

then be named. Let *Jonesia* then be found to be the same genus as *Smithia*. Then the name *Jonesia* "lapses into synonymy" and cannot be thereafter applied to *any other genus* in botany. That is all that is meant by the saying "once a synonym, always a synonym." In other words, if *Jonesia* is not good for what it originally meant, it is good for nothing; it is to be deleted absolutely, and cannot come into re-existence by transfer to any other genus.

Exactly the same principle holds for all specific names within their respective genera. Example: Let there be a *Rosa Smithi*. Let some one then name a *Rosa Jonesi*. Let *R. Jonesi* be considered to be the same species as *R. Smithi*. Then there can never be a *R. Jonesi*; that is to say, *no other species* of *Rosa* can be specified as *Jonesi*. But, of course, if anyone discovers, after this reduction of *Jonesi* to a synonym of *Smithi*, that what had been called *R. Jonesi* is a good species, then *Jonesi* revives as the name of *that* species; and the fact that it had been (erroneously) regarded as a synonym of *Smithi* is no bar to its use in its original sense.

So the expression, "once a synonym, always a synonym," is seen to hold perfectly good in its proper acceptance. The fact that a certain name has ever been wrongly regarded as a synonym does not make it a synonym; for it ceases to be such the moment the mistake is detected and corrected, and therefore is not amenable to the rule at all.

I think that, on this reconsideration of the subject, Mr. Townsend may be himself the first to affirm the validity of the now famous maxim, and I am sure that, if he does so, he will find it works well.

ELLIOTT COUES.

Smithsonian Institution, Washington, Oct. 10.

#### Crayfish Attacked by Leeches.

WHILE walking on the beach at Lake Chautauqua one day, recently, I observed a crayfish about four inches in length lying just at the edge of the water, where it had apparently been thrown up by the waves.

On picking it up, I found that it had moulted but a short time previously, and that its new shell was still quite soft. As I lifted the animal, I was surprised to see five large leeches, the smallest of which in its semi-contracted position extended nearly three inches, hanging from the body, and upon a closer investigation observed that all five were attached to a single portion—the left chela. The part which had been attacked by the leeches was the area of attachment of the adductor muscle; and, if the work had not been interrupted by my examination, it would have resulted in the complete crippling of the pinching apparatus of that side. Other and seemingly less protected portions of the body were uninjured.

It would be interesting to ascertain whether the point of attack in this case was accidental or determined by intelligence, but the appearance was that the leeches, appreciating that their prey was just at this time incapable of protecting itself, had deliberately attacked the animal in such a way as to prevent it from protecting itself in case its shell should sufficiently harden before they had succeeded in killing it. The right chela had one slight perforation in it, in the same location, and it is possible that a leech had begun there also, but dropped off unnoticed when the crayfish was raised from the ground. I should be glad to learn of any other observations on the way in which leeches attack their prey.

H. T. FERNALD.

State College, Centre County, Pa., Sept. 27.

#### A Wasp Study.

NEAR my summer home we have large numbers of the small solitary wasp (*Eumenes smithii*). The mother-wasp digs a passage and cell, usually in the open sandy pathway: our pathways show hundreds of these wasp-holes, about one-half an inch in diameter, while the work is going on and before the cells are closed. The egg having been laid, the mother-wasp provides a caterpillar or two, which she leaves in the nest in a state of coma or paralysis; this coma lasts until the young wasp is hatched, when it finds fresh living food ready for it.

About the time when the Eumenidæ are busy with home-building and egg-laying, we usually have on our wild cherry-trees and young poplars large numbers of the nests of small caterpillars. This year I noticed a remarkable absence of caterpillars; scarcely a web-nest was to be seen. It did not occur to me to wonder what food Madame Eumenes would provide for her babes in this famine of caterpillars, until one day I was treated to a curious spectacle. I saw a slender blue-black wasp about an inch long, carrying off a large gray grasshopper. The grasshopper was fully two inches long, large and heavy in proportion to its length, a handsome insect of a greenish-gray, with some pale yellow touches and markings.

The wasp lay upon the caterpillar, its thorax upon the thorax of the caterpillar, and its sharp-pointed black head resting exactly between the large, full eyes of the captive. The small fore-legs of the wasp clasped the upper part of the caterpillar's thorax; the wasp's third pair of legs lay along the thighs of the large hind-legs of the grasshopper. Claspings its prize firmly with its first and second pairs of legs the Eumenes flew, carrying the grasshopper. Each flight was short, not over from five to ten yards; then the wasp settled, and before flying again made some little progress between walking and flying, dragging the grasshopper beneath it in the position just described. The course of the wasp was in a direct line. It followed the path for a time, but where the path curved or deflected the wasp moved directly over bushes, stubble, and long grass.

Meanwhile, the grasshopper was absolutely quiescent, and had I not known the wasp's penchant for living prey, I should have believed it to be dead. I followed captor and prisoner for some fifty yards, and then seized them both. The wasp clung to her prey, and seemed so absorbed in that as to be heedless of capture. I took the two home in my hand, holding by the body of the grasshopper, put them on a plate under a goblet, and proceeded to examine the case.

The wasp was not biting or stinging the grasshopper, but merely held it firmly clasped, the rigidity of the heads of both insects being very noticeable. The extremity of the abdomen of the wasp trembled slightly; the eyes of the grasshopper had a very peculiar, dull, unseeing expression, like those of a person in a state of coma; occasionally the grasshopper's large thighs quivered, and constantly there was a slow expansion and contraction of the abdominal rings. Finally I forcibly removed the wasp from the back of the grasshopper, and placed the latter on the floor in a draught of air. In a moment or two it seemed to recover itself slightly, stretched all its legs, and gave a feeble hop. I then set the wasp free within a foot of the grasshopper, and seeming to recognize its booty, it dashed upon it, and took the same position as before. There was no biting of the head of the grasshopper. I watched both closely. After this second capture the grasshopper rapidly succumbed: its first pair of legs curled up closely; the second pair folded together into a kneeling posture; the hind-legs were extended, quivered no longer, and the abdominal expansion and contraction were feebler and slower.

At the end of twenty minutes I removed the wasp, carried her to the other side of the house and set her free. She departed as if reluctantly "enforced to go and seeming still unready," evidently all her mental powers, whatever they might be, were concentrated upon that grasshopper. I returned to the grasshopper, and found it giving no signs of life except the abdominal motion. I then sprinkled it thoroughly with ice-water. It recovered a little, moved its thighs several times, but the contraction of the first and second pairs of legs, and the motionless, stiffened state of the antennæ, were very marked. In whatever position I put the insect there it remained, on back or side, or propped up on its bent, "kneeling" fore-legs. The slight reviving produced by air, water, and freedom from its enemy did not last. The grasshopper grew more rigid and the ring expansion less and less marked. I desired to keep the creature to discover how long it remained uncorrupted in this state, but a sharp gust of wind blew it from my hand into grasses where I could not recover it.

The manner of the carrying of the grasshopper by the wasp, the strength exhibited by the wasp, its absorption in its prize, the peculiar resting of its head motionless upon the upper portion of

the grasshopper's head, and the singular state to which the grasshopper was reduced, all seemed to me worthy of notice.

Evidently the grasshopper was carried off to serve for the food of the young larva, instead of the caterpillar usually provided. Had the grasshopper been paralyzed by a sting or bite? Was it mesmerized or hypnotized by its vigorous little enemy? Whatever had been done to it, it was absolutely quiescent and making no manner of fight for itself.

JULIA MCNAIR WRIGHT.

Fulton, Missouri.

#### Auroras versus Thunder-Storms.

DURING September just past sun-spots were very numerous and large. Nevertheless, auroras during the month were without exception comparatively inconspicuous. In this case certainly large sun-spots have not been attended by bright auroras, as some have held to be the rule. The explanation of this anomaly, which appears to be justified by systematic records in my possession, is that thunder storms took the place of auroras. It has been found that not unfrequently thunder-storms become widely prevalent upon dates upon which auroras should fall in accordance with their periodicity corresponding to the time of a synodic revolution of the sun. When this happens, it robs them of their brightness, wholly or in part. The relation between these two classes of phenomena appears to be reciprocal or substitutive, the one taking the place of the other under conditions which are only just beginning to be understood, and which are in process of investigation.

M. A. VEEDER.

Lyons, N. Y., Oct. 8.

#### European Origin of the Aryans.

IN reference to Dr. Brinton's note in *Science*, Sept. 16, I certainly have not read all D'Hallo's writings, which seem to me to have no present scientific value, possessing merely a faint historical interest. I only professed to have read those passages which Dr. Brinton cited in his lectures.

The extract which Dr. Brinton now gives from the article of 1848 only confirms me in my conclusions. D'Hallo's mention of an Himalayan origin, and his allusion to the hypothesis that the Indo-Germanic languages were derived from Sanscrit, point rather to an acquaintance with Adelung's Cashmere theory of 1806 than to any adequate knowledge of the Central-Asian hypothesis of Pott, Lassen, and Grimm, which dates from 1847-48. At the time when D'Hallo, in his "Éléments d'Ethnographie," appended a note to this article, he must have heard of the Central-Asian theory; but the "Éléments d'Ethnographie" I had not looked at, as it was not one of the works cited by Dr. Brinton.

However, the matter is so unimportant that if Dr. Brinton still wishes to maintain his view, we may agree to differ.

ISAAC TAYLOR.

Settrington, York, England, Sept. 29.

#### Change of Diet in Birds.

EVERYONE who has a garden must have noticed the manner in which the common sparrow destroys the flowers of the yellow crocus. The earliest mention of this which I can find is in *Science Gossip* for 1865. The question is, Was the bird previously in the habit of thus destroying crocus flowers,—I do not say eating,—or is it a new departure?

Since then I have observed that the common yellow primrose is similarly injured by sparrows. Seeing a crowd of sparrows busy among some primrose plants in my garden, I made a close examination of their work. Some of the flowers had been entirely plucked off; in others the entire cradle and some of the petals had been bitten off and dropped on the ground, but nothing appeared to have been eaten. I examined a number of the flowers carefully, first with the naked eye and then with lenses of different powers, but I could find no traces of insects which the sparrows might be supposed to have been seeking.

The main point is, then, What is the motive of the sparrows in thus singling out the crocus and the primrose for attack?

W. SLATER.

London, England, Sept. 29.

#### BOOK-REVIEWS.

*The Speech of Monkeys.* By R. L. GARNER. New York, Chas. L. Webster & Co. 8°. 233 p. \$1.

The work of Mr. Garner upon the "Speech of Monkeys" is already well known through the public press, and all who have become interested in this extremely suggestive subject will be pleased that he has summarized in a neat little volume the important results of his work up to the present time. Nearly all of the facts published in this volume have already been given to the public through the pages of the *Cosmopolitan*, *The Forum*, *The North American Review*, and other publications; but in this volume he has brought together all of the important facts given in these various places. Mr. Garner has been at work upon the subject of monkey language for some eight years, and, although a number of interesting facts were seen earlier in his observations, it was the application of the modern phonograph to the study which for the first time put the subject upon a scientific basis.

The present work is divided into two parts. The first part gives an outline of the facts as he has observed them, and his methods of experiment. As one reads this part he receives two impressions. The first is as to the exceeding scantiness of the definite results. It is perhaps a little disappointing to find that the speech of monkeys as thus far made out by Mr. Garner seems to be confined to a few sounds, nearly every one of which has a variety of meanings, or rather does not seem to have any exact significance. This is, after all, not to be wondered at. Mr. Garner himself recognizes that he has only made a beginning in his researches, and it must be remembered that he has had absolutely no guidance from the previous work of others. Moreover, it is to be expected from their general grade of intelligence that the speech of monkeys will be confined to a few ideas, and those ideas of the widest general signification. The second impression that we receive as we read the book is, that Mr. Garner's work, so far as it has gone, is reliable and that he is dealing with facts rather than fancies. We cannot but feel that the few facts which Mr. Garner has made out are well authenticated. It is very striking when we learn that Mr. Garner has so far discovered the speech of monkeys as to have learned the password into their good graces, and we cannot but be interested in his ability to attract the attention of monkeys by saying to them, in their language, the word which means food. His ability to thus obtain their good-will by the use of a word of their own language; the fact that monkeys always use this word in connection with food; the very fact that the meaning of the word is vague, being used in connection with food or drink, or "any kindly office done them;" the fact that other actions of monkeys are also always accompanied by a perfectly definite sound, which Mr. Garner has in many cases been able to imitate; the fact that a repetition of these sounds in all cases will produce similar actions in other monkeys of the same species; the fact that monkeys of different species do not use the same sounds under the same conditions; the fact that occasionally one monkey learns a word used by another species of monkeys for certain purposes; the fact that monkeys do not use these words when alone but only when they have some one to talk to; and many other incidental occurrences combine to give us the feeling that, so far as Mr. Garner has gone, his belief that monkeys have speech is well substantiated.

As one reads this work, he is at some loss to know in his own mind whether to predict that Mr. Garner is going to be able to develop the speech of monkeys to a great extent, and is only on the threshold of important discoveries, or whether he has already nearly reached the limit of their speech. Their language, of course, cannot advance beyond their knowledge, and it may be that their speech will be confined to the vague expression of a few of their crude conceptions of nature. Mr. Garner believes, however, that there is very much to be still discovered, and that the speech of monkeys is of more importance to them in expressing their ideas than their gestures.

The second part of the work is of considerably less interest, being more in the line of speculation. It gives the theoretical deductions which Mr. Garner is inclined to draw from the facts he has already seen, and some few speculations as to the origin