the virus to mouse brain (*9*) was unsuccessful.

Conjunctival scrapings from nine other, similar infants with inclusion conjunctivitis treated in an identical manner failed to yield virus. This fact, and the high number of egg passages required for demonstration of viral activity in the one infant yielding virus (five, six, and seven passages on three attempts) suggest that of the vast number of virus particles seen microscopically in conjunctival smears only a minute proportion was able to propagate in eggs. During the period of these isolation attempts trachoma viruses proliferated readily in eggs from the same source. Thus, seasonal insusceptibility of eggs (*7*) is not a likely explanation for the failure of virus isolation in nine out of ten patients.

Undoubtedly the mother's genital tract is the source of the newborn's infection with inclusion conjunctivitis (*3*). The mother of our patient had marked vaginal discharge late in pregnancy, and examination 10 weeks after delivery indicated resolving cervicitis. However, cervical scrapings yielded no epithelial inclusions, and gross bacterial contamination vitiated attempts at virus isolation.

Whereas trachoma regularly involves the cornea and, if untreated, tends to produce progressive eye-tissue changes, inclusion conjunctivitis in newborn or adult does neither. We are currently comparing strains of trachoma virus (*7*) with the strain of inclusion conjunctivitis virus, in the hope of demonstrating some biological difference which might parallel the evident differences in the diseases caused by these agents.

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Performance Record of a Parthenogenetic Turkey Male

Abstract. A Beltsville Small White turkey poult of parthenogenetic origin hatched in the spring of 1958, matured, and produced semen containing viable spermatozoa. Semen from this male was used in January 1959 to inseminate seven virgin and seven previously mated Beltsville Small White turkey hens. Three hundred and twenty eggs were incubated, of which 175 or 54.7 percent were infertile. One hundred and twenty-two poults, about equally divided as to sex, hatched unaided from 145 fertile eggs.

During 1958 more than 8000 unfertilized eggs from 214 Beltsville Small White turkey hens were incubated, and data were collected on the incidence of parthenogenetic development. Seven hundred and twenty-two of these eggs (9.0 percent) were found to contain embryos of various ages, including 20 which survived to 29 days of incubation and were helped from the shell. One of three parthenogenetic poults raised to maturity produced usable quantities of semen containing viable spermatozoa. Semen from this parthenogenetic male was used in January 1959 to inseminate 14 Beltsville Small White hens, seven of which were young, unselected virgins. The other seven hens from the parthenogenetic line had been mated 8 months prior to these tests. Eggs laid by these 14 hens were identified as to hen number and subsequently incubated to obtain data on fertility and hatchability.

Data presented in Table 1 show that infertility was generally higher than would be expected for eggs from regular matings of Beltsville Small White turkeys, amounting to 50.3 percent of total eggs for the virgins and 61.1 percent for previously mated hens. Hatchability, when calculated on the basis of fertile eggs, was satisfactory, amounting to 85.1 percent for the virgins and 82.4 percent for eggs of previously mated hens. These percentages are within the range of normal variation for eggs of mated flocks of these turkeys.

Early embryonic mortality, 8.5 percent for virgins and 13.7 percent for previously mated hens, was generally higher than that for unhatched eggs from normal flocks of Beltsville Small White turkeys. The percentages of late mortality—6.4 percent for virgins, 3.9 percent for previously mated hens—may be considered normal, certainly no higher than normal. Late embryonic mortality in eggs from regular matings is generally two or three times greater than that occurring during the first 7 days of incubation.

One hundred and twenty-two poults were hatched from the 147 fertile eggs produced by the 14 hens. These poults were relatively free of major anatomical defects and thus were able to hatch unaided. They were about equally divided with respect to numbers of males and females. Poults were hatched from eggs laid as many as 44 days previously, and fertile eggs were obtained for as long a time as 50 days following a single insemination. The duration of fertility on the part of the sperm of the parthenogenetic male compares favorably with duration of fertility in normal turkeys as given in previously published figures.

Table 1. Incubation record of eggs produced by 14 Beltsville Small White turkey hens after insemination with semen from a parthenogenetic male.

Item	Virgins		Previously mated	
	No.	%	No.	%
Hens inseminated	7		7	
Eggs laid following insemination	189		131	
Fertile eggs	94	49.7*	51	38.9*
Dead embryos (1–14 days)	8	8.5	7	13.7
Dead embryos (15–28 days)	6	6.4	2	3.9
Poults hatched	80	85.1	42	82.4

* Percentage based on total eggs (the other percentages are based on fertile eggs).

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Thermodynamic Treatment of Radio-Tracer Movements across Biological Membranes

Abstract. The movements of radioactive tracers across living cell membranes are discussed on the basis of thermodynamics of irreversible processes. Krogh's equation describing the flux of a tracer as a function of time is derived, and the significance of the "permeability" constant is clarified.

It is well known that, when a living cell is immersed in a large volume of medium containing a radioactive tracer, the intracellular concentration of the tracer rises roughly exponentially with time. The final concentration of the tracer is determined, as is expected, by the ratio at which the nonradioactive species of the same chemical substance is distributed across the cell membrane. The time constant with which the intracellular tracer concentration rises is considered to be determined by the "permeability" of the membrane with respect to the substance (*1*). The purpose of this report is to treat this behavior of the tracer movement from the