differences in growth potential are manifested first in differences in rate of segmentation of the fertilized egg, then in differences in the size of the blastocyst and of the embryonic area which develops upon it, later in difference in size of the young at birth and in (percentage) growth rate subsequent to birth, and finally in a more prompt and complete arrest of growth at puberty. Robb was able to show that differences in size of the endocrine glands are correlated with differences in general body size and so that differences in endocrine activity are probably not responsible for the differences in adult body size. This started Gregory and myself on a search for the causative agency elsewhere and we think that by a study of the embryology we have located it in the gametes.

If Robb's statement were correct that there is no difference in percentage growth rate between large race and small race rabbits prior to puberty, it would present an exceptional situation requiring explanation. As it is, all the facts of embryology, of size at birth, of post-natal and post-pubertal growth are consistent and referable to a common agency inherent in the gametes at the time of fertilization.

The observations of Riddle and others on birds indicate that a similar situation exists there also with only this complication, that size on hatching (unlike birth weight in mammals) is absolutely limited by the size of the egg (including everything within the limy shell). It seems probable, therefore, that racial size in vertebrates generally is determined by constitution of the gametes, and that endocrine glands enter only as secondary agencies in modifying the growth rate in the later stages of the life cycle.

W. E. CASTLE

BUSSEY INSTITUTION,
HARVARD UNIVERSITY

CULTIVATION OF THE VIRUS OF INFECTIOUS LARYNGO-TRACHEITIS OF CHICKENS

THE ability of certain viruses, *e.g.*, vaccine virus, Virus III and herpes virus, to multiply in a fluid medium has been demonstrated by the work of Maitland and Maitland,[1] Eagles and McLean,[2] Andrewes,[3-5] Maitland and Laing,[6] Li and Rivers[7] and others. The report to be made here is concerned with the results of the application of methods used by some of these investigators in the cultivation of the virus of infectious laryngotracheitis of chickens.

The medium devised by Li and Rivers[7] for the cultivation of vaccine virus, consisting simply of minced chicken embryo and Tyrode's solution, has proved satisfactory and has been used most extensively. The containers used were 50 cc Erlenmeyer flasks, with cotton stoppers, over which were placed two layers of lead foil. In each flask, 0.5 cc of minced embryo and 5 cc of Tyrode's solution, sterilized by filtration, were placed. Bacteriologically sterile Berkefeld V filtrates of an infusion broth suspension of tracheal exudate obtained from an infected chicken were used to initiate the cultures. Sterile emulsions of spleen tissue from infected chickens were also tried, but without success.

To start a culture, 0.5 cc of filtrate was added to each flask of medium. New cultures were made at five- to seven-day intervals by the direct transfer of 0.5 cc of the old culture into flasks of fresh medium. The cultures were tested for the presence of virus by the injection of 0.1 cc into the tracheas of susceptible chickens. In this manner, active virus has been demonstrated in a number of cultures that were separated from the original culture by a sufficient number of generations that virus could be present only by reason of multiplication. In only one series of cultures has virus been present beyond the twelfth generation. In this series, which is still carried, virus has been demonstrated in cultures of the twenty-second generation. In this instance, the multiplication of virus is more than 5×10^{23}.

It has been proved that virus may be present in some, but not all, flasks of media of the same generation of cultures. Therefore, in the tests for virus, it has been necessary to make inoculations separately with the contents of several flasks. The virulence of the culture virus has been observed to equal that of the virus filtrate with which the cultures were initiated.

J. R. BEACH

DIVISION OF VETERINARY SCIENCE
UNIVERSITY OF CALIFORNIA

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