THE DURATION OF GESTATION IN RABBIT BREEDS AND CROSSES

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The data described in this paper relate to thirty pregnancies, in each of seventeen breeds or varieties, and seventeen crosses. Matings were usually made during the daytime and in daylight. Births were recorded during the daytime, and those occurring before the opening of the rabbitry in the morning were recorded as having taken place on that morning. In those instances where delivery was spread over more than one day the date was taken as that on which the majority of the young were born.

In the crosses marked with an asterisk in Table 2 the females are given first; the reciprocal crosses were not made. The Norrusco cross was the result of mating a Norrusco male (a Himalayan Rex of German origin) with females of several other breeds. The remaining crosses were made in both directions.

Among the breeds and varieties the length of the gestation period varied from 26 to 36 days and among the crosses from 26 to 37 days. In all cases the most frequent length was either 31 or 32 days, and over 72 % of the litters were born on the 31st or 32nd day (see Table 1). When the 30th and 33rd days were added to the former more than 93 % of the 1020 litters are included.

The length of pregnancy has been reported (Hammond & Marshall, 1925, 1936; Kenneth, 1947; Menjsov, 1935; Ploetz, 1932; Rosahn, Greene & Hu, 1934, 1935; Templeton, 1939; Vasin, 1940; Wishart & Hammond, 1933) to vary from 26 to 40 days, and reports from breeders mention instances of prolonged gestation up to 55 days (Pickard, 1930), but no such prolongation was encountered in our records. The contents of a recent thesis (Wing, 1945) on this subject are not yet known to us.

The average duration of pregnancy for each of the breeds or varieties, and crosses, is shown in Table 2. In this table the full titles of the breeds and crosses are given, together with reference letters by which they are designated in further tables.

An analysis of variance of the data, summarized in Table 3, shows that the breeds differed significantly among themselves and likewise the crosses, but that the breeds as a whole were remarkably similar to the crosses as a whole.

It has been reported (Hammond & Marshall, 1936; Ploetz, 1932; Rosahn *et al.* 1934, 1935) that duration of pregnancy varies with the breed or strain, and that it is shortest for the small types which shed but few ova and longest for heavy breeds which produce more numerous ova. Among the breeds shown in Table 2 the three longest average gestations are those for Flemish, Lilac Rex and Blue Beveren, and the three shortest those for Belgian, the mixed group Lilac, Siberian and Beige, and for Squirrel. The three longest among the crosses recorded are those for Norrusco, Agouti crosses and Havana × Rex, and the three shortest for crosses are those for Dutch × Beveren, the backcross F_1 (Lilac × Rex) × Lilac Rex, and Lilac × Castorrex $F_1 \times F_1$. It has been reported (Rosahn *et al.* 1935) that the mean gestation period was significantly longer for pure breeds than for hybrids. The data summarized above do not confirm this conclusion.

The literature on duration of pregnancy in the rabbit suggests that the length is only slightly affected by the time of year, the age of the dam or the order of pregnancy (Pickard, 1930), but that within a breed the pregnancy is prolonged when the number of young in the litter is small and vice versa.

Table 1. *Numbers of pregnancies of different duration*

	Length of pregnancy in days												
	26	27	28	29	30	31	32	33	34	35	36	37	Total
Breeds	1	1	5	5	62	228	148	42	13	3	2	—	510
Crosses	1	1	5	13	65	218	151	42	11	2	—	1	510
Total	2	2	10	18	127	446	299	84	24	5	2	1	1020

Table 2. *Average duration of pregnancy in days*

Breed or variety	Ref. letter	Pregnancy in days	Average no. in litter	Crosses	Ref. letter	Pregnancy in days	Average no. in litter
Angora	*a*	31·33	4·97	*Agouti crosses	*A*	31·87	5·90
Beaver	*b*	31·13	6·47	*Angora × Beveren	*B*	31·33	5·60
Belgian	*c*	30·90	6·20	*Angora × Flemish	*C*	31·37	5·90
Blue Beveren	*d*	31·80	4·87	*Angora × Himalayan and Dutch	*D*	31·57	5·10
Brown Beveren	*e*	31·57	5·30	*Dutch × Beveren	*E*	30·63	7·03
Chinchilla	*f*	31·33	4·97	Dutch × Flemish	*F*	31·30	5·93
Chinchilla Giganta	*g*	31·53	6·57	Flemish × Beveren	*G*	31·10	6·70
Dutch	*h*	31·27	5·50	Flemish × Belgian and Giganta	*H*	31·43	6·53
Flemish	*k*	32·27	6·33	Giant crosses	*K*	31·37	7·03
Glavcot	*l*	31·10	5·67	Glavcot crosses	*L*	31·33	6·30
Havana	*m*	31·27	5·33	*Havana × Rex	*M*	31·80	5·23
Lilac, Siberian and Beige	*n*	30·97	6·00	Miscellaneous crosses	*N*	31·40	4·87
Havana Rex	*p*	31·43	6·17	Norrusco × Miscellaneous	*P*	31·93	5·57
Lilac Rex	*q*	31·87	7·03	Sable crosses	*Q*	31·33	5·77
Sable, Siamese and Fox	*r*	31·17	6·40	Squirrel × Beveren	*R*	31·10	6·57
Harlequin, Silver and Tan	*s*	31·57	3·97	*Lilac × Castorrex, $F_1 \times F_1$	*S*	31·03	5·53
Squirrel	*t*	31·07	6·20	*F_1 (Lilac × Rex) × Lilac × Rex	*T*	30·67	7·13
All breeds		31·39	5·76	All Crosses		31·33	6·04

* See text.

Table 3. *Analysis of variance of length of pregnancy in days*

Variation	D.F.	M.S.
Within breeds	493	1·141
Between breeds	16	3·767
Within crosses	493	1·161
Between crosses	16	3·876
Breeds *v.* crosses	1	0·882

D.F. degrees of freedom; M.S. mean squares.

In Tables 4 and 5 the average duration of pregnancy according to the number in a litter is set out for each breed and cross. The means at the foot of each table, though not giving an accurate estimate of the effect of number in a litter on length of pregnancy, since not all breeds and crosses have litters of all sizes from one to fourteen, give an indication of the general trend. Length of pregnancy is greatest for litters of one, slightly less for litters of two, with an irregular decline to a minimum for litters of eight and nine. Beyond this size there is no regular trend, though the values on the whole are slightly higher than those for litters of nine. Inspection of the values for different breeds and crosses reveals that whereas most of them conform to this general pattern, particularly for litters of one and two, there are instances where the trend is upwards with increasing number in a litter and other cases in which there is no evidence of any effect of litter number on length of gestation.

Table 4. *Average length of pregnancy in days, according to number in litter. Breeds and varieties*

(For breed titles see Table 2)

Breed or variety	No. in litter 1	2	3	4	5	6	7	8	9	10	11	12	13
a	—	—	31·0	31·3	31·3	31·4	31·7	32·0	31·0	—	—	—	—
b	—	34·0	31·0	31·5	30·0	30·2	31·0	31·1	31·0	31·0	—	—	—
c	30·0	32·0	—	34·0	31·3	31·5	30·0	31·2	28·0	—	31·0	—	32·0
d	32·3	31·0	31·8	32·0	31·7	30·5	32·2	31·0	32·0	—	32·2	—	—
e	—	31·0	32·0	31·8	31·4	31·5	31·0	31·0	32·0	32·0	—	—	—
f	33·0	32·0	30·3	30·5	31·7	31·6	33·0	31·0	31·2	—	—	—	—
g	33·0	—	—	32·2	31·3	31·5	31·4	31·6	30·5	31·0	—	31·0	—
h	33·0	—	31·5	31·3	30·8	31·6	31·0	31·0	—	31·0	—	—	—
k	33·5	32·7	32·0	34·0	31·8	31·7	32·7	33·0	31·5	31·7	33·0	—	—
l	32·0	32·0	31·0	31·5	31·0	30·7	31·6	31·0	31·0	—	—	—	—
m	—	30·5	31·8	32·2	30·8	31·1	31·0	31·0	—	31·0	—	—	—
n	33·0	30·0	30·5	31·2	30·7	31·0	30·8	31·2	31·0	31·0	—	—	—
p	32·0	—	—	32·7	31·4	31·8	30·8	31·1	31·0	—	—	—	—
q	32·0	32·0	33·0	33·0	32·7	32·0	32·0	31·7	31·0	31·5	31·0	—	—
r	31·0	32·0	31·3	31·7	32·0	31·2	31·2	30·3	31·0	31·0	—	31·0	—
s	33·5	32·3	31·3	32·2	30·7	31·5	30·0	31·0	—	—	—	—	—
t	—	32·0	31·0	30·2	31·0	31·2	31·2	31·2	31·0	—	—	—	—
Weighted mean	32·2	32·0	31·4	31·7	31·2	31·3	31·3	31·3	30·8	31·3	31·5	31·0	32·0
Unweighted mean	32·3	31·8	31·4	32·0	31·3	31·3	31·3	31·3	30·9	31·2	31·7	31·0	32·0

Table 5. *Average length of pregnancy in days, according to number in litter. Crosses*

(For titles of crosses see Table 2)

Crosses	No. in litter 1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	34·0	33·0	30·0	32·3	31·4	32·0	31·8	31·0	31·8	31·0	—	—	—	—
B	—	32·0	31·0	31·2	32·0	31·3	30·5	31·3	31·0	31·0	—	—	—	—
C	34·0	32·0	—	31·2	31·6	31·3	31·1	31·0	31·0	—	—	—	—	—
D	31·0	31·5	32·0	32·0	31·6	31·6	31·4	31·5	31·0	—	—	—	—	—
E	—	—	31·0	30·0	30·5	31·0	30·4	30·6	30·0	30·8	32·0	—	—	—
F	34·0	32·0	32·0	31·5	31·2	31·3	31·2	31·3	30·2	—	—	—	—	—
G	—	27·0	31·3	32·7	30·0	30·8	31·2	31·0	31·0	—	32·0	32·0	—	—
H	32·0	—	32·2	—	31·0	31·7	31·2	30·5	31·0	31·5	—	—	32·0	—
K	—	33·0	31·5	31·0	31·7	32·0	31·0	31·2	31·2	32·0	31·5	30·0	—	—
L	—	33·5	31·7	31·5	30·3	32·0	31·2	30·5	32·0	—	30·0	—	—	31·0
M	34·3	33·0	33·0	31·7	31·0	31·3	30·3	32·5	30·7	31·0	—	—	—	—
N	33·5	32·7	31·8	31·0	30·6	30·5	31·0	31·5	31·0	32·0	—	—	—	—
P	33·0	33·0	31·0	32·2	33·0	31·8	32·0	31·6	32·0	32·0	—	—	—	—
Q	34·0	31·3	—	32·0	31·5	31·3	31·0	30·8	—	31·0	—	—	—	—
R	—	32·0	30·5	32·0	30·0	31·6	31·2	30·3	30·8	—	—	32·0	—	—
S	31·0	—	31·0	30·2	30·6	30·7	31·4	32·0	—	—	—	—	—	—
T	—	31·0	31·0	31·0	30·0	30·8	30·0	30·6	31·3	30·5	—	—	—	—
Weighted mean	33·1	32·1	31·5	31·5	31·1	31·3	31·1	31·0	31·0	31·2	31·4	31·3	32·0	31·0
Unweighted mean	33·1	31·9	31·4	31·5	31·1	31·4	31·1	31·1	31·1	31·3	31·4	31·3	32·0	31·0

In order to investigate this relationship more critically the data for each breed and cross were fitted with a curve of the second degree of the form

$$Y = A + Bx_1 + Cx_2.$$

In this equation Y represents the duration of pregnancy in days: $x_1 = X - \bar{X}$ is a linear term, X being the number in a litter and $\bar{X}$ the average number in a litter for the breed or cross. Its coefficient, B, indicates the linear or straight-line trend, and in most of our cases it may be expected to be negative, since pregnancy tends to become shorter as number in litter increases, at any rate up to nine in a litter. The term x_2 is more complicated and is a quadratic expression of the form

$$x_2 = x_1^2 - g/f\, x_1 = f/n,$$

g being equal to $S(x_1^3)$, f equal to $S(x_1^2)$ and n being the number of litters (30) for the breed or cross concerned. Its coefficient, C, indicates whether the linear trend is diverted upwards or downwards; in our examples we may expect C to be positive, having the effect of retarding the downward trend and perhaps transforming it in some instances into an upward trend at the other extreme.

The number of litters in the breeds and crosses as a whole with varying number of young in the litter is given in Table 6. The average number of young in a litter for individual breeds and crosses have been included in Table 2. The breed averages vary from 4·0 for

Table 6. *Numbers of litters with varying number of young*

	No. in litter														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Breeds	21	22	50	63	70	89	75	59	33	19	6	2	1	—	510
Crosses	16	27	34	58	63	83	85	74	41	19	5	3	1	1	510
Total	37	49	84	121	133	172	160	133	74	38	11	5	2	1	1020

Table 7. *Analysis of variance of number in litter*

Variation	D.F.	M.S.
Within breeds	493	5·085
Between breeds	16	18·493
Within crosses	493	5·264
Between crosses	16	14·819
Breeds *v.* crosses	1	21·048

the group Harlequin, Silver, Tan to 7·0 for Lilac Rex, and the averages for crosses vary from 4·9 for the Miscellaneous group to 7·1 for the backcross (Lilac × Rex) × Rex. There is not a marked relationship in these average figures between average number in litter and average duration of pregnancy, but this point is considered later in the paper.

The analysis of variance summarized in Table 7 shows that the number in a litter for crosses as a whole was significantly higher than for breeds as a whole; that the breeds differed significantly among themselves and likewise the crosses.

The coefficients A, B and C of the equation discussed earlier were calculated for each breed and cross. The values of A are the average duration of pregnancy in days, and these have already been presented in Table 2. In the presentation of the values of B and C in Table 8 the former have each been multiplied by 10 to make easier reading, and C has in each case been multiplied by 100. Four of the breeds and four of the crosses had positive values of B, but that for cross S (Lilac × Castorrex $F_1 \times F_1$) was the only significant value among them. Four of the remaining breeds and six of the remaining crosses had significant negative values of B. The B coefficients for the seventeen breeds did not differ significantly from the average value of $-0·092$, found from the total sums of squares and products within breeds; but among the seventeen crosses there were significant deviations of the B coefficients from the average value of $-0·113$. The linear regression between breeds, which shows whether breeds with the larger average number of young in a litter had a shorter gestation period than the average, had a value of $-0·011$, not significantly different from the average linear regression within breeds, but the linear regression between crosses had a markedly different value of $-0{\cdot}316$; in both cases the breeds and crosses deviated significantly from their respective linear regressions.

The C coefficients were negative for five of the breeds and two of the crosses, but none of these values was significant. Only one of the twelve positive values for breeds was

Table 8. *Values of* 10 B *and* 100 C

Breed	10 B	100 C	Cross	10 B	100 C
a	+0·89±1·11	− 3·49±6·12	*A*	−2·00±0·76	+ 4·94±2·98
b	−1·54±0·85	+10·38±3·75	*B*	−1·12±0·73	+ 0·25±2·96
c	−0·86±1·09	− 0·89±2·71	*C*	−2·31±0·75	+ 4·95±3·06
d	+0·06±0·81	+ 1·05±2·66	*D*	−0·31±0·72	− 3·61±3·13
e	−0·74±0·82	+ 2·67±3·76	*E*	+0·37±0·83	+ 3·18±3·81
f	+0·14±1·03	+ 3·46±4·23	*F*	−2·62±0·80	+ 2·70±3·13
g	−1·83±0·55	+ 1·65±1·53	*G*	+0·71±1·20	− 0·73±4·36
h	−1·10±0·68	+ 3·14±2·28	*H*	−0·89±0·60	+ 2·62±1·57
k	−0·97±0·86	+ 1·84±3·18	*K*	−0·92±0·60	+ 0·94±2·01
l	−0·70±1·20	+ 3·94±4·62	*L*	−1·73±0·89	+ 2·47±2·08
m	−0·86±0·96	− 0·70±3·70	*M*	−3·55±0·81	+ 7·54±3·04
n	−0·29±0·77	+ 3·53±3·03	*N*	−2·09±0·63	+10·83±2·42
p	−1·96±0·63	− 1·50±2·38	*P*	−0·48±0·84	+ 2·40±3·48
q	−1·90±0·53	− 2·27±1·72	*Q*	−2·06±0·61	+ 1·70±2·32
r	−0·89±0·50	+ 0·03±1·58	*R*	−0·96±0·95	+ 2·49±3·15
s	−3·64±1·30	+ 6·13±6·01	*S*	+2·02±0·96	+ 9·22±4·41
	+0·69±0·89	+ 3·01±4·62	*T*	+0·03±0·75	+ 2·79±3·15

Table 9. *Co-variance analysis of duration of pregnancy on litter size for breeds*

	Within litter sizes		Between litter sizes				
			Regression				
			Linear (1 D.F.)	Quadratic (1 D.F.)	Total (2 D.F.)	Deviations of means from regression	
Breeds	D.F.	M.S.			M.S.	D.F.	M.S.
a	23	1·0087	0·5652	0·2870	0·4261	4	0·1536
b	21	1·0765	3·9953	9·1515**	6·5735**	6	1·6188
c	20	2·4733	1·7574	0·3093	1·0334	7	3·8809
d	20	1·4108	0·0073	0·1985	0·1029	7	0·9111
e	21	0·9286	0·6771	0·4162	0·5467	6	0·4622
f	21	1·3914	0·0330	1·1805	0·6068	6	3·0388
g	21	0·3967	4·4091**	0·4554	2·4322**	6	0·3785
h	22	0·4747	1·3151	0·9545	1·1348	5	0·6308
k	19	2·2675	2·5890	0·6791	1·6340	8	1·4394
l	21	1·7000	0·4868	1·0565	0·7716	6	0·5761
m	22	1·0784	0·9127	0·0413	0·4770	5	1·4375
n	20	0·8083	0·1176	1·0953	0·6065	7	0·7981
p	23	0·3634	4·5418**	0·1860	2·3640**	4	1·0704*
q	19	0·6579	7·2067**	0·9849	4·0958**	8	0·3469
r	19	0·5070	1·5115	0·0003	0·7559	8	0·3777
s	22	1·3371	10·6997**	1·4381	6·0689*	5	1·5624
t	22	0·6356	0·3881	0·2711	0·3296	5	0·6448

D.F. degree of freedom; M.S. mean square.
* Significant at 5% level; ** Significant at 1% level.

significant, and only three of those for crosses were significant. The average value of C within breeds was $+0{\cdot}0115$ and within crosses $+0{\cdot}0320$, and the values for individual breeds and crosses respectively did not differ significantly from these averages. The quadratic portion of the regression was relatively unimportant in most of the breeds and crosses, as may be seen from the co-variance analyses for individual breeds and crosses, summarized in Tables 9 and 10. In only five of the breeds was there a marked effect of number of young in a litter on duration of pregnancy. The Beaver (b) had a non-significant downward linear trend but a very marked curvature; with two litters of two the average duration was 34 days, but for the remaining litters there was a surprisingly small variation in duration from 30 to 31·5 days, which tended to lengthen slightly as litter number increased from five to ten. In Chinchilla Giganta (*g*) the relationship was mainly linear, duration becoming shorter as litter number increased. The equation for the Havana Rex (*p*) did not give a good fit, since there were significant departures from the general downward trend. For Lilac Rex (*q*) and the Harlequin, Silver and Tan group (*s*) the duration of pregnancy declined as the litter number increased.

In the crosses Agouti crosses (*A*), Angora × Flemish (*C*), and Dutch × Flemish (*F*), the shortening of gestation with increase in number of young was well marked; the Sable crosses (*Q*) showed a similar tendency, but the deviations from the regression were significant. The Lilac × Castorrex (*S*) showed a quite different tendency, for length of

Table 10. *Co-variance analysis of duration of pregnancy on litter size for crosses*

	Within litter sizes		Between litter sizes: Regression			Between litter sizes: Deviations of means from regression	
Crosses	D.F.	M.S.	Linear (1 D.F.)	Quadratic (1 D.F.)	Total (2 D.F.) M.S.	D.F.	M.S.
A	20	1·1708	8·6920*	3·4004	6·0462*	7	1·4225
B	21	0·4683	1·3433	0·0040	0·6736	6	0·9143
C	22	0·5527	5·0645**	1·5469	3·3057**	5	0·4394
D	21	0·7435	0·1153	0·8111	0·4632	6	0·1377
E	21	0·8881	0·1603	0·5713	0·3658	6	0·5975
F	21	0·8262	8·4794**	0·5830	4·5290*	6	0·6487
G	20	2·4308	0·9944	0·0796	0·5370	7	3·8585
H	21	0·8056	1·7781	2·2251	2·0016	6	0·7411
K	19	0·5904	1·5137	0·1412	0·8275	8	0·7619
L	20	1·4444	5·7225	2·1298	3·9261	7	1·7036
M	20	1·2583	23·6732**	7·6495*	15·6613**	7	1·1872
N	20	0·8333	7·3947**	13·5637**	10·4792**	7	0·2250
P	20	1·3433	0·4287	0·6131	0·5220	7	1·1369
Q	22	0·3589	5·4969**	0·2588	2·8779**	5	1·0031*
R	21	1·1722	1·3092	0·8007	1·0550	6	1·6622
S	23	1·1691	4·5283*	4·5224*	4·5253*	4	0·2568
T	21	0·6211	0·0011	0·4692	0·2351	6	0·5255

* Significant at 5% level. ** Significant at 1% level.

gestation increased slightly from 30·2 to 32·0 days as litter number increased from four to eight; for litters of one and three the length was 31 days. In the crosses Havana Rex (*M*) and Miscellaneous crosses (*N*) the curvature was very marked; duration of pregnancy became shorter as number in litter increased from one to six or seven; for larger litters the gestation period tended to increase, but only very slightly. The remaining breeds and crosses provided no evidence of any effect of number in a litter on length of pregnancy.

The average duration of pregnancy for breeds and crosses with different average litter numbers cannot be adequately represented by a straight line or by a curve of the second degree. The results given in Table 11 and 12 show the significant deviations of the averages for breeds and crosses from their respective regressions. It does not necessarily follow, therefore, that because a breed has a high average number of young in a litter that the length of pregnancy is below the average. The Blue Beveren, for example, with low average number of young in a litter, 4·87, had an average duration of pregnancy of 31·8 days, nearly the same as the average duration for Lilac Rex (31·9 days) which had an average of 7·03 young per litter.

It is evident that factors other than number in litter influence the variation between breeds in duration of pregnancy, for the mean square for variation between breeds having the same number per litter is 1·3875 (141 D.F.), compared with 1·0774 (356 D.F.) for rabbits of the same breed and the same number per litter. The corresponding mean squares for crosses are 1·4034 (142 D.F.) and 0·9740 (353 D.F.).

Table 11. *Co-variance analysis of duration of pregnancy on litter size for breeds*

		D.F.	S.S.	M.S.
Within breeds	Linear regression	1	21·43	21·43**
	Quadratic regression	1	2·74	2·74
	Total	2	24·17	12·09**
	Deviations	491	538·46	1·0967
Between breeds	Linear regression	1	0·03	0·03
	Quadratic regression	1	6·91	6·91*
	Total	2	6·94	3·47*
	Deviations	14	53·33	3·8093**
Differences between regressions	Linear regression	1	1·78	1·78
	Quadratic regression	1	2·88	2·88
	Total	2	4·65	2·3262
Deviations from average linear regression		492	541·21	1·1000
Deviations from separate linear regressions		476	521·42	1·0954
Differences between separate linear regressions		16	19·79	1·2367
Differences between separate quadratic regressions		16	15·96	0·9975
Deviations from average 'total' regression		491	538·46	1·0967
Deviations from separate 'total' regressions		459	502·71	1·0952
Differences between separate 'total' regressions		32	35·75	1·1171
Within litter sizes within breeds		356	383·55	1·0774
Deviations of means for different litter sizes from regressions		103	119·16	1·1569

* Significant at 5% level. ** Significant at 1% level.

Table 12. *Co-variance analysis of duration of pregnancy on litter size for crosses*

		D.F.	S.S.	M.S.
Within crosses	Linear regression	1	33·05	33·05**
	Quadratic regression	1	21·71	21·71**
	Total	2	54·76	27·38**
	Deviations	491	517·54	1·0541
Between crosses	Linear regression	1	23·73	23·73**
	Quadratic regression	1	6·60	6·60*
	Total	2	30·33	15·17**
	Deviations	14	31·68	2·2630**
Differences between regressions	Linear regression	1	9·00	9·00**
	Quadratic regression	1	0·00	0·0008
	Total	2	9·00	4·4990*
Deviations from average linear regression		492	539·25	1·0960
Deviations from separate linear regressions		476	495·61	1·0412
Differences between separate linear regressions		16	43·64	2·7274**
Differences between separate quadratic regressions		16	17·66	1·1039
Deviations from average 'total' regression		491	517·54	1·0541
Deviations from separate 'total' regressions		459	456·24	0·9940
Differences between separate 'total' regressions		32	61·30	1·9157**
Within litter sizes within crosses		353	343·81	0·9739
Deviations of means for different litter sizes from regressions		106	112·43	1·0607

* Significant at 5% level. ** Significant at 1% level.

Summary

In this paper are presented data on the duration of pregnancy in seventeen breeds or varieties of rabbits and in seventeen crosses. In each case thirty pregnancies were recorded.

Length of pregnancy varied from 26 to 37 days, and the breeds differed significantly among themselves in this respect, as also did the crosses.

The number of young per litter varied from one to fourteen. The crosses as a whole had a higher number per litter than the breeds, and both breeds and crosses differed significantly among themselves.

The influence of litter size on length of pregnancy has been investigated. It was found that in twelve of the breeds and ten of the crosses there was no significant effect; in one breed and in one cross the general tendency was a shortening of the gestation period with increase in number of young, but there were significant departures from the regression. In Chinchilla Giganta (*g*), Lilac Rex (*q*) and the Harlequin, Silver, Tan (*s*) group the duration of pregnancy declined as the number per litter increased. A similar effect was noticed in the crosses Agouti (*A*), Angora × Flemish (*C*) and Dutch × Flemish (*F*). The cross Lilac × Castorrex $F_1 \times F_1$ (*S*) showed a quite different tendency, for length of gestation increased slightly as number of young increased from four to eight per litter. In the Beaver breed (*b*) the average duration for litters of two was 34 days, but for larger litters there was little variation, the lowest being 30 days with litters of five, with an increase to 31 days for litters of seven to ten. In the crosses Havana × Rex (*M*) and Miscellaneous Crosses (*N*) duration of pregnancy became progressively shorter as number in litter increased from one to six or seven; for larger litters the gestation period tended to increase, but only very slightly.

There is no evidence that for a breed with a high average number of young in a litter the length of pregnancy is necessarily below the average.

Factors other than number in a litter influence breed differences in duration of pregnancy.

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