NOTES ON LOCAL BYTHOSCOPIDÆ AND CERCOPIDÆ.

IN the Bythoscopidæ, *Podiopsis viridis* Fitch is a rare insect with me, of which I have never taken more than a dozen specimens. Professor J. B. Smith mentions Fitch's *P. trimaculatus* as occurring in New Jersey, but as yet I have never been able to discover it, although it may be securely hidden among a lot of undetermined material so common to many entomological collections, and so detrimental to the science in not being recorded. As no list of the Hemiptera of this locality has ever been published, I have used Professor Smith's as a basis on which to establish the possible occurrence of many species, although the only species I am responsible for are those I have collected, many of which have been determined by Professor Van Duzee.

In *Bythoscopus* I have taken *pallidus* Fitch, now known as *Idiocerus pallidus* Fitch; this is not a common species, but is represented in my collection by a dozen specimens. *Bythoscopus seminudus* Say I have not taken, but it is no doubt a resident species, and is given from New Jersey.

Agallia is represented by two species, *A. sanguinolenta* Prov. and *A. quadripunctata* Prov., the latter species being quite common, and the former rare.

Idiocerus alternata Fitch, *I. lachrymalis* Fitch, *I. maculipennis* Fitch, and *I. suturalis* Fitch are all recorded from New Jersey, and are Fitch's types. So they should occur with us also, but I have never taken any of them as far as I know.

In the *Cercopidæ* we have quite a number of species, strong in character and abundant in numbers.

In the sub family *Cercopinæ* I have never taken a single representative species; but Professor Smith records *Monecphora bicincta* Say as occurring in New Jersey, and it no doubt occurs here also.

In the sub-family APHROPHORINÆ, *Lepyronia quadrangularis* Say is very common on grasses and weeds (so-called). *Aphrophora parallela* Say and *A. quadrinotata* Say are rare, the first being the most common of the two species. Fitch's *Aphrophora sarogotensis*, now known as *Philaenus sarogotensis* Fitch, I have never found, although it should be with us.

Philœnus bilineatus Say, *P. lineatus* Linn., and *P. Spumaria* Germ. are recorded from New Jersey, and will no doubt be found to occur here also.

Clostoptera is represented in my collection by two species, *C. proteus* Fitch and *C. obtusa* Say, the former species being the most common. Professor Smith gives *C. achatina* Germ., *C. pini* Fitch, C. *testacea* Fitch, and *C. xanthocephala* Germ. as occurring in New Jersey.

In the sub-family LEDRINÆ I have not as yet found a single representative species, although *Ledra perdita* is recorded from New Jersey, and should occur here also.

In the sub-family GYPONINÆ three species are represented: *Gypona 8 lineata* Say being the largest and most beautiful of the series. This insect varies in color from a delicate yellowish green to those who have the entire veining of the wings a brilliant scarlet, which suffuses the entire head and thorax also. These were taken from young, vigorous sprouts of *Platanus occidentalis* Linn. and also from the trunks of *Ulmus americana* Linn.; the latter were taken during a severe and protracted rain-storm, when they were apparently driven from the foliage, and sought shelter in the crevices of the rough bark. My experience has shown that such a time is very advantageous for collecting rare and new species of Hemiptera, as very many species taken then have never been found by me in any other situation, and many can in this way be taken, which the sweep-net will fail to reach.

Gypona flavilineata Fitch is slightly greener in color and without the scarlet veining in the fore-wings. In size it is a trifle smaller. Many of these were taken from the trunks of elms with *S. lineata*, and also at electric lights.

There is great difficulty (in collecting Hemiptera) in knowing just where a certain species comes from. If one sweeps the grass, a myriad of weeds and plants are covered, and it is impossible to tell from which food-plant the species may come, or, if it is maintained by different plants, which one it is the most partial to.

The third species of *Gypona* is new, or at least is not known to Professor Van Duzee; this is much greener than the last, with a suggestion of brown on the inner edges of the fore-wings.

Xerophloea viridis Fobr., recorded from New Jersey, I have never taken here, nor have I seen *Paropholis peltata* Uhler, nor the two species of *Penthimia P. atra* Fabr., nor *P. americana* Fitch.

In the sub-family TETTIGONINÆ we are quite well represented. What we have before known as *Proconia undata* Fobr. is now referred to *Oncometopia* and known as *O. undata* Fobr. Professor Smith records *Proconia costalis* Fabr. as occurring in New Jersey, and also *Oncometopia obtusa* Fobr. and *O. orbona* Fobr. These also will no doubt prove to be resident species with us also.

Homalodisca coagulata Say, recorded from New Jersey, I have never taken. *Aulacizes irrorata* Fobr. is represented by two species, but they are without data, and I do not know if they were even taken in the State. I do not remember ever having taken this species.

Diedrocephala coccinea Forst. is very common with us, but shows such diversified markings that there appear to be two species, while still allowing ample color distribution. They occur from a pale green to a brilliant red, the red ones showing a fine green line on their fore-wings, and the green ones a fine red line. *Diedrocephala mollipes* Say is also common; it is more uniform in coloration. *D. noveboracensis* Fitch is of a brilliant green, and with me it is quite rare. Another species of *Diedrocephala* is new to Professor Van Duzee. This is much darker than either *mollipes* or *noveboraceusis*. Dr. C. V. Riley's *Diedrocephala floviceps* I have never taken, although it is recorded from New Jersey.

Helochara communis Fitch is by no means common here, but is represented by a dozen specimens.

Evacanthus orbitalis Fitch I have never collected, but no doubt it will be found here. *Tettigonia* is represented by two species, *bifida* Say and *tripunctata* Fitch, the former being the most common of the two species. *T. trifasciata* Say I have never found, but it is recorded from New Jersey, and no doubt occurs with us also.

In the sub-family ACOCEPHALINÆ I have three representative species. *Acocephalus mixtus* Say is represented by about half a dozen specimens. *Parabolocratus vittilinus* Fitch is very rare indeed, and *Platymetopius frontalis* Van Duzee is represented by three specimens. Professor Smith also records in this sub-family *Hecalus fenestratus* Uhl., *Acocephala solidaginis* Harr., *Platymetopius acutus* Say, *P. albonotatus* Fitch, and *Selenocephalus vittilinus* Fitch, now referred to *Parabolocratus* as above.

After extended examination and research, I am inclined to believe with Professor Osborn that what is known as

"Silver Top" in grass is caused by the working of leaf-hoppers, and that the *Jassidæ* furnish many of the insects as well as those in the families named in this paper. In our Park meadows, some of which are left to develop hay, "silver top" is very common, especially on the earlier grasses, and throughout the season a weakening and deforming of grass stalks are everywhere noticeable, which in most cases, no doubt, is due to the extraction of the juices by these insects. The node of the grass, especially on the upper side and for an inch or more, is very tender and succulent; but as we traverse the internode, we find it becomes more firm and woody, as it were. Every boy knows where to find the succulent portion of a grass-stem, and proceeds to pull it out, when it breaks just above the node at the tenderest place. This succulent feeding ground is soon discovered by the "hoppers" in their tours of prospecting up and down the stem; veritable "sappers, if not miners," they are often seen in numbers in such situations, and the punctures can also be noticed. The exhausted stems of the dead part of the grass culm show every sign of having been pumped dry by these creatures, as at that point nothing seems to be left but a bundle of woody fibres, and the internode for some distance diminishing in size from the loss of sap, and that loss occurring before the cells had been sufficiently developed to stand without collapsing. My success in finding Thrips, or Meromyza, in the stems or under the leaf-sheaths has been no better than Professor Osborn's.

As I am working on a list with food-plants and habits of Hemiptera for New York State, I should be glad to receive from collectors information in regard to those found here and their distribution elsewhere, so that the list can be made as complete as possible; for all "local lists" are of the greatest value, not only to local students but to students of North American entomology also. EDMUND B. SOUTHWICK.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

Four-Fold Space and Two-Fold Time.

ANY attempt at expounding popularly the recent developments of the old idea of space should be prefaced by the explanation that their tremendous value to mathematics is utterly independent both of their external reality and of the possibility of their realization. For example, had either M'Clelland or Preston ever glanced through Bolyai's "Science Absolute of Space," we would not to-day read in their excellent "Treatise on Spherical Trigonometry," p. 10, "The student must be careful, however, not to regard a solid angle as an *area*, but as a mere *number*, like the circular measure of a plane angle. . . . and the solid angle subtended at O by the $\frac{1}{n^{th}}$ part of the surface of the sphere is $\frac{4\pi}{n^{th}}$, which is thus a *mere number*." A solid angle is a magnitude as different from a mere number as is the current of electricity which kills a man. Though its scientific unit, the *steradian*, is American, yet they could have found it in the "Encyclopædia Britannica, in William Thomson's article "Mensuration."

Because these magnitudes, solid angles, have a natural unit, the steregon, and a scientific subsidiary unit, the steradian, therefore mathematicians, unused to the idea of a natural unit, blunder about them. To Bolyai belongs the honor of showing that each geometric magnitude has its natural unit, which never could have been discovered in Euclidean space, since homaloidal, parabolic space appears as a limit in which the natural unit for length becomes indefinitely great, so calling, in practice, for an artificial unit for length, a finite sect, as the centimeter. The fundamental importance of the pseudospheric hyperbolic space of Bolyai and Lobatschewsky in no wise depends on whether C. S. Peirce is right in maintaining that such is the real space in which we live. It has already enriched us eternally by the gift of the Science of Comparative Geometry, and so of pure spherics.

Now, in his beautiful paper in Crelle, on "Single Elliptic Geometry," Professor Newcomb has used, unnecessarily we think, space of four dimensions. Elliptic space, though finite, is unbounded. But there is a sense in which hyperbolic space, though infinite, is bounded, and so its realization is naturally connected with that of four-fold space. For this the most fruitful idea has ever been Professor Sylvester's, of working up from two-dimensional beings. And here let me say that thinkers must not confine themselves as in the past to "an imaginary *plane* being," but must likewise draw from two dimensional spherics and pseudospherics. Not only must we think of a *flexible* closed shell turned inside out, as we turn a glove; we must try if we can realize that as the flexibility of the "thin hoop" mentioned by Dr. Hall is only needed because the hoop has as many dimensions as the space in which we wish to turn it, therefore can we not turn an inflexible closed shell, an unbroken eggshell, inside out, *without flexure*?

The corresponding generalizations for *time* are harder, because in time's domain we are one-dimensional beings; therefore our best space-method fails us. Cannot genius give us a next-best almost as good? GEORGE BRUCE HALSTED.

University of Texas, Austin, Tex., May 22.

Family Traits.

IN your issue of May 20, "Veritas" again combats the proposition that family traits are a reality. The statement was made in my original communication that questions of descent were questions of heredity and environment, and that heredity, consisting as it does of questions relating to the reproduction of the race as an animal, must be referred to biology. The results of all departments of research for the last fifty years refer man to his place in nature as an animal, and as an animal a fit subject for biological investigation.

Will Veritas please explain how, if it be admitted that a man may resemble his father and grandfather, that with the great-grandfather the resemblance must cease? Is not every man the son of his father, and is his father not also the son of his grandfather, and so on from generation to generation back in an infinite series? If a man may or does resemble his father, that is the limit of the question, and further argument is unnecessary.

I freely admit that the Does of the present know, of their own knowledge, nothing of 100 per cent of the traits of John Doe the first. I was not referring to any positive knowledge held in this generation of the ninth generation from the present. Nevertheless John Doe of the seventeenth century had personal traits, and if the oldest Doe now living has seen and known 100 Does in perhaps five generations, and affirms that, out of the almost infinite diversity of traits that constitute human character, a few have been observed in all these generations common to a large majority of the 100 Does, I assert that there are "Doe" traits or "family traits," and in my former article I gave a scientific explanation of the occurrence of such traits, with a number of illustrations that were neither a figment of the imagination nor a delusion. If these are not facts, what are facts?

Moreover, in your issue of April 15, Ed. H. Williams Jr. gave a number of other reasons why family traits should descend on the male side strongest, that are either "facts" or delusions. Facts are established by observation of the repeated recurrence of identical phenomena under like conditions.

What fact is developed by speculation concerning a man's ancestor of the seventeenth century relative to the occurrence of traits common to forty people now living, who all bear his surname, and who are likewise his descendants? Suppose these