perchlorate. Before $NaClO_4$ injection, histamine increased the iodide clearance an average of 12 cc/min. but after $NaClO_4$, the increase was less than 1 cc/min. Therefore, the effects of histamine before and after perchlorate were relatively similar but absolutely quite different. This suggests that histamine had some effect upon the specific iodide trap of the stomach.

Summary. Iodide and chloride clearances were determined in anesthetized and unanesthetized dogs. The control gastric iodide clearance was 10-50 times greater than the chloride clearance. The iodide clearance could be 95% suppressed by anions known to block the thyroid iodide trap but chloride clearance was practically unchanged. In the presence of the blocking agent, gastric iodide and chloride clearances were similar. These data suggest at least 2 mechanisms for gastric secretion of iodide: (a) a specific iodide secretory system and (b) a non-specific mechanism in common with chloride secretion which continues to function after blockade of (a).

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Frequency of Abortive Parthenogenesis in Domestic Turkey.*† (22836)

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Abortive parthenogenesis in the chicken has been demonstrated to occur in eggs laid by virgin hens(1,2). Parthenogenesis also occurs in the turkey(3-5) and most of this development is of abnormal type. The available cytological evidence(6) is that nuclei of such parthenogenetically developing tissue are diploid. Kosin(7,8), in the absence of evidence to the contrary, ruled out parthenogenesis as a major factor responsible for the presence of aggregates of "moribund" cells observed in germ discs of apparently infertile eggs from mated hens. Following the first report by Olsen and Marsden(3) on the occurrence of parthenogenetic development in the turkey, a more intensive study of the matter was undertaken.

Materials and methods. The period reported here covers 1952-1956. The eggs were produced by the College strain of Broad Breasted Bronze hens and by U. S. D. A. strain of Beltsville Small White hens. The hens had been separated from males since 10-14 weeks of age. Upon separation, the birds were brought into completely enclosed pens where they remained for the entire observation period. Because the pens lacked windows, a low intensity artificial light (less than 1-foot candle power) was provided until the birds were 28 weeks old. At that time, the light intensity was increased to more than 5-foot candle power to stimulate oviposition.

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TABLE I. Frequency of Parthenogenetic Development in Broad Breasted Bronze Eggs.

	Unincubated		Incubated for 7 days	
Year	No. eggs	Positives, micro. examinations	No. eggs	Positives, micro. examinations
1954	101*	59 (58.4%)†	522	10 (2.8%)
1955			2594	65 (2.5%)

* These eggs received 10 hr of incubation.
† % of total eggs.

The 1953, 1954 and 1956 egg records were kept on pen-basis, while in 1955 trap nesting was introduced to identify the egg according to hen. Moreover, in the latter case there was an environmental difference: In one pen (No. 71), beginning in November, temperature was maintained at 55° ± 5°F; in the other pen (No. 70) the temperature fluctuated as before. The 1953 study, based on 1952 hatched birds, was designed primarily to develop suitable technics for assessing the prevalence of parthenogenesis in the domestic turkey. In 1954 the study was expanded to include observations on nearly 800 eggs. Some germ discs were studied histocytologically without first being subjected to incubation. Others were incubated for 7 days before being observed for gross signs of development. All 1955 and 1956 eggs were incubated for 7 days prior to examination. Discs which showed any evidence of tissue growth in the germ disc area were preserved for further histo-cytological study.

Results. The 1953 and 1954 material demonstrated that abortive parthenogenetic development occurs in the domestic turkey with higher frequency than that reported for the domestic chicken(1). Study of the 1954 eggs revealed that up to 80% of unincubated eggs laid by virgin turkey hens showed signs of parthenogenetic development. However, only a fraction of the germ discs showing such development on a cellular level, had the capacity to develop further (Table I).

In 1955 there was an indication of a difference in potential to develop parthenogenetically in the two groups subjected to different environments. In pen 70 (no temperature control) 3.5% of the eggs showed development; in pen 71 (temperature control), the corresponding figure was 2.2%. A complicating factor was introduced by the fact that birds in pen 70 developed a type of non-specific respiratory condition early in January, before egg laying began (trap-nesting was started on Jan. 23).

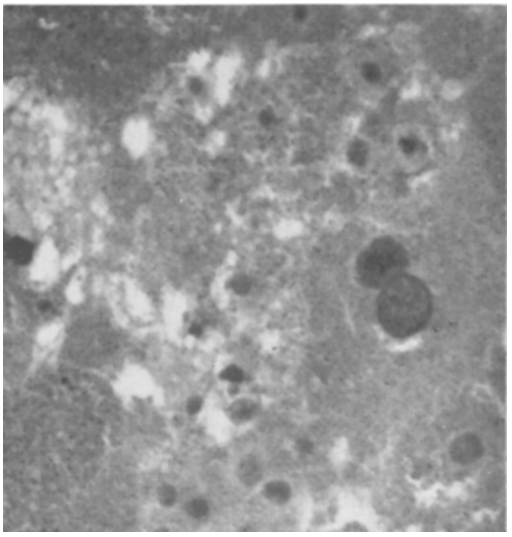

FIG. 1. Example of "single-cluster" type of cell proliferation in unincubated egg laid by virgin turkey hen.

FIG. 2 and 3. A more extreme type of development than shown in Fig. 1, frequently found in unincubated eggs from virgin turkey hens.

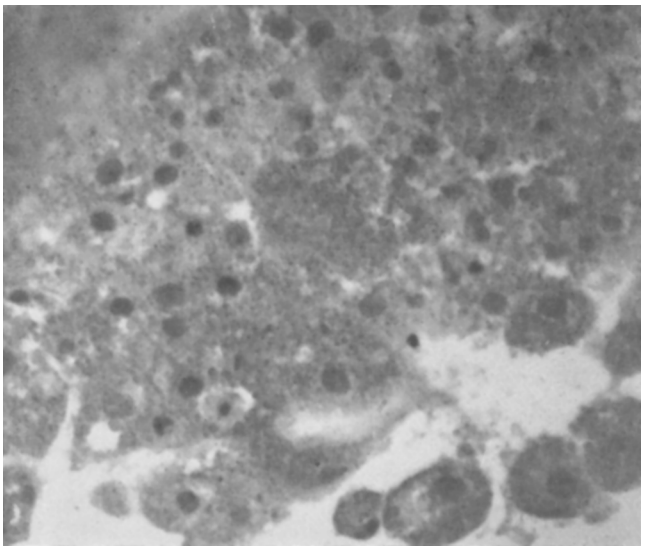

FIG. 3.

The unincubated turkey eggs which showed parthenogenetic development almost invariably were characterized by the presence of a single cluster of cells. In a number of instances, however, more than one such aggregate was observed in the blastodisc. (Fig. 1, 2, and 3.) The nuclei usually showed moderate affinity for basophilic stains, although only a few examples of active cell division have been encountered. This agrees with the observation that only a small portion of such germ discs are capable of developing further. In a great majority of cases, these cell clusters undoubtedly are either moribund cells or those which have recently died.

The observed level of abortive parthenogenesis in the Broad Breasted Bronze stock, as studied in this investigation, was considerably below that reported for Beltsville Small Whites(2,5). To check on this further, 100 eggs laid by virgin Beltsville Small White hens, and 100 eggs laid by mated Beltsville Small White hens of the strain which showed a high level of "positives" in the Beltsville work, were obtained from the Beltsville Research Center in late spring of 1955.‡ These B. S. W. eggs from virgin hens were incubated for 7 days and examined for evidence of "embryonic" growth. The eggs from the mated hens were used to provide an experimental flock of virgin Beltsville Small White hens raised under Pullman conditions.

Table II gives comparative figures on the frequency of parthenogenetic development in the eggs from 2 locations. There is obviously a genetic difference in the potential of the eggs to show such development. The location *per se* is not a major factor affecting the expression of that potential. Olsen and Marsden(2) have demonstrated that similar differences exist among the turkeys and chickens studied by them.

The fact that abortive parthenogenesis is of such common occurrence in turkeys poses certain problems. For example: Is the poten-

TABLE II. Population Differences in Frequency of Parthenogenesis following 7 Days of Incubation.

Year	Variety	No. of eggs	Positives, gross examination
1955	B. S. W.*	100	18.0
	B. B. B.	2954	2.9
1956	B. S. W.†	314	31.2
	B. B. B.	214	4.2

* Based on eggs obtained from U. S. D. A.

† Based on eggs laid by Beltsville Small White hens hatched in Pullman in 1955. 1956 data for both varieties include information up to June 6.

‡ The authors wish to acknowledge the cooperation of Drs. T. C. Byerly and W. A. Brant of the Agriculture Research Service, USDA, in providing these eggs.

tial for parthenogenetic development expressed to a greater or lesser degree in flocks of mated birds? Obviously, the answer to this question has a direct bearing upon the interpretation placed on finding cell colonies in so-called "infertile" eggs. Thus far, these usually have been considered to be instances of early embryonic mortality(8). Which of these "infertile" eggs from mated hens are developing parthenogenetically and which are cases of delayed development following fertilization? Olsen and Marsden(9) suggested that those turkey eggs from mated hens which show development only after 72 hours of incubation may be instances of parthenogenesis. Krizenecky *et al.*(10) approached the problem of morphological differences between infertile and non-fertile (from virgin hen) chicken eggs on the basis of the appearance of the germ disc. Unpublished data from this laboratory indicate that there may be similar differences in the turkey.

Another question is: Can the predisposition to parthenogenetic development serve as a deterrent to normal fertilization? It is conceivable that eggs possessing a high potential for such development would be less capable of being fertilized.

Summary. Evidence has been presented that: (1) Frequency of abortive parthenogenesis in the Broad Breasted Bronze turkey is as high as 80% when based on unincubated eggs studied histo-cytologically. (2) There are varietal differences which affect the frequency of occurrence of this type of development. Possibly, environmental differences also affect the frequency of abortive parthenogenesis.

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Effect of Anesthetics and Collection Time on Corticosteroid Secretion By Rat Adrenal.* (22837)

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Measurement of corticosteroids in the adrenal vein effluent of the rat has been described by Bush(1), Singer and Stack-Dunne (2) and Rosenman *et al.*(3). However, no attempt has been made to correlate secretion rate under these circumstances with time of collection of effluent and the nature of anesthetic employed. Several lines of evidence suggest that ether anesthesia is more stressful than Nembutal (pentobarbital sodium) and evokes a more profound pituitary-adrenocortical response than the latter(4-10).

The present observations support this conclusion and demonstrate that ether, but not Nembutal, anesthesia results in a marked early elevation of corticosterone in the ad-

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