

Tank Wagon Ethyl - 1929

Tank Wagon Ethyl

Age

Age in years	f	x	fx	fx ²
24 - 29	15	0	0	0
30 - 35	9	1	9	9
36 - 41	10	2	20	40
42 - 47	6	3	18	54
48 - 53	5	4	20	80
54 - 59	1	5	5	25
60 - 65	3	6	18	108
66 -	<u>1</u>	7	<u>7</u>	<u>49</u>
	50		97	365

$$Nu_1 = \frac{97}{50} = 1.940000$$

$$Nu_2 = \frac{365}{50} = 7.300000$$

$$(Nu_1)^2 = 3.763600$$

$$Pi_2 = 7.300000 - 3.763600 = 3.536400$$

$$\text{Sigma} = 1.880532 \times 6 = 11.283192 \text{ years}$$

$$\text{P.E. sig.} = \frac{.67449 \times 11.283192}{10}$$

$$= \pm .761040$$

$$\text{mean} = 1.94 \times 6 + 27 = 38.640000 \text{ years}$$

$$\text{P.E.}_m = \frac{.67449 \times 11.283192}{\sqrt{50}}$$

$$= \frac{7.610400}{7.071067}$$

$$= \pm 1.076273$$

$$\text{mean} = 38.640 \pm 1.08 \text{ years}$$

$$\text{S.D.} = 11.283 \pm .761 \text{ years}$$

Tank Wagon Ethyl

Weight

Weight in pounds	f	x	fx	fx ²
130 - 144	5	0	0	0
145 - 159	13	1	13	13
160 - 174	12	2	24	48
175 - 189	9	3	27	81
190 - 204	6	4	24	96
205 - 219	3	5	15	75
220 -	1	6	6	36
	<u>49</u>		<u>109</u>	<u>349</u>

No information 1

$$Nu_1 = \frac{109}{49} = 2.224490$$

$$Nu_2 = \frac{349}{49} = 7.122449$$

$$(Nu_1)^2 = 4.948356$$

$$Pi_2 = 2.174093$$

$$Sigma = 1.474481 \times 15 = 22.117215$$

$$P.E. sig. = \frac{.67449 \times 22.117215}{\sqrt{98}}$$

$$= \frac{14.917840}{9.899495}$$

$$= \pm 1.506929$$

$$mean = 2.224490 \times 15 + 137.5$$

$$= 170.867350$$

$$P.E. m = \frac{14.917840}{7}$$

$$= \pm 2.131120$$

$$mean = 170.867 \pm 2.131 \text{ pounds}$$

$$S.D. = 22.117 \pm 1.507 \text{ pounds}$$

RE 0019025

Height

Height in inches	f	x	fx	fx ²
65 - 65.9	1	0	0	0
66 - 66.9	5	1	5	5
67 - 67.9	7	2	14	28
68 - 68.9	10	3	30	90
69 - 69.9	4	4	16	64
70 - 70.9	4	5	20	100
71 - 71.9	10	6	60	360
72 - 72.9	6	7	42	294
73 - 73.9	1	8	8	64
74 - 74.9	0	9	0	0
75 -	<u>1</u>	10	<u>10</u>	<u>100</u>
	49		205	1105

No information 1

$$Nu_1 = \frac{205}{49} = 4.183673$$

$$Nu_2 = \frac{1105}{49} = 22.551020$$

$$(Nu_1)^2 = 17.503120$$

$$Pi_2 = 5.047900$$

$$Sigma = 2.246753 \text{ inches}$$

$$P.E. sig. = \frac{.67449 \times 2.246753}{\sqrt{98}}$$

$$= \frac{1.515412}{9.899495}$$

$$= \pm .153080$$

$$\text{mean} = 4.183673 \times 1 + 65.5$$

$$= 69.683673 \text{ inches}$$

$$P.E._m = \frac{1.515412}{7}$$

$$= \pm .216487$$

$$\text{mean} = 69.684 \pm .216 \text{ inches}$$

$$S.D. = 2.247 \pm .153 \text{ inches}$$

Tank Wagon Ethyl

Pb in Urine mgs./Liter

Mgs. Pb per liter urine	f	x	fx	fx ²
.0 - .039	11	0	0	0
.04 - .079	18	1	18	18
.08 - .119	4	2	8	16
.12 - .159	1	3	4	12
.16 - .199	1	4	4	16
.20 - .239	0	5	0	0
.24 - .279	1	6	6	36
.28 - .319	1	7	7	49
.32 - .359	1	8	8	64
.36 - .399	0	9	0	0
.40 - .439	0	10	0	0
.44 - .479	0	11	0	0
.48 - .519	1	12	12	144
.52 -	<u>1</u>	<u>13</u>	<u>13</u>	<u>169</u>
	40		80	524

No information 10

$$Nu_1 = \frac{80}{40} = 2.000000$$

$$Nu_2 = \frac{524}{40} = 13.100000$$

$$(Nu_1)^2 = 4.000000$$

$$Pi_2 = 13.100000 - 4 = 9.100000$$

$$\text{Sigma} = \sqrt{9.1} = 3.01620 = 3.01620 \times .04 = .01 \text{ mgs.}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times .01}{\sqrt{30}} = \frac{.006}{8.944271} \\ &= \pm .0007 \end{aligned}$$

$$\text{mean} = 2.0 \times .04 + .02 = .10 \text{ mgs.}$$

$$\begin{aligned} \text{P.E.}_m &= \frac{.67449 \times .01}{6.324555} \\ &= \frac{.007}{6.324555} \\ &= \pm .001 \end{aligned}$$

$$\text{mean} = .10 \pm .001 \text{ mgs. Pb per liter}$$

$$\text{S.D.} = .01 \pm .0007 \text{ mgs.}$$

KE 0019027

Tank Wagon Ethyl

Lead in Urine (Total)

Pb in urine mgs.	f	x	fx	fx ²
.0 - .039	3	0	0	0
.04 - .079	8	1	8	8
.08 - .119	15	2	30	60
.12 - .159	5	3	15	45
.16 - .199	3	4	12	48
.20 - .239	2	5	10	50
.24 - .279	1	6	6	36
.28 - .319	1	7	7	49
.32 - .359	1	8	8	64
.36 - .399	0	9	0	0
.40 - .439	0	10	0	0
.44 - .479	0	11	0	0
.48 -	1	12	12	144
	40		108	504

No information 10

$$Nu_{1x} = \frac{108}{40} = 2.700000$$

$$Nu_{2x} = \frac{504}{40} = 12.6000000$$

$$(Nu_{1x})^2 = 7.290000$$

$$Pi_2 = 5.310000$$

$$Sigma = 2.304344 \times .04$$

$$= .092174 \text{ mgs.}$$

$$P.E. \text{ sig.} = \frac{.67449 \times .092174}{\sqrt{80}}$$

$$= \frac{.062184}{8.944272}$$

$$= \pm .006953$$

$$\text{mean} = 2.700000 \times .04 + .02$$

$$= .128000 \text{ mgs. Pb}$$

$$P.E. \text{ m} = \frac{.67449 \times .092174}{\sqrt{40}}$$

$$= \frac{.062184}{6.324555}$$

$$= \pm .009832$$

$$\text{mean} = .128 \pm .009 \text{ mgs. Pb}$$

$$S.D. = .092 \pm .007 \text{ mgs.}$$

KE 0019028

Tank Wagon Ethyl

Pb in Faeces mgs./gm. Ash

Mgs. Pb per gm. ash in faeces	f	x	fx	fx ²
.0 - .039	2	0	0	0
.04 - .079	16	1	16	16
.08 - .119	4	2	8	16
.12 - .159	3	3	9	27
.16 - .199	3	4	12	48
.20 - .239	1	5	5	25
.24 - .279	1	6	6	36
.28 - .319	0	7	0	0
.32 - .359	0	8	0	0
.36 - .399	0	9	0	0
.40 - .439	1	10	10	100
.44 - .479	0	11	0	0
.48 - .519	0	12	0	0
.52 -	2	13	26	338
	<u>33</u>		<u>92</u>	<u>606</u>

No information 17

$$Nu_1 = \frac{92}{33} = 3.787878$$

$$Nu_2 = \frac{606}{33} = 18.363636$$

$$(Nu_1)^2 = 14.348020$$

$$Pi_2 = 18.363636 - 14.348020 = 4.015616$$

$$\text{Sigma} = 2.003900 \times .04 = .08 \text{ mgs.}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times .08}{\sqrt{66}} \\ &= \frac{.054}{8.124} \\ &= \pm .006 \end{aligned}$$

$$\begin{aligned} \text{mean} &= 3.787878 \times .04 + .02 \\ &= .17 \end{aligned}$$

$$\begin{aligned} \text{P.E.}_m &= \frac{.67449 \times .08}{\sqrt{33}} \\ &= \frac{.054}{5.745} = \pm .009 \end{aligned}$$

$$\text{mean} = .17 \pm .009 \text{ mgs. Pb per gm. ash}$$

$$\text{S.D.} = .08 \pm .006 \text{ mgs.}$$

KE 0019029

Tank Wagon Ethyl

Pb in Faeces mgs./gm. Ash

Mgs. Pb per gm. ash in faeces	f	x	fx	fx ²
.0 - .039	2	0	0	0
.04 - .079	16	1	16	16
.08 - .119	4	2	8	16
.12 - .159	3	3	9	27
.16 - .199	3	4	12	48
.20 - .239	1	5	5	25
.24 - .279	1	6	6	36
.28 - .319	0	7	0	0
.32 - .359	0	8	0	0
.36 - .399	0	9	0	0
.40 - .439	1	10	10	100
.44 - .479	0	11	0	0
.48 - .519	0	12	0	0
.52 -	<u>1</u>	13	<u>13</u>	<u>169</u>
	32		79	437

Excluding case No. 150

$$Nu_1 = \frac{79}{32} = 2.468750$$

$$Nu_2 = \frac{437}{32} = 13.656250$$

$$(Nu_1)^2 = 6.094727$$

$$Pi_2 = 13.656250 - 6.094727 = 7.561523$$

$$\text{Sigma} = 2.749822 \times .04 = .109 \text{ mgs.}$$

$$\text{P.E. sig.} = \frac{.67449 \times .11}{\sqrt{64}}$$

$$= \frac{.074}{8.000}$$

$$= \pm .009$$

$$\text{mean} = 2.468750 \times .04 + .02$$

$$= .118750$$

$$= .119$$

$$\text{P.E.}_m = \frac{.67449 \times .11}{\sqrt{32}}$$

$$= \frac{.074}{5.657} = \pm .013$$

$$\text{mean} = .119 \pm .013 \text{ mgs. Pb per gm. ash}$$

$$\text{S.D.} = .11 \pm .009 \text{ mgs.}$$

KE 0019030

Tank Wagon Ethyl

Lead in Faeces (Total)

(Exclusive of Case No. 150.)

Pb in faeces (total) mgs.	f	x	fx	fx ²
.0 - .079	1	0	0	0
.08 - .159	4	1	4	4
.16 - .239	4	2	8	16
.24 - .319	6	3	18	54
.32 - .399	6	4	24	96
.40 - .479	2	5	10	50
.48 - .559	5	6	30	180
.56 - .639	2	7	14	98
.64 - .719	1	8	8	64
.72 - .799	0	9	0	0
.80 - .879	0	10	0	0
.88 - .959	0	11	0	0
.96 - 1.039	0	12	0	0
1.04 -	<u>1</u>	13	<u>13</u>	<u>169</u>
	32		129	731

No information 17

$$Nu_{1x} = \frac{129}{32} = 4.031250$$

$$Nu_{2x} = \frac{731}{32} = 22.843750$$

$$(Nu_{1x})^2 = 16.250977$$

$$Pi_2 = 6.592773$$

$$\text{Sigma} = 2.567340 \times .08 = .205387 \text{ mgs.}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times .205387}{\sqrt{64}} = \frac{.138531}{8} \\ &= \pm .017441 \end{aligned}$$

$$\text{mean} = 4.031250 \times .08 + .04$$

$$= .362500 \text{ mgs. Pb}$$

$$\begin{aligned} \text{P.E.}_m &= \frac{.67449 \times .205387}{\sqrt{32}} = \frac{.138531}{5.656854} \\ &= \pm .024489 \end{aligned}$$

$$\text{mean} = .363 \pm .024 \text{ mgs. Pb}$$

$$\text{S.D.} = .205 \pm .017 \text{ mgs.}$$

Tank Wagon Ethyl

Haemoglobin

DARE haemoglobin
reading

	f	x	fx	fx ²
- 68	1	0	0	0
68 - 69.9	0	1	0	0
70 - 71.9	1	2	2	4
72 - 73.9	1	3	3	9
74 - 75.9	2	4	8	32
76 - 77.9	1	5	5	25
78 - 79.9	4	6	24	144
80 - 81.9	4	7	28	196
82 - 83.9	3	8	24	192
84 - 85.9	8	9	72	648
86 - 87.9	2	10	20	200
88 - 89.9	13	11	143	1573
90 - 91.9	4	12	48	576
92 -	5	13	65	845
	<u>49</u>		<u>442</u>	<u>4444</u>

No information 1

$$Nu_1 = \frac{442}{49} = 9.020408$$

$$Nu_2 = \frac{4444}{49} = 90.693877$$

$$(Nu_1)^2 = 81.367760$$

$$Pi_2 = 9.326117$$

$$Sigma = 3.053869 \times 2 = 6.107738\% \text{ DARE}$$

$$P.E. sig. = \frac{.67449 \times 6.107738}{\sqrt{98}}$$

$$= \frac{4.119608}{9.899495}$$

$$= \pm .416143$$

$$mean = 9.020408 \times 2 + 67$$

$$= 85.040816\% \text{ DARE}$$

$$P.E._m = \frac{4.119608}{7}$$

$$= \pm .588515$$

$$mean = 85.041 \pm .588\% \text{ DARE}$$

$$S.D. = 6.108 \pm .416\% \text{ DARE}$$

KE 0019032

Tank Wagon Ethyl

Dynamometer Left

Dynamometer reading	f	x	fx	fx ²
50 - 59	2	0	0	0
60 - 69	2	1	2	2
70 - 79	2	2	4	8
80 - 89	3	3	9	27
90 - 99	13	4	52	208
100 - 109	6	5	30	150
110 - 119	2	6	12	72
120 - 129	7	7	49	343
130 - 139	0	8	0	0
140 - 149	2	9	18	162
150 -	<u>1</u>	10	<u>10</u>	<u>100</u>
	40		186	1072

No information 10

$$Nu_1 = \frac{186}{40} = 4.650000$$

$$Nu_2 = \frac{1072}{40} = 26.800000$$

$$(Nu_1)^2 = 21.622500$$

$$Pi_2 = 5.177500$$

$$Sigma = 2.275412 \times 10 = 22.754120$$

$$P.E. sig. = \frac{.67449 \times 22.754120}{\sqrt{80}}$$

$$= \frac{15.347426}{8.944271}$$

$$= \pm 1.715895$$

$$mean = 4.65 \times 10 + 55$$

$$= 101.500 \text{ dynam. degrees}$$

$$P.E.m = \frac{15.347426}{6.324555}$$

$$= \pm 2.426641$$

$$mean = 101.500 \pm 2.427 \text{ dynam. degrees}$$

$$S.D. = 22.754 \pm 1.716 \text{ dynam. degrees}$$

KE 0019033

Tank Wagon Ethyl

Dynamometer Right

Dynamometer reading	f	x	fx	fx ²
70 - 79	2	0	0	0
80 - 89	4	1	4	4
90 - 99	6	2	12	24
100 - 109	7	3	21	63
110 - 119	5	4	20	80
120 - 129	6	5	30	150
130 - 139	5	6	30	180
140 - 149	2	7	14	98
150 - 159	2	8	16	128
160 -	<u>1</u>	9	<u>9</u>	<u>81</u>
	40		156	808

No information 10

$$Nu_1 = \frac{156}{40} = 3.900000$$

$$Nu_2 = \frac{808}{40} = 20.200000$$

$$(Nu_1)^2 = 15.210000$$

$$Pi_2 = 4.990000$$

$$Sigma = 2.233831 \times 10 = 22.338310$$

$$P.E. \text{ sig.} = \frac{.67449 \times 22.338310}{\sqrt{80}}$$

$$= \frac{15.066967}{8.944271}$$

$$= \pm 1.684538$$

$$\text{mean} = 3.9 \times 10 + 75$$

$$= 114.000 \text{ dynam. degrees}$$

$$P.E. _m = \frac{15.066967}{\sqrt{40}} = \frac{15.066967}{6.324555}$$

$$= \pm 2.382297$$

$$\text{mean} = 114.000 \pm 2.382 \text{ dynam. degrees}$$

$$S.D. = 22.338 \pm 1.684 \text{ dynam. degrees}$$

Tank Wagon Ethyl

Pulse Pressure

Pulse pressure

mm. Hg	f	x	fx	fx ²
30 - 34	4	0	0	0
35 - 39	7	1	7	7
40 - 44	6	2	12	24
45 - 49	6	3	18	54
50 - 54	12	4	48	192
55 - 59	0	5	0	0
60 - 64	5	6	30	180
65 - 69	0	7	0	0
70 - 74	2	8	16	128
75 - 79	0	9	0	0
80 -	<u>4</u>	10	<u>40</u>	<u>400</u>
	46		171	985

No information 4

$$Nu_1 = \frac{171}{46} = 3.717391$$

$$Nu_2 = \frac{985}{46} = 21.413043$$

$$(Nu_1)^2 = 13.818996$$

$$Pi_2 = 7.594047$$

$$\text{Sigma} = 2.755730 \times 5 = 13.778650 \text{ mm. Hg}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times 13.778650}{\sqrt{92}} \\ &= \frac{9.293562}{9.591663} \\ &= \pm .968921 \end{aligned}$$

$$\text{mean} = 3.717391 \times 5 + 32.5$$

$$= 51.086955 \text{ mm. Hg}$$

$$\text{P.E.}_m = \frac{9.293562}{\sqrt{46}}$$

$$= \frac{9.293562}{6.782329}$$

$$= \pm 1.370261$$

$$\text{mean} = 51.087 \pm 1.370 \text{ mm. Hg}$$

$$\text{S.D.} = 13.779 \pm .969 \text{ mm. Hg}$$

KE 0019035

Tank Wagon Ethyl

Systolic Pressure

Systolic pressure mm. Hg	f	x	fx	fx ²
100 - 109	2	0	0	0
110 - 119	16	1	16	16
120 - 129	10	2	20	40
130 - 139	7	3	21	63
140 - 149	4	4	16	64
150 - 159	2	5	10	50
160 - 169	3	6	18	108
170 - 179	0	7	0	0
180 -	<u>2</u>	<u>8</u>	<u>16</u>	<u>128</u>
	46		117	469

No information 4

$$Nu_1 = \frac{117}{46} = 2.543478$$

$$Nu_2 = \frac{469}{46} = 10.195652$$

$$(Nu_1)^2 = 6.469280$$

$$Pi_2 = 3.726372$$

$$\text{Sigma} = 1.930381 \times 10 = 19.303810 \text{ mm. Hg}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times 19.303810}{\sqrt{92}} \\ &= \frac{13.020227}{9.591663} \\ &= \pm 1.357453 \end{aligned}$$

$$\text{mean} = 2.543478 \times 10 + 105$$

$$= 130.43478 \text{ mm. Hg}$$

$$\begin{aligned} \text{P.E.}_m &= \frac{13.020227}{\sqrt{46}} \\ &= \frac{13.020227}{6.782329} \\ &= \pm 1.919728 \end{aligned}$$

$$\text{mean} = 130.435 \pm 1.920 \text{ mm. Hg}$$

$$\text{S.D.} = 19.304 \pm 1.357 \text{ mm. Hg}$$

KE 0019036

Tank Wagon Ethyl

Pulse

Pulse in beats per minute	f	x	fx	fx ²
40 - 49	1	0	0	0
50 - 59	0	1	0	0
60 - 69	6	2	12	24
70 - 79	12	3	36	108
80 - 89	13	4	52	208
90 - 99	11	5	55	275
100 - 109	6	6	36	216
110 -	<u>1</u>	<u>7</u>	<u>7</u>	<u>49</u>
	50		198	880

No information - 0

$$Nu_1 = \frac{198}{50} = 3.960000$$

$$Nu_2 = \frac{880}{50} = 17.600000$$

$$(Nu_1)^2 = 15.681600$$

$$Pi_2 = 1.918400$$

$$\text{Sigma} = 1.385063 \times 10 = 13.850630 \text{ beats}$$

$$\begin{aligned} \text{P.E. sig.} &= \frac{.67449 \times 13.850630}{\sqrt{100}} \\ &= \frac{9.342111}{10} \end{aligned}$$

$$= \pm .9342111$$

$$\text{mean} = 3.96 \times 10 + 45$$

$$= 84.6$$

$$\text{P.E.}_m = \frac{.67449 \times 13.850630}{\sqrt{50}}$$

$$= \frac{9.342111}{7.071067}$$

$$= \pm 1.321174$$

$$\text{mean} = 84.600 \pm 1.321 \text{ beats per minute}$$

$$\text{S.D.} = 13.851 \pm .934 \text{ beats per minute}$$

RE 0019037

Tank Wagon Ethyl

Temperature

Temperature in °F	f	x	fx	fx ²
- 97	1	0	0	0
97 - 97.4	0	1	0	0
97.5 - 97.9	1	2	2	4
98 - 98.4	17	3	51	153
98.5 - 98.9	14	4	56	224
99 - 99.4	11	5	55	275
99.5 - 99.9	3	6	18	108
100 -	<u>1</u>	<u>7</u>	<u>7</u>	<u>49</u>
	48		189	813

No information 2

$$Nu_1 = \frac{189}{48} = 3.937500$$

$$Nu_2 = 16.937500$$

$$(Nu_1)^2 = 15.503906$$

$$Pi_2 = 1.433594$$

$$Sigma = 1.197328 \times .5 = .598664^{\circ} F.$$

$$P.E. \text{ sig.} = \frac{.67449 \times .598664}{\sqrt{96}}$$

$$= \frac{.403793}{9.797958}$$

$$= \pm .041212$$

$$\text{mean} = 3.937500 \times .5 + 96.5$$

$$= 99.468750^{\circ} F.$$

$$P.E._m = \frac{.403793}{\sqrt{48}}$$

$$= \frac{.403793}{6.928203}$$

$$= \pm .058283$$

$$\text{mean} = 99.468 \pm .058$$

$$S.D. = .599 \pm .041$$

KE 0019038

