

Pectis papposa, Gray, which very much abounds in large dotted glands throughout, especially on the leaves (1-2 inches long, $\frac{1}{2}$ -line wide), mucronate, often slightly connate at base—opposite lower branches and similar portion of the stem purplish—slender peduncles enlarged near the base of the heads, sulcate corresponding to the 6-9 involucreal scales which are dotted with 1-2 large glands on the back at the tips, margins involuted, but not scarious, infolding the ray akenes in their channels. These rigid, yellowish-green scales are rounded abruptly at the base and laterally attached; orange rays same in number, but longer, their akenes without pappus, or only a very minute united scaly crown; pappus of the disk of 20-25, tawny, rather long, unequal barbellate bristles similarly cohering.

An exceedingly beautiful and delicate pink-purple morning-glory, brought by Mr. Wm. J. Fisher from Ajiabampo, of the Gulf of California, has very handsomely radiated leaves, adding a new glory to these very beautiful twiners. We, therefore, propose to name it

Ipomœa radiatifolia. K.

Stem slender, twining or creeping, 2-4 or more feet high, glabrous, somewhat petangular, fistulose; leaves alternate, or more rarely opposite, pedately 5-12-parted, lobes linear, filiform, mucronate, margins thickened and entire, lateral lobes subdivided into 2-4 outer lesser lobes (giving the leaves a delicate, airy, rounded, radiating outline), petioles slender, $1\frac{1}{4}$ inches long (or shorter than the longest middle, and distinct lobe), muricated (no stipules); peduncles 1-flowered, axillary, 2-3 inches long, articulated $\frac{1}{2}$ -inch or more below the calyx, bibracteolate at the insertion of the pedicel, bracteoles minute, subulate, scabrous at the joint; calyx 5-sepaled, equal, naked, narrowly lanceolate-linear, acuminate, thin, 3-nerved, margins scarious, subentire; corolla purplish-pink, broadly funnel-form, 1-2 inches diameter, tube gradually enlarging to the throat of the widely expanded campanulate border; stamens and style included, unequal, filaments hirsute to the oblong saggitate anthers (scales none), style long, glabrous, stigma 2-lobed, semicircularly fan-shaped, often subdivided into minute lamellary lobules, minutely villous; Root and mature fruit unknown; embryo 2-celled, smooth.

Pacific Coast Lepidoptera, No. 22.—Notes on some Diurnal Lepidoptera, with descriptions of new varieties.

BY HENRY EDWARDS.

Mr. W. H. Edwards, of Coalburgh, West Virginia, has in view the speedy publication of a complete check list of North American butterflies, and it has been suggested by him that all facts connected with the group known to observers in different parts of the region comprised by the work, should at once be published, so as to bring together such information as may, if deemed worthy, be incorporated in the more important publication. With this view I have made the following notes on some doubtful or little-known species, at the same time calling attention to such strongly marked varieties of some of

our butterflies as seem to me worthy of special note. In these days of doubt as to the "origin of species," every trifling fact which can shed light on so important a field of inquiry becomes of striking value, and it appears to me necessary for all varieties which are apparently permanent to bear a distinguishing name, so that they may at once be recognized and hold their proper place in our nomenclature. The following remarks will be, therefore, taken at their true value, as I by no means claim that all of the forms described in this paper should rank as distinct species, though future observations may possibly elevate some of them to that position.

Parnassius Clodius. Menetries.

This species, like all of its genus, is liable to great variations, and there is little doubt that some of its extreme forms have been described under other names. Indeed, I am conscious of having unwittingly led Mr. W. H. Edwards into the error of believing that our forms represented *Clodius*, Menetr., and *Clarius*, Evers., and on my authority he has figured them as such in his "Butterflies of North America." Subsequent observations, however, led me to the conclusion that we had but one species, and the capture of some sixty or seventy specimens in Bear Valley in 1873, gave me a long series of intergrades, in which both of the forms above alluded to were certainly included, and with the knowledge that *Smintheus* and *Behrii* were but variations of one species, I could do no other than acknowledge the incorrectness of my former opinion. Dr. Boisduval appears also to have once been led into the same error, and afterward to have rectified it, as he leaves *Clarius* out of the list of species in his "Lepid. Calif., 1869." The clearness of the white ground, the size of the colored spots, and the presence or absence of the red basal patches of the under side, do not appear to constitute permanent characters, though at first sight they would seem to indicate distinct specific relations, while the size of the insect and the intensity of the colored patches seem to be modifications resulting probably from various altitudes, those of the less elevated regions being usually most pronounced in color. It should be remembered that *Clarius* was described by Eversman from specimens taken in the Altai Mountains, Siberia, and, on the high authority of Mr. H. W. Bates, our "Californian specimens do not resemble at all *Clarius* of the Altai," so that we have to blame Boisduval for introducing that species into our lists, instead of alluding to our extreme variations (as has been done in the case of *Behrii*) by a new name. That they are worthy of such distinction there can be no doubt, and I propose for perhaps the widest range of variety the following name, the specimens from which the description is taken being in my own collection. It must be borne in mind that this variety wanders considerably farther from the type than that figured by Mr. Edwards as *P. Clarius*, Evers.:

Parnassius Menetriesii. Hy. Edw. n. var. of *Clodius*. Menetr.

Imago ♂. Smaller than the typical forms of *Clodius*. Ground color of wings, sordid white; semi-transparent margin rather narrow, with the white lunules indistinct; the whole of the black marks of primaries are fainter than in *Clodius*, and there is no black spot in the submedian interspace. The sec-

ondaries have the abdominal margin comparatively more deeply edged with black, the line being distinctly bent inwardly toward the extremity of the cell; the colored spots are very small, almost obsolete, becoming simply pale pinkish or yellowish dots, surrounded by a narrow black ring. Under side vitreous, with a yellower tinge than above; all the marks fainter, except the colored spots of the secondaries, which are here, though small, distinct in color, and have white pupils. There is also a faint indication of a black bar on the anal angle, but no trace whatever of crimson basal patches. Head, thorax and abdomen beneath densely clothed with deep yellow hair, much darker and a more brilliant tint than in the typical form.

Exp. of wings, 2.25 inch.

♀. In nearly all respects this sex of the present variety resembles the ♂ of the type, and would at first sight be certainly so regarded. The transparent space of primaries is much smaller than usual; the bands are narrower and less defined, so that the white area of the wing is nearly as large as that of the male insects. The black patch in the submedian interspace is rather large, and the veins more sharply marked throughout. The secondaries have the colored spots small, but distinct in color, mostly pale crimson or orange, and surrounded by a black ring. The abdominal margin is only faintly black, and there is a trace of a black bar at the anal angle, which is, however, entirely without red. Under side similar to the upper in the black markings; the colored spots of secondaries are bright in color, and in some specimens there are two basal red patches, the anal bar more distinct than above, but without red. There is a seam of yellow hair along the abdominal margin, surmounted by yellow scales, a character which I do not find in my typical specimens of *Clodius*, and the yellow hair of the thorax and abdomen are almost golden in their tint.

Exp. of wings, 2.50 inch.

Bear Valley, Sierra Nevada (Hy. Edw.), Lake Tahoe (Hy. Edw.), Downieville, Cal. (Dr. Behr), Mt. Nebo, Utah (I. D. Putnam).

Parnassius Smintheus. Dby. Var. *Behrii*. Edw.

I have two specimens of this insect in my collection, one taken by Mr. J. Hutchings, of Yosemite, on the top of Mt. Dana, Cal., at an elevation of 10,000 feet, and the other by Mr. I. D. Putnam, in Summit Cañon, Utah. It is somewhat singular that the typical form of *Smintheus* never occurs in California, while the variety should be found here. Both of my specimens have the spots orange, and the double row of marginal lunules on the secondaries so characteristic of this strongly marked form.

Pieris venosa. Scud.

Perhaps there is no group so puzzling to an entomologist as that of the genus *Pieris*, to which this species and its allies belong, and the number of names which we find in our catalogues are the natural outgrowth of the widely different variations which we find in collections. Our Pacific Coast species rather tend to increase the confusion than otherwise, and in the separate opinions which exist as to their specific rank the complication becomes more and more intri-

cate and unsatisfactory. In Lepid. *Heteroc. et Rhopt.*, No. 8, Mr. H. Strecker has advanced the idea that *P. venosa* and *P. castoria*, Reakt., are one and the same thing, and that they are simply the American forms of the European *P. Napi*, and I can, after an examination of many scores of specimens, but simply endorse his views. That *venosa* and *pallida*, Scud., = *castoria*, Reakt., are at times represented by widely differing varieties no one can deny, and if we take the extreme forms we should naturally regard them as distinct species; but intergrades may always be found, and among these intergrades we find what Scudder designated as *pallida*, which more nearly approaches Reakirt's type of *castoria* than it does that of Scudder's *venosa*. But the insects are not, as has been suggested, spring and summer generations, as they are both found together, appearing in early spring (sometimes in February), and continue on the wing until the end of April or the beginning of May, when they begin to die out. But admitting *P. venosa* and *P. pallida* to be forms of the same species, what becomes of *P. oleracea*? Among my specimens captured during the present year, as well as others taken in Colorado, Oregon, Vancouver Island, and Northern California, are some which continue the series of intergrades until they are merged into the exact counterparts of the Atlantic species of *P. oleracea*, and cannot be in any way distinguished from the well known species of the Eastern States. Is *P. oleracea*, then, but another form of a trimorphic or polymorphic species? Then, again, many of the individuals of *P. pallida* approach very closely (so closely as to suggest the very nearest relation), others of *P. Rapce*, and the form described by Mr. Scudder as *P. marginalis*, and afterwards by Mr. Reakirt as *P. Yreka*, can sometimes scarcely be distinguished from the varieties of *pallida*, upon which Reakirt founded his *castoria*. Do not, then, our American examples serve very powerfully to prove the common origin of all these forms, and show that we have hitherto attached too much value to what is designated a species, believing certain characters to be permanent, when, in fact, they are so only under the light of our limited knowledge? To illustrate more clearly my meaning, let us take a strongly marked and darkly colored specimen of *P. venosa* as our starting point, and we shall pass through the various stages thus, our insects becoming paler, and with the markings less pronounced, as we proceed.

1. *P. venosa*. Scud. Veins of underside of secondaries, broadly bordered with black scales; the lines of equal width to the margin of the wings.
2. " " Veins narrowing at the margin, with the ground color of the wings more yellow.
3. *Hulda*. Edw. Veins with their accompanying black scales, sometimes becoming confused, and spread over the whole surface; the lines of scales being sometimes quite indistinct, at others well marked and approaching the following:
4. *Napi*. L.
(Germany.) Surface of secondaries, yellow, with the nerves bordered by black scales, the lines being narrower as they near the margin.

5. *frigida*. Scud. Like *Napi*, but with the whole of the lines a little narrower and fainter.
6. *Napi*.
(Colorado.) Lines all very faint, almost obsolete as they approach the margin.
7. *Napi*.
(Massachusetts.) Lines still fainter, quite obsolete at the margin, with the ground color of the wings still yellow.
8. *pallida*. Scud. Ground color usually white, sometimes pale yellow, with the lines bordering the nervules, very faint or quite obsolete, passing by many gradations into the following:
=*castoria*. Reak.
- P. oleracea*. Veins without margins of scales, surface white or pale yellow.

We may pursue this still farther, until we arrive at a form of *oleracea* almost pure white, in which even the nervules themselves are scarcely to be traced by any definite color. But the subject may perhaps be better illustrated by retracing our steps, this time starting with *oleracea*, and endeavoring to show its relationship to *P. Rapæ*.

1. *P. oleracea*. Almost pure white, with faint yellowish tinge beneath. ♂ without spots.
2. " (Oreg. and N. Cal.) White, with very faint indications of spots on the primaries.
3. *Castoria*. Reak. White, with faint yellowish tinge. ♂ with faint spots on the primaries.
4. *Marginalis*. Scud. White above, yellow beneath on secondaries. ♂ with distinct spots on primaries, and with the apex slightly dusky.
5. *Ergani*.
(Europe.) ♂ with the apex more broadly dusky, and with the spots on primaries well defined.
6. *Rapæ*. L. Apices broadly dusky. Spots very distinct and well defined. Underside of secondaries, white, greenish white to yellow.
7. *Novangliæ*. Scud. Upper and lower surfaces yellow, spots and apices as in *Rapæ*.

Thus it will be seen, that according to my views, two branches of variation have proceeded from the one original source, though what that original source may be we are at a loss to tell, and that the most special characters distinguishing these two branches belong to *P. Pallida*, which in many respects resembles *P. Rapæ* as much as it does *P. Napi*. I am aware that there are other points of difference between the extremes of these insects, but certainly none more remarkable than between the darkly veined specimen of *P. venosa*, and the almost immaculate and veinless examples of *P. Pallida*.

Breeding the caterpillars through successive generations, will alone lead us to the truth, and unhappily at present we know but little of the earlier stages of these creatures. The present remarks must therefore be taken as a suggestion rather than the dogmatic statement of a fact.

Pieris calyce. W. H. Edw.

I am inclined, from the examination of a specimen in Dr. Behr's collection, to believe that this is the Spring generation of *P. occidentalis*. Dr. Behr's specimen was taken by Mr. R. H. Stretch, in April, in Carson Valley, Nev., and mine, from which the original description was made, and which is now in the possession of Mr. W. H. Edwards, was caught by myself near Reno, Nev. in the end of March. *P. occidentalis* occurs in the same localities in May, June and July.

P. Beckeri. W. H. Edw.

This species is said by Mr. Strecker and others to be identical with the Russian *P. Chlorodice*, Hb., differing only by its larger size. In support of this opinion, I may state that in my collection are two specimens (♂) from the Coast Range in Mendocino County, measuring only 1.50 inch in expanse, while those from Virginia City are over 2.00 inches; the smaller examples in no other respect differing from the Nevada specimens.

Nathalis Iole. Bois.

This pretty little species, as well as the var. *N. Irene*, Fitch, must be included in the list of Pacific Coast Butterflies, having been taken in some abundance near San Diego by the late G. R. Crotch, G. W. Dunn and others. It is extremely abundant near Cape St. Lucas, and in various portions of the country on the eastern side of the Gulf of California.

Anthocaris Creusa. Dby.

I have little doubt, from an examination of a figure by Mr. Butler of the British Museum, kindly loaned to me by Mr. W. H. Edwards, that this species is the same as *A. Hyantis*, Edw., which is well known to occur in the Sierra Nevada, and in other high lands in this State. It is said by Dr. Behr to be far from rare in the neighborhood of Oroville, and has been taken recently by Baron d'Osten Sacken in the Yosemite Valley, and by myself near Lake Tahoe. It is probably often confounded with *A. Ausoniedes*, but is abundantly distinct.

Anthocaris olympia. Edw.

This exquisite species exists in my collection from Colorado, near the Utah border, where it was taken by Mr. Winslow Howard.

Anthocaris Reakirtii. Edw.

I think I am wholly to blame if this should turn out, as I now suspect it to be, only a form of *Sara*, Bdv., as it was entirely through my statements that Mr. W. H. Edwards erected it to the rank of a species. The main points of difference are the smaller size, the irrorations of the costa, the straight line enclosing the orange apical spot, and the white females. But I find of late years, that these characters are by no means permanent, and that all gradations may be found. It is most probable, therefore, that *Reakirtii* is the

spring generation, and *Sara* that of the summer. The former appears very early in March, and the latter in May and June. The ♀♀ of *Reakirtii* are at times, though only rarely, as yellow as those of *Sara*, and the irrorations upon the costa are as frequent in the latter as in the former.

Anthocaris lanceolata. Bdv. = *A. Edwardsii*. Behr.

In most of the males I have seen, the apices are only very slightly clouded with dusky scales but in two specimens taken in Kern County by Mr. R. H. Stretch, they are broadly and distinctly clouded, thus more closely resembling the other sex.

Callidryas eubule. L.

Examples of this species, of both sexes, were taken in San Diego, in August, 1875, by Mrs. James Behrens, flying about the streets of the city, and settling upon the flowers of the gardens. I have since received other specimens from Mr. G. Hitchcock, of San Diego.

Cobias eurydice. Bdv.

Between the spring and autumn generations of this beautiful insect a great variation occurs, which is quite constant in all the examples which have come under my notice. In the spring specimens, which may be regarded as the type, and which make their appearance in April and May, the secondaries of the ♂ are wholly bright orange, without any spots or marks upon the margin, except some brown dots to note the termination of the nervures, while the ♀ is, with the exception of the large discal spot of the primaries, and a very faint brown marginal line, quite immaculate. The autumn brood, however, appearing in July and August, have the secondaries of the ♂♂ with a black marginal border, sometimes one and one-half or two lines in width, and the ♀♀ have the margins distinctly marked with brownish patches, and occasionally (though rarely) with a black submedian band, composed of clouded patches, interrupted by the nervules, reaching from the costa to the interior margin. If deemed worthy of a name, I should propose for this strongly marked form that of

C. eurydice. Var. *Anorpha*. Hy Edw.

I have recently received from Mr. O. Barron, of Mendocino County, a magnificent variety of this species, in which the whole of the yellow space of the primaries (which usually bears the name of the "dog's head") is suffused with the richest purple, the orange being only slightly visible beneath it, thus giving the insect a most striking appearance.

Terias Nicippe. Cram.

Taken in Kern County, by Mr. R. H. Stretch, and by Mr. Dunn and others, near San Diego.

Terias Mexicana.

Taken in the neighborhood of San Diego by Miss Marcia Crane, and near San Bernardino by the late G. R. Crotch.

Euptoieta Hegesia. Cram.

This species is very common in Lower California, and occasionally wanders over the border into this State. I have received specimens taken undoubtedly within our limits, but it must at present be regarded as a rarity.

Agraulis Vanilla. L.

Very abundant in the gardens of San Diego in August and September. (Mrs. Jas. Behrens.)

Argynnis Liliana, n. sp. Hy. Edw.

I am unwilling to add another to the already long list of *Argynnis*, but can see no other way out of the difficulty which is presented to me by some specimens taken by me in Napa County. I have, however, much pleasure in dedicating what I believe to be a true species, to my friend, Mrs. Lillie Coit, who has added many great rarities to my collection, and at whose country residence, in one of the most charming portions of the State, the species seems to have made its home. It is intermediate between *A. Calippe*, Bdv., and *A. coronis*, Behr., partaking of the characters of both, yet I think distinct in the following details:

It is darker in color of the upper side than *A. coronis*, and very much darker than *A. calippe*, being of a rich reddish brown. The markings above similar to those of these two species. Beneath, the primaries are largely suffused with reddish brown, as in *coronis*, but the remainder of the wing is occupied by bright buff, not dull ochreous as in *coronis*. The silver spots of the margin are very decidedly triangular, and not ovate as are the apical ones of *coronis*. On the lower wings the differences are more apparent. The silver spots are larger proportionally than in any other species with which I am acquainted, while the sheen of the silver is exceedingly vivid and intense. The marginal spots are quite triangular, and the large one of the cell more decidedly oblong than either in *A. coronis* or *A. calippe*. The ground color of the wing is bright buff, inclining to orange; much the same color as in *A. rupestris*, and by no means brown as in *A. coronis* and *A. calippe*, thus giving a brighter and more lively appearance to the whole of the underside.

Without forming a *positive* conclusion as to its value as a species, I think this form well worthy of a separate name. I have taken it for three seasons past near St. Helena, Napa Co., and altogether have had before me thirty-four ♂ and seven ♀, all of which are true to their own type, presenting among themselves little or no variation. When placed side by side with long series of the closely allied species, this insect presents at once so great a difference as to strike the observer, being quite as complete as that between *A. coronis* and *A. pervadensis*. The actual position of many of our *Argynnis* as species, can only be determined, however, by watching the insects through their various stages.

Argynnis monticola. Behr. Var. *purpurascens*. Hy. Edw.

Under this name I wish to recognize the form of *Arg. monticola*, which is found chiefly in Siskiyou County, in the region surrounding Mt. Shasta, as

well as in some parts of Oregon. It differs from the type, by the larger amount of black on the upper surface, visible in both sexes, by the smaller size, and by the more suffused appearance of the lower side. The spots are somewhat larger proportionally than in the type, in this respect resembling *Zerene*. Behr, and the basal half of the secondaries is much darker in color, while the margins of all the spots are larger and more intense. The whole of the underside is also tinted with a purplish efflorescence, very visible in fresh specimens. The female is always deeply suffused with black on the lower side, and almost invariably has the spots either partially or wholly silvered, a character not observable in the typical *monticola*. This beautiful variety was first taken by Mr. W. G. W. Harford, at the Dalles, Oregon, and subsequently by Mr. J. Behrens at Soda Springs, Siskiyou County, in which last named locality I took about forty specimens, all characterized as mentioned above, in the fall of 1875. It closely connects *A. monticola* with *A. Zerene*, and may have been under Dr. Boisduval's eye when he confounded these two species.

Argynnis myrina.

Though not found in California or Oregon, this species was taken in abundance near Sitka, Alaska, by the late Mr. Bischoff. The specimens are smaller than those of the Eastern States, and the whole of the underside brighter in color, with the silver spots proportionally of a larger size.

Melitæa Leanira. Bdv. Var. *Obsoleta*. Hy. Edw.

Near San Rafael, in Marin County, I annually take specimens of a very curious variety of *M. Leanira*, so constant in its characters as to suggest the idea of a new species. In the lower side of the typical form, the secondaries are marked with black blotches near the base, and a double submedian band inclosing a series of seven spots of the pale ochraceous color of the ground. In the variety *obsoleta* these marks are all obliterated, and nothing appears but the black nervules and a slight black marginal line. In all other respects the insect agrees with the typical form. It is somewhat singular that in the locality in which these varieties are found I never met with the true *Leanira*, which is always a very local insect, and that, although I know several localities in which *Leanira* is found, it is only in the one mentioned above that I ever met with the var. *obsoleta*.

Pyrameis. Hybrid between *P. Caryæ* and *P. Atalanta*.

Hybrids among diurnal Lepidoptera are very rare, and the present is a very interesting form, worthy of record. It was raised by Dr. H. Behr from a caterpillar found feeding on nettles (*urtica*) at Lagunitas, Marin County, in July, 1876. The perfect insect appeared in August. It presents a very singular conjunction of the characters of the two species, of which it is undoubtedly a hybrid. The spots across the primaries form a bent macular band, the sub-apical spot being red and not white as in *Atalanta*, the base of the wing behind the band being rusty red. The secondaries are blackish nearly over

the whole surface, with reddish hairs, which are longest toward the base; the submarginal row of ocelli similar to those of *caryæ*, only with white pupils. The under side is that of *Atalanta*, the abdomen being neither black nor red, but brownish, the color of the anal margin of the hind wings. Altogether it is a very remarkable production of the two species, and should be figured, so that such an interesting hybrid may not be lost.

Limenitis Lorquini. Bdv.

In all the specimens I have received from Vancouver Island, the ground color of the under side has a purple tint in place of the snuff-brown of the usual form, and in two specimens received from near Virginia City, Nevada, taken by Mr. W. Eaves, I note more remarkable changes. On the upper side the white macular band is very narrow, and is edged on the secondaries posteriorly by a very distinct row of ovate orange spots, reaching quite to the costa, while inside the ochreous apical patch of the primaries, and beneath the outer band of three white spots, which is peculiar to the species, there is a duplex spot also of orange. Beneath, the wings have considerably more white than the type, and the basal spots of the secondaries are clear white and oblong in shape. I desire to record this well-marked variety by the name of *Limenitis Lorquini*. Var. *Eavesii*. Hy. Edw.

Oenonympha Eryngii. n. var. Hy. Edw.

Under this name I wish to recognize a remarkable form of *O. californica*, taken by me in considerable numbers at Soda Springs, Siskiyou County, in the fall of 1875. The upper side is exactly that of *O. californica*, var. *galactina*, wanting the black or dusky hairs at the base of the wings, the thorax and abdomen being concolorous. The under side is characterised by the usual straight band on the primaries and the waved or dentate line of the secondaries, but there is an utter absence of points, spots or ocelli, in this respect closely approaching the ornamentation of *O. inornata*. I took this insect only in one locality, flying about the beautiful *Eryngium petiolatum*, Hook, which here attains a large size, and a most brilliant bluish color.

Size of *O. californica*. Soda Springs, Siskiyou County, Cal. Hy. Edw., August. (11 ♂; 9 ♀; Coll. Hy. Edw.)

Thecla sepium. n. var. *fulvescens*. Hy. Edw.

A very strongly marked variety of *T. sepium* occurs rarely throughout the State. It is usually smaller than the type, and very much paler in color, being occasionally of a golden brown instead of chestnut tint. The fringes are whiter than in *T. sepium*, the under side much fainter in color, with the markings less pronounced, and the submarginal band always more distinctly edged with white. It may prove ultimately to be a new species, but for the present I prefer to regard it as a variety of the common form alluded to.

Lake Tahoe, Hy. Edw. Tehachepi Pass, R. H. Stretch. Havilah, Kern County, R. H. Stretch. (2 ♂; 2 ♀; Coll. Hy. Edw.)

Thecla melinus. Var. *pubica*. n. var. Hy. Edw.

I have before me two specimens (♂ ♀) of an insect which at first sight appeared to me a new species, but which I now think can only be considered a

variety of *T. melinus*, Bdv. It is considerably smaller than *melinus*, being only 0.90 inch in expanse, while *melinus* measures 1.25 to 1.30 inch. The upper side is similar to that of *melinus*, but the lower side is more silvery gray, with the markings in the primaries utterly obliterated, and a distinct black line at the base of the fringe. The markings of the secondaries are similar in outline to those of *melinus*, but they are extremely faint, and the anal orange spot is almost obsolete, while the red bordering to the submarginal band, so conspicuous in *melinus*, is here reduced to a few scattered scales.

Contra Costa County. Hy. Edwards. June, 1875.

Perhaps a long series of specimens will show the identity of *T. melinus*, Bdv., and *T. humuli*, Harr., but in all the examples I have seen of the latter, I miss the red scales bordering the submarginal band above alluded to. But beyond this, I see no character by which they can be separated.

Lycæna speciosa, n. sp. Hy. Edw.

Pale silvery blue, the color of *L. mellisa*, Edw. Fringes, very broad, clear white, cut very distinctly by black at the ends of the nervules. Underside, pale silvery gray, with a very minute round black spot on the costa, and a series of five round sub-marginal and one oblong central spots arranged almost in circular form on the disc. There is also a distinct oblong discal spot, and a smaller round one on the internal margin. The whole of the spots on the primaries are comparatively large, very distinct, and jet black, without white margins. The secondaries have one basal dot, a minute discal point, and a sub-marginal row of seven small black spots, also without white margins. Fringes, as in the upper side. Anterior, with the club unusually large, and the shafts distinctly annulated with white. Thorax and abdomen, blackish above, silvery beneath.

Exp. of wings, 0.70 inches.

Havilah, Kern County, R. H. Stretch. (1 ♂ Coll., Hy. Edw.)

I should have hesitated to describe this exquisite species from a single specimen, but the peculiar arrangement of the spots on the lower side of the primaries, its extremely small size, and the broad and distinctly black and white fringes serve abundantly to distinguish it from any other form with which I am acquainted.

N. B. As I intend to devote a separate article to the species of *Colias* proper, I have omitted all reference to that genus in the present paper.

Professor Davidson read a continuation of his papers on Irrigation, describing the canal Cavour.

The Committee on Nomination submitted the following report:

The Committee appointed to present a ticket of officers to the Academy to be voted for at the coming election, beg to offer the

following report. They have carefully considered the responsible duty assigned to them, and have unanimously resolved to recommend to the Academy the re-election of the present officers and Trustees. They were led to this conclusion by a consideration of the unsettled condition of the temporalities of the Academy. Many matters of grave importance, and at the same time affairs of a complicated and delicate nature have often been under consideration at the joint meetings of the Council and Board of Trustees, and it seemed to them only ordinary prudence to continue these gentlemen in office. We therefore recommend the following ticket:

PRESIDENT,

GEORGE DAVIDSON.

FIRST VICE-PRESIDENT,
HENRY EDWARDS.

RECORDING SECRETARY,
CHAS. G. YALE.

SECOND VICE-PRESIDENT,
HENRY C. HYDE.

TREASURER,
J. F. HALL, JR.

CORRESPONDING SECRETARY,
DR. A. B. STOUT.

LIBRARIAN,
C. TROYER.

DIRECTOR OF MUSEUM,

W. G. W. HARFORD.

TRUSTEES,

DAVID D. COLTON,

R. E. C. STEARNS,
THOS. P. MADDEN,
R. C. HARRISON.

WM. ASHBURNER,
GEO. E. GRAY,
JOHN F. MILLER.

(Signed,)

Horace Davis, Wm. Norris, J. H. Smythe, P. B. Cornwall,
S. P. Christy.

On motion, Dr. A. Kellogg and S. P. Christy were appointed Inspectors, and Chas. Wolcott Brooks and Henry Chapman Judges of Election.