accelerates or inhibits some vital process. In either case a difficulty arises when the probability of a single or even small number of molecules reaching the necessary cells is considered.

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THE PERIODICAL CICADA

TO THE EDITOR OF SCIENCE: It is probably desirable to record the appearance, in accord with expectation, of brood XIII of the periodical cicada or seventeen-year locust (*Tibicina septendecim*) in the Chicago area this year. Reference to Marlatt's excellent paper[1] enables one to satisfactorily identify the present insects as those of the compact brood described by Fitch as brood 6, by Walsh-Riley as brood III, by Riley as brood V and by Marlatt as brood XIII. In Dr. Gideon B. Smith's manuscript chronology the present brood was listed as appearing "in Winnebago, Monard County, and neighborhood in 1854; again in 1871."

The writer first noted the larvæ April 29 of this year, at which time they were present in great numbers at Flossmoor, occupying their characteristic "chimneys." The adults emerged May 28 in enormous numbers, distributed from at least Batavia and Wheeling to Flossmoor and to Crown Point. Two weeks ago oviposition seemed to be past its crest and at the present time in localities visited the adults have practically disappeared.

The precision of appearance of this brood over a period of seventy years is an interesting instance of the uniformity of developmental tempo under natural conditions.

JAMES NELSON GOWANLOCK
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JUNE 30, 1922

SOME SIDELIGHTS ON THE LIFE OF RUSSIAN PROFESSORS

IT has been noted on various occasions that the Russian professors and the research men are "book-hungry." Being shut off from the remainder of the civilized world for nearly eight years, they have but very little and very fragmentary knowledge of what has been and is being done in western Europe and America. To work under such conditions is at least very inconvenient. But in reality the situation is much worse. The Russian men of science literally have been "bread hungry" for the past several years. Every one of us who had a chance to talk to Russian refugees heard of stories of bread hunting for four or five hours at a time. Those days, let us hope, have passed. The conditions in Russia are becoming better. But even the so-called "better conditions" are very far from good, as one can judge from the following extracts from a letter which the writer received from a Russian professor in Petrograd:

> Notwithstanding the fact that the salaries are regulated by associations of professionals and continuously raised in parallel with the value of the ruble, yet the highest paid specialist in various departments will receive in May, 1922, nearly 40,000,000 rubles in Soviet paper money, plus the food ration of 36 pounds of flour, 7 pounds of fish and a pound each of salt, sugar and fat, plus (in exceptional cases) special academic portion (a little in excess of one mentioned above). Meantime, according to quotation of Government Bank for May, $100 is equal to $193,000,000 Soviet paper rubles.
>
> But even this meager portion and the pack of worthless money do not come on time, adding further to the discomfort of professional people in Russia.
>
> On account of shortage of funds at the government's disposal, the personnel in all departments is systematically decreasing, the salaries come late as well as the food rations. As a matter of fact, the salaries in our division (of an agricultural experiment station) have not been received for March, while the food ration is just being received for April. [The letter was dated May 27, 1922.]
>
> In the same way, the allowances for current expenses of the experiment station are being decreased and delayed.
>
> In spite of all these conditions, of which I do not think it advisable to talk in detail, we are still alive and continue our research, although, of

[1] Marlatt, C. L.: 1907, "The Periodical Cicada," *Bureau of Entomology Bulletin No. 71*, U. S. Department of Agriculture.

course, not so intensively as in America or other countries.

Sorry to confess, I was unable until now to send you our literature including that which was published during the last few years. Perhaps I will have this possibility in the near future.

Such bits of information fairly well characterize the conditions under which Russian men of science are obliged to live and to keep the "light of knowledge burning," in anticipation of better days for science in Russia.

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SCIENTIFIC BOOKS

Genetics, An Introduction to the Study of Heredity. By H. E. WALTER. Revised edition, pp. XVI + 354, 92 figs. The Macmillan Co., New York.

This revised edition of a book originally published in 1913 brings the elemental facts of genetics up to date, and meets at once a need for a popular presentation for the general reader as well as an introduction to the study of heredity for the beginning college student. The enormous progress in this field during the last ten years has necessitated eliminations, additions, and modifications in the former text.

About 82 pages have been added in the present edition, 50 of which form three new chapters. A new chapter on the "Factor Hypothesis" contains much material that was formerly discussed under "Old Types and New," but the rearrangement of materials places the subject matter in a more logical position and allows a distinct and important concept to be treated as a separate unit. Hereditary genes are here classified roughly as single or plural according to ways in which they determine the visible hereditary character. Of the plural genes, the discussion of genetic modifiers is the most important new subject, since modifiers play such a large part in present explanations for the results of selection. An entirely new chapter on the "Architecture of the Germ Plasm" reflects the most important advances made since the original edition was published, and deals with the conceptions and viewpoints based largely on the famous Drosophila experiments, such as linkage, crossing over, the chiasmatype theory, interference, and the arrangement of the genes. The author takes the point of view "that it has been possible in a single chromosome to determine not only the relative arrangement of over thirty genes but also to find out the relative distance between these genes." While the order of the genes may be determined readily, our conclusions as to distances between genes have perhaps outstripped the demonstrable evidence. If two linked genes show 1.5 per cent. recombinations, it still remains to be proved that the low percentage of crossing over is due to or proportional to a short distance between these genes on the chromosome, even in the so-called normal population. Possibly it may be, but there are other alternative explanations. To be sure, the possibility of an accurate localization of hereditary genes in their appropriate chromosomes is attractive and even astonishing. While the hypothesis is alluring, the implications are so grave and important, we must await conclusive proof. A new chapter on "Somatogenesis" points out the problem of biological differentiation which must take place between the invisible genes in the fertilized egg and the Mendelian characters as end products, for during this process many external and internal factors (including endocrines) come into play and contribute to the formation of the somatic characters as we see and study them in pedigreed cultures. The present chapter on "Determination of Sex" introduces much new and important material which was unavailable ten years ago, and substitutes for some of the former discussion which now has only a historical significance, such topics as polyembryony, sex-linked inheritance, nondisjunction of the sex chromosomes, secondary sex characters in relation to hormones, sex intergrades and the like. Excellent diagrams make clear at a glance the distinction between the cases where the males are heterogamic (producing two types of spermatazoa) and those cases in which the females are heterogamic (producing two types of matured ova).

Two radical changes occur in the rearrangement of materials in the new edition. A chapter discussing "Pure Lines and Selection" formerly preceded Mendelism but now more appropriately follows this subject because pure lines and selection can be interpreted best in terms