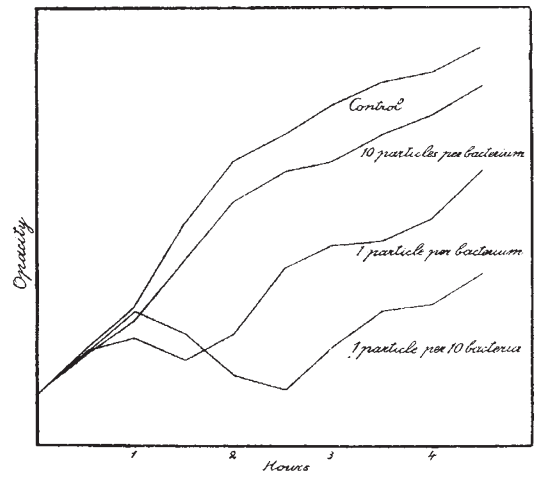

Fig. 4. Similar to Fig. 3, but exposed to virus of the type which undergoes diphasic variation, and produces 'solid centre' plaques

result which parallels the development of the 'solid centre' in the plaque.

The recognition of these stable lytic mutants is further evidence in favour of a suggestion previously made—that lytic (virulent) bacterial viruses have their origin and continuing source in innocuous parent symbionts, and represent only a single phase in the life-history of the virus.

Details of this work will be published elsewhere.

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[1] Boyd, J. S. K., *J. Path. Bact.*, **53**, 445 (1951).
[2] Burnet, F. M., *J. Path. Bact.*, **33**, 637 (1930).

Transplantation of Mouse Eggs

The transplantation of mammalian eggs into a host uterus is usually achieved by means of an operation on the recipient female. It would clearly be of advantage in several respects if transference could be effected without the necessity of opening the body cavity of the recipient. As described below, mouse eggs transferred directly through the cervical opening into a host uterus have come to term. This seems to be the first mammal in which a direct non-operative transplantation has succeeded. It is suggested that the procedure could be called 'inovulation', by analogy with the word insemination[1].

Fertilized mouse eggs were obtained in the usual way from the uterus or Fallopian tubes of a previously mated female, sacrificed for the purpose. The apparatus (a 1-c.c. syringe bearing an obliquely blunted needle of about 0·2 mm. internal diameter), and the general procedure, were as described by Snell, Hummel and Abelmann[2] for artificial insemination of mice, except that a 4-in. needle was thought to lessen the danger of losing eggs in the lumen of the syringe. The eggs, held in the lumen of the needle in Pannet–Compton solution, were expelled into the uterus of a recipient female, the sexual cycle of which had been set into operation by mating with another male. Eggs were transferred to one horn only of the recipient uterus. Genetic marks were arranged to enable the young born of transferred eggs to be distinguished from the young of the recipient female itself (for example, transferred embryos homozygous albino, host embryos homozygous non-albino). Tested sterile males, homozygous for the dominant marker Rex as an extra precaution, were sometimes used to activate the recipient female, and the young born in two such cases were necessarily derived from transferred eggs only.

No maternal effects were observed. As scored by eye colour at birth, young from homozygous non-brown transferred eggs developed black eyes in a maternal environment homozygous for brown and pink eye; eyes which were homozygous brown developed normally in a homozygous non-brown host. In these cases, the transferred eggs and the host were all homozygous for non-agouti. In young scored a fortnight after birth, homozygous Rex and homozygous albino both showed normal expression after gestation in a host homozygous for absence of Rex and albino.

The ages of transferred eggs and recipient females were timed from the formation of a vaginal plug, with an absolute error of plus or minus a $\frac{1}{4}$-day, and the developmental stage of each egg was noted. Transplantation of fifty-five morulæ and blastulæ into recipients the sexual state of which was out of phase with the age of the eggs by a day or more, and transplantation of forty-four 1- and 2-cell stages, were unsuccessful. The five successes achieved were with morulæ and blastulæ transferred into recipients of almost exactly the appropriate sexual stage, as shown in the accompanying table. Similar optimal conditions for transfer had already been found by Fekete and Little[3], using an operative technique.

Transference of Mouse Morulæ and Blastulæ into Recipient Females of Similar Age from Copulation

Data concerning females which failed to produce any young at all are excluded. In each successful inovulation, one transferred egg per recipient female was recovered in the resulting litter

Age from copulation (days)		No. of recipient females	No. of eggs transferred	No. of transferred eggs recovered as young
Transferred eggs	Recipient females			
$2\frac{1}{4}$	2	1	5	0
$2\frac{1}{2}$	$2\frac{1}{2}$	2	8	1
3	$3\frac{1}{2}$	1	4	1
$3\frac{1}{2}$	3	1	6	1
$3\frac{1}{2}$	$3\frac{1}{2}$	8	36	2

The present results show that eggs transferred by inovulation can come to term, but further work is necessary to establish whether the technique can develop into a routine method for egg transference.

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[1] "Inovulation": a film made and held by the Film Unit of the Institute of Animal Genetics, Edinburgh (1951).
[2] Snell, G. D., Hummel, K. P., and Abelmann, W. H., *Anat. Rec.*, **90**, 243 (1944).
[3] Fekete, E., and Little, C. C., *Cancer Res.*, **2**, 525 (1942).