



# Insecutor Inscitiae Menstruus

Vol. VIII

JANUARY-MARCH, 1920

Nos. 1-3

## THE MOSQUITOES OF BRITISH COLUMBIA AND YUKON TERRITORY, CANADA

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

During the summer of 1919 I continued the exploration of the Canadian mosquito fauna westward from the Continental Divide where I left it the previous season (*Ins. Ins. Mens.*, vii, 11-39, 1919) to the Pacific Ocean, and northward down the Yukon Valley to near the Alaskan boundary. The streams emptying into the Arctic Ocean were not explored in either British Columbia or Yukon Territory, and some other omissions are noted below. The season resulted in 11,220 specimens, besides which I have 33 others, selected from the collection of Dr. C. Gordon Hewitt by his kind permission.

A somewhat complicated condition exists in the west, owing to the fact that two very distinct faunal regions are embraced within the limits of British Columbia, while the Canadian fauna proper divides up into several subregions in which peculiar combinations of species occur.

### I. CANADIAN FAUNA

The Canadian fauna proper extends down the western slope of the Rocky Mountains and reaches tide water at certain points. It occupies all the mountains and smaller river valleys, but in the larger valleys is modified. The Kootenay-Columbia region was explored in 1903 and, though the results are unsatisfactory according to present standards, the region evidently belongs to the border zone of the Canadian fauna

as at Winnipeg or Ottawa, with the Rocky Mountain species added in the high elevations. The Nass, Stikine, Taku and Alsek valleys, flowing into the Pacific, have not been explored; but they are all smaller than the Skeena, and probably do not present different faunistic conditions.

*Fraser Valley.*—From the junction of the Fraser and Nechaco at Prince George, the Fraser Valley broadens out southward, producing a flood-plain, in which many pools are formed by seepage at the time of floods from the melting snows of the mountains. A special fauna has adapted itself to these conditions, although it is few in species. An economic problem has arisen in the lower valley, involving this fauna, which is being investigated by Mr. Eric Hearle under the direction of Dr. C. Gordon Hewitt. A report may be expected later from these gentlemen, so I will not deal with the fauna here.

*Skeena Valley.*—The lower Skeena River forms flood-pools in the same manner as the Fraser, but there is no broad flood-plain and the whole region is forested. In these pools five members of the Canadian fauna have established themselves in the following order of abundance: *lazarensis* F. & Y., *cinereus* Meig., *intrudens* Dyar, *diantaeus* H., D. & K., and *pionips* Dyar, all normally early spring forms. None of the river-pool species occur in these pools, nor any members of the *excrucians* group, nor any other members of the spring fauna such as *punctor*, *decticus* or *pullatus*, though these species occur in early snow pools in the same region. Neither do normally later-occurring species appear, such as *canadensis* and *vexans*. Exactly what conditions this peculiar selection of species in the Skeena flood-pools, I do not know. The common occurrence of *diantaeus* is the most interesting. I never met this species commonly before, nor have I positive records west of White River, Ontario. Early snow-pools also occur in the Skeena Valley and these give rise to the ordinary Canadian fauna, of which *punctor* is a very prominent if not dominant member.

*Yukon Valley.*—The river rises in a series of great lakes which lie to the eastward of the coastal barrier mountains. These great reservoirs prevent sudden floods and there is no flood-pool fauna. The country is forested with spruce and pine, though rather sparsely and openly. Semi-prairie conditions are produced, of which *prodotes* and *callithotrys*, a new form allied to *campestris* D. & K., take advantage, flying abundantly in the open. The latter species seems confined to the pine country, as I met with it only in the vicinity of White Horse, with what may have been a stray specimen at Skagway. All the other species of the Canadian fauna are represented except *intrudens* and *diantaeus*, and there is a form representing the eastern *stimulans* Walker in river pools, which I describe as new on account of certain small differences. The dominant species is *lazarensis*, frequenting the forest. The three Rocky Mountain species of *Culiseta* are common along the Yukon, and there is one rare *Anopheles*, but no *Culex*. The Yukon fauna crosses the White Pass and reaches tide water at Skagway, Alaska.

The swarming habits of the common males at White Horse were constant and interesting. The town is in the sandy level river-flat with a high bluff behind, formerly the river margin. On walking toward the bluff any still evening, males were encountered, first the *callithotrys* in the tops of the small pines; next *prodotes* over open spaces between pines and willows, then, on reaching the high spruce trees, *lazarensis*, high up opposite the ends of projecting branches, and lastly in openings between tall spruce, over willow bushes, *puncctor*, and an occasional *excrucians*, high up and flying wildly. At Dawson, *pullatus* appeared over willow bushes on the hillside any time after 4 p. m. that the sun went behind a cloud.

I note the following desiderata for the Canadian fauna: Larvæ of *callithotrys* Dyar; mating habits of *intrudens* Dyar.

#### *Aëdes puncctor* Kirby.

*Culex puncctor* Kirby, Richardson's Fauna Bor. Am., iv, 309, 1837.

*Culex implacabilis* Walker, List Dipt. Brit. Mus., i, 7, 1848.

*Culex provocans* Walker, List Dipt. Brit. Mus., i, 7, 1848.

*Culex abserratus* Felt & Young, Science, n. s., xx, 312, 1904.

*Culicelsa auroides* Felt, Bull. 79, N. Y. Sta. Mus., 448, 1905.

*Aedes centrotus* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 747, 1917.

Mr. F. W. Edwards, of the British Museum, after comparing Walker's types with Canadian specimens, remarks: "*C. implacabilis* Walk. is almost certainly the same as *A. punctor* as identified by you. *C. provocans* Walk. is quite unrecognizable, but *might* be *punctor*." I include the synonymy as indicated.

*A. punctor* extends throughout the Canadian region, reaching the Yukon Valley. It is, however, not the dominant species in the west, being replaced in that respect by *lazarensis*. In the Coastal Region it gives rise to derivative species, which are discussed under that heading.

The coloration possesses the usual variability. The mesonotum may be yellow or gray or wholly suffused with dark brown; the median band may be distinct or diffused and divided. The dark *abserratus* form is comparatively rare, and not usual as in the east. There is no difference in specimens taken in the Yukon watershed.

In the Skeena Valley the species breeds in the early snow-pools, but not in the late flood-pools. Adults flying in August there were very old and worn while *lazarensis*, *diantaeus* and others from the flood-pools were still fresh.

Total, 808 specimens: Edmonton, Alberta, May 4, 14, 1919; Prince George, British Columbia, May 12, 13, 14, 16, 17, 18, 20, 22, 24, 25, 26, 27, 1919; Hazelton, British Columbia, September 6, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Kwinitsa, British Columbia, May 22, 23, 24, 25, 28, 29, June 1, 2, 6, 7, 1919; Skagway, Alaska, June 26, 29, July 1, 31, 1919; Atlin, British Columbia, July 22, 23, 24, 1919; Carcross, Yukon Territory, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July 1-5, 16, 17, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Carmack's, Yukon Territory, July 14, 1919; Selkirk, Yukon Territory, July 13, 1919; Horse Falls, Yukon

Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 1919.

**Aedes lazarensis** Felt & Young.

*Culex lazarensis* Felt & Young, Science, n. s., xx, 312, 1904.

*Culex borealis* Ludlow, Can. Ent., xliii, 178, 1911.

Doctor Ludlow gives the indefinite locality "Alaska" for her species. Upon inquiring if she had more definite data, I was informed that the types came from Fort Egbert, Eagle, Alaska, which is in the Yukon Valley, about 100 miles below Dawson. Specimens which are evidently cotypes, although not so marked, from Eagle, Alaska, are in the collection, presented by Doctor Ludlow. They are large, stout specimens with almost normal *lazarensis* markings.

Males were repeatedly seen swarming at White Horse, after sunset, opposite projecting branches of large spruce trees, 10 to 20 feet from the ground.

This is the most abundant mosquito in the British Columbia mountains and also in the Yukon Valley. It is absent from the Fraser bottom lands, even as high up as Prince George, but occurs a few miles from that place in the valleys of tributary creeks. In the Skeena, it is dominant down to tide-water. There appear to be two emergences in this region, first the normal early one from snow-pools, and later in greater abundance from the flood-pools.

As occurring in the Skeena Valley, *lazarensis* is of normal coloration. The mesonotum is yellow, with two dorsal dark brown lines and short sublateral ones. Variation is not great. The form with brown suffusion on the disk of the mesonotum between the lines occurs rarely. Occasionally the lines are broadened, the two dorsal ones even fused, but this is exceptional. The ground color is always yellow, never gray. The most striking variation is the obsolescence of the lines, in which case the mesonotum is suffused with brown centrally. Specimens of this form, taken out of doors, were thought at first to be *intrudens* with the mesonotum marginally lightened; but I never found any of them in the house. Fortunately a male

of this form was bred and proved to be *lazarensis*. Last season I took this form to be a variation of *decticus*, but evidently wrongly. A considerable number of the specimens listed by me under *decticus* (Ins. Ins. Mens., vii, 18, 1919) will have to be removed.

In the Yukon watershed, including the lakes at its head and across the White Pass to the end of the Lynn Canal, *lazarensis* is also the dominant species; but it has taken on a wholly different aspect. The normal form occurs, but it is rare. Usually the mesonotum is light gray without trace of yellow or brown shading. The lines vary from narrow to broad, the broad form the commonest, sometimes completely confluent, leaving only a pair of star-like whitish specks, or even the mesonotum wholly blackish brown. The markings seem to have run wild, all sorts of freakish-looking variations occurring. As a whole a rather distinctly marked race is indicated, for which the name *borealis* Ludlow is available, although the type of *borealis* is an almost normally marked *lazarensis*.

Total, 3,612 specimens: (normal form) Prince George, British Columbia, May 9-20, 22, 25, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, May 27, 28, June 3-8, 13, 1919; Kwinitza, British Columbia, May 24, 25, 1919; (*borealis* form) Skagway, Alaska, June 24, 25, 28, 29, July 28, 1919; Glacier, Alaska, June 26, 1919; Pitchfork Falls, Alaska, July 28, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, June 21, 26, 27, 1919; White Horse, Yukon Territory, June 26-29, July 1-5, 7, 8, 16-18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 15, 1919; Half way to Big Salmon, July 15, 1919; Big Salmon, Yukon Territory, July 15, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-10, 1919.

Also from Doctor Hewitt's collection, Glacier, British Columbia (normal form), July 28, 1916 (C. G. Hewitt), and

Fort Egbert, Alaska, June 2, 1906 (cotypes of *borealis* Lud.).

### *Aëdes pionips* Dyar.

*Aëdes pionips* Dyar, Ins. Ins. Mens., vii, 19, 1919.

Well distributed throughout the region, though never abundant. The adults are late in issuing, larvæ being found, together with *pullatus*, after most of the other forms had emerged. The species occurred rarely in the Skeena flood-pools, to judge by captured adults. No actual breedings of *pionips* were obtained from these pools.

The mesonotum has usually a clear yellow ground color, but at Atlin specimens occurred with the mesonotum gray.

Total, 122 specimens: Prince George, British Columbia, May 9, 13, 25-28, 1919; Terrace, British Columbia, August 12-14, 1919; Kwinitza, British Columbia, May 25, 1919; Skagway, Alaska, June 24, 27, 28, 29, 30, July 1, 2, 1919; Atlin, British Columbia, July 22, 25, 1919; Carcross, Yukon Territory, July 27, 1919; White Horse, Yukon Territory, July 3, 16, 17, 18, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-13, 1919.

### *Aëdes diantæus* Howard, Dyar & Knab.

*Aëdes diantæus* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 758, 1917.

This species occurred not uncommonly in the lower Skeena Valley, issuing from the flood-pools in July. The female adults generally had the mesonotal stripes united in the manner of *punctor*, which they consequently much resembled. They are a little smaller and blacker, less robust, the legs having a blue-black appearance different from the brown-black of *punctor*.

The males do not swarm, but seize the females when approaching to bite. The males may be attracted to the presence of warm-blooded animals as *varipalpus* is; but no swarms were observed as with that species. While sitting on a log in dark woods at Terrace, B. C., in the forenoon, the weather being cloudy, a male and female were noted in the air, grappling. They flew to a neighboring twig and alighted, the fe-

male resting on her feet, the male underneath, grasping the female, his back to the twig. They remained there for several seconds.

Total, 158 specimens: Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, June 9, 1919.

*Aedes impiger* Walker.

*Culex impiger* Walker, List Dipt. Brit. Mus., i, 6, 1848.

*Aedes decticus* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 737, 1917.

Mr. F. W. Edwards, after comparing Walker's type of *impiger* with Canadian specimens, remarks: "*C. impiger* Walk. is much more like *decticus* than any of the others you sent, but I should say is probably distinct. Both Walker's specimens have the front tibiæ entirely dark, whereas your specimen of *decticus* has them pale beneath towards the tip. Anyway, *impiger* can hardly be the same as *punctor*, *lazarensis* or *intrudens* as the head has dark markings—and there are other points which would exclude all except *decticus*." <sup>1</sup>

After carefully restudying the material, I think that Mr. Edwards is right about the existence of two species, but not exactly as indicated. The two species are *decticus* and *prodotes*, the former being darker, more heavily marked, the latter paler, with markings diffused, generally absent. I tried to separate the species on locality, but that will not hold, as the habitats of the two overlap. *A. decticus* is not common anywhere, but extends across the continent; *prodotes* is very rare in the east, if it occurs at all, but common in the west.

The male genitalia differ as indicated (Ins. Ins. Mens., vii,

<sup>1</sup>This identification of *impiger* duplicates the difficulty experienced with *Culex territans* Walker. In the monograph, we treated as *impiger* the species now called *intrudens*, following Dr. Felt's identification, which now proves to have been wrong. I proposed to drop *territans* as confusing, and on the same reasoning would have to drop *impiger*. I am afraid I will have to recede from this position. It will be necessary to cite "*territans (restuans)*" and "*impiger (decticus)*" for a decade or so, till the weight of literature accumulates to this usage. To cite either "*territans*" or "*impiger*" alone would be wholly ambiguous at present.



17, 1919). The larvæ are quite distinct. I have larvæ of *decticus* from Banff, Alberta (Dr. C. G. Hewitt), and from Dawson, Yukon Territory, agreeing essentially with *lazarensis*. In these larvæ the anal plate is more sharply marked than in the specimens I described from Plattsburgh, New York (Ins. Ins. Mens., vii, 21, 1919), ending sharply, but irregularly at some distance from the ventral line.

This species prefers densely forested country. The males swarm low near the ground, under trees, as described by me in error for *prodotes* (Ins. Ins. Mens., vii, 22, 1919). The swarming habits of *prodotes* are really quite different.

Total, 433 specimens: Edmonton, Alberta, May 1-5, 1919; Prince George, British Columbia, May 11-17, 19-22, 1919; Skagway, Alaska, June 24, 25, 1919; Atlin, British Columbia, July 22-25, 1919; White Horse, Yukon Territory, June 26-30, July 1-8, 16, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 6, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 13, 14, 1919.

#### *Aedes prodotes* Dyar.

*Aedes prodotes* Dyar, Ins. Ins. Mens., v, 118, 1917.

I referred to this as the "Rocky Mountain form of *decticus*" (Ins. Ins. Mens., vii, 22, 1919), but the appellation is incorrect, for while *prodotes* is not certainly known east of the Rockies, *decticus* crosses the range and inhabits the Yukon Valley, the two species occurring together. I previously called all specimens from the Rockies and westward *prodotes*, but now find that both occur at Banff. Thus *prodotes* is more of a high-altitude species, the records in the west cited by me, Field and Mt. Cheam, B. C., being correct. On the other hand, the troublesome female from White River, Ontario, June 25, 1907 (F. Knab), which was placed under *trichurus* in the monograph, and under *decticus* by me, appears in the light of latest information to be *prodotes*. If so, this is the easternmost record. The range of *prodotes* is to the north along the higher mountains of the Rockies into the Yukon Valley where it is the second species in abundance.

The coloration in the Yukon takes on a generally different character. Instead of dull stone gray, mixed with black and with dark brown shades and diffused lines, the mesonotum becomes bright clear gray with a little brown suffusion centrally. The brown may be absent, or overspread the whole mesonotum, sometimes with the addition of a pair of star-like whitish spots, but without blackish lines.

The larvæ occur mixed with those of *decticus*. I have specimens from Banff, Alberta (Dr. C. G. Hewitt), and from Atlin, British Columbia.

Larva. Head-hairs both single, long, the ante-antennal tuft in four. Lateral comb of the eighth segment of 12 large scales, each with a very long central thorn and small lateral spinules. Air tube about two-and-a-half times as long as wide, the pecten evenly spaced, followed by a two-haired tuft, after which are three widely detached teeth, the third toward the apex of the tube. Anal segment with a large plate, quadrately emarginate on the side posteriorly, the anterior part approaching the ventral line and irregularly edged.

Eggs of *prodotes* were obtained from captured females at White Horse. They are thickly fusiform, rounded, one side flattened, the ante-micropylar end more pointed than the other, shining black. They were deposited on the bottom of the glass jar, under moss, in little groups of half a dozen.

The adults prefer open or semi-open country. The males swarm, not over projecting objects, but over the spaces between. At White Horse and Atlin, the males were frequently seen just after sunset swarming singly or in small groups over bare ground between willows or small pines, some ten feet in the air. Under tall pines or in spruce forest they were never met with. The swarming habits as given by me (*Ins. Ins. Mens.*, vii, 22, 1919) really belong to *decticus*.

Total, 1,973 specimens: (Yukon region) Skagway, Alaska, July 28, 1919; Inspiration Point, Alaska, July 28, 1919; White Pass, British Columbia, July 28, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, June 26, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July

1-5, 7, 8, 16-18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Knudson's Camp, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 1919.

### *Aedes intrudens* Dyar.

*Aedes intrudens* Dyar, Ins. Ins. Mens., vii, 23, 1919.

This species occurred in early snow-pools and also in the Skeena flood-pools, which are filled by seepage and do not hold snow-water on account of the porosity of the ground. It was thus encountered in houses as late as August, contrary to its normal early habits. No differences were observed in these late specimens from normal early ones, either in coloration or habits. The species was not encountered in the Yukon watershed.

Total, 116 specimens: Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, June 3, 4, 7, 8, 9, 10, 1919; Kwinitza, British Columbia, May 22-26, August 14, 1919.

### *Aedes pullatus* Coquillett.

This species, which inhabits high altitudes in the Rocky Mountains southward to Colorado, comes down to the valley floor in the lower Skeena and the Yukon, and reaches sea-level at Skagway, Alaska.

The larvæ are to be found late in the season in the last remaining pools, together with *pionips*. The species was rather common at Dawson, my most northerly point, where males were seen swarming over willow bushes on the hillside after sunset, or even as early as 4 p. m. when the sun passed behind a temporary cloud.

Total, 643 specimens: Kwinitza, British Columbia, May 29, 31, June 1, 2, 7, 1919; Skagway, Alaska, June 24-30, July 1-4, 6, 1919; Bennett, British Columbia, July 28, 1919; Atlin, British Columbia, July 23, 24, 1919; Carcross, Yukon Terri-

tory, July 21, 27, 1919; White Horse, Yukon Territory, June 27, 28, July 1-4, 9, 14, 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 15, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Dawson, Yukon Territory, July 7-13, 15-17, 19, 1919.

#### *Aedes excrucians* Walker.

A male was demonstrated from White Horse, Yukon Territory. In the west this species is much less common than *fitchii*. Larvæ from Prince George, British Columbia, have the airtube somewhat shorter and stouter than in those from Massachusetts; but the detached pecten-teeth, comb-scales and head-hairs are the same.

The name *sansoni* D. & K. is available for the western form, but I think a separate name is unnecessary as there are practically no differences.

#### *Aedes stimulans* Walker.

*Culex stimulans* Walker, List Dipt. Brit. Mus., i, 4, 1848.

*Culex cantans* Theobald (not Meigen), Mon. Culic., i, 401, 1901.

*Culicada subcantans* Felt, Bull. 97, N. Y. Sta. Mus., 448, 1905.

*Culex (Culicada) stimulans* Speiser, Schr. Phys.-ökon. Ges. zu Königsb., xlix, 391, 1908.

The preferred habitat of *stimulans* larvæ in the east is pools which have been actually overflowed by early high water, not seepage-filled. Such pools are common along streams in the Atlantic water-shed where the valleys are broad and low. In western Canada, however, the streams are deeply cut, with steep banks, for example the Saskatchewan or the Bow, and pools of this character do not occur. It has thus been necessary for *stimulans* to cease to exist in the west or change its habits. In writing the monograph, we were of the opinion that the species adopted the former alternative, as we state (vol. iv, p. 682): it "does not seem to be represented in the far west by an allied form." However, I have found it at Edmonton, Alberta, breeding in early marsh-pools with *decticus*

and *fitchii*. This appears to be a case of change of habits. Concomitantly therewith we find a change in structure, affecting, as would be expected, the larva only. The lateral comb-scales are reduced in number and have each a very long stout central thorn, with only small basal lateral fringes.

The male genitalia scarcely differ perceptibly. The basal lobe and spine are perhaps a little larger than in *stimulans*, but a trace less than in *mercurator*, described below.

No name exists applicable to this form; but as I have no larval material between Plattsburgh, New York, and Edmonton, Alberta, a gradation may exist, and I do not suggest a new name at present.

*Aedes mercurator*, new species.

Female: Proboscis black; head with narrow yellow scales, almost replaced by a large black patch on each side. Mesonotum with pale yellow scales, a broad dark brown and black band in the middle; posterior side-stripes narrow, of the same color. Abdomen black, the basal segmental white bands narrow, obsolete posteriorly; a median white spot at base of second segment, forming large triangular patches on the sides; venter white, with median row of black spots. Legs black, with many white scales; femora white below; tarsi with white rings at the bases of the joints, broad on the hind legs on first to fourth joints. Wing-scales black.

Male: Similar. Genitalia: Side pieces three times as long as wide, conical at tip; clasp with long terminal spine; apical lobe conical, nearly nude, with only a few small setæ; basal lobe low-conical, transversely rugose, with non-projecting tubercles and short, rather curved setæ; a large spine on the basal side. Harpes and unci normal. Harpago with rather short stem, the filament longer than the stem, sickle-shape, a sharp angular expansion beyond the middle. Basal lobes short, with six long terminal spines.

Types, male and female, No. 22615, U. S. Nat. Mus.; Dawson, Yukon Territory, July 16, 1919 (H. G. Dyar).

Larva: Head hairs, upper 4 or 3, lower 2 or 1. Lateral comb of the eighth segment a large patch of scales, the tips

evenly feathered, the central spine sometimes a little stouter and longer. Air-tube about two-and-a-half times as long as wide, the pecten evenly spaced, running nearly to the middle, followed by a 6-haired tuft. Anal segment with the dorsal plate reaching two-thirds, irregularly incised.

Males were seen swarming at Dawson over willow bushes on the hillside after sunset. They were in small groups, flying rapidly from one place to another, much as with the allied *excrucians* and *fitchii*.

Total, 65 specimens: Dawson, Yukon Territory, July 7-11, 13, 15, 16, 17, 19, 1919.

This is very close to *stimulans* Walker, and I am not sure that it should be separated. I have proposed the new name largely on account of the discontinuous distribution. The western form of *stimulans* referred to above, which intervenes between eastern *stimulans* and *mercurator*, shows larval differences; yet here the typical larva reappears in abundance in the Yukon Valley. This valley becomes very broad in the "Flats" below Fort Yukon, Alaska, and doubtless *mercurator* has its stronghold here where many overflowed pools must occur.

The larva differs only in the head hairs, *stimulans* having them upper in 2, lower single (the statement in the monograph, page 681, is accidentally reversed), while *mercurator* has upper 4 or 3, lower 2 or single as stated.

In the male genitalia the spine of the basal lobe of the side-piece is longer in *mercurator* than in *stimulans* and a little more basally situated, being on the edge of the chitinization instead of a little removed therefrom. The basal lobe is round and full, openly tubercular with moderate short setæ, not "tubercular-expanded." In *stimulans* one of my mounts (Plattsburgh, New York) shows the basal lobe "tubercular-expanded" but this may be due to excessive pressure in preparation. Another mount from the same place does not show this peculiarity, neither do others from Detroit, Michigan, May, 1909 (B. F. Lowe), Arnprior, Ontario, May, 1917 (C. Macnamara), and Oxbow, Saskatchewan (F. Knab). In these

the basal lobe is low-rounded, openly tubercular, with fine setæ, smaller and less developed than in *mercurator*.

### *Aedes fitchii* Felt.

Male demonstrated from Dawson, Yukon Territory. Also from Saskatoon, Saskatchewan, June 7, 18, 1918 (A. E. Cameron), and Prince Albert, Saskatchewan, June 10, 1918 (A. E. Cameron), from Doctor Hewitt's collection.

Larvæ were obtained at Dawson. Head hairs, upper in threes, lower double or single. Comb scales of the eighth segment long and thorn-like with small lateral fringes. Tracheal tubes decidedly broad within the air-tube and not conspicuously angled in the eighth segment. Air tube shorter and stouter than usual.

These differ from Massachusetts specimens in the shorter tube with broader tracheæ, less strongly angled in the eighth segment, the strong median spine on the comb-scales and the less numerous head-hairs, which are, upper 3 or 4, lower 2 or 3 in typical *fitchii*. But they agree entirely in all these respects with *fitchii* larvæ which I obtained at Edmonton, Alberta.

The male genitalia show a slight progressive difference westward. In eastern specimens the filament of the harpago is shorter proportionately to the stem. Plattsburgh, New York, White River and Dryden, Ontario, Winnipeg and Aweme, Manitoba, are about alike. The lengthening of the filament appears gradually. Elkhorn, Manitoba, Oxbow and Prince Albert, Saskatchewan, appear intermediate, while Regina and Saskatoon, Saskatchewan, and Banff, Alberta, appear about like Dawson, Yukon Territory.

A western race of *fitchii* is thus indicated, but it would seem to appear so gradually that probably there is no sharp demarcation.

No varietal name is available, but it seems hardly worth while to propose one deliberately.

Total, 1,327 specimens, including *excrucians*, *stimulans*, *fitchii* and *mercurator*, most of the captured adults not being certainly separable: Edmonton, Alberta, May 11-20, 22, 25,

1919 (western forms of *fitchii* and *stimulans*); Prince George, British Columbia, May 28 (*excrucians*), September 9, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Skagway, Alaska, July 28, 1919; Bennett, British Columbia, July 28, 1919; Taku, British Columbia, July 22, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July 1-5, 16, 17, 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 8-11 (*mercurator*), 20 (*fitchii*), 1919.

**Aedes callithotrys**, new species.

Female: Proboscis black; head brownish yellow, a darker patch on each side, followed by flat white scales below. Mesonotum bronzy yellow scaled; a band of dark brown scales in the middle. Abdomen with black scales, transverse segmental and longitudinal median dorsal white lines, cutting the black into squares, sparsely dusted with white scales; venter pale, with a broken median black line. Wing-scales black and white, rather evenly mixed. Legs with femora and tibiæ with many white scales; tarsi black, the joints dull white at base and apex.

Male: Mesonotum and abdomen all yellowish white scaled.

Genitalia: Side pieces three times as long as wide, conical; clasp with long terminal spine; apical lobe small, conical, haired like the rest of the surface; basal lobe expanded-tubercular, with many short setæ, those along the inner margin somewhat stouter than the others, none developed into a spine. Harpes and unci normal. Harpagones with rather short stem, bearing several closely placed setæ before tip; filament rather short, shortly sickle-shaped. Basal appendages moderate with five or six terminal spines.

Types, male and female, No. 22616, U. S. Nat. Mus.; White



Horse, Yukon Territory, June 26 and July 17, 1919 (H. G. Dyar).

This species is allied to *curriei* and *campestris*, of the size of the latter, but differing in the male genitalia, which have no stout spine on the margin of the basal lobe of the side piece. It occurred in pine country from the White Horse Rapids to the Tahkeena River, about 25 miles, but was not met with elsewhere, except a single female at Skagway, which may have been carried down on the train.

The males swarm after sunset in little groups close to one side of the tops of small pines (resembling lodgepole pine).

The larvæ were not observed, all having emerged at the date of my visit.

This may not be specifically distinct from *campestris*. While male *campestris* from Regina and Carnduff, Saskatchewan, have the larger marginal spine on the basal lobe of the side piece as indicated above, a male from Salt Lake County, Utah, April 30, 1914 (C. T. Vorhies), does not show it distinctly, while a male from Oxbow, Saskatchewan, June 19, 1907 (F. Knab), shows the enlarged spine on one side but not on the other. Several of the marginal spines are enlarged in all the specimens, and whether there is a central one differentiated may prove an evanescent character.

The habits of *campestris* are undescribed, and the larva is unknown, and therefore I hold *callithotrys* apart for the present.

The species seems addicted to pine country instead of the open prairie, as with *curriei*. Its distribution is peculiar and restricted. The swarming habits are markedly different from those of *curriei*. Specimens recorded by me from Charlton Island in James Bay (Ins. Ins. Mens., vii, 38, 1919) are undoubtedly *callithotrys* or *campestris*. No males were obtained from this locality.

Total, 816 specimens: White Horse, Yukon Territory, June 26–July 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Skagway, Alaska, June 25, 1919.

**Aedes curriei** Coquillett.

No extension of range up the coast north of Vancouver Island was observed. The coast is steep and rocky, forming no marshes.

Total, 1 specimen: Edmonton, Alberta, May 19, 1919.

**Aedes canadensis** Theobald.

Found only in the Fraser Valley near the southern part of the faunal region. It occurs also in the Kootenai region.

Total, 4 specimens: Prince George, British Columbia, May 22, 1919.

**Aedes vexans** Meigen.

Absent from the Canadian Fauna in the west. It occurs in the bottom lands of the Fraser Valley.

Total, 161 specimens: Prince George, British Columbia, September 7-10, 1919.

**Aedes aestivalis** Dyar.

Occurring in the southern fringe of the Canadian Fauna. I found a nice series in Doctor Hewitt's collection from Sicamous, and myself took a few specimens in the upper Fraser Valley.

Total, 2 specimens: Prince George, British Columbia, September 7, 10, 1919.

Also from Doctor Hewitt's collection, Sicamous, British Columbia, July 28, 1916 (C. G. Hewitt).

**Aedes cinereus** Meigen.

Extending throughout the Canadian region, though always rare. The most abundant occurrence was in the Skeena flood-pools, where *cinereus* was second in importance. In estimating the abundance of *cinereus* in the Skeena Valley, I use the data from larval emergences. The adults have habits of their own, and in the deep forest, which the other flood-pool species frequented, *cinereus* was extremely rare. On the other hand, collecting under a solitary tree amid bushes by the river-bank where the surroundings were light and open, nothing but *cinereus* came.

Total, 91 specimens: Prince George, British Columbia, September 9, 1919; Terrace, British Columbia, August 11-14, 1919; Salvus, British Columbia, June 7-10, 12, 1919; Kwinitza, British Columbia, June 1, 4, 1919; Atlin, British Columbia, July 23, 1919; White Horse, Yukon Territory, June 29, July 2, 4-7, 9, 11, 15, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 10, 11, 1919.

**Aedes varipalpus** Coquillett.

The species occurs in the southern part of the Canadian region where suitable tree-holes are present, not in the spruce forest.

It was impossible to sit for more than a few minutes in the woods at Terrace without a swarm of males forming close by elbow or knee, attacking the females as these came to bite.

Total, 40 specimens: Terrace, British Columbia, August 12-14, 1919.

**Culicella dyari** Coquillett.

The species extends throughout the Canadian region, though always rare.

Total, 2 specimens: Kwinitza, British Columbia, June 10, 1919; White Horse, Yukon Territory, July 3, 1919.

**Culiseta impatiens** Walker.

The species occurs throughout the region and also in the Coast Region. I give all the localities together.

In the sandy flats at the mouth of the Skagway River, an incipient race occurs. The size is distinctly smaller than normal, and the habits are divergent. The egg-boats are narrow and long, as in *incidens*, not broad and rounded or triangular as normally in the species, and are deposited in overflowed pools in the sand and even in protected water-barrels, all quite contrary to the usual sylvan habits of *impatiens*. However, I could not demonstrate any positive differences. The divergent habits have not yet been followed by structural change.

Total, 220 specimens: Terrace, British Columbia, August 14, 17, 20, 23, 1919; Salvus, British Columbia, June 3, 1919;

Prince Rupert, British Columbia, May 13–June 13, July 8, 9, 1919; Ketchikan, Alaska, August 8, 1919; Cape Fanshaw, Alaska, June 22, 1919; Skagway, Alaska, June 24, July 1, 2, 3, 27, 28, 30, 31, August 1–5, 1919; Taku, British Columbia, July 22, 1919; Atlin, British Columbia, July 24–27, 1919; Carcross, Yukon Territory, July 27, 1919; White Horse, Yukon Territory, June 27–30, July 4, 1919; Dawson, Yukon Territory, July 9, 14, 15, 16, 18, 1919.

The species evidently ranges all down the Yukon. I have specimens through the U. S. Biological Survey as follows: Flat, Alaska, June 12, 1917 (A. H. Twitchell); Beaver Mountains, Alaska, May 26, 1917 (A. H. Twitchell); Iditarod, Alaska, June 12, 1918 (Alice Twitchell).

#### **Culiseta incidens** Thomson.

Throughout the Canadian and Coastal regions, preferring artificial pools or barrels for oviposition. In the Yukon Valley the black markings on the wings are commonly very much reduced; the species being with difficulty separated from *impatiens* at casual glance. I give all the localities together.

Total, 105 specimens: Hazelton, British Columbia, September 7–10, 1919; Prince Rupert, British Columbia, May 30–June 9, 1919; Cape Fanshaw, Alaska, June 22, 1919 (the specimen plainly seen, but escaped capture); Atlin, British Columbia, July 22, 23, 24, 26, 27, 1919; White Horse, Yukon Territory, June 28–30, July 1–4, 1919; Dawson, Yukon Territory, July 15, 16, 18, 19, 1919.

#### **Culiseta alaskaënsis** Ludlow.

Not uncommon in the Yukon Valley. The species is addicted to grassy pools, such as occur along river-beds, not in forest. It is absent from the forested Canadian region, but follows the mountains from the Yukon southward onto the Canadian plains.

Total, 78 specimens: Edmonton, Alberta, April 27, 1919; Atlin, British Columbia, July 25, 26, 1919; White Horse, Yukon Territory, June 26–30, July 1–4, 16, 1919; Selkirk,

Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 18, 1919.

Also Calgary, Alberta, April 14, 1913 (N. Criddle), from the collection of Dr. C. Gordon Hewitt.

This species extends also well down the Yukon. Dr. Ludlow's types came from Eagle, Alaska, and I have, through the U. S. Biological Survey, specimens from Beaver Mountains, Alaska, May 15, 28, 1917 (A. H. Twitchell).

### **Anopheles occidentalis** Dyar & Knab.

A specimen was taken on the deck of the steamship *Dawson* on the Yukon River while making a landing.

Total, 1 specimen: Hootalinqua, Yukon Territory, July 6, 1919.

Also Aweme, Manitoba, April 16, 1915 (N. Criddle), from the collection of Dr. C. Gordon Hewitt.

## II. PACIFIC COAST FAUNA

The moist winds from the Pacific, striking the high coastal mountains, produce an almost continual rain, from which peculiar conditions have evolved. The ground is a mass of peat, roots and moss, designated as muskeg, which retains water for a considerable time. In the spring, flat, shallow, sharp-edged pools are frequent, not in the bottoms of valleys or even in depressions, but right on exposed tops or sides of hills. Some of these pools remain more or less full all summer and all leave permanent beds from which grass is absent. Plate I, figure 1, shows Ketchikan, Alaska, as seen from tide water, the high mountains in the back being entirely obscured by the small hills in the foreground, but the precipitous nature of the coast is evident, the town being perched on a steep hillside. Figure 3 is a view of Kaien Island from the hill across the bay, the scattering town at the base of the hill being Prince Rupert, British Columbia. The water at the right is the estuary of the Skeena River. Figure 2 is a view looking down from the center of Prince Rupert from the spot marked with an arrow in figure 3. This place looks level, but is in reality a high hill

in the center of the town where the reservoir stands. The view shows a number of muskeg-pools in the foreground, situated on the steep hillside, which is much steeper than appears, due to the camera having been pointed downward in taking the view.

These conditions have produced an entire change in the species of *Aedes* for the region. The whole Canadian fauna is completely cut off, not a species surviving, while three endemic species take its place. These three species are all derivatives of *punctor*, which we have found to be the most hardy member of the Canadian fauna, but they are specifically distinct therefrom, though closely allied among themselves. The *Culiseta*, inhabiting permanent pools in the bottom lands, find conditions here similar to those elsewhere, and the species have not changed.

The Coastal Region extends northward as far as the island barrier. North of Cape Spencer I do not yet know what conditions obtain. The region extends southward, west of the Coast Range, to the United States, being cut narrowly by the Skeena River and more broadly by the Fraser. It embraces all of Vancouver Island. In western Washington and Oregon it broadens out, embracing the region between the Cascades and the sea. The rainfall is less continuous here, but the same general characters persist. Its exact southern limits are unknown to me, owing to lack of collections. The upper valleys of the Olympic Mountains are unexplored, as are most of the isolated peaks from Mount Baker to Mount Shasta. In the mountain meadows of the Mount Rainier region no species of this group occurred. We found *altiusculus* (a derivative of the Californian *tahoënsis*), although *aboriginis*, the dominant Coastal species, occurred in the foothills.

East of the Cascades arid conditions immediately supervene, with the appropriate fauna; so it is this Coastal Region which widely intervenes between the Canadian Fauna and that of the Californian mountains, and permits the existence of a separate fauna there. A comparative list of the Canadian and Californian species may be of interest. Some of the species may

still be identical (males and larvæ of some unknown) though most are plainly distinct, and of one pair (*impiger* and *ventrovittis*) I am not sure of the correspondence.

<i>Canadian representative.</i>	<i>Californian representative.</i>
<i>Aedes punctor</i> Kirby	<i>Aedes hexodontus</i> Dyar
<i>lazarensis</i> F. & Y.	<i>tahoënsis</i> Dyar
<i>pionips</i> Dyar	(unrepresented)
<i>impiger</i> Walk. ( <i>decticus</i> H., D. & K.)	<i>ventrovittis</i> Dyar
<i>prodotes</i> Dyar	<i>cataphylla</i> Dyar
<i>intrudens</i> Dyar	<i>fisheri</i> Dyar
<i>diantaeus</i> H., D. & K.	(unrepresented)
<i>pullatus</i> Coq.	(unrepresented)

Of the *excrucians* group, the two Californian species, *in-crepitus* Dyar and *palustris* Dyar, are representatives of *mutator* Dyar and *mimesis* Dyar of the arid region, not of the three species of the Canadian one. The ubiquitous *vexans* Meigen and *cinereus* Meigen occur in both, the latter also invading the Coastal fauna to some extent. Besides the strictly prairie species, *canadensis* Theob. is really an intrusion in the Canadian fauna proper, and its absence from the Californian mountains is reasonable. *Culiseta*, *Culex* and *Anopheles* are entirely oblivious of these regions, their distribution depending upon other factors.

#### *Aedes cyclocerculus*, new species.

Female: Head brownish yellow scaled, dull whitish on the sides; mesonotum brownish yellow scaled, whitish around the antescutellar space; two diffused dark brown median bands; posterior-lateral stripes broad, black-brown, distinct. Abdomen with basal segmental white bands, widening at the sides; venter whitish-scaled, the segments black-scaled on the sides. Legs black, femora white below; knee-spots white.

Male: Ground-color scales lighter yellow and sparser than in the female, the dark markings broad. White abdominal bands narrow; ventral scaling mixed with black. Genitalia: Side pieces over three times as long as wide, the clasp with

long terminal spine; apical lobe low-conical, large, with dense recurved or flattened short setæ; basal lobe quadrately expanded, tubercular-setose, the setæ longer and denser about the marginal spine, which is stout and strongly recurved. Harpago with short hirsute stem, the filament rather broadly fusiform with pointed tip, about one-half as long as the stem. Harpes and unci normal. Basal appendages rather long, with five or six terminal and sub-terminal spines.

Types, male and female, No. 22617, U. S. Nat. Mus.; Prince Rupert, British Columbia, May 11, 12, 1919 (H. G. Dyar).

Larva: Head-hairs in twos (upper occasionally 3 or 1, lower rarely 1). Lateral comb of the eighth segment of six or seven large scales, each with long pointed tip, shortly and sparsely fringed at base. Air-tube two-and-a-half times as long as wide; pecten of evenly spaced teeth, followed by a 5-haired tuft. Anal segment ringed by the plate, short and quadrate, the ventral brush obliquely posteriorly directed.

Larvæ in muskeg-pools early in May. The larvæ are small, darkly colored, and occurred in considerable numbers in one pool.

Total, 85 specimens: Prince Rupert, British Columbia, May 11-31, 1919; Ketchikan, Alaska, June 20, August 6, 8, 1919; Cape Fanshaw, Alaska, June 22, 1919; Juneau, Alaska, June 23, 1919.

#### ***Aedes leuconotips*, new species.**

Female: Head yellow-brown scaled, with whitish diffuse spots at the sides. Mesonotum yellow-brown, with two diffuse broad median dark brown bands; posterior lateral stripes faint, showing only traces. Abdomen with basal white segmental bands, widening at the sides; venter grayish white scaled. Legs black, femora white beneath; knee-spots white.

Male: Ground-color scales paler than in the female and sparser. Posterior lateral bands broad and distinct, similar to the median ones. Venter mixed with black scales, predominating on tips of segment. Genitalia: Side pieces over three times as long as wide, the clasp with long terminal spine;



apical lobe low-conical, large, with dense recurved or flattened short setæ; basal lobe quadrately expanded, tubercular-setose, the setæ longer and denser about the marginal spine, which is very stout and contrasted. Harpago with short hirsute stem, the filament rather broadly fusiform with pointed tip, about one-half as long as the stem. Harpes and unci normal. Basal appendages rather long, with five or six terminal and sub-terminal spines.

Types, male and female, No. 22618, U. S. Nat. Mus.; Prince Rupert, British Columbia, May 26, 30, 1919 (H. G. Dyar).

Larva: Head-hairs in twos, or the lower single; lateral comb of the eighth segment of seven large scales, each with long pointed tip, shortly and sparsely fringed at base. Air-tube two-and-a-half times as long as wide; pecten of evenly spaced teeth, followed by a 6-haired tuft. Anal segment ringed by the plate, rather short and broad, the ventral brush obliquely posteriorly directed.

Larvæ in muskeg-pools in May. The larvæ are pale in color, whitish, and occurred sparsely in the pools, in two cases but one larva in a pool.

Total, 44 specimens: Prince Rupert, British Columbia, May 22–June 13, 1919; Ketchikan, Alaska, June 20, 1919; Cape Fanshaw, Alaska, June 22, 1919; Juneau, Alaska, June 23, 1919.

### **Aedes aboriginis** Dyar.

*Aedes aboriginis* Dyar, Ins. Ins. Mens., v, 99, 1917.

The larvæ from Prince Rupert differ slightly from those from the type locality (Mount Rainier, Washington). The head hairs are more numerous, upper in 5, lower in 3 or 4, instead of upper in 3 or 4, lower in 2 or 3. The comb-scales of the eighth segment have the central spine more sharply differentiated—the scale should be described as with a central thorn and long lateral spinules rather than evenly spined. Otherwise no differences appear.

The larvæ frequent pools of a semi-stagnant character, or drainage pools, not typical muskeg pools. These pools are

largely created by artificial conditions—most of my larvæ of *aboriginis* occurred in the town proper. The dark pools in the stream-beds in the forest, which are heavily infested with *Eucorethra*, yielded no *Aedes* larvæ, one third-stage skin only rewarding search, although these would seem to be the only habitat of *aboriginis* in a state of nature. Civilization, if not too highly organized, would seem to be beneficial to the species.

Total, 382 specimens: Prince Rupert, British Columbia, May 9–June 17, 1919; Cape Fanshaw, Alaska, June 22, 1919.

Also in Doctor Hewitt's collection, Royal Oak, British Columbia, May 4, 1917 (R. C. Treherne).

These three species, *cyclocerculus*, *leuconotips* and *aboriginis*, with *hexodontus* of the Californian Sierra Nevada range and *punctor* of the Canadian fauna, form a closely allied group. The first two inhabit typical muskeg pools in the northern rainy Pacific strip; *aboriginis* occupies drainage or casual, often dirty pools in the same general region, but extends southward over western Washington; *hexodontus* occurs in the Californian mountains, inhabiting open marshy pools, often much of the typical muskeg type, while *punctor* extends throughout the Canadian fauna from the Atlantic to the Pacific.

On colorational characters, the species group thus:

Mesonotum typically with single quadrate median dark stripe,

*punctor* Kirby

• Mesonotal stripe divided.

Typically, median and posterior-lateral stripes equally developed,  
*aboriginis* Dyar, *leuconotips* Dyar, *hexodontus* Dyar

Posterior lateral stripes darker and more distinct than the median,  
*cyclocerculus* Dyar

On genitalic characters the grouping is as follows, replacing dichotomy 21 of my table (Ins. Ins. Mens., vi, 78, 1918):

Spine of basal lobe of side piece stronger than accompanying setæ,  
but not strongly differentiated.....*punctor* Kirby, *aboriginis* Dyar

Spine of basal lobe much stronger than the accompanying slender  
setæ and well differentiated,

*hexodontus* Dyar, *cyclocerculus* Dyar, *leuconotips* Dyar

On larval characters they group thus :

Anal segment with the plate separated ventrally; upper head hairs  
 3-5, lower, 2-4.....*aboriginis* Dyar  
 Anal segment ringed by the plate; head-hairs single or double,  
*punctor* Kirby, *hexodontus* Dyar, *cyclocerculus* Dyar, *leuconotips*  
 Dyar

The specific localities for *Culiseta impatiens* Walk. and *C. incidens* Thom. have been included under the heading of the Canadian Fauna. In the southern part of the Coast Region there is an intrusion of *Culex tarsalis* Coq., *Culex saxatilis* Grossb. and *Aedes palustris* Dyar (Royal Oak, British Columbia, April, 1917, R. C. Treherne, through Dr. C. G. Hewitt), of *Aedes astivalis* Dyar (Nanoose Bay, British Columbia, August 1, 1903, J. Fletcher), of *Aedes varipalpus* in tree holes, and of *Aedes curriei* Coq. as a salt-marsh breeder, besides *Anopheles* sp. (Ins. Ins. Mens., v, 102, 1917), but these species are not found farther north in the typically rainy belt. The specimen which I recorded from the Olympics (Ins. Ins. Mens., v, 98, 1917) as *increpitus* (?) seems on reëxamination to be certainly *palustris*; but there remains the large red *alopnotum* Dyar, about which nothing positive can be said until males and larvæ are at hand.

## A SECOND CULEX OF THE SUBGENUS TRANSCULICIA DYAR

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

*Culex* (*Transculicia*) *petersoni*, new species.

Male. Proboscis with a broad whitish ring beyond the middle. Palpi slightly exceeding the proboscis, with small white rings at the bases of the joints and the middle of the long joint. Femora with whitish tip, the tarsal joints narrowly dull white at bases and apices. Abdomen with basal segmental whitish bands, widening at the sides; venter white, with some black scales at the tips of the segments toward the base. Pleura pale, with six brown spots. Antennæ plumose,