

indicate the presence of one bristle factor in the sex chromosome and another in the third group, but the exact relation of these to the increase in number of bristles has not been determined. The environment also influences the number of bristles which appear. In MacDowell's experiments forty-nine generations were bred, and it was found that in a uniform environment selection had no effect after the thirteenth generation; statistical methods show that selection failed to shift the modal condition, and no mutations occurred during the experiments.

In a study of the effects of alcohol on white rats, the same author (*Proc. Nat. Acad. Sci.*, vol. iii., p. 577) finds that alcoholised rats showed a considerable falling off in the weight of their offspring, and a still greater loss in fecundity. Twenty-nine pairs of normal rats produced three hundred young in the same time that thirty alcoholised pairs produced one hundred and eight young. He also (*Proc. Soc. Exptl. Biol. and Med.*, vol. xvi., p. 125) finds that the children and grandchildren of parents which had been treated with alcohol for two months before the birth of their young were less apt than the controls in learning to run a maze or to make a multiple choice.

The Leguminosæ are well known to have usually compound leaves, but several genera have unifoliolate varieties, or even species. Blakeslee (*Journal of Heredity*, April, 1919) describes such a form arising as a mutation in the Adzuki bean (*Phaseolus angularis*). His studies of *Datura* (Blakeslee and Avery, *Journal of Heredity*, March, 1919) have disclosed a number of new forms differing from the type in shape of capsule, foliage, and other characters. They transmit their characters as a complex, chiefly through the female, and in one instance a distinct new species seems to have arisen which breeds true, but appears to be sterile in crosses with the parent species.

R. R. G.

Increase of Population—a Warning.

PROF. E. M. EAST has much that is important in his address as retiring president of the American Society of Naturalists, meeting at Princeton (*Scientific Monthly*, vol. x., 1920, pp. 603-24). At present there are about 1700 million people, with an annual increase of between 14 and 16 millions. The white race is increasing much more rapidly than the yellow or the black. China's 300 million population is practically stationary. With the exception of France, few white peoples are increasing at a less rate than 10 per thousand. It is true that in most of the civilised countries of the world the birth-rate is slowly but steadily decreasing, but the result is not what many would have us believe. Where the birth-rate is low, the death-rate is low, except in France. Prof. East predicts that, owing to the steadily increasing development of preventive medicine, the decrease in the birth-rate will have no great effect on the natural increase in the world for many years to come. If the rate of increase actually existent during the nineteenth century in the United States should continue, within the span of life of the grandchildren of persons now living the States will contain more than a billion inhabitants. "Long before this eventuality the struggle for existence in those portions of the world at present more densely populated will be something beyond the imagination of those of us who have lived in a time of plenty." The law of diminishing returns is even now in operation in a comparatively new country like America, thought to be supplied with inexhaustible riches. Prof. East considers in detail what may be done by improved utilisation of energies,

improved agriculture, improved breeding, and so on; but he is not sanguine. To the criticism that he has not allowed for the "immense possibilities in the way of utilising sea food," he responds with vigour. The cloud grows denser when it is noticed that the birth-rate of the foreign population of the United States, coming largely now from eastern and southern Europe, is so much greater than that of the Anglo-Saxon stock (to which, it is claimed, most of the superior types belong) that within a century the latter will be but a fraction of the whole. Prof. East looks forward to severe restriction of immigration; the spread of education; equitable readjustment in many economic customs; rational marriage selection which will tend to an increase of the birth-rate in families of high civic value; and among the rank and file a restriction of births commensurate with the family resources and the mother's strength.

Glass Technology.

WE have received from the Department of Glass Technology, University of Sheffield, a copy of vol. ii. of "Experimental Researches and Reports" published by that department. The papers included have already appeared in the *Journal of the Society of Glass Technology*. They range over a somewhat wide field of the glass industry, and include papers dealing with bottle-glass and glass-bottle manufacture, chemical glassware, glass for lamp-working purposes, besides accounts of such relevant investigations as the accurate calibration of burette tubes, a simple apparatus for the detection of strain in glass, and the annealing temperatures of lime-soda and magnesia-soda glasses. There are also a paper descriptive of the glass industry of North America and an account of the year's progress in glass research under the auspices of the Glass Research Delegacy. The condition of the glass industry in this country undoubtedly calls for sustained and systematic research, and this contribution of the Department of Glass Technology of the University of Sheffield must be of considerable assistance to what should be a great and national industry. The newly founded Glass Research Association has also an extensive programme of research in the field of what may be called industrial and laboratory glass, and the British Scientific Instrument Research Association is also more particularly concerned with investigations into optical glass. With such a measure of co-operation and co-ordination as the development of the researches shows to be necessary between these various bodies, there is hope that the users of all types of glass in this country may be able to find a home supply equal, if not superior, to the foreign sources to which, before the war, they perforce had to go for much of the glass they needed.

Rate of Evolution.

PROF. E. G. CONKLIN discusses (*Scientific Monthly*, 1920, vol. x., pp. 589-602) the difficult question of the rate of evolution, including under evolution (a) diversification of species, (b) more perfect adaptation to the conditions of life, and (c) increasing differentiation and integration, or, more briefly, progress. If the rate of diversification ("divergent evolution") depends upon the number of mutations that appear, Prof. Conklin argues that it should be proportional, other things being equal, to the rate of reproduction. But this