There is no reason to suppose that the epinephrin, present in larger or smaller amount in the extracts, could have had any appreciable influence in prolonging life. No effect of this kind was observed when epinephrin equal to the maximum amount which could have been contained in the dose, given on the assumption that none of it had been destroyed, was injected. Much of the epinephrin was destroyed in making the extract.

J. M. ROGOFF
G. N. STEWART

WESTERN RESERVE UNIVERSITY

AN INQUIRY INTO THE MOTION OF DROPLETS OF JUICE EJECTED FROM AN ORANGE[1]

WHEN an orange is divided into hemispheres and eaten with a spoon, it has often been observed that droplets of the juice emerge and proceed with extraordinary rapidity and uncanny accuracy into the eye of the observer. The phenomenon is a subtle one and explanations which have been offered are conflicting, so that recently certain experiments have been undertaken with a view to its elucidation. Although much remains to be done, it is believed that the results obtained are of sufficient importance to warrant a preliminary report at this time.

Earlier observations in this field, rather sketchy perhaps, may be mentioned briefly. Adam[2] is recorded as saying "damn" violently at the breakfast table (with, of course, the inevitable remonstrance from Eve). This may be regarded as very precise evidence that the oranges of that epoch delivered their droplets with unerring aim. Although the conditions were not quite the same the fact was evidently well known to Atlanta[3] who dropped oranges (the Greek word is ωραμσε, wrongly interpreted by the commentators as "apple") in the path of her competitors in races, thereby removing them from the competition. More recently the Spanish Dons were wont to present oranges to their ladies with a view to rendering them incapable of choosing other partners. In the late war no doubt only the high visibility of oranges prevented them from being used in the most bitter offensives.

In the present experiments a large concave ladle, 2,000 karat, served as a source of energy. The crossed fields were impressed by a cuneiform magnet, the usual precautions being observed when adding the cracked ice. It was soon found absolutely necessary to apply a relativity correction. This was done, however, carefully in Latin so as not to injure any of the finer sensibilities, if there were such present.

The results of the measurements showed that the diameters of the droplets were of the order of 10^{-21} cm, which accounts for their being able to enter the smallest crevice of the eye. Their speeds varied over a considerable range, but on the whole were high, averaging about a tenth of the velocity of light. It was found that the droplets were attracted towards the eye with a force varying with the inverse seventh power of the distance. These facts are all seen to be but details bearing out the surprising frequency with which the droplets steer for the eye, and are best explained by an appeal to the 1st law, *i.e.*, the innate cussedness of inanimate things. An exhausting series of experiments developed the remarkable fact that the right hand invariably propels the droplets into the left eye. A little thought, however, indicated that this was so because the right hand didn't wish the left to know what it was doing.

It is hoped to present in a future paper a mathematical explanation based on the flirtation theory of Einwein and Drinkemoffski.

E. O. HULBURT

WASHINGTON, D. C.

[1] Read before the Royal Society of Sultry Yachtsmen.

[2] Eden "Scientific Papers," 1, 35 (6721 B. C.).

[3] Homer, Canto 7.

USE AND DISUSE IN THE CHROMOSOMES

THE writer expressed his theory of use and disuse in the chromosomes as an explanation of phylogenetic development in the article "Factors in Phylogenetic Development" in the May–June, 1927, number of the *American Naturalist*. Further study of the principles expressed in this paper has led to the conclusion that the uniformity of genes in the various parts of the body need not be limited to the coordinative forces of the organism, although coordination is an obvious essential to such uniformity.

Since the chromosome complex characteristic of the species persists in most cells of the body, it follows that most cells contain a great number of genes which find no expression within those cells. It seems improbable that the millions of genes in this category are entirely without effect in the expression of inherited characters.

The only logical interpretation of this condition is then that a given character is the product of certain genes not merely in the cells taking part in the expression of the character but throughout the body. According to this view the distribution and influence of genes are not coincident. The development of a cell may be due to the influence of a multitude of genes rather than of one or a few within itself, and consequently any increase in the functional capacity of a gene due to repeated use would be at the outset an attribute of all genes of that kind throughout the