAGE of BRAIN AND VISCERA OF HAMSTERS 7, 8, and 12
which succumbed in Middle East.

MATERIAL INOCULATED - TISSUE SUSPENSIONS FROZEN in solid CO_2

Brain of 7+8 AND 12 - pooled - 0.06cc i. cer

remaining 6cc
pooled with viscera

of 7+8 and 12

total = 15cc. — 0.2cc i. cut
2.3cc i. p.

HAMSTERS - 6 females weighing 48, 49, 50, 52, 63 and 64 Gm.

FEB. 12 - all ok.; only small uninfamed papules at i. cut. sites