

فسلجة تدريب المرتفعات للمسافات الطويلة

أ.م.د. ساطع اسماعيل ناصر

تشرين الثاني 2005

(1)

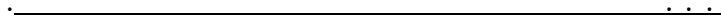
(1)

. 1	. 1
. 2	. 2
. 3	. 3
. 4	

() ()

$$\begin{aligned}
 ({}^3 760) & \quad 30 - 20 & (&) \\
 & & ({}^3 580) & \\
 & & & ({}^3 1020) \\
 & & & , *({}^3 1700) \\
 250 - 200 & & &
 \end{aligned}$$

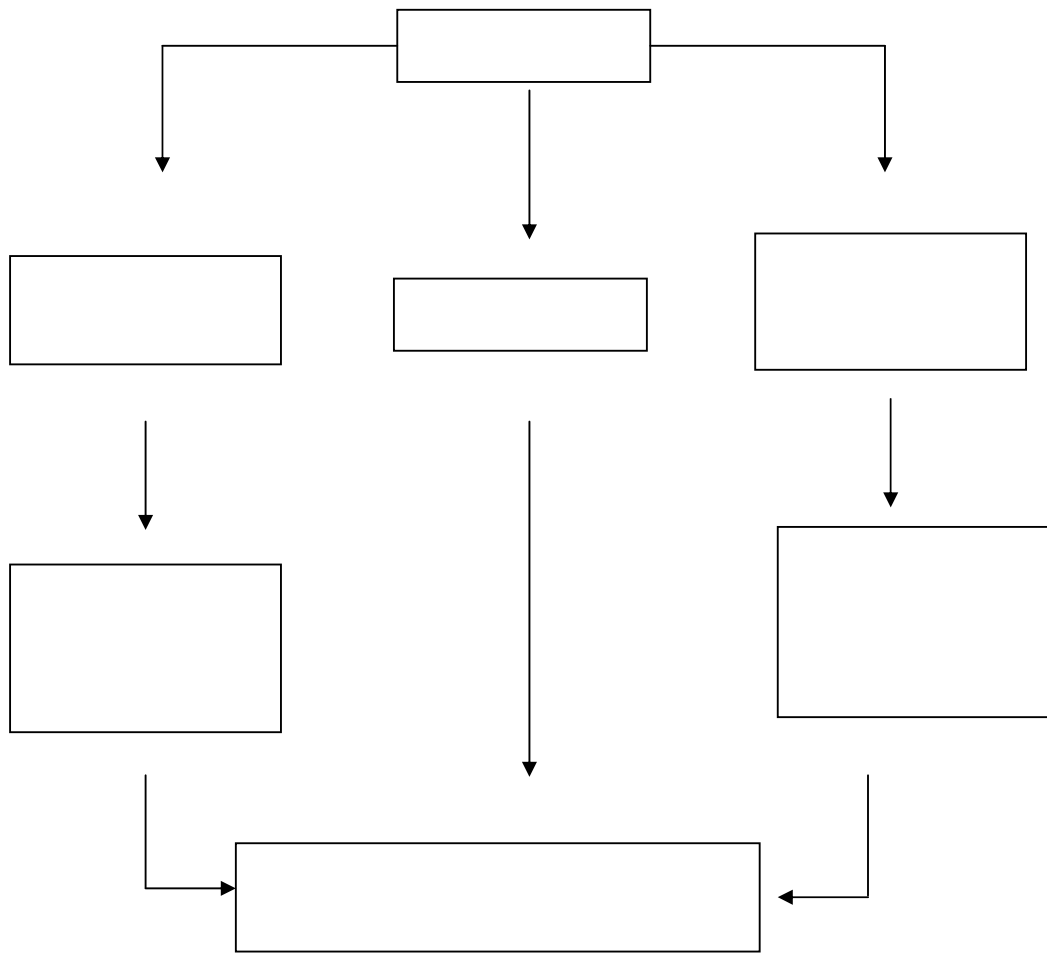
$$\begin{aligned}
 & 80 \quad 60 \\
 (0.85) & \\
 & 71 = 0.85 / 60
 \end{aligned}$$



7 - 5

(2)

(2)



100 – 60

% 60 – 50

% 90 – 80

2005

:

. 1

. 2

(2)

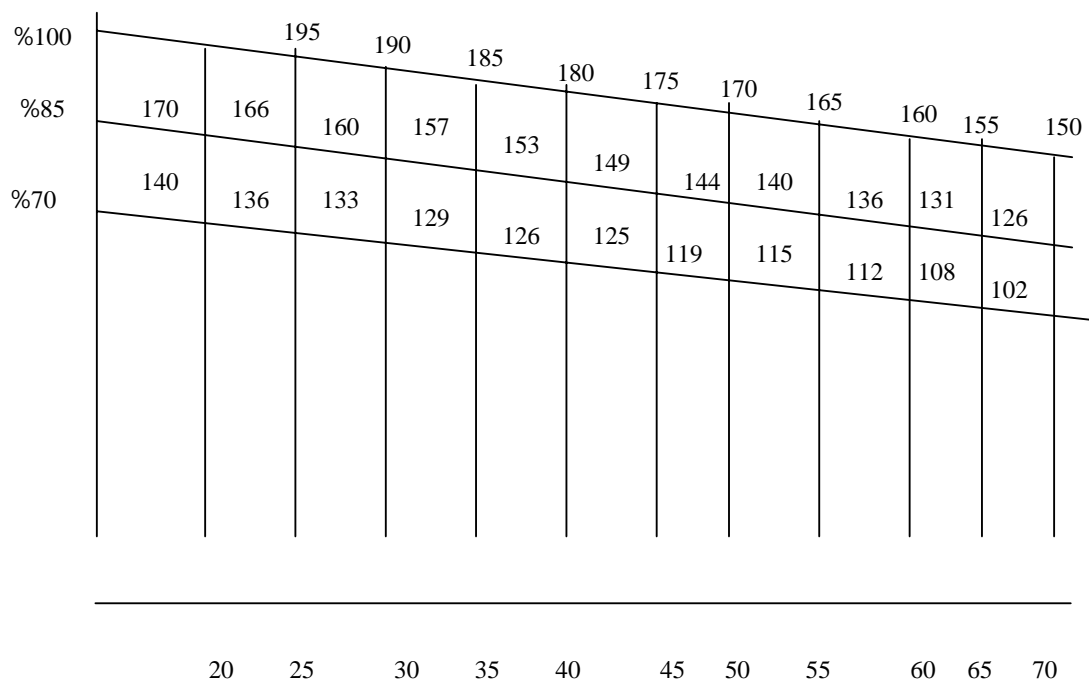
/ 30 / 5.5 - 5
 % 50 162 105
 % 270 185 50

(2)

162	110		105	75	()
185	195		50	75	/

.(3)

(3) .



20 25 30 35 40 45 50 55 60 65 70

:

13 / 1 / 70

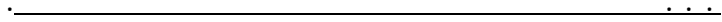
, 5 70 ,

3 / 2

7.4 PH

% 45

2005



%55

. 1

. 2

. 3

%45

% 55

8 - 7

(4.5)

(5)

CO

210

100

16 - 14

1.34

2005

$$\begin{array}{r} 20.1 \\ 1.34 \times \\ \hline 100 \\ 20.1 = \end{array} \quad \begin{array}{r} 100 \\ 15 \\ 100 \\ 15 \end{array}$$

(4)

(4)

	#		
		+	
		+	
-			
-			
-			
		+	
		+	
	#		



160 - 100

120

13.6

(5)

80

:



(40)

.
:
. 5 . . 4 . . 3 . . 2 . . 1



.....

³ 3500

% 75 – 66

³ 7000 – 6000

(5)

(5)

()											
100	95	90	85	80	75	70	65	60	55	50	
5000	4850	4700	4500	4400	4250	4100	3950	3800	3650	3500	160
5200	5050	4900	4750	4600	4450	4300	4150	4000	3850	3700	165
5400	5250	5100	4950	4800	4650	4500	4350	4200	4050	3900	170
5600	5450	5300	5150	5000	4850	4700	4550	4400	4250	4100	175
5800	5650	5500	5350	5200	5050	4900	4750	4600	4450	4300	180
6000	5850	5700	5550	5400	5250	5100	4950	4800	4650	4500	185
6200	6050	5900	5750	5600	5450	5300	5150	5000	4850	4700	190

(6)

(6)

* 60 - 1	40	100	100	
573	573	573	573	
46	46	40	40	
47	47	47	47	

760

) 713 47
 713 (713 = 47 - 760

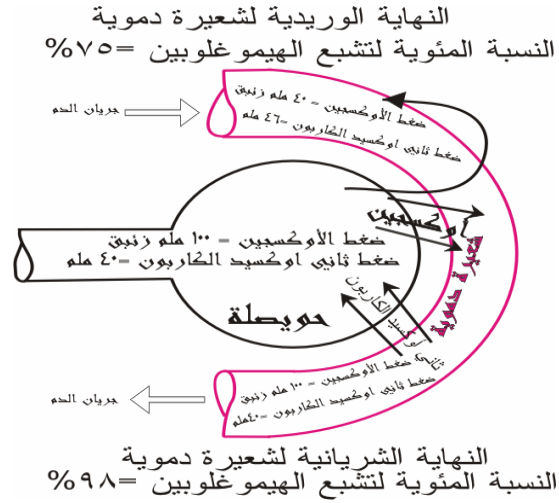
(713 × 100 / 21) 40
 150

110

100

(3)

(3)



60

100

% 98

. % 75

40

46

40

6

40

100

40

1

60

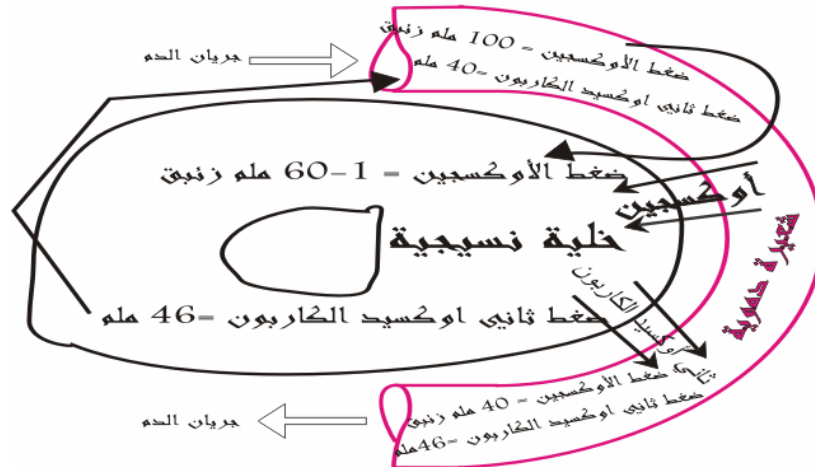
46

46

(4)

(4)

النهاية الشريانية لشعيرة دموية
النسبة المئوية لتثبع الهيموغلوبين = 98%



النهاية الوريدية لشعيرة دموية
النسبة المئوية لتثبع الهيموغلوبين = 75%

8 - 7
- 120

150

(1)

()

2005

.1628

()

)

(Vo_2max
 10000 – 5000
 6

1

:

. 3.5 5000



*
*
*
*

) 0.3 - 0.2

(/ 300 - 200
6 3

(V)
)

oxygen

(O₂)
(maximal)

(V_{O₂})
volume
(max

()

/

70/ **2.8**

$$/ \quad / \quad 40 = \frac{2800}{70} =$$

(VO₂ max)

:

.

-

.

.

'

'

'

-

.

'

-

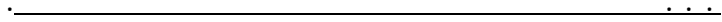
:

:

. 1

.

.



:

. : . **1**

: . **2**

: . **2**

) ()
(Astrand Nomogram) (

Bicycle step - test
: ergometer
33 40 step - test .

50**146**

2.4 =

% 95

% 85 – 65

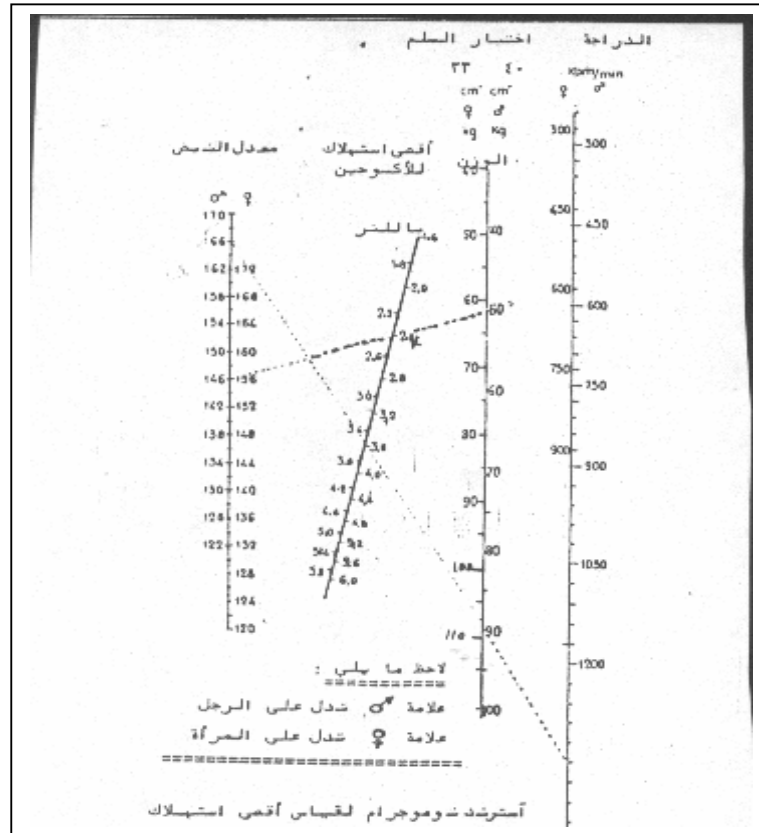
20

-150

.(/ 180

()

(5)



(7)

(7)

% 78.09	
% 20.95	
% 0.03	
% 0.93	

(29)

(8.848)

760

(250)

(8)

		/
159.2	760	
141.2	674	1000
124.9	596	2000
110.2	526	3000
96.9	462	4000
84.4	231	9000

% 79

% 0.03

% 20.95

% 21 , % 79

5 / 1

5 / 4

760

%21

(160)

3000

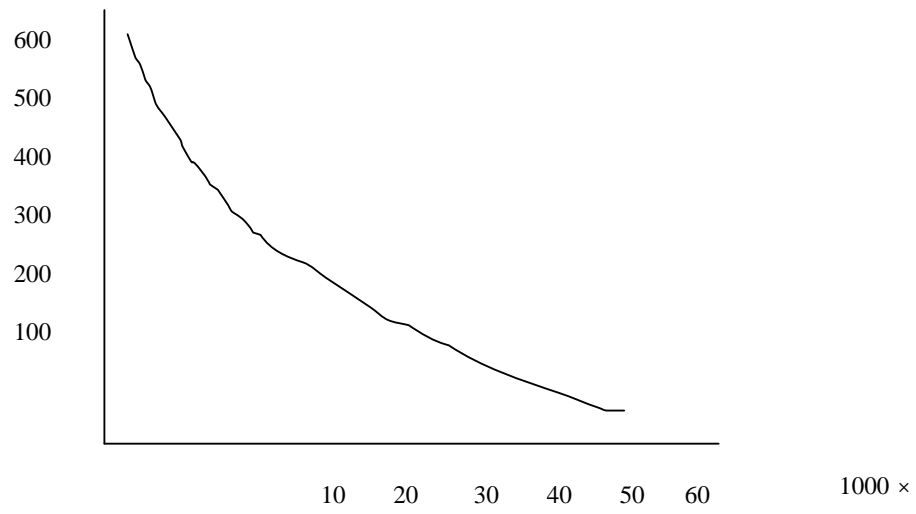
2000

1000

(6)

1000

(6)



1000

(9)

(9)

1000

2.7	54.1	60000
	56.8	59000
4.2	78.3	50000
	91.5	49000
8.6	170.1	35000
	178.7	34000
12.6	281.8	25000
	294.4	24000
17.6	428.8	15000
	446.4	14000
20.6	522.6	10000
	543.2	9000
26.3	706.6	2000
	732.9	1000
27.1	732.9	1000
	760.0	



.(())
:
+ + + =

760 = .
))
.((
%78.9

$$593.4 = \frac{760 \times 78.09}{100}$$

$$159.2 = \frac{760 \times 20.95}{100}$$

$$7.4 = \frac{760 \times 0.97}{100}$$

$$760 = 7.4 + 159.2 + 593.4 =$$

760

))

%47

%80 % 6 - 5.5

% 14

:

((

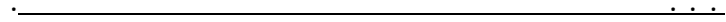
$$100 = \quad \% 14$$

$$40 = \quad \% 6 - 5.5$$

$$573 = \quad \%80$$

$$47 =$$

760



}

{

760

(760)

100

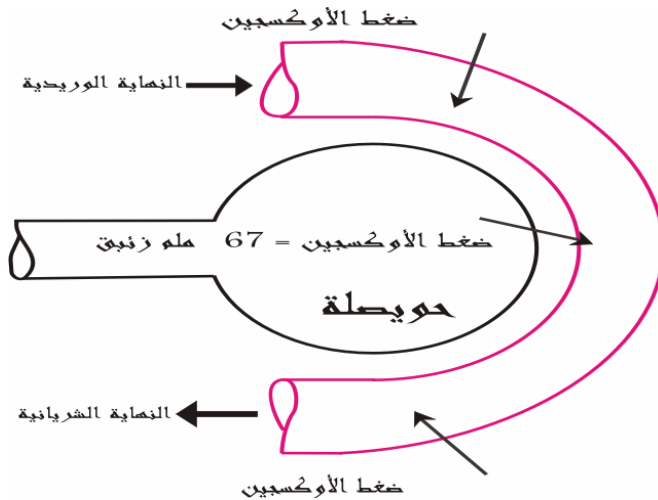
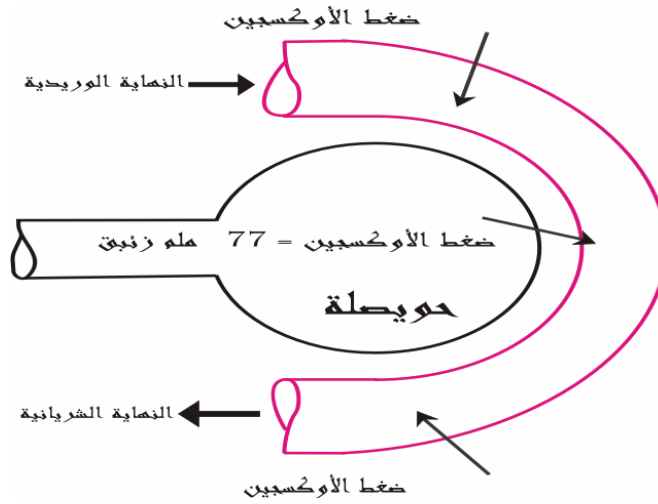
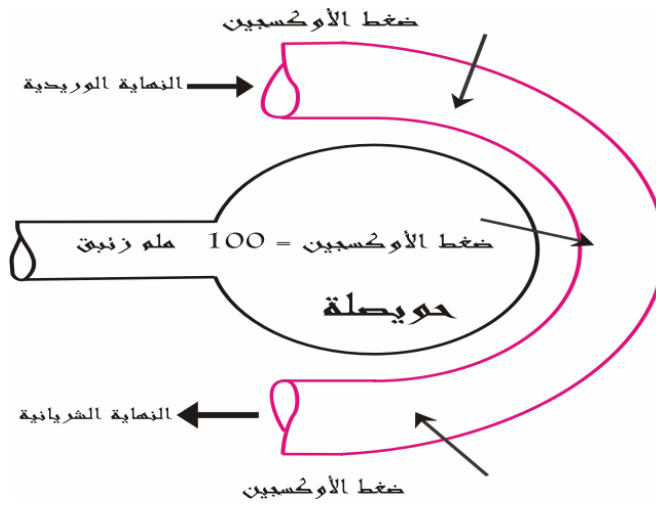
2005

%98

100

(7)

(7)



3000 - 2000
85 -60

%90

(526)
(3000)

596)

(2000) (

) (526)

(3000

3000

(10)

()
() (1500)

(3.42)

38

(3.54)

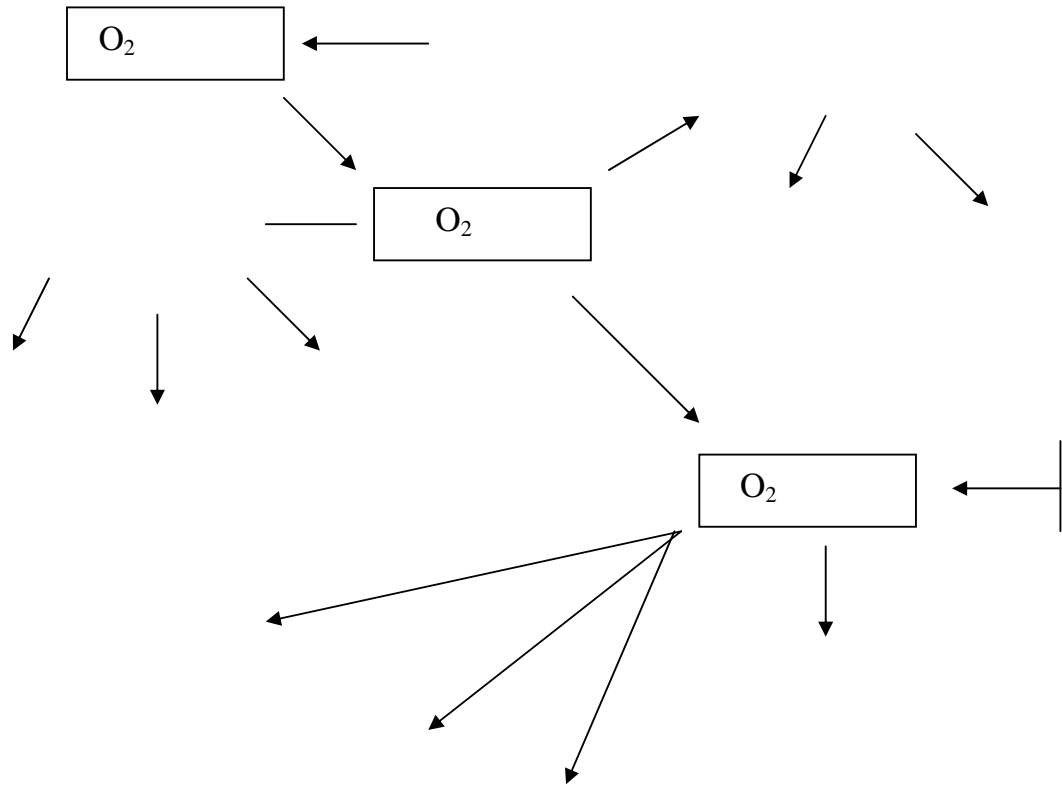
(/ 42)

/

2005

(8) 18.6 19.3

(8)



1981 , 1983 , , 1990 , ,

(10)

(3000)

2000		
2400		
1850		
1820		
1895		
1895		
2200		
2194		
2035		
2218		
1560		

15 - 1 - 2

()

(Hypo)
 (oxygen)
)

(oxygen dep.)

1968

760

ATP

.ATP

2005

.....

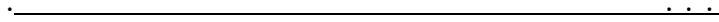
) ()
(11) (5000

()
% 12

% 21

% 50- 25

3000 - 1500



2400

()

1990

(11)

5000

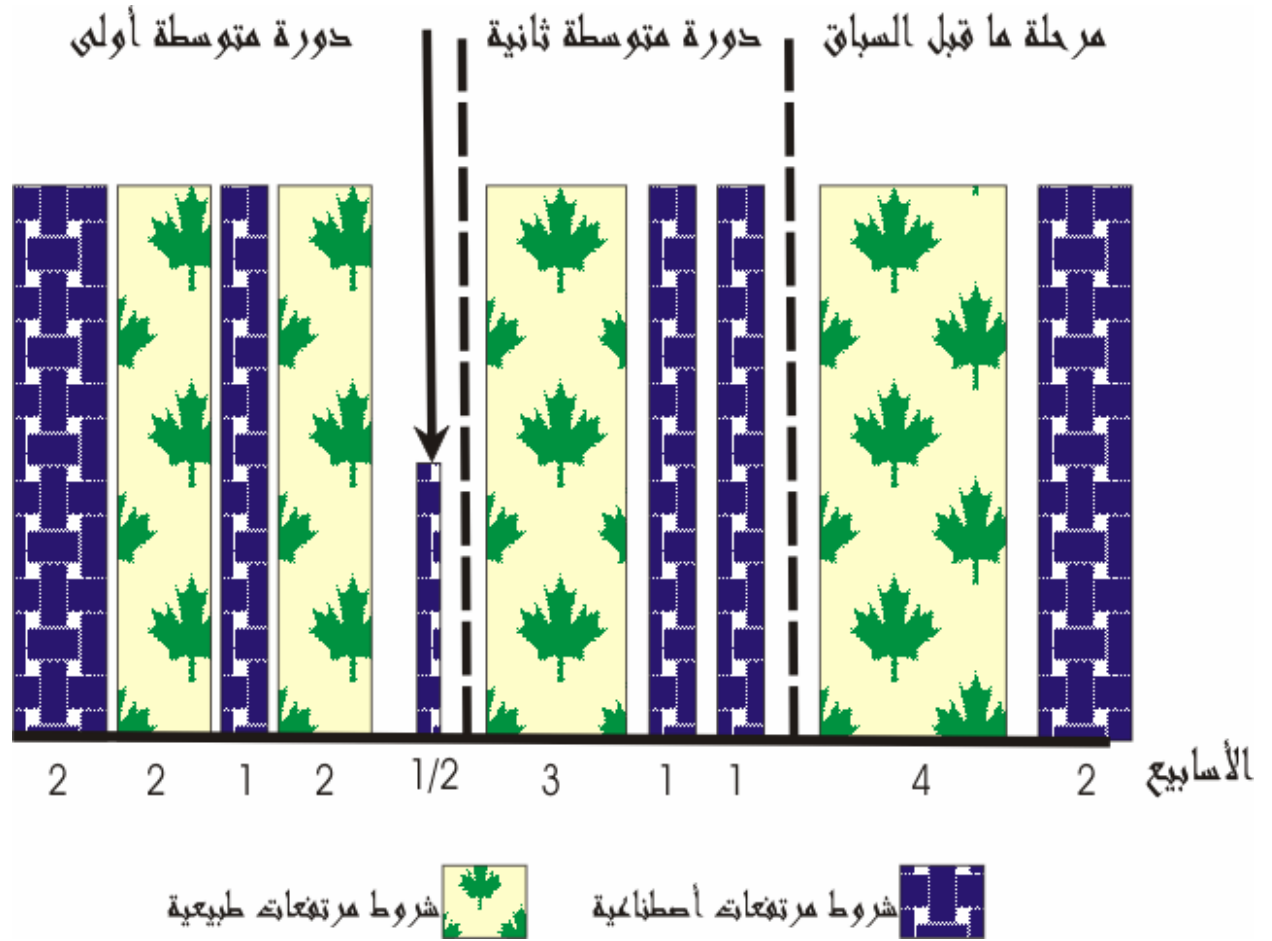
.....

(11)

...

5000

9	8	7	6	5	4	3	2	1	12	11	10	



(12)

5000

5000		2000	1991			
				13.14.45	. 1	1991
				13.16.64	. 2	
13.23.41	. 8	13.05.40	. 3	13.02.75	. 1	1993
		13.06.64	. 4	13.03.17	. 2	
		13.20.12	. 6	13.16.77	. 1	1995
		13.34.52	. 8	13.17.59	. 3	
				13.07.38	. 1	1997
				13.11.09	. 3	
13.20.81	. 8	13.13.86	. 6	12.58.72	. 2	1999
		13.18.97	. 7	13.03.71	. 5	
13.14.07	. 8	13.05.60	. 6	13.00.77	. 1	2001
		13.08.46	. 7	13.03.47	. 3	

(13)

10000

10000		2000	1991			
		27.53.66	. 4	27.38.74	. 1	1991
				27.39.41	. 2	
		28.06.02	. 3	27.46.02	. 1	1993
				27.46.54	. 2	
		27.23.72	. 5	27.12.95	. 1	1995
		27.30.02	. 6	27.14.70	. 3	
28.00.29	. 7	27.30.39	. 4	27.24.58	. 1	1997
		27.32.48	. 5	27.25.62	. 2	
28.08.82	. 6	27.59.15	. 3	27.57.27	. 1	1999
28.14.98	. 7	28.02.08	. 4	27.58.56	. 2	
27.57.56	. 7	27.54.41	. 3	27.53.23	. 1	2001
27.58.06	. 8	27.55.21	. 4	27.53.97	. 2	

(14)

- 5000

10000

10000	5000	2000	1992	
27.47.72 . 2			13.13.71 . 2	1992
28.00.07 . 3			13.13.03 . 3	
27.07.34 . 1			13.08.16 . 2	1996
27.08.17 . 2				
27.18.20 . 1			13.35.49 . 1	2000
27.18.29 . 2			13.36.88 . 3	
27.19.75 . 3				

3000- 1500

45

% 8

800

% 3

. 10000 , 5000

:

. 1

. 2

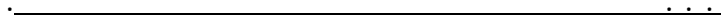
. 3

. 4

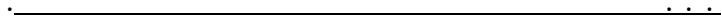
(15)

(27.18.20) 10000 (13.35.49)
5000
10000 (12.39.36)
(26.22.75)
2001 1912 10000 5000

- 5000
5000 2001 1912 10000
(% 15.85) 10000 (% 13.35)
(70.08) 5000 1912
/ 5.80) (60.72) 2001
(74.4) 1912 10000 (5.80)
(63.28) 2001
(/



:



)

(

()

()

- 5000)

(10000

10000 - 5000

(90)

2005

.(16)

(16)

(1992 – 1980)

1992	1988	1984	1980		
600 – 550	550 – 500	500 – 470	480 – 440		5000
1300 – 1200	1200 – 1100	1100 – 1000	1000 – 900	/	
9500 – 8500	8500 – 7500	6500 – 5500	5500 – 5000	/	10000

(17)

(17)

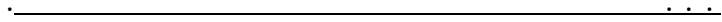
1300 - 1600	35 - 30	/	
9500 - 8500	420 - 360	/	
340 - 320	7 - 6		
600 - 550	18 - 12		

(110)

(150)

(85)

3000 1800





% 60 – 40

%75

160 – 140

170 – 130

180 – 130

% 90 – 70

150

170– 50

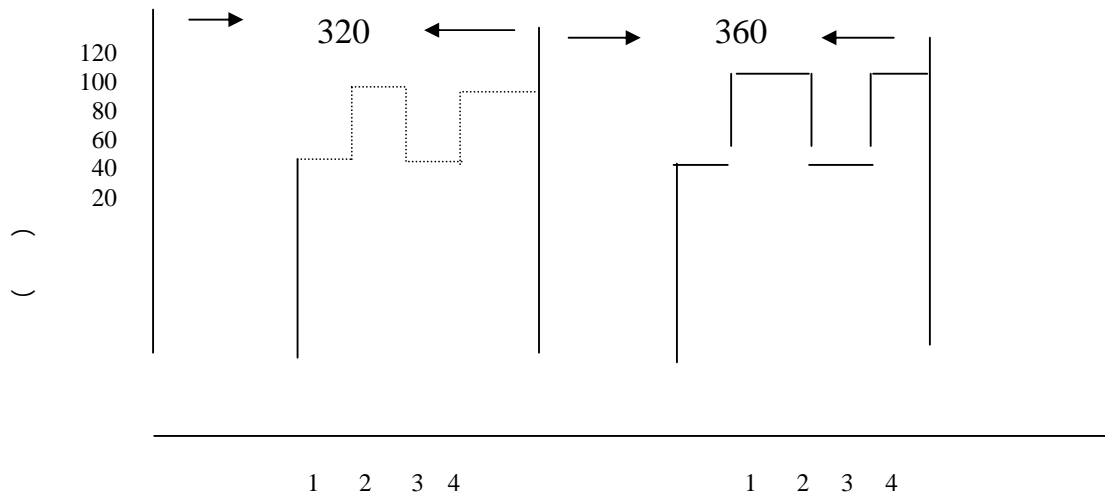
(

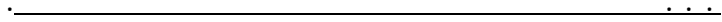
% 75 – 25

5000
 ()
 (9)

360 – 320
 (9)

10000 –





10000 – 5000

– 5000

10000

(10)

1997

(10)

/

(PFUTONER / GROSSE / 1997 -)

