

decim has several very distinct and variable notes. He has probably been misled by the abnormal condition of things the present year in the District of Columbia, where the English sparrow has so prevented the full maturity of the males, and so decimated their ranks, that the more characteristic noises, and those most apt to be recollected, have scarcely been heard. This has been a common remark among entomologists, who recollected former visitations in other parts of the country.

Finally, Professor Ward will convince no one that I was ever guilty of speaking of the note of *Cicada pruinosa* as 'precisely like' that of *C. septendecim*, though the mature and louder note of the latter much more nearly resembles that of the former than he seems to imagine.

C. V. RILEY.

Washington, D.C., June 17.

Periodical cicada in Massachusetts.

Among the localities given by the earlier writers for the present septendecim brood of the periodical cicada, are Fall River and the south-eastern portion of Massachusetts. These need confirmation; as, so far, no reports have been received from Massachusetts the present year. There is a brood which appears at Fall River one year later. I shall be glad to get confirmation either of the absence or presence of the insect the present year from the readers of *Science* in south-eastern Massachusetts.

C. V. RILEY.

Washington, D.C.

Height of land in Connecticut.

The ninth and last edition of the 'Encyclopaedia Britannica' has the statement that there is no land in Connecticut 'above a thousand feet in elevation.' Statements equivalent to this will be found also in 'Appletons' American cyclopaedia' and in 'Johnson's cyclopaedia.' A survey by an engineer, Mr. G. M. Bradford, in 1873, which was based on the survey of the Connecticut western railroad, gives the heights of several points in the north-western part of this state, and these results cannot be much in error. I am indebted to Mr. Henry Norton of Goshen, Conn., for the communication of these heights. It will be remembered that Salisbury is the north-western town of the state, and that east of it, joining Massachusetts, are Canaan and Norfolk: Goshen joins Norfolk on the south. The following are some of the heights above sea-level:—

	Feet.
Ivy Mount (Goshen)	1,642
Haystack Mount (Norfolk)	1,672
Bald Mount (Norfolk)	1,770
Bradford Mount (Canaan)	1,910
Bear Mount (Salisbury)	2,100
Brace Mount (Salisbury)	2,300

It may be thought hardly worth while to dispute any statement made in a cyclopaedia; but, having been born and reared among the beautiful hills of Connecticut, I dislike to see them diminished to one-half their height, even by such a ponderous authority as the 'Encyclopaedia Britannica.'

ASAPH HALL.

June 27.

The ginkgo-tree.

In *Science*, No. 124, Mr. L. F. Ward states that the Frankfort, Ky., ginkgo-trees are the only ones known to him in the United States that have borne fruit. Permit me to say that a group of these trees in Central Park, New-York City, have borne fruit to my knowledge for the past six years, and that in great abundance.

R. P. WHITFIELD.

Amer. mus. nat. hist.,
June 24.

THE FORMATIVE FORCE OF ORGANISMS.

THE assertion is safe, that the majority of biologists incline at present to explain the forming of an organism out of its germ upon mechanical principles. The prevalent conception is, that the forces of the ovum are so disposed that the evolution of the adult organism is the mechanical result of the predetermined interplay of those forces. The object of the present article is to point out that this conception is inadequate, and must be at least supplemented, if not replaced, by another view; namely, that the formative force is a generally diffused tendency, so that all parts inherently tend to complete, by their own growth and modification, the whole organism,—a fact which finds a legitimate hypothetical expression in Darwin's doctrine of pangenesis. The nature of the view here advanced will become clearer upon consideration of the evidence upon which it is based, and which is adduced below. The evidence that the formative force is diffused through all parts falls under three heads: 1. The process of regeneration in unicellular and multicellular bionts; 2. The phenomena of the duplication of parts; 3. All forms of organic reproduction. Let us briefly consider these categories.

1. *Regeneration.* All living organisms have to a greater or less degree the ability to repair injuries: indeed, we must regard the power of regeneration as coextensive with life, but the capacity varies enormously in the different species. In man the power is very small, though more extensive than is generally realized. Among annelids are species the individuals of which may be divided in two, and each piece can regenerate all that is needed to render it a complete worm. We sometimes see a small fragment of a plant, a single switch of a willow for instance, regenerate an entire tree,—roots, trunk, branches, leaves, flowers, and all. In the last instance a few cells possess a latent formative force, which we recognize by its effects, but cannot explain. We perceive, therefore, that each individual has, as it were, a scheme or plan of its organization to which it strives to conform. As long as it actually does so, the cells perform their routine functions; but when an injury destroys or removes some portion, then the remaining cells strive to conform again to the complete scheme, and to add the missing fragment. The act of regeneration of lost parts strikes the imagination almost as an intelligent pursuit by the tissues of an ideal purpose.

Our knowledge of the regenerating power