still of the opinion that in normal years the parasite would, in all probability, maintain a general distribution (page 26). During the spring and summer of 1909 a notable exception to this opinion existed in southwestern Oklahoma. Here the green bug was abundant over about one hundred square miles. This area was examined, first by a representative from the federal bureau about the middle of April and then by a member of the entomological department of the university of Kansas a month later, and neither of these entomologists found any evidence of the presence of the parasite. Reliable reports subsequently made to the author showed the green bugs present and the absence of the parasite during the entire growing season and this in a locality where parasites were superabundant two years previous and in a climate favorable to the existence and natural distribution of the parasite.

These are the evidences upon which the opinion was based that this parasite does not maintain a general distribution.

5. What the reviewer says regarding the Australian lady bird in California is important. The only reference to this insect in the bulletin is in connection with a historical summary of entomological endeavor in the control of one insect by the use of another. Since this lady bird is not referred to in the discussion of the green-bug problems, there does not appear to be anything to show that the behavior of this lady bird was used as corroborative evidence to strengthen any conclusions regarding the green bug and its parasite.

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GAMETOGENESIS OF THE SAWFLY NEMATUS RIBESII. A CORRECTION

In the *Quarterly Journal of Microscopical Science,* Vol. 51, 1907, p. 101, I described observations on the gametogenesis of *Nematus ribesii,* some of which subsequent work has shown to be erroneous. Since my statements have been quoted in several recent papers, I think it necessary to correct the mistakes as far as possible, although I have not yet reached a satisfactory solution of the phenomena. The errors arose partly through misinterpretation of the phenomena observed, and partly through imperfect fixation, for I find that, unless the material is very accurately fixed, the chromosomes tend to adhere together and give the appearance of a smaller number than the true one. The same cause has led other observers to make similar mistakes.

Reinvestigation of *Nematus* shows, in the first place, that there is only one division of the spermatocytes; the first division described in my paper is not a true mitosis, but is probably comparable with the abortive division observed in the spermatogenesis of the bee. I have not yet been able to determine the chromosome number with certainty. In the spermatogonia the number appears to be about sixteen, and that in spermatocyte mitoses about eight, but if eight is the true reduced number, the occurrence of sixteen in the spermatogonial mitoses of larvæ derived from parthenogenetic eggs is unexplained. In the bee, and as I find, also in a cynipid (to be published shortly), the spermatogonial number is the same as that of the spermatocytes.

I have not yet obtained fresh material for reinvestigation of the maturation of the egg, but the results of my recent work on the spermatogenesis make it clear that my observations on the chromosomes in the polar divisions also require revision.

But the behavior of the chromosomes in *Nematus ribesii* is so difficult to follow that it is possible that the true interpretation will be obtained only by the discovery of some nearly related species in which they are more clearly distinguishable.

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University of Birmingham, England,
November, 1909

MOUNTAIN AND VALLEY WINDS IN THE CANADIAN SELKIRKS

To the Editor of Science: Report has been brought from British Columbia by Mr. C. T. Brodrick, of Harvard University, of an interesting case of the daytime descent of air

currents in mountain valleys. The fact of the nocturnal descent of air on mountain sides and along the floors of mountain valleys is familiar, and in some cases a deepening of the current during the night has been noted. The present report describes the method of occurrence of the lateral drainage only. The observer found that during the daytime, provided the sun shone, a distinct set of the air toward the valley bottoms was noticeable in the shadows of cliffs, while in the sunlight no movement was discernible. One case, where a vertical cliff cast a well-defined shadow, showed that by going even so short a distance as twenty-five feet, one moved from uncomfortable heat into a cooling breeze. This descent of air in the shadows was undoubtedly due to a cooling similar to the more often observed nocturnal phenomenon, though on a very small scale.

A similar control over *nocturnal* winds was noted by the writer a few years ago near the foot of the Illecillewaet Glacier, in the Canadian Selkirks. The valley of the Illecillwaet River, which flows northwestward from the glacier, is very steep walled. This, with the presence of the ice, affords ideal conditions for nocturnal downcast winds. About sunset on the day in question, the writer was standing near the foot of the glacier, but somewhat upon the east side of the valley. The air was perfectly calm, and the temperature in the full sunlight gave no indication of the presence of the ice. The west side of the valley was already in shadow. As the edge of this shadow crossed the valley floor, a distinct movement of foliage within the shadow became evident. The zone of movement widened, keeping pace with the advance of the shadow; and as the edge of the latter passed the observer on its way up the east wall of the valley, the edge of the zone of foliage movement lagged a hardly perceptible distance behind, and was seen to move up the slope to the limit of the bushes. Possible movement beyond this point was rendered invisible by the distance and character of vegetation on the higher slopes. Almost at the instant of the passing of the shadow edge, a gentle puff of cold wind down off the glacier announced the beginning of the nocturnal descent of air. Half an hour later, at the hotel some distance down the valley, the night wind was already blowing moderately and the temperature had dropped many degrees.

It is improbable that the upper limit of foliage movement indicated the depth of the down-valley current in "mid-stream." The rapidity of ascent of the shadow would call for the sudden beginning of movement of a mass of air so large that it could not possibly have been cooled thus quickly throughout. Instead, the upper limit of a relatively thin sheet of cooling air which was moving more or less directly toward the valley bottom, was indicated.

Observation may prove that this lateral movement, while showing near its upper limits a fairly direct downward course, turns more and more obliquely down the valley under the influence of the drag of the air-stream proper. Careful study might also show whether the surfaces of such down-valley currents assume the slight convexity noted in the case of water-streams, or whether the constant lateral accessions of air tend to produce a diminishing concavity of surface as the stream slowly deepens during the night.

B. M. VARNEY

HARVARD UNIVERSITY,
January 6, 1910

SCIENTIFIC BOOKS

Outlines of Chemistry: A Text-Book for College Students. By LOUIS KAHLENBERG, Ph.D., Professor of Chemistry and Director of the Course in Chemistry in the University of Wisconsin. New York, The Macmillan Co. 1909. Pp. vii + 548. $2.60 net.

In a clear and interesting style the author here presents such a course in elementary chemistry as was almost universally taught a generation ago and still keeps its place in many of our largest institutions of learning. Professor Kahlenberg has accomplished his purpose with a high degree of success, but we may nevertheless inquire with all seriousness whether this purpose is consistent with the