242.5 PAY ROLLS

G Co 85TH INFANTRY CAC

V-140

Sheet No. 1

PAY ROLL

DECLASSIFIED
Authority NND 963078

COMPANY "G" 85TH INFANTRY-REGIMENT - PAY ROLL
(Dept. or Unit)

WE HEREBY CERTIFY to have received from _____ Officerof _____ the sum herein specified opposite our respective names, the same being in full compensation for our services rendered during the period stated below, to the correctness of which we hereby severally certify.

No.	Names	Rank	Per. Serv. From -To	Amount	Signature of Payee
1.	Federico Y. Baguio	1"Lt		P 100-	
2.	Florentino R. Atillo	2"Lt		100-	
3.	Lope Narra	Capt		100-	
4.	Mario B. Bihag	2"Lt		100-	
5.	Sotero Tumulak	1/Sgt		25-	
6.	Gerardo L. Peñas	Sgt.		25-	
7.	German Cabigas	Sgt.		25-	
8.	Moises Golis	Sgt.		25-	
9.	Fedil Mangyao	Sgt.		25-	
10.	Rufino Tampus	Sgt.	1-6	25-	
11.	Vicente Enriquez	Corp	10	25-	
12.	Vicente Betio	"	1	25-	
13.	Anicito Caballero	"		25-	
14.	Silverio Englis	"		25-	
15.	Rufino Escuto	"		25-	
16.	Cosme Guinto	"		25-	
17.	Angel Nuñez	"		25-	
18.	Alejandro Martil	"		25	
19.	Juanito Sabay	"		25-	
20.	Florentino Tabal	"		25-	
21.	Pedro Tampus	"		25-	
22.	Bonifacio Abalos	Pfc.		25-	
23.	Maximo Abella	"		25-	
24.	Ambrosio Bacong	"		25-	
25.	Fortunato Badayos	"		25-	
26.	Marciano Biscutso	"		25-	
27.	Lorenzo Claros	"		25-	
28.	Candido Codilla	"		25-	

TOTAL AMOUNT CARRIED FORWARD - - - - P 1000.00

I Object. To find the velocity of sound in air.

II Apparatus. Kundt's apparatus consisting of a [illegible] tube filled with a piston rod is attached to [illegible] of metal or other hard elastic substance, a [illegible] of chalk, resin, dry cork dust, and a thermometer.

III Data:

Wave length of sound in the gas as shown by dust

First trial	Second trial	Third Trial
5.5	5.5	5.6
5.6	5.2	5.7
5.7	5.3	5.5
5.6	5.5	5.4
	5.5	5.4
	5.6	5.5
	5.6	5.5

Temperature 27°C

Computation:

5.5
5.6
5.7
5.8
22.60 ÷ 4 = 5.65 cm mean

5.5
5.2
5.3
5.5
5.5
5.6
32.60 ÷ 6 = 5.43 cm mean

5.6
5.7
5.5
5.4
5.4
5.5
5.5
38.60 ÷ 7 = 5.5 mean

5.65
5.43
5.57
16.65 ÷ 3 = 5.53 cm. av. mean

× 2
11.06 ÷ 100 = .1106 m = wave length of gas

V_0 = 331.4 m/sec velocity of sound in air at 0°C

Formula: $V_t = V_0 \sqrt{1 + .00367 \times t}$

$= 331.4 \sqrt{1 + .00367 \times 27}$

$= 33.4 \sqrt{1 + .099009}$

$= 33.4 \sqrt{1.099009}$

$= 33.4 \times 1.048$

$= 347.3092$ m/sec Velocity of sound in air.

.6 m/sec corresponding increase of V_t for every 1°C increase

× 27.1

16.3 m

331.4 m
+ 16.3 "
347.7 m/sec V_t by using temp. at 27°C

347.3 " " " by permental value
.4 m difference

∴ .4 ÷ 347.7 = .001 or 1% Error

Length of the rod = 76.5 cm
× 2
153 cm wave length, λ_t

V_t = 34730 cm/sec; λ_t = 11.06

Formula: $V_0 = V_t \frac{\Delta t}{\lambda_t}$

$V_0 = 34730 \times \frac{153}{11.06} = \frac{5313690}{11.06}$

V_0 = 471,400 cm/sec velocity of sound in roo

V-140

COMPA.Y "G" 85TH INF- PAY ROL. Sheet No. 2

No.	Names	Rank	Per. Serv. From- To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD - - - - -			P 1000-	
29.	Cresenciano Cabaeàlre	Pfc		25-	C. Caballero
30.	Jose Ilauria	"		25-	J. Ilauria S.E.
31.	Jose Incorporado	"		25-	Jose Incorporado SCT
32.	Pedro Rigardo	"		25-	P Rigardo
33.	Genovevo Baring	"		25-	G. Baring
34.	Victoriano Abendan	Pvt.		25-	Victoriano Abendan
35.	Eduardo Abonayan	"		25-	Eduardo Abonayan SCT
36.	Salvino Agacayan	"		25-	Salvino Agacayan
37.	Agapito Alivio	"		25-	Agapito Alivio
38.	Juan Archibal	"		25-	Juan Archibal
39.	Pantaleon Archibal	"	16	25-	P. Archibal S.E.
40.	Demetrio Avila	"	80 4	25-	Demetrio Avila
41.	Gavino Bacong	"	1	25-	Gavino Bacong
42.	Luis Bacong	"		25-	Luis Bacong
43.	Simeon Bacong	"		25-	Simeon Bacong
44.	Manuel Badal	"		25-	M. Badal S.E.
45.	Elino Banate	"		25-	E. Banate S.E.
46.	Eufemio Barriga	"		25-	Eufemio Barriga
47.	Francisco Bellita	"		25-	Francisco Bellita
48.	Jose Bitoon	"		25-	Jose Bitoon
49.	Ramon Bitoon	"		25-	Ramon Bitoon
50.	Alejandro Bughao	"		25-	By Pvt Cabatingo Alejandro Bughao
51.	Marcos Bontilao	"		25-	Marcos Bontilao
52.	Julio Cani	"	3/5/50	25-	Julio Cani SCT
53.	Felino Capoy	"		25-	Felino Capoy
54.	Simeon dela Cerna	"		25-	Simeon dela Cerna
55.	Francisco Codilla	"		25-	Francisco Codilla
56.	Macario dela Cruz	"		25-	Macario dela Cruz SCT
57.	Santiago Dieparine	"		25-	Santiago Dieparine
58.	Juan Enriquez	Transferred to 86th		25-	X
59.	Primitivo Espiñoza	"		25-	Primitivo Espiñoza
60.	Pablo Fernandez	"		25-	P. Fernandez S.E.
	TOTAL AMOUNT CARRIED FORWARD - - - -			P1800.00	

Carlos Pascual Experiment II Jan ...

I. Object: To find the frequency of the vibrati...

II. Apparatus: Electrically driven tuning fork, ... weights, and meter stick.

III. Data

1. Parallel

	1st	2nd	3rd
Tension in grams	170	100 grams	60 grams
Length of string	100 cm	100	100 cm
Number of Segments	3	4	5
Length of 1st segment	32 cm	24 cm	19.25 cm
" 2nd	33 "	26 "	20.5 "
" 3rd	34 "	25 "	19.2 "
" 4th	—	26	20.5 "
5th	—	25 "	20.9 "
Av. length of Segment	33 cm		19.9 "

Vertical

	1st	2nd	3rd
Tension in grams	50	30 grams	15 grams
Length of String	100 cm	100 cm	100 cm
Number of Segment	3	4	5
Length of 1st Segment	32	24 cm	20.5 cm
" 2nd	34	25 "	20 "
" 3rd	34	26 "	19.5 "
" 4th	—	25 "	20.5 "
" 5th	—	25 "	20 "
Av. length of Segments	33 cm		20 "

Parallel fas:

N equals $\frac{1}{2l}\sqrt{\frac{T}{m}}$

$3 \times 3 = 9 \times 170 = 1530$ grams
$4 \times 4 = 16 \times 100 = 1600$ "
$5 \times 5 = 25 \times 60 = 1500$ "
4630 grams

$4630 \div 3 = 1533$; 1 gram = 980 dynes
$1533 \times 980 = 1502340 = T$; $N = 121.575$

Vertical fas:

$3 \times 3 = 9 \times 50 = 450$ grams
$4 \times 4 = 16 \times 30 = 480$ "
$5 \times 5 = 25 \times 15 = 375$ "
1305 grams

$1305 \div 3 = 435$, $435 \times 980 = 426300$

$N = \frac{1}{2l}\sqrt{\frac{426300}{.00235}}$ $N = \frac{1}{200}\sqrt{\frac{426300}{.00235}}$

$N = 77.09$

$77.09 + 121.575 = 198.665$; $198.665 \div 2 = 99+$ or 100

Experimental value of n = 100
accepted " " " = 128   128 − 100 = 28 difference

$28 \div 128 = .22$ or 22% Error

IV. Remarks: The laws of vibrating string holds true. Error is due to inaccuracy in the performance

D-140

COMPANY "G" 85TH INF- PAY ROLL

Sheet No. 3

No.	Names	Rank	Per. Serv. From - To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD - - - - - -			P1800.00	
61.	Celestino Gardavan	Pvt.		25.00	Celestino Gardavan
62.	Ricardo Generosa	"		25.00	Ricardo Generosa
63.	Canuto Goc-ong	"		25.00	
64.	Pedro Huntong	"		25.00	Pedro Huntong
65.	Felicisimo Juntilla	"		25.00	Felicisimo Juntilla
66.	Pedro Labita	"		25.00	
67.	Pascual Lapasigue	"		25.00	Pascual Lapasigue
68.	Isiderio Luna	"		25.00	I. Luna, Jr.
69.	Juanito Manulat	"		25.00	Juanito manulat
70.	Valentin Mata	"		25.00	Valentin Mata
71.	Concurdio Matugas	"		25.00	Concurdio Matugas
72.	Ricardo Morales	"		25.00	R. morales, Jr.
73.	Victor Narra	"		25.00	
74.	Wencislao Nuñez	"	Paid	25.00	
75.	Marcial Oliverio	"		25.00	Marcial Oliverio
76.	Eliseo Oliverio	"		25.00	E. Oliverio Jr.
77.	Jesus Pasay	"		25.00	Jesus Pasay
78.	Colastico Pepito	"		25.00	
79.	Delfin Puebla	"		25.00	Delfin Puebla
80.	Jose Pahugot	"		25.00	
81.	Salvador Rabago	"		25.00	
82.	Zacarias Rabago	"		25.00	
83.	Jesus Racasa	"		25.00	
84.	Francisco Ragudos	"		25.00	
85.	Vicente Sabillo	"		25.00	
86.	Pastor Sabroso	"		25.00	Pastor Sabroso
87.	Pedro Tabal	"		25.00	Pedro Tabal
88.	Cristito Viscayno	"		25.00	Cristito Viscayno
89.	Tomas Hermoso	"		25.00	Tomas Hermoso
90.	Generoso Cuirbo	"		25.00	
91.	Marcial Lawas	"		25.00	Marcial Lawas
92.	Mauricio Dargantes	Corp		25.00	X
	GRAND TOTAL - - - - - - - - - -			P 2600.00	

Experiment 5

Carlos Arnal — Jan. 11, 1937

I Object: To find the velocity of sound in air from resonance experiment upon a closed pipe, and to find the correction which must be applied at the open end.

II Apparatus: Glass resonance tube, tuning forks, rubber hammer & thermometer.

III Data:

	First trial	Second trial	Mean
A First resonant length	31.3 cm	30 cm	30.65
Second " "	98.8 "	98.7"	98.4

Frequency of the fork = 256
Temperature reading = 28°C

B First resonant length	24.1 cm	24 cm	24.5 cm
Second " "	77.6 "	78 "	77.8 "

Frequency of fork = 320
Temperature reading 28°C

Computation:

A-formula: $L_2 - L_1 = \frac{1}{2}\lambda$ $98.4 - 30.65 = \frac{1}{2}\lambda$

$67.75 = \frac{\lambda}{2}$; $\lambda = 135.5$

formula for velocity $S = N\lambda$

Subs: $S = 256 \times 135.5 = S$

$S = 34,688$

B-formula: $L_2 - L_1 = \frac{\lambda}{2}$; $\lambda = 106.6$

formula for velocity; $S = N\lambda$

$S = 320 \times 106.6 = 34,112$ cm/sec

Finding the theoretical value

formula: $S = \sqrt{\gamma \times P \times \text{degree of freedom} \times \text{pressure of mercury} \over \text{density of air}}$

$\gamma = 1.402$

Subs: $S = \sqrt{1.402 \times 75.65 \times 980 \times 13.6 \over 0.00130}$

$S = 34,996.5$

$68,990 = 34,495$ Expt. value

34,112 — 34,996.5 (standard value)
+ 34,688 — 34,495 (experimental value)
68,990 — 501.5 = difference

$501.5 \div 34,996.5 = .017$ or 1.7% Error

V-140

COMPANY "G" 85TH INF- PAY ROLL Sheet No. 4

(1) I HEREBY CERTIFY on my official oath that this list is made to identify all the officers and enlisted men under this unit or department and that entries pertaining to each name are correct.

August 30 19 44

FEDERICO Y. BAGUIO
Bvt. 1st Lieut., 85th Inf-
Commanding

(2) APPROVED FOR PAYMENT:

Reginald O. Smith
(Signature)
Bvt Major
C.O 85th Inf
(Designation)

(3) I HEREBY CERTIFY on my official oath that I have paid in cash to each officer and enlisted man whose name appears on the above roll the amount set opposite his name, he having signed or marked his name in my presence and at the time that payment was made to him, in acknowledging receipt of the money paid him.

August 30. 19 44

Cash Brk
10/2/44

(Signature)
B. 1st Lieut., 85th Inf
Commanding
(Designation)

Formula: $S = \sqrt{\frac{\gamma \times P \times \text{dynes} \times \text{Pressure of mercury}}{\text{Density of air}}}$

$\gamma = 1.403$

Subs: $S = \sqrt{\frac{1.403 \times 75.65 \times 980 \times 13.6}{.00155}}$

$S = 34996.5$

68790 ÷ 2 = 34395 expt. (experimental)

34112
34678
68790

34996.5 (theoretical)
− 34395 (exptal.)
601.5 dif.

601.5 ÷ 34,996.5 = .017 or 1.7% Error

Determination of X:

3.63 diameter of tube
1.815 radius of tube

First res. wave length − 30.65 cm
Second " " " − 98.4 "

98.4 ÷ 3 = 32.8 ¼ the wave length (sound)

32.8 + 30.65 = 63.45; 63.45 ÷ 2 = 31.725

31.725 − 30.65 = 1.075 Value of X

UNITED STATES FORCES IN THE PHILIPPINES
CEBU AREA COMMAND
COMPANY "C", 85TH INFANTRY

October 23, 1944

Subject: Cash, Return of
To : The Commanding Officer, 85th Inf
(Thru the CO, 2nd Bn., 85th Inf)

1. The sum of TWO HUNDRED FIFTY PESOS (₱250.00) in Japanese Currency together with the corresponding Pay Roll for this Unit is sent to that Headquarters with the following explanation:

Total Cash received - - - - - - - - -	₱2800.00
Total Cash paid to officers & E/M -	2550.00
Balance (Returned) -	250.00

2. The following E/M are not paid their partial pay for reasons indicated opposite their names:

a- Corp. Dargantes, Mauricio - Missing
b- Pvt. Enriquez, Juan - trfd to Ord. Co., CAC

3. Acknowledge receipt.

[signature]
1st Lieut., 85th Inf.
Commanding

3 INCLS:
Incl 1- 50-FIVE-PESO-BILL, (₱250.00) in Japs Cy
Incls 2 & 3 - Two copies of Pay Roll

Cash Brot
10/29/44

DECLASSIFIED
Authority NND 883078

or special
eneral Col-
n the last

V-140

Sheet No. 1

PAY ROLL

COMPANY "G" 85TH INFANTRY-REGIMENT - PAY ROLL
(Dept. or Unit)

WE HEREBY CERTIFY to have received from ______________
Officer of ______________
[illegible] specified opposite our respective names, the same being in full compensation for [illegible] services rendered during the period stated below, to the correctness of which we hereby severally certify.

No.	Names	Rank	Per. Serv. From - To	Amount	Signature of Payee
1.	Federico Y. Baguio	2"Lt		✓ 100.-	[illegible]
2.	Florentino R. Atillo	2"Lt		✓ 100.-	[illegible]
3.	[illegible] Morra	Capt		✓ [illegible]	Jose Morra
4.	[illegible] E. Bihag	2"Lt		✓ [illegible]	M. Bihag. S. E.
5.	Sotero [illegible]	1/Sgt		✓ 25.-	[illegible]
6.	Gerardo L. Pe[illegible]as	Sgt.		✓ 25.-	[illegible]
7.	German Cabigas	Sgt.		✓ 25.-	G. Cabigas
8.	Moises Golis	Sgt.		✓ 25.-	M. Golis S. E.
9.	[illegible]	Sgt.		✓ [illegible]	[illegible]
10.	Rufino Tampus	Sgt.		✓ [illegible]	Rufino Tampus
11.	Vicente Enriquez	Corp		✓ 25.-	[illegible]
12.	Vicente Bello Eduardo [illegible]	"		✓	[illegible]
13.	Anicito Caballero	"		✓ 25.-	[illegible] Caballero
14.	Silverio English	"		✓ 25.-	S. English
15.	Rufino Escoto	"		✓ 25.-	Rufino Escoto
16.	Cosme Quinto	"		✓ 25.-	[illegible]
17.	Angel Nuñez	"		✓ 25.-	angel nuñez
18.	Alejandro Martil	"		✓ 25	A. Martil S. E.
19.	Juanito I. Bay	"		✓ 25.-	J. Sabay S. E.
20.	Florentino Tabal	"		✓ 25.-	Fr. Tabal
21.	Pedro Tampus	"		✓ 25.-	P. Tampus
22.	Bonifacio [illegible]	Pfc.		✓ 25.-	[illegible]
23.	Maximo Abella	"		✓ 25.-	maximo abello sc7
24.	[illegible]	"		✓ 25.-	ambrosio Bacung
25.	[illegible]	"		✓ 25.-	Fortunato Bacayo
26.	[illegible]	"		✓ 25.-	M. Biacutso S. E.
27.	Lorenzo Claros	"		✓ 25.-	L. Claros S. E.
28.	Candido Cadilla	"		✓ 25.-	[illegible]

TOTAL AMOUNT CARRIED FORWARD - - - - P 1000.00

DECLASSIFIED
Authority NND 883078

V-140

No.	Names	Rank	Period Covered From	To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD				₱1000.-	
29.	Crescenciano Caballero	Pvt.			✓ 25.-	C. Caballero
30.	Jose Ilusria	"			✓ 25.-	J. Ilusria, S.E.
31.	[illegible]	"	Paid		25.-	
32.	Pedro Rigardo	"			✓ 25.-	P. Regardo
33.	[illegible]	"			✓ 25.-	G. Barong
34.	Victoriano Abendan	Pvt.			✓ 25.-	Victoriano Abendan
35.	Eduardo Alemsan	"			X 25.-	Eduardo Alemsan Sgt
36.	[illegible]	"			✓ 25.-	[illegible]
37.	Agapito Alivio	"			✓ 25.-	Agapito Alivio
38.	Juan Archibal	"			✓ 25.-	Juanito Archibal
39.	Pantaleon Archibal	"			✓ 25.-	P. Achibal, S.E.
40.	Demetrio Avila	"			✓ 25.-	Demetrio Avila
41.	[illegible]	"			✓ 25.-	[illegible]
42.	Luis Bacong	"			✓ 25.-	Luis Bacong
43.	Simeon Bacong	"			✓ 25.-	Simeon Bacong
44.	Manuel Bedal	"			✓ 25.-	M. Bobal, S.E.
45.	Eliseo Baneta	"			✓ 25.-	E. Banateal, S.E.
46.	Eufemio Barrica	"			✓ 25.-	Eufemio Barriga
47.	Francisco Bellita	"			✓ 25.-	Francisco Bellito
48.	Jose Bitoon	"			✓ 25.-	Jose Bitoon
49.	Ramon Bitoon	"			✓ 25.-	Ramon Bitoon
50.	Alejandro Bughao	"			✓ 25.-	By Repito Celestino Alejandro Bughao
51.	Marcos Bontilao	"			✓ 25.-	Marcos Bontilao
52.	Julio Cani	"			25.-	Julio Cani Sgt
53.	Felipe Capoy	"			✓ 25.-	Filipe Capoy
54.	Simeon dela Cerna	"			✓ 25.-	Simeon dela Serna
55.	Francisco Cadilla	"			✓ 25.-	Francisco Cadilla
56.	Macario dela Cruz	"			25.-	Macario dela Cruz Sgt
57.	Santiago Dispacina	"			✓ 25.-	Santiago Dispacina
58.	Juan Enriquez	"			X 25.-	
59.	Demetrio Espinoza	"			✓ 25.-	Demetrio Espinoza
60.	Pablo Fernandez	"			✓ 25.-	P. Fernandis, S.E.
	TOTAL AMOUNT CARRIED FORWARD - - - -				₱1800.00	

B Rod made of Aluminium

Density = 2.75

Formula = $M = V^2 D$

$M = 471,400 \times 2.75$

$M = 222217960000 \times 2.75$

$M = 6,110,999,390,000$ Sq. cm

$\times 980$

$4888795/200000$

$5499894/100000$

$5,877,492,200,000$ dynes/sq. cm modulus of aluminium rod

IV Remarks: In the velocity of sound in gas we obtained a good result. The error was but .1%. We compared it to that which we obtained from the computation depending upon its temperature at 27°C.

DECLASSIFIED
Authority NND 883078

V-140

COMPANY "C" 85TH INF. PAY ROLL

Sheet No. 3

No.	Names	Rank	Per. Serv. From - To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD			1500.00	
61.	Celestino Cardavan	Pvt.		✓ 25.00	Celestino Cardavan
62.	Ricaño Canerosa	"		✓ 25.00	Ricardo Veneroso
63.	[illegible] Cop-ens	"		✓ 25.00	[illegible]
64.	Pedro Muntong	"		✓ 25.00	Pedro [illegible]
65.	Feliciano Juntilla	"		25.00	Feliciano Juntilla sct
66.	Pedro Tabita	"		✓ 25.00	Pedro Tabita
67.	Pascual Lapsanigue	"		✓ 25.00	Pascual Lapsanigue
68.	[illegible]	"		✓ 25.00	J. Luna, L.E.
69.	Juanito Manulat	"		✓ 25.00	Juanito Manulat
70.	Valentin Mata	"		✓ 25.00	Valentin Mata
71.	Concordio Matunan	"		✓ 25.00	Concordio Matuga
72.	Ricardo Morales	"		✓ 25.00	R. Morales, L.E.
73.	Victor Narcsiso	"		✓ 25.00	[illegible]
74.	Venceslao Nuñez	"	Paid	✓ 25.00	
75.	Marcial Oliverio	"		✓ 25.00	Marcial Oliverio
76.	Eliseo Oliverio	"		✓ 25.00	E. Oliverio, L.E.
77.	Jesus Pasay	"		✓ 25.00	Jesus Pasay
78.	Celestino Penite	"		✓ 25.00	[illegible]
79.	Delfin Pueblo	"		25.00	Delfin Pueblo sct
80.	Jose Pahugot	"		✓ 25.00	Jose Pahugot
81.	Salvador Rabago	"		✓ 25.00	Salvador Rabago
82.	Zacarias Rabago	"		✓ 25.00	Zacarias Rabago L.E.
83.	Jesus Racaza	"		✓ 25.00	Jesus Racaza
84.	Francisco Rojas	"		✓ 25.00	Francisco Rojas
85.	Vicente Sabillo	"		✓ 25.00	Vicente Sabillo
86.	Pastor Sabroso	"		✓ 25.00	Pastor Sabroso
87.	Pedro Tabal	"		✓ 25.00	Pedro Tabal sct
88.	Crisolito Viscayno	"	Paid	✓ 25.00	
89.	Tomas Hermoso	"		✓ 25.00	Tomas Hermoso sct
90.	Generoso Quirbe	"		✓ 25.00	Generoso Quirbe L.E.
91.	Marcial Lawas	"		✓ 25.00	Marcial Lawas L.E.
92.					
93.	Narciso Cervantes	Corp.		X 25.00	
	GRAND TOTAL			2300.00	

SOUND
EXPERIMENT 2

MELDES EXPERIMENT STATIONARY WAVES

APPARATUS: Electrically driven tuning fork, string; weights; motor stick.
OBJECT: To find the frequency of the vibrating string.
DISCUSSION:- When one end of a string is made fast and its other end is caused to vibrate at a uniform rate, the disturbance may be transmitted along the string towards its fixed end in the form of tranverse waves. These waves are reflected back along the string, and the two sets of waves may interfere with each other, combining to produce regions of minimum and maximum disturbance, if the string is under the proper tension. When this is of the correct value, the string will break up into clearly defined and "stationary" nodes and segments. This condition may be obtained by attaching one end of the cord to one of the prongs of a tuning fork of known frequency of vibration, and passing the other end over a pulley to a weight pan. Then the proper tension can be found experimentally. It has been shown that for such a system,

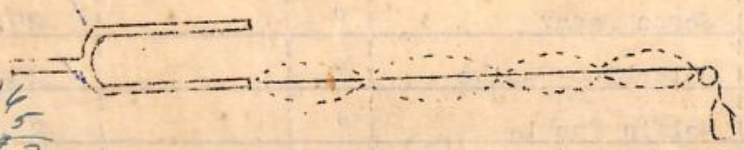
$$n = \frac{1}{\lambda} V$$

where n is the frequency of vibration of the string; λ is the wave length in the string; T is the force stretching the string, in dynes; and m is the mass of the string per unit of length.

PROCEDURE - Set the fork with its prong parallel to the string as shown in Fig. and find separately the tensions, in grams, necessary to let the string vibrate in three, four, and five segments, so that at the nodes the string appears practically stationary. Record tensions, total length of string, average length of one segment, and the number of segments in each case. It will be noticed that the segment nearest the fork does not end at the tip of the fork, but perhaps a short distance inside the prong, so to speak. Hence the tension should be varied until the segments are as nearly as possible all of the same length, when it will be found that the one next to the fork seems to end an inch or less inside of the prong of the fork.

16
25
80

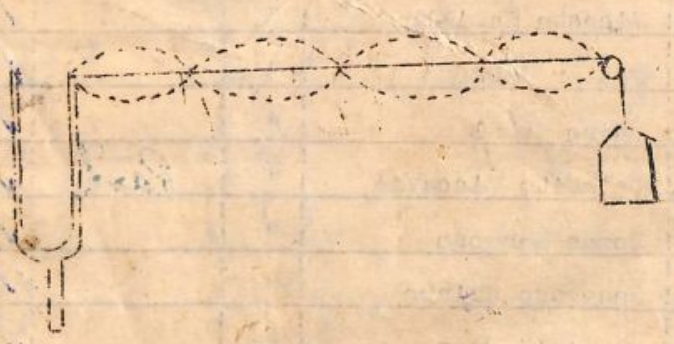
16
25
80



Unclamp the fork from the table and set it at right angles to the axis of the cord, as shown in the Fig. Then repeat the steps given above.

From each of the six sets of data, compute the value of n. The value of m will be obtained from the instructor, or weigh the string and divide its weight by the total length to obtain its mass per unit of length.

Plot two curves, one for each position of the fork, using the square roots of the tensions as abscissas, and the wave length as ordinates. Put them both on the same sheet and with the same axes.



VE 140

COMPANY "G" 85TH INF- PAY ROLL Sheet No. 4

(1) I HEREBY CERTIFY on my official oath that this list is made to identify all the officers and enlisted men under this unit or department and that entries pertaining to each name are correct.

August 30, 1944

FEDERICO Y. [illegible]
Bvt. 1st Lieut., 85th Inf-
Commanding

(2) APPROVED FOR PAYMENT:

Rogers C. Egan
(Signature)
Bvt Major
C.O. 85th Inf
(Designation)

(3) I HEREBY CERTIFY on my official oath that I have paid in cash to each officer and enlisted men whose name appears on the above roll the amount set opposite his name, he having signed or marked his name in my presence and at the time that payment was made to him, in acknowledging receipt of the money paid him.

August 30, 1944

Cash Book
10/29/44
E.A.

[illegible]
(Signature)
Bvt 1st Lieut, 85th Inf
Commanding
(Designation)

S-4 [illegible]
For acknowledgment
F-O

UNITED STATES FORCES IN THE PHILIPPINES
CEBU AREA COMMAND
COMPANY "G", 85TH INFANTRY

October 23, 1944

Subject: Cash, Return of
To : The Commanding Officer, 85th Inf
(Thru the CO, 2nd Bn., 85th Inf)

1. The sum of TWO HUNDRED FIFTY PESOS (₱250.00) in Japanese Currency together with the corresponding Pay Roll for this Unit is sent to that Headquarters with the following explanation:

Total Cash received - - - - - - - - -	₱2800.00
Total Cash paid to officers & E/M -	2550.00
Balance (Returned) -	250.00

2. The following E/M are not paid their partial pay for reasons indicated opposite their names:

a- Corp. Dargantes, Mauricio - Missing
b- Pvt. Enriquez, Juan - trfd to Ord. Co., CAC

3. Acknowledge receipt.

FEDERICO Y. BAGUIO
Bvt. 1st Lieut., 85th Inf.
Commanding

3 INCLS:
Incl 1- [illegible] 50 [illegible]-FIVE-PESO-BILL, (₱250.00) in Japs Cy
Incls 2 & 3 - Two copies of Pay Roll

r special
neral Col-
the last

8th MD
E/Troubles

GENERAL PAYROLL

Gen Form No.) Revised Jan 30, 1946

"G" COMPANY 85TH INF GF (PA)
(Organization)

I HEREBY ACKNOWLEDGE to have received from 1st Lt V. R Garcia, FS, 24th FDS, PA the sum herein specified opposite our respective names, being in full compensation (difference in pay) for our services from the period stated. (Auth: Dir 194, Hq PA, cs):

"G" COMPANY 85TH INF. Month of July 194_ Journal Voucher No. _____

No	NAMES	RANK & ASN	PERIOD OF SERVICE	MONTHLY SALARY DIFFER	AMOUNT DUE	DEDUCTION ASB	DEDUCTION WAR BD	DEDUCTION CLASS N	CASH RECD	NO SIGNATURE OF PAYEE	INITIAL WITNESS	REMARKS
	PRIVATES											
	FRANCISCO, BOHOL	Pvt. 130471	1 July to 31	P18.00	P25.00				P25.00			July 45
	JULIO, CANI	Pvt.	1 Jul to 31	P18.00	P25.00				P25.00			July 45

CERTIFICATE

1. I CERTIFY on my official oath that the above Pay Roll, consisting of _____ sheets, is correct and that the services have been duly rendered as stated.

VICENTE C RAMIREZ
1st Lieut, Infantry
Personnel Officer

...VE the ...ove Pay Roll ... 1 ... sheets, payable from appropriation from _____

MAXIMO ALBINDA
Lt Col, Inf
Comdg

3. I CERTIFY on my official oath that I have personally paid in cash to each employee whose name appears on the above pay roll the amount set opposite his name, after satisfying myself that the persons above enumerated are the real claimants. The total ... paid by me on this Pay Roll, consisting of ____ sheets is P _____.

4. I CERTIFY on my official oath that I have witnessed the payment in cash to each person whose name appears on the above payroll consisting of 1 sheets to the amount set opposite his name and my initials.

FEDERICO, DAVID
1st Lieut. Inf
Co, "G" Co, 86th Inf (GP)

(Rank)
Unit Commander

242.5 PAYROLL
HQ "G" Co. 1st Bn. 85th Infantry PA BAC 8th MD July '45

CAC

...t No. 1

C[illegible]L PAYROLL
DISCHARGE
(Organization)

[illegible]n. Form No. 6 (a)-Revised Jan 39

[W]E HEREBY ACKNOWLEDGE TO have received from 1st Lt V R GARCIA, FS, the sums herein specified opposite our respective names, being in full compensation (difference in pay) for our services for the period stated. (Auth: Cir 194, HPA, cs).
[D]ifference in Pay Month of July 1945 Journal Voucher No.

No.	NAME	RANK & ASN	PERIOD OF SERVICE	MONTHLY SALARY DIFF.	AMOUNT DUE	DEDUCTIONS AES	DEDUCTIONS FINE	DEDUCTIONS CL N	CASH RECD	NO.	SIGNATURE OF PAYEE	INITIAL OF WITNESS	REMARKS
1.	Escoto Rufino	Cpl. 130449	Jul 45	₱23.00						1	Rufino Escoto	[illegible]	17 Jul 45 Processed
2.	Martil Alijandro	Cpl. 130448	Jul 45	₱23.00						2	Alejandro Martil	[illegible]	17 Jul 45 Processed
3.	Caputolan Hilario	Cpl 130308	Jul 45	₱23.00							Hilario Caputolan	[illegible]	17 Jul 45 Processed
4.	Bacong Simeon	Pvt. 132815	Jul 45	₱25.00						3.	Simeon Bacong	[illegible]	17 Jul 45 Processed
5.	Banate Elino	Pvt. 132930	Jul 45	₱37.00						4	Elino Banate	[illegible]	15 Aug 45 Processed
6.	Pepito Nicolastico	Pvt. 130482	Jul 45	₱25.00						5.	Nicolastico Pepito	[illegible]	17 Jul 45 Processed

TOTAL 6 - - - - - - - - - - -

CERTIFICATION

1. I CERTIFY on my official oath that the above Pay Roll, consisting of _____ sheets, is correct and the services have been duly rendered as stated.

VICENTE C RAMIREZ
1st Lieut., Infantry
Personnel Officer

2. I APPROVE the above Pay Roll consisting of _____ sheets, payable from appropriation from _____

MAXIMO ALBINDA
Lieut-Colonel, Infantry
Commanding

3. I CERTIFY on my official oath that I have personally paid in cash to each employee whose name appears on the above roll the amount set opposite his name, after satisfying myself that the persons above enumerated are the real claimants. The total amount paid by me on this Pay Roll, consisting of _____ sheets is $ _____

4. I CERTIFY on my official oath that I have witnessed payment in cash to each person whose name appears on the above payroll consisting of _____ sheets to the amount set opposite his name and my initials.

1st Lieut Inf
CO 6th BCT 1st
(Rank)
Unit Commander

242.5 PAY ROLLS

G Co 85TH INFANTRY CAC

V-140

PAY ROLL

Sheet No. 1

COMPANY "G" 85TH INFANTRY-REGIMENT - PAY ROLL
(Dept. or Unit)

WE HEREBY CERTIFY to have received from _____ Officerof _____ the sum herein specified opposite our respective names, the same being in full compensation for our services rendered during the period stated below, to the correctness of which we hereby severally certify.

No.	Names	Rank	Per.Serv. From -To	Amount	Signature of Payee
1.	Federico Y. Baguio	1"Lt		P 100-	
2.	Florentino R. Atillo	2"Lt		100-	
3.	Lope Narra	Capt		100-	
4.	Mario B. Bihag	2"Lt		100-	
5.	Sotero Tumulak	1/Sgt		25-	
6.	Gerardo L. Peñas	Sgt.		25-	
7.	German Cabigas	Sgt.		25-	
8.	Moises Golis	Sgt.		25-	
9.	Fedil Mangyao	Sgt.		25-	
10.	Rufino Tampus	Sgt.	1-20 6	25-	
11.	Vicente Enriquez	Corp	10	25-	
12.	Vicente Betio ~~Vicente Enriquez~~	"	1	25-	
13.	Anicito Caballero	"		25-	
14.	Silverio Englis	"		25-	
15.	Rufino Escuto	"		25-	
16.	Cosme Guinto	"		25-	
17.	Angel Nuñez	"		25-	
18.	Alejandro Martil	"		25	
19.	Juanito Sabay	"		25-	
20.	Florentino Tabal	"		25-	
21.	Pedro Tampus	"		25-	
22.	Bonifacio Abalos	Pfc.		25-	
23.	Maximo Abella	"		25-	
24.	Ambrosio Bacong	"		25-	
25.	Fortunato Badayos	"		25-	
26.	Marciano Biscutso	"		25-	
27.	Lorenzo Claros	"		25-	
28.	Candido Codilla	"		25-	

TOTAL AMOUNT CARRIED FORWARD - - - - P 1000.00

Carbon Course Experiment III

I Object. To find the velocity of sound in air.

II Apparatus. Kundt's apparatus consisting of a glass tube fitted with a piston rod to which is attached a disc of metal or other hard, elastic substance, a quantity of chalk, some dry cork dust, and a thermometer.

III Data:

Wave length of sound in the gas as shown by dust

First trial	Second trial	Third Trial
5.5	5.5	5.6
5.6	5.2	5.7
5.7	5.3	5.5
5.6	5.5	5.4
	5.5	5.4
	5.6	5.5
		5.5

Temperature 27°C

Computation:

5.5 + 5.6 + 5.7 + 5.8 = 22.60 ÷ 4 = 5.65 cm mean

5.5 + 5.2 + 5.3 + 5.5 + 5.5 + 5.6 = 32.60 ÷ 6 = 5.43 cm mean

5.6 + 5.7 + 5.5 + 5.4 + 5.4 + 5.5 + 5.5 = 38.60 ÷ 7 = 5.51 mean

5.65 + 5.43 + 5.51 = 16.59 ÷ 3 = 5.53 cm. av. mean

× 2

11.06 ÷ 100 = .1106 m ½ wave length of gas

V_0 = 331.4 m/sec velocity of sound in air at 0°C

Formula: $V_t = V_0 \sqrt{1 + .003667 \times t}$

$= 331.4 \sqrt{1 + .003667 \times 27}$

$= 33.4 \sqrt{1 + .099009}$

$= 33.4 \sqrt{1.099009}$

$= 33.4 \times 1.048$

$= 347.3072$ m/sec Velocity of sound in air.

.6 m/sec corresponding increase of V_t for every 1°C increase

× 27.1

16.3 m

331.4 m

+ 16.3 "

347.7 m/sec V_t by using temp. at 27°C

347.3 " " " by permental value

.4 m difference

.4 ÷ 347.7 = .001 or .1% Error

Length of the rod = 76.5 cm

× 2

153 cm wave length, λ_t

V_t = 34730 cm/sec; λ_t = 11.06

Formula: $V_h = V_t \frac{\Delta t}{\lambda t}$

$V_h = 34730 \times \frac{153}{11.06} = \frac{5313690}{11.06}$

V_c = 471,400 cm/sec Velocity of sound in rod

V-140

COMPANY "G" 85TH INF- PAY ROLL

Sheet No. 2

No.	Names	Rank	Per. Serv. From- To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD - - - -			₱ 1000-	
29.	Cresenciano Cabaeiro	Pvt.		25-	C. Caballero
30.	Jose Ilauria	"		25-	J. Ilauria S.E.
31.	Jose Incorporado	"		25-	Jose Incorporado SCT
32.	Pedro Rigardo	"		25-	P. Rigardo
33.	Genovevo Baring	"		25-	G. Baring
34.	Victoriano Abendan	Pvt.		25-	Victoriano Abendan
35.	Eduardo Abonayan	"		25-	Eduardo Abonayan SCT
36.	Salvino Agacayan	"		25-	S. agacayan
37.	Agapito Alivio	"		25-	Agapito Alivio
38.	Juan Archibal	"		25-	Juan Archibal
39.	Pantaleon Archibal	"	16 8	25-	P. achibal S.E.
40.	Demetrio Avila	"	8 1	25-	Demetrio Avila
41.	Gavino Bacong	"		25-	Gavino Bacong
42.	Luis Bacong	"		25-	Luis Bacong
43.	Simeon Bacong	"		25-	Simeon Bacong
44.	Manuel Badal	"		25-	M. Badal S.E.
45.	Elino Banate	"		25-	E. Banate S.E.
46.	Eufemio Barriga	"		25-	Eufemio Barriga
47.	Francisco Bellita	"		25-	Francisco Bellita
48.	Jose Bitoon	"		25-	Jose Bitoon
49.	Ramon Bitoon	"		25-	Ramon Bitoon
50.	Alejandro Bughao	"		25-	By Pvt. Catalino Alejandro Bughao
51.	Marcos Bontilao	"		25-	Marcos Bontilao
52.	Julio Cani	"		25-	Julio Cani SCT
53.	Felino Capoy	"		25-	Felino Capoy
54.	Simeon dela Cerna	"		25-	Simeon dela Cerna
55.	Francisco Codilla	"		25-	Francisco Codilla
56.	Macario dela Cruz	"		25-	Macario dela Cruz SCT
57.	Santiago Dieparine	"		25-	Santiago Dieparine
58.	Juan Enriquez	Transferred to 86th		25-	X
59.	Primitivo Espiñoza	"		25-	Primitivo Espiñoza
60.	Pablo Fernandez	"		25-	P. Fernandez S.E.
	TOTAL AMOUNT CARRIED FORWARD - - - -			₱1800.00	

DECLASSIFIED
Authority NND 963078

Carlos Pascual   Experiment II   Jan. [illegible]

I. Object: To find the frequency of the vibrating [illegible]

II. Apparatus: Electrically driven tuning fork, st[illegible] weights, and meter stick.

III. Data

Parallel

	1st	2nd	3rd
Tension in grams	170	100 grams	60 grams
Length of strength	100 cm	100	100 cm
Number of Segments	3	4	5
Length of 1st segment	32 cm	24 cm	19.25 cm
" 2nd "	33 "	26 "	20.5 "
" 3rd "	34 "	25 "	19.2 "
" 4th "	—	25	20.5 "
" 5th "	—	25 "	20.9 "
			19.9 "

Av. length of segment - 33 cm

Vertical

	1st	2nd	3rd
Tension in grams	50	30 grams	15 grams
Length of Strength	100 cm	100 cm	100 cm
Number of Segments	3	4	5
Length of 1st Segment	32	24 cm	20.5 cm
" 2nd "	34	25 "	20 "
" 3rd "	34	26 "	19.5 "
" 4th "	—	25 "	20.5 "
" 5th "	—	25 "	20 "
			20 "

Av. length of Segments - 33 cm

Parallel for:

N equals $\frac{1}{2l}\sqrt{\frac{T}{m}}$

$3\times3 = 9\times170 = 1530$ grams

$4\times4 = 16\times100 = 1600$ "

$5\times5 = 25\times60 = 1500$ "

4630 grams

$4630 \div 3 = 1533$; 1 gram = 980 dynes

$1533 \times 980 = 1502340$ T; N = 121.575

Vertical for:

$3\times3 = 9\times50 = 450$ grams

$4\times4 = 16\times30 = 480$ "

$5\times5 = 25\times15 = 375$ "

1305 grams

$1305 \div 3 = 435$, $435 \times 980 = 426300$

$N = \frac{1}{2l}\sqrt{\frac{426300}{.00235}}$ $N = \frac{1}{200}\sqrt{\frac{426300}{.00235}}$

N = 77.09

$77.09 + 121.575 = 198.665$; $198.665 \div 2 = 99+$ or 100

Experimental value of n = 100
Accepted " " " = 128   128 - 100 = 28 difference

$28 \div 126 = .22$ or 22% Error

IV. Remarks: The laws of vibrating string holds true. Error is due to inaccuracy in the performance.

V-140

COMPANY "G" 85TH INF- PAY ROLL Sheet No. 3

No.	Names	Rank	Per. Serv. From - To	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD - - - - - -			P1800.00	
61.	Celestino Gardavan	Pvt.		25.00	Celestino Gardavan
62.	Ricardo Generosa	"		25.00	Ricardo Generosa
63.	Canuto Goc-ong	"		25.00	
64.	Pedro Huntong	"		25.00	Pedro Huntong
65.	Felicisimo Juntilla	"		25.00	Felicisimo Juntilla SGT
66.	Pedro Labita	"		25.00	Pedro Labita
67.	Pascual Lapasigue	"		25.00	Pascual Lapasigue
68.	Isiderio Luna	"		25.00	I. Luna S.E.
69.	Juanito Manulat	"		25.00	Juanito manulat
70.	Valentin Mata	"		25.00	Valentin Mata
71.	Concurdio Matugas	"		25.00	Concurdio Matugas
72.	Ricardo Morales	"		25.00	R. Morales S.E.
73.	Victor Narra	"		25.00	
74.	Wenceslao Nuñez	"	Paid	25.00	
75.	Marcial Oliverio	"		25.00	Marcial Oliverio
76.	Eliseo Oliverio	"		25.00	E. Oliverio S.E.
77.	Jesus Pasay	"		25.00	Jesus Pasay
78.	Colastico Pepito	"		25.00	
79.	Delfin Puebla	"		25.00	Delfin Puebla SGT
80.	Jose Pahugot	"		25.00	Jose Pahugot
81.	Salvador Rabago	"		25.00	
82.	Zacarias Rabago	"		25.00	
83.	Jesus Racasa	"		25.00	
84.	Francisco Ragudos	"		25.00	
85.	Vicente Sabillo	"		25.00	
86.	Pastor Sabroso	"		25.00	Pastor Sabroso
87.	Pedro Tabal	"		25.00	Pedro Tabal
88.					
88.	Cristito Viscayno	"		25.00	Cristito Viscayno
89.	Tomas Hermoso	"		25.00	Tomas Hermoso SGT
90.	Generoso Cuirbo	"		25.00	
91.	Marcial Lawas	"		25.00	Marcial Lawas
92.					
92.	Mauricio Dargantes	Corp		25.00	
	GRAND TOTAL - - - - - - - - - - -			P 2600.00	

DECLASSIFIED
Authority NND 963078

Experiment I

Carlos [illegible] Jan. 11, 1937

I. Object: To find the velocity of sound in air from resonance experiment upon a closed pipe, and to find the correction which must be applied to that of the open end.

II. Apparatus: Glass resonance tube, Tuning forks, rubber hammer & thermometer.

III. Data:

A First trial — Second trial — Mean

First resonant length = 31.3 cm — 30 cm — 30.65

Second " " = 98.8 " — 98.2 " — 98.4

Frequency of the fork = 256

Temperature reading = 28°C

B First resonant length = 24.1 cm — 24 cm — 24.5 cm

Second " " = 77.6 " — 78 " — 77.8 "

Frequency of fork = 320

Temperature reading 28°C

Computation:

A formula: $L_2 - L_1 = \frac{1}{2}\lambda$ $98.4 - 30.65 = \frac{\lambda}{2}$

$67.75 = \frac{\lambda}{2}$; $\lambda = 135.5$

Formula for velocity – $S = N\lambda$

Subs: $S = 256 \times 135.5 = S$

$S = 34,688$

B – formula: $L_2 - L_1 = \frac{\lambda}{2}$; $\lambda = 106.6$

Formula for velocity; $S = N\lambda$

$S = 320 \times 106.6 = 34,112$ cm/sec

Finding the theoretical value

formula: $S = \sqrt{\frac{\gamma \times P \times \text{dynes} \times \text{Pressure of mercury}}{\text{density of air}}}$

$\gamma = 1.403$

Subs: $S = \sqrt{\frac{1.403 \times 75.65 \times 980 \times 13.6}{.001153}}$

$S = 34,996.5$

$\frac{68,790}{2} = 34,395$ – Expt. value

34,102	34,996.5	(theoretical value)
+ 34,688	34,395	(experimental value)
68,790	601.5	= difference

$601.5 \div 34,996.5 = .017$ or 1.8% Error

V-140

COMPANY "G" 85TH INF- PAY ROLL Sheet No. 4

(1) I HEREBY CERTIFY on my official oath that this list is made to identify all the officers and enlisted men under this unit or department and that entries pertaining to each name are correct.

August 30, 19 44

FEDERICO Y. BAGUIO
Bvt. 1st Lieut., 85th Inf-
Commanding

(2) APPROVED FOR PAYMENT:

(Signature)
Bvt Major
C.O 85Th Inf
(Designation)

(3) I HEREBY CERTIFY on my official oath that I have paid in cash to each officer and enlisted man whose name appears on the above roll the amount set opposite his name, he having signed or marked his name in my presence and at the time that payment was made to him, in acknowledging receipt of the money paid him.

August 30, 19 44

Cash Bvt 10/2/44

(Signature)
B. 1st Lieut., 85th Inf
Commanding
(Designation)

UNITED STATES FORCES IN THE PHILIPPINES
CEBU AREA COMMAND
COMPANY "G", 35TH INFANTRY

October 23, 1944

Subject: Cash, Return of
To : The Commanding Officer, 35th Inf
(Thru the CO, 2nd Bn., 35th Inf)

1. The sum of TWO HUNDRED FIFTY PESOS (₱250.00) in Japanese Currency together with the corresponding Pay Roll for this Unit is sent to that Headquarters with the following explanation:

Total Cash received - - - - - - - - -	₱2800.00
Total Cash paid to officers & E/M -	2550.00
Balance (Returned) -	250.00

2. The following E/M are not paid their partial pay for reasons indicated opposite their names:

a- Corp. Dargantes, Mauricio - Missing
b- Pvt. Enriquez, Juan - trfd to Cmd. Co., CAC

3. Acknowledge receipt.

[signature]
Pvt. 1st Class, 35th Inf.
Commanding

3 INCLS:

Incl 1- 50 - FIVE-PESO-BILL, (₱250.00) in Japs Cy
Incls 2 & 3 - Two copies of Pay Roll

Cash Rec'd
10/29/44 E CA

DECLASSIFIED
Authority NND 963078

...or special
...General Col-
...on the last

V-140

PAY ROLL

Sheet No. 1

DECLASSIFIED
Authority NND 883078

COMPANY "G" 85TH INFANTRY-REGIMENT - PAY ROLL
(Dept. or Unit)

WE HEREBY CERTIFY to have received from ______________________ Officer of ______________________ the sums herein specified opposite our respective names, the same being in full compensation for our services rendered during the period stated below, to the correctness of which we hereby severally certify.

No.	Names	Rank	Per. Serv. Ser.-No.	Amount	Signature of Payee
1.	Federico Y. Baquio	2"Lt		100.-	
2.	Florentino R. Atillo	2"Lt		100.-	
3.	Jose Morra	Capt		[illegible]	
4.	Mario E. Bihag	2"Lt		100.-	
5.	Sotero Sumulak	1/Sgt		25.-	
6.	Gerardo L. Peres	Sgt.		25.-	
7.	German Cabigas	Sgt.		25.-	
8.	Moises Golia	Sgt.		25.-	
9.	Vitaliano Tanggao	Sgt.		[illegible]	
10.	Rufino Tampus	Sgt.		[illegible]	
11.	Vicente Enriquez	Corp		25.-	
12.	Vicente Estio Eduardo Enriquez	"		[illegible]	
13.	Anicito Caballero	"		25.-	
14.	Silverio Englis	"		25.-	
15.	Rufino Escoto	"		25.-	
16.	Crispin Quinto	"		25.-	
17.	Angel Nuñez	"		25.-	
18.	Alejandro Martil	"		25	
19.	Juanito Sabay	"		25.-	
20.	Florentino Tabal	"		25.-	
21.	Pedro Tampus	"		25.-	
22.	Bonifacio Baños	Pfc.		25.-	
23.	Maximo Abella	"		25.-	
24.	Ambrocio Bacong	"		25.-	
25.	Fortunato Bacalso	"		25.-	
26.	Marciano Bircatso	"		25.-	
27.	Lorenzo Claros	"		25.-	
28.	Candido Cadilla	"		25.-	

TOTAL AMOUNT CARRIED FORWARD - - - - P 1000.00

J U N I O R - (EXPIRMENT - 4)

A STUDY OF THE LAWS OF VIBRATING STRINGS.

APPARATUS. Sonometer; weights; violin bow; meter stick.

DISCUSSION:-If a tightly stretched string or wire is stroked with a violin bow, it will be set in vibration and the disturbance will pass along the string in the form of transverse waves. The rate of vibration and the wave length in the string under these conditions depend upon the tension of the string, it length, and its mass per unit of length, i. e., its diameter and density.

The wave length in a vibrating string is equal to twice the distance between two adjacent nodes. These will be at its ends if the string is vibrating in a single segment. The velocity (v) with which the disturbance travels thru any elastic medium is given by the length (λ) of one wave, multiplied by the number (n) of such waves produced each second, i.e., v equals n λ

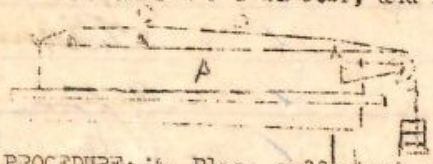
Also it can be shown that

$$v = \sqrt{\frac{T}{m}}$$

where T is the tension of the string, in dynes, and m is the mass of the string per unit of length, in gms. Therefore, by combining eqts. (1) and (2), we have,

$$n = \frac{1}{\lambda}\sqrt{\frac{T}{m}}$$

It is the object of the present expirement to study these relations. The apparatus used is called a sonometer, and it consists simply of a resonating box, A, as in the fig. on which are stretched two or more fine wires, as represented at B, and whose active length can be varied by the use of movable bridges, one of which is shown at C. The tensions can be altered by adjusting the attached weights at W.



PROCEDURE: A. Place sufficient weight in one of the scale pans so that the stretched wire may give forth a clear, musical tone when set in vibration. Listen to the vibrating string a number of times to see if you can detect any change in the pitch of the tone emitted as the amplitude of the vibration dies down. Try this for several different tensions and note your conclusion in your report.

B. Tune two wires of the same diameter and material in unison. This will require practice, but ordinarily it can be accomplished by adjusting the tension of one of them until they sound nearly alike, and then listening for the beats which may be heard when the two strings vibrate almost in unison, but not quite. The beats will become slower and slower as the tuning becomes better, and finally disappear when the adjustment is perfect. A further test can be made by bowing or plucking one of the strings only; if in perfect unison the other string will be set in vibration sympathetically, and emit an audible tone after the first string, has been silenced by the hand. Often tiny pieces of paper riders hung on the second string will afford an even more delicate test, for their motion will show clearly the disturbance communicated to this string from the first one, if they are in tune.

Now, without changing the tension of either string, slide a movable bridge along so as to make one string half as long as the other; then one-fourth as long. By comparing the tones emitted by the shortened string, under these conditions, with that of the longer one, determine the relation of the frequency of vibration of a string to its length, the tension being constant.

C. Tune two wires of the same material and diameter in unison, so that they emit a clear but low tone. Then increase the stretching weight on one of the wires to four times the original amount. Compare the tones now given out by the two wires. Similarly, increase the tension to 16 times the original, then write your conclusion.

D. Arrange two wires differing in material and diameter so that they are subjected to equal tensions. Shift the movable bridge and tune them in unison. Note the tension and lengths of the vibrating wires when this condition is obtained. Now find the ratio of the sq. roots of the masses of the wires per unit length, and compare this value with the ratio of the lengths of the vibrating parts of the wires. Again write out your conclusion.

E. As a check on the conclusions drawn under secs. B.C.D, apply Eq. (3) to each of those cases, substituting the proper quantities for T, λ, and m, and solving for n, the frequency of vibration.

No.	Names	Rank	[illegible]	Amount	Signature of Payee
	TOTAL AMOUNT BROUGHT FORWARD			1000.-	
29.	Crescenciano Caballero	Pvt.		✓ 25.-	C. Caballero
30.	Jose [illegible]	"		✓ 25.-	J. Almario, S.E.
31.	Jose [illegible]	"	Paid ✓	25.-	
32.	Pedro Regardo	"		✓ 25.-	P Regardo
33.	[illegible]	"		✓ 25.-	G. Barng
34.	Victoriano Abandon	Pvt.		✓ 25.-	Victoriano Abandon
35.	[illegible] Almazan	"		X 25.-	Eduardo Almazan Sgt
36.	[illegible]	"		✓ 25.-	Bogdalayan
37.	Apolito Alirio	"		✓ 25.-	Apolito Alirio
38.	Juan Archibal	"		✓ 25.-	Juan Archibal
39.	Pantaleon Archibal	"		✓ 25.-	P. Achibal, S.E.
40.	Demetrio Avila	"		✓ 25.-	Demetrio Avila
41.	Gavino Baeng	"		✓ 25.-	[illegible]
42.	Luis Baeng	"		✓ 25.-	Luis Baeng
43.	Simeon Baeng	"		✓ 25.-	Simeon Baeng
44.	Manuel Badal	"		✓ 25.-	M. Badal, S.E.
45.	Eligo Banate	"		✓ 25.-	E. Banate, S.E.
46.	Eufemio Barriga	"		✓ 25.-	Eufemio Barriga
47.	Francisco Bellita	"		✓ 25.-	Francisco Bellita
48.	Jose Bitoon	"		✓ 25.-	Jose Bitoon
49.	Ramon Bitoon	"		✓ 25.-	Ramon Bitoon
50.	Alejandro Bughao	"		✓ 25.-	By Apolito [illegible] Alejandro Bughao
51.	Marcos Bontilao	"		✓ 25.-	Marcos Bontilao
52.	Julio Cani	"		25.-	Julio Cani Sgt
53.	Felipe Cabay	"		✓ 25.-	Filipo Cabay
54.	Simeon dela Serna	"		✓ 25.-	Simeon dela Serna
55.	Francisco Cabillo	"		✓ 25.-	Francisco Cabillo
56.	Macario dela Cruz	"		25.-	Macario dela Cruz Sgt
57.	Santiago Diaparina	"		✓ 25.-	Santiago Diaparina
58.	Juan Enriquez	"		X 25.-	
59.	[illegible] Espinosa	"		✓ 25.-	Remitio Espinosa
60.	Pablo Fernandez	"		✓ 25.-	P. Fernandez, S.E.
	TOTAL AMOUNT CARRIED FORWARD - - - -			1800.00	

Experiment III

B Rod made of Aluminium

Density = 2.75

Formula = $M = V^2 D$.

$M = 471,400 \times 2.75$

$M = 222-217460000 \times 2.75$

$M = 6,110,999,350,000$ (sq. cm

$\times 980$

$\overline{488879571200000}$

$\overline{5499894510000}$

$\overline{5\,495,877,492,290,000}$ dynes/sq. cm modulus of aluminium rod

IV Remarks: In its velocity of sound in gas we obtained a good result. The error was but .1%. We compared it to that which we obtained from the computation depending upon its temperature at 27 C.

V-140

DECLASSIFIED
Authority NND 883078

COMPANY "C" 85TH INF. PAY ROLL

Sheet No. 3

No.	Names	Rank	Per. Serv. From - To	Amount	Signature of Payee
	BROUGHT FORWARD			1800.00	
61.	Celestino Cardavan	Pvt.		✓ 25.00	Celestino [illegible]
62.	Ricardo Generoso	"		✓ 25.00	Ricardo, Generoso
63.	[illegible] Cogong	"		✓ 25.00	[illegible]
64.	Pedro Huntong	"		✓ 25.00	Pedro [illegible]
65.	Feliciano Juntilla	"		25.00	Feliciano Juntilla 8ct
66.	Pedro Tabita	"		✓ 25.00	Pedro Tabita
67.	Pascual [illegible]	"		✓ 25.00	Pascual [illegible]
68.	[illegible]	"		✓ 25.00	I. Luna, S.E.
69.	Juanito Manulat	"		✓ 25.00	Juanito Manulat
70.	Valentin Mata	"		✓ 25.00	Valentin Mata
71.	Concurdio Matugas	"		✓ 25.00	Concordio Matugas
72.	Ricardo Morales	"		✓ 25.00	R. Morales, S.E.
73.	Victor Navarro	"		✓ 25.00	[illegible] Navarro
74.	Marcialdo [illegible]	"	Paid	✓ 25.00	
75.	Marcial Oliverio	"		✓ 25.00	Marcial Oliverio
76.	Eliseo Oliverio	"		✓ 25.00	E. Oliverio, S.E.
77.	Jesus Pasay	"		✓ 25.00	Jesus Pesay
78.	Celestino Pepito	"		✓ 25.00	Celestino Pepito By [illegible]
79.	Delfin Pueblo	"		25.00	Delfin Pueblo 8ct
80.	Jose Pahugot	"		✓ 25.00	Jose Pahugot
81.	Salvador Rabago	"		✓ 25.00	Salvador Rabago
82.	Zacarias Rabago	"		✓ 25.00	Zacarias Rabago
83.	Jesus Racaza	"		✓ 25.00	Jesus Racaza
84.	Francisco Rojanes	"		✓ 25.00	Francisco Rojanes
85.	Vicente Sabillo	"		✓ 25.00	Vicente Sabillo
86.	Pastor Sabroso	"		✓ 25.00	Pastor Sabroso
87.	Pedro Tabal	"		✓ 25.00	Pedro Tabal
88.					
88.	Crisalito Viscayno	"	Paid	✓ 25.00	
89.	Tomas Hermoso	"		✓ 25.00	Tomas Hermoso 8ct
90.	Generoso Quirbo	"		✓ 25.00	Generoso Quirbo
91.	Marcial Lawas	"		✓ 25.00	Marcial Lawas
92.					
93.	Marcelo Dormentes	Corp.		X 25.00	
	GRAND TOTAL			2600.00	

SOUND
EXPERIMENT 2

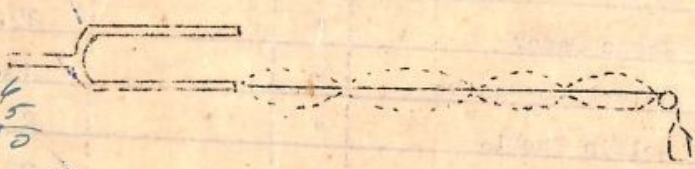
MELDES EXPERIMENT STATIONARY WAVES

APPARATUS: Electrically driven tuning fork, string; weights; meter stick.
OBJECT: To find the frequency of the vibrating string.
DISCUSSION:- When one end of a string is made fast and its other end is caused to vibrate at a uniform rate, the disturbance may be transmitted along the string towards its fixed end in the form of tranverse waves. These waves are reflected back along the string, and the two sets of waves may interfere with each other, combining to produce regions of minimum and maximum disturbance, if the string is under the proper tension. When this is of the correct value, the string will break up into clearly defined and "stationary" nodes and segments. This condition may be obtained by attaching one end of the cord to one of the prongs of a tuning fork of known frequency of vibration, and passing the other end over a pulley to a weight pan. Then the proper tension can be found experimentally. It has been shown that for such a system,

$$n = \frac{1}{\lambda} v$$

where n is the frequency of vibration of the string; λ is the wave length in the string; T is the force stretching the string, in dynes; and m is the mass of the string per unit of length.

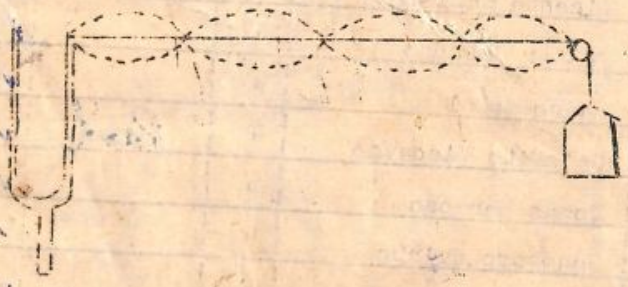
PROCEDURE - Set the fork with its prong parallel to the string as shown in Fig. and find separately the tensions, in grams, necessary to let the string vibrate in three, four, and five segments, so that at the nodes the string appears practically stationary. Record tensions, total length of string, average length of one segment, and the number of segments in each case. It will be noticed that the segment nearest the fork does not end at the tip of the fork, but perhaps a short distance inside the prong, so to speak. Hence the tension should be varied until the segments are as nearly as possible all of the same length, when it will be found that the one next to the fork seems to end an inch or less inside of the prong of the fork.



Unclamp the fork from the table and set it at right angles to the axis of the cord, as shown in the Fig. Then report the steps given above.

From each of the six sets of data, compute the value of n. The value of m will obtained from the instructor, or weigh the string and divide its weight by the total length to obtain its mass per unit of length.

Plot two curves, one for each position of the fork, using the square roots of the tensions as abscissas, and the wave length as ordinates. Put them both on the same sheet and with the same axes.



(1) I HEREBY CERTIFY on my official oath that this list is made to identify all the officers and enlisted men under this unit or department and that entries pertaining to each name are correct.

August 30, 1944

FEDERICO Y. [illegible]
Bvt. 1st Lieut., 85th Inf.
Commanding

(2) APPROVED FOR PAYMENT:

(Signature)
Bvt Major
C.O. 85th Inf
(Designation)

(3) I HEREBY CERTIFY on my official oath that I have paid in cash to each officer and enlisted men whose name appears on the above roll the amount set opposite his name, he having signed or marked his name in my presence and at the time that payment was made to him, in acknowledging receipt of the money paid him.

August 30, 1944

Cash Book
10/29/44
E.A.

(Signature)
Bvt 1st Lieut 85th Inf
Commanding
(Designation)

S-4 [illegible]
For acknowledgment
F-4-0

UNITED STATES FORCES IN THE PHILIPPINES
CEBU AREA COMMAND
COMPANY "G", 85TH INFANTRY

October 23, 1944

Subject: Cash, Return of
To : The Commanding Officer, 85th Inf
(Thru the CO, 2nd Bn., 85th Inf)

1. The sum of TWO HUNDRED FIFTY PESOS (P250.00) in Japanese Currency together with the corresponding Pay Roll for this Unit is sent to that Headquarters with the following explanation:

Total Cash received - - - - - - - - -	P2800.00
Total Cash paid to Officers & E/M -	2550.00
Balance (Returned) -	250.00

2. The following E/M are not paid their partial pay for reasons indicated opposite their names:

a- Corp. Dargantes, Mauricio - Missing
b- Pvt. Enriquez, Juan - trfd to Ord. Co., CAC

3. Acknowledge receipt.

FEDERICO Y. BAGUIO
Bvt. 1st Lieut., 85th Inf.
Commanding

3 INCLS:
Incl 1- FIFTY-FIVE-PESO-BILL, (P250.00) in Japs Cy
Incls 2 & 3 - Two copies of Pay Roll

r special
neral Col-
the last

8th MD
E/Troops

GENERAL PAYROLL

Con Form No.) Revised Jan 30, 1946

"G" COMPANY 85TH INF GF (PA)
(Organization)

I HEREBY ACKNOWLEDGE to have received from 1st Lt V. R Garcia, FS, 24th FDS, PA the sum herein specified opposite our respective names, being in full compensation (difference in pay) for our services from the period stated. (Auth: Cir 194, Hq PA, cs):

"G" COMPANY 85TH INF. Month of July 194_ Journal Voucher No. _____

No.	NAMES	RANK & ASN	PERIOD OF SERVICE	MONTHLY SALARY	AMOUNT DUE	DEDUCTION ASD	DEDUCTION MSN	DEDUCTION CLASS N	CASH RECD	NO. OF PAYEE	SIGNATURE WITNESS	INITIAL	REMARKS
	PRIVATES												
	FRANCISCO, BOHOL	Pvt.130471	1 July to 31	P18.00	P25.00				P25.00			July	45
	JULIO, CANI	Pvt.	1 Jul to 31	P18.00	P25.00				P25.00			July	45

CERTIFICATE

1. I CERTIFY on my official oath that the above Pay Roll, consisting of _____ sheets, is correct and that the services have been duly rendered as stated.

VICENTE C RAMIREZ
1st Lieut, Infantry
Personnel Officer

WE the above Pay Roll ... _____ sheets, payable from appropriation from _____

MAXIMO ALBINDA
Lt Col, Inf
Comdg

3. I CERTIFY on my official oath that I have personally paid in cash to each employee whose name appears on the above Pay roll the amount set opposite his name, after satisfying myself that the persons above enumerated are the real claimants. The total amount paid by me on this Pay Roll, consisting of _____ sheets is $ _____.

4. I CERTIFY on my official oath that I have witnessed the payment in cash to each person whose name appears on the above payroll consisting of 1 sheets to the amount set opposite his name and my initials.

FEDERICO, Claudio
1st Lieut. Inf
Co, "C" Co, 86th Inf (GF)

(Rank)
Unit Commander