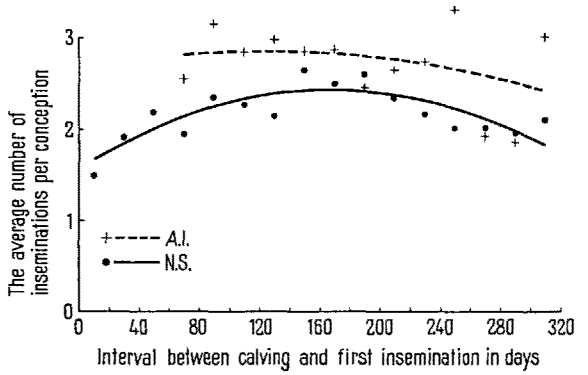
not be made. However, all the animals pooled together (A.I. and N.S.) show a similar tendency.

(3) The number of inseminations per conception and the percentage of abortions on the successful conceptions (in relation to the service interval) are negatively correlated ($r = -0.383 \pm 0.228$, $b = -4.19$).

(4) From the results obtained it might be concluded that the optimum service interval varies between 40 and 100 days.

(5) Further investigations, in order to understand better certain aspects of the problem in Italian Friesian breed and in other Italian breeds, are in progress.



Average number of inseminations per conception in relation to the interval in days between calving and first insemination.

Riassunto. In relazione alle frazioni dell'intervallo interparto è stata studiata l'efficienza riproduttiva nelle vacche (445 soggetti) di razza Frisona italiana, allevate in una grande azienda del Salernitano (Italia), come numero di inseminazioni per concepimento, come percentuale degli aborti sul totale di essi e sui concepimenti, e come lunghezza del periodo dal concepimento all'aborto.

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Weight of Rat Embryos after X-Ray Irradiation

It has recently been reported[1] that during the early stages of the mesoderm formation in rat, there is a great increase of resorption following x-ray irradiation.

We have thought it useful to carry on the analysis of unresorbed embryos during these stages of the rat development.

It is well known[1,2] that the incidence of gross malformations of the head shows a peak on day 9 after x-rays of 100 r. This way of expressing radiation effect cannot quantitatively evaluate the damage but only the degree of differentiation of an organ or an organ system.

On the other hand, the parameter of foetal weight appears, according to BRENT[3], to be a very sensitive measurement of radiation effect, and for this reason we tried to use it in our analysis.

The method of x-ray irradiation is already described elsewhere[1]. However, it is necessary to point out that in these experiments only the embryos of one uterine horn were irradiated with 100 r, the other horn being shielded by lead plates and serving as control[2]. All treated animals were killed on the 15th day of pregnancy and the embryos weighed after the fixation in Bouin's mixture.

From Table I it is readily seen that in all irradiated groups the mean foetal weights are significantly lower than in controls (the '*t*' test). The coefficient of variation is higher in irradiated groups than in controls.

The differences in the weight of different groups, either irradiated or controls, are shown by the analysis of variance (Tables II–IV).

The control group represents a homogeneous sample of the 15th day rat embryos, while the irradiated groups show a significant difference between the groups. If the $8^1/_2$ and 9 day embryos are excluded, the mean weights of irradiated embryos also become homogeneous. The $8^1/_2$ and 9 day embryos seem to be very sensitive to x-rays because the irradiation damage appears greater than on other days analysed.

Several authors have observed that the onset of the mesoderm formation begins during the 9th day of rat pregnancy, which is in complete agreement with our data.

As regards the cause of their sensitivity during the mesoderm formation, we tried to analyse the mitotic activity of rat embryos on the 7 and $8^1/_2$ days. The dif-

Table I. Foetal weights in mg

Day of gestation	Irradiated N	$\bar{X}$	C.V.%	$\sigma_{\bar{x}}$	Control N	$\bar{X}$	C.V.%	$\sigma_{\bar{x}}$	t
5	49	95.5	21.99	3.000	66	114.470	15.72	2.215	5.084
6	38	90.5	27.36	4.017	68	118.603	11.33	1.629	6.477
7	61	91.2	22.00	2.570	74	115.541	14.37	1.930	7.562
$7^1/_2$	68	86.9	25.52	2.689	89	115.112	18.54	2.263	8.023
8	46	83.9	32.76	4.053	87	115.172	15.89	1.963	6.942
$8^1/_2$	23	74.7	28.76	4.484	94	119.841	16.67	2.061	9.130
9	54	78.3	29.58	3.153	71	114.437	13.01	1.768	9.987
$9^1/_2$	39	91.5	25.59	3.752	73	113.356	11.76	1.561	5.730
10	72	91.9	22.14	2.399	80	111.188	13.48	1.676	6.574

Table II. Analysis of variance of all irradiated groups

	Sums of squares	Degrees of freedom	Mean square	Variance ratio	*P*
Between groups	15163.94	8	1895.4925	3.734	<0.01
Within groups	223891.00	441	507.6893		
Total	239054.94	449			

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Table III. Analysis of variance of all irradiated groups except two groups (days $8^1/_2$ and 9)

	Sums of squares	Degrees of freedom	Mean square	Variance ratio	P
Between groups	4292.83	6	715.47	1.413	>0.05
Within group	185267.09	366	506.19		
Total	189559.92	372			

Table IV. Analysis of variance of the control group

	Sums of squares	Degrees of freedom	Mean square	Variance ratio	P
Between groups	4411.57	8	551.446	1.860	>0.05
Within group	20413.39	693	296.412		
Total	209824.96	701			

Table V

7			$8^1/_2$		
Embryos	Number of cells	Number of mitoses	Embryos	Number of cells	Number of mitoses
I	505	48	I	15309	1294
II	434	61	II	7032	903
III	469	50	III	4975	531
IV	1069	102	IV	9960	1105
V	700	96	V	6656	1041
VI	664	119	VI	7265	983
Total	3841	476	Total	51197	5857
$\chi^2 = 34.12$		d.f. $=5$	$\chi^2 = 299.75$		d.f. $= 5$
		$\chi^2 = 3.177$	d.f. $= 1$		

ference in the incidence of resorption and of weight is clear-cut between these two days.

We counted all the cells and mitoses on every second section. The number of cells and mitoses are presented in Table V.

The embryos of the same day show a great variability as far as the number of cells and mitoses are concerned, the difference within a day being significant. On the contrary, no significant difference in mitotic activity could be established between the two days of gestation mentioned.

CORLISS[4], who studied the mitotic activity in the rat embryo on $8^1/_4$, $8^1/_2$, and $8^3/_4$ days, did not find any greater activity of the primitive streak. On the other hand, he found a rise in mitotic activity on the $8^3/_4$ day, but since he attempted no statistical analysis of that fact, no final conclusion can be drawn.

As far as the percentage of gross malformation is concerned, there is no significant difference[1] between the $8^1/_2$ and $9^1/_2$ days, although the mean foetal weights are different.

Thus, after analysing the foetal weight following x-ray irradiation, our conclusion is the same as that made after analysing the incidence of resorption. The irradiation damage, measured as foetal weight, is greater during the mesoderm formation than before or after it.

In view of the results obtained so far, it is reasonable to exclude greater mitotic activity as the main reason for the increased radiosensitivity observed.

Résumé. Les embryons de rat ont été irradiés par les rayons X à la dose de 100 r du cinquième au dixième jour de la gestation. Tous les embryons ont été fixés au bouin le quinzième jour de la gestation et ont été pesés après le passage dans l'alcool.

Les embryons irradiés, comme c'est déjà connu, sont plus légers que les témoins, mais il y a aussi une différence significative entre les divers groupes irradiés.

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Pineal Body and Urinary Sodium Excretion in the Rat

FARRELL et al., in a series of papers[1–5], suggested that the pineal body or some adjacent structure secretes a hormone (adrenoglomerulotropin) which controls the secretion of aldosterone. Although their results were corroborated by other authors[6–10], the role played by the pineal body in the control of the aldosterone secretion has not been definitely settled[11–13]. Until now, only extracts prepared from beef and human pineal body have been investigated either for their aldosterone-stimulating activity or sodium-retaining effect.

In the present experiments, rat's pineal body extracts were used because this animal presents the advantage of having its pineal body far from other brain structures, such as the subcommissural organ. This anatomical feature permits the removal of the gland completely free from the neighbouring tissue.

In this communication we investigated the urinary excretion of sodium as an indication of the aldosterone-stimulating activity of extracts from rat pineal body. The extracts were prepared as follows: the glands were re-

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