RESULTS

RESULSTS

I- Killing time :

Malathion Ø.5% lotion killed all lice within 6 minutes with a mean of 5.2 ± Ø.63 minutes (Table 9). Non survived after 6 minutes (Table I).

Kerosene followed Malathion in effectiveness. The lethal time was about 12 minutes (Table 2) with a mean of 1Ø.6 ± 1.89 minutes (Table 9).

Licid "Pyrethroid combined with pipronyl butoxide", (Ø.6 tetramethrin + 2.4 pipronyl butoxide) killed all lice within 16 minutes (Table3)with a mean of 13.5±1.27 minutes (Table9).

Half concentration of the previous dose of licid killed all lice within 4Ø minutes with a mean of 34.4 ± 3.1 minutes.

Benzyl benzoate and crotamiton killed all lice within 22 minutes and 16 minutes respectively (Table 4 and 5) with a mean of 14.1 ± 1.66 minutes for Crotomiton and 18.6 ± 1.26 minutes for Benzyl benzoate 25% (Table 9).

Gamma benzene hexachloride 1% was the least effective insecticide. It required 12Ø minutes to kill all lice (Table 7) with a mean 1Ø5 ± 1Ø.8 minutes (Table 9).

On the other hand all control lice were alive and active allover the experimental work and even for three hours later (Table 8). Non survived more than 13 hours with a mean lethal time of 11.5 ± 1.8 hours (Table 9).

II- Ovicidal activity : (Table 1Ø and Fig. 14).

Malathion Ø.5 % lotion was the most effective one. It killed 93 % of the one hundred experimented viable eggs.

Next to it was kerosene as it killed 8Ø% of the eggs. The ovicidal activity of licid full and half concentration were 7Ø % and 55 % respectively.

Gamma benzil lotion "Gamma Benzene hexachloride 1%", Bebzanil" Benzyl benzoate" and Eurax "Crotamiton" showed moderate to mild ovicidal activity of 65%, 6Ø%, and 55 % respectively.

On the other hand, nearly all the experimented control eggs hatched (96 %).

Table (1) : Shows the lethal time in minutes on using malathion 0.5% lotion.

\ Time min \ N.of test \	0	1	2	3	4	5	6	
1	---	4	6	7	9	10	10	Number
2	---	3	5	6	7	9	10	
3	---	3	5	9	10	10	10	of
4	---	2	4	7	8	10	10	
5	---	4	6	8	9	10	10	killed
6	---	3	5	7	8	9	10	
7	---	3	5	8	9	10	10	lice
8	---	2	4	6	8	10	10	
9	---	4	5	8	10	10	10	
10	---	5	5	7	9	10	10	
Total	---	33	51	73	87	98	100	

Fig. (5) : Shows the relation between the number of lice killed by Malathion 0.5% and time in minutes.

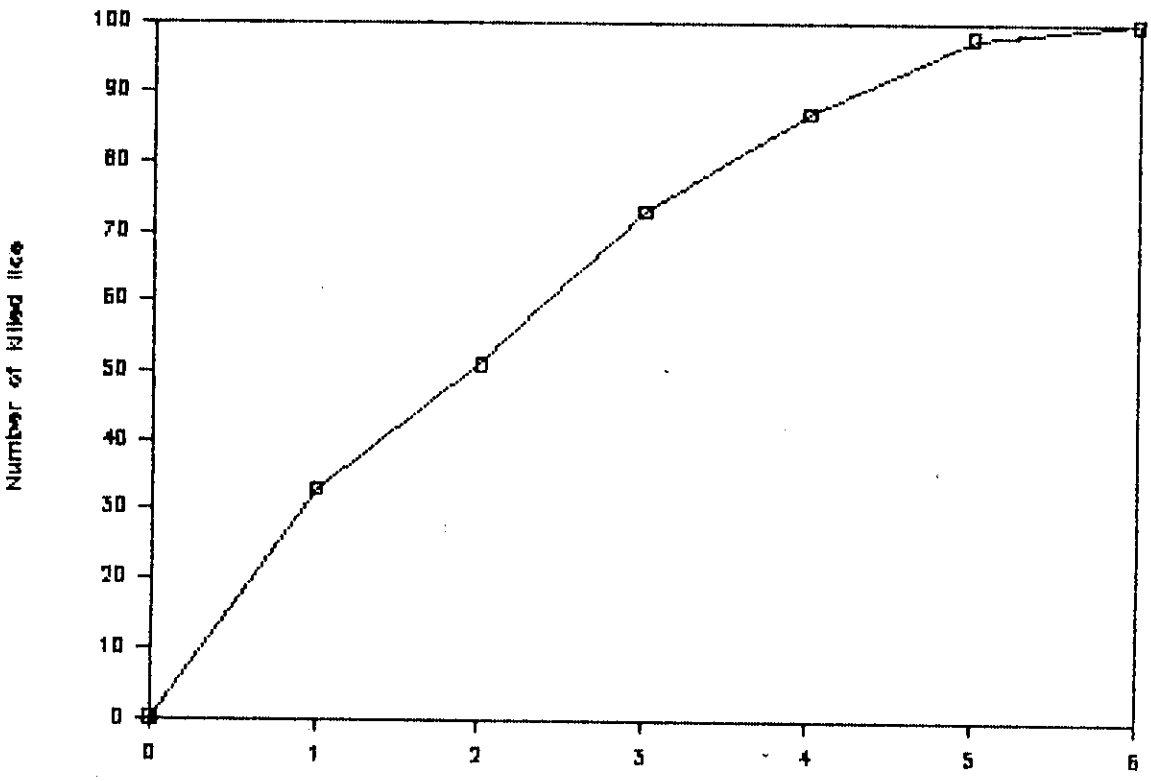


Table (2) : Shows the lethal time in minutes on using kerosene.

\ Time min \ N.of test	0	2	4	6	8	10	12	14	
1	---	4	7	8	9	10	10	10	Number
2	---	3	5	6	8	9	10	10	
3	---	4	6	8	9	10	10	10	of
4	---	2	5	7	9	9	10	10	
5	---	3	5	6	8	8	9	10	killed
6	---	4	6	9	10	10	10	10	
7	---	2	4	5	8	10	10	10	
8	---	2	3	6	7	8	10	10	lice
9	---	3	5	7	8	10	10	10	
10	---	4	7	8	10	10	10	10	
Total	---	31	53	80	85	93	99	100	

Fig. (6) : Shows the relation between the number of lice killed by Kerosene and time in minutes.

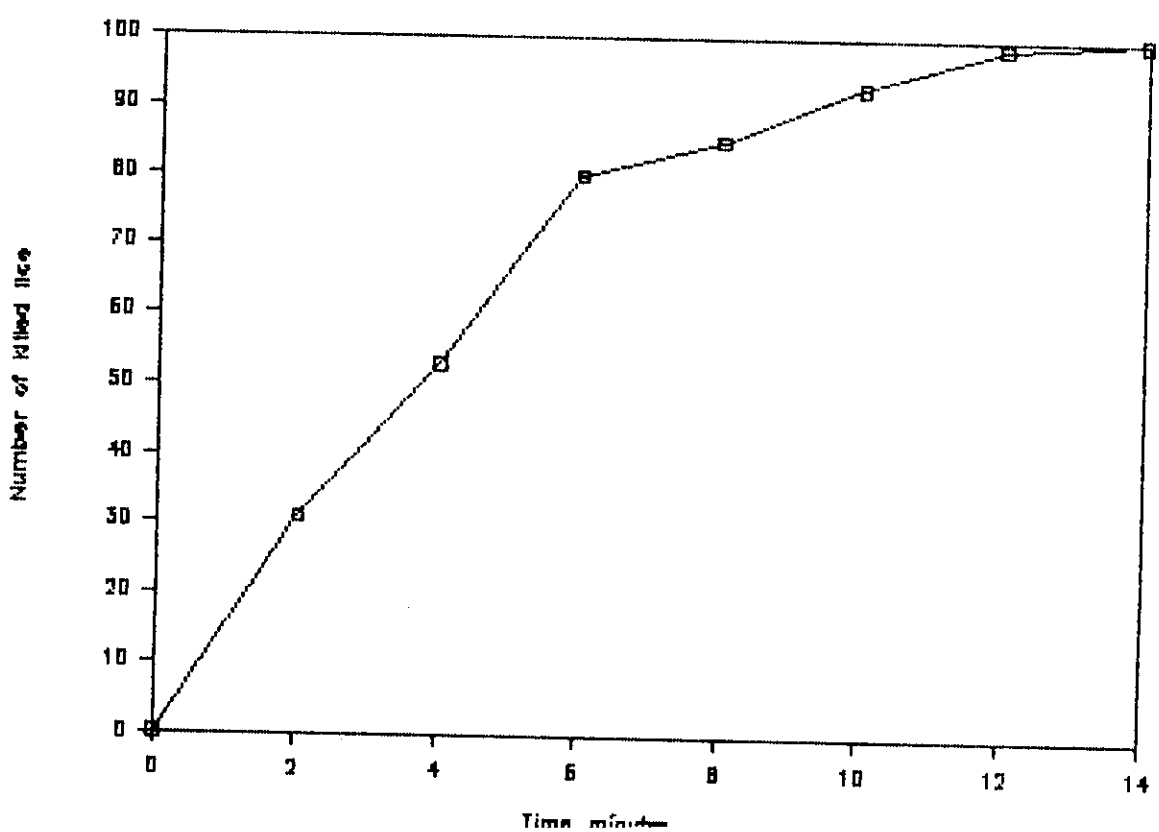


Table (3) : Shows the lethal time in minutes on using licid "full concentration"

\ Time min / N.of test \	0	2	4	6	8	10	12	13	14	15	16	
1	---	1	2	3	5	7	8	9	9	10	10	
2	---	1	3	5	6	8	9	10	10	10	10	
3	---	1	4	6	7	8	9	10	10	10	10	Number
4	---	2	3	4	6	7	8	9	10	10	10	
5	---	1	5	7	8	9	10	10	10	10	10	of
6	---	3	4	6	7	7	9	10	10	10	10	
7	---	1	4	5	6	8	10	10	10	10	10	killed
8	---	2	3	4	5	6	8	9	10	10	10	
9	---	---	---	1	3	4	6	8	8	10	10	lice
10	---	2	2	3	5	7	9	10	10	10	10	
Total	---	14	30	44	58	70	85	94	97	98	100	

Fig. (7) : Shows the relation between the number of lice killed by Licid "full concentration" and time in minutes.

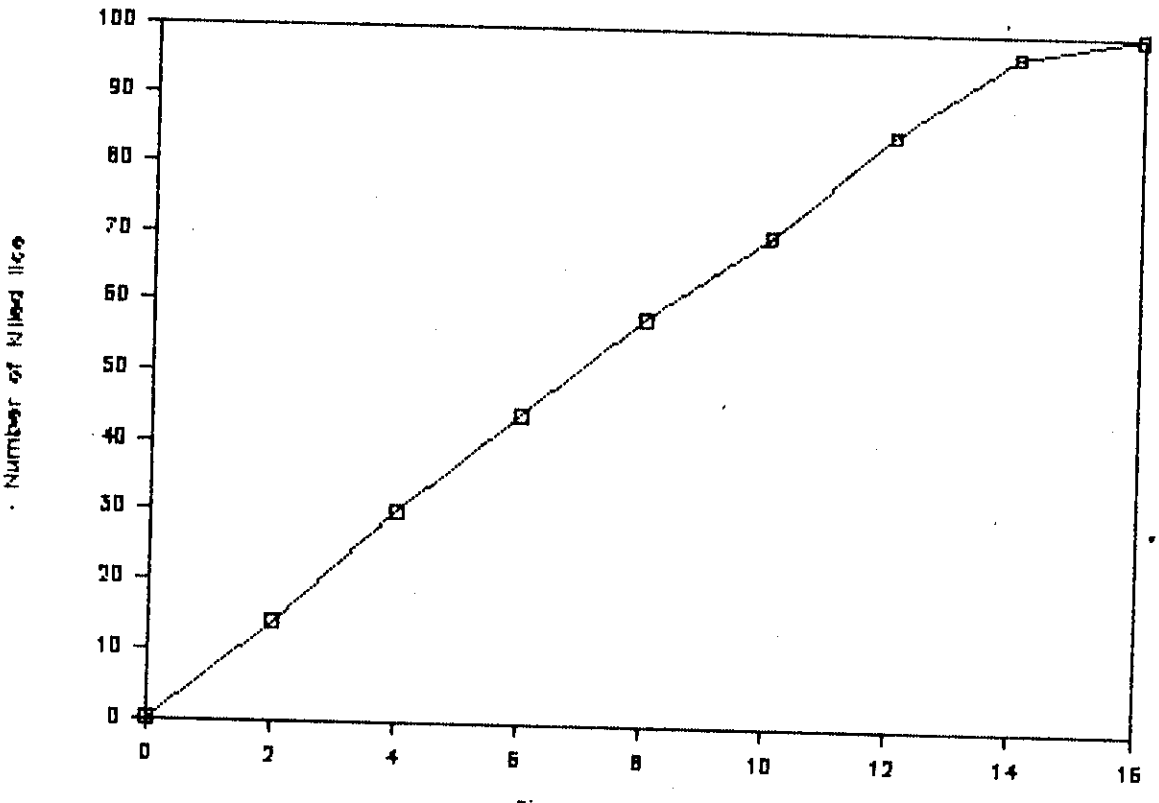


Table (4) : Shows the lethal time in minutes on using Eurax (crotamiton).
The number of lice was estimated every two minutes.

\ Time min / N.of test \	0	2	4	6	8	10	12	13	14	15	16	
1	---	1	2	4	4	6	7	8	8	10	10	Number
2	---	---	2	3	4	5	7	7	8	9	10	
3	---	3	5	6	7	8	9	10	10	10	10	of
4	---	1	3	3	5	7	8	9	9	9	10	
5	---	1	2	4	4	8	10	10	10	10	10	killed
6	---	1	3	5	6	7	7	8	8	9	10	lice
7	---	1	2	4	6	8	9	10	10	10	10	
8	---	1	2	3	5	7	9	10	10	10	10	
9	---	2	4	6	8	9	10	10	10	10	10	
10	---	1	2	2	4	6	8	9	10	10	10	
Total	---	12	27	40	53	69	86	92	93	97	100	

Fig. (8) : Shows the relation between the number of lice killed by Eurax "crotamiton" and time in minutes.

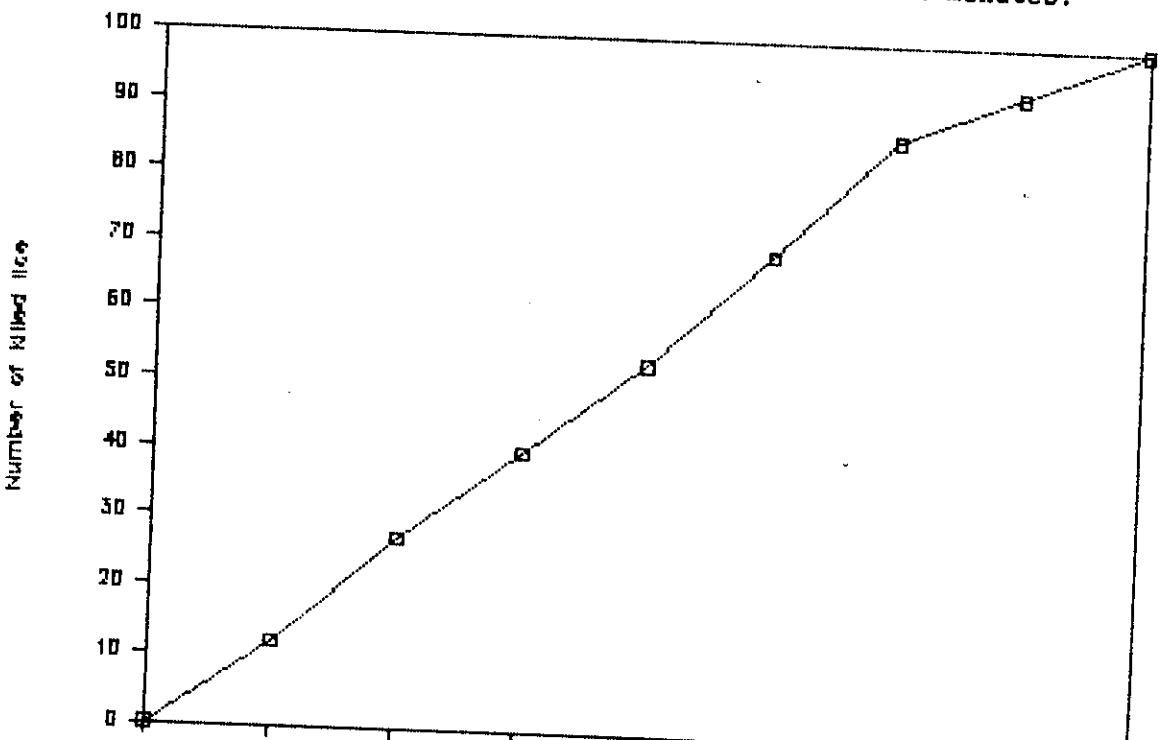


Table (5) : Shows the lethal time in minutes on using Benzyl Benzoate "Benzanil" lotion.

\ Time min / N.of test \	0	2	4	6	8	10	12	14	16	18	20	22	
1	---	1	2	4	6	7	7	8	9	10	10	10	Number
2	---	---	1	3	5	6	7	7	8	9	10	10	
3	---	---	---	1	2	2	3	4	7	7	9	10	of
4	---	2	3	4	7	8	9	10	10	10	10	10	
5	---	2	3	5	6	7	9	9	10	10	10	10	killed
6	---	1	3	4	5	6	6	7	8	9	10	10	
7	---	3	3	4	5	6	8	8	8	10	10	10	
8	---	1	4	6	7	7	8	9	9	10	10	10	lice
9	---	2	4	6	6	8	8	9	10	10	10	10	
10	---	3	5	5	7	7	8	10	10	10	10	10	
Total	---	15	27	40	56	64	73	80	88	94	99	100	

Fig. (9) : Shows the relation between the number of lice killed by Benzyl Benzoate "Benzanil" and time in minutes.

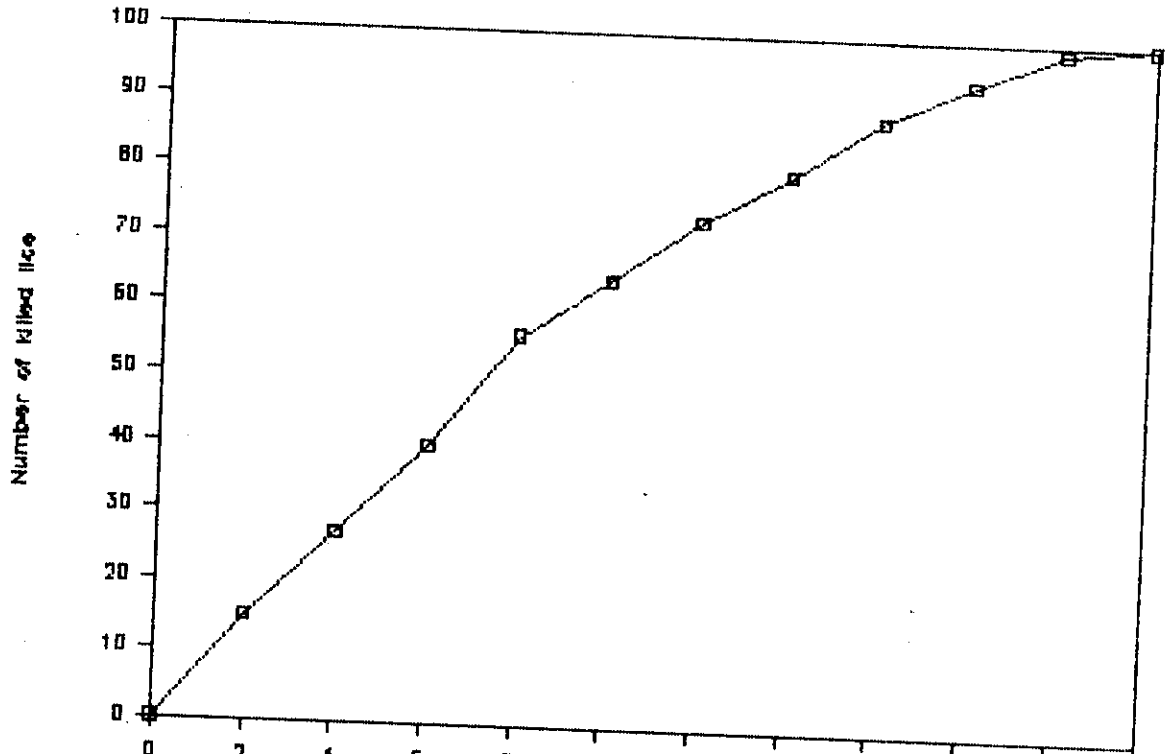


Table (6) : Shows the lethal time in minutes on using licid "half concentration".

\ Time in \ min. / No.of test	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	
1	--	1	1½	2½	3½	5	5	7	7	7	8	8	8	8	9	9	9	10	10	10	10	Number
2	--	--	--	1½	2½	3	4	5	5	5	6	6	7	7	8	8	9	9	10	10	10	
3	--	--	1½	1½	3½	3	3	4	4	5	5	6	8	8	9	9	10	10	10	10	10	of
4	--	1	2½	2½	3½	3	3	4	4	5	5	6	6	8	8	8	8	9	9	10	10	
5	--	1	1½	1½	2½	3	3	3	4	4	5	5	5	6	6	6	6	9	9	9	10	killed
6	--	--	--	1½	1½	2	3	3	3	6	6	6	6	7	8	9	10	10	10	10	10	
7	--	--	--	1½	1½	2	2	3	3	4	4	4	5	5	8	8	8	10	10	10	10	lice
8	--	1	1½	2½	3½	3	4	4	6	6	6	8	9	9	9	10	10	10	10	10	10	
9	--	--	--	1½	1½	1	2	3	5	5	5	7	7	7	8	8	10	10	10	10	10	
10	--	--	1½	3½	3½	4	4	4	5	5	6	6	6	8	8	9	9	9	10	10	10	
Total	--	4	7½	15½	22½	29	33	41	47	53	57	63	68	74	81	84	89	96	98	99	100	

Fig. (10) : Shows the relation between the number of lice killed by licid "half concentration" and time in minutes.

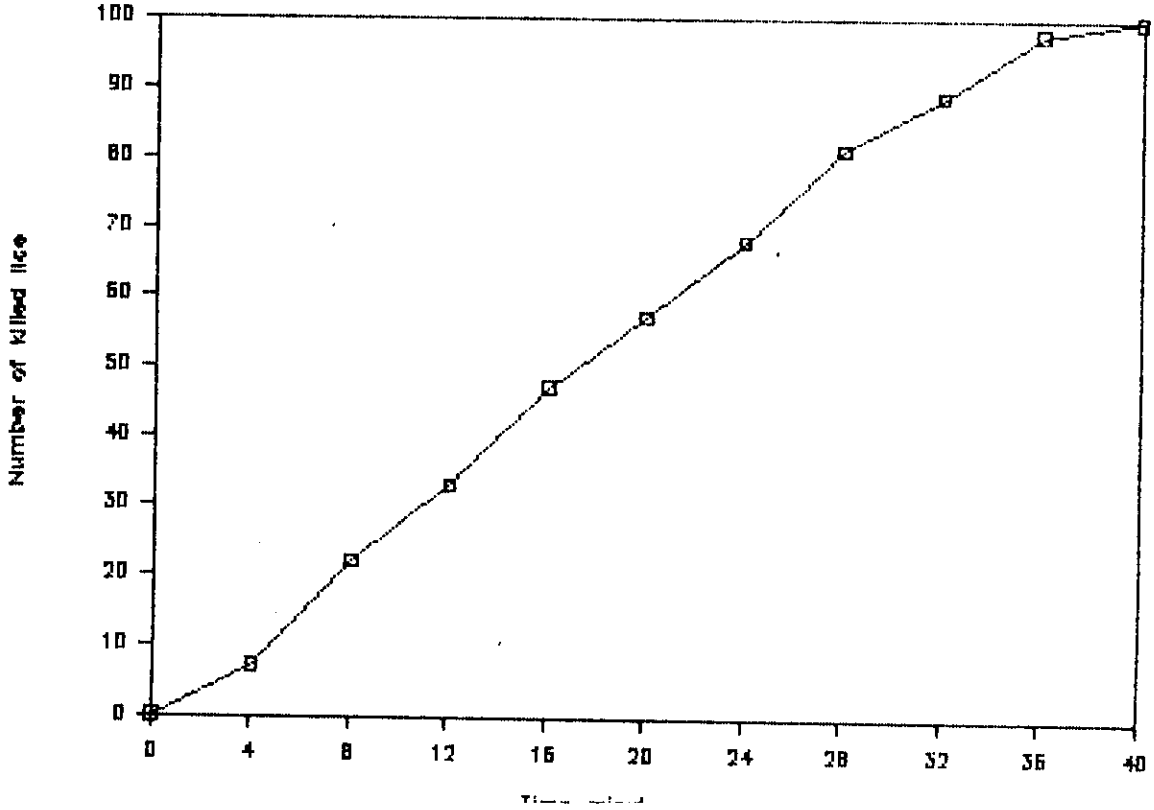


Table (7) : Shows the lethal time in minutes on using of Gamma benzene hexachloride 1%.

\ Time min / N.of test \	0	10	20	30	40	50	60	70	80	90	100	110	120	
1	---	---	2	3	6	7	8	8	9	10	10	10	10	Number
2	---	---	1	1	3	6	7	7	8	9	10	10	10	
3	---	---	2	3	3	4	5	6	7	8	9	10	10	
4	---	1	2	2	3	4	6	7	7	8	9	10	10	of
5	---	---	---	1	1	3	5	6	6	7	8	9	10	
6	---	2	4	4	5	5	6	7	9	10	10	10	10	killed
7	---	---	2	3	4	6	6	7	8	9	10	10	10	
8	---	1	2	2	3	5	5	6	8	8	10	10	10	lice
9	---	---	1	1	2	2	4	5	6	7	8	10	10	
10	---	---	---	1	3	5	6	7	7	8	8	9	10	
Total	---	4	16	21	31	47	58	66	75	85	92	98	100	

Fig. (11) : Shows the relation between the number of lice killed by Gamma Benzene hexachloride 1% and time in minutes.

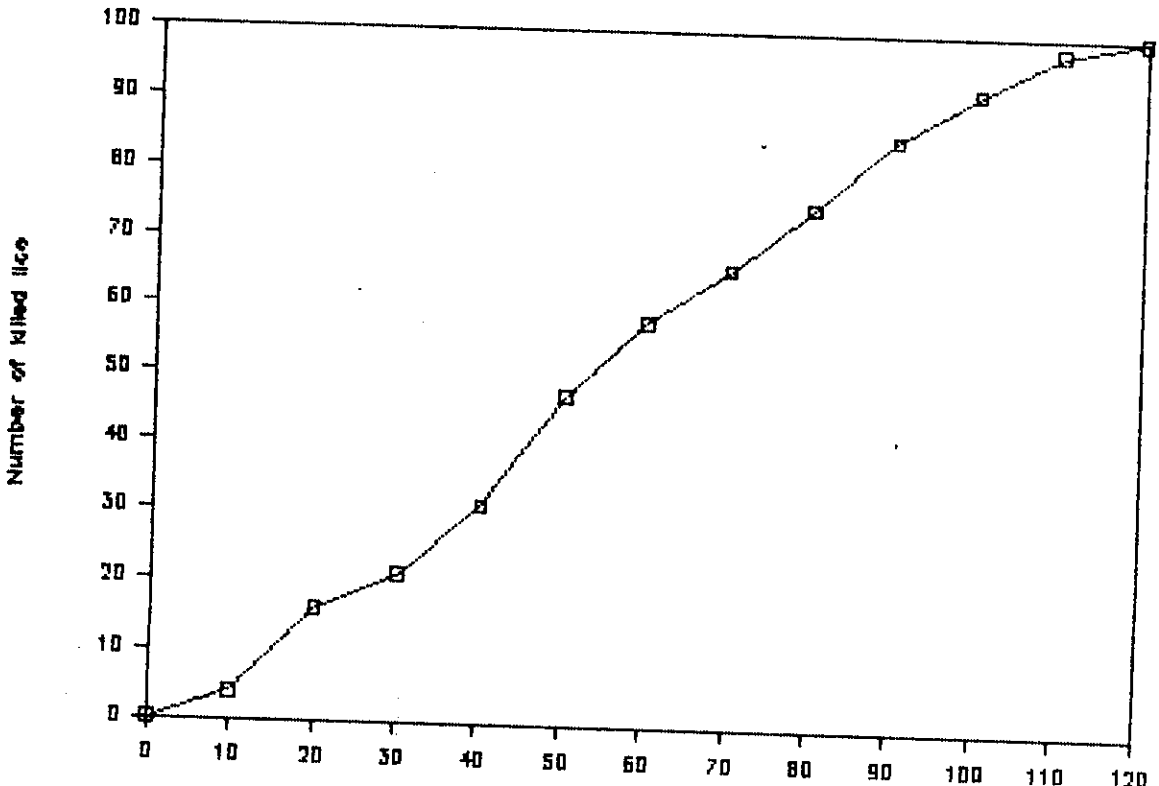


Table (8) : Shows the lethal time in hours on using Dist. H2o as a control.

\ Time hs. / N.of test \	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	---	---	---	---	1	1	3	4	5	6	6	7	9	10	---	
2	---	---	---	---	2	3	4	4	6	7	8	8	10	10	---	Number
3	---	---	---	---	---	1	1	3	5	7	9	10	10	10	---	
4	---	---	---	---	---	1	3	4	4	6	8	8	9	10	---	of
5	---	---	---	---	1	3	4	7	8	8	10	10	10	10	---	killed
6	---	---	---	---	2	3	5	8	8	10	10	10	10	10	---	
7	---	---	---	---	2	3	4	4	5	8	9	10	10	10	---	lice
8	---	---	---	---	3	3	3	4	4	7	8	8	8	10	---	
9	---	---	---	---	1	3	5	5	8	8	9	10	10	10	---	
10	---	---	---	---	2	3	3	7	8	8	10	10	10	10	---	
Total	---	---	---	---	16	24	35	50	61	75	87	91	96	100	---	

Fig. (12) : Shows the relation between the number of dead lice and time in hours of the control group.

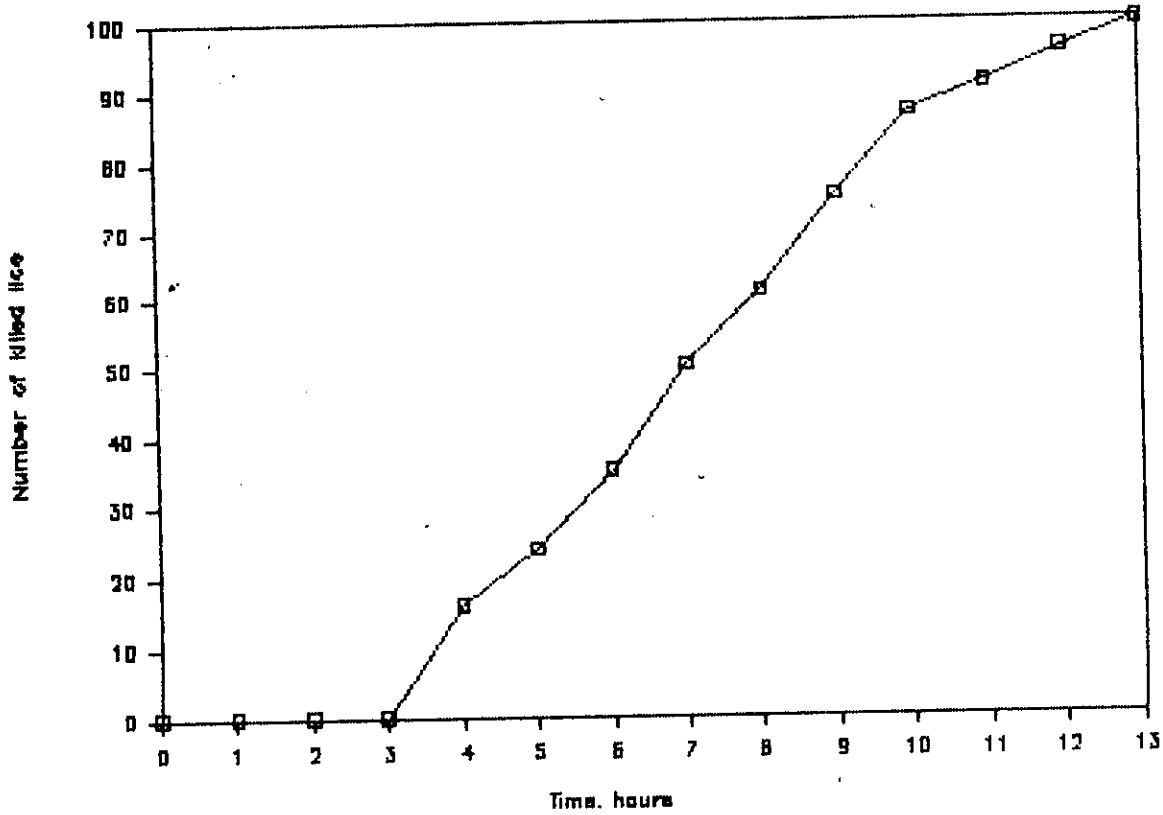
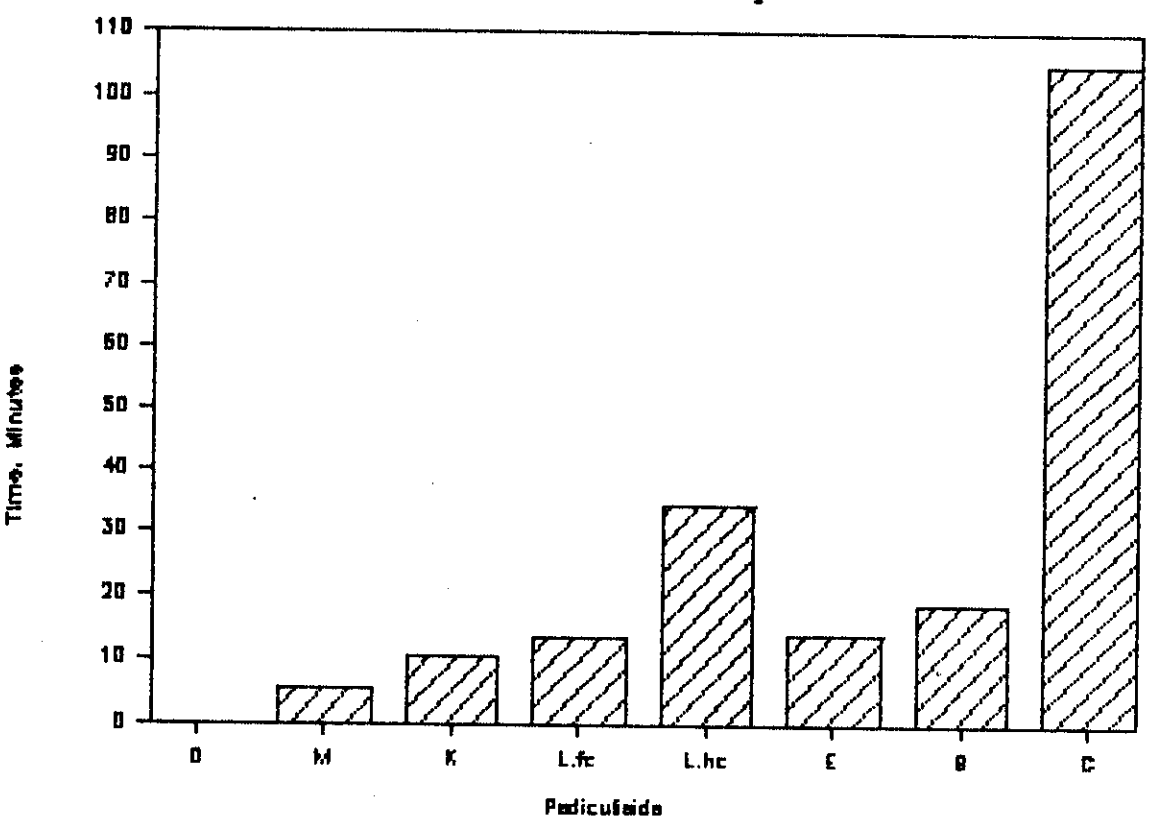


Table (9) : Shows the comparison of lethal time in minutes of all the chemicals used against one hundred lice.

Pediculicide	Mean ± S.D.
1- Malathion Ø.5% lotion	5.2 ± Ø.63 minutes
2- Kerosene	1Ø.6 ± 1.89 ""
3- Licid "Full concentration"	13.5 ± 1.27 ""
4- Licid "half concentration"	34.4 ± 3.1 ""
5- Eurax	14.1 ± 1.66 ""
6- Benzil	18.6 ± 1.26 ""
7- Gamma benzyl lotion	1Ø5 ± 1Ø.8 ""
8- Control (H2o)	11.5 + 1.8 "Hours"

Fig. (13) : Represents the lethal time of different pediculicide used in this study.

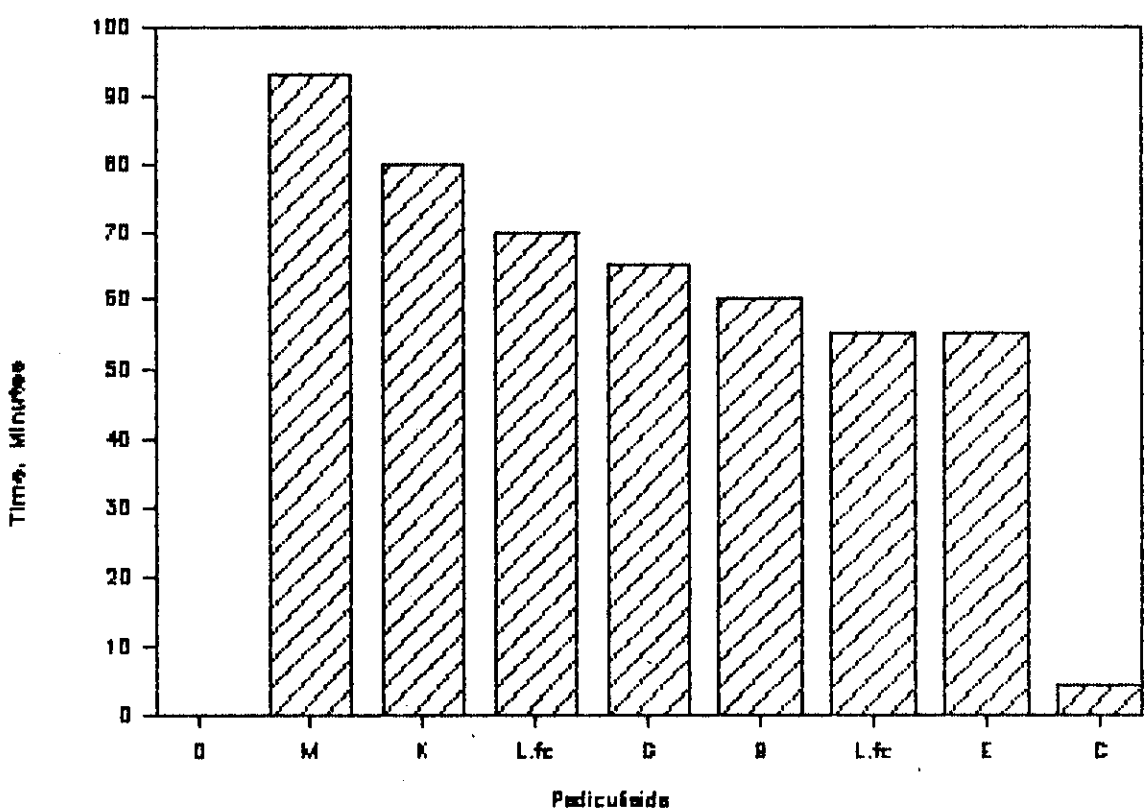


M = Malathion Ø.5%.
L.Fc = Licid (full concentration)
L.hc = Licid (half concentrat).
G = Gamma benzene hexachloride 1%
K = Kerosene.
E = Eurax
C = Control.

Table (10) : Shows the percentage of ovicidal activities of each pediculicide.
The number of exposed ova is constant for each drug (100 eggs).

Pediculicide	Percentage of hatched ova	Percentage of ovicidal activity
1- Malathion 0.5% lotion	7%	93%
2- Kerosene solution	20%	80%
3- "Licid" full concentration	30%	70%
4- "Licid" half concentration	45%	55%
5- Gamma benzyl lotion	35%	65%
6- Benzanil lotion	40%	60%
7- Eurax lotion	45%	55%
8- Control (H20)	96%	4%

Fig. (14) : Represents the percentage of ovicidal activity of each drug used.



M = Malathion 0.5%.
L.Fc = Licid (full concentration)
L.hc = Licid (half concentrat).
G = Gamma benzene hexachloride 1%
K = Kerosene.
E = Eurax
C = Control.

Table (11) : Correlation between the lethal time in minutes of "Licid" full concentration and other chemicals used against head lice.

Pediculicide	Malathion 0.5 %	Kerosene	Eurax	Benzanil	Licid "half con	Gama Benine
Mean	5.2	10.6	14.1	18.6	34.4	105
S.D.	0.63	1.89	1.66	1.26	3.10	10.80
S.E.	0.1992	0.5976	0.5249	0.3984	0.9803	3.4152
T-test	18.514	4.8259	0.9024	9.369	14.069	15.988
P-value	< 0.0005	<0.005	> 0.05	< 0.0005	< 0.0005	< 0.0005
Significance	H.S.	H.S.	N.S.	H.S.	H.S.	H.S.

Pediculicide	Licid "Full concentration"
Mean	13.5
S.D.	1.27
S.E.	0.4016

SD = Standard deviation

SE = Standard error

HS = High significance

NS = Non significance

Table (12) : Correlation between the lethal time in minutes of "Licid" half concentration and other chemicals used against head lice.

Pediculicide	Malathion 0.5 %	Kerosene	Licid Full conc	Eurax	Benzanil	Gama Benzine
Mean	5.2	10.6	13.5	14.1	18.6	105
S.D.	0.63	1.89	1.27	1.66	1.26	10.80
S.E.	0.1992	0.5976	0.4016	0.5249	0.3984	3.4152
T-test	29.1900	21.4977	14.069	18.2160	23.056	19.870
P-value	< 0.0005	<0.0005	> 0.0005	< 0.0005	< 0.0005	< 0.0005
Significance	H.S.	H.S.	H.S.	H.S.	H.S.	H.S.

Pediculicide	Licid "half concentration".
Mean	34.4
S.D.	3.10
S.E.	0.9803

SD = Standard deviation

SE = Standard error

HS = High significance

NS = Non significance

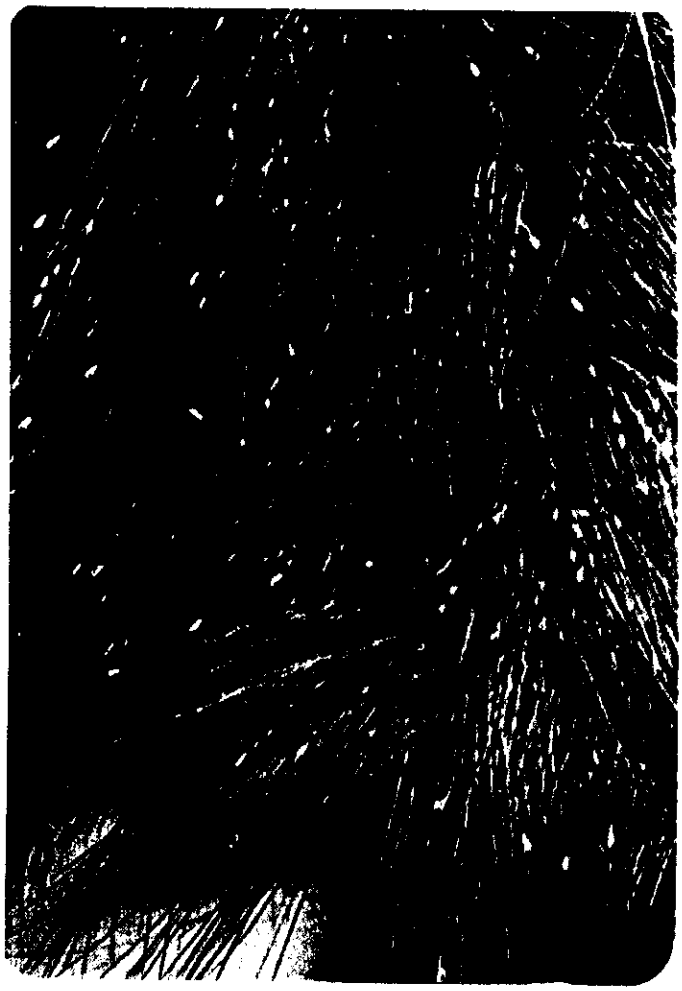


Fig. (15) : Shows lice infestation, pediculosis capitis. Living lice may be hard to find but conclusive evidence of infestation is provided by "nits" which are eggs comented firmly to hairs. The nits give the hair a speckled appearance, particularly around the ear.

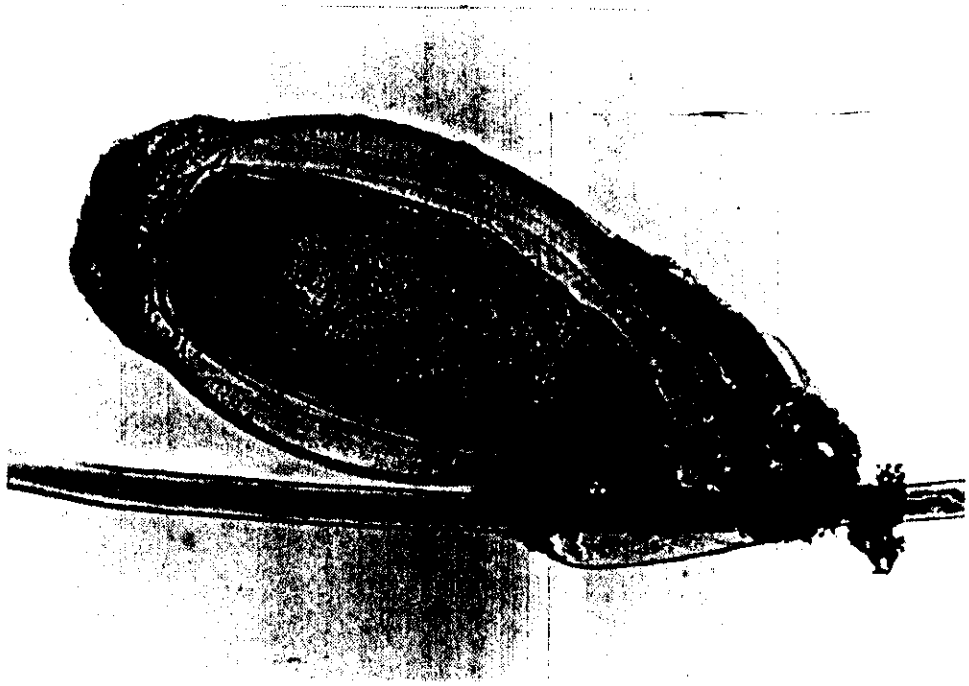


Fig. (16) : Shows Pediculus humanus capitis.
Viable egg (X 400)
The egg (nit) is shown firmly cemented to the hair shaft.

Fig. (17) : Shows Pediculus humanus capitis.
Dead eggs (X 100).
The eggs were microscopically examined after imersion in the insectcide "Malathion 0.5%" for ten minutes and then incubated for 2 weeks.

Fig. (18) : Shows Pediculus humanus capitis.
Nymph. (X 100).

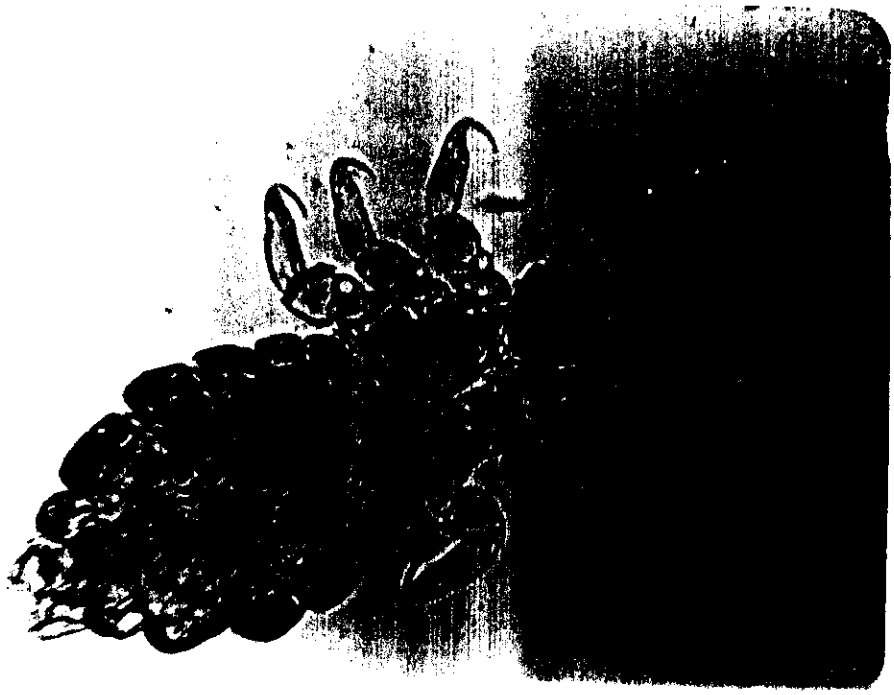


Fig. (19) : Shows Pediculus humanus capitis.
Adult female (X 100)

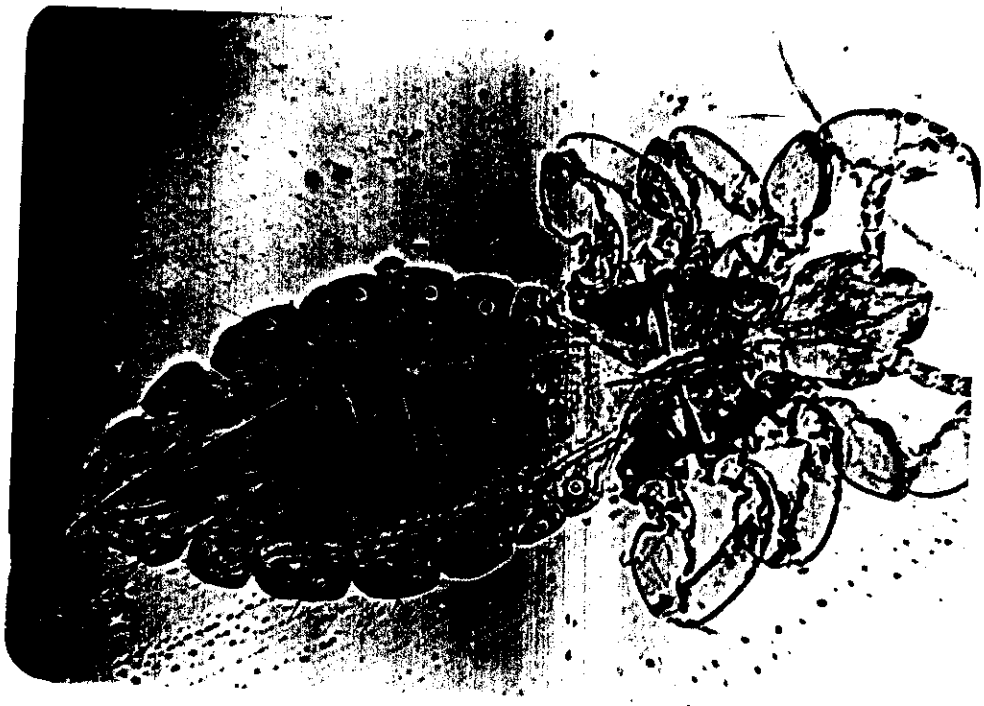


Fig. (20) : Shows Pediculus humanus capitis.
Adult male (X 100).

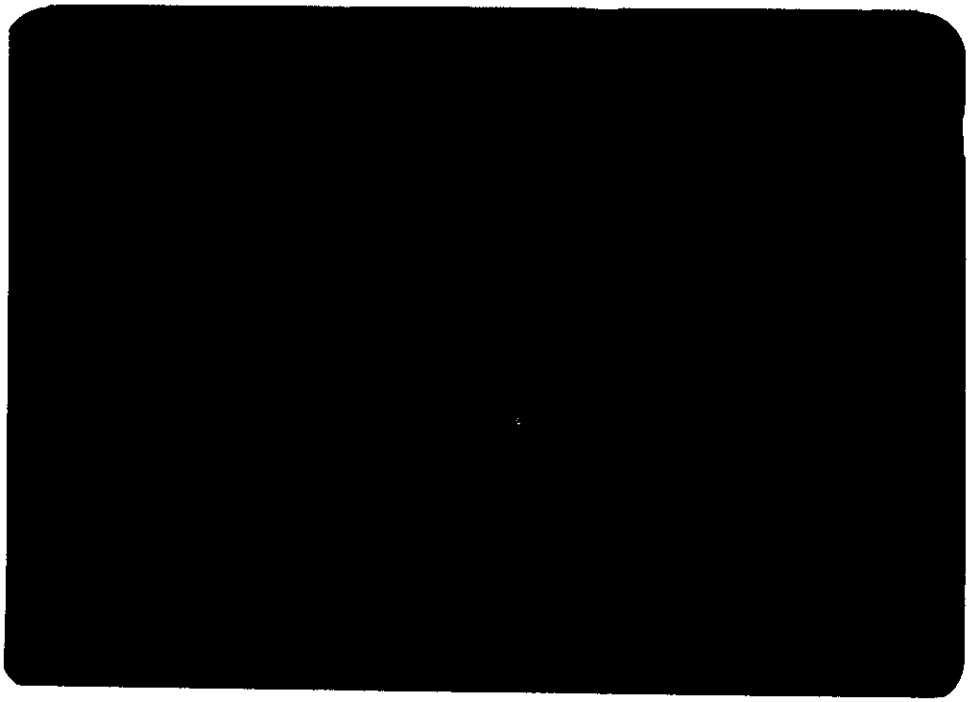


Fig. (21) : Shows Petri dish containing ten lice (X 100). Sterrlized filter paper of 5 cm diameter was cut to fit the inner side of the petri dish. One ml of the tested drug was thoroughly distributed over the filter paper. This amount covered the filter paper, after complete dispersion of the tested insecticide ten head lice were introduced in petri dish by gentle transference using of single strand of human hair to avoid physical damage of the lice. They were observed with hand lens until the death of the last louse.

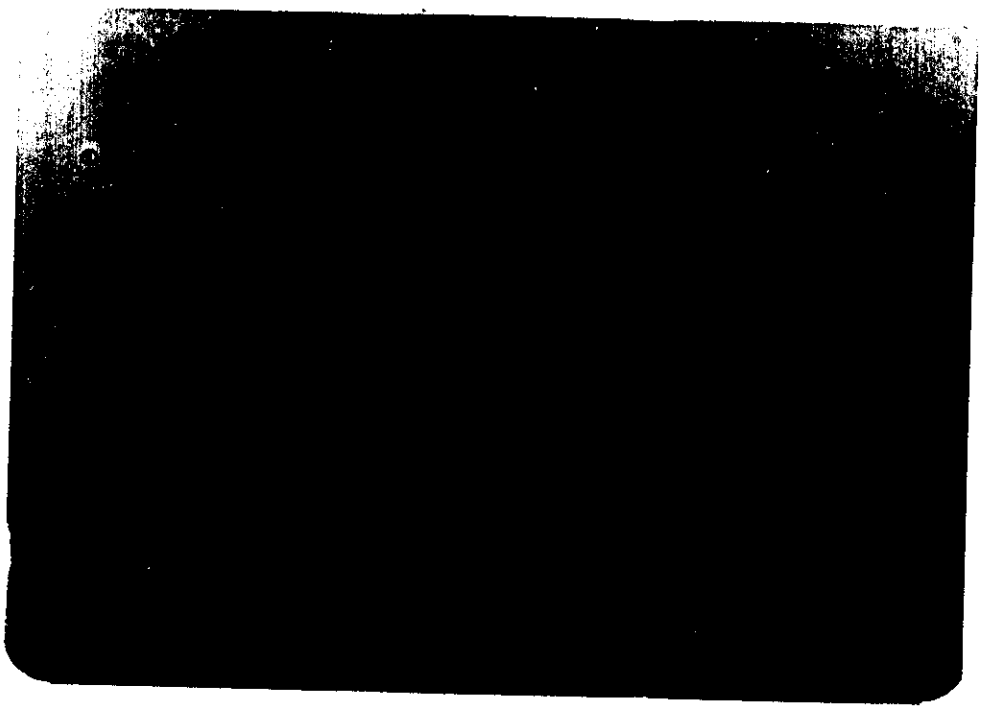


Fig. (22) : Shows life cycle of Pediculus humanus capitis and the diseases trnasimitted by it. Quoted from the the museum of parasitology department Ain Shams University.