The "coefficient of fertility" is $\frac{8848}{8438}$.

The coefficient of fertility differs according to the number of canals and to their regularity. Thus:

Number of canals	Coefficient of Symmetry	
	All individuals	Irregular individuals
3	.75	.555
4	.782	.69
5	.844	.63
6	.814	.69
7	.785	.57

It appears then that the less typical an individual the less its fertility, and irregular individuals are more sterile than those having some sort of symmetry. Thus the typical form and symmetry tend to be preserved.

It will be noted that this is a case of "reproductive selection," i.e. that there exists a correlation between fertility and the intensity of certain characters.

C. B. DAVENPORT.

II. Variation of the Egg of the Sparrow (*Passer domesticus*).

I HAD recently occasion for a special purpose to measure 180 clutches, containing 687 eggs of the house-sparrow. They were collected from Essex, Hertfordshire, Buckinghamshire, Berkshire, Surrey, Cambridgeshire, and even as far north as Nottinghamshire and Yorkshire. They were thus a fairly representative English series. The bulk of them were collected early in the year, and were undoubtedly first-nesting eggs. Having calculated out the constants for my series, it may not be without interest to compare them with constants obtained from the measurements of Professor Hermon C. Bumpus on both the American and English races of *Passer domesticus*. Professor Bumpus in 1896 measured 868 American and 868 English eggs and published* diagrams giving the frequency in length and index—breadth/length—of these series. He did not publish, as far as I am aware, the means and standard deviations of his frequency distributions, but concluded from his diagrams that the egg of the American sparrow is shorter and rounder than that of the English sparrow and further that it is more variable in length and shape. The greater variability of length and shape was judged not by the standard deviation (S. D.), or the coefficient of variability (C. of V.), but by the extent of the ranges. This method is, I believe, open to criticism†, and it seemed desirable to work out the numerical constants of Professor Bumpus' series. The results I have found are given in the table below, absolute lengths being in mms.

Sufficient data are not given for me to determine the S.D.'s of the breadths in Professor Bumpus' series, and as for the actual values of the breadths, I think, all we can say is that they must be very nearly equal and lie between 15.3 and 15.4. Now from these results we conclude:

- (i) That the American egg is not more but less variable than the English in length.

* *Biological Lectures delivered at the Marine Biological Laboratory of Wood's Holl.* Summer Session, 1896. Boston, 1897.

† *The Chances of Death*, Vol. 1. *Variation in Man and Woman*, p. 275.

(ii) That while the American egg is more variable in shape than Bumpus' English series, it is less variable than mine, although the difference between the two is really not significant.

(iii) That the American egg is sensibly shorter than the English egg, if judged by either English series.

(iv) That the American egg has probably slightly less breadth than the English egg.

(v) That having considerably less length and only slightly less breadth, the American egg appears rounder than the English egg.

Character	ENGLISH EGGS		AMERICAN EGGS
	Pearson (887)	Bumpus (868) *	Bumpus (868)
Mean Length ... S. D. Length ... C. of V. Length	21.8229 ± .0456 1.1846 ± .0322 5.47	21.7368 ± .0362 1.0677 ± .0256 4.91	21.3065 ± .0356 1.0481 ± .0252 4.92
Mean Breadth... S. D. Breadth ... C. of V. Breadth	15.5052 ± .0200 .5245 ± .0141 3.38	15.3683 ± [?] [?] [?]	15.3443 ± [?] [?] [?]
Index S. D. Index	71.2150 ± .1433 3.7560 ± .1013	70.8662 ± .1092 3.2155 ± .0772	72.1843 ± .1250 3.6831 ± .0884

If we put aside Professor Bumpus' colour and shape appreciations†, I think we must conclude from the actual measurements that there is no evidence that the American egg is more variable than the English egg. On the contrary it appears slightly less variable, as we might expect if the sparrow imported into America had been largely drawn from one district of the mother country. In the next place the American egg does appear to be .5 mm. shorter than the English. This might be due to (a) direct selection in America, or to (b) absence of the periodic selection we may suppose to maintain the stability of the species in England. But it may equally likely be due to original import into America of an English local race, to good or bad seasons in England or America in the year the eggs were collected, or to a large preponderance of second nestings in the clutches measured by Professor Bumpus. All these points could, I think, be investigated and answered. Professor Bumpus has opened a most interesting field of inquiry, and for the next few years arrangements ought to be made for the annual measurement in both America and England of good series of sparrows' eggs, with due record of district, probable nesting and climate of previous winter and spring. We might then learn the effect of each of these factors in both America and England, and at least put on record valuable results for comparison with similar measurements 20 or 30 years hence. Only in this way shall we be able to ascertain whether there are persistent sources of differentiation at work.

K. PEARSON.

* I could find only the indices of 867 English eggs given.

† The extraordinary variety of mottling and tint on my eggs was commented on by all who saw them; I consider that it varied a good deal with the district. I found no method of quantitatively measuring it. It disappeared to some extent with time and I daresay something of the colour would be liable to fade if the eggs were preserved for any time and transported.