Others are quite unlike these ; the head case and mesonotum are yellow-brown, and the rest of the dorsal side is yellow-brown with a pink tint ; the stripe and the ridge brown ; the dorsal spots blue, and dull blue spots below the ridge ; whole under side light yellow-brown.

No butterflies from my larvæ emerged the same season. But of four chrysalids found in Florida 11th to 13th Sept., 1880, two gave butterflies 25th and 27th Sept., and two over-wintered, the butterflies emerging 2nd and 3rd Feb.

I received 24th August, 1880, from Dr. Wm. Wissfeld, Indian River, Fla., about a dozen larvæ of *Palamedes* in 1st and 2nd stages. My correspondent wrote : "On 15th I confined 2 ♀ in bag over limb of *Persea carolina*, or Red Bay. One began to lay eggs within a short time, and in an hour had laid 26. The other was heavy with eggs but would not lay till to-day, and has laid 7 eggs." These were sent me with leaves of the food plant, in a tin box per mail, and I received them 24th, the leaves still fresh, and the larvæ, which had hatched on the road, feeding. As this food plant is not found here I tried the larvæ with leaves of orange and lemon, to no purpose. But sassafras they took to at once. This is the food plant of *P. Troilus*, a species belonging to same sub-group as *Palamedes*. I had no difficulty in raising the larvæ to chrysalis. They are sluggish, like the larvæ of *Troilus*, and in general behave in same way, at all stages resting on a lining of silk which they had spun on middle of the leaf, whereby the leaf is curled or drawn together so as to afford a concealment. This they rarely leave, and then only when hungry, feeding on the end of the leaf until it becomes too small for a hiding place, after which they betake themselves to another leaf. But these larvæ do not cut into the side of the leaf and fold down the cut portion, as *Troilus* does. This Dr. Wissfeld states in reply to my inquiries. He farther says : "*Palamedes* roosts on the highest tree it can find, oak or palmetto. I have seen four to six near sundown fluttering about the tree, where they finally settled and remained. Sometimes three or four so roost on one large palmetto leaf."

DIFFERENCES WITHOUT DISTINCTIONS.

BY C. E. WORTHINGTON, CHICAGO, ILL.

If there is one thing more than another that fills the brain of an amateur Entomologist with despair, when he first makes the acquaintance

of the long lists of largely incongruous and incomprehensible names that he is expected to master, it is the utter absence of anything in the system of nomenclature tending to show the relations of various forms to each other, or of varieties to the parent or more abundant form. There is nothing to show at a glance the results of the experience of others and to attain any idea of the true relationship of allied forms. The student must either acquire the knowledge by slow and persevering experiment, or oftentimes forego the acquisition altogether, because time and the rarity of books will not permit him to gain it. We cannot start where others left off, but must follow their paths step by step, only hoping to gain the point they reached soon enough to be able to penetrate a little further.

Most conspicuously is this the case as regards the so-called varieties of variable species. Let a student in England, for instance, take up Mr. Edwards' Catalogue of North American Butterflies, and the first species is listed with three "dimorphic" varieties and one "sub-variety." The theory of their origin is well known, and the facts regarding their appearance at certain seasons, but this cannot be learned from the list, and must be gained from various contributions on the subject written at many times and distributed through many books—a comparatively easy task as regards *Papilio ajax*, though less easy were the researches of some species in question conducted by an obscure author and published in some rare book in a foreign language.

Under the present system *Papilio Walshii*, *Pieris pallida* and *Grapta umbrosa* are designated dimorphic varieties, although no two of them bear the same or similar relations to the species to which they belong.

It is hardly to be expected that we can arrive at an exact and universally acceptable definition of a species, or that the time will soon come when extremists for the sake of advertisement or other reasons will not persist in declaring accepted species as mere varieties or *vice versa*, or that such persons will cease to set dictum above experiment; but it does not seem impossible to adopt some system that shall indicate to a certain extent the relations of many forms, and at the same time elastic enough to be acceptable to all.

For the purposes of this article, however, I consider it necessary to submit a brief description of what I hold to constitute a species, in the hope that it will substantially agree with the conceptions of others in the main.

We may define a species as an aggregation of individual forms of life

having the same general characteristics, but exhibiting definite, transmittable structural differences from all other forms of life—a definition which does not touch the construction of genera.

From each species are given off from time to time individuals in greater or less numbers differing from the parent form and from any other species; these forms sometimes exhibit transmittable differences, sometimes not transmittable, but in nearly every case are connected by almost imperceptible gradations or known circumstances of origin with the form from which they sprung, the extremes of variation being sometimes so great that in the absence of knowledge of intergrades or attendant circumstances, they would readily be declared distinct species.

In the case of those species where the departures from the normal form appear at all seasons and in all broods without restriction to locality and with satisfactory intergrades, it seems to me that a good end would be served by ceasing to consider them “varieties,” but merely terming them “variations” and designating the extremes of variation by letter, as Variation A, or by name, if the practice be more agreeable, as in the case of *Catocala scintillans*, a name given to an extreme variation of *C. innubens*, which occurs in all broods without restriction to locality and with perfectly satisfactory intergrades, which would thus become Variation *scintillans*—a name that would at once express its relation to *C. innubens*.

Thus relieved of an embarrassing number of forms whose title to the dignity of varieties is, to say the least, dubious, we might classify actual varieties as follows:

Seasonal—Where a certain variation of form appears only or mainly in certain broods of many brooded species, disappearing in following broods only to reappear in the succeeding year at its proper season, as *Papilio Walshii*.

Climatic—Where varieties occupy considerable habitats, often to all appearance distinct species when viewed at the extremes, but having common ground where intergrades occur or either form is produced indiscriminately, as in the varieties of *S. alope*.

Dimorphic—Where well marked varieties do not thoroughly intergrade, but appear in all broods and are produced indiscriminately regardless of sex, as in *Grapta comma*.

Occasional—When aberrant forms are produced in both sexes rarely and at irregular intervals, as *Papilio Calverleyii*.

Melanic or Albinic—Male or female, or local, the names of which are sufficient definition.

This would not preclude the use of the term sub-variety as now used, but would open the way for the use of the still more expressive term of "sub-species," applicable to varieties highly differentiated, and especially when the differentiation has so far progressed as to begin in the larval state.

Would not the application of some such system to the catalogues be of much aid in study and designate approximately the relations of many forms to each other?

I offer this as a suggestion; the subject will certainly bear discussion, and some permanent good may come of it surely. If the result of the discussion is the adoption of the system herein indicated, after elaboration and revision, or of some other system that will in some way indicate the relationship of forms in their names, my end will be attained. That some reform is necessary I am convinced.

THE NORTH AMERICAN SPECIES OF MAMESTRA, Ochs.

BY A. R. GROTE.

The species of this genus have hairy eyes, unarmed tibiae and a tufted thorax. The dorsum of the abdomen is more or less tufted, but in some species the tuftings are not noticeable. Several species which seem to me to belong to *Graphiphora* (*Taeniocampa*) have been referred to this genus; among these I may mention *orobia* of Harvey, *modesta*, *incincta* and *thecata* of Morrison, and the species described by me as *rufula* and *puerilis*. I also take out the *curta* and *promulsa* of Morrison, which I believe to be species of *Anarta*. The species included under *Dianthoeicia* differ from *Mamestra* by the extruded ovipositor. But they appear to arrange themselves naturally among the species of *Mamestra*, and perhaps do not really differ in a generic sense. They are here included.

purpurissata Grote, P. Ent. S. Phil. 3, 82. Can.; Eastern and Middle States.

nimbosa Guen., Noct. 2, 77; Speyer, Ent. Can.; Zeit. 142. Eastern and Middle States.

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