TABLE II
Vibrational and rotational constants (in cm.$^{-1}$) of $^2\Delta$ and $^2\Pi$ states of PD$^+$

State	$\Delta G(\frac{1}{2})$	B_0	r_0(Å)	D_0	A_0	γ	p
$^2\Delta$	1017	3·635 (3·635)	$1{\cdot}565_9$	0·0001713 (0·0001673)	1·35	0·09	..
$^2\Pi$	1666	$4{\cdot}350_5$ ($4{\cdot}345_2$)	$1{\cdot}431_3$	0·000116 (0·000111)	295·83	..	0·08

Values in parentheses are calculated ones from B_0 and D_0 of PH^+.

correspond to N $\geqslant$ 17 levels of $v' = 4$. The rotational lines involving N $\geqslant$ 17 levels of $v' = 0$ are either extremely weak or not observed in the 0–0 band of PD^+.

1. Narasimham, N. A., *Can J. Phys.*, 1957, **35**, 901.
2. Mulliken, R. S, *Rev. Modern Phys.*, 1932, **4**, 1.
Tomkins, F. S. and Fred, M., *J. Opt. Soc. Am.*, 1957, **47**, 1087.

FOETAL RESORPTION IN BARBITAL SODIUM TREATED PREGNANT RATS

A. V. CHAMPAKAMALINI AND M. APPASWAMY RAO
Department of Zoology, Manasa Gangotri, Mysore-6, India

INTRODUCTION

BARBITURATES are extensively used as sedative, hypnotic, anæsthetic and anticonvulsant drugs. They are known to reduce the adrenocortical secretions and inhibit the pituitary hormone production.[1,2] It is well established that normal pregnancy necessitates a balanced proportion of ovarian and adrenocortical hormones, which are under the control of anterior pituitary.[3-5] As there is paucity of information regarding the effect of barbiturates on pregnancy,[6] the present investigation was undertaken to study the effect of Barbital Sodium on pregnancy in albino rats.

EXPERIMENTAL

Adult female rats (180–220 gm.) of Wistar strain were mated with fertile males on the day of prœstrus. Rats showing sperms in their vaginal smear on the following morning were selected for the experiment and that day was designated as day 0 of pregnancy. The rats were kept in individual cages at a room temperature of 27 ± 1° C. and maintained on CFTRI chow with water *ad lib*. On day 8 of pregnancy they were laparotomized under ether anæsthesia in sterile condition to note the number of implantation sites. 20 mg. of Barbital Sodium (M & B) in 1 ml. of distilled water per 100 gm. body weight was administered subcutaneously from day 8 to 19 and autopsied on day 20 of pregnancy. The controls received 1 ml. of distilled water per 100 gm. body weight per day. Body weight and vaginal smear were recorded daily. The fœtuses, uteri, ovaries, adrenals and thymus were weighed. The tissues were fixed in Bouin's fluid, sectioned at 10 μ thick and stained with Harris' hæmatoxylin-eosin.

RESULTS AND DISCUSSION

The results indicate that out of 12 pregnant rats treated with Barbital Sodium, 8 show complete resorption of the embryos at autopsy and their uteri resemble those of the non-pregnant rats, despite they possess implantations on the day of laparotomy (Table I, Figs. 1 and 3). In these rats continuous vaginal bleeding has been observed from day 9 to 11 of pregnancy followed by estrus and prolonged diestrus. Out of the remaining 4 treated rats only 1 shows partial resorption (Fig. 4) and the rest 3 possess live fœtuses whose weights are considerably less than those of the controls (Fig. 5). All the controls have normal pregnancy without any significant fœtal resorption (Table I, Fig. 2), wherein the per cent fœtal survival is 92·7, while in the treated it is only 36. Though there is no significant change in the ovarian weight between the controls and the drug-treated rats, histological studies of the ovaries reveal that in the treated rats the corpora lutea are small with many developing follicles, while in the controls the corpora lutea are large.

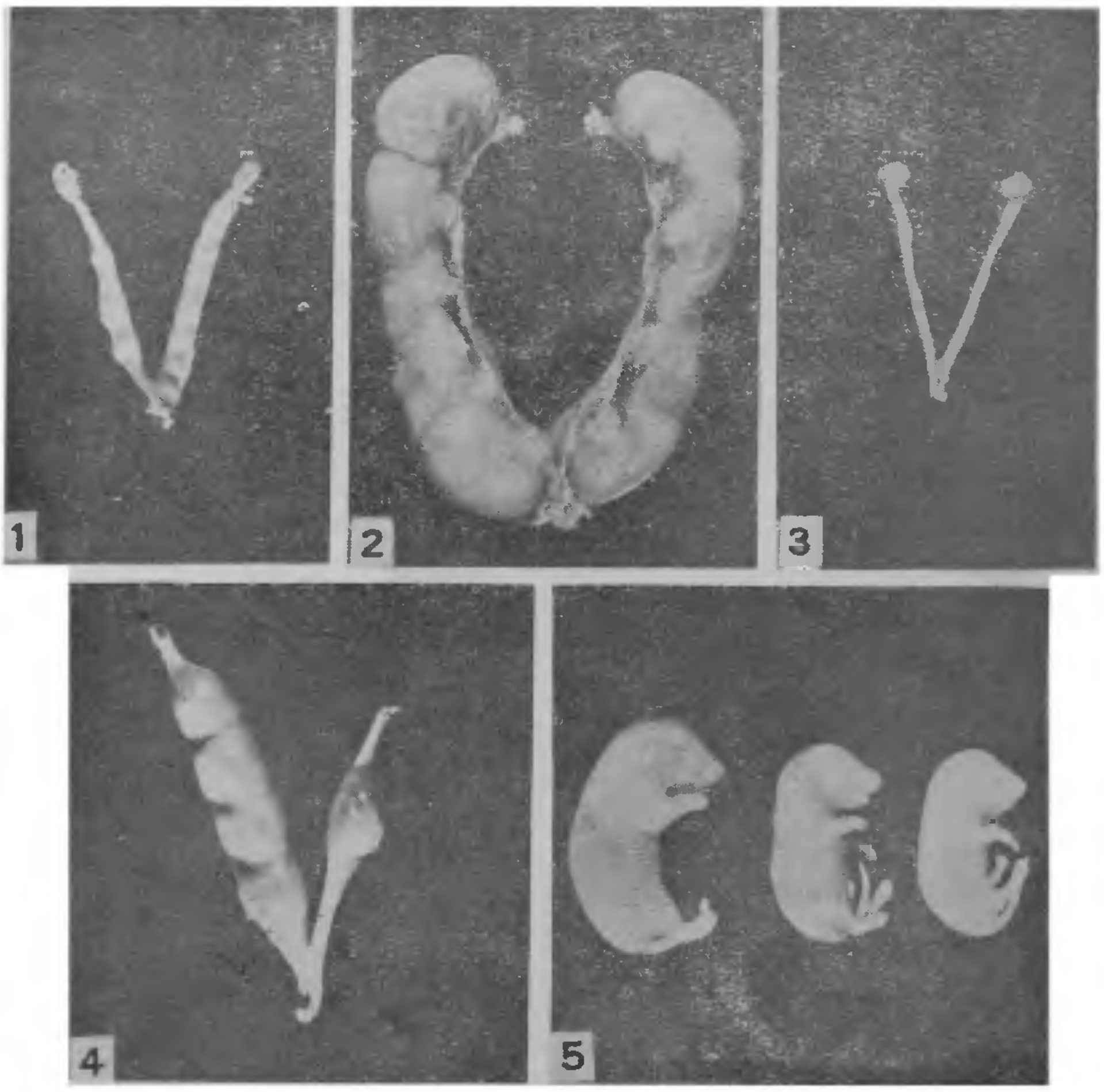
Barbiturates are known to inhibit the release of pituitary hormones and reduce the adrenocortical secretions,[1,2] and probably their action is mediated through the hypothalamus.[7] It is well known that hypophysectomy, ovariectomy or adrenalectomy during early phase of pregnancy causes fœtal resorption in rats.[4-8] In the present experiment the fœtal resorption in Barbital Sodium-treated rats may be

TABLE I

Effect of Barbital Sodium on pregnancy in albino rats

Treatment	Number of rats				Mean in relation to pregnant rat at laparotomy M±S.E.		Fœtal survival (%)*	Fœtal weight (gm.)	Organ weight/100 gm. body weight M±S.E.		
	Pregnant at		Showing resorption								
	Laparotomy	Autopsy	Complete	Partial	Implantations	Viable fœtuses			Uterus (gm.)	Ovary (mg.)	Adrenal (mg.)
Controls	5	5	—	—	8·2 ±0·73	7·6 ±0·75	92·7	3·42 ±0·34	15·39 ±4·50	38·65 ±2·98	30·99 ±1·42
Barbital Sodium	12	3 (25·0)	8 (66·7)	1 (8·33)	6·25 ±1·05	1·83 ±1·02	36·0	1·83 ±0·02	3·56 ±1·71	38·20 ±2·59	34·32 ±1·44

Numbers in parentheses denote percentage. M ± S.E. = Arithmetic Mean ± Standard Error.
* Total number of fœtuses/Total number of implantations, × 100. Probability (P) = .. = > ·05 ... = > ·001.



FIGS. 1–5. Fig. 1. Uterus on day 8 of pregnancy showing implantation sites, × 0·6. Fig. 2. Pregnant uterus on day 20 of pregnancy with fully developed fœtuses (control), × 0·6. Figs. 3 and 4. Uteri of Barbital Sodium treated pregnant rats on day 20 showing complete resorption or partial resorption, × 0·6. Fig. 5. Fœtuses of Barbital Sodium treated rats showing retarded growth (T) when compared to control (C) on day 20 of pregnancy, × 0·7.

due to reduced secretions of ovaries and adrenals. This assumption is further corroborated by the presence of small corpora lutea in the ovaries of treated rats. However, this experiment does not exclude the possibility of the toxic effect of the drug on the developing fœtuses.

ACKNOWLEDGEMENT

The award of Junior Fellowship to A. V. C., by CSIR is gratefully acknowledged. Our thanks are due to the University of Mysore, for research facilities, to Ford Foundation and U.G.C., for research grants and to Sri. Ramakrishna Raju for the photographs.

1. Harwood, C. T. and Mason, J. W., *Endocrinol.*, 1957, **60**, 239.
2. Purshottam, N., Mason, M. M., and Pincus, G., *Fertil. and Steril.*, 1961. **12**, 346.
3. Yochim, J. and Zarrow, M. X., *Ibid.*, 1961, **12**, 263.
4. Davis M. E. and Plotz, E. J., *Endocrinol.*, 1954, **54**, 384.
5. Knobil, E. and Caton, W. L., *Ibid.*, 1953, **53**, 198.
6. Olivecrona, H., *Acta Anat.*, 1964, **58**, 217.
7. Bosque P. G. Quevedo, J. C. and Pinedo, V. V., *Ibid.* 1965, **60**, 187.
8. Turner, C. D., *General Endocrinology*, W. B. Saunders Co., 3rd Ed., 1964.

PECTINOLYTIC *AEROMONAS* SPECIES FROM *SISAL* RETS

A. D. AGATE AND J. V. BHAT

Fermentation Technology Laboratory, Indian Institute of Science, Bangalore

IN the course of studies on the aerobic microflora associated with the rets of *Sisal* (*Agave* Linn.) leaves, it was revealed that *Aeromonas* species dominated in 3 out of 6 rets examined up to the eighth day. A total of 44 isolations were made and of these 4 representative strains were examined according to the methods given in the *Manual*.[1] They were placed in the genus *Aeromonas* according to *Bergey's Manual*[2] and their identity was confirmed on the basis of recommendations of Ewing, Hugh and Johnson,[3] Eddy[4,5] and Eddy and Carpenter.[6] A description of characteristics is as follows: Gram negative cocco-bacillary rods, occurring in clusters, motile with one polar flagellum (occasionally tufted flagellar arrangement), colonies on nutrient agar were small to pinpoint, round to oval with irregular margin and transparent periphery, elevated, glistening smooth surface, transparent to translucent. Good growth was observed after 72 hr. at room temperature (about 24–26° C). No fluorescence was detected. Growth in nutrient broth was uniformly turbid with a sediment but without a pellicle. Glucose, glycerol and lactose were fermented with acid and gas, though acidity was only slight. Mannitol was not attacked. All the strains could hydrolyse starch, gelatin and tributyrin; produce indole, reduce nitrates to nitrites, form acid and clot in bromo-cresol purple milk, utilize citrate, decompose pectin and were V.P. positive. They did not produce H_2S and were M.R. negative.

The above attributes resembled to a certain extent with those recorded for *A. punctata* (*A. liquefaciens*)[4,5] as well as for *Aeromonas* (*Pseudomonas*) *pectinovora* sp. nov. of Betrabet and Bhat[7] but differed in other respects (Table I). It will be pertinent to mention that the classification of the latter organism, dominant in the rets of malvaceous plant straws, as *Pseudomonas pectinovora* was based on the system adopted in the 6th edition of *Bergey's Manual*.[8] In the present edition,[2] such polar flagellated aerogenic bacteria are placed in the genus *Aeromonas*.

Examination of the pectinolytic attributes of these isolates was carried out according to the methods described elsewhere[9] and the results are tabulated in Table II. That these strains possessed pectinolytic activity and that polygalacturonic acid was preferred to pectin as substrate is illustrated by the differences in quantities of enzymes secreted in the presence of these substrates. This led to testing the effect of these substrates at 0·5% level in the maintenance medium[10] and capability of the isolates to elaborate pectic enzymes subsequent to their storage. After six transfers, made monthly on these media, the pectinolytic properties of the cultures were rechecked and it was found that whereas the cultures grown on media without either pectin or polygalacturonic acid lost completely their ability to produce pectin enzymes, those maintained on media with pectin retained to an extent the ability to do so. Significantly, the cultures maintained on media with polygalacturonic acid revealed to have retained to the full extent their capacity to attack pectin. All these cultures have since