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Records and Descriptions of North American Crane-Flies (Diptera)¹

Part IX. The Tipuloidea of Oregon, I¹

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General Account

The state of Oregon is roughly rectangular in outline, its extreme east-west width being 380 miles, its greatest length, as measured along the 124th meridian 280 miles. It includes 96,699 square miles, of which 1092 are water. The state is bounded on the north by Washington and, in large part, by the Columbia River; on the east by Idaho, with the Snake River, a major tributary of the Columbia, forming more than one-half of this boundary; on the south it is bounded by the states of Nevada and California; on the west by the Pacific Ocean.

The Cascade Range divides the state into two unequal parts, the western third including the Willamette Valley and the Coast section, the eastern two-thirds the extensive but sparsely populated plains-plateau region. Physiographically, the state has been subdivided into eight more or less natural regions or provinces that are defined further on characters of climate, soil, biota, and other features. From west to east these regions include the Coast; Southern Oregon; Willamette Valley; Cascades; Deschutes-Columbia; Blue Mountains-Wallowas; Southeastern Lake; and the Snake River. As regards the crane-fly fauna, certain of these areas are much more important than others and are discussed in more detail.

The Coast Region.—This includes the Oregon Coast Range, comprised of low rolling mountains that have a mean elevation of less than 2,000 feet, the highest point (Marys Peak) attaining 4,097 feet. Between the mountains and the ocean lies the narrow Pacific coastal plain where the western foothills of the range leave only a narrow margin of plain, or, in places, actually jut into the sea as rocky headlands. Many streams rise in the Coast Range and flow westward into the Pacific while others flow eastward into the Willamette River, as discussed later under the Willamette Region. In the south, two rivers, the Rogue and the Umpqua, originate in the western slopes of the Cas-

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References in the text refer to the bibliography at the conclusion of the general account.

In the report the author's name has been abbreviated to the initial "A" following records of specimens. M. M. Alexander—Mrs. Charles P. Alexander.

caedes and completely traverse the Coast Range, flowing into the Pacific. Peck (1941) in his study of plant distribution divides the present region into four areas, a south and north coast and a south and north mountain, all well distinguished by peculiarities of distribution in the higher plants.

Numerous and very important collections of crane-flies have been made throughout the Coast Region, including the Coast Range, particularly by the Fenders, but with smaller series having been taken by Albright, Davis, Macnab, Post, Scullen, Townes, and others. Of particular significance are the collections made by Professor James A. Macnab, assisted by co-workers and former students at Linfield College, in an area on Saddle Mountain, in northeastern Lincoln County (Macnab, 1945; Dirks-Edmunds, 1947). Extensive series of these flies have been taken by Fender at Gunaldo Falls and at High Heaven, in Yamhill County. The highly important series of crane-flies taken by Fender on Peavine Ridge, in the eastern foothills of the Coast Range in Yamhill County, are here construed as falling more properly in the Willamette Region and will be discussed thereunder.

The Southern Oregon Region.—Extends from the Calapooya Mountains in Lane and Douglas counties southward to the California state line, lying chiefly between the Coast Range and the Cascades, including the complex mountain mass formed by the close approximation or union of the Cascades, Coast Range, Klamath Mountains and the Siskiyou. The section lying between Eugene and Roseburg, a distance of some 50 miles in length by from 10 to 20 miles in width, while not considered as being "Coast Range" by the local inhabitants, according to Fenneman (1931: 419, 435, 459-460) is quite comparable in its altitude and relief to a large part of the Oregon Coast Range and is placed by him in the same physiographic section. Peck (1941) recognizes two separate districts, the Siskiyou of the south coastal area and the Rogue-Umpqua area lying more inland. The Tipulidae of this region are but little known, the chief collections having been made at Ashland, Grants Pass and Medford, and in the Siskiyou National Forest.

The Willamette Region.—This is comprised essentially of the Willamette Valley, a roughly rectangular trough, nearly 180 miles in length, extending from the Columbia River in the north to the Calapooya Mountains, in width extending some 60 miles from the Cascades to the Coast Range. The region is drained by the Willamette River and its tributaries, including a total area of some 11,200 square miles, producing the most important agricultural, commercial and industrial parts of the state and with approximately two-thirds of the entire population.

The western slopes of the Cascades, with its foothills, comprise some 60 percent of the total area of the Willamette Basin. This is traversed by many deep valleys that have been cut by glaciers and streams, some of these valleys being fully 1,000 feet in depth. The Coast Range, forming the western boundary of the basin, obstructs part of the moisture-bearing winds from off the Pacific but because of the average low height of the range, large quantities of moisture reach the Willamette Basin. At the lower end of the valley, the Calapooya Mountains separate the Willamette River from that of the Umpqua River to the south. Numerous tributary streams originate in both the Coast Range and in the Cascades, particularly the latter. The Middle Fork of the Willamette River rises in a small lake near the summit of the Cascades at near 6,000 feet, flowing northwestward, near Eugene uniting with

the Coast Fork, in its course dropping some 5,600 feet in a distance of approximately 90 miles. Similar steep slopes characterize most of the principal tributaries that originate in the Cascades, from north to south these including the Clackamas, Molalla, Santiam and McKenzie Rivers. Most of the Coast Range tributaries are shorter, originating on the east slope of the mountains, and entering the Willamette River from the west. From north to south, the chief of these are the Tualatin, Yamhill, Luckiamute, Marys and Long Tom Rivers. The floor of the Willamette Valley is generally flat while sloping gently to the river's mouth, where it unites with the Columbia some twelve miles above Portland. Several hills rise above the comparatively level valley but none exceeds a few hundred feet in height. The main channel of the river follows a meandering course, with many oxbows, sloughs and overflow channels, as commonly found in alluvial valleys. The valley and its topography and climate have been discussed in detail by Brands (1947).

Numerous collections of Tipuloidea have been made at stations in the valley, including several by Fender from the actual banks of the Willamette River in the vicinity of Dayton, yielding certain of the species characteristic of the banks and margins of major streams. Other important valley stations include the leading educational centers of Corvallis and Eugene, particularly the former, where the entomologists and students of the Oregon State Agricultural College have amassed considerable collections of these flies during past years. Likewise included in the valley are the beautiful Silver Creek Falls in Marion County. More to the north, McMinnville, home of the Fenders, who are cited constantly throughout this report, and Forest Grove, where Cole collected various species (Cole and Lovett, 1921), are similarly typical valley stations. Furthermore, the most important single station discussed in this paper, Peavine Ridge, in Yamhill County, on the eastern slopes of the Coast Range, where Fender has made most noteworthy discoveries in many groups of insects (Fender, 1948) is construed as falling in this region, as discussed in more detail hereinafter.

The Cascade Mountains.—Under the discussion of the state of Washington in the preceding part under this same title (Alexander, 1949) the general features of the Northern Cascades were outlined. In Oregon, the range completely traverses the state from north to south, there passing into California where it terminates near Lassen Peak. In Oregon, virtually the entire range is comprised of the Middle Cascade Mountains, where distinct evidences of crustal uplift are shown, particularly in the north, additional to and contrasting with the gradual accumulations of volcanic andesitic lavas by which the Southern Cascades have been built up. On the northern boundary, the Columbia River, in forming its great east-west gorge, has cut through thousands of feet of lava. The general crest level of the Oregon Cascades is between 5,000 and 6,000 feet, this surface being studded at infrequent intervals by towering extinct volcanoes, the summits of the higher ones being permanently snow-covered or even provided with glaciers. From north to south, the chief peaks of the Cascades include Mount Hood (11,253 feet), highest point in Oregon; Mount Jefferson (10,495 feet); Mount Washington (7,769 feet); the Three Sisters (North Sister, 10,094 feet; Middle Sister, 10,053 feet; South Sister, 10,354 feet); Mount Thielsen (9,178 feet); ancient Mount Mazama and its relict, Crater Lake (6,117 feet); and, in the south, Mount McLoughlin (9,493 feet).

Collections of Tipuloidea in the Oregon Cascades have been very numerous and of extreme interest. The majority of these have been taken in the vicinities of Mount Hood and Crater Lake, as detailed later (under "Collecting Stations"). The intervening section of the Cascades is less accessible and hence not as well known but some interesting records are available from stations along the North Santiam River, South Santiam River, Metolius River, Deschutes River, Century Drive out of Bend, vicinity of the Three Sisters, and along the crest of the Cascades near the headwaters of the Middle Fork of the Willamette River, the vicinity of Odell Lake, and at beautiful Salt Creek Falls.

Deschutes-Columbia, Southeastern Lake and Snake River Regions.—The eastern slopes of the Cascades merge into the great interior plateau that lies between them and the Blue Mountains in the east. Drainage from the eastern slopes of the Cascades is chiefly into the Deschutes River and thence northward into the Columbia. Still farther east the John Day and Umatilla Rivers originate in the interior of the state and likewise flow north into the Columbia. This great basaltic plateau is formed by the Columbia lava flow which further occupies much of Idaho and eastern Washington, including a total of about 100,000 square miles, in places with a thickness exceeding 4,000 feet.

Extensive collections of crane-flies have been made in the eastern Cascades, particularly at Tumalo Creek, near Bend; on the Metolius River, and along the Hood River on the eastern slopes of Mount Hood. All such collections actually pertain to the Cascadean fauna and show few or none of the Great Basin and Rocky Mountain elements that form such a characteristic part of the biota of the Blue Mountains-Wallowas, as discussed later. East of the Cascades, the Columbia Plateau seems to support relatively few species of Tipulidae, except on the higher and damper mountains where there is a coniferous forest, as on the Ochocos. To the southeast the plateau merges into the Great Basin and certain of the species of Tipulidae so far discovered here are characteristic Rocky Mountain and Great Basin forms. This part of Oregon comprises the Southeastern Lake Region, with numerous dry, semi-permanent and permanent lakes. The isolated Steens Mountains have produced very few species of Tipulidae but this may well be due to insufficient collecting. These rugged mountains constitute a boldly tilted uplift jutting above the plain of lava.

The Snake River Region is similarly very poor in Tipulidae but is still insufficiently known. It includes a narrow strip along the eastern boundary of the state, consisting of an open basaltic plateau averaging some 3,500 to 4,000 feet in altitude, with low mountains and narrow river valleys. The Snake River, a major tributary of the Columbia, forms its great canyon along the northern half of the eastern border of Oregon, reaching a maximum depth of 5,500 feet opposite the Wallowa Mountains.

Peck (1941), working on the distribution of the flora, subdivides eastern Oregon into five areas that he terms the Columbia River, Yellow Pine, Bunchgrass, Sagebrush, and Lake Sections. The Yellow Pine includes a zone fringing the eastern base of the Cascades, western base of the Blue Mountains, and the lower slopes and summits of various short mountain chains lying within the Great Basin territory, lacking in the Steens Mountains.

Blue Mountain-Wallowas Region.—This includes an area of approximately 20,000 square miles in northeastern Oregon, containing the exceedingly inter-

esting Blue and Willowa Mountains. As indicated by Fenneman (1931: 248), the Blue Mountains in Oregon and southeastern Washington are contiguous with the Northern Rocky Mountain Province in Idaho, being separated therefrom only by the canyon of the Snake River, a distance of about 15 miles from rim to rim.

The Blue Mountains are actually a composite of several separate ranges, one of these being the Elkhorn Ridge, west of Baker City, where the most important collections of crane-flies known from the entire region have been taken by Mr. James H. Baker, as discussed later (under "Collecting Stations"). Further important materials from the Blue Mountains have been taken at and near Langdon Lake and on the Upper Walla Walla River, close to the Washington state border. North of this the Blue Mountains pass into extreme southeastern Washington, or virtually to the Snake River opposite Lewiston, Idaho.

The more rugged and imposing Willowas include an island of some 25 miles in diameter surrounded by the sea of basalt comprising the Blue Mountain Plateau. The mountain mass is chiefly of non-volcanic rocks, including granites, quartzite, limestone and slate. In topography, the Willowas are much like the Rocky Mountains and it is well known that many Rocky Mountain species of plants and animals occur here. The peaks of the range are sharp and jagged, separated by steep cirques and deeply cut canyons. The highest peaks are just over 10,000 feet in height. There are numerous small mountain lakes that give rise to torrential streams, particularly during the summer months when the melting snow and ice provide abundant water. This is well shown in the beautiful Lostine Valley, where we collected in June and in August 1948, as discussed later. On the eastern base of the mountains lies the largest lake, Willowa, at about 4,400 feet.

Climate.—The general climate of Oregon is like that of Washington, with much of the rainfall occurring in the western third of the state, east of the Cascades the country being unusually dry to semi-desert, excepting on the higher mountains. The prevailing westerly winds bring abundant rains but comparatively little passes the Cascades. The heaviest rains fall on the slopes facing the ocean, in general increasing from near the coast to near the summit of the Coast Range, thence decreasing in amount in the valleys of the Willamette, Umpqua and Rogue Rivers, again increasing to certain altitudes on the Cascades. On the eastern slopes of this range and eastward there is a rapid decrease in precipitation, with the amount again increasing on the Blue Mountains. The annual average precipitation reaches nearly 130 inches at some Pacific Slope stations (as Glenora, Tillamook Co.), falling to less than 8 inches in the dry eastern parts of the state (as Umatilla; Harper, Malheur Co.; Lake Co.; Andrews, Harney Co.). Precipitation is seasonal, showing influences of the Mediterranean type of climate in the great preponderance of rainfall in winter over that of summer. West of the Cascades, 44 percent falls in winter, 24 in spring, 5 in summer and 27 in the autumn; east of the Cascades, 37 percent falls in winter, 27 in spring, 12 in summer and 24 in autumn. Snow seldom falls on the coastal areas and rarely persists, the winter of 1948-49 having been unusually severe in this regard. The average annual snowfall ranges from less than one inch on certain coastal stations to more than 40 feet in the Cascades.

The mean annual temperature ranges from about 56° Fahr. in the lower

Snake River Canyon in extreme northeastern Oregon to about 38 in the Cascades (not including the highest points, from which no records are available). January minimum temperatures normally range between 12 and 40 degrees, with the greatest extremes occurring over the high eastern plateau. July maximum temperatures normally range between 65 on the middle and southern coastal stations to 95 in the Snake River Canyon. The great gorge of the Columbia River permits the transfer of continental air masses into western Oregon, particularly in the winter, producing lower temperatures than would otherwise be the case.

The following stations are selected from the detailed state records as given by Wells, in *Climate and Man* (1941: 1075-1086).

Station	Temperatures (in Fahrenheit degrees)				Precipitation (in inches)		
	Jan. av.	July av.	Max.	Min.	Jan.	July	Annual
Baker	24.9	65.6	104	-24	1.09	0.44	10.69
Corvallis	39.3	65.9	106	-14	6.63	0.32	40.06
Crater Lake	26	56.6	100	-20	9.66	0.59	58.29
Forest Grove	37.4	66.1	108	-15	7.42	0.37	45.88
Mount Hood-Govt. Camp ..	30.3	56	96	-16	12.28	1.52	84.81
Hood River	32.9	67.3	106	-27	4.78	1.17	30.06
McMinnville	38.9	66.3	110	-24	7.00	0.38	42.15
Salem	39.7	66.6	108	-6	5.61	0.39	37.24
Wallowa	24.4	65.4	108	-38	1.78	0.59	16.81

Biotic and Physical Provinces.—Dice (1943) recognizes four of his biotic provinces in the state. The heavy coniferous coastal forest, called by him the Oregonian and herein termed the Vancouverian, occupies the Coast, the formerly wooded Willamette Valley, and the Middle Cascades, the dividing line being placed at The Dalles on the Columbia River and thence southward just east of the crest of the Cascades. From the south, the Californian province extends into the state, in the southwest lying inside the coast and including the valleys of the Rogue and Umpqua Rivers, extending northward in the Cascades to near Crater Lake. The dry eastern plateau is occupied by the Palusian province in the northeast, including and encircling the Blue and Wallowa Mountains. The more extensive southeastern part of Oregon includes the great sagebrush covered plains of the Artemisian province, Great Basin country extending as far west as the Cascades where it meets the Vancouverian and Californian provinces, as described. The local distribution of the *Tipuloidea* in Oregon substantiates the limits of the provinces as defined by Dice.

Fenneman (1931) recognizes three physiographical provinces, the Pacific Border Province, including the Oregon Coast Range section in the north and the Klamath Mountain section in the south. The Cascade-Sierra Mountains Province extends the entire length of the state along the Cascades. The entire eastern part of Oregon is occupied by the Columbia Plateaus Province, with four of the five sections occurring within the state, the Walla Walla Plateau in the northwest, Blue Mountain in the northeast, Payette in the southeast, and Harney in the south.

In similar manner, Mulford, in Van Dersal (1938) classifies the state on the basis of plant-growth and soil regions and climatic provinces. From west to east in Oregon the plant growth regions include the North Pacific Coast; Willamette Valley-Puget Sound; Cascade-Sierra Nevada; a very slight intrusion of the Columbia River Valley in the extreme north; a major northward extension of the Great Basin-Intermontane region in the southeast, and a comparable major arm of the Snake River Plain-Utah Valley in the northeast, the last enclosing an isolated island of the Northern Rocky Mountains region that includes the Blue Mountains and the Wallowas.

Peck (1941: 10-30) recognizes no fewer than nine areas based upon the distribution of the higher plants, providing a short discussion and detailed lists of the characteristic plant species of each of these. The areas are the Northern Coast; Northern Coast Mountain; Willamette Valley; Rogue-Umpqua; Southern Coast; Southern Coast Mountain and Siskiyou; Cascade; Eastern Oregon; Blue Mountain, including the Wallowas.

Life Zones.—The most detailed account of the life zones of the entire state is that provided by Bailey (1936: 11-53, colored map, figs. 1-6, showing the distribution of the zones on Mounts Hood, Jefferson, Three Sisters, McLoughlin, Wallowas and Steens Mountains). Five of the Merriam zones are represented in Oregon, the lowest being the Upper Sonoran (Upper Austral) which occupies the low valleys east of the Cascades, west of the mountains including the valleys of the Rogue and Umpqua Rivers. The Transition zone includes the higher valleys and foothills, showing a more humid subdivision in the valley foothills and on the Coast Ranges west of the Cascades. The Canadian zone forms a wide belt higher in the mountains, while the Hudsonian zone occupies a narrower belt on the higher peaks, extending to timber line. The highest zone, the Arctic-Alpine, is much restricted in area, including the treeless summits of the highest peaks. As regards the Tipulidae, the most important zones are the humid portions of the Transition and Canadian, with fewer species occurring in the Hudsonian and Upper Sonoran.

Crater Lake National Park.—A detailed survey of the life zones of the vicinity of Crater Lake has been given by Wynd (1941). This shows that only three zones are present, the Transition being found in the lowest portions of the Park to about 5,500 feet; the Canadian from about 5,500 to 6,250 feet, and the Hudsonian from 6,250 feet to the highest altitudes in the Park (Mount Scott, east of Cloudcap, 8,938 feet). As shown by Wynd, the upper limits of these zones range from 1,200 to 2,500 feet higher than the corresponding zones on Mount Rainier, Washington, some 275 miles to the north (Alexander, 1949: 261).

General Survey of the Tipuloidean Fauna of Oregon

The accompanying record includes 317 species of Tipuloidea as determined to this time, Oregon having by far the largest list of these flies as known for any western state or Canadian province, with the single exception of California. It appears certain that when fully known, the Oregon list will exceed 400 species. Numerous additions may be expected from the north and south, but especially from the east, where various species representing the Rocky Mountain and Great Basin elements should be found to occur.

The altitudes of the various zones on the six mountains listed above are given herewith (adapted from Bailey).

Mountain	Zone	Upper limit— NE slopes	Upper limit— SW slopes
Mount Hood (Base level 500 feet)	Sonoran	1,000 feet	—
	Transition	3,000	4,000
	Canadian	5,000	6,000
	Hudsonian	6,000	7,000
	Arctic-Alpine	(Summit—11,253 feet)	
Mount Jefferson (Base level 1,500 feet)	Sonoran	2,000	—
	Transition	3,500	4,500
	Canadian	5,500	6,500
	Hudsonian	6,500	7,500
	Arctic-Alpine	(Summit—10,495 feet)	
Three Sisters Peaks (Base level 1800 South 3500 North)	Sonoran	—	—
	Transition	4,500	4,800
	Canadian	6,000	7,000
	Hudsonian	7,000	8,000
	Arctic-Alpine	(Summit, South Sister, 10,354 feet)	
Mount McLough- lin (Pitt) (Base level 1,400 South 4,000 North)	Sonoran	3,500	2,500
	Transition	5,000	5,000
	Canadian	7,000	7,200
	Hudsonian	8,000	8,200
	Arctic-Alpine	(Summit—9,493 feet)	
Wallowa Mountains (Base level 3,000 South 1,500 North)	Sonoran	2,800	3,500
	Transition	4,800	5,800
	Canadian	7,000	8,000
	Hudsonian	8,000	9,000
	Arctic-Alpine	(Summit, Sacajawea Peak, 10,033 feet)	
Steens Mountains (Base level 4,500 South 4,000 North)	Sonoran	4,200	5,000
	Transition	6,000	7,000
	Canadian	7,500	8,500
	Hudsonian	8,500	9,000
	Arctic-Alpine	(Summit—9,354 feet)	

Of particular interest is the occurrence of two species of the so-called Primitive Crane-flies, Tanyderidae, which are among the most generalized of all living Diptera. Actually this family belongs to the superfamily Psychodoidea but since it has always been considered as being a crane-fly is included here for completeness. The Ptychopteridae and Trichoceridae are unusually well represented in the state. In the Tipulidae proper, the great genus *Tipula*, largest single genus in the fauna, includes 68 species. The small tribe Pediciini, a group characteristic of northern faunas, includes the unusually high number of 39 species (compare also the state of Washington, Alexander, 1949). The Limoniini have 43 species, the Hexatomini 45. As is usual throughout the north temperate zone, the small-sized Tipulidae belonging to the tribe Eriopterini are the most numerous in species, the 95 here listed including nearly a third of the entire fauna.

Very many of the species of Tipulidae in the state, particularly of the Cascades and westward, are characteristic of the Vancouverian biotic area, as considered in the preceding paper under this general title (Alexander, 1949). A large percentage of such forms evidently do not cross the Cascades to the east but a considerable number do cross the mountains in the northern part of their range and some, at least, occur as far east as Flathead Lake and the Continental Divide in western Montana.

Hatch (1949: 16) briefly considers the above type of distribution and further calls attention to cases in the Coleoptera where various species, of which a few are listed by name, range entirely across North America from the Atlantic states to the eastern foot of the Cascades while apparently being unable to extend their range farther to the west and so reach the Pacific coast. An analysis of the Tipuloidea of the present list, a total of 317 species, shows only three having a distribution of this type, these being *Nephrotoma ferruginea*, *Limonia (Dicranomyia) gracilis* and *L. (D.) piscataquis*. Thirteen further species extend from the Atlantic states to the Pacific, these being *Diazosma subsinuata*, *Tipula (Lunatipula) dorsimacula*, *Limonia (Rhipidia) lecontei*, *L. (Dicranomyia) halterata*, *L. (D.) humidicola*, *L. (Geranomyia) diversa*, *Ula paupera*, *Dicranota (Rhaphidolabis) cayuga*, *Limnophila (Phylidorea) claggi*, *Pilaria imbecilla*, *Erioptera (Trimicra) pilipes*, var., *Ormosia (Ormosia) manicata* and *Molophilus (Molophilus) perflaveolus*. It should be noted that some of the above have an even more extensive range, occurring also in Eurasia or, in cases, extending southward into Mexico or beyond. A further group of species extends from the Atlantic states to either the Blue or Wallowa Mountains, or both, but not beyond this general longitude, such crane-flies including *Trichocera garretti*, *Tipula (Lunatipula) macrolabis*, *Limonia (Limonia) tristigma*, *L. (Metalimnobia) cinctipes*, *L. (Discobola) annulata*, *L. (Rhipidia) fidelis*, and *L. (Dicranomyia) morioides*. A small group of forms extend from the Atlantic to the valley of the Willamette River, that is, have crossed the Cascades but, as known to this date, have not reached the counties of the Pacific coast. This list includes *Limonia (Dicranomyia) brevivena*, *L. (D.) iowensis*, *L. (D.) longipennis*, *L. (Geranomyia) communis*, *Ula elegans*, *Erioptera (Erioptera) dyari*, *E. (E.) septemtrionis*, and *E. (Symplecta) cana*. Here again it should be noted that some of the species in the last two categories have a much wider range, being found also in Eurasia, and their non-occurrence on the Pacific coast seems to be a question of further collecting rather than actual distribution.

The apparent reason for the failure of many eastern North American Tipulidae to pass westward of the Rocky Mountains would seem to be the barrier of the Great Basin and other extensive arid or semiarid regions in the west. The developmental stages of most Tipulidae are very dependent on moisture and their distribution is greatly influenced by the presence or absence of water.

Our knowledge of Oregon crane-flies dates only from the present century. Aldrich, in his *Catalogue of North American Diptera*, 1905, recorded only two species of these flies, *Tipula albofascia* and *T. usitata*, described by Doane in 1901 from Corvallis. The basic list of the Diptera of Oregon is by Cole and Lovett (1921) where a total of 953 determined species are recorded, of which 50 fall in the Tipuloidea, as here treated. Virtually all such species were taken by Cole at Forest Grove and Hood River or were contained in the

early collections made at and near Corvallis by Chamberlin, Lovett, Moulton and other early workers at the State Agricultural College. The present writer was responsible for the identifications of crane-flies in this list and despite insufficient knowledge of the fauna at the time, mis-determinations are surprisingly few in number (*Dicranomyia stigmata* Doane becomes *libertoides* Alexander; *Dicranoptycha sobrina* Osten Sacken becomes *stenophallus* Alexander; *Limnophila cressoni* Alexander becomes *L. vancouverensis* Alexander). It may be noted that in this list the records for *Nephrotoma californica* (Doane) and *Tipula californica* Doane (Nos. 26 and 35) actually refer to a single species.

During the 1930s and later, important additions were made by Professor H. A. Scullen and associates at the State Agricultural College. The great development in our knowledge of the state fauna came during the present decade and chiefly within the past five years. Mr. Kenneth M. Fender, to whom much of the success of the present record is due, has devoted a great amount of time to the collection of several thousand specimens of these flies throughout the state. In 1946, 1947 and 1948, Mrs. Alexander and I spent considerable periods of time in Oregon and added numerous records to the list, as described more in detail later. Various other entomologists and collectors have added to our knowledge of the group and these are listed later under "Collectors and Localities" and under the Acknowledgements.

COLLECTING STATIONS

Certain localities where Mrs. Alexander and the writer have collected in person are discussed herewith. In 1946, we were in Oregon between August 1st and 9th, from the 7th to the 9th camping at various stations on the Mount Hood Loop with Fender and Macnab. In 1947, between July 11th and 19th, we again camped on the Mount Hood Loop with Fender. In 1948, a considerable part of the entire summer was spent in the state. Between June 24th and July 5th, the Blue Mountains and Wallows were stressed, for a part of the time with Baker. From July 29th to August 9th, a trip down the Cascades from Mount Hood in the extreme north to the Siskiyou in the southwest, and thence into California, in company with Fender, proved to be one of the most enjoyable and successful trips we have ever had. Between August 16th and 20th, we again returned to the Blue and Wallowa Mountains, in order to secure the late-season Tipulidae. At this time we did some collecting in the Ochoco Mountains and in the John Day country in eastern Oregon.

A few selected stations having more than usual interest are considered in some detail.

COAST RANGE: SADDLE MOUNTAIN, "BOYER"

An area of humid coniferous forest in the Oregon Coast Range, located on the north side of Saddle Mountain, in northeastern Lincoln County, at an average altitude of 1,400 feet. The station is reached from Highway 18, being about six miles south of the highway and some six miles west of Grand Ronde. The name "Boyer," often used in conjunction with this survey, refers to a filling-station on the highway near the road into the station. A detailed study of the ecology of the area was made by Professor James A.

Macnab and students between 1932 and 1938. The actual survey was conducted for some five years, during which period weekly visits were made to the area. In more recent years the whole study area was badly de-forested. The following brief account is adapted from the more detailed records published by Dirks-Edmunds (1947) and Macnab (1944).

The forest canopy of the area at the time the survey was made was composed of Douglas fir, *Pseudotsuga mucronata* (Raf.) Sudw., with fewer Noble fir, *Abies nobilis* Lindl. Western hemlocks, *Tsuga heterophylla* (Raf.) Sarg., formed an understory, varying from small saplings to mature trees of some 150 feet in height. The shrub layer of the community consisted of species of huckleberry, *Vaccinium ovalifolium* Smith and *V. parvifolium* Smith, with salal, *Gaultheria Shallon* Pursh, Oregon grape, *Berberis nervosa* Pursh, and some devil's club. The herbaceous growth was principally seasonal in its appearance, including sword fern, *Polystichum munitum* (Kaulf.) Presl., wood rush, *Luzula parviflora* (Ehrh.) Desv., false solomons seal, *Smilacina*, sp., *Trillium ovatum* Pursh, *Maianthemum bifolium kamtschaticum* (Gmel.) Jeps., *Clintonia uniflora* (Schult.) Kunth., fairy bells, *Disporum oreganum* (Wats.) B. & H., twayblade, *Listera* sp., vanilla leaf, *Achlys triphylla* (Smith) DC, *Dentaria tenella* Nutt., cool-wort, *Tiarella* sp., *Oxalis oregana* Nutt., *Moneses uniflora* (L.) Gray, with occasional saprophytic orchids, *Corallorhiza*, sp. The forest floor and prostrate rotting logs were carpeted by mosses, the two most common species being *Rhytidiadelphus loreus* (L. Hedw.) Wainst., and *Hylocomium splendens* (Hedw.), the ground mat averaging approximately 6 cm. in thickness. The Tipuloidea recorded from the area total some 30 species that are listed throughout this report under the name Saddle Mountain (Boyer).

WILLAMETTE VALLEY AND EASTERN FOOTHILLS OF THE COAST RANGE: PEAVINE RIDGE

As has been indicated elsewhere, the survey of the Tipuloidea of Peavine Ridge, as conducted by Fender, has proved to be of most unusual interest and value. Before collecting of these flies on the Ridge was begun, the recorded list of species from all Oregon totalled approximately 70 and it is of interest to note that from Peavine Ridge alone Fender has taken 134 species of Tipuloidea. The reasons for this virtually unparalleled local list result from the diligence and care of the collector and the fact that specimens have been taken almost daily over a period of several years, rendering the list unusually complete. The total area studied totals scarcely more than five acres and it is my belief that the present list of crane-flies may be the largest ever recorded from so limited an area.

The following account is digested from Fender's basic account of Peavine Ridge (1948). The Ridge forms the eastern base of the Oregon Coast Range in Yamhill County, almost due west of McMinnville. The survey area extends for a distance of about four miles in a general direction extending from the southeast to the northwest. Over this distance a total of five major stations, numbered 1, 2, 3, 3A and 4 were established by Fender. All of the stations, with the exception of 4, are provided with small water-courses, an important factor in the consideration of the present group of flies.

Station 1; elevation 210 feet: This has the largest stream of any of the

areas selected but even this dries up in spots during particularly warm summers. The dominant tree is Oregon ash, *Fraxinus oregana* Nutt., with broad-leaf maple, *Acer macrophyllum* Pursh, and Oregon oak, *Quercus Garryana* Dougl., as subdominants. The shrub layer is composed largely of Oregon grape, *Berberis aquifolium* Pursh, and salmon berry, *Rubus spectabilis* Pursh. A fern layer of sword fern, and various rushes is present. Water hemlock, *Cicuta Douglasii* (DC) C. & R., and grasses abound in the herb layer.

Station 2; elevation 600 feet: Rather open, most of the trees being young, the area having been cut over about 1914. Oregon ash and willows, *Salix*, sp., are the dominant trees. The most abundant shrubs are western hazel, *Corylus californica* (A. DC) Rose, poison ivy, *Rhus Toxicodendron* L., and salmon berry. Brake, *Pteridium aquilinum pubescens* Underw., snowberry, *Symphoricarpos albus* (L.) Blake, and sword fern, comprise most of the fern layer, with grasses, St. Johns wort, *Hypericum perforatum* L., water hemlock, and the common monkey-flower, *Mimulus guttatus* DC, composing the majority of the herb layer. Two small temporary streams converge at this station, forming a small meadowland.

Station 3; elevation 605 feet: This is only a short distance from Station 2, yet conditions are very different. A small permanent spring rises in the middle of the area. The predominant trees are Douglas fir and broadleaf maple. Salmonberry and willows are the most abundant shrubs, with sword fern, giant chain fern, *Woodwardia fimbriata* (J. E. Smith) and Oregon grape dominating the fern layer and species of Umbelliferae the herb layer. At this station the first encroachment of the Douglas fir subclimax forest is found and provides the best example of this forest type in the area.

Station 3 A; elevation 980 feet: Smallest of the five areas; close to the road from which it is concealed by overhanging fir branches. Although small in size, this has been one of the most productive of the stations. Oregon alder, *Alnus rubra* Bong., and broadleaf maple are the dominant trees. Important shrubs include the salmon berry, evergreen blackberry, *Rubus laciniata* Willd., and stink currant, *Ribes bracteosum* Dougl. The more important members of the fern layer include the giant chain fern and the brake fern. The herb layer is chiefly choked out but there is one patch of western wild ginger, *Asarum caudatum* Lindl., with occasional smooth woodland violets, *Viola glabella* Nutt., and western trillium.

Station 4; elevation 1,085 feet: A dry station, cut over about 1916 but now coming back to a stand of young Douglas fir and Oregon oak. The shrub layer is composed largely of snowberry, western hazel, and very young Oregon oak. Brake fern comprises the chief constituent of the fern layer. The herb layer includes grasses, English plantain, *Plantago lanceolata* L., and heal-all, *Prunella vulgaris* L. Relatively few Tipulidae have been taken here, this being explainable in large part by the lack of free water.

On August 6, 1946, I accompanied Mr. Fender on his rural mail route out of McMinnville and so was able to visit and inspect all of the above described stations. From such a brief examination it would seem quite impossible that more than 130 species of crane-flies could occupy such a restricted area. This study by Fender indicates clearly that while Peavine Ridge is unusually rich in various insect groups, including crane-flies, there must remain unlimited numbers of comparable areas throughout the Pacific Northwest awaiting study and the patient care and attention such as has been devoted to

the Ridge by Fender over the past several years. Unfortunately for entomology, there are very few persons with ability, enthusiasm and courage possessed by Kenneth Mark Fender, to whom I express my deepest thanks for having made the Oregon list of Tipuloidea what it is today.

The impressive list of 134 species of crane-flies from the Peavine Ridge stations includes more than 40 percent of all species now known from the state and this proportion will probably be maintained, since it seems certain that still further species of these flies remain to be discovered at the established stations. From other not distant localities, as McMinnville and High Heaven, various further species have been taken, some of which will be found to occur on the Ridge. A considerable number of species of Tipuloidea described by the writer were based originally either wholly or in part on Fender's Peavine Ridge materials. These include *Bittacomorphella fenderiana*, *Trichocera hyaloptera*, *Tipula (Lunatipula) diabolica*, *T. (L.) fenderi*, *T. (L.) macnabi*, *Dicranopycha melampygia*, *D. stenophallus*, *Paradelphomyia (Oxyrhiza) deprivata*, *Cladura (Cladura) nigricauda*, *Lipsothrix fenderi*, *Gonomyia (Gonomyia) percomplexa*, *Erioptera (Psiloconopa) irata*, *Ormosia (Ormosia) furibunda*, *O. (O.) pleuracantha*, *O. (O.) upsilon*, *Tasiocera (Dasymolophilus) squirei*, *Molophilus (Molophilus) oregonicolus*, and *M. (M.) suffalcatus*.

CASCADES: MOUNT HOOD

As indicated earlier, in our own collecting very particular attention was devoted to the vicinity of Mount Hood and to Crater Lake National Park. A small group of stations are chosen as being representative of many other comparable ones throughout the Cascades.

The stations in the vicinity of Mount Hood where collecting has been done, mostly in company with Fender, are as follows: Barlow Pass, 4,160 feet; Bear Creek, 1,400; Bear Springs Forest Camp, Wapinitia cutoff, 3,200; Beaver Creek, 1150; Clackamas Lake (Oak Grove Fork of Clackamas River), 3,300; Cloud Cap Inn, 5,985; Eagle Creek Forest Camp, 300; Government Camp, 3,870; Hood River Meadows, 4,480-4,500; Horsethief Meadows, 3,400; Iron Creek, 4,400; Kelly Creek, Wapinitia Cutoff; Polally Forest Camp, 3,000; Robin Hood Forest Camp, 3,560; Sahale Falls, 4,575; Sherwood Forest Camp, 3,100; Still Creek, 3,600-3,800; Tilly Jane Forest Camp, 5,600-5,700; Wapinitia Cutoff. The various waterfalls along the Columbia River, all having an approximate altitude of 100 feet at the base, include Horsetail Falls, Multnomah Falls, Oneonta Gorge and Wahkeena Falls.

Bear Creek (Faubion); elevation 1,400 feet: Throughout the Humid Transition and into the Canadian zone of the Pacific Northwest are found low-lying areas where western skunk cabbage and Oregon alder are dominant. Such areas are of unusual interest as regards their Tipulid fauna and well repay detailed collecting and study. As representative of such areas, the one here indicated is discussed. In the low swampy land adjoining Bear Creek occurs a rank dense growth of western or yellow skunk cabbage, *Lysichitum americanum* St. John, with a sparse open forest cover consisting chiefly of Oregon alder and vine maple, *Acer circinatum* Pursh. Associated herbs include rank growths of ferns, with some hellebore, *Veratrum*, great hedge nettle, *Stachys ciliata* Douglas, and various others. On the more elevated

hummocks and dryer margins of the area grow salal and Oregon grape, with associated herbs, including wood sorrel and *Maianthemum*. Scattered around the swamp margins are a few devils club, *Olopanax horrida* (Smith) Miguel.

Tipulidae in this area are very numerous, as shown by the accompanying list. Those species that are especially characteristic of, though not necessarily restricted to, the habitat are indicated by an asterisk (*). *Ptychoptera sculleni*,* *P. townesi*, *Bittacomorpha occidentalis*, *Diazosma subsinuata*, *Tipula* (*Bellardina*) *aspersa*,* *T. (B.) pacifica*, *T. (Lunatipula) megalabiata*,* *T. (Hesperotipula) streptocera*, *Limonia (Limonia) bistigma*,* *L. (L.) sciophila*,* *L. infuscata*, *L. (Discobola) elegans*,* *L. (Rhipidia) lecontei*, *L. (Dicranomyia) particeps*, *Pedicia (Tricyphona) aperta*, *P. (T.) bicomata*,* *P. (T.) constans*,* *P. (T.) unigera*, *Dicranota (Rhaphidolabis) xanthosoma*, *D. (Plectromyia) cascadia*, *Limnophila (Prionolabis) indistincta*,* *L. (Dendrolimnophila) albomanicata*,* *L. (Phylidorea) euxesta*, *L. (P.) rubida*,* *L. occidentis*, *Ulolomorpha sierricola*, *Ormosia (Ormosia) buceri*,* *O. (O.) decusata*,* *O. (O.) fusiformis*, *Molophilus (Molophilus) perflaveolus*.*

In virtually similar plant associations at higher altitudes, as at Still Creek and Robin Hood Forest Camps, additional species of Tipulidae restricted to these higher levels are found and have been discussed later in the report under the species concerned. Elsewhere in the western skunk cabbage associations throughout the Pacific Northwest, studied in detail by us from western Washington southward into northern California, crane-flies such as *Paradelphomyia (Oxyrhiza) deprivata* and *Ormosia (Ormosia) profunda* were found to be especially characteristic of such habitats.

Hood River Meadows; elevation 4,480-4,500 feet: As representative of the high alpine meadows, the unusually interesting area on the southeast side of Mount Hood, known as the Hood River Meadows, is discussed briefly. A stream of medium size flows through the open meadows that are overgrown with grasses and sedges, together with scattered clumps of shrubby willows. Characteristic herbs in bloom in July and August, at the time of our visits, included hellebore, *Veratrum viride* Ait., abundant green and white species of *Habenaria* orchids, *Caltha leptosepala* DC, *Pedicularis groenlandica surrecta* (Benth.) Piper, *Dodecatheon*, and numerous others. Along the stream and on adjoining dryer banks grow alpine fir, mountain hemlock and some pine. The meadows extend high up onto the slopes of Mount Hood and collections have been made for a distance of nearly one mile or to the Clark Creek crossing.

This is one of the richest areas for Tipulidae in the entire state. In the accompanying list, the asterisk indicates species particularly characteristic of this particular habitat. *Ptychoptera lenis*, *P. sculleni*, *Bittacomorphella fendleriana*,* *Tipula (Yamatotipula) spernax*, *Tipula (Trichotipula) rusticola*,* *T. (Arctotipula) plutonis*,* *T. (Oreomyia) pseudotruncorum*, *Cylindrotoma occidentalis*,* *C. splendens pallescens*, *Limonia (Limonia) bistigma*, *L. (L.) sciophila*,* *L. venusta*, *L. (Dicranomyia) fulva*, *Pedicia (Pedicia) parvicellula*, *P. (Tricyphona) aperta*,* *P. (T.) bicomata*,* *P. (T.) constans*, *P. (T.) cascadiensis*,* *P. (T.) diaphana*, *P. (T.) smithae*, *Dicranota (Polyangaeus) maculata*, *D. (Rhaphidolabis) cayuga*, *D. (R.) integriloba*, *D. (R.) xanthosoma*, *D. (Plectromyia) reducta*,* *Limnophila (Phylidorea) claggi*,* *L. (P.) euxesta*,* *L. (P.) nycteris*,* *L. (P.) olympica*,* *L. (P.) snoqualmiensis*,* *L. occidentis*,* *Ulolomorpha sierricola*,* *Erioptera (Mesocyphona) melanderi*.

ana,* *E. (Symplecta) cana*, *Ormosia (Rhypholophus) hoodiana*, *O. (Ormosia) albertensis*,* *O. (O.) onerosa*,* *Molophilus (Molophilus) falcatus*, *M. (M.) kulshanicus*, *M. (M.) rainierensis*.

Sahale Falls; elevation 4,575 feet: Close to the Hood River Meadows on the southeast side of Mount Hood, on the East Fork of Hood River, the ethereal Sahale Falls has cut a small gorge where some unusually interesting northern Tipulidae have been taken by Fender and the writer. It may be noted that while collecting on the wet cliff faces immediately at the falls, a specimen of the ascaphid frog, *Ascaphus truei* Stejneger, was taken, resting among the soaking herbage. The characteristic crane-flies of the habitat include *Tipula (Yamatotipula) continentalis*,* *Limonia (Dicranomyia) halterata*, *L. (D.) humidicola*,* *Elliptera astigmatica*,* *Pedicia (Tricyphona) smithae*,* *Dicranota (Dicranota) astigma*,* *D. (Rhapidolabis) integriloba*, *Phyllolabis fenderiana*,* *Limnophila (Phylidorea) claggi*, *L. tetonicola*,* *Erioptera (Hesperoconopa) dolichophallus*,* *Ormosia (Rhypholophus) paradisea*,* *O. (O.) onerosa*, *O. (O.) proxima*,* *Molophilus (Molophilus) perflaveolus*,* *M. (M.) suffalcatus*.

CASCADES: SALT CREEK FALLS

Salt Creek is a major tributary of the Middle Fork of the Willamette River on the western slopes of the Cascades. Above McCredie Springs, at an approximate altitude of between 3,800 and 4,000 feet, are the fine Salt Creek Falls, with a drop of 286 feet into the great gorge formed at their foot. Small lateral streamlets, as well as the slopes of the gorge above the main stream, were carefully swept for insects on July 14, 1947, and again on August 7, 1948, the latter in company with Fender. As before, the most characteristic species are indicated by an asterisk. *Bittacomorpha occidentalis*, *Tipula (Bellardina) aspersa*, *T. (Schummelia) subtenuicornis*,* *T. (Yamatotipula) continentalis*,* *Limonia (Limonia) bistigma*,* *L. (Geranomyia) diversa*,* *L. (Dicranomyia) gracilis*,* *L. (D.) halterata*,* *Elliptera astigmatica*,* *Pedicia (Tricyphona) aperta*, *P. (T.) townesiana*,* *P. (T.) unigera*, *Ornithodes harimani*,* *Ula (Ula) paupera*, *Dicranota (Polyangaeus) maculata*, *D. (Rhapidolabis) anthosoma*,* *D. (Plectromyia) reducta*, *Paradelphomyia (Oxyrhiza) pacifica*, *Dactylolabis nitidithorax*,* *Limnophila (Prionolab's) antennata*, *L. (P.) indistincta*,* *L. (P.) vancouverensis*, *L. (Dendrolimnophila) albomaniata*, *Ulomorpha vanduzeei*, *Gonomyia (Gonomyia) percomplexa*, *Ormosia (Ormosia) albrighti*,* *Molophilus (Molophilus) perflaveolus*, *M. (M.) spiculatus*.

CASCADES: CRATER LAKE NATIONAL PARK

The striking physical features of Crater Lake have been detailed in various papers cited in the References, provided later (Anon., 1941, 1942; Applegate, 1939; Atwood, Jr., 1935; Bailey, 1936; Diller, 1902; Williams, 1941; Wynd, 1936, 1941).

The stations in the vicinity of Crater Lake where we have collected are as follows: Annie Springs, 6,000-6,015 feet; Castlecrest Garden, 6,800; Cold Spring Forest Camp, 5,900; Lake Rim, 7,075; Lake Shore, 6,177; Lost Creek,

5,900-6,000; Pole Bridge Creek, 3 miles south of Annie Springs, 5,900; Park Headquarters, 6,500; Vidae Falls, 6,500.

We camped at Crater Lake for short periods on three successive years, August 1-4, 1946; July 11-13, 1947, and August 7-8, 1948, the last in company with Fendler. To show the differences in snowfall over different winters, it may be indicated that in August 1946, the trail to the lake shore was blocked by snow drifts and was impassible on the dates in question. The next year, before mid-July, the trail to the lake was open and we were able to descend to the lake level.

Two areas in the Park were found to be exceptionally rich in Tipulidae and were selected for special study.

Castlecrest Garden; elevation 6,800 feet. A restricted boggy area adjoining the road a short distance below the rim of Crater Lake. The area supports scattered shrubby willows and rather numerous species of herbaceous plants, the following being most conspicuous on the dates when the collections of Tipulidae were made: *Dicentra formosa* (Andr.) DC, *Spiraea densiflora* Nutt., *Viola Macloskeyi* Lloyd, *Pedicularis groenlandica surrecta*, and *Mimulus Lewisii* Pursh. Only a few Tipulidae were found but these were very common, including *Tipula* (*Arctotipula*) *plutonis*,* *Pedicia* (*Tricyphona*) *smithae*,* *Gonomyia* (*Gonomyia*) *bihamata*,* and *Erioptera* (*Mesocyphona*) *melanderiana*.*

Pole Creek Meadows; elevation 5,900 feet: An open hillside sloping gradually down to Pole Creek, with numerous cold springs forming small ramifying rills that flow into the main stream, the whole forming an extensive boggy meadow. Great beds of an aquatic or semi-aquatic moss carpet the ground, interspersed with a further rank growth of herbs of many species, including *Equisetum arvense* L., *Habenaria dilatata* (Pursh) Hook., *Polygonum bistortoides* Pursh, *Ranunculus Gormani* Greene, *Aconitum columbianum* Nutt., *Dodecatheon alpinum* Greene, *Mimulus guttatus* DC, and *Senecio triangularis* Hook. The tree growth on the surrounding higher land includes mountain hemlock, *Tsuga Mertensiana*, shasta fir, *Abies magnifica shastensis* Lemmon, and lodgepole pine, *Pinus contorta Murrayana* (Balf.) Engelm.

Considering the relatively small number of species of crane-flies so far discovered at Crater Lake, the following list of species found on the meadows is surprisingly large. These include *Bittacomorpha occidentalis*,* *Diazosma subsinuata*, *Tipula* (*Yamatotipula*) *continentalis*, T. (*Arctotipula*) *plutonis*,* *Pedicia* (*Pedicia*) *parvicellula*, var.,* *P. (P.) magnifica*, *P. (Tricyphona)* *aperta*,* *Dicranota* (*Plectromyia*) *reducta*,* *Limnophila* (*Elaeophila*) *aldrichi*, L. (*Phylidorea*) *claggi*, L. *occidens*,* *Gonomyia* (*Idiocera*) *shannoni* G. (*Gonomyia*) *bihamata*, *Erioptera* (*Mesocyphona*) *melanderiana*,* *E. (Psiloonopa)* *rainieria*,* *Molophilus* (*Molophilus*) *colonus*,* and *M. (M.) rainierensis*.*

It may be noted that specimens of the *Pedicia parvicellula* were found that had evidently just emerged from the saturated mosses. The noon-day temperature of the water at this time, August 3, 1946, was 40° Fahr.

BLUE MOUNTAINS

Collections of Tipuloidea have been made at various places in these mountains, chiefly by Messrs. Baker, Davis, Lane, Scullen, Sperry, and the writer.

The chief localities where these flies were taken are as follows: Anthony Lake, 7,000 feet; Granite, 4,690; Langdon Lake (Tollgate P.O.), 4,970; Lime, 2,225; Little Phillips Creek (Elgin, 2,665, to Langdon Lake, 5,000); Mosquito Creek, Whitney; Pine Creek, 4,500; Spring Creek, 3,900; Upper Walla Walla River, 1,450.

Spring Creek, Whitman National Forest; 14 miles northwest of Baker; elevation 3,900 feet. A beautiful mountain stream flowing from off the slopes of the Elkhorn Ridge, crossing the 40 acre estate of Mr. and Mrs. James H. Baker. Smaller lateral streamlets and boggy spots along the creek provide ideal haunts for Tipulidae. We stayed at the Baker cabin and collected here between June 24 and 28, 1948, and further series of these flies were taken throughout the seasons of 1948 and 1949 by the Bakers, to whom my most sincere thanks are extended for this co-operation. As a result of this, our knowledge of the crane-fly fauna of this section of the Blue Mountains may be considered as being satisfactory.

THE WALLOWA MOUNTAINS

The physical features of this most attractive mountain range have been indicated earlier. The chief localities where crane-flies have been taken include the following: Chief Joseph Mountain, 4,500 feet; Enterprise, 3,750; French Camp, Lostine Valley, 5,500; Lazy T. Ranch, Chief Joseph Mountain, 4,500; Johnson Park, Wallowa River, 2,750; Lostine, 3,360; Lostine Valley, 4,500-5,600; Wallowa Creek, 4,675; Wallowa Lake, 4,410.

Collections of crane-flies were made by us along the inlet of Wallowa Lake in late June 1948. Most of these specimens were taken near the spring of the Pacific Power and Light Company at the Wallowa Falls Generating Station, and along the trail to Ice Lake in the Eagle Cap Wilderness Area, Wallowa National Forest. From June 30 to July 2, and again between August 18 and 20, 1948, we camped in the beautiful Lostine Valley (Lake Creek and French Camps). Between July 1 and September 10, 1949, John and Grace Sperry were in the Wallowas, for virtually all of this time being stationed at the Lazy T Ranch, on Chief Joseph Mountain, near Enterprise. A serious accident after mid-July prevented John Sperry from collecting for the next several weeks but during this period of convalescence, Grace continued the collecting of insects, including Tipulidae. The total collections of the Sperrys have added some fine records to the state list and I am most grateful to them for this continued co-operation in our studies of Western American Tipulidae. On June 28, 1948, Lane, Baker and the writer collected along the trail to Ice Lake and the vicinity of Wallowa Lake, while on July 26, 1949, Baker and Lane collected along the trail to Aneroid Lake to an altitude of more than 7,000 feet. The first crane-flies taken in the Wallowas appear to be those collected by Scullen at Aneroid Lake in July 1926 (as recorded under *Prionocera oregonica*).

Collectors and Localities.—A summary of the known collectors of Tipuloidea in Oregon is provided herewith. Throughout the text, specimens taken by Fender are indicated by the letter "F"; those collected by Mrs. Alexander and the writer by the letter "A". The asterisk indicates the more important collectors.

Aitken, Thomas H. G.	*Fender, Kenneth Mark	Miller, Leo
Albright, Kenneth	Ferguson, George	Morrison, Herbert K.
Albright, Ray	Frewing, D. K.	Mote, Don C.
Aldrich, John M.	Gardner, R.	Motley, Lee
*Alexander Charles P.	Gentner, L. A.	Osborn, Muriel
*Alexander, Mabel M.	Gillespie, D. G.	*Post, Richard L.
*Baker, James H.	Glover, Frederick	Rieder, R. E.
Barber, Don	Gray, K.	Roaf, James
Bell, John W.	Hammond, D.	Ross, Marshall
Bock, J. F.	Hach, D. W.	Sargent, M. J.
Bohart, George	Hill, Laura	Schuh, J.
Bowerman, Harold	James, Maurice T.	*Scullen, Herman A.
Bruce, R. F.	Kimmey, F. E.	Shattuck, Velma T.
Burrill, Alfred C.	Kincaid, Trevor	Shaw, Frank R.
Chamberlin, Willard J.	Knowlton, George F.	Shelford, Victor E.
*Childs, Leroy	Lanchester, H. P.	Shotwell, A.
*Cole, Frank R.	Lane, Merton C.	Sipe, E. P.
*Davis, John E.	Larson, N. P.	*Sperry, Grace H.
Dice, Lee R.	Lovett, A. L.	*Sperry, John L.
Dimmick, R. E.	Macnab, James A.	Taylor, D.
*Dirks-Edmunds, Jane C.	Malkin, Borys	Thorne, Harry W.
*Dyar, Harrison G.	Maris, Zelna	*Townes, Henry K.
Epper, F.	May, Irene I.	Townes, M.
*Fender, Dorothy McKey	Melander, Axel L.	Wilcox, J.

The various stations and localities where crane-flies have been collected in Oregon are listed, together with their county and approximate altitude, where this is known. Many of the altitudes have been taken from the American Guide Series volumes on "Oregon" and "Mount Hood," cited in the References. Certain of the altitudes of places visited by us have been taken or confirmed by altimeter.

Agate Beach, Lincoln Co., 125 ft.	Bear Creek, Siskiyou Nat. For., Josephine Co.
Albany, Linn Co., 215 ft.	Bear Springs Forest Camp, Mt. Hood, Wasco Co., 3,200 ft.
Albright Ranch, Dayton, Yamhill Co., 160 ft.	Beaver Creek, Mt. Hood, Clackamas Co., 1,150 ft.
Alea, Benton Co., 1,245 ft.	Beech Creek Forest Camp, Malheur Nat. For., Grant Co., 4,500 ft.
Amity Hills, Yamhill Co., 500 ft.	Bend, Deschutes Co., 3,550 ft.
Aneroid Lake, Wallowas, Wallowa Co., 7,500 ft.	Big Creek, Coos Co.
Annie Springs, Crater Lake, Klamath Co., 6,000 ft.	Big Meadow, N. Santiam Highway, Linn Co., 3,460 ft.
Antelope Mt., Harney Co., 6,500 ft.	Bly, Klamath Co., 4,355 ft.
Anthony Lake, Blue Mts., Baker Co., 7,000 ft.	Bonneville, Multnomah Co., 50 ft.
Archer's Camp, Creswell, Lane Co., 535 ft.	Boyer, see Saddle Mt., Lincoln Co.
Ashland, Jackson Co., 1,900 ft.	Brookings, Curry Co., 130 ft.
Aurora, Marion Co.	Brook Meadow, sw of The Dalles, Wasco Co.
Austin, Blue Mts., Grant Co., 4,080 ft.	
Baker, Baker Co., 3,440 ft.	Canby, Clackamas Co., 155 ft.
Baker Creek Valley, McMinnville, Yamhill Co.	Cannon Beach, Clatsop Co.
Bald Mt., Yamhill Co.	Carlton, Willamette Valley, Yamhill Co., 225 ft.
Balloon Tree Trail, Blue Mts., Union Co., 5,000 ft.	Cascade Head Expt. For., Siuslaw Nat. For., Tillamook Co.
Barlow Pass, Mt. Hood, Clackamas Co., 4,160 ft.	Cascadia, S. Santiam Highway, Linn Co., 800 ft.
Bear Creek, Mt. Hood, Clackamas Co., 1,400 ft.	Castlecrest Garden, Crater Lake, Klamath

- Co., 6,800 ft.
 Castle Rock, Tillamook Co.
 Cave Junction, Josephine Co., 1,350 ft.
 Charleston, Coos Co.
 Chetco R., Curry Co.
 Chief Joseph Mt., Willows, Willows Co., 4,500 ft.
 Chintimini (Marys Peak), Benton Co., 4,097 ft.
 Chitwood, 270 ft.
 Clackamas Lake, Hood Nat. For., Clackamas Co., 3,300 ft.
 Clear Lake, Hood Nat. For., Wasco Co., 3,300 ft.
 Cloverdale, Tillamook Co., 25 ft.
 Cloud Cap Inn, Mt. Hood, Hood River Co., 5,985 ft.
 Cold Springs For. Camp, Crater Lake, Klamath Co., 5,900 ft.
 Coos Bay, Coos Co., sea-level
 Coquille River, Sitkum, Coos Co.
 Corvallis, Benton Co., 225 ft.
 Crater Lake, Klamath Co., 6,177 ft.
 Creswell, Lane Co., 535 ft.
 Cultus Lake, Deschutes Nat. For., Deschutes Co., 4,670 ft.
- Dayton, Yamhill Co., 160 ft.
 Deer Creek, McMinnville, Yamhill Co.
 Dell Creek, Willamette R., Lane Co.
 Deschutes River Guard Sta., Deschutes Co., 4,635 ft.
 Devils Garden Camp, Century Drive, Deschutes Co.
 Dexter, Lane Co., 990 ft.
 Dixie, Grant Co.
 Dutchflat Trail, Anthony Lake, Baker Co., 7,100-7,850 ft.
 Dutchman's Flat, Century Drive, Deschutes Co., 6,100-6,300 ft.
- Eagle Cap Wilderness Area, Willows, Willows Co., 5,000 ft.
 Eagle Creek Forest Res., Clackamas Co.
 Eagle Creek For. Camp, Multnomah Co., 300 ft.
 Edmunds Ranch, High Heaven, Yamhill Co., 700 ft.
 Eel Creek For. Camp, Coos Co.
 Elgin, Blue Mts., Union Co., 2,665 ft.
 Elk Creek, Siskiyou Nat. For., Josephine Co., 1,600 ft.
 Elk Lake, Century Drive, Deschutes Co., 4,900 ft.
 Elk Lake, Marion Co., 3,850 ft.
 Enterprise, Willows, Willows Co., 3,750 ft.
 Eola Hills, Yamhill Co.
 Eugene, Lane Co., 425 ft.
- Fern Ridge Reservoir, Lane Co.
 Fish Lake, Steens Mts., Harney Co., 7,000 ft.
 Florence, Lane Co., 10 ft.
 Forest Grove, Washington Co., 195 ft.
 Fort Klamath, Klamath Co., 4,185 ft.
 Fremont Nat. For., Klamath-Lake Cos.
 French Glen, Steens Mts., Harney Co.
- Gales Creek, Wilson R., Washington Co.
 Glenada, Lane Co.
 Gold Beach, Curry Co., 70 ft.
 Grand Ronde, Polk Co., 335 ft.
 Granite, Blue Mts., Grant Co., 5,500 ft.
 Grants Pass, Josephine Co., 950 ft.
 Gualdo Falls, Sourgrass Creek, Yamhill Co.
- Happy Valley, McMinnville, Yamhill Co.
 Harris Beach State Park, Curry Co., sea-level.
 Hazel Creek, near Dexter, Lane Co., 990 ft.
 Hemlock, Tillamook Co.
 Henderson Bridge, Yamhill Co.
 High Heaven, Yamhill Co.,
 Hillsboro, Washington Co.
 Hood Craven Cabin, Saddle Mt., Lincoln Co., 3,000 ft.
 Hood River, Hood River Co., 155 ft.
 Hood River Meadows, Mt. Hood, Hood River Co., 4,480-4,500 ft.
 Honeyman (Jessie M.) State Park, Lane Co.
- Horseshoe Lake, Blue Mts., 7,500 ft.
 Horsetail Falls, Multnomah Co., 100 ft.
 Horsethief Meadows, Mt. Hood, Hood River Co., 3,400 ft.
 House Rock For. Camp, S. Santiam, Linn Co., 1,600 ft.
 Huckleberry Mt., Crater Lake, Klamath Co., 6,000 ft.
 Humbug Mt. State Park, Curry Co., sea-level.
 Huntington, Baker Co., 2,110 ft.
 Hurricane Creek, Willows, Willows Co., 5,200-6,000 ft.
- Illinois R., Siskiyou Nat. For., Josephine Co., 950 ft.
 Independence, Polk Co., 170 ft.
 Indian Ford, Deschutes Nat. For., Deschutes Co., 3,240 ft.
- Johnson Park, Willows R., Willows Co., 2,750 ft.
 Jordan Creek, Wilson R. Highway, Tillamook Co.
 Joseph, Willows, Willows Co., 4,400 ft.
 Jungle Creek, Odell Lake, Klamath Co., 4,800 ft.

- Juntura, Malheur Co., 2,955 ft.
- Kelly Creek, Wapinitia Cutoff, Wasco Co., 3,200 ft.
- Lake-o-Woods (Lake of the Woods), Klamath Co.
- Lake Trembley, Chitwood, Linn Co., 270 ft.
- Langdon Lake, Blue Mts., Umatilla Co., 4,970 ft.
- Langlois, Curry Co., 90 ft.
- Lazy Creek, Odell Lake, Klamath Co., 4,800 ft.
- Lazy T Ranch, Wallowas, Wallowa Co., 4,500 ft.
- Lee's Camp, Tillamook Co.
- Lime, Burnt Creek, Baker Co., 2,225 ft.
- Little Antone Creek, Blue Mts., Baker Co.
- Little Deschutes R., Deschutes Nat. For., Klamath Co.
- Little Phillips Creek, Blue Mts., Union Co.
- Lost Creek, Crater Lake, Klamath Co.
- Lostine, Wallowa Co., 3,360 ft.
- Lostine Guard Station, Wallowas, Wallowa Co., 4,700 ft.
- Lost Prairie, Willamette Nat. For., Lane Co., 1,150 ft.
- Malheur National Forest, Grant Co.
- Malone Spring For. Camp, Rogue River Nat. For., Klamath Co., 4,150 ft.
- Marion Creek, Linn Co.
- Marshfield, Coos Co.
- Marys Peak, Coast Range, Benton Co., 4,097 ft.
- Marys River, Benton Co.
- McCredie Springs, Lane Co.
- McMinnville, Yamhill Co., 115 ft.
- Meadow Lake, Carlton, Yamhill Co.
- Medford, Jackson Co., 1,375 ft.
- Merrill Creek, N. Santiam Highway, Linn Co.
- Metolius R., Deschutes Nat. For., Jefferson Co., 2,600-3,000 ft.
- Milton, Blue Mts., Umatilla Co., 1,275 ft.
- Minam, Wallowa Co., 2,700 ft.
- Mosquito Creek, Whitney, Baker Co.
- Mossy Rock Forest Camp, Ochocos, Crook Co., 4,000 ft.
- Mount Angel, Marion Co., 165 ft.
- Mount McLoughlin, Jackson Co., 9,493 ft.
- Mountain Creek, Wheeler Co.
- Muddy Valley, McMinnville, Yamhill Co.
- Multnomah Falls, Columbia R., Multnomah Co., 100 ft.
- Neskowin, Tillamook Co., 17 ft.
- O'Brien, Josephine Co., 1,475 ft.
- Ochoco Forest Camp, Ochocos, Crook Co., 4,000 ft.
- Odell Lake, Klamath Co., 4,760-4,790 ft.
- Oneonta Gorge, Columbia R., Multnomah Co., 100 ft.
- Oregon Caves, Josephine Co.
- Oswego, Clackamas Co.
- Pacific City, Tillamook Co.
- Panther Creek, McMinnville, Yamhill Co.
- Peavine Ridge, Yamhill Co., 210-1,085 ft.
- Pedro Mt., Baker Co., 3,500 ft.
- Pendleton, Umatilla Co., 1,070 ft.
- Peoria Ferry, Benton Co.
- Philomath, Benton Co., 280 ft.
- Pine Creek, Baker Co., 4,500 ft.
- Pistol R., Curry Co.
- Polally For. Camp, Mount Hood, Hood River Co., 3,000 ft.
- Pole Creek Meadows, Crater Lake, Klamath Co., 5,850-5,900 ft.
- Pratum, Marion Co.
- Princess Creek For. Camp, Odell L., Klamath Co., 4,760 ft.
- Prospect, Jackson Co., 2,600 ft.
- Redwood Ranger Station, Cave Junction, Josephine Co.
- Rieth, Umatilla Co.
- River Island For. Camp, Metolius R., Jefferson Co., 3,000 ft.
- Rivers Edge For. Camp, near Westfir, Lane Co., 1,000 ft.
- Roaring River Fish Hatchery, Marion Co.
- Robin Hood For. Camp, Mount Hood, Hood River Co., 3,560 ft.
- Rock Creek, Corvallis, Benton Co.
- Rogue River, Jackson Co.
- Roseburg, Douglas Co., 480 ft.
- Saddle Mt. (Boyer Station), Lincoln Co., 1,400 ft.
- Saddle Mountain State Park, Clatsop Co.
- Sahale Falls, Mount Hood, Hood River Co., 4,575 ft.
- Salem, Polk Co., 170 ft.
- Salmon River, near Boyer, Polk Co.
- Salmon River, Mount Hood, Clackamas Co.
- Sand Lake, Tillamook Co.
- Santiam Pass, Deschutes Co., 4,815 ft.
- Salt Creek Falls, Lane Co., 3,800 ft.
- Schweitzer Creek, near Westfir, Lane Co., 1,000 ft.
- Seaside, Clatsop Co., 16 ft.
- Shady Dell For. Camp, Lane Co.
- Sherwood For. Camp, Mount Hood, Hood River Co., 3,100 ft.
- Shevlin Park, Tumalo Creek, Bend, Deschutes Co., 3,610 ft.
- Silver Creek Falls, Marion Co., 800-1,000 ft.

- Siskiyou Mt., Jackson Co.
 Sitkum, Coquille R., Coos Co.
 Sourgrass Creek, Yamhill Co.
 Sparks Lake, Century Drive, Deschutes Co., 5,450 ft.
 Spencers Butte, Eugene, Lane Co.
 Spring Creek, Blue Mts., Baker Co., 3,900 ft.
 Starr Creek, Malheur Nat. Forest.
 State Line Creek, Josephine Co., 1,700 ft.
 Steens Mountains, Harney Co.
 Still Creek, Mount Hood, Clackamas Co., 3,600-3,800 ft.
 Store Gulch For. Camp, Siskiyou, Josephine Co., 1,190 ft.
 Summit, Benton Co., 650-750 ft.
 Summit Lake, Willamette Pass, Lane Co., 5,120 ft.
 Sunshine Shelter, Three Sisters, Deschutes Co., 6,000 ft.
- Tahkenitch Lake, Reedsport, Douglas Co.
 The Dalles, Wasco Co., 95 ft.
 Three Creek Lake, Three Sisters Area, Deschutes Co.
 Three Rivers, Tillamook Co.
 Tierra del Mar, Tillamook Co., sea-level to 50 ft.
 Tilly Jane For. Camp, Mount Hood, Hood River, 5,600 ft.
 Todd Lake, Century Drive, Deschutes Co., 6,100 ft.
 Tollgate, Langdon Lake, Blue Mts., Umatilla Co., 5,000 ft.
 Tombstone Meadows, S. Santiam Highway, Linn Co.
- Trout Creek For. Camp, Willamette Nat. Forest, Linn Co., 1,245 ft.
 Tumalo Creek, Bend, Deschutes Co., 3,610 ft.
- Vale, Malheur Co.
 Vernonia, Columbia Co.
 Vidae Falls, Crater Lake, Klamath Co., 6,500 ft.
 Viento, Hood River Co., 140 ft.
- Wahkeena Falls, Multnomah Co., 100 ft.
 Wallace Bridge, Polk Co., 200 ft.
 Walla Walla R. (Upper), Blue Mts., Umatilla Co., 1,450 ft.
 Wallowa Creek, Wallowa Co., 4,675 ft.
 Wallowa Lake, Wallowa Co., 4,410 ft.
 Wapanitia Cutoff, Mount Hood, Wasco Co.
 Warner Lakes, Lake Co.
 Westfir, Middle Fork Willamette R., Lane Co., 1,000 ft.
 Wheeler, Tillamook Co., 50 ft.
 Whitney, Blue Mts., Baker Co.
 Wildhorse Prairie Lookout, Curry Co.
 Wildwood For. Camp, Ochocos, Crook Co., 4,500 ft.
 Willis Creek, N. Santiam Highway, Linn Co.
 Willowdale, Marion Co., 240 ft.
 Wilson River, Tillamook Co.
 Wood Hop Yard, Willamette R., Yamhill Co.
- Yachats, Lincoln Co., 15 ft.
 Zena, Eola Hills, Yamhill Co.

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The parts of three summers that Mrs. Alexander and I have spent in Oregon have yielded several thousand specimens of crane-flies. The outstanding series of these flies taken at all seasons and over a period of many years by Mr. Kenneth Mark Fender has proved even more important and has added numerous species to the Oregon list. An expression of deepest thanks and appreciation to Mr. Fender seems most inadequate when weighed against the amount of time and labor that he has devoted to the collecting of these flies. Further acknowledgements are made to all other collectors but particularly to those in the preceding list whose names are preceded by an asterisk. Special thanks are extended to Messrs. James H. Baker, Frank R. Cole, John E. Davis, James A. Macnab, Herman A. Scullen, and John L. Sperry, and to Mrs. Grace H. Sperry. I have been privileged to study the collections of the Oregon State Agricultural College, Corvallis, through the kind interest of Professors Don C. Mote and Herman A. Scullen, and of the United States National Museum, through the late Dr. John M. Aldrich and Dr. Alan Stone. And very especially do I express my continued thanks and appreciation to Mrs. Alexander, camp-mate and loyal helper in my studies on the crane-flies.

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Systematic Account

TANYDERIDAE

Protanyderus margarita Alexander, 1948.—Blue Mts.: Upper Walla Walla River, above Milton, 1,275 ft., July 4, 1948 (A); a single specimen swept from vegetation along river. A characteristic Rocky Mountain and Great Basin species.

Protanyderus vipio (Osten Sacken, 1877).—Willamette Valley: Dayton, on gravel bar in Willamette River, April 17, 1949 (*Dorothy McKey-Fender*); South Fork of Marys River, April 25, 1940 (*Fred Glover*); an alcoholic female in Oregon State Agricultural College Collection. Known hitherto only from coastal section of California.

PTYCHOPTERIDAE

Ptychoptera lenis lenis Osten Sacken, 1877.—Coast: Deer Creek, May 6, 1945 (F); Pacific City, May 23, 1948 (F). Willamette Valley: Peavine, Sta. 1, May 2, 1946 (F). Aurora, June 20, 1925 (*Melander*); Dayton, Willamette River, April 24, 1949 (F); Summit, 650 ft., June 8, 1929 (*Scullen*). Southern Oregon: Ashland-Lake of the Woods, June 12, 1945 (F). Cascades: Hood River, June 5 (*Cole*); Mount Hood-Hood River Meadows, 4,480 ft., July 31, 1948 (F), small, approaching the race *coloradensis*; Still Creek, 3,600 ft., July 17, 1947 (A & F).

Ptychoptera lenis coloradensis Alexander, 1937.—Blue Mts.: Spring Creek, 3,900 ft., May 23, 1949 (*Baker*).

Ptychoptera pendula Alexander, 1937.—Blue Mts.: Mosquito Creek, Whitney, June 19, 1949 (*Ilah Baker*). A characteristic Rocky Mountain species.

Ptychoptera sculleni Alexander, 1943.—Coast: Alsea Mt., May 23, 1931 (*Scullen*), types; Bald Mt., July 19, 1942 (F); High Heaven, August 6, 1946 (A & F); Jessie M. Honeyman State Park, August 12, 1948 (F); Salmon River, near Boyer, August 12, 1948 (F). Willamette Valley: Peavine, Sta. 3, July 1, 1947, July 2, 1949; Sta. 3A, September 10-24, 1945, September 13, 1948 (F), Silver Creek Falls, August 2, 1948 (F). Southern Oregon: State Line Creek, 1,700 ft., August 9, 1948 (A & F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (A & F); Bear Springs, 3,200 ft., August 8, 1946 (F); Hood River Meadows, 4,480 ft., July 31, 1948 (A & F); Horsethief Meadows, 3,400 ft., July 18, 1947 (F); Still Creek, 3,600 ft., July 17, 1947, July 31, 1948, (F). Cascadia, August 11, 1924 (*Scullen*), types; Big Meadows, August 3, 1948 (A); Lost Prairie, August 3, 1948 (F); Tombstone Meadows, August 17, 1947 (F & *Albright*); Metolius River, August 3, 1948 (A & F).

Ptychoptera townesi Alexander, 1943.—Coast: Gunaldo Falls, June 30, 1949 (F); High Heaven, June 22, 1945, August 6, 1946, May 4, 1947, July 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, June 4-11, 1946, May 1-22, 1947; Sta. 3, May 14-20, 1947, May 11, 1948 (F), Happy Valley, May 12, 1946 (F); Silver Creek Falls, July 8, 1949 (F & *Davis*). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (F); Beaver Creek, 1,150 ft., July 16, 1947 (A & F); Still Creek, 3,600 ft., July 17, 1947 (A & F). Hazel Creek, Willamette River, 990 ft., July 15, 1947 (A).

Bitacomorphella fenderiana Alexander, 1947.—Willamette Valley: Peavine, Sta. 1, May 24, 1947; Sta. 3A, May 15, 1946, type; May 5-26, 1945, August 22, September 17, 1946, type material; May 5-19, 1947, May 12-24, September 9-13, 1948, July 9, 1946; Sta. 3, August 22, 1946, June 29, 1948 (F). Albrights, Dayton, September 19, 1946 (F), type material. Cascades: Mount Hood-Bear Springs, 3,200 ft., August 8-9, 1946 (A & F); Hood River Meadows, 4,480 ft., July 31, 1948 (A & F); Horsethief

Meadows, 3,400 ft., July 18, 1947 (A); Robin Hood Camp, 3,560 ft., July 18, 1947 (F); stream below timberline, 5,000 ft., August, 7, 1946 (A); Wapinitia cutoff, August 7, 1946 (F).

Bittacomorphella sackeni (Röder, 1890).—Coast: Alsea Mt., May 26, 1934 (Scullen). Willamette Valley: Peavine, Sta. 3, August 22, 1946, July 2, 1949; Sta. 3A, May 26-June 5, 1945, May 15-June, October 12, 1946, May 5, 1947, June 8, 1948 (F). Albrights, Dayton, September 19, 1946 (F). Cascades: Mount Hood—At 3,000 ft., July 29, 1921 (Melander). Cascadia, August 12, 1924 (Scullen); Hazel Creek, 990 ft., July 15, 1947 (A).

Bittacomorpha occidentalis Aldrich, 1895.—Coast: Saddle Mt. (Boyer), September 1, 1937 (Macnab). Cascades: Mount Hood-Bear Creek, 1,400 ft., July 16, 1947 (A); Horsethief Meadows, 3,400 ft., August 9, 1946, July 18, 1947 (A & F). Hood River, June 3, 1917 (Cole); Cascadia, August 12, 1924, June 30, 1939 (Scullen); Salt Creek Falls, July 14, 1947 (A); Metolius River, August 3, 1948 (A & F). Crater Lake-Pole Creek Meadows, 5,900 ft., August 3, 1946 (A).

ANISOPODIDAE

Anisopus alternatus (Say, 1823).—Willamette Valley: Corvallis, May 25; Albany, May 2; Forest Grove, April 20 (Cole).

TRICHO CERIDAE

(There has been much confusion in the use of family names in Biology where the type genus of the family terminates in forms such as *-cera*, *-cerus*, *-ceros*, and the like. Thus certain authors use the name Trichoceridae for the present group, while others use Trichoceratidae. The case was submitted to Dr. L. W. Grensted, of Oxford University, distinguished Greek scholar and entomologist, for his opinion, which has now been published in *Entomologist's Monthly Magazine* 84; 280-281; 1948. From this it appears that Greek words that have been Latinized, as in the present case, and with the ending *-cera*, should be treated as above, and the correct name for the present group is Trichoceridae).

Diazosma subsinuata (Alexander, 1915).—Coast: Harris Beach State Park, August 11, 1948 (F); Wheeler, July 24, 1949 (F). Cascades: Mount Hood-Bear Creek, August 1, 1948 (F); Beaver Creek, July 16, 1947 (A); Clackamas Lake, 3,300 ft., August 8, 1946 (F); Hood River side at 3,000 ft., July 29, 1921 (Melander); Eagle Creek Forest Reservation, July 1, 1917 (Melander). Metolius River, August 3, 1948 (A & F); Prospect, May 27, 1921 (Dyar). Crater Lake-Annie Springs, 6,000 ft., August 1, 1946; Pole Creek Meadows, 5,900 ft., August 3, 1946 (A). Blue Mts.: Spring Creek, 3,900 ft., June 25, 1948 (A), August 29, 1948 (Baker). Wallows: Lostine Valley, 5,500 ft., August 19, 1948 (A).

Paracladura trichoptera (Osten Sacken, 1877).—Coast: Agate Beach, March 27, 1949 (F); Boyer, May 9, 1949 (F); Castle Rock, March 31, 1949 (F); Gales Creek, September 5, 1948 (F); High Heaven, May 4, 1947 (F); Edmunds Ranch, April 14, 1949 (F); Gunaldo Falls, June 30, 1949 (F); Hemlock, April 5, 1949 (F); Jordan Creek, September 5, 1948 (F); Lake Tahkenitch, August 12, 1948 (F); Sourgrass Creek, May 17, 1948 (F); Tierra del Mar, May 13, 1949 (F); Wallace Bridge, March 14, 1946 (F). Willamette Valley: Peavine, Sta. 1, October 3, 1945, April 15, 1946, May 22, 1947; Sta. 3, November 8, 1945, March 4-April 26, 1946; Sta. 3A, April 17-May 3, October 1-12, 1946, May 5-19, 1947, April 27, August 30, September 13, 1948 (F). Forest Grove, December, January, February (Cole); Silver Creek Falls, May 9, 1948 (F).

Trichocera annulata Meigen, 1818.—Coast: Peavine, without station, October 10, 1945; October 21, 1946 (F). A European species, widespread throughout the World, in cases, at least, through commerce.

Trichocera colei Alexander, 1919.—Coast: Agate Beach, March 27, 1949; Sand Lake, April 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, February 2, 1947; Sta. 3, October 10, November 8, 1945, February 12, March 9, April 4, 1946, March 12, 1947 (F). Forest Grove, November 11, March 20-26 (Cole), types; Hillsboro, April 1 (Cole), types.

Trichocera columbiana Alexander, 1927.—Willamette Valley: Peavine, Sta. 4, March 18, 1947 (F). There are undoubtedly further records of this species among undetermined materials.

Trichocera garretti Alexander, 1927.—Blue Mts.: Spring Creek, 3,900 ft., April 24-May 9, 1949 (Baker).

Trichocera hyaloptera Alexander, 1949.—Coast: Saddle Mt. (Boyer), February 3, 1935 (Dirks-Edmunds). Willamette Valley: Peavine, Sta. 3, March 4, 1946 (F), types. Happy Valley, April 14, 1946 (F).

Trichocera pallens sp. nov.—Generally similar to *gracilis*, differing in the reddish brown coloration of the thorax and the pale wing veins; male hypopygium with the dististyle relatively short, with a small basal hairy tubercle.

♂. Length, about 4.5-5 mm.; wing, 5-5.5 mm.

♀. Length, about 5-5.5 mm.; wing, 4.5-5.5 mm.

Very closely allied to *gracilis* Walker, 1848, now generally believed to be identical with the European *saltator* (Harris, 1782), differing in the characters listed in the diagnosis. Mesonotum reddish brown, the praescutum somewhat darker brown. Pleura more yellowed. Legs brown. Wings grayish subhyaline, the veins darker, slightly more delicate than in *gracilis*. Abdominal tergites brown, the sternites paler. Male hypopygium with the dististyle relatively short, at base on mesal face with a small hairy tubercle. Mesal lobes of basistyle broadly meeting but not fused at the midline; gonapophyses long and slender. In *gracilis*, the coloration of the body is dark brown to brownish black. Male hypopygium with the tubercle of the dististyle longer and more slender.

Holotype, ♂, Saddle Mountain (Boyer), Oregon, September 26, 1936 (J. A. Macnab, No. 64). *Allotopotype*, ♀, November 14, 1936. *Paratopotypes*, several ♂ ♀, September 29-December 30, 1934; October 6-November 24, 1935; September 10-November 30, 1936; January, February, October, November, December, 1937 (Macnab and associates). *Paratype*, ♂, Carlton-Meadowlake Road, Yamhill Co., October 13, 1945 (Fender).

Trichocera setosivena Alexander, 1927.—Coast: Agate Beach, March 27, 1949 (F); Castle Rock, March 31, May 13, 1949 (F); Gales Creek, September 5, 1948 (F); Humboldt Mountain State Park, August 11, 1948 (F); Jessie M. Honeyman State Park, August 12, 1948 (F); Lake Tahkenitch, August 12, 1948 (F); Saddle Mt. (Boyer), December 2, 1933, November 10-December 30, 1934, January 5, 1935, October 25, 1936, February 6, October 30, 1937 (J. A. Macnab and associates); South Fork of Chetco River, March 18, 1940 (Post & Ross). Willamette Valley: Peavine, Sta. 3, May 6, 1945, February 12, March 21, April 26, September 13, 1946, May 7, 1947 (F). Silver Creek Falls, August 1-2, 1948 (A). Cascades: Mount Hood-Salmon River, July 30, 1948 (F); Horsetail Falls, August 9, 1946 (A); Oneonta Gorge, July 19, 1947 (A).

TIPULIDAE

TIPULINAE

Phoroctenia vittata angustipennis (Loew, 1872) (*Malpighia* Enderlein).—Willamette Valley: Peavine, Sta. 1, April 23, May 18, June 21, 1946, May 1-22, 1947, Sta. 2, April 26, May 21, 1947; Sta. 3A, May 29-June 10, 1945; Sta. 4, June 12, 1946 (F). Corvallis, April, May, to October 29 (Lovett); Spencer's Butte, Eugene, April 20, May 25, 1947 (Malkin), reared. Cascades: Mount Hood-Hood River, May 21, 1929 (D. G. Gillespie); Tilly Jane Creek, 5,600 ft., July 18, 1947 (M. M. Alexander).

Lovett (1915) discusses damage to prune trees in Oregon caused by the larvae of this species, the chief damage resulting from rains entering the trees through the larval tunnels.

Holorusia (Holorusia) grandis Bergroth, 1888 (*rubiginosa* Loew, 1863; preoccupied by *rubiginosa* Bigot, 1863).—Willamette Valley: Corvallis, June 10-11, 1922 (Lovett); Eugene, June-July 1946 (Malkin); McMinnville, July 15, 1945 (F), June 25, 1946 (Macnab). Southern Oregon: North slope of Siskiyou Summit, June 9, 1947 (F); Store Gulch Forest Camp, Siskiyou National Forest, 1,190 ft., August 8, 1948 (A & F). Cascades: Mount Hood-Hood River, June (Cole); Still Creek, 3,600 ft., July 17, 1947 (F); Horsetail Falls, August 9, 1946 (A & F). Cascadia, August (Cole); House Rock Forest Camp, S. Santiam, 1,600 ft., August 2, 1948 (Macnab). Blue Mts.: Upper Walla Walla River, near Milton, August 17, 1948 (A).

Prionocera oregonica Alexander, 1943.—Wallowas: Aneroid Lake, 7,500 ft., July 25, 1929 (Scullen); type. In the original description, erroneously indicated as being in the Blue Mountains.

Nephrotoma ferruginea (Fabricius, 1805).—Cascades: Hood River, June 3-15 (Cole); Tumalo Creek, Bend, August 15, 1948 (A). Blue Mts.: Spring Creek, 3,900

ft., June 7, 1949 (*Baker*); *Baker*, 3,400 ft., September 12, 1948 (*Baker*); *Dixie*, May 18, 1949 (*Davis*); *Rieth*, Umatilla River, July 5, 1948 (*A*). Wallowas: *Enterprise*, 3,750 ft., July 28, 1929 (*Scullen*); *Lazy T Ranch*, July 14, 1949 (*Sperry*); *French Camp*, Lostine Valley, 5,300 ft., July 8, 1949 (*Sperry*).

Nephrotoma lugens erythrophrys (*Williston*, 1893).—Blue Mts.: *Anthony Lake*, 7,100 ft., August 9, 1929 (*Scullen*); *Dutchflat Trail*, *Anthony Lake*, 7,100-7,850 ft., August 8, 1929 (*Scullen*); *North Powder River*, 3,800 ft., June 27, 1928 (*A*); *Spring Creek*, 3,900 ft., July 31, 1949 (*Baker*). Wallowas: *Joseph* (*Cole* auct.). *Steen Mts.*: *Fish Lake*, 7,000 ft., June 25, 1922 (*W. J. Chamberlin*).

Nephrotoma occidentalis (*Doane*, 1908).—Coast: *Neskowin*, August 13, 1948 (*James*); *Tillamook*, September 19-21, 1949 (*Davis*).

Tipula (Bellardina) aspersa *Doane*, 1912.—Coast: *Marshfield*, September 14, 1934 (*Melander*); *Neskowin*, August 13-19, 1948 (*James*). *Willamette Valley*: *Peavine*, Sta. 3, September 13, 1946, September 3, 1947, September 11, 1948; Sta. 3A, September 10-18, 1945, September 17-October 1, 1946, September 13, 1948 (*F*). *Albrights*, *Dayton*, September 19, 1946 (*F*). *Cascades*: *Mount Hood-Bear Creek*, 1,400 ft., August 1, 1948 (*F*); *Beaver Creek*, 1,150 ft., August 7, 1946 (*A & F*); below timberline, 5,100 ft., August 7, 1946 (*A & F*). *Metolius River*, August 3, 1948 (*A & F*); *Salt Creek Falls*, 3,800 ft., August 7, 1948 (*A & F*); *Willis Creek*, *N. Santiam*, August 17, 1947 (*F*).

A characteristic late season inhabitant of the alder-skunk cabbage association.

Tipula (Bellardina) gothicana *Alexander*, 1943.—*Willamette Valley*: *Silver Creek Falls*, on wet cliff near falls, 950 ft., August 2, 1948 (*A & F*). *Cascades*: *Mount Hood*, altitude 3,000 ft., July 29, 1921 (*Melander*). *Blue Mts.*: *Spring Creek*, 3,900 ft., June 26, 1948 (*A*); *Pine Creek*, 4,400 ft., June 25, 1948 (*A & Baker*).

Tipula (Bellardina) jepsoni *Alexander*, 1945.—*Wallowas*: *Wallowa Lake*, July 14, 1947 (*Davis*); 2 small males.

***Tipula (Bellardina) josephus* sp. nov.**—Generally similar to *commiscibilis* *Doane*, 1912 (*Alberta*, *Wyoming*, *Colorado*, *Utah*, *New Mexico*), differing conspicuously in the structure of the male hypopygium.

♂. Length, about 20-21 mm.; wing, 20-22 mm.

♀. Length, about 22-25 mm.; wing 19-23 mm.

Praescutum buffy, the dark gray stripes bordered by dark brown, the lateral margins broadly darkened; scutal lobes with the entire centers dark brown; a narrow brown central line on scutellum and mediotergite. Abdomen chiefly light reddish brown, vaguely patterned with darker.

Male hypopygium having the essential characters of *commiscibilis*, that is, with the ninth tergite transverse, the median area broadly membranous, the long narrow lateral lobes provided with dense black setae. Outer dististyle a large scoop-like structure, the whitened outer face with few setae, the concave inner face with abundant long black setae; inner dististyle relatively small and inconspicuous.

In *commiscibilis*.—Ninth tergite with the blackened setae abundant but short. Outer dististyle with a sclerotized basal plate that terminates in a strong spine or hook, directed laterad; outer end of style extended into a short horny point. Inner dististyle a long slender rod, its base dilated and provided with long setae. Aedeagus a simple rod, without a basal projection.

In *josephus*.—Ninth tergite with the blackened setae denser and much longer. Outer dististyle without the sclerotized basal armature. Inner dististyle relatively small and stout, the outer half slightly more narrowed than the base. Aedeagus with a powerful bispinuous lobe at base of lower margin.

Ovipositor of *josephus* with the cerci black, the acute tips paler. In *commiscibilis*, the cerci pale brown, the tips narrowly obtuse.

Holotype, ♂, *Lee Motley Ranch*, *Durkee*, August 28-30, 1940 (*Lee Motley & R. L. Post*); type in *Oregon State Agricultural College*. *Allotopotype*, ♀. *Para-topotypes*, a few ♂ ♀, with the types.

The species is named for *Chief Joseph* the younger, leader of the *Nez Perce* Indian war of 1877. The 1,400 mile retreat of the great chief and his people is one of the outstanding events in American history. *Joseph* died in 1904 and is buried at *Nespelem*, *Washington*, on the *Colville Indian Reservation*.

Tipula (Bellardina) pacifica *Doane*, 1912.—Coast: *Alsea Mt.*, May 23, 1931 (*Scullen*); *Brookings*, July 9, 1925 (*Scullen*); *Gunaldo Falls*, June 6, 1949 (*F*); *Yachats*, May 30, 1949 (*Davis*). *Cascades*: *Mount Hood-Bear Creek*, 1,400 ft., August

1, 1948 (A); North fork of Iron Creek, July 30, 1948 (F); Salmon River, July 30, 1948 (F). Odell Lake, 4,760 ft., August 6, 1948, in spider's web (A).

Tipula (Bellardina) rastriystyla Alexander, 1945.—Coast: Gualdo Falls, Sourgrass Creek, April 27, 1949 (F). Hitherto only from Snoqualmie Falls, Washington.

Tipula (Bellardina) subcinerea Doane, 1901.—Blue Mts.: Spring Creek, 3,900 ft., May 30, 1948, May 8-9, 1949 (Baker). Willows: Willowa Creek, 4,635 ft., June 28, 1948 (M. M. Alexander).

Tipula (Schummelia) subtenuicornis Doane, 1901.—Coast: Gualdo Falls, July 14, 1949 (F). Willamette Valley: McMinnville, July 16, 1933 (Macnab); Silver Creek Falls, July 8, 1949 (F & Davis). Cascades: Mount Hood-Clear Lake, 3,300 ft., August 8, 1946 (F); Horsethief Meadows, 3,400 ft., July 18, 1947 (A); Still Creek, 3,600 ft., July 16-17, 1947, July 31, 1948 (A & F). Big Meadows, August 3, 1948 (A & F); N. Santiam Highway, May 30, 1949 (F); Lost Prairie, 3,700 ft., August 3, 1948 (A & F); Metolius Spring, August 4, 1948 (A & F); Odell Lake, 4,760 ft., August 6, 1948, resting on tree trunks (A); Salt Creek Falls, 3,800 ft., July 14, 1947, August 7, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A), June 5-15, 1949 (Baker). Willows: Willowa Lake, 4,410 ft., June 28, 1948 (A).

Tipula (Tipula) carinata Doane, 1901.—Willamette Valley: Corvallis, October 26-November 21 (Cole auct.); McMinnville, October 20, 1942, at light (Macnab), October 15-28, 1945, at light (F).

Tipula (Tipula) spenceriana Alexander, 1943.—Blue Mts.: Spring Creek, 3,900 ft., August 29-September 19, 1948 (Baker); La Grande, September 11, 1948 (Davis).

Tipula (Yamatotipula) cognata Doane, 1901.—Cascades: Odell Lake, Princess Creek Forest Camp, 4,760 ft., August 6, 1948 (A); resting on tree trunks. Lobes of ninth tergite of male hypopygium somewhat longer and more slender than in other material determined as being this species but agreeing in other regards. Willows: Willowa Lake, 4,410 ft., June 29, 1948 (A).

Tipula (Yamatotipula) colteri Alexander, 1943.—Blue Mts.: Spring Creek, 3,900 ft., April 8, 1949 (Baker); Tollgate, Langdon Lake, June 8, 1949 (Baker & Lane).

Tipula (Yamatotipula) continentalis Alexander, 1941.—Coast: Gualdo Falls, Sourgrass Creek, April 27, May 13, 1949 (F); High Heaven, May 4, 1947 (F); Marys Peak, June 1, 1946 (F). Willamette Valley: Silver Creek, 950 ft., August 2, 1948 (A), July 8, 1949 (F). Southern Oregon: Ashland-Lake of the Woods, July 10, 1945 (F). Cascades: Mount Hood-Stream below timberline, 5,000 ft., July 16, 1947 (A); Sahale Falls, 4,575 ft., July 17, 1947 (A & F); Tilly Jane Creek, 5,600 ft., July 30, 1948, ovipositing in wet earth at stream margin (Macnab). Salt Creek Falls, 3,800 ft., July 14, 1947 (M. M. Alexander); Sunshine Shelter, Three Sisters, 6,000 ft., July 12, 1936 (R. E. Rieder). Crater Lake-Pole Creek Meadows, 5,900 ft., August 7, 1948 (A). Willows: Aneroid Lake trail, 7,000 ft., July 26, 1949 (Baker).

Tipula (Yamatotipula) edmundsi Alexander, 1948.—Willamette Valley: Peavine, Sta. 1, April 23, 1946, April 12, 1947 (F). Happy Valley, April 14, 1946 (F). Blue Mts.: Spring Creek, 3,900 ft., April 26-May 9, 1949 (Baker).

Tipula (Yamatotipula) near fulvilineata Doane, 1912 (*graphica* Doane, 1901).—Coast: Wallace Bridge, May 25, 1947 (Davis); a single female, the male sex needed for full identification.

Tipula (Yamatotipula) spernax spernax Osten Sacken, 1877.—Willamette Valley: Peavine, Sta. 2, April 16, 1947; Sta. 3, May 2-14, 1945, May 16, 1946 (F). Corvallis, May 8, 1929 (V. T. Shattuck); April 19, May 5 (Cole auct.); Happy Valley, April 14, 1946 (F); McMinnville, April 18, 1947 (F). Southern Oregon: O'Brien, August 9, 1948 (A & F); Ashland-Lake of the Woods, June 10, 1945 (F). Cascades: Prospect, May 23, 1921 (Dyar). Crater Lake-Huckleberry Mt., 6,000 ft., July 15, 1927 (E. P. Sipe). Blue Mts.: Spring Creek, 3,900 ft., May 9, 1949 (Baker).

Tipula (Yamatotipula) spernax lanei Alexander, 1940.—Cascades: Mount Hood-Hood River Meadows, 4,475 ft., July 31, 1948 (A).

Tipula (Trichotipula) dorsolineata Doane, 1901.—Willows: Enterprise, August 16, 1949 (G. H. Sperry); Lazy T Ranch, 4,500 ft., August 24, 1949 (Muriel Osborn).

Tipula (Trichotipula) macrophallus (Dietz, 1918).—Coast: High Heaven, June 7-22, 1945, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Jessie M. Honeyman State Park, August 12, 1948 (F). Willamette Valley: Peavine, Sta. 1, July 18, 1946; Sta. 3, July 12, 1945, August 13, 1946 (F). Forest Grove, July 8 (Cole); Happy Valley, August 6, 1946 (F); McMinnville, August 1943 (Macnab), July 10-12, 1946, June 30, 1948 (F). Southern Oregon: Store Gulch Forest Camp, Sis-

kiyou National Forest, August 8, 1948 (A & F). Cascades: Mount Hood-Eagle Creek, July 18-19, 1947 (A & F), abundant at lights; Oneonta Gorge, August 9, 1946 (A & F). Bend, August 5-15, 1948 (A); Metolius River, August 3, 1948 (A & F); Indian Ford, 3,240 ft., August 5, 1948 (A & F). Blue Mts.: Spring Creek, 3,900 ft., August 18-29, September 26, 1948 (Baker); Pendleton, July 5, 1948 (A); South fork of Upper Walla Walla River, 1,450 ft., July 4, 1948 (A). Wallowas: Johnson Park, Wallowa River, August 20, 1948 (A).

Tipula (Trichotipula) repulsa Alexander, 1943.—Coast: Gales Creek, Wilson River, September 5, 1948 (F). Willamette Valley: Peavine, Sta. 3A, September 9, 1948 (F).

Tipula (Trichotipula) rusticola Doane, 1912.—Coast: High Heaven, August 6, 1946 (A & F). Cascades: Mount Hood-Hood River side, at 3,000 ft., July 29, 1921 (Melander); Hood River Meadows, 4,500 ft., July 31, 1948 (F). Trout Creek Forest Camp, 1,245 ft., August 2, 1948 (F).

***Tipula (Arctotipula) bakeriana* sp. nov.**—Size large (wing over 18 mm.); mesonotal praescutum with the ground color yellow, gray on the sides, with four conspicuous brownish black stripes, the intermediate pair separated by a capillary ground line; setae of notum small and inconspicuous; pleura and pleurotergite gray, the dorsopleural membrane orange-yellow; legs with tips of femora and tibiae broadly blackened; wings pale yellow, the prearcular and costal fields more saturated; stigma dark brown; certain of the veins seamed with brown, more conspicuous beyond the cord, especially in the outer radial field; veins glabrous; R_s about twice $m-cu$; abdomen brown to reddish brown, the tergites with a nearly continuous dark brown central stripe, the lateral tergal borders paler; male hypopygium with the tergite produced into two slender spines; outer dististyle relatively narrow, more than twice as long as broad; inner dististyle complex, the outer basal lobe a long slender spine.

♂. Length, about 17-18 mm.; wing, 19-20 mm.; antenna about 3 mm.

♀. Length, about 19 mm.; wing, 20 mm.

Frontal prolongation of head gray, narrowly orange on sides at apex; nasus elongate; palpi black. Antennae relatively short, black, scape gray pruinose; flagellar segments short, narrowed outwardly, the basal enlargements scarcely indicated; segments subequal in length to the verticils. Head gray, clearer gray adjoining the eyes; vertex with a narrow black median stripe, slightly widened behind; vertical tubercle very low to scarcely apparent; surface of head with short black setae, more abundant on genae.

Pronotum gray, narrowly darkened medially. Mesonotal praescutum with the ground yellow, gray on the sides, with four conspicuous brownish black stripes, the intermediate pair separated by a capillary ground vitta that does not reach the suture behind; scutum more obscure brownish yellow, each lobe with two dark areas, the more anterior one smaller but more intense; scutellum gray, infuscated medially; postnotum gray; medio-tergite with the central portion vaguely more darkened; setae of mesonotum small and inconspicuous. Pleura and pleurotergite gray, the dorsopleural membrane orange-yellow; pleura nearly glabrous. Halteres with stem obscure yellow, brighter at base, the knob dark brown. Legs with coxae gray pruinose, with long pale setae; trochanters gray; femora brownish yellow basally, with approximately the outer half blackened; tibiae and basitarsi brown, passing into black at tips, remainder of tarsi black; claws (male) weakly toothed. Wings pale yellow, the prearcular and costal fields more saturated; stigma dark brown, more yellowed at proximal end; most veins seamed with darker, more conspicuous beyond the cord, especially in the outer radial field and along veins Cu and $m-cu$; veins brown, paler in the brightened portions, especially the prearcular field. Veins glabrous, even R_{4+5} with scarcely any trichia. Venation: R_s about twice $m-cu$, nearly straight; R_{1+2} entire; m longer than the petiole of cell M_1 ; $m-cu$ at or close to fork of M_{3+4} .

Abdominal tergites brown to reddish brown, the basal segment gray pruinose; a conspicuous dark brown central stripe, not or scarcely interrupted at the posterior borders of segments; lateral tergal borders paler; outer segments, including hypopygium, more extensively darkened; ninth tergite of male hypopygium black, the styli fulvous; sternites chiefly reddish gray, with a broken dark brown central stripe, the areas appearing as elongate triangles that are widened behind. Male hypopygium (Fig. 1) with the ninth tergite, $9t$, relatively small, broadest at near midlength, thence gradually narrowed; posterior border produced into two long slender glabrous spines that are slightly decurved, the emargination between them U-shaped; surface of tergite with abundant dense black setae. Outer dististyle relatively narrow, more than twice as long as broad, obtuse at tip, the surface with scattered black setae. Inner dististyle, id , complex, the main blade or beak broadest,

with a smaller lobule on outer margin; behind the base of this blade with a second more slender rod-like structure that narrows to a point, the outer margin before apex with a spur-like point, the inner margin densely fimbriate; outer basal lobe a long slender spine that narrows gradually to an acute point. Aedeagus black, pale at tip, subtended by small, weakly spatulate gonapophyses, g. Eighth sternite unarmed. Ovipositor with cerci nearly straight, compressed-flattened, the tips obtuse; hypovalvae very short, subtriangular in lateral outline.

Holotype, ♂, Spring Creek, Blue Mountains, 3,900 ft., April 10, 1949 (J. H. Baker). *Allotopotype*, ♀, pinned with type. *Paratopotypes*, 3 ♂♂, with the types; 5 ♂♀, April 24-May 9, 1949 (J. H. Baker).

I take great pleasure in naming this fine species for Mr. James H. Baker, whose cooperation in making known the crane-flies of eastern Oregon has been greatly appreciated. Among the other regional members of the subgenus the fly is most similar to *Tipula* (*Arctotipula*) *semidea* Alexander, differing in all details of structure of the male hypopygium and in other characters.

Tipula (*Arctotipula*) *illustris* Doane, 1901 (*Prionocera fuscipennis* Loew, 1865, pre-

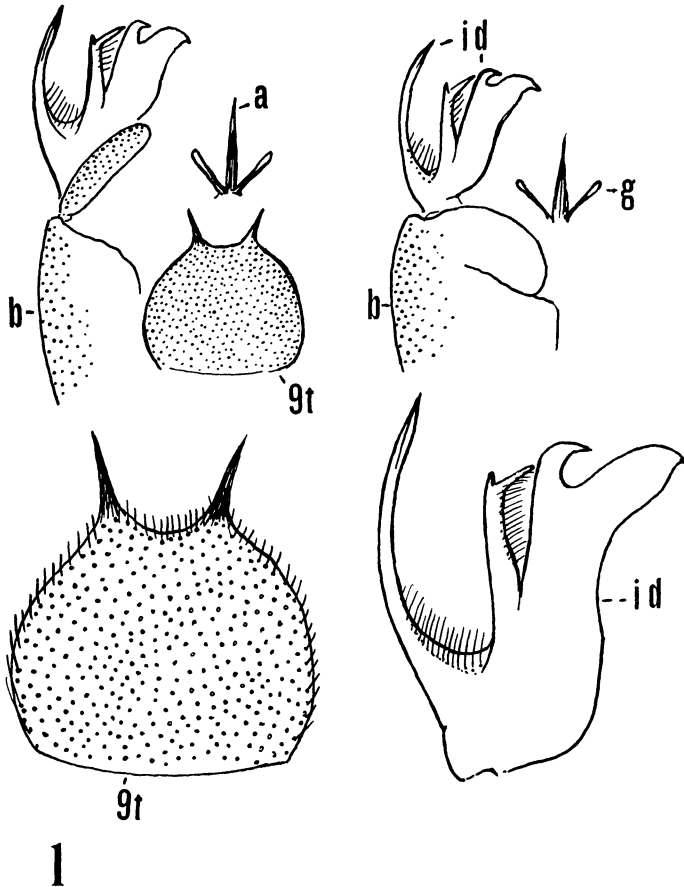


Fig. 1.—*Tipula* (*Arctotipula*) *bakeriana* sp. nov., male hypopygium.

SYMBOLS: a— aedeagus, b— basistyle, d— dististyle, g— gonapophysis, i— interbase, id— inner dististyle, od— outer dististyle, p— phallosome, s— sternite, t— tergite, vd— ventral dististyle.

occupied by *Tipula fuscipennis* Curtis, 1834).—Willamette Valley: Jenkins Lake, March 29, 1939 (F. E. Kimmey). Steens Mts.: French Glen, June 12, 1947 (F).

Tipula (Arctotipula) plutonis Alexander, 1919 (*absaroka* Alexander, 1943).—Southern Oregon: Ashland-Lake of the Woods, June 10, 1945, August 8, 1948 (F). Cascades: Mount Hood-Bear Springs, 3,200 ft., June 15, 1946 (A & F); Hood River Meadows, 4,500 ft., June 12, 1941 (Lane), July 31, 1948 (A & F). Dutchman's Flat, Century Drive, 6,100 ft., August 5, 1948 (A & F); Metolius River, June 15, 1947 (F). Crater Lake-Castlecrest Garden, 6,800 ft., July 12, 1947 (A); Pole Creek Meadows, 5,900 ft., August 3, 1946 (A). Blue Mts.: Anthony Lake, 7,000 ft., June 12, 1939 (Lane & Lanchester), June 27, 1948 (A & Baker); Granite, 5,500 ft., June 21, 1945 (Lane); Langdon Lake, 4,970 ft., July 2-4, 1948 (A), July 17, 1948 (Lane), June 8, 1949 (Baker & Lane); Mottet Ranger Station, June 29, 1939 (Lanchester).

Tipula (Arctotipula) semidea Alexander, 1944.—Willamette Valley: Silver Creek Falls, May 17, 1939 (Scullen); type. The male hypopygium (Fig. 2) is shown. Ninth tergite, 9t, relatively small, depressed; caudal margin with a broad and deep U-shaped

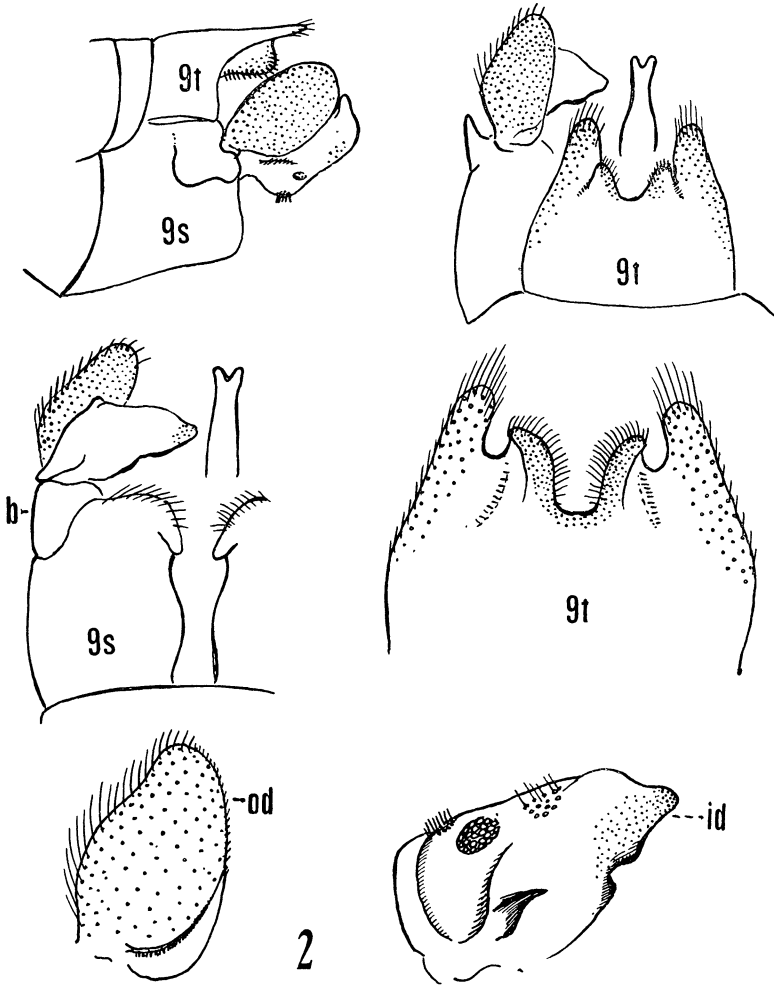


Fig. 2.—*Tipula (Arctotipula) semidea* Alexander, male hypopygium (See fig. 1 for explanation of symbols).

notch, the yellow lateral lobes thin, depressed-flattened, their tips obtusely rounded, provided with conspicuous yellow setae; ventrad of each lateral lobe with a shorter and broader compressed dark-colored blade or lobe, lying more nearly vertically, covered with abundant setae. Outer dististyle, *od*, broadly flattened, its greatest breadth about one-half the length. Inner dististyle, *id*, very simple in structure, with a small blackened tooth at base, the apex of beak obtuse. The hypopygium is shown from lateral, dorsal and ventral aspects.

Tipula (Vestiplex) leucophaea Doane, 1901.—Blue Mts.: Anthony Lake, 7,100-8,650 ft., August 3-4, 1929 (Scullen); Oregon State Agricultural College.

Tipula (Oreomyza) alia Doane, 1911 (*olia* erroneously).—Coast: High Heaven, June 22, 1945 (F); Salmon River, near Boyer, August 12, 1948 (F). Willamette Valley: Peavine, Sta. 1, July 26, 1946; Sta. 3, July 11, 1945, June 26-July 21, 1946 (F). Cascades: Mount Hood-Horsetail Falls, August 9, 1946 (A). Fort Klamath, June 25, 1939 (Aitken).

Tipula (Oreomyza) appendiculata Loew, 1863 (*derelicta* Dietz, 1914; *gaspensis* Alexander, 1929; *stalactoides* Doane, 1901).—Blue Mts.: Spring Creek, 3,900 ft., June 5, 1949 (Baker).

***Tipula (Oreomyza) dorothea* sp. nov.**—Belongs to the *borealis (unca)* group; general coloration of mesonotum light gray, the praescutum with a pair of brown intermediate stripes and \square -shaped lateral ones; scutellum with a median dark vitta; mediotergite with a pair of dark spots on disk; pleura gray, yellowed posteriorly, with a short brown stripe on the dorsal pleurites; antennae (male) elongate, black, the scape and pedicel light yellow; femora and tibiae obscure yellow, the tips narrowly blackened; wings whitish subhyaline, conspicuously patterned with pale brown and darker brown; abdominal tergites with the lateral and caudal margins broadly yellow, the disk with three dark brown stripes; hypopygium chiefly dark brown; ninth tergite with posterior border on either side produced into an unequally bispinous blackened structure; beak of inner dististyle slender, slightly upcurved; dorsal crest with abundant setae, those nearest beak longer; upper process a flattened obtuse blade; lower process a broad pale blade, triangularly dilated at near midlength, thence narrowed and paling into membrane; gonapophysis long and slender, tapering to the very narrow beaklike apex; eighth sternite weakly trilobed, the broad subtruncate median portion with a brush of longer yellow setae.

♂. Length, about 15-16 mm.; wing, 14-16 mm.; antenna about 6.5-7 mm.

♀. Length, about 17 mm.; wing, 17 mm.

Frontal prolongation of head light brown on sides, narrowly light gray above; nasus elongate; palpi with basal two segments dark brown, the remainder paler. Antennae (male) elongate, as shown by the measurements; scape and pedicel light yellow, flagellum black; basal enlargements of segments small, verticils much shorter than the segments. Head light gray, the vertex with three brown spots, the median one linear.

Pronotum gray, with three brown areas. Mesonotal praescutum light gray, with a pair of brown intermediate stripes and \square -shaped lateral lines that enclose darker gray centers; posterior sclerites of notum gray, the scutal lobes each with two brown areas, the more posterior one more circular; scutellum with a median vitta; mediotergite with a pair of dark spots on disk, the posterior border with two further confluent darkened areas; pleurotergite weakly pruinose, the katapleurotergite more infuscated on its margins. Pleura with the mesepisternum gray, the sternopleurite darker ventrally, the metepimeron and metapleura pale yellow; a brown stripe on dorsal pleurites, extending from the cervical region across the propleura and anepisternum to about midwidth of the latter; dorso-pleural membrane pale yellow. Halteres with stem yellow, knob infuscated. Legs with the coxae grayish yellow, more or less darkened basally, trochanters yellow; femora and tibiae obscure yellow, the tips narrowly blackened; tarsi yellowish brown, passing into brownish black; claws (male) toothed. Wings whitish subhyaline on disk, the posterior border pale brown; dark pattern heavy and contrasted, including darker areas at arculus, origin of *R*₅ and stigma, with somewhat paler brown clouds at one-third the length of cell *R*, in outer radial field, and as paired spots on basal half of cell *Cu*, the spots alternating with the white ground areas; veins brown, more brownish yellow in the ground areas. Venation: *m* longer than the petiole of cell *M*₁.

Abdominal tergites conspicuously patterned, the lateral and posterior margins broadly yellow, the disk more brownish yellow with three dark brown stripes, the broad central one conspicuously interrupted at the posterior borders; sternites infuscated medially, paler on sides, the posterior borders yellow; hypopygium chiefly dark brown. Male hypopygium (Fig. 3) with the ninth tergite, *9t*, elongate, its posterior border on either side produced

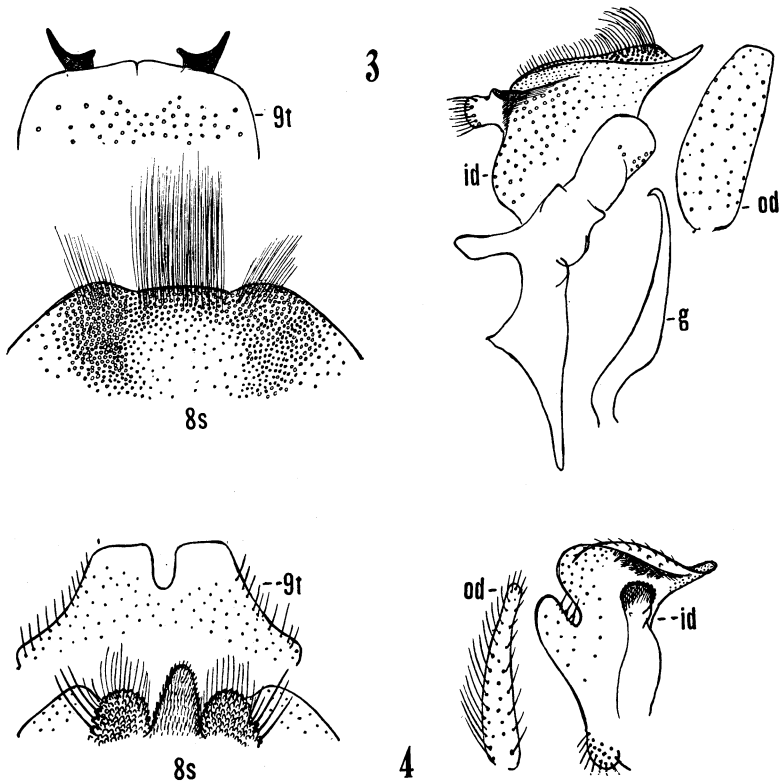
into an unequally bispinous blackened structure. Outer dististyle, *od*, relatively broad, slightly narrowed outwardly, the tip subtruncate. Inner dististyle, *id*, with the beak slender, slightly upcurved; dorsal crest with abundant setae, those nearest beak longer and more bent, the posterior ones shorter but still long and conspicuous; lower process of style a broad blade that gradually widens to beyond midlength where it is more or less triangularly dilated, thence narrowed and paling into hyaline membrane, the membranous portion shorter than the more darkened base; upper process a flattened blade, its apex darkened, obtuse to slightly subacute. Gonapophysis, *g*, long and slender, weakly angulated on basal third, thence very gradually narrowed to the very slender beaklike apex. Eighth sternite, *8s*, with caudal margin weakly trilobed, the wide subtruncated median portion with a brush of long yellow setae, the low lateral lobes with much shorter setae.

Holotype, ♂, Elk Lake, Cascades, 4,900 ft., August 5, 1948 (*Fender*). *Allotopotype*, ♀. *Paratopotype*, 1 ♂; *paratype*, 1 ♂, Dutchman's Flat, Three Sisters Area, 6,100 ft., August 4, 1948 (*Fender*).

This interesting crane-fly is named for Mrs. Kenneth M. Fender (Dorothy McKey-Fender), most capable botanist and student of earthworms, who has collected several of the specimens discussed in this report. The nearest allies are *Tipula (Oreomyza) clathrata* Dietz and *T. (O.) newcomersi* Doane, which differ especially in the structure of the male hypopygia.

Tipula (Oreomyza) fallax Loew, 1863.—Coast: Salmon River, near Boyer, August 12, 1948 (*F*). Willamette Valley: Corvallis, April 18-May 9 (*Cole auct.*).

Tipula (Oreomyza) yellowstonensis Alexander, 1946.—Cascades: Tumalo Creek,



Figs. 3, 4.—Male hypopygia: 3. *Tipula (Oreomyza) dorothea* sp. nov.; 4. *T. (O.) bakeri* sp. nov. (See fig. 1 for explanation of symbols).

Bend, 3,610 ft., August 15, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., August 5, 1949 (Baker). Wallowas: Johnson Park, Wallowa River, 2,750 ft., August 20, 1948 (A).

Tipula (Oreomyza) accurata Alexander, 1927 (*johannus* Alexander, 1945).—Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker). Wallowas: Lazy T Ranch, 4,500 ft., July 15, 1949 (Sperry).

***Tipula (Oreomyza) bakeri* sp. nov.**—Size small (wing, male, about 11 mm.); general coloration gray, the vertex with a central brown line; praescutum with four narrow entire brown stripes; posterior sclerites of notum with a nearly continuous darkening from the suture to the abdomen; pleura clear gray; femora obscure yellow, the tips vaguely more darkened; wings faintly tinged with gray, the centers of the outer radial cells, particularly R_2 and R_3 , more strongly darkened; stigma darker brown; no squamal setae; R_s nearly twice as long as R_{2+3} , R_{1+5} entire; abdominal sternites chiefly brownish black, the tergites and hypopygium yellowed; male hypopygium with the tergite large, entirely pale, its posterior border with a deep and narrow U-shaped notch, the truncated lobes unusually glabrous; basistyle not produced; outer dististyle elongate, with conspicuous setae; eighth sternite only moderately sheathing, the margin with five lobes, the lateral pair low, provided with sparse setae; intermediate pair of lobes appearing as setiferous cushions, with abundant long setae, the outermost four or five longer and stronger; median lobe a tongue-like extension that is densely covered with microscopic setulae.

♂. Length, about 10 mm.; wing, 10-11 mm.; antenna, about 3 mm.

Frontal prolongation of head obscure yellow, nearly as long as remainder of head; nasus long and slender; palpi brown, the terminal segment somewhat darker. Antennae (male) with the long scape yellow; pedicel brown; flagellum brownish black; basal flagellar segment subcylindrical, the succeeding ones with the basal enlargements slightly indicated but the segments only feebly incised; longest verticils a little shorter than the segments. Head light gray, the center of the vertex with a brown line, the sublateral portions of the posterior vertex less distinctly darkened; vertical tubercle very low.

Pronotum gray. Mesonotal praescutum gray, with four narrow entire brown stripes, the intermediate pair narrowly confluent near suture; posterior sclerites of notum light gray, with a nearly entire central darkening extending from the suture to the abdomen; scutal lobes each with two unequal brown areas. Pleura and pleurotergite clear gray; dorsopleural membrane pale yellow. Halteres weakly infuscated, the knob more strongly so. Legs with the coxae light gray; trochanters yellow; femora obscure yellow, the tips very vaguely more darkened; remainder of legs yellow, the terminal tarsal segments dark brown or brownish black; claws (male) toothed. Wings faintly tinged with gray, the centers of the outer radial cells, especially R_2 and R_3 , more strongly darkened; stigma oval, darker brown; veins brown. No stigmal or squamal setae; veins with numerous trichia. Venation: R_s moderately long, nearly twice R_{2+3} ; R_{1+5} preserved, with trichia on more than the proximal half; cell 1st M_2 narrow; cell M_1 deep, its petiole about one-half m ; cell 2nd A moderately broad.

Abdominal tergites yellowish, the more proximal ones weakly darkened medially; sternites chiefly dark brown or brownish black, the lateral borders broadly more yellowed; hypopygium yellow. Male hypopygium (Fig. 4) with the ninth tergite, $9t$, large, entirely pale, gently narrowed outwardly, the posterior border with a deep and narrow U-shaped notch, the much broader lateral lobes truncated at tips, unusually glabrous, especially near the margins. Appendage of ninth sternites, $9s$, a small setiferous lobe. Basistyle not at all produced, as in *alta*, *mandan* and others. Outer dististyle, *od*, elongate, pale, with scattered setae over the entire length, the outermost ones shorter. Inner dististyle, *id*, with the beak blackened, twisted near apex, slender, the lower beak heavily blackened, knoblike, its surface microscopically roughened; outer basal lobe broad, its inner margin with three strong setae from basal tubercles, the most basal one largest. Eighth sternite, $8s$, of distinctive conformation, only moderately sheathing; posterior border with five lobes, the lateral pair relatively short, provided with a few small scattered setae only; inside the lateral pair lie an intermediate set of setiferous cushions, each bearing numerous close-set long pale setae, the outermost four or five much longer and stronger; fifth lobe a median tongue-like appendage that is densely provided with microscopic setulae.

Holotype, ♂, French Forest Camp, Lostine Valley, Wallowas, 5,500 ft., August 19, 1948 (Alexander). *Paratypes*, ♂♂, Tumalo Creek, Bend, 3,160 ft., August 15, 1948 (Alexander); Spring Creek, Blue Mts., 3,900 ft., August 29, 1948, July 31, 1949 (Baker); Austin, 4,000 ft., August 10, 1929 (Scullen); Lazy T Ranch, Wallowas, 4,500

ft., August 30, 1949 (*Sperry*); Wallowa Lake, 4,500 ft., July 25, 1929 (*Scullen*); Antelope Mt., Steen Mts., 6,500 ft., July 6, 1931 (*D. K. Frewing*).

The species is named for Mr. James H. Baker, to whom much of our knowledge of the crane-flies of the Blue Mts. is due. The fly seems to fall in the group of species containing *Tipula* (*Oreomyza*) *mandan* Alexander and *T. (O.) alta* Doane, differing in hypopygial characters and in all details of coloration. It is likewise quite distinct from *T. (O.) accurata* Alexander, and various related forms.

Tipula (*Oreomyza*) *helvociuncta* Doane, 1901.—Cascades: Sisters Area-Three Creek Lake road, below Broken Top Mountain, Todd Lake, 6,000 ft., August 3, 1948 (*Macnab*); near Dutchman's Flat, 6,100 ft., August 5, 1948 (*A & F*).

Tipula (*Oreomyza*) *mandan* Alexander, 1915 (*perexigua* Alexander, 1924).—Blue Mts.: Spring Creek, 3,900 ft., June 24-27, 1948 (*A & Baker*); Whitney, June 19, 1949 (*Baker*).

Tipula (*Oreomyza*) *pseudotruncorum* Alexander, 1920.—Coast: Saddle Mt., (Boyer), June 13, 1936 (*Macnab*). Cascades: Mount Hood-Hood River Meadows, 4,500 ft., July 17, 1947 (*M. M. Alexander*); Tilly Jane Creek, 5,600 ft., July 18, 1947, July 29-30, 1948 (*A & F*); Timberline Lodge, 5,500 ft., August 7, 1946, July 16, 1947 (*F*). Dutchman's Flat, Century Drive, 6,300 ft., August 5, 1948 (*A*). Crater Lake-near Annie Springs, 6,000 ft., August 2, 1946 (*M. M. Alexander*); along Lake trail, 6,300-6,500 ft., July 12, 1947 (*A*). Blue Mts.: Horseshoe Lake, 7,500 ft., July 26, 1929 (*Scullen*).

Tipula (*Oreomyza*) *shoshone* Alexander, 1946.—Coast: Cascade Head Experimental Forest, May 23, 1948 (*F*); Gunaldo Falls, May 13-June 30, 1949 (*F*). Willamette Valley: Peavine, Sta. 1, May 7-29, 1945, May 11, 1946, May 23, 1947; Sta. 2, May 17, 1949; Sta. 4, May 17, 1946 (*F*). Muddy Valley, McMinnville, May 3, 1945 (*F*). Cascades: Mount Hood-Eagle Creek, June 15, 1925 (*Melander*).

Tipula (*Oreomyza*) *tristis* Doane, 1901.—Willamette Valley: Peavine, Sta. 2, April 16, 1947 (*F*). Corvallis, April 26, 1908 (*Laura Hill*); Fern Ridge Dam, April 4, 1947 (*Malkin & Shotwell*); Forest Grove, May 5 (*Cole*); McMinnville, April 13, 1947 (*F*); Philomath, May 13, 1917 (*Enter mille*).

Tipula (*Lunatipula*) *acuta* Doane, 1901.—Willamette Valley: Peavine, Sta. 1, May 1945, May 11, 1946 (*F*). Corvallis May 24, 1908 (*Laura Hill*), April 30, 1913 (*Roberts*), June 25, 1929 (*Scullen*); McMinnville, May 13, 1945 (*F*); Muddy Valley, McMinnville, June 7, 1945 (*F*). Southern Oregon: Cave Junction, 1,350 ft., May 17, 1947 (*Malkin*).

Tipula (*Lunatipula*) *aequalis* Doane, 1901.—Willamette Valley: Forest Grove, July 22 (*Cole*); Salem, May 1-5, 1947, reared, June 7, 1948 (*J. W. Bell*).

Tipula (*Lunatipula*) *albofascia* Doane, 1901 (*biarmata* Doane, 1912).—Willamette Valley: Peavine, Sta. 1, May 18, 1946, May 22, 1947, June 7, 1948 (*F*). Corvallis, May 22, 1898 (*Kincaid*), type. Southern Oregon: Cave Junction, 1,350 ft., August 27, 1948 (*Bowerman*); South slope of Siskiyou Summit, June 8, 1947 (*F*).

Tipula (*Lunatipula*) *armata* Doane, 1901 (*varia* Doane, 1901, ♀).—Coast: High Heaven, June 22, 1945, July 12, 1949 (*F*). Willamette Valley: Peavine, Sta. 1, May 11-24, 1946, Sta. 3, June 8-July 13, 1945, May 24, 1947, June 6, 1949; Sta. 3A, June 11-July 13, 1946 (*F*). Corvallis (*Cole* auct.); Forest Grove, May 17 (*Cole*). Southern Oregon: North slope of Siskiyou Summit, June 9, 1947 (*F*). Cascades: Mount Hood-Bear Springs, 3,200 ft., August 8-9, 1946 (*F*); Kelly Creek, June 22, 1947 (*F*); Metolius River, August 3, 1948 (*A & F*); Prospect, May 28-30, 1921 (*Dyar*).

Tipula (*Lunatipula*) *bisetosa* Doane, 1901.—Blue Mts.: Blue Mt., July 25, 1948 (*Davis*); Spring Creek, 3,900 ft., August 22, 1948, June 30, July 31, 1949 (*Baker*); Pine Creek, 4,000 ft., August 22, 1948 (*Baker*); Pendleton, along Umatilla River, July 5, 1948 (*A*). Wallows: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948, in dense riverside thickets (*A*); Lazy T Ranch, July 15, 1949 (*Sperry*).

Tipula (*Lunatipula*) *calcarata* Doane, 1901.—Cascades: Mount Hood-Timberline Lodge, 5,500 ft., among mountain hemlock, August 7, 1946 (*A & F*). Crater Lake, without exact station, July 29, 1921 (*Dyar*); Mount McLoughlin, June 25, 1939 (*Aitken & Bohart*).

Tipula (*Lunatipula*) *californica* (Doane, 1908).—Willamette Valley: Peavine, without exact station, May 2, 1946 (*F*). Clackamas Co., May 15, 1946 (*J. F. Bock*); Corvallis, 1897; June 2, September 25 (*Cole* auct.); Forest Grove, May 20 (*Cole*); Medford,

May 20, 1921 (*Dyar*). Southern Oregon: North slope of Siskiyou Summit, June 9, 1947 (*F*).

***Tipula (Lunatipula) diabolica* sp. nov.**—Size above medium (wing, ♂, 16-18 mm.); mesonotal praescutum yellowish gray, with four very poorly differentiated brownish yellow stripes that are narrowly bordered by reddish yellow; antennae with basal three segments yellow, remainder of flagellum chiefly black; femora yellow, the tips narrowly brownish black; wings with a weak brown tinge, restrictedly patterned with darker brown; obliterative band at cord conspicuous; abdomen yellow, the median tergal stripe narrow, sublateral stripes obsolete or very narrow; male hypopygium with the tergite tumid or arched, the posterior portion with a feebly sclerotized dorsal margin and a more heavily blackened ventral ledge, the two margins separated by a thickened membranous area; lower tergal ledge with three emarginations separated by two acute teeth; inner dististyle complex, its outer basal lobe bearing several spinous points; eighth sternite sheathing, projecting caudad beyond the ninth sternite, the narrow apex fringed with very long yellow setae.

♂. Length, about 16-17 mm.; wing, 16-18 mm.; antenna, about 5-5.3 mm.

Frontal prolongation of head yellow, sparsely light gray pruinose above; nasus distinct; palpi with basal two or three segments yellowish brown to darker brown, the terminal segment black. Antennae with scape and pedicel light yellow, the first flagellar segment lightly darker yellow; succeeding flagellar segments brownish black, the enlargement black, outer segments more uniformly blackened; flagellar segments moderately incised, the longest verticils subequal to the segments. Head in front yellow, sparsely pruinose, behind dark brown, still darker on the sides of the posterior vertex.

Pronotum obscure yellow. Mesonotal praescutum with the ground light gray or yellowish gray, with four very poorly differentiated brownish yellow stripes that are narrowly and insensibly bordered by reddish yellow, the general effect being brownish yellow; posterior sclerites of notum slightly darker brown, including the midregion of the scutum and the scutellum. Pleura more uniformly yellow, very sparsely pruinose; dorsopleural region light yellow. Halteres brownish yellow, base of stem yellow, knob brownish black.

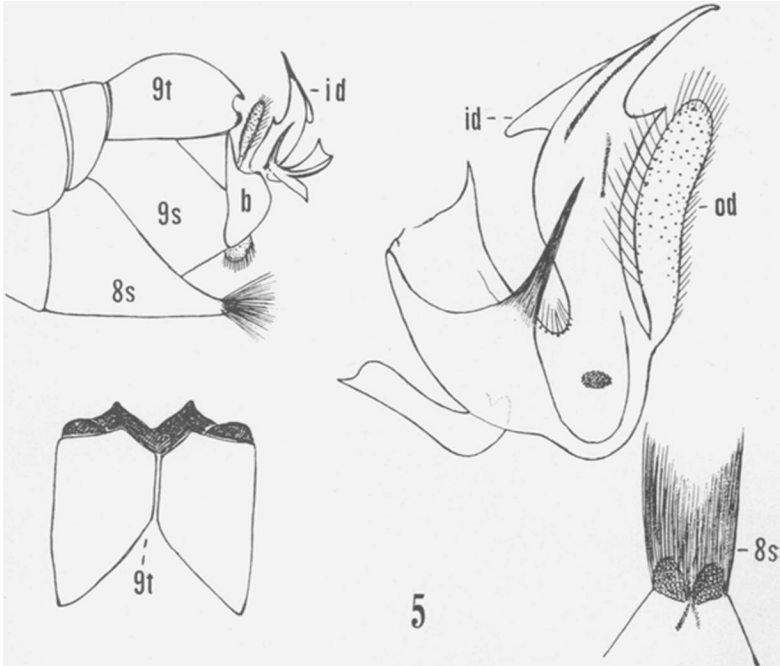


Fig. 5.—*Tipula (Lunatipula) diabolica* sp. nov., male hypopygium (See fig. 1 for explanation of symbols).

Legs with the coxae yellow, very sparsely pruinose; trochanters yellow; femora and tibiae yellow, the tips narrowly dark brown or brownish black, the amount subequal on all legs; basitarsi light brown, the tips and the remainder of tarsi passing into black; claws (male) toothed. Wings with a weak brownish tinge, the prearcular and costal fields deeper yellow or brownish yellow; stigma medium brown; very restricted darker brown spots at origin of R_s , tip of Sc , and over the anterior cord; obliterative band at cord relatively extensive and conspicuous, extending from before the stigma into the proximal end of cell M_3 ; no post-stigmal brightening; veins brown, more brownish yellow in the yellowed fields. Venation: $m-cu$ about one-third R_s ; R_{1+2} entire; m oblique, narrowing cell 1st M_2 at its outer end.

Abdomen obscure yellow, the tergites with a narrow but conspicuous brown dorsal stripe that is very slightly interrupted at the posterior borders of the segments; sublateral dark stripes lacking or very narrow, becoming more clearly defined beyond the second tergite; lateral tergal borders gray; sternites more uniformly yellow; hypopygium relatively large, castaneous. Male hypopygium (Fig. 5) with the ninth tergite, $9t$, entirely separate from the sternite, conspicuously tumid or arched, the mid-dorsal area completely divided by a membranous line or groove; posterior portion with a distinct dorsal edge or margin that is feebly sclerotized and a more blackened, heavily sclerotized ventral ledge, the two edges separated by pale membrane; dorsal margin with a conspicuous U-shaped median notch; ventral ledge with three emarginations, the broad median notch U-shaped, the lateral pair shorter and shallower, separated by acute blackened teeth, the lateral denticles obtuse. Ninth sternite, $9s$, with the appendage small but conspicuously bilobulate, each lobe with long crinkly yellow setae; accessory sclerite of ninth sternite entire and unusually large. Basistyle entire, its posterior suture vertical and almost straight; upper angle of sclerite produced dorsad into a slender fingerlike point; posterior border not produced. Outer dististyle, od , large, extending caudad beyond the apex of the lower beak of the inner style, provided with long setae, certain of those on the outer margin unusually long. Inner dististyle, id , with the beak pale, long and slender; lower beak not blackened, subspinous, separated from the upper one by a U-shaped notch; dorsal crest unusually small and narrow, elevated at a strong angle, pale yellow; outer basal lobe large, complex and spinous, including a flattened scooplike blade that is produced at apex into weak tuberculate points, an inner long slender spine and an outer more flattened blade, the tip of the latter more or less truncate, the lower angle spinous, the upper angle obtusely rounded. Eighth sternite, $8s$, unusually sheathing, the apex jutting some distance beyond the ninth sternite; tip with a shallow V-shaped notch that is fringed with unusually long yellow setae, these more or less fimbriate, their tips unusually delicate and twisted; on either side of this narrow notch with a flattened lobe that bears additional similar setae.

Holotype, ♂, Mount Diablo, Contra Costa Co., California, 3,000 ft., April 28, 1939 (Aitken & Cazier). *Paratopotypes*, 2 ♂♂; *paratypes*, 3 ♂♂, Alum Rock Park, Santa Clara Co., California, May 5, 1939 (Aitken); 2 ♂♂, Livermore, Alameda Co., California, May 1, 1939 (Aitken & Cazier); Peavine Ridge, Oregon, Sta. 1, April 30-May 11, 1946; Sta. 3, May 24, 1947 (Fender).

This interesting fly differs from all other medium-sized yellow species by the structure of the male hypopygium, especially the very peculiar ninth tergite, the equally distinctive inner dististyle, and the eighth sternite. I am unable to indicate any species that I can consider as being closely allied.

Tipula (Lunatipula) diacanthophora Alexander, 1945.—Willamette Valley: Peavine, Sta. 3, July 21, 1946 (F). Hitherto from the Sierra Nevada, California.

Tipula (Lunatipula) dido malheurensis Alexander, 1950.—Blue Mts.: Beech Creek Forest Camp, Malheur National Forest, 4,500 ft., August 16, 1948 (A), types; Spring Creek, 3,900 ft., August 20, 1948 (Baker), types.

Tipula (Lunatipula) dorsimacula dorsimacula Walker, 1848 (*angustipennis* Loew, 1863).—Coast: Three Rivers, May 23, 1948 (F); Deer Creek, McMinnville, May 6, 1945 (F). Willamette Valley: Peavine, Sta. 1, May 6, 1946, April 21, 1947 (F). Corvallis (Cole auct.); Forest Grove, April 20-May 10 (Cole). Blue Mts.: Spring Creek, 3,900 ft., May 2-30, 1948, April 24-May 8, June 5, 1949 (Baker); Whitney, May 30, 1949 (Baker).

Tipula (Lunatipula) dorsimacula shasta Alexander, 1919.—Southern Oregon: Ashland-Lake of the Woods, June 10-11, 1945 (F). Cascades: Prospect, May 22-26, 1921 (Dyar).

Tipula (Lunatipula) fenderi sp. nov.—Size small (wing, male, under 14 mm.);

general coloration buffy gray, the praescutum with four brown stripes, the intermediate pair separated by a slightly wider ground line; wings with a brownish tinge; a conspicuous oblitative band before cord but no post-stigmal brightening; male hypopygium with the basistyle produced into a long glabrous arm, the tip obtusely rounded; inner dististyle with the dorsal crest low, conspicuously ribbed, the margin produced into acute blackened points; outer basal lobe very reduced.

♂. Length, about 12-13 mm.; wing, 12-13.3 mm.; antenna, about 5-5.4 mm.

Frontal prolongation of head obscure yellow, more or less pruinose above; nasus distinct; palpi brown, with pale incisures, the terminal segment blackened. Antennae (male) relatively long, as shown by the measurements; basal three segments yellow, the first flagellar segment a trifle more infuscated; succeeding segments very vaguely bicolored, the basal swellings black, the stem dark brown, the outer segments more uniformly darkened; flagellar segments elongate, moderately incised, the basal swellings small; verticils shorter than the segments. Head gray, more yellowed on anterior vertex.

Pronotum yellow. Mesonotum with the ground buffy gray, the praescutum with four brown stripes, the intermediate pair separated by a ground line of slightly greater width; centers of scutal lobes infuscated; scutellum and postnotum more pruinose. Pleura gray, the ventral portions more infuscated but pruinose; dorsopleural membrane pale. Halteres with stem yellow, knob infuscated. Legs with the coxae and trochanters yellow; femora yellow, the tips narrowly brownish black, the amount subequal on all legs; tibiae obscure yellow, the tips more broadly blackened; tarsi black; claws of male toothed. Wings with a brownish tinge, somewhat stronger on outer portion, the prearcular field and cells *Sc* and *Cu*₁ more yellowed; stigma oval, pale brown; a small pale brown cloud at origin of *Rs*; a conspicuous oblitative band at cord, extending from before the stigma across the proximal half of cell *1st M*₂ into the base of cell *M*₃, with a further inconspicuous seam along vein *M*₄ to the posterior margin; no post-stigmal brightening; veins brown, more yellowed in the brightened portions. Squamal setae about six in number. Venation: *R*₁₊₂ long, entire; *Rs* about three times *m-cu*; petiole of cell *M*₁ longer than *m*.

Abdomen obscure yellow, the apex of tergites two and three weakly darkened; small lateral darkenings at near midlength of tergite two and subbasal on tergites three and four; hypopygium concolorous with the remainder of abdomen. Male hypopygium (Fig. 6) with the ninth tergite, *9t*, simple, the caudal margin with a broad V-shaped notch, the lateral lobes relatively narrow; setulae of margin exceedingly small and delicate. Ninth

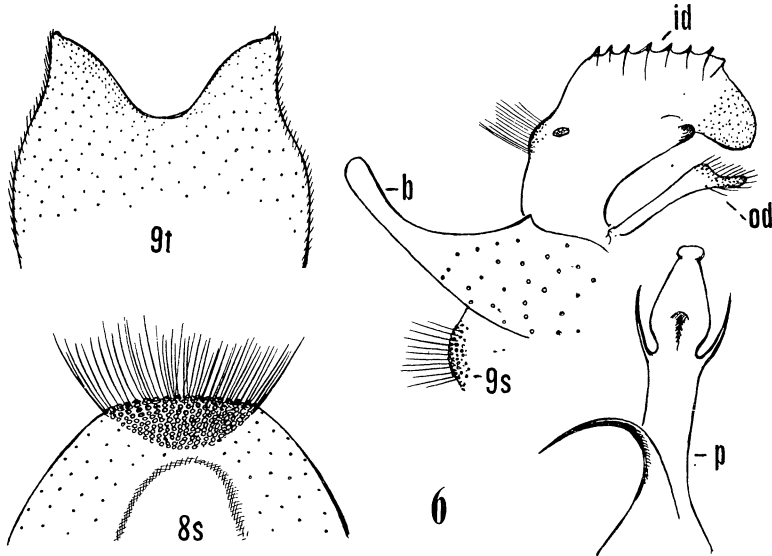


Fig. 6.—*Tipula (Lunatipula) fenderi* sp. nov., male hypopygium (See fig. 1 for explanation of symbols).

sternite, *9s*, with the appendage very small, darkened, provided with elongate setae. Basistyle, *b*, with the suture indicated on its ventral portion; outer end of style produced caudad into a long glabrous arm, the tip obtusely rounded; basal part of arm with conspicuous setae. Outer dististyle, *od*, with the outer half irregularly produced, darkened. Inner dististyle, *id*, with the beak deep, its apex obtusely rounded; lower beak very small, blackened; outer basal lobe exceedingly reduced, represented by a low tubercle that bears a brush of elongate setae; dorsal crest low but conspicuous by about eight flutings that are produced at margin into small blackened spines or points that give a serrate appearance to the style. Phallosome, *p*, consisting of a central depressed-flattened organ, beyond midlength with a subtending spine on either side; at base of organ with a strong sickle-shaped rod or spine. Eighth sternite, *8s*, broad, moderately sheathing, its caudal margin virtually transverse, with a broad low cushion that is densely provided with long yellow setae.

Holotype, ♂, Peavine Ridge, Coast Range, Sta. 3A, June 19, 1946 (*K. M. Fender*).
Paratopotype, ♂, with the type.

I take unusual pleasure in naming this distinct fly for Mr. Kenneth Mark Fender, to whom much of the success of the present list is due. There are rather numerous regional species of the subgenus that have the basistyle of the male hypopygium more or less produced into a lobe or spine. Among such species, the present fly is perhaps most similar to *Tipula* (*Lunatipula*) *saxemontana* Alexander, especially in the nature of the basistyle. In some other details of structure of the hypopygium it more suggests species such as *T. (L.) atrisumma* Doane, but is amply distinct from all previously defined species.

Tipula (*Lunatipula*) *impudica* Doane, 1901.—Eastern Oregon: Juntura, May 26, 1948 (*Davis*).

Tipula (*Lunatipula*) *lamellata* Doane, 1901 (*rangiferina* Alexander, 1915).—Cascades: Mount Hood-Hood River side, 3,000 ft., July 29, 1921 (*Melander*). Metolius River, August 3, 1948 (*A & F*); Tumalo Creek, 3,610 ft., August 14, 1948 (*A*). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, August 20, 1948 (*A & Baker*), July 31-August 5, 1949 (*Baker*). Wallawas: Lostine, 3,375 ft., July 2, 1948 (*A*); Lazy T Ranch, 4,500 ft., July 4-8, August 25, September 9, 1949 (*Sperry*).

Tipula (*Lunatipula*) *leechi* Alexander, 1938.—Coast: Saddle Mt. (*Boyer*), June 24,

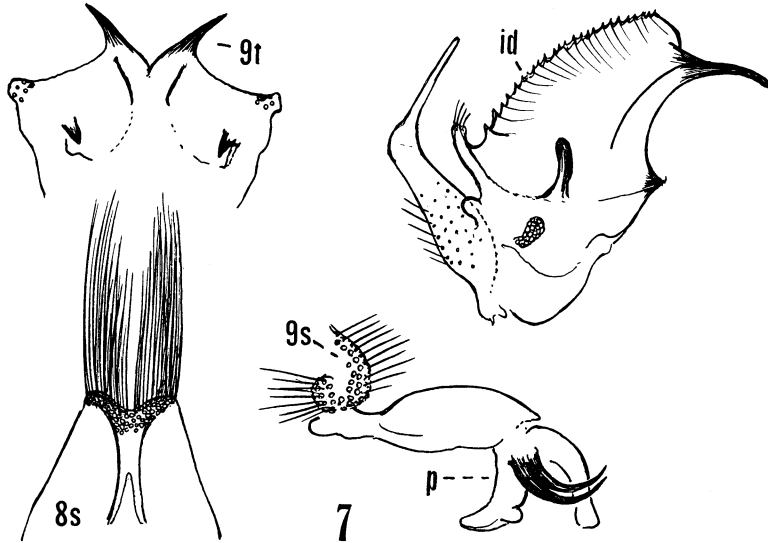


Fig. 7.—*Tipula* (*Lunatipula*) *macnabi* Alexander, male hypopygium (See fig. 1 for explanation of symbols).

1938 (*Macnab*). Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., August 8, 1946 (A); Robin Hood Forest Camp, 3,560 ft., August 8, 1946 (F).

Tipula (Lunatipula) lucida Doane, 1901.—Willamette Valley: McMinnville, May 7, 1944 (D. & K. Fender). Cascades: Mount Hood-Hood Rapids, July 29, 1921 (*Melander*). Indian Ford, 3,240 ft., August 5, 1948 (A); Metolius River, August 3, 1948 (A & F). Ochocos: Wildwood Forest Camp, 4,500 ft., August 15, 1948 (A); flying in some numbers about the trunks of trees, especially Ponderosa Pine, Douglas Fir, and Western Larch. Blue Mts.: Spring Creek, 3,900 ft., July 25-August 22, 1948 (Baker); Beech Creek Forest Camp, Malheur National Forest, August 16, 1948 (A).

Tipula (Lunatipula) macnabi Alexander, 1939.—Coast: Saddle Mt. (Boyer), June 21, 1932, July 28-August 1, 1935, July 30, 1936, April 15, September 25, 1937 (*Macnab and associates*); types. Willamette Valley: Peavine, Sta. 3, July 21, 1946, May 20-30, 1947 (F). Male hypopygium (Fig. 7) with the posterior margin of tergite, $9t$, produced into two divergent black horns or spines; lower face of tergal plate with a small blackened tooth and a low blackened flange near the marginal spines. Limits of outer dististyle difficult to determine in available slides but apparently expanded into a head at outer end. Inner dististyle, *id*, with the beak long and slender; lower beak appearing as a small triangular point that is far removed from the beak. From the extreme base of the inner style or apex of the basistyle arises an elongate arm that terminates in a narrow rod or spine, in cases, this structure even broader on its basal portion than shown. Eighth sternite, δ_8 , strongly narrowed and sheathing, the gently emarginate apex with two brushes of long yellow setae.

I believe that the nearest relatives of this isolated fly are *Tipula (Lunatipula) modoc* Alexander and *T. (L.) perfidiosa* Alexander.

Tipula (Lunatipula) macrolabis Loew, 1864 (*spectabilis* Doane, 1901).—Blue Mts.: Spring Creek, 3,900 ft., June 25, 1948 (A), June 30, 1949 (Baker). Wallows: Above the Lazy T Ranch, 5,000 ft., July 6-9, 1949 (*Sperry*).

Tipula (Lunatipula) megalabata Alexander, 1915.—Cascades: Mount Hood-Bear Creek, 1,400 ft., July 16, 1947 (A); Hood River side, 3,000 ft., July 29, 1921 (*Melander*); Cloudcap Inn Junction, August 9, 1946 (A & F); Polally Forest Camp, 3,000 ft., August 9, 1946 (A); Robin Hood Forest Camp, 3,560 ft., August 8, 1946 (A & F); Still Creek, 3,600 ft., July 31, 1948 (A & F). Metolius River, August 3-4, 1948 (A & F); Odell Lake, 4,760 ft., August 6, 1948 (A).

Tipula (Lunatipula) olympia Doane, 1912 (*concinna* Doane, 1901; *flavomarginata* Doane, 1912).—Willamette Valley: Peavine, Sta. 3, May 20, 1947 (F); Rock Creek, Corvallis, April 24, 1940.

Tipula (Lunatipula) pellucida Doane, 1912 (*clara* Doane, 1901; *pyramis* Doane, 1912).—Blue Mts.: Spring Creek, 3,900 ft., May 30, 1948, May 15, 1949 (Baker). Steens Mts.: Fish Lake, 7,000 ft., July 11, 1927 (*Scullen*).

Tipula (Lunatipula) praecisa Loew, 1872.—Willamette Valley: Peavine, Sta. 3, May 25, 1945, July 21, 1946, May 15, 1947 (F). McMinnville, June 25-July 2, 1946, June 14-30, 1948 (F); Panther Creek, McMinnville, July 14, 1948 (F). Cascades: Kelly Creek, June 22, 1947 (F).

Tipula (Lunatipula) pubera Loew, 1864.—Coast: High Heaven, May 4, 1947 (F). Willamette Valley: Peavine, Sta. 1, May 18-June 20, 1946, May 22-23, 1947 (F); Sta. 3, May 29, 1946; Sta. 3A, May 29, 1947, June 8-9, July 14, 1948 (F). Corvallis, May 5, 1925; May 12 (*Gentner*); Silver Creek Falls, July 8, 1949 (F & Davis). Southern Oregon: Cave Junction, 1,325 ft., August 27, 1948 (*Bowerman*).

Tipula (Lunatipula) retusa Doane, 1901.—Willamette Valley: Peavine, Sta. 1, April 30-May 11, 1946, May 22, 1947; Sta. 2, May 21, 1947; Sta. 3, May 20-24, 1947; Sta. 3A, June 2, 1948 (F). Forest Grove, July 22 (*Cole*); McMinnville, May 30, 1948 (F). Southern Oregon: Siskiyou Summit, June 10, 1945 (F). Cascades: Mount Hood-Oneonta Gorge, 100 ft., July 19, 1947 (F).

Tipula (Lunatipula) siskiyouensis Alexander, 1949.—Southern Oregon: O'Brien, Siskiyou National Forest, 1,475 ft., March 24, 1940 (*Post, Maris and Ross*); type. Male hypopygium (Fig. 8) with the ninth tergite, $9t$, large, transverse; caudal border with four lobes, the sublateral or outer pair each appearing as a long slender rod, the tip obtuse, blackened; intermediate lobes much shorter, blackened, their tips obtuse; margin between the lobes produced into a low pale triangular blade on either side of the midline. Outer dististyle, *od*, an unusually small pale blade, flattened, the upper edge with three black setae, the remainder of surface glabrous. Inner dististyle, *id*, of peculiar conformation; what seems to represent the normal beak is slender, straight, subtended above by a pale membranous dorsal crest; posterior portion of main body of style produced into a

flattened blade that is unequally bispinous, the upper arm a strong erect spine, the lower one a small triangular point; outer basal lobe very conspicuous, appearing as a flattened blade that is longer than the remainder of style, dilated on basal half and here provided with numerous long pale setae, thence narrowed into a more slender apical portion, the whole bent forwards over the main body of style. Gonapophyses, *g*, paired, each half terminating in a long decurved point. Eighth sternite, *8s*, bearing a flattened lobe or blade on either side of midline, each with a brush or tuft of very long yellow setae that are very conspicuously roughened by lateral hairlike projections to produce an unusually fuzzy appearance.

Tipula (Lunatipula) snoqualmiensis Alexander, 1945.—Cascades: Odell Lake, Princess Creek Forest Camp, 4,760 ft., August 6, 1948 (*F*); resting on tree trunk. Hitherto only from Washington (Alexander, 1949: 285-286, fig. 9).

Tipula (Lunatipula) splendens Doane, 1901.—Cascades: Dutchman's Flats, 6,100 ft., August 5, 1948 (*F*); Metclius River, 2,600 ft., June 15, 1947 (*F*). Blue Mts.: Spring Creek, 3,900 ft., July 31, 1949 (*Baker*); Beech Creek Forest Camp, Malheur National Forest, 4,500 ft., August 16, 1948 (*A*). Wallowas: Lazy T Ranch, 4,500 ft., September 1, 1949 (*Grace Sperry*); Lostine Valley, 5,500 ft., August 18, 1948 (*A*); numerous flying among the evergreens.

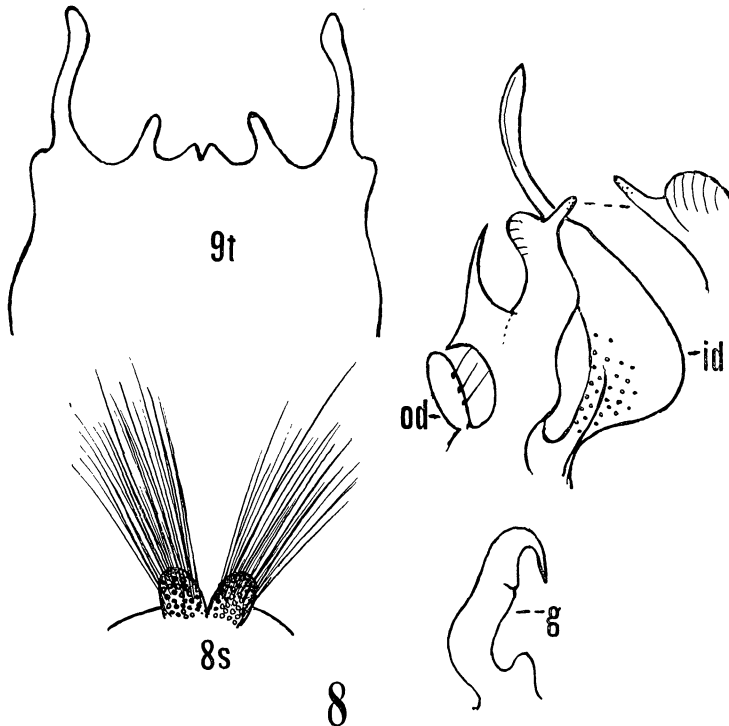


Fig. 8.—*Tipula (Lunatipula) siskiyouensis* sp. nov., male hypopygium (See fig. 1 for explanation of symbols).

Tipula (Lunatipula) unincta unincta Doane, 1901.—Willamette Valley: Corvallis, May 25 (*Cole* auct.). Cascades: Mount Hood-Hood River side, 3,000 ft., July 29, 1921 (*Melander*); Clear Lake, 3,300 ft., August 8, 1946 (*A*); Eagle Creek Forest Camp, July 18, 1947 (*F*); Polally Forest Camp, August 9, 1946 (*F*). Elk Lake, Century Drive, 4,900 ft., August 6, 1948 (*F*).

Tipula (Lunatipula) uncinata bifila subsp. nov.—Very close to the typical form, differing in certain details of the male hypopygium. The latter (Fig. 9) has the appendage of the ninth sternite, 9t, elongate, terminating in a powerful reddish spine, the lower surface back from the spine with about six powerful setae scattered along the length. Phallosome, p, symmetrical, as in *uncinata*; tips of the inner apophyses produced into very long slender spines. Ninth tergite with the outer lateral points slender, directed laterad.

Holotype, ♂, Gold Beach, Curry Co., July 11, 1925.

Tipula (Lunatipula) usitata usitata Doane, 1901.—Willamette Valley: Peavine, Sta. 1, May 18, 1946, May 22, 1947; Sta. 2, May 31, 1946; Sta. 3, May 20-24, 1947, June 8, 1948; Sta. 3A, May 12, 1947 (F). Corvallis, June 2 (Kincaid), type; Eugene, May 1947 (Malin); McMinnville, June 1, 1948 (F).

Tipula (Lunatipula) usitata aurantionota Alexander, 1945.—Coast: Saddle Mt. (Boyer), June 2, 1934; July 21, August 1, 1935 (Macnab), types; High Heaven, June 22, 1945 (F). Willamette Valley: Peavine, Sta. 2, May 18-31, 1946 (F). McMinnville, July 16, 1933 (Macnab).

Tipula (Lunatipula) vittatipennis Doane, 1912 (*albovittata* Doane, 1901).—Willamette Valley: McMinnville, May 24, 1947 (D. McKey-Fender); Muddy Valley, McMinn-

ville, June 6, 1945 (F). Southern Oregon: Cave Junction, 1,325 ft., August 27, 1948 (Bowerman); North slope of Siskiyou Summit, June 9, 1947 (F). Cascades: Mount Hood-Eagle Creek, August 2, 1921 (Melander).

Tipula (Hesperotipula) fragmentata Dietz, 1919.—Coast: Chetco River, August 11, 1948 (F); Glenada, June 9, 1946 (Malin). Willamette Valley: Forest Grove, May 20, 1918 (Cole).

Tipula (Hesperotipula) streptocera Doane, 1901.—Coast: High Heaven, June 22, 1945, July 12, 1949 (F); Saddle Mt. State Park, July 24, 1949 (F); Tierra del Mar, June 30, 1949 (F). Willamette Valley: Peavine, Sta. 1, May 2-11, July 12, August 6, 1946, May 27-June 24, 1947; Sta. 2, June 27, 1946; Sta. 3, July 16-21, 1946; Sta. 3A, June 30, 1947 (F). McMinnville, in skunk cabbage association, May 16, 1945 (F); Muddy Valley, McMinnville, May 22, 1945 (F); Silver Creek Falls, 1,000 ft., August 1, 1948 (A & F), July 8, 1949 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., July 16, 1947 (F); Horsetail Falls, July 19, 1947 (A & F); Eagle Creek Forest Camp, July 18, 1947 (A & F). Blue Mts.: Spring Creek, 3,900 ft., June 24-28, July 25, August 18, 1948, June 5-30, 1949 (Baker).

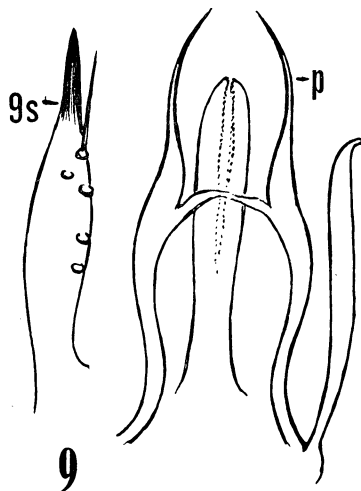


Fig. 9.—*Tipula (Lunatipula) uncinata bifila* subsp. nov., male hypopygium (See fig. 1 for explanation of symbols).

CYLINDROTOMINAE

Cylindrotoma occidentalis (Alexander, 1927).—Cascades: Mount Hood-Hood River Meadows, 4,475 ft., August 8, 1946, July 17, 1947, July 31, 1948 (A & F). This distinct fly was originally described in the genus *Phalacrocer* but seems to be more correctly placed in the present group. The species shows a surprising degree of variation in venation, particularly of the medial field. This was shown in the type (Longmire Springs, Mount Rainier, Washington) and likewise in virtually all specimens of the present series (see Alexander, *Genera Insectorum*, Fasc. 187, *Cylindrotominae*, pl. 2, fig. 4; 1927). Since the distinctions employed in separating *Cylindrotoma* and *Phalacrocer* are chiefly venational and apply particularly to the medial field, the indication earlier

made that *Phalacrocera* should perhaps be considered as being not more than a subgenus of *Cylindrotoma* seems justified.

Cylindrotoma splendens splendens Doane, 1900 (*juncta* Coquillett, 1900).—Coast: Saddle Mt. (Boyer), May 6, 1934, June 11, 1935, June 13, 1936, June 18, 1937 (*Macnab and associates*); Castle Rock, May 13, 1949 (*F*); High Heaven, May 4, 1947 (*F*); Sourgrass Creek, May 17, 1948 (*F*). The 1937 Boyer specimen has the venation abnormal, one wing having an adventitious crossvein in cell R_5 , as in the extinct group *Cyrtaromyia* Scudder. All of the above specimens represent the typical form, having heavily blackened praescutal stripes in both sexes.

Cylindrotoma splendens pallescens Alexander, 1930.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (*A & F*); North Fork of Iron Creek, July 30, 1948 (*F*); Still Creek, July 16, 1947 (*A & F*). Big Meadows, North Santiam, August 3, 1948 (*A & F*); Odell Lake, 4,760 ft., July 14, 1947 (*A*). Crater Lake-Along small stream on Lake Road above Annie Springs, 6,200 ft., August 2, 1946, July 12, 1947 (*A*). Blue Mts.: Spring Creek, 3,900 ft., June 5, 1949 (*Baker*); Little Antone Creek, 4,100 ft., June 27, 1948 (*A*); Little Phillips Creek, 3,800 ft., July 3, 1948 (*A*). Wallows: Wallowa Creek, at Power Plant spring, 4,635 ft., June 29-30, 1948 (*A*); above Lazy T Ranch, 5,500 ft., July 17, 1949 (*Sperry*); Lostine Valley Guard Station, 4,900 ft., June 30, 1948 (*A*). All of the above have the dark markings of the praescutum virtually lacking, particularly in the male sex.

LIMONIINAE

LIMONIINI

Limonia (Limonia) bistigma (Coquillett, 1905, as *bestigma*) (*tributaria* Alexander, 1943).—Coast: Big Creek, Sitkum, August 12, 1948 (*H. W. Thorne*); Chetco River, August 11, 1948 (*F*); Glenada, June 9 1946 (*Malkin*); Gunaldo Falls, June 30, 1949 (*F*); High Heaven, June 22, 1945, August 6, 1946 (*F*); Humbug Mountain State Park, August 11, 1948 (*F*); Saddle Mountain State Park, July 24, 1949 (*F*); Tierra del Mar, June 30, 1949 (*F*); Wheeler, July 24, 1949 (*F*). Willamette Valley: Peavine, Sta. 3A, July 5-9, 1946, June 17, July 7, 1947, June 24, July 13, 1948 (*F*). Silver Creek Falls, August 2, 1948 (*F*), July 8, 1949 (*F*). Cascades: Mount Hood-Bear Creek, July 16, 1947, August 1, 1948 (*A & F*); Bear Springs, August 8, 1946 (*A & F*); Beaver Creek, August 7, 1946, July 16, 1947 (*F*); Cloudcap Inn Junction, August 9, 1946 (*F*); Hood River side at 3,000 ft., July 29, 1921 (*Melander*); Hood River Meadows, July 17, 1947 (*A & F*); Horsethief Meadows, August 9, 1946, July 19, 1947 (*A & F*); Polally Forest Camp, August 9, 1946 (*A*); Multnomah Falls, July 19, 1947 (*A & F*); Salmon River, July 30, 1948 (*F*); Still Creek, July 16, 1947, July 31, 1948 (*A & F*); Wahkeena Falls, September 9, 1934 (*Melander*). Hazel Creek, near Dexter, July 15, 1947 (*A*); Merrill Creek, N. Santiam, August 17, 1947 (*Albright*); Odell Lake, August 6, 1948 (*A*); Metolius River, June 15, 1947 (*F*); Salt Creek Falls, August 7, 1948 (*F*); Willis Creek, N. Santiam, August 17, 1947 (*F*). The species is closely allied to the Palaearctic *tripunctata* (Fabricius, 1781).

Limonia (Limonia) sciophila (Osten Sacken, 1877).—Coast: Cascade Head Experimental Forest, July 6, 1945 (*Shelford*); Castle Rock, March 31, 1949 (*F*); Chetco River, March 18, 1940 (*Post & Ross*), August 11, 1948 (*F*); Deer Creek, McMinnville, May 6, 1945 (*F*); Gales Creek, September 5, 1948 (*F*); Glenada, June 9, 1946, May 23, 1947 (*Malkin*); Gunaldo Falls, May 13, 1949 (*F*); Hemlock, April 5, 1949 (*F*); High Heaven, June 22, 1945, July 6, August 16, 1946, May 4, 1947 (*F*); Humbug Mountain State Park, August 11, 1948 (*F*); Jessie M. Honeyman State Park, August 12, 1948 (*F*); Lake Tahkenitch, August 12, 1948 (*F*); Lee's Camp, September 18-25, 1949 (*Davis*); Pacific City, May 23, 1948 (*F*); Saddle Mt. (Boyer), September 8, 1933, April 27, September 22, October 26, 1935, May 15, 1937 (*Macnab & Dirks*); Salmon River, near Boyer, August 12, 1948 (*F*); Sourgrass Creek, May 17, 1948 (*F*); Three Rivers, May 23, 1948 (*F*); Tierra del Mar, May 13, 1949 (*F*). Willamette Valley: Peavine, no station, May 5-14, July 13, September 10, October 10, 1945; Sta. 1, April 30, May 6, 1946, May 1, 1947; Sta. 3, September 13, 1946, May 14, July 8, September 3, 1947; Sta. 3A, May 3, September 17, October 12, 1946, May 5, 1947, August 30, September 13, 1948; Sta. 4, May 2, 1947 (*F*). Albrights, Dayton, September 19, 1946 (*F*); Corvallis, April 20, May 28 (*Cole* auct.); Forest Grove, September-October (*Cole*); Mount Angel (*Epper*); Silver Creek Falls, May 9, August 2, 1948, July 8, 1949 (*F*). Southern Oregon: State Line Creek, August 9, 1948 (*A & F*); Roseburg, April 6, 1930 (*J. Wilcox*). Cascades: Mount Hood-Bear Creek, July 16,

1947, August 1, 1948 (F); Beaver Creek, July 16, 1947 (A & F); Eagle Creek Forest Reservation, July 1, 1917 (Melander); Hood River side, 3,000 ft., July 29, 1921 (Melander); Hood River Meadows, July 17, 1947 (F); Horsethief Meadows, August 9, 1946, July 18, 1947 (A & F); Oneonta Gorge, July 19, 1947 (A & F); Robin Hood Forest Camp, August 8, 1946 (F); Salmon River, July 30, 1948 (F); Still Creek, July 16, 1947, July 31, 1948 (A & F). Big Meadows, N. Santiam, August 17, 1947, August 3, 1948 (F); Deschutes River Guard Station, August 6, 1948 (F); Elk Lake, Century Drive, August 6, 1948 (F); Hazel Creek, near Dexter, July 15, 1947 (A); Odell Lake, August 4, 1946, July 14, 1947, August 6, 1948 (A); Trout Creek, August 24, 1944 (Knowlton); Tumalo Creek, August 15, 1948 (A); Willis Creek, N. Santiam, August 17, 1947 (Albright). Crater Lake-Annie Spring, August 1-3, 1946 (A). Ochoco Mts.: Mossy Rock Forest Camp, August 15, 1948 (A). Blue Mts.: Spring Creek, June 24-26, July 25, August 29, September 12, 1948, June 5-30, 1949 (Baker); Langdon Lake, August 16-17, 1948 (A), very abundant and extremely variable in size; North Powder River at 3,800 ft., June 27, 1948 (A); Pine Creek, June 30, 1949 (Baker & Sperry); South Fork of Upper Walla Walla River, 1,450 ft., July 4, 1948 (A). Wallows: Aneroid Lake trail, 7,000 ft., July 26, 1949 (Baker); Eagle Cap Wilderness Area, 5,000 ft., June 28, 1948 (A); French Forest Camp, August 18, 1948 (A); Hurricane Creek, 5,460 ft., July 11, 1949 (Sperry); Lazy T Ranch, July 17, September 3, 1949 (Sperry); Lostine Valley Guard Station, June 30, 1948 (A). The species is very close to the Palaearctic *nubeculosa* (Meigen, 1804).

Limonia (Limonia) tristigma (Osten Sacken, 1859).—Wallows: Lazy T Ranch, 4,500 ft., July 4, 1949 (Sperry), a single ♀. Hitherto not known from farther west than Colorado. Probably only racially distinct from the Palaearctic *trivittata* (Schummel, 1829).

Limonia (Metalimnobia) annulus triphaea subsp. nov.—Closest to *L. (M.) annulus cinctipes* (Say), differing in slight details of coloration and structure of the male hypopygium.

♂. Length, about 12 mm.; wing, 13 mm.

General coloration very dark, including the head and much of the thorax, the obscure yellow of the praescutum and scutum much restricted. Head dark. Femora with three distinct darkened rings, as in *annulus immatura* (Osten Sacken, 1859), the latter differing otherwise in the structure of the male hypopygium, particularly of the dististyles. Male hypopygium with the dorsal dististyle relatively narrow, the tip a slightly decurved blackened spine.

Holotype, ♂, McMinnville, on Fender property, May 29, 1948 (Fender). *Paratopotype*, ♂.

Limonia (Metalimnobia) annulus cinctipes (Say, 1823).—Wallows: Trail above Lazy T Ranch, 5,200 ft., July 6, 1949 (Sperry).

Limonia (Metalimnobia) californica (Osten Sacken, 1861).—Coast: Gualdo Falls, May 13, 1949 (F); Saddle Mt. (Boyer), July 13, 1933 (Macnab and associates). Willamette Valley: Forest Grove, April 20 (Cole). Cascades: Mount Hood-Hood River side, 4,000 ft., June 25, 1935 (Melander); Robin Hood Forest Camp, 3,560 ft., July 18, 1947 (F). Odell Lake, 4,790 ft., August 6, 1948 (F).

Limonia infusata (Doane, 1900) (*adjecta* Doane, 1908; *nitidiuscula* Alexander, 1927).—Coast: Agate Beach, March 27, 1949 (F); Cascade Head Experimental Forest, May 23, 1948 (F); Deer Creek, McMinnville, May 6, 1945 (F); Gales Creek, September 5, 1948 (F); Gualdo Falls, May 17, 1948, May 13, June 6, 1949 (F); Hemlock, April 5, 1949 (F); High Heaven, June 22, 1945, May 4, 1947, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Lake Tahkenitch, August 12, 1948 (F); Meadow Lake Road, Carlton, October 13, 1945 (F); Saddle Mt. (Boyer), March 31, October 3, 1934, April 27, May 12, July 28, August 15, 1935, April 25, 1936, May 22, August 16, 1937 (Macnab and associates); Salmon River, near Boyer, August 12, 1948 (F); Sand Lake, April 12, 1949 (F); Three Rivers, May 23, 1948 (F); Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, no station, April 28-May 31, 1945, on sword fern; Sta. 3A, June 24, August 30, 1948 (F). Albrights, Dayton, September 19, 1946 (F); Happy Valley, McMinnville, April 14, 1946 (F); Silver Creek Falls, May 9, August 2, 1948 (F). Southern Oregon: State Line Creek, August 9, 1948 (A & F); Store Gulch Forest Camp, August 8, 1948 (A). Cascades: Mount Hood-Beaver Creek, July 16, 1947 (F); Horsethief Meadows, August 9, 1946 (A & F); Still Creek, July 16, 1947 (A & F). Odell Lake, 4,800 ft., August 4, 1946, July 13, 1947 (A); Schweitzer Creek, 1,000 ft., August 5, 1946 (A); Willis

Creek, August 17, 1947 (*Albright*). Wallowas: Lostine Valley Guard Station, June 30, 1948 (*A*); Wallowa Creek, 4,675 ft., June 29, 1948 (*A*).

Limonia simulans concinna (Williston, 1893).—Coast: Marys Peak, June 1, 1946 (*F*). Willamette Valley: Orchard View, McMinnville, May 4, 1949 (*F*). Cascades: Mount Hood-Hood River, June 3, (*Cole*); Hood River side at 4,000 ft., June 25, 1935 (*Melander*); Multnomah Falls, 100 ft., August 9, 1946, July 17, 1947 (*A* & *F*). Odell Lake, 4,760 ft., August 6, 1948 (*F*); Salt Creek Falls, July 14, 1947 (*M. M. Alexander*). Eastern Oregon: Juntura-Vale, May 13, 1947 (*Albright*).

Limonia venusta (Bergroth, 1888) (*duplicata* Doane, 1900; *negligens* Alexander, 1927).—Coast: High Heaven, Edmunds Ranch, April 1, 1949 (*F*); Jordan Creek, September 5, 1948 (*F*). Willamette Valley: Peavine, Sta. 2, June 27, 1946 (*F*). Cascades: Mount Hood-Stream below timberline, 5,000 ft., July 16, 1947 (*A*); Hood River Meadows, August 8, 1946, July 17, 1947, July 31, 1948 (*A* & *F*); Still Creek, July 17, 1947 (*A* & *F*). Blue Mts.: Anthony Lake, 7,100 ft., June 27, 1948 (*A* & *Baker*), flying in small swarms beneath the evergreens; Langdon Lake, 4,970 ft., July 3, 1948 (*A*); Spring Creek, 3,900 ft., May 2, 1948 (*Baker*); Whitman National Forest, June 14, 1947 (*F*). Wallowas: Lazy T Ranch, 4,500 ft., August 29-31, 1949 (*Sperry*); Lostine Valley, 5,500 ft., August 18, 1948 (*A*).

Limonia (Geranomysia) communis (Osten Sacken, 1859) (*canadensis* of authors, nec Westwood, 1835).—Southern Oregon: Store Gulch Forest Camp, swept from willows at edge of Illinois River, 950 ft., August 9, 1948 (*A*).

Limonia (Geranomysia) diversa (Osten Sacken, 1859).—Coast: High Heaven, June 22, 1945 (*F*); Jordan Creek, September 5, 1948 (*F*). Willamette Valley: Peavine, Sta. 1, April 23, June 20, 1946 (*F*); Sta. 3, July 2-16, 1946 (*F*). Orchard View, McMinnville, May 4, 1949 (*F*). Southern Oregon: O'Brien, August 9, 1948 (*F*); Store Gulch Forest Camp, along Illinois River, August 9, 1948 (*A* & *F*). Cascades: Mount Hood-Hood River, October 30 (*Cole* auct.); Still Creek, July 16, 1947 (*A* & *F*). Cascadia, August 2, 1948 (*A* & *F*); Dell Creek, Willamette River, July 14, 1947 (*A*); Salt Creek Falls, 3,800 ft., July 14, 1947, August 8, 1948 (*A* & *F*).

Limonia (Dicranomyia) acerba Alexander, 1943.—Willamette Valley: Willamette River near Dayton, on gravel bars, April 24, 1949 (*F*). Southern Oregon: Ashland-Lake of the Woods, June 11, 1945 (*F*). Cascades: Mount Hood-Still Creek, 3,600 ft., July 16, 1947 (*F*).

Limonia (Dicranomyia) athabasca (Alexander, 1927).—Coast: Coquille River, Sitkum, August 5, 1948 (*H. W. Thorne*); Gunaldo Falls, May 13, 1949 (*F*); Humburg Mountain State Park, August 11, 1948 (*F*). Willamette Valley: Peavine, June 18, 1948; Sta. 1, April 30, June 20, July 26, 1946, May 15, July 3, 1947, May 27, 1949; Sta. 2, September, October 1945, May 10, July 12, 1946, May 22, 1948; Sta. 3, April 26, June 26, July 2-16, 1946, May 7, 1947, April 20, May 25, 1948 (*F*). McMinnville, May 7, 1944 (*F*); Muddy Valley, McMinnville, May 24, 1945 (*F*). Cascades: Mount Hood-Bear Springs, August 8, 1946 (*F*); Clear Lake, 3,300 ft., October 7, 1945 (*F*). Cultus Lake, 4,670 ft., August 6, 1948 (*A*); Dell Creek, July 14, 1947 (*A*); Metolius River, 2,200 ft., June 14, 1945, August 3, 1948 (*A* & *F*); Rivers Edge Forest Camp, Willamette River, 1,000 ft., August 5, 1946 (*A*). Blue Mts.: Pine Creek, June 30, 1949 (*Baker* & *Sperry*); Langdon Lake, 4,970 ft., July 4, August 16, 1948 (*A*); Spring Creek, 3,900 ft., June 24-26, 1948 (*A* & *Baker*); Vale, May 19, 1949 (*Davis*); Whitney, June 19, 1949 (*Baker*). Wallowas: Lostine Valley, 4,900 ft., June 30, 1948; 5,500 ft., August 19, 1948 (*A*); Wallowa Lake, June 30, 1948 (*A*).

Limonia (Dicranomyia) brevivena (Osten Sacken, 1869).—Willamette Valley: Peavine, no station number, May 31, 1945 (*F*). Cascades: Metolius River, August 3, 1948 (*A* & *F*). Eastern Oregon: Mountain Creek, near junction with the John Day River, August 16, 1948 (*A*); Seneca, Malheur National Forest, June 12, 1947 (*F*); Warner Lakes, June 12, 1947 (*F*). Blue Mts.: Anthony Lake, 7,000 ft., June 27, 1948 (*A*); Whitman National Forest, June 14, 1947 (*F*); Whitney, June 19, 1949 (*Baker*). Wallowas: Johnson Park, Wallowa River, 2,750 ft., August 20, 1948 (*A*).

Limonia (Dicranomyia) citrina (Doane, 1900).—Blue Mts.: Langdon Lake, 4,970 ft., July 2-4, 1948 (*A*), July 17, 1948 (*Lane*); in marshes at lake margin, abundant among *Camassia* and *Veratrum*: Whitney, May 30, June 19, 1949 (*Baker*).

Limonia (Dicranomyia) fulva fulva (Doane, 1900).—Coast: Sourgrass Creek, May 17, 1948 (*F*). Willamette Valley: Peavine, May 4, 1945, on sword fern (*F*). Cascades: Mount Hood-Hood River Meadows, 4,500 ft., August 8, 1946 (*A*); Still Creek, July 16, 1947 (*A* & *F*).

Limonia (Dicranomyia) fulva fulvoides Alexander, 1943.—Blue Mts.: Starr Creek, Malheur National Forest, May 30, 1949 (Baker).

Limonia (Dicranomyia) gracilis (Doane, 1900) (*halterella* Edwards, 1921).—Cascades: Mount Hood-Multnomah Falls, August 9, 1946 (F). Big Meadows, North Santiam, August 17, 1947 (F); Salt Creek Falls, 3,800 ft., August 7, 1948 (A); Tombstone Meadows, South Santiam, August 17, 1947 (Albright). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker); August 20, September 6, October 3, 1948 (Baker).

Limonia (Dicranomyia) halterata (Osten Sacken, 1869) (*cinereipennis* Lundstrom, 1912).—Coast: Cascade Head Experimental Forest, May 23, 1948 (F); Gales Creek, September 5, 1948 (F); Gunaldo Falls, June 30, July 14, 1949 (F); High Heaven, June 22, 1945, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Jessie M. Honeyman State Park, August 12, 1948 (F); Jordan Creek, September 5, 1948 (F); Lake Tahkenitch, August 12, 1948 (F); Neskowin, August 17, 1948 (James); Pacific City, May 23, 1948 (F); Saddle Mt. (Boyer), June 21, July 29, 1934, August 1, 1935 (*Macnab and associates*); Saddle Mountain State Park, July 24, 1949 (F). Willamette Valley: Peavine, Sta. 3, May 23-29, 1946, May 14, July 8, 1947; Sta. 3A, June 24, July 14, 1948 (F). Albrights, Dayton, September 19, 1946 (F); Silver Creek Falls, August 2, 1948, July 8, 1949 (F); Willamette River, below Dayton, April 24, 1949 (F). Southern Oregon: State Line Creek, August 9, 1948 (A & F). Cascades: Mount Hood-Beaver Creek, August 7, 1946 (A); Eagle Creek Forest Reserve, July 1, 1917 (*Melander*); Horsetail Falls, August 9, 1946, July 19, 1947 (A & F); Multnomah Falls, July 19, 1947 (F); Oneonta Gorge, July 19, 1947 (A); Sahale Falls, July 17, 1947, July 31, 1948 (F); Salmon River, July 30, 1948 (F); Still Creek, July 31, 1948 (A & F); Timberline, at 5,000 ft., August 7, 1946 (A); Wahkeena Falls, September 9, 1934 (*Melander*). Cascadia, August 2, 1948 (F); Dell Creek, July 14, 1947 (A); Hazel Creek, July 15, 1947 (A); Odell Lake, July 14, 1947 (A); Salt Creek Falls, August 7, 1948 (A & F). Blue Mts.: Spring Creek, June 26, 1948 (A & Baker).

Limonia (Dicranomyia) humidicola (Osten Sacken, 1859) (*badia* of authors, nec Walker, 1848; *viridicans* Doane, 1908).—Coast: Grand Ronde, March 31, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Lee's Camp, September 18-25, 1949 (Davis); Sourgrass Creek, May 17, 1948 (F). Willamette Valley: Peavine, Sta. 1, September 10, 1945, July 3-12, October 11, 1946, July 2, 1948; Sta. 3, April 26, May 16, 1946, May 3-14, 1947, May 11, June 29, 1948 (F). Happy Valley, McMinnville, June 3, 1945, April 14, 1946 (F); Silver Creek Falls, May 9, August 2, 1948, July 8, 1949 (F). Southern Oregon: Store Gulch Forest Camp, August 8, 1948 (A & F). Cascades: Mount Hood-Eagle Creek, August 2, 1921 (*Melander*), July 18, 1947 (F); Horsetail Falls, August 9, 1946, July 19, 1947 (A & F); Multnomah Falls, August 9, 1946, July 19, 1947 (F); Oneonta Gorge, July 19, 1947; Sahale Falls, July 31, 1948 (A); Still Creek, July 31, 1948 (A & F); Viento, August 1, 1921 (*Melander*). Metolius River, August 3, 1948 (A & F). Blue Mts.: Spring Creek, April 24, May 9, 1949 (Baker); Langdon Lake, July 2-3, 1948 (A); Pine Creek, 4,600 ft., June 25, 1948 (A). Wallowas: Lostine Valley Guard Station, June 30, 1948 (A); Wallowa Lake, June 28, 1948 (A).

Certain of the above specimens, particularly those from the gorges along the Columbia River, have the yellow femoral tips much reduced or entirely lacking.

Limonia (Dicranomyia) illustris Alexander, 1944.—Coast: Carlton-Meadow Lake road, June 5, 1942 (*Macnab*), types; High Heaven, May 4, 1947 (F). Willamette Valley: Peavine, Sta. 1, May 5, July 13, 1945, on sword fern, May 18, 1946; Sta. 3A, May 5-24, 1947, June 8, 1948 (F). Happy Valley, McMinnville, May 12, 1946 (F).

Limonia (Dicranomyia) inhabilis Alexander, 1949.—Coast: Three Rivers, May 23, 1948 (F), type. The male hypopygium is shown (Fig. 10).

Limonia (Dicranomyia) iowensis (Rogers, 1926).—Willamette Valley: Willamette River, 2 miles south of Dayton, June 24, 1948 (F). This is the first record of the species from west of the Rocky Mountains.

Limonia (Dicranomyia) libertoides (Alexander, 1912).—Willamette Valley: Peavine, Sta. 1, April 25-May 4, 1945, on sword fern; Sta. 2, May 22, 1948; Sta. 3, April 26, May 16, 1946, May 24, 1947, April 20, 1948; Sta. 4, April 17, 1946 (F). Amity Hills, April 25, 1948 (F); Corvallis, April 18 (*Cole* auct., determined 1920 by Alexander as *stigmata* Doane); Happy Valley, McMinnville, May 12, 1946 (F); Zena, June 5, 1948 (F).

Limonia (Dicranomyia) longipennis (Schummel, 1829) (*immemor* Osten Sacken,

1861).—Willamette Valley: Peavine, without station, July 12, 1945 (F). McMinnville, November 10, 1942, August 28, 1948 (F); Woods Hopyard, Willamette River, July 4, 1947 (F). Southern Oregon: O'Brien, 1,475 ft., August 9, 1948 (A). Cascades: Bend, along Deschutes River, August 5, 1948 (A & F).

Limonia (Dicranomyia) marmorata (Osten Sacken, 1861) (*signipennis* Coquillett, 1905).—Coast: Florence, February 20, 1923 (D. W. Hatch), Oregon State Agricultural College, Accession No. 2,620; Harris Beach State Park, August 11, 1948 (F); Neskowin, August 11-17, 1948 (James), numerous in the intertidal zone. This is a Pacific Coast marine species whose life history has been described by Saunders (Ann. Ent. Soc. America, 21: 521-545; 1928, as *signipennis*).

Limonia (Dicranomyia) melanderiana Alexander, 1945.—Blue Mts.: Langdon Lake, September 9, 1949 (Davis).

Limonia (Dicranomyia) moniliformis (Doane, 1900).—Willamette Valley: Three miles south of Dayton, along the Willamette River, June 3, 1948 (F). Blue Mts.: Juntura, May 20, 1949 (Davis). Willowas: Enterprise, 3,750 ft., June 29, 1948 (A).

An unfortunate confusion in names has obtained in this particular part of the subgenus, chiefly through the inability to study the male genitalia of certain critical species. I now regard the species formerly called *gibsoni* Alexander, 1929, as being the true *haeretica* Osten Sacken, 1869, widely distributed along the Atlantic coast of North America. It further appears that the paratype females of *moniliformis* from Long Island, New York, and Nantucket Island, Massachusetts, similarly pertain to *haeretica*, as here restricted. As to whether *brunnea* Doane, 1900, likewise falls in the synonymy of *haeretica* is more questionable. All of these species that are represented by female specimens only are difficult to determine. The type of *moniliformis* was from Colorado and represents the species under consideration. It has as a synonym *penicillata* Alexander and numerous inland records reported as being *haeretica*.

Limonia (Dicranomyia) morioides (Osten Sacken, 1860).—Willowas: Wallowa Lake, 4,410 ft., June 28, 1948 (A).

Limonia (Dicranomyia) nielseniana Alexander, 1949.—Blue Mts.: Spring Creek, 3,900 ft., September 19-October 17, 1948 (Baker). The male hypopygium is shown (Fig. 11).

Limonia (Dicranomyia) particeps (Doane, 1908).—Coast: Coquille River, Sitkum, August 4, 1948 (H. W. Thorpe); Grand Ronde, March 31, 1949 (F); High Heaven, July 12, 1949 (F); Jordan Creek, September 5, 1948 (F); Pacific City, May 23, 1948 (F); Sand Lake, April 12, 1949 (F); Three Rivers, May 23, 1948 (F). Willamette Valley: Peavine, June 18, 1948; Sta. 1, July 2, 1948; Sta. 3, July 16, 1946, June 29, 1948; Sta. 3A, March 26, 1946, June 18, 1947, July 24, 1948 (F). Amity Hills, 500 ft., April 25, 1948 (F); Henderson Bridge, June 16, 1948 (F); McMinnville, July 2, 1949 (F); Panther Creek, McMinnville, July 25, 1948 (F); Silver Creek Falls, May 9, August 2, 1948, July 8, 1949 (F). Cascades: Mount Hood-Bear Creek, August 1, 1948 (A & F); Beaver Creek, August 1, 1948 (A & F); Hood River, October 26 (Cole auct.); Oneonta Gorge, August 9, 1946 (A & F). Cascadia, August 2, 1948 (F); Trout Creek Forest Camp, South Santiam, 1,245 ft., August 2, 1948 (A). Blue Mts.: South fork of Walla Walla River, 1,450 ft., July 4, 1948 (A).

Limonia (Dicranomyia) piscataquis Alexander, 1941.—Cascades: Mount Hood, Clear Lake, 3,300 ft., October 7, 1945 (F). This very distinct fly had hitherto been known only from northern Maine.

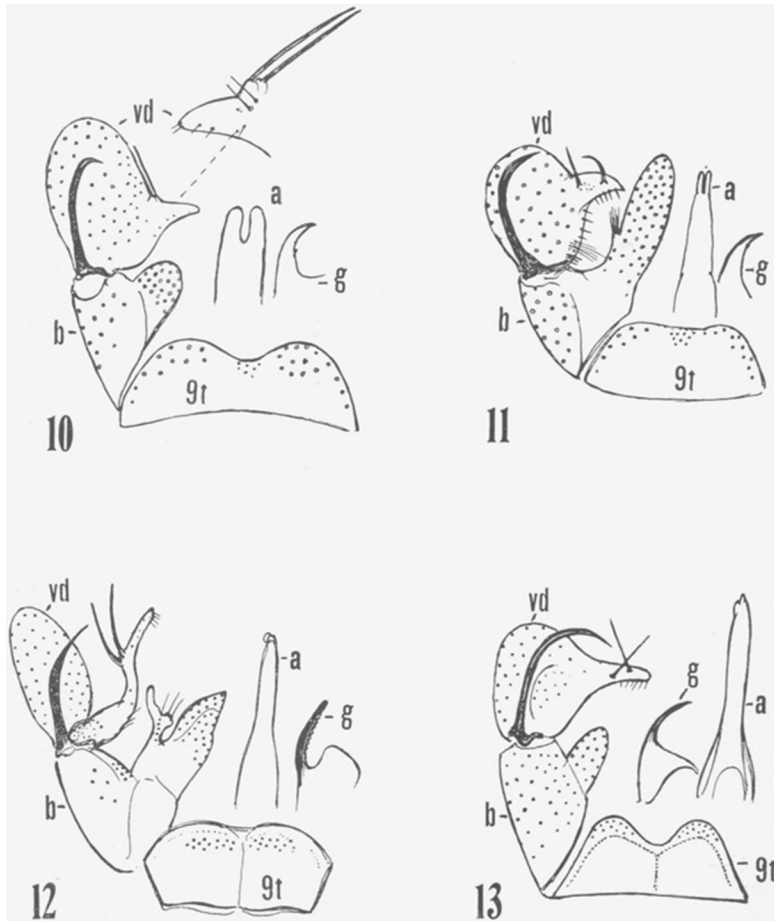
Male hypopygium (Fig. 12) with the tergite, *9t*, transverse, the caudal margin nearly truncate, the surface with a narrow darkened midline; setigerous punctures translucent, conspicuous, setae long and pale. Proctiger undeveloped. Baistyle, *b*, in total area about one-third more extensive than the ventral dististyle; setae of body of style sparse; ventromesal lobe large and complex, stout-based, on outer margin with an irregular blackened area, angularly bent at near midlength and here provided with several strong setae; apex of lobe produced into two outer divisions, the larger one narrowed to a point, the smaller lower division (not shown in figure) more obtuse, both provided with long coarse setae. Dorsal dististyle blackened, gently curved, the outer fourth more narrowed into a long acute point. Ventral dististyle, *vd*, with the main body oval, relatively small; rostral prolongation very loosely joined, appearing as a powerful feebly sclerotized arm that is more enlarged at base, the outer two-thirds more slender and sinuous, the tip obtuse, with a few strong setae; rostral spines borne on outer margin of the narrowed part, unusually long and powerful, considerably longer than the prolongation beyond the point of insertion of the outer one. Gonapophysis, *g*, with mesal-apical lobe long and slender, black-

ened, its lateral edge microscopically toothed or roughened. Aedeagus, *a*, slender, blackened.

Limonia (Dicranomyia) vulgata (Bergroth, 1888) (*ochracea* Doane, 1900).—Willamette Valley: Peavine, Sta. 1, October 1, 1945, June 20, 1946; Sta. 3, July 2, 1946 (*F*). Cascades: Mount Hood-Bear Springs, 3,200 ft., August 8, 1946 (*F*); Still Creek, 3,600 ft., July 16, 1947 (*A*). Big Meadows, North Santiam, 3,460 ft., August 17, 1947 (*Albright*); Tombstone Meadows, South Santiam, August 17, 1947 (*F*). Blue Mts.: Spring Creek, 3,900 ft., July 25, August 29, October 3, 1948 (*Baker*); Langdon Lake, September 9, 1949 (*Davis*); Little Phillips Creek, 2,850 ft., July 3, 1948 (*A*); Pine Creek, June 30, 1949 (*Baker & Sperry*). Wallawas: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (*A*); Lostine Valley, Shady Forest Camp, 5,600 ft., August 19, 1948 (*A*).

Limonia (Dicranomyia) willamettensis Alexander, 1949.—Willamette River, 2 miles south of Dayton, June 24, 1948 (*F*), type. The male hypopygium is shown (Fig. 13).

Limonia (Rhipidia) fidelis (Osten Sacken, 1859).—Blue Mts.: South fork of the



Figs. 10-13.—Male hypopygia: 10. *Limonia (Dicranomyia) inhabilis* Alexander. 11. *L. (Dicranomyia) nielsenii* Alexander. 12. *L. (Dicranomyia) piscataquis* Alexander. 13. *L. (Dicranomyia) willamettensis* Alexander (See fig. 1 for explanation of symbols).

Upper Walla Walla River, below the plant of the Pacific Power and Light Company, 1,450 ft., July 4, 1948 (A).

Limonia (Rhipidia) lecontei Alexander, 1940 (Replacement name for *maculata* Meigen, 1818, preoccupied by *maculata* Meigen, 1804).—Coast: Coquille River, Sitkum, August 5, 1948 (H. W. Thorne); Humbug Mountain State Park, August 11, 1948 (F); Jordan Creek, September 5, 1948 (F); Lee's Camp, September 18-25, 1949 (Davis); Saddle Mt. (Boyer) April 21, June 2, 1934 (*Macnab and associates*). Willamette Valley: Peavine, Sta. 1, June 20, July 26, August 6, 1946; Sta. 2, May 6, 1947; Sta. 3A, May 4, 1945, on sword fern, July 16, August 30, September 10, 1948; Sta. 4, April 19, 1947 (F). McMinnville, May 24, 1947, May 26-30, June 7, 1948 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (F). Cascadia, August 2, 1948 (F). Blue Mts.: Spring Creek, 3,900 ft., August 18-20, September 19, 1948, July 31, 1949 (Baker). Wallows: Above the Lazy T Ranch, 5,000 ft., July 9, 1949 (Sperry); Lostine, 3,375 ft., July 2, 1948 (A).

Limonia (Discobola) annulata (Linnaeus, 1758) (*argus* Say, 1824; *imperialis* Loew, 1851).—Wallows: Lazy T Ranch, 4,500 ft., August 26, 1949 (G. H. Sperry).

Limonia (Discobola) noelegans nom. nov. (for *elegans* Doane, Journ. N. Y. Ent. Soc., 8: 186, 1900; nec *elegans* Zetterstedt, Ins. Lapponica, Diptera, p. 837, 1838; nec *elegans* Wiedemann, Aussereur. zweifl. Ins., 2: 617, 1830).—Coast: Chetco River, August 11, 1948 (F); Gualdo Falls, June 30, July 14, 1949 (F); High Heaven, June 22, 1945, August 6, 1946, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Jessie M. Honeyman State Park, August 12, 1948 (F); Saddle Mt. (Boyer), July 21, 1935 (*Macnab and associates*); Saddle Mountain State Park, July 24, 1949 (F). Willamette Valley: Peavine, Sta. 1, June 10, July 3, 1946, May 15-27, 1947; Sta. 2, May 20, June 18, 1946; Sta. 3, June 9-25, 1948, July 2, 1949; Sta. 3A, May 29, 1947, June 2, 1948 (F). Hendersons Bridge, May 22, 1947 (F); Silver Creek Falls, August 2, 1948 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (A & F); Beaver Creek, 1,150 ft., August 7, 1946 (A & F). House Rock Forest Camp, August 3, 1948 (A & F).

I am greatly indebted to Dr. Alan Stone for information and suggestions regarding the synonymy of the present fly and various other names that are preoccupied in the Tipulidae.

Antocha (Antocha) monticola Alexander, 1917.—Coast: Humbug Mountain State Park, August 11, 1948 (F); Jordan Creek, September 5, 1948 (F); Lee's Camp, September 18-25, 1949 (Davis). Willamette Valley: Silver Creek Falls, July 8, 1949 (F). Cascades: Mount Hood-Horsetail Falls, August 9, 1946, July 19, 1947 (A & F); Oneonta Gorge, August 9, 1946, July 19, 1947 (A & F), both sexes resting and bobbing on cliff faces but not ovipositing. Cascadia, August 2, 1948 (A & F); Deschutes River Guard Station, 4,635 ft., August 6, 1948 (A); Little Deschutes River, August 4, 1946 (A); Metolius River, June 14, 1945, June 15, 1947, August 3, 1948 (F); Odell Lake, 4,760 ft., August 6, 1948 (A); Rivers Edge Forest Camp, Willamette River, August 5, 1946 (A); Schweitzer Creek, Willamette River, August 5, 1946 (A). Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F). Wallows: Johnson Park, Wallowa River, 2,750 ft., August 18-20, 1948 (A); Lazy T Ranch, 4,500 ft., August 24-31, September 3-10, 1949 (Sperry).

Elliptera astigmatica Alexander, 1912.—Coast: Gualdo Falls, June 6, 1949 (F); Marys Peak, June 1, 1946 (F). Willamette Valley: Silver Creek Falls, 950 ft., August 2, 1948 (A & F), July 8, 1949 (Davis). Cascades: Mount Hood-Multnomah Falls, August 9, 1946, July 19, 1947 (A); Sahale Falls, July 17, 1947, July 31, 1948 (A & F); Tilly Jane Creek, 5,600 ft., July 29, 1948 (A). North Santiam Highway, May 30, 1949 (F); Salt Creek Falls, 3,800 ft., July 14, 1947 (A), August 7, 1948 (F). Crater Lake-Vidae Falls, 6,500 ft., August 2, 1946 (A).

Dicranoptycha melampygia Alexander, 1949.—Coast: High Heaven, July 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, July 3-18, 1946, June 19-24, 1947; Sta. 2, July 1, 1948 (F). Baker Creek Valley, McMinnville, June 14-30, 1948 (F); McMinnville, June 14-30, 1948 (F); Zena, Eola Hills, June 5, 1948 (F), type material. Cascades: Mount Hood-Hood River Meadows, 4,500 ft., July 17, 1947 (F).

Dicranoptycha nigrogenualis Alexander, 1949.—Coast: Saddle Mountain State Park, July 24, 1949 (F). Cascades: Mount Hood-Sahale Falls, 4,575 ft., July 17, 1947 (A), part of type material. Blue Mts.: Little Phillips Creek, 4,000 ft., July 3, 1948 (A).

Dicranoptycha quadrivittata Alexander, 1919.—Wallows: Wallowa Lake, July 2,

1949 (*Sperry*); trail above Lazy T Ranch, 5,000 ft., July 6, 1949 (*Sperry*). A characteristic Rocky Mountain species.

Dicranoptycha spinosissima Alexander, 1949.—Blue Mts.: Little Phillips Creek, near Elgin, 2,850 ft., July 2, 1948 (*A*); part of type material.

Dicranoptycha stenophallus Alexander, 1949.—Coast: Humberg Mountain State Park, August 11, 1948 (*F*). Willamette Valley: Peavine, Sta. 1, June 20, July 26, August 6, 1946, July 3, 1947; Sta. 2, May 20, August 20, 1946, July 11-12, 1945; Sta. 3, July 21, August 13, September 13, 1946; Sta. 3A, July 14-16, 1948 (*F*), part of type material. Happy Valley, McMinnville, August 6, 1946 (*F*); Panther Creek, McMinnville, July 25, 1948 (*F*); Forest Grove, July 8-12 (*Cole*), determined 1920 by Alexander as *sobrina* Osten Sacken, in error; Independence, July 6, 1934 (*N. P. Larson*); Silver Creek Falls, August 1, 1948 (*A* & *F*), very numerous in open woods above falls. Southern Oregon: O'Brien, August 9, 1948 (*A* & *F*); State Line Creek, August 9, 1948 (*A* & *F*). Cascades: Mount Hood-Cloud Cap Inn Junction, August 9, 1946 (*F*); Eagle Creek, 300 ft., July 18, 1947 (*A*); Hood Rapids at 3,000 ft., July 29, 1921 (*Melander*); Horsetail Falls, August 9, 1946 (*A* & *F*). Blue Mts.: Langdon Lake, 4,995 ft., August 17, 1948 (*A*); Little Phillips Creek, above Elgin, 2,850 ft., July 2, 1948 (*A*), part of type material.

PEDICIINI

Ula (Ula) elegans Osten Sacken, 1869.—Willamette Valley: Silver Creek Falls, 1,000 ft., May 9, 1948 (*F*).

Ula (Ula) paupera Osten Sacken, 1869.—Coast: Agate Beach, March 27, 1949 (*F*); High Heaven, August 6, 1946, April 1, July 12, 1949 (*F*). Willamette Valley: Peavine, Sta. 1, July 2, 1948 (*F*). Cascades: Mount Hood, Salmon River, July 30, 1948 (*F*). Lost Prairie, 3,700 ft., August 3, 1948 (*F*); Metolius River, 2,800 ft., August 3, 1948 (*A*); Odell Lake, 4,760 ft., August 6, 1948 (*F*); Salt Creek Falls, 3,800 ft., August 7, 1948 (*F*). Blue Mts.: Spring Creek, June 24-26, August 20-29, 1948 (*Baker*); Langdon Lake, 4,970 ft., July 3, 1948 (*A*).

Ornithodes harimani Coquillett, 1900.—Cascades: Salt Creek Falls, 3,800 ft., August 7, 1948 (*F*).

Pedicia (Pedicia) magnifica Hine, 1903 (as *Peditia*).—Cascades: Mount Hood, taken by H. K. Morrison, in the Bigot Collection (Osten Sacken, 1895). Crater Lake-Cold Springs Forest Camp, 5,900 ft., at light, August 7, 1948 (*F*); Pole Bridge Meadow, 5,900 ft., August 11, 1935 (*George Ferguson*). Fort Klamath, August 16, 1922 (*L. R. Dice*); University of Michigan.

Pedicia (Pedicia) obtusa Osten Sacken, 1877.—Willamette Valley: Peavine, Sta. 3A, September 10, 1948 (*F*). Hitherto from California. Part of the male hypopygium is shown (Fig. 14).

Pedicia (Pedicia) parvicellula Alexander, 1938.—Coast: Lee's Camp, September 18-25, 1949 (*Davis*); Saddle Mt. (Boyer), September 26, 1936 (*Macnab*); Tillamook, September 19-21, 1949 (*Davis*). Cascades: Mount Hood-Hood River Meadows, 4,500 ft., July 31, 1948 (*F*); Hersthief Meadows, 3,400 ft., August 9, 1946 (*F*); Robin Hood Forest Camp, 3,560 ft., August 9, 1946 (*Macnab*); Still Creek, 3,600 ft., July 31, 1948 (*A* & *F*). Metolius River, at Lower Bridge Forest Camp, 2,600 ft., August 3, 1948 (*A* & *F*); Odell Lake, Lazy Creek, 4,800 ft., August 4, 1946 (*A*); Tombstone Meadows, South Santiam, August 17, 1947 (*F*). Crater Lake-Pole Creek Meadows, 5,900 ft., August 2-4, 1946 (*A*), August 8, 1948 (*A* & *F*); smaller than the typical form and require further study and comparisons. Blue Mts.: Spring Creek, 3,900 ft., August 29, 1948 (*Baker*).

Pedicia (Tricyphona) ampla (Doane, 1900).—Willamette Valley: Peavine, Sta. 1, October 3, 1945; Sta. 2, September 12, October 5, 1946; Sta. 3, September 11, 1948; Sta. 3A, September 18, 1945, September 10, 1948 (*F*). Corvallis, September 21-25, 1905; Forest Grove, May 5, October 3 (*Cole*).

Pedicia (Tricyphona) aperta (Coquillett, 1905).—Coast: High Heaven, May 4, 1947 (*F*). Willamette Valley: Peavine, Sta. 3A, October 18, 1946, May 12, 1947 (*F*). Silver Creek Falls, August 2, 1948 (*A* & *F*), July 8, 1949 (*F*). Cascades: Mount Hood-Bear Creek, August 1, 1948 (*A* & *F*); Hood River, June 8 (*Cole*); Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (*A* & *F*); Horsetail Falls, 100 ft., July 19, 1947 (*A* & *F*); Hersthief Meadows, 3,400 ft., July 18, 1947 (*F*); Robin Hood Forest Camp, 3,560 ft., August 8, 1946 (*F*); Still Creek, 3,600 ft., October 6, 1945, July 16, 1947 (*F*); Stream below timberline, 5,000 ft., July 16, 1947 (*A*). Des-

chutes River Guard Station, 4,635 ft., August 6, 1948 (A); Dutchman's Flat, Century Drive, 6,100 ft., August 5, 1948 (A & F); Odell Lake, 4,760 ft., August 6, 1948 (F); Salt Creek Falls, 3,800 ft., July 14, 1947 (MMA); Sparks Lake, 5,450 ft., August 5, 1948 (A); Summit Lake, Willamette Pass, 5,120 ft., August 7, 1948 (A); Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Crater Lake-Annie Springs, 6,000 ft., August 1, 1946 (A); Pole Creek Meadows, 5,900 ft., July 12, 1947, August 7, 1948 (A & F). Eastern Oregon: Seneca, Malheur National Forest, June 12, 1947 (F); Ochoco National Forest, June 14, 1947 (F). Blue Mts.: Spring Creek, 3,900 ft., June 25, August 29, September 12, 1948 (Baker); Little Phillips Creek, 4,000 ft., July 3, 1948 (A); Whitney, June 19, 1949 (Baker). Wallowa: Aneroid Lake trail, 7,000 ft., July 26, 1949 (Baker); Wallowa Creek, spring at Power Plant, 4,675 ft., June 29, 1948 (A).

Pedicia (Tricyphona) bicomata Alexander, 1943.—Coast: Bald Mt., July 19, 1942 (F); Lee's Camp, September 18-25, 1949 (Davis); Seaside, August 7, 1940 (Townes), type. Willamette Valley: Peavine, Sta. 1, May 18, July 26, 1946; Sta. 3, May 16, June 4, July 16, September 13, 1946, May 3-20, July 8, September 3, 1947, May 25, June 29, 1948, July 2, 1949; Sta. 3A, May 16, July 11, September 10, October 12, 1945, May 21, July 5, September 17, October 1, 1946, May 5-29, 1947, May 12, June 2, August 30, September 13, 1948 (F). Silver Creek Falls, 800 ft., August 2, 1948 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., July 16, 1947, August 1, 1948 (A & F); Beaver Creek, August 7, 1946 (A & F); Eagle Creek, August 2, 1921 (Melander); Hood River, June 30, 1917 (Melander); Hood River Meadows, July 17, 1947 (A); Horseshief Meadows, July 18, 1947 (Macnab); Multnomah Falls, August 9, 1946, July 19, 1947 (A); Still Creek, July 16, 1947, July 31, 1948 (F); Stream below timberline, 5,000 ft., July 16, 1947 (A). Lost Prairie, 3,700 ft., August 3, 1948 (A & F); Metolius River, 2,200 ft., June 15, 1947, August 3, 1948 (F); North Santiam, May 30, 1949 (F); Odell Lake, 4,760 ft., August 6, 1948 (A); Salt Creek Falls, August 7, 1948 (F); Tombstone Meadows, South Santiam, August 17, 1947 (Albright); Willis Creek, North Santiam, August 17, 1947 (F).

Male hypopygium (Fig. 17) with the ninth tergite, *9t*, transverse, the caudal margin with a broad U-shaped notch, the much broader lobes very densely provided with short erect setulae, with strong pale setae back from the margin. Basistyle, *b*, at apex produced into an elongate lobe, narrowed to the obtuse tip, the apex back for about one-half the length of the lobe with conspicuous retrorse spines; mesal face of style near base with a brush of long yellow setae. Interbase, *i*, a powerful simple rod, stout-based, angularly bent at near one-third the length, thence produced into a long straight spine. Dististyle, *d*, elongate, tapering gradually to the obtuse tip, on outer margin at base with a powerful curved spine that is about as long as the style beyond the point of insertion. Phallosome, *p*, with the aedeagus weak but relatively slender, fully twice the length of the subtending apophyses, the latter obtusely rounded at tips.

Pedicia (Tricyphona) cascadenis sp. nov.—General coloration dark brownish gray, the praescutum with three scarcely differentiated darker stripes; antennae (male) 16-segmented, elongate, approximately two-thirds as long as the wings; halteres unusually long and slender; wings with a weak brownish tinge, stigma slightly darker; cell M_1 closed or open by the atrophy of *m*; male hypopygium with the apex of basistyle flattened and scooplike; dististyle divided into two long conspicuous arms.

♂. Length, about 7.5-8 mm.; wing 7.5-8.5 mm.; antenna, about 5-5.5 mm.

Rostrum brownish gray; palpi brownish black. Antennae (male) 16-segmented, elongate, approximately two-thirds the length of the wing; flagellar segments elongate-cylindrical, the outer ones gradually shorter, terminal segment about one-half the penultimate; verticils short, about one-fourth to one-fifth the segments, placed beyond the middle of their length; segments with a short dense erect pubescence, additional to the verticils. Head dark brownish gray; vertex broad.

Thorax dark brownish gray, the praescutum with three scarcely differentiated darker stripes; dorsopleural region dusky. Halteres unusually long and slender, stem obscure yellow, knob infuscated. Legs with the coxae brown, pruinose; trochanters obscure yellow; remainder of legs brownish black, the femoral bases restrictedly obscure yellow, even more limited on the posterior legs. Wings (Fig. 15) with a weak brownish tinge, the oval stigma slightly darker brown; veins dark brown. Venation: R_5 long, reaching its maximum length in the holotype, arcuated to weakly angulated at origin; cell R_4 from one-fourth to one-fifth longer than its petiole; cell M_1 closed or open by the atrophy of *m* (closed in the holotype, as figured); *m-cu* at or a short distance beyond the fork of *M*.

Abdominal tergites and hypopygium dark brown, the more proximal sternites obscure yellow, the outer ones darker. Male hypopygium (Fig. 18) with the basistyle, *b*, short and compact, the outer portion beyond the dististyle produced into a very thin scooplike blade, with a shorter flattened arm immediately beyond the dististyle. Interbase, *i*, a stout straight rod, its tip acute. Dististyle, *d*, with two very long conspicuous arms, the outer more flattened and subcultrate in outline.

Holotype, ♂, Hood River, Mount Hood, 4,480 ft., August 8, 1946 (C. P. Alexander). *Paratopotypes*, 3 ♂♂, July 31, 1948 (C. P. Alexander); *paratypes*, 4 ♂♂, Island Lake, Beartooth Mts., along the Cooke-Red Lodge Highway, Wyoming, about 9,000 ft., July 10, 1946 (M. E. Smith).

Pedicia (Tricyphona) cascadenis is readily told from all other regional species by the elongate antennae of the male and the distinctive hypopygium. In its venation, it is most similar to *P. (T.) glacialis* (Alexander), which differs in the short antennae and in the very different male hypopygium.

Pedicia (Tricyphona) constans (Doane, 1900).—Coast: Pacific City, May 23, 1948 (F); Sourgrass Creek, May 17, 1948 (F); Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, Sta. 1, May 11-18, 1946, May 24, 1947; Sta. 2, May 31, 1946; Sta. 3, March 9, April 22, 1946, March 12, May 3-30, 1947; Sta. 3A, October 3-23, November 8, 1945, October 1, 1946, May 5-29, June 30, 1947, May 17-24, June 2-8, September 10, 1948, May 6, 1949 (F). Clackamas County, May 15, 1946 (J. F. Bock); Forest Grove, March 29 (Cole); Happy Valley, McMinnville, April 14, 1946 (F); Portland, 1927 (E. Walley Jones). Cascades: Mount Hood-Bear Creek, August 1, 1948 (F); Hood River Meadows, July 31, 1948; Horsethief Meadows, August 9, 1946 (F); Multnomah Falls, August 9, 1946 (A & F); Still Creek, July 16, 1947 (A). Lost Prairie, 3,700 ft., August 3, 1948 (A & F); Metolius River, 2,600 ft., August 3, 1948 (A & F). Crater Lake-Pole Creek Meadows, August 7, 1948 (F). Blue Mts.: Spring Creek, 3,900 ft., June 25, July 25, August 20-22, 1948, June 10-30, 1949 (Baker). Wallows: Wallowa Lake, July 3, 1949 (Sperry).

Male hypopygium (Fig. 19) with the tergite, *9t*, transverse, the caudal margin very shallowly triemarginate, there being a very shallow median lobe and variously developed sublateral lobes that are further separated from the still more lateral pair of lobes by even more shallow notches; apex of central part of tergal margin microscopically setulose. In the lower figure, a variation in the tergal outline is shown. Basistyle, *b*, with the apical lobe very slender, with relatively few blackened spines, chiefly on the mesal face; at base of the lobe with a more flattened reddish plate that is extended into a subacute point, the surface with abundant dense pale setulae. Interbase, *i*, complex, produced into a slender curved spine with a small lobule on outer margin near base; surrounding the interbase a darkened lobe bearing a brush of unusually long yellow setae. Dististyle, *d*, chiefly bilobed, the outer lobe with long erect yellow setae, the inner lobe at apex bearing two stout blackened spines. Phallosome, *p*, with the aedeagus straight, weak, jutting slightly beyond the apices of the gonapophyses.

Pedicia (Tricyphona) degenerata (Alexander, 1917).—Cascades: Crater Lake-Annie Springs, 6,000 ft., August 1, 1946 (A). Wallows: Aneroid Lake trail, 7,000 ft., July 26, 1949 (Baker); Eagle Cap Wilderness Area, 5,000 ft., June 28, 1948 (A); Lostine Valley, 5,500 ft., August 19, 1948 (MMA).

Pedicia (Tricyphona) diaphana (Doane, 1900).—Coast: Grand Ronde, March 31, 1949 (F); Saddle Mt. (Boyer), April 27, 1935 (Macnab). Willamette Valley: Peavine, Sta. 1, May 22, 1947; Sta. 3, March 9, May 29, 1946, March 17, April 11, May 7-20, 1947; Sta. 3A, May 5, 1947, June 8, 1948 (F). Cascades: Mount Hood-Hood River Meadows, July 17, 1947, July 31, 1948 (A & F). Metolius River, June 14, 1945, June 15, 1947, August 3, 1948 (F). Blue Mts.: Spring Creek, 3,900 ft., September 5-19, 1948, May 9, 1949 (Baker); Balloon Tree trail, 5,000 ft., July 3, 1948 (A). Wallows: Lostine Valley, 5,000 ft., July 1, 1948 (A).

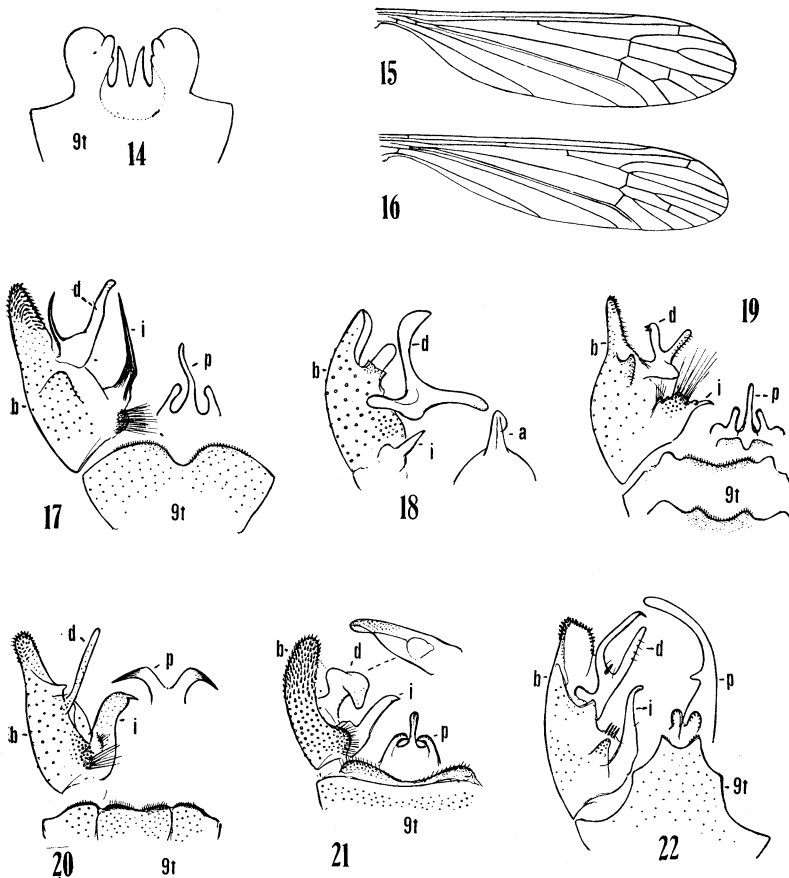
Pedicia (Tricyphona) fenderiana sp. nov.—Thorax dull black, the pleura somewhat more pruinose; antennae short; halteres elongate; wings weakly grayish yellow, the stigma and a seam along vein *Cu* faintly darker; cell *R*₄ sessile or short-petiolate, cell *1st M*₂ long; male hypopygium with the basistyle produced into a slender lobe that is provided with numerous blackened pegs; interbase a stout flattened blade, narrowed at tip into a daggerlike point, the surface with microscopic setulae; dististyle a long slender rod; phallosome consisting of two divergent horns.

♂. Length, about 8.5-9 mm.; wing, 9.5-10 mm.; antenna, about 0.8-0.9 mm.

Rostrum and palpi black. Antennae short, black throughout; flagellar segments oval, shorter than the verticils. Head brownish black, sparsely pruinose; vertex broad.

Thorax dull black, the pleura somewhat more pruinose. Halteres elongate, stem dirty white, clearer at base, knob infuscated. Legs with the fore coxae obscure yellow, restrictedly darkened at base, remaining coxae dark brown, pale at tips; trochanters yellow; remainder of legs black, the femoral bases restrictedly yellow. Wings (Fig. 16) with a weak grayish yellow ground, the stigma very pale brown, inconspicuous; a poorly indicated dusky seam along vein *Cu*; wing base more yellowed. Venation: *Rs* relatively long, angulated and weakly spurred at origin; *r-m* at fork of vein R_{4+5} ; cell R_4 thus sessile or short-petioled; cell 1st M_2 long, *m* subequal to or much shorter than the basal section of vein M_2 ; *m-cu* at or beyond the fork of *M*.

Abdomen elongate, brownish black to black, including the hypopygium. Male hypopygium (Fig. 20) with the tergite, *9t*, transverse, the caudal margin truncated, more or less trilobed, the lateral lobes with the margins narrowly thickened and darkened; median area broader, emarginate at midline, the border darkened and setiferous; no developed



Figs. 14-22.—14. *Pedicia (Pedicia) obtusa* Osten Sacken, male hypopygium, ninth tergite. 15-16. Venation: 15. *Pedicia (Tricyphona) cascadenensis* sp. nov. 16. *Pedicia (Tricyphona) fenderiana* sp. nov. 17-22. Male hypopygia: 17. *P. (Tricyphona) bicomata* Alexander; 18. *Pedicia (Tricyphona) cascadenensis* sp. nov. 19. *P. (Tricyphona) constans* Doane. 20. *P. (Tricyphona) fenderiana* sp. nov. 21. *P. (Tricyphona) glacialis* Alexander. 22. *P. (Tricyphona) macrophallus* Alexander (See fig. 1 for explanation of symbols).

lateral tergal arms. Basistyle, *b*, produced apically into a slender lobe that is set with numerous blackened peglike spinous setae; at its base and near the origin of the dististyle with a small short fingerlike lobule; mesal face of basistyle near proximal end with a group or brush of unusually long setae; setae of outer surface of style long and conspicuous. Interbase, *i*, a stout flattened blade, the tip obtuse, abruptly produced into a daggerlike point; surface of blade with small setae, these very numerous and congested near apex; nearer base with a concentration of longer setae. Dististyle, *d*, a long slender parallel-sided rod, its tip obtuse, the surface with scattered microscopic pale punctures. Phallosome, *p*, consisting essentially of two divergent horns that narrow into strong spines.

Holotype, ♂, in poor condition, Sourgrass Creek, Yamhill Co., in Coast Range, May 17, 1948 (K. M. Fender). *Paratopotypes*, 4 ♂ ♂.

This unusually interesting species is named for the collector, Kenneth M. Fender, student of the Nearctic fireflies, particularly the difficult *Malthodes* complex. The nearest ally is *Pedicia (Tricyphona) unigera* Alexander, which differs in the coloration, venation and structure of the male hypopygium.

Pedicia (Tricyphona) glacialis (Alexander, 1917).—Coast: Saddle Mt., Hood Craven Cabin, 3,000 ft., September 30, 1933 (*Macnab*). Cascades: Mount Hood-One mile south of the Wapinitia cut-off junction, August 7, 1946 (*F*). Tombstone Meadows, South Santiam, August 17, 1947 (*F*).

Male hypopygium (Fig. 21) having the ninth tergite, *9t*, with what appears to be a loosely attached narrow posterior border that is densely setiferous, easily torn or broken from the main body of the tergite behind it. Basistyle, *b*, produced beyond the point of insertion of the dististyle as a stout lobe, the entire outer portion densely set with long blackened spicules which pass into stout setae more basad on main body of style; mesal face of style with a low lobe that is abundantly setiferous. Interbase, *i*, a flattened cultriform blade, in some specimens appearing narrower than in others, this possibly due to tilting. Dististyle, *d*, a simple dusky, very broad based blade that narrows to an obtuse point, before midlength with a lacuna or clear space, in most specimens the apex of the style beyond this point more bent or pendant. Phallosome, *p*, with the aedeagus relatively small, projecting beyond the incurved apices of the gonapophyses.

Pedicia (Tricyphona) macrophallus macrophallus Alexander, 1945.—Coast: Humbug Mountain State Park, August 11, 1948 (*F*); wings slightly more patterned than in the type, approaching the race *actaeon*; Meadow Lake, June 6, 1948 (*Albright*). Willamette Valley: Silver Creek Falls, June 23, 1939 (*Aitken & Bohart*), type; August 2, 1948 (*A*). Cascades: Hazel Creek, near Dexter, 990 ft., August 5, 1946, July 15, 1947 (*A*).

Male hypopygium (Fig. 22) very large. Ninth tergite, *9t*, large, produced and narrowed outwardly, the caudal end relatively narrow, emarginate. Basistyle, *b*, large, the apex produced beyond the point of insertion of the dististyle as a flattened blade, the apex and margin of which bears numerous small black spicules; nearer base of style and close to the interbase with a conical lobe bearing several long yellow setae. Interbase, *i*, a simple elongate rod, the part of the basistyle near its base with a group of four stout black spines. Dististyle, *d*, deeply bilobed, each lobe a long slender arm, the outer somewhat shorter, its tip obtuse, the margin with relatively few erect pale setae; inner arm longer, more sinuous, terminating in a single strong black spine; at base of fork of the style with one further spine. Phallosome, *p*, with the aedeagus unusually large and conspicuous, appearing as a stout, gently curved rod, the apex a little expanded, obtuse, the margin at near midlength bearing a slender lobe; what appear to represent the gonapophyses are oval flattened plates at the base of the aedeagus.

Pedicia (Tricyphona) macrophallus actaeon Alexander, 1947.—Coast: High Heaven, May 4, 1947 (*F*); Humbug Mountain State Park, August 11, 1948 (*F*). Southern Oregon: State Line Creek, August 9, 1948 (*A & F*). The type, from coastal northern California, is even larger than the present materials but has the same conspicuously patterned wings, giving an appearance quite distinct from that of the typical form.

Pedicia (Tricyphona) protea (Alexander, 1918).—Coast: Agate Beach, March 27, 1949 (*F*); Cascade Head Experimental Forest, May 23, 1948 (*F*); Castle Rock, March 31, 1949 (*F*); Coquille River, Sitkum, August 5, 1948 (*H. W. Thorn*); Gualdo Falls, May 17, 1948, May 13, June 6, 1949 (*F*); Hemlock, April 5, 1949 (*F*); High Heaven, May 4, 1947 (*F*); Saddle Mt. (Boyer), May 6, October 12, 1934, March 17, May 19, 1935, April 18-25, 1936 (*Macnab and associates*); Sand Lake, April 12, 1949; Tierra del Mar, May 13, 1949 (*F*). Willamette Valley: Peavine, Sta. 1, July 3, 1947; Sta. 3, March 21, April 12, 1946, May 3-15, 1947, June 4, 1948, May 26, 1949; Sta. 3A, May 3, 1946, May 12, 1947, May 6, 1949 (*F*). Happy Valley, McMinnville, April 14, 1946 (*F*); Silver Creek Falls, May 9, 1948 (*F*), May 2, 1949 (*F & Davis*). Cascades:

Mount Hood-Beaver Creek, 1,150 ft., July 16, 1947 (F); stream below timberline, 5,000 ft., July 16, 1947 (A). North Santiam, May 30, 1949 (F); Odell Lake, along various small streams flowing into the lake from the north, July 13, 1947 (A). Wallows: Lostine Valley Guard Station, 4,900 ft., June 30, 1948 (A); Wallowa Creek, spring at Power Plant, 4,630 ft., June 30, 1948 (A).

Pedicia (Tricyphona) septentrionalis septentrionalis (Bergroth, 1888) (*sparsipuncta* Alexander, 1920).—Coast: Sand Lake, April 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, October 3, 1945; Sta. 3, April 12, May 5, October 11, 1946; Sta. 3A, October 1, 1946 (F). Corvallis, May 14, 1917 (Moulton); Hillsboro, April 1, 1919 (Cole), types of *sparsipuncta*; McMinnville, April 14, 1945, at light (F). Cascades: Prospect, May 28, 1921 (Dyar).

Pedicia (Tricyphona) septentrionalis vitripennis (Doane, 1900).—Coast: Lee's Camp, September 18-25, 1949 (Davis); Saddle Mt. (Boyer), October 10, 1936 (Macnab). Willamette Valley: Peavine, Sta. 3, May 3-30, 1947; Sta. 3A, April 12, May 21, 1946, May 24, 1948 (F). Summit, 650 ft., June 5, 1929 (Scullen). Cascades: Prospect, May 28, 1921 (Dyar). This is evidently only a color form of *septentrionalis* with the wings unpatterned or virtually so.

Pedicia (Tricyphona) smithae Alexander, 1941.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (A & F); North fork of Iron Creek, 4,400 ft., July 30-31, 1948 (A & F); Sahale Falls, 4,575 ft., July 17, 1947, July 31, 1948 (A & F); Still Creek, July 16, 1947 (F); Stream below timberline, 5,000 ft., July 16, 1947 (A); Tilly Jane Creek, 5,600-5,700 ft., July 18, 1947, July 29-30, 1948 (A & F). Crater Lake-South Rim, 7,100 ft., August 1, 1930 (Scullen); Castlecrest Garden, 6,800 ft., August 2, 1946 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker).

Pedicia (Tricyphona) townesiana townesiana Alexander, 1942.—Cascades: Mount Hood-Multnomah Falls, August 9, 1946 (F); Robin Hood Forest Camp, 3,560 ft., in wet swale, July 17, 1947 (A). Salt Creek Falls, August 7, 1948 (A).

***Pedicia (Tricyphona) townesiana majuscula* subsp. nov.—**

♂. Length, about 11 mm.; wing, 11 mm.

♀. Length, about 12-14 mm.; wing, 11.5-12.8 mm.

Very similar to the typical form, differing almost solely in the unusually large size.

At first sight this appears to represent an entirely distinct species but a careful comparison fails to reveal any significant differences except the above, which is very striking.

Holotype, ♂ on slide, Lee's Camp, Coast Range, September 18, 1949 (J. E. Davis). *Allotopotype*, ♀ on slide. *Paratopotype*, a ♀ on slide; paratype, ♀, Jordan Creek, Coast Range, September 5, 1948 (K. M. Fender).

Pedicia (Tricyphona) unigera Alexander, 1949.—Coast: Gunaldo Falls, June 6, 1949 (F); Harris Beach State Park, August 11, 1948 (F). Southern Oregon: State Line Creek, August 9, 1948 (A). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (F); Still Creek, 3,600 ft., July 16, 1947, July 31, 1948 (F); Stream below timberline, 5,000 ft., July 16, 1947 (A). Big Meadows, North Santiam, 3,460 ft., August 17, 1947 (F); Hazel Creek, 990 ft., August 5, 1946 (A), type; Lost Prairie, 3,700 ft., August 3, 1948 (A); North Santiam Highway, May 30, 1949 (F); Salt Creek Falls, 3,700 ft., August 7, 1948 (F).

Dicranota (Dicranota) argentea Doane, 1900 (*montana* Alexander, 1920).—Willamette Valley: Peavine, Sta. 2, March 13, 1947 (F). Cascades: Metolius River, June 14, 1945 (F).

***Dicranota (Dicranota) astigma* sp. nov.**—General coloration gray, the praescutum with three entire brownish gray stripes; antennae short in both sexes, 12-segmented; apex of knob of halteres infuscated; wings subhyaline, the stigma only a trifle darker than the ground; R_5 and the supernumerary crossvein widely separated; cell R_6 very short-petiole to barely sessile, m lacking; male hypopygium with the caudal border of the tergite gently emarginate, the lateral arms long and narrow, their tips decurved into sharp points; interbase a long pale blade, the apex obtuse; dististyle nearly as long as the inner apical lobe of basistyle, the tip broadly rounded.

♂. Length, about 5.3-5.5 mm.; wing, 7-7.3 mm.; antenna, about 0.8-0.9 mm.

♀. Length, about 6-7 mm.; wing, 7.2-8.3 mm.

Rostrum gray; palpi dark brown. Antennae 12-segmented, black, the scape more pubescent; flagellar segments oval, the terminal one about one-half longer than the penulti-

mate and apparently formed by the fusion of two segments. Head brownish gray, the anterior part somewhat clearer gray.

Pronotum gray, more infuscated medially. Mesonotum gray, the praescutum with three darker brownish gray stripes, the median one entire; scutal lobes weakly darkened. Pleura gray. Halteres pale, apex of knob infuscated. Legs with the coxae pale, pruinose; trochanters obscure yellow; remainder of legs brown, the outer tarsal segments darker. Wings (Fig. 23) subhyaline, the extreme base more yellowed; stigma only a trifle darker than the ground; veins brown. Venation: Sc_1 ending a short distance beyond the supernumerary crossvein in Cell R_1 , the latter widely separated from vein R_2 so that the second section of R_{2+3} is approximately three times the first section or about one-fifth longer than R_5 ; cell R_3 usually sessile but in cases with a short element R_{2+3+4} ; R_5 in cases strongly angulated beyond origin.

Abdomen dark brown, in female with the genital segment more obscure yellow. Ovipositor with cerci horn-yellow, long and powerful, gently upcurved. Male hypopygium (Fig. 27) with the caudal border of the tergite, $9t$, gently emarginate, the lateral arms relatively long and narrow, the slightly dilated triangular head decurved into a sharp point; surface of tergite with abundant setae. Basistyle, b , with the outer apical lobe stout, with relatively few setae, all long and slender, the somewhat smaller inner lobe with numerous blackened spinous setae. Interbase, i , a long pale blade, the outer end moderately dilated, the apex obtuse. Dististyle, d , nearly as long as the inner apical lobe of the basistyle, the tip broadly rounded. Phallosome, p , a compact mass, the apex of the darkened aedeagus jutting slightly beyond the level of the apophyses, the latter acute, directed laterad.

Holotype, ♀, Mount Hood, at timberline, 5,500 ft., August 7, 1946 (C. P. Alexander). *Allotype*, ♂, Sahale Falls, 4,575 ft., July 31, 1948 (C. P. Alexander). *Paratypes*, 2 ♂♂, with the allotype; ♀, Horsethief Meadows, 3,400 ft., July 18, 1947 (K. M. Fender).

The most similar species is *Dicranota (Dicranota) tetonicola* Alexander, of the north-central Rocky Mountains, which differs in the details of structure of the male hypopygium, particularly the lateral arms of the tergite, interbase and dististyle.

***Dicranota (Dicranota) parvella* sp. nov.**—Size very small (wing, male, 4.5 mm.); general coloration brownish gray, the praescutum with a median brown stripe; wings subhyaline, stigma pale brown, inconspicuous; R_{2+3+4} fully one-half the basal section of R_{2+3} ; cell M_1 present; male hypopygium with the median region of tergite only moderately convex, lateral tergal arms long; interbase a large and conspicuous blade, its inner apical angle produced into a long spinous point; basistyle terminating in two unequal lobes.

♂. Length, about 4 mm.; wing, 4.5 mm.

Rostrum and palpi black. Antennae short, black; flagellar segments oval. Head dark brown.

Mesonotum chiefly brownish gray, the praescutum with a broad central brown stripe, the lateral pair ill-defined. Pleura more brownish gray. Halteres whitened. Legs with the coxae brownish testaceous; trochanters yellow; remainder of legs brown. Wings (Fig. 24) narrow, subhyaline, the base more whitened; stigma pale brown, relatively inconspicuous; veins pale brown. Venation: R_{2+3+4} long, fully one-half the basal section of R_{2+3} ; supernumerary crossvein and vein R_5 relatively distant from one another, the space on R_{2+3} between them a trifle longer than the basal section of the same vein; R_{1+2} shorter than R_2 ; cell M_1 short.

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 26) with the median region of the tergite, $9t$, only moderately rounded or convex, provided with coarse setae; lateral tergal arms long, incurved, the tips feebly dilated. Basistyle, b , at apex with two unequal lobes, the larger one with relatively few spinous setae on the apical third, the second lobe stouter and a little more than one-half as long, provided only with scattered setae. Interbase, i , large and conspicuous, appearing as a quadrate blade, the inner apical angle produced into a long, nearly straight spinous point. Dististyle, d , an oval ear-shaped blade, provided with scattered setae, some of those at tip larger and more conspicuous. Phallosome, p , with the central element or aedeagus expanded at apex into an oval head, the apophyses weakly dilated at tips.

Holotype, ♂, Big Meadow, North Santiam, August 17, 1947 (K. M. Fender).

This very small *Dicranota* is readily told from regional allies, including *Dicranota (Dicranota) astigma* sp. nov., and *D. (D.) argentea* Doane, by the small size and by

the structure of the male hypopygium, particularly the interbase. The similarity to *Dicranota* (*Plectromyia*) *cascadica* Alexander is discussed under the latter species.

Dicranota (*Polyangaues*) *maculata* (Doane, 1900).—Coast: Agate Beach, March 27, 1949 (F); Cascade Head Experimental Forest, May 23, 1948 (F); Castle Rock, March 31, May 13, 1949 (F); Gunaldo Falls, May 17, 1948, May 13, 1949 (F); Saddle Mt. (Boyer), September 20, 1933 (*Macnab*); Sand Lake, April 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, April 19, May 8, October 3-23, 1945, on sword fern; Sta. 3, April 17, May 1, 1946, April 24, May 14, 1947, May 11, 1948; Sta. 3A, April 17, May 6-21, October 11, 1946, May 5-19, 1947, April 27, May 17, 1948 (F). Archer's Camp, Creswell, April 26, 1942 (*Davis*); Forest Grove, May 20 (*Cole*); Happy Valley, McMinnville, April 14, May 12, 1946 (F); McMinnville, April 19, 1945 (F); Orchard View, May 4, 1949 (F); Silver Creek Falls, May 9, 1948 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946, July 17, 1947, July 31, 1948 (A & F). Salt Creek Falls, 3,800 ft., July 14, 1947 (A).

Dicranota (*Polyangaues*) *subapterogyne* Alexander, 1943.—Willamette Valley: Peavine, Sta. 2, April 26, 1947 (F), a single ♂. When compared with *maculata*, the relatively small dichoptic eyes of the male provide a character for ready identification.

Dicranota (*Rhaphidolabis*) *cayuga* (Alexander, 1916).—Coast: South fork of the Chetco River, March 18, 1940 (*Post & Ross*); Saddle Mt. (Boyer), April 27, 1935 (*Macnab*); Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, Sta. 3, April 26, May 16, 1946; May 20-30, 1947; Sta. 3A, May 19, 1947, June 2, 1948 (F). Silver Creek Falls, 1,000 ft., May 9, 1948 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946, July 17, 1947 (A & F); North Fork of Iron Creek, July 30, 1948 (A); Still Creek, July 16, 1947 (F); Tilly Jane Creek, July 18, 1947 (A & F). North Santiam, May 30, 1949 (F). Blue Mts.: Spring Creek, 3,900 ft., August 29, October 3, 1948, May 9, June 30, 1949 (*Baker*).

Dicranota (*Rhaphidolabis*) *cazieriana* Alexander, 1944.—Coast: Jordan Creek, September 5, 1948 (F). Willamette Valley: Peavine, Sta. 1, May 18, 1946; Sta. 3, July 2, 1946, September 11, 1948; Sta. 3A, May 23, June 30, 1947, June 8, September 10, 1948 (F).

***Dicranota* (*Rhaphidolabis*) *fenderi* sp. nov.**—General coloration pale brown, the pleura more yellowed; antennal scape pale, flagellum brown; head brownish gray, paling to yellow behind; knobs of halteres infuscated; legs brownish yellow, the outer tarsal segments dark brown; wings whitish subhyaline, unpatterned; R_{2+3+4} present, unusually erect, subequal to $r-m$; R_s long, square and spurred at origin; male hypopygium with the tergite transverse, the caudal margin not produced, at midline with a semicircular notch that is bordered by a blackened area set with numerous small setae from conspicuous punctures; basistyle at apex broadly rounded, with erect spinous setae; interbase leg-shaped; dististyle unequally bifid, the outer arm a small cylinder that is tipped with about a dozen blackened points, the inner arm a long straight blade that narrows to the acute tip.

♂. Length, about 5.3-5.7 mm.; wing, 5.7-6.3 mm.

♀. Length, about 7 mm.; wing, 6 mm.

Rostrum light yellow; palpi dark brown. Antennae short, apparently 12-segmented; scape pale, remainder of organ brown; basal flagellar segments suboval, the subterminal ones lengthened; terminal segment very small; verticils much longer than the segments. Head brownish gray, the posterior portion obscure brownish yellow.

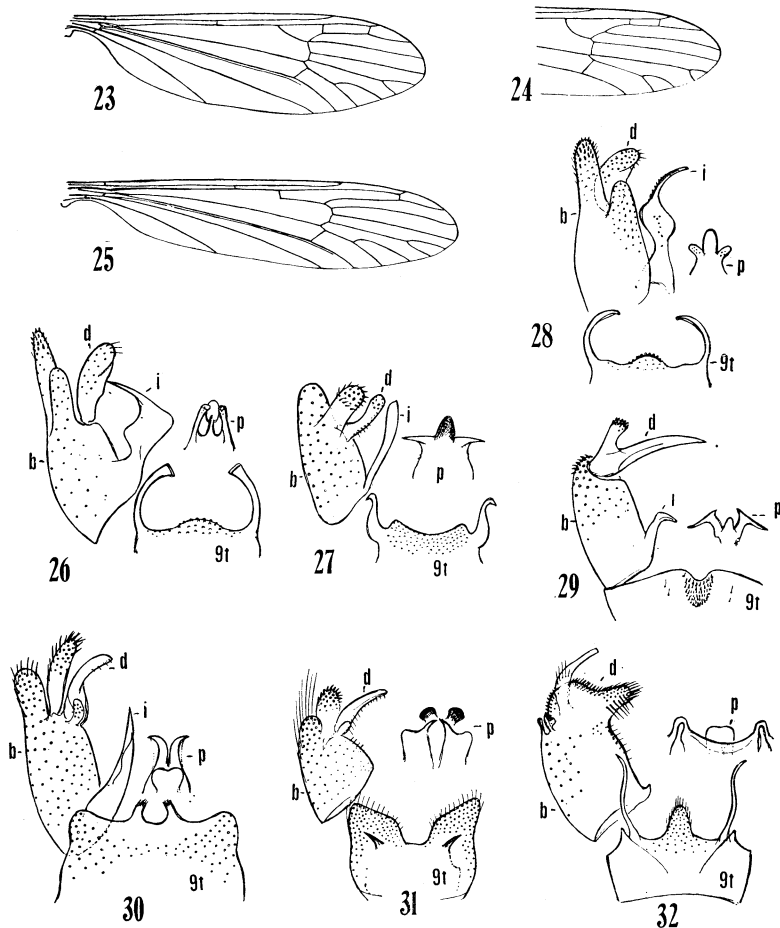
Thorax gibbous, the praescutum projecting strongly over the pronotum; dorsum pale brown or brownish buff, the posterior sclerites and pleura clearer yellow. Halteres pale, knob infuscated. Legs with the coxae and trochanters yellow; remainder of legs brownish yellow, the outer tarsal segments dark brown. Wings whitish subhyaline, unpatterned; veins pale brown. Venation: Sc_1 ending just beyond the level of the fork of R_s , Sc_2 some distance before the origin of the latter; R_s unusually long, square and spurred at origin; R_{2+3+4} unusually erect, subequal to $r-m$, the latter shortly before the fork of R_s ; $m-cu$ about one-fifth its length beyond the fork of M .

Abdomen dark brown, sparsely pruinose; hypopygium somewhat more brightened. Male hypopygium (Fig. 29) with the tergite, $9t$, transverse, the caudal margin not produced as in other regional members of the genus, at the midline with a semicircular notch, behind which there is an oval blackened area set with small setae that arise from conspicuous punctures, the setae directed caudad. Basistyle, b , at apex broadly rounded, set with a number of erect to slightly retrorse spinous setae, interspersed with some unusually long setae. Interbase, i , leg-shaped, the foot portion flattened. Dististyle, d , unequally

bifid, consisting of two arms, the shorter cylindrical one tipped with about a dozen short blackened points, the inner arm a long straight blade that narrows gradually to the acute tip. Phallosome, *p*, small but relatively conspicuous, the gonapophyses exceeding the aedeagus in length, unequally bispinous, the outer spine long and straight.

Holotype, ♂, Gualdo Falls, Sourgrass Creek, Coast Range, May 17, 1948 (*K. M. Fender*). *Allotopotype*, ♀, with the type. *Paratopotype*, 1 ♂, pinned with the allotype; *paratypes*, 1 ♀, Saddle Mt. (Boyer), June 21, 1934 (*Macnab*); 1 ♂, Jessie M. Honeyman State Park, August 12, 1948 (*K. M. Fender*); ♂, Tierra del Mar, May 13, 1949 (*K. M. Fender*); 1 ♂, Silver Creek Falls, 1,000 ft., May 2, 1949 (*K. M. Fender*).

This entirely distinct fly is named for Kenneth M. Fender who is chiefly responsible for the success of the present Oregon list. Superficially it most resembles *Dicranota* (*Rhaphidolabis*) *xanthosoma* Alexander but the actual relationship to this species is



Figs. 23-25—Venation: 23. *Dicranota* (*Dicranota*) *astigma* sp. nov. 24. *D.* (*Dicranota*) *parvella* sp. nov. 25. *D.* (*Rhaphidolabis*) *uniplagia* sp. nov. 26-32. Male hypopygia: 26. *D.* (*Dicranota*) *parvella* sp. nov. 27. *D.* (*Dicranota*) *astigma* sp. nov. 28. *D.* (*Plectromyia*) *cascadica* Alexander. 29. *D.* (*Rhaphidolabis*) *fenderi* sp. nov. 30. *D.* (*Rhaphidolabis*) *polymeroides* Alexander. 31. *D.* (*Rhaphidolabis*) *uniplagia* sp. nov. 32. *D.* (*Rhaphidolabis*) *xanthosoma* Alexander (See fig. 1 for explanations of symbols).

remote, as can be seen by comparing the figures of the male hypopygia of the two species (Figs. 29 and 32).

Dicranota (Rhaphidolabis) integriloba Alexander, 1943.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 31, 1948 (F); Robin Hood Forest Camp, 3,560 ft., August 8, 1946 (A); Sahale Falls, 4,575 ft., July 17, 1947 (A & F); Tilly Jane Creek, 5,600 ft., July 30, 1948 (A). Wallowas: East Fork of Wallowa River, 5,450 ft., July 15, 1949 (Sperry); Lostine Valley, 5,000 ft., July 1, 1948 (A); Wallowa Creek, 4,675 ft., June 29, 1948 (A).

Dicranota (Rhaphidolabis) neomexicana (Alexander, 1912).—Coast: Gualdo Falls, June 6, 1949 (F).

Dicranota (Rhaphidolabis) nooksackensis Alexander, 1949.—Cascades: Mount Hood-Salmon River, July 30, 1948 (F). Tumalo Creek, Bend, 3,610 ft., August 14-15, 1948 (A).

Dicranota (Rhaphidolabis) polymeroides (Alexander, 1914).—Coast: Gualdo Falls, June 6, July 14, 1949 (F); Harris Beach State Park, August 11, 1948 (F); High Heaven, July 12, 1949 (F); Jordan Creek, September 5, 1948 (F); Saddle Mt. (Boyer), June 21, 1934, October 13, 1935 (*Macnab and associates*). Willamette Valley: Peavine, Sta. 1, May 23, 1947; Sta. 3, April 26, May 23, 1946, May 20, 1947, May 28, June 4, 1948; Sta. 3A, October 12, 1945, June 11, 1946, May 24, June 8, August 30, 1948 (F). Southern Oregon: State Line Creek, August 9, 1948 (A); Store Gulch Forest Camp, Illinois River, 970 ft., August 9, 1948 (A). Cascades: North Santiam, May 30, 1949 (F); Schweitzer Creek, near Westfir, 1,000 ft., August 5, 1946 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker); Pine Creek, 4,600 ft., June 25, 1948 (A).

Male hypopygium (Fig. 30) with the tergite, $9t$, very large, slightly narrowed outwardly; caudal margin with four lobes, the lateral pair short and stout, the intermediate lobes slender, tipped with a few strong setae; lateral emarginations shallow, the median one broadly U-shaped; lateral lobes with strong setae, the row continued across the mid-dorsal region. Basistyle, b , with two apical lobes, the outer one shorter and stouter, with long setae; inner lobe longer but more slender, especially at base, the setae somewhat stouter but elongate, especially at apex. Interbase, i , a large broad-based blade, gradually narrowed to the acute point, the outer portion more or less twisted. Dististyle, d , a little longer than the inner lobe of the basistyle, stout at base and here with a few small setae, the outer half more narrowed into a blade, its apex obtuse. Phallosome, p , with the apophyses projecting caudad beyond the level of the stout aedeagus, the apex of the latter weakly emarginate.

Dicranota (Rhaphidolabis) querula Alexander, 1944.—Blue Mts.: Spring Creek, 3,900 ft., August 29, 1948 (Baker). Wallowas: Lostine Valley, above French Forest Camp, 5,500 ft., August 19, 1948 (M. M. Alexander).

Dicranota (Rhaphidolabis) uniplagia sp. nov.—General coloration brownish gray, the praescutum with blackened stripes; antennae short, 14-segmented; wings brownish yellow, stigma and a spot over the cord brown; cell R_3 broadly sessile, cell M_2 open; male hypopygium with the caudal border of the large tergite broadly and deeply emarginate, without lateral arms but with a pair of acute spines on ventral surface; dististyle a slender rod that narrows to the obtuse tip.

♂. Length, about 8.5 mm.; wing, 10.5 mm.; antenna, about 1.2 mm.

Rostrum and palpi black. Antennae short, 14-segmented, black throughout; first flagellar segment nearly as long as the succeeding two combined; remaining segments oval, the terminal one about one-half longer than the penultimate. Head brown, the front light gray pruinose.

Pronotum black, gray pruinose. Thorax discolored, evidently brownish gray, the praescutum with black stripes, the median one broad. Pleura dull gray pruinose. Halteres with stem dirty white, the apex of knob more infuscated. Legs with the coxae gray pruinose; trochanters obscure yellow; remainder of legs black, the bases of the posterior femora restrictedly more yellowed. Wings (Fig. 25) brownish yellow, the prearcular and costal fields slightly darker; stigma large, brown; a conspicuous brown spot over the anterior cord, especially on $r-m$ and basal section of R_5 . Venation: R_s relatively long, angulated and spurred at origin; R_{1+2} shorter than R_2 , the latter transverse; cell R_2 broadly sessile, R_{4+5} subequal in length to the basal section of R_5 and in oblique alignment with it; cell M_2 open, cell M_1 present; $m-cu$ more than one-fourth its length beyond the fork of M .

Abdomen dark brownish gray. Male hypopygium (Fig. 31) with the tergite, $9t$,

large, transverse, the caudal border broadly and deeply emarginate, the broad lateral lobes obliquely truncated, clothed with abundant long setae; no lateral tergal arms; on ventral surface near center of base of each lobe with an acute spine, directed laterad and slightly outward. Basistyle, *b*, with two apical lobes, the low outer one with long setae, the slightly larger oval inner lobe with numerous blackened spinous setae at apex; no developed interbase. Dististyle, *d*, a slender rod that narrows to the obtuse tip. Phallosome, *p*, consisting of flattened apophyses, the inner apical angle produced into a spine, the outer angle obtuse; aedeagus bifid.

Holotype, ♂, Sourgrass Creek, Coast Range, May 17, 1948 (K. M. Fender).

The only close ally of the present fly is *Dicranota (Rhaphidolabis) stigma* (Alexander), which differs in the venation and pattern of the wings, and in the structure of the male hypopygium, particularly the tergite and dististyle.

Dicranota (Rhaphidolabis) xanthosoma Alexander, 1944.—Coast: Saddle Mountain State Park, July 24, 1949 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (A); Hood Rapids, July 29, 1921 (Melander), type; Hood River Meadows, 4,500 ft., July 17, 1947 (A); Horsethief Meadows, 3,400 ft., July 18, 1947 (F); North Fork of Iron Creek, July 30, 1948 (F); Robin Hood Forest Camp, 3,560 ft., July 17, 1947 (A); Still Creek, 3,600 ft., July 16, 1947 (A); Stream below timberline, 5,000 ft., August 7, 1946, July 16, 1947 (A). Lost Prairie, 3,700 ft., August 3, 1948 (A); Odell Lake, Jungle Creek, 4,800 ft., July 13, 1947, August 6, 1948 (A & F); Salt Creek Falls, 3,800 ft., August 7, 1948 (A & F).

Male hypopygium (Fig. 32) with the tergite, *9t*, transverse; caudal margin generally truncate, the median area produced caudad into a large depressed lobe, obtuse, the surface densely covered with strong setae; on either side the tergite produced into a small sub-lateral point, and at nearly the same place or slightly more laterad with a long slender spinous rod, its tip acute. Basistyle, *b*, simple, the only lobe being a small slender rod that is very inconspicuous. Interbase similarly very reduced, appearing as a small triangular blade at the extreme base of the mesal face of style. Dististyle, *d*, single, very large, occupying the whole apex of the basistyle, appearing as a slightly irregular lobe, the inner or rostral portion slightly more narrowed; outer lateral end further divided into a small, more sclerotized plate; apex of style at this point with numerous small blackened spicules, at summit the setae still spinous but longer, on the rostral portion passing into strong setae; on face of rostral area with about a dozen dark spinous setae of unusual length; on face of style with a long arm or blade that extends caudad beyond all other elements of the hypopygium, the apex broadly obtuse, the surface with five or six strong setae. Phallosome, *p*, broad, shaped about as figured.

Dicranota (Plectromyia) cascatica Alexander, 1949.—Cascades: Mount Hood-Bear Creek, 1,400 ft., August 7, 1946 (F). Described from Mount Rainier, Washington. The above specimen is evidently conspecific but shows slight differences in the structure of the male hypopygium that make it appear that the type, as originally described and figured, was somewhat deformed by mounting on a microscope slide. The hypopygium is therefore figured and re-described from the present material.

Ninth tergite (Fig. 28, *9t*) with the median region moderately produced, obtuse, provided with abundant setae; lateral tergal arms long and slender, blade-like, slightly more dilated before the subobtuse tip, before the latter on the lower margin with a low flange. Basistyle, *b*, with two apical lobes, the outer one more slender, on its apical fourth with peglike spinous setae that merge more basally into normal setae; shorter inner lobe stout, with elongate setae. Dististyle, *d*, very broad, its outer margin convex, the inner one more nearly straight, the tip obtuse, not emarginate, as indicated for the type. Interbase, *i*, large, broadly dilated just beyond midlength, thence narrowed into a long slender blade, the tip acute or subacute; outer margin with a row of delicate setae. Phallosome, *p*, with the apophyses small and weak, the aedeagus projecting a little beyond their ends.

The only other regional species of the subgenus having the median lobe of the ninth tergite low and obtuse is *Dicranota (Plectromyia) nooksackiae* Alexander, and races, differing in all details of structure of the hypopygium. In its general features, the hypopygium is more like that of *D. (Dicranota) parvella* sp. nov. (compare Fig. 26) which certainly appears to be correctly placed in the subgenus *Dicranota*. This resemblance of the hypopygia of two evidently distinct flies serves to confirm the belief in a very close relationship between the various so-called subgenera in *Dicranota*.

Dicranota (Plectromyia) nooksackiae nooksackiae Alexander, 1949.—Cascades: Big

Meadow, North Santiam, 3,460 ft., August 17, 1947 (F); Tumalo Creek, Bend, 3,610 ft., August 14-15, 1948 (A).

Dicranota (Plectromyia) nooksackiae subtruncifer subsp. nov.

♂. Length, about 4.5 mm.; wing, 5.5.2 mm.

♀. Length, about 5 mm.; wing, 5.5.5.7 mm.

Very similar to the typical form, differing in details of coloration, venation, and structure of the male hypopygium. It seems probable that more material will indicate that two distinct species are involved. Wings with the stigma pale brown, distinct, entirely lacking in the typical form. Venation, as compared with the typical form, with *Sc* short, ending opposite or just beyond the fork of R_{2+3+4} ; *Rs* shorter and more strongly arcuated; cell R_3 long-petiolate by the presence of vein R_{2+3+4} , this element subequal to or longer than *r-m*. Male hypopygium with the median lobe of the tergite broad, its apex truncated; lateral tergal arms much as in the typical form. Interbase, apical lobe of basistyle and dististyle not greatly different from the typical form.

Holotype, ♂, Big Meadow, North Santiam, August 17, 1947 (K. M. Fender). *Allotopotype*, ♀. *Paratopotypes*, 7 ♂ ♀, with the types.

Dicranota (Plectromyia) reducta Alexander, 1921.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946, July 17, 1947, July 31, 1948 (A & F); North Fork of Iron Creek, 4,400 ft., July 31, 1948 (A); Robin Hood Camp, 3,560 ft., August 8, 1946 (A & F); Stream below timberline, 5,000 ft., July 16, 1947 (A). Odell Lake, 4,760 ft., August 4, 1946 (A); Salt Creek Falls, August 7, 1948 (A). Crater Lake-Annie Springs, 6,000 ft., August 1-3, 1946; Lost Creek, 5,900 ft., August 2, 1946 (A); Pole Creek Meadows, 5,900 ft., August 3, 1946, July 12, 1947 (A); August 7, 1948 (A & F).

HEXATOMINI

Paradelphomyia (Oxyrhiza) deprivata sp. nov.—Size relatively large (wing, male, about 6 mm.); mesonotum almost uniformly brownish yellow, unpatterned, pleura clearer yellow; wings faintly tinged with brown; macrotrichia of outer wing cells abundant; cell M_1 lacking; male hypopygium with the basistyle produced at apex into a sclerotized point that extends a short distance beyond the point of insertion of the dististyles; outer dististyle expanded at tip, with three conspicuous spines; gonapophysis a long flattened blade; ventral fork of aedeagus with the paired spines very long and slender, almost setoid.

♂. Length, about 5.5.5 mm.; wing, 5.8-6.3 mm.

♀. Length, about 5.5.5.7 mm.; wing, 5.5.5.7 mm.

Rostrum light brown; palpi dark brown. Antennae with scape light brown, the remainder of organ brownish black; outer flagellar segments elongate, with long verticils. Head dark brown.

Pronotum brown. Mesonotum almost uniformly brownish yellow, unpatterned; pleura and pleurotergite clearer yellow; setae of nota conspicuous. Halteres elongate, infuscated. Legs with the coxae and trochanters yellow; femora and tibiae obscure yellow, the tips narrowly brownish black, tarsi passing into black; tibial spurs distinct. Wings (Fig. 34) with a very faint brownish tinge, the prearcular and costal fields a little more yellowed; veins and trichia brown. Cells of wing tip with numerous trichia, including R_5 through M_4 , in cells R_4 and R_5 , involving more than the outer half of the cell. Venation: Sc_1 ending just before the level of fork of *R*; Sc_2 some distance from its tip; R_{2+3+4} in direct alignment with R_{2+3} , the latter shorter than R_2 ; cell M_1 lacking; *m-cu* more than one-half its length beyond the fork of *M*.

Abdomen dark brown, the basal sternites yellowed; hypopygium yellow. Male hypopygium (Fig. 33) with the basistyle, *b*, produced at apex into a sclerotized point that extends only a short distance beyond the point of insertion of the dististyles; outer surface of style with scattered coarse setae, more concentrated near the apex, on mesal face the setae much smaller and interspersed with small linear groups of setulae. Outer dististyle, *d*, slender, expanded at apex, with two outer spines and a stouter lower one. Inner dististyle broadest just beyond base, thence narrowed to the obtuse tip. Gonapophysis appearing as a long flattened blade, the base narrowed, much exceeding the aedeagus in length. Ventral fork of aedeagus, *v*, with the paired spines long and unusually slender, almost setoid.

Holotype, ♂, Beaver Creek, Mount Hood, 1,150 ft., August 7, 1946 (C. P. Alexan-

der). *Allotype*, ♀, Bear Springs Forest Camp, Mount Hood, August 8, 1941 (C. P. Alexander & K. M. Fender). *Paratypes*, ♂♂, with the allotype; numerous ♂♀, Prairie Creek, Humboldt Co., California, August 10-11, 1948 (C. P. Alexander & K. M. Fender); 1 ♂, Peavine Ridge, Station 3A, September 10, 1948 (K. M. Fender); ♂, Humbug Mountain State Park, August 11, 1948 (Fender); ♂, Silver Creek Falls, August 1-2, 1948 (Alexander & Fender).

The only other regional species of *Paradelphomyia* that has cell M_1 lacking is the eastern Nearctic *Paradelphomyia (Oxyrhiza) cayuga* (Alexander), a much darker species that has the details of structure of the male hypopygium entirely distinct.

Paradelphomyia (Oxyrhiza) pacifica Alexander, 1944.—Coast: Carlton-Meadow Lake Road, June 5, 1942 (*Macnab*), types; October 13, 1945 (F); Jordan Creek, September 5, 1948 (F); Pacific City, May 23, 1948 (F); Saddle Mt. (Boyer), May 9, 1935; Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, Sta. 3, October 23, 1945, May 23, July 3, 1946, July 8, 1947, July 2, 1949; Sta. 3A, June 5, July 13, October 3-12, 1945, May 21, July 16, October 1-11, 1946, May 12-29, June 17, 1947, June 15, July 14, September 13, 1948, June 27, 1949 (F). Albrights, Dayton, September 19, 1946 (F); Silver Creek Falls, August 2, 1948, July 8, 1949 (F); Willamette River, near Dayton, June 4, 1948 (F). Cascades: Mount Hood-Beaver Creek, 1,150 ft., August 1, 1948 (A); Horsetail Falls, 100 ft., August 9, 1946 (A & F); below timberline, 5,000 ft., August 7, 1946 (A). Cascadia, 800 ft., August 2, 1948 (A & F); Salt Creek Falls, 3,800 ft., July 14, 1947, August 7, 1948 (A & F); Willis Creek, North Santiam, August 17, 1947 (*Albright*). Blue Mts.: Spring Creek, 3,900 ft., June 25, July 25, August 20-29, 1948 (*Baker*).

Austrolimmophila badia (Doane, 1900).—Coast: Castle Rock, March 31, 1949 (F); Deer Creek, McMinnville, May 6, 1945 (F); Glenada, May 23, 1947 (*Malkin*); High Heaven, June 22, 1945, May 4, 1947, July 12, 1949 (F); Pacific City, pupa in moss, May 23, 1948, emerged May 25 (F); Saddle Mt. (Boyer), June 21, 1934 (*Macnab*); Saddle Mountain State Park, July 24, 1949 (F); Sourgrass Creek, Gunaldo Falls, May 17, 1948, June 6-30, 1949 (F); Three Rivers, May 23, 1948 (F); Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, Sta. 1, May 18, June 20, 1946, May 1-27, June 19, 1947; Sta. 2, May 26, 1947; Sta. 3, April 26, May 29, 1946, May 7-14, 1947, May 11, June 4, 1948, July 2, 1949; Sta. 3A, May 15-22, June 5-19, July 13, 1945, on sword fern; May 3, July 5, 1946, May 19-29, 1947, May 24, June 2-8, July 9-13, 1948 (F). Happy Valley, McMinnville, April 14, May 12, 1946 (F); Silver Creek Falls, June 25, 1939 (*Aitken & Bohart*), May 9, 1948, July 8, 1949 (F); Summit, 650-750 ft., June 8, 1929 (*Scullen*); Willamette River, south of Dayton, June 4, 1948, April 24, 1949 (F). Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., July 18, 1947 (A & F); Still Creek, 3,600 ft., July 16, 1947; Metolius River, 2,400 ft., June 14, 1945, June 15, 1947 (F); North Santiam, May 30, 1949 (F). Eastern Oregon: Ochoco National Forest, June 14, 1947 (F). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A), May 8, June 5, 1949 (*Baker*).

Dactylolabis knowltoni Alexander, 1943.—Cascades: Crater Lake—along the Lake Trail at 6,300 ft., resting on cliff faces along the path, July 12, 1947 (A). Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F).

Dactylolabis nitidithorax (Alexander, 1918).—Coast: Coos Bay, May 23, 1947 (*Malkin*); Gunaldo Falls, June 30, July 14, 1949 (F); High Heaven, June 7-22, 1945, May 4, 1947, July 12, 1949 (F); Saddle Mountain State Park, July 24, 1949 (F). Willamette Valley: Peavine, Sta. 3, July 8, 1947 (F). Southern Oregon: South slope of Siskiyou Summit, June 8, 1947 (F). Cascades: Kelly Creek, June 22, 1947 (F); Salt Creek Falls, August 7, 1948 (F).

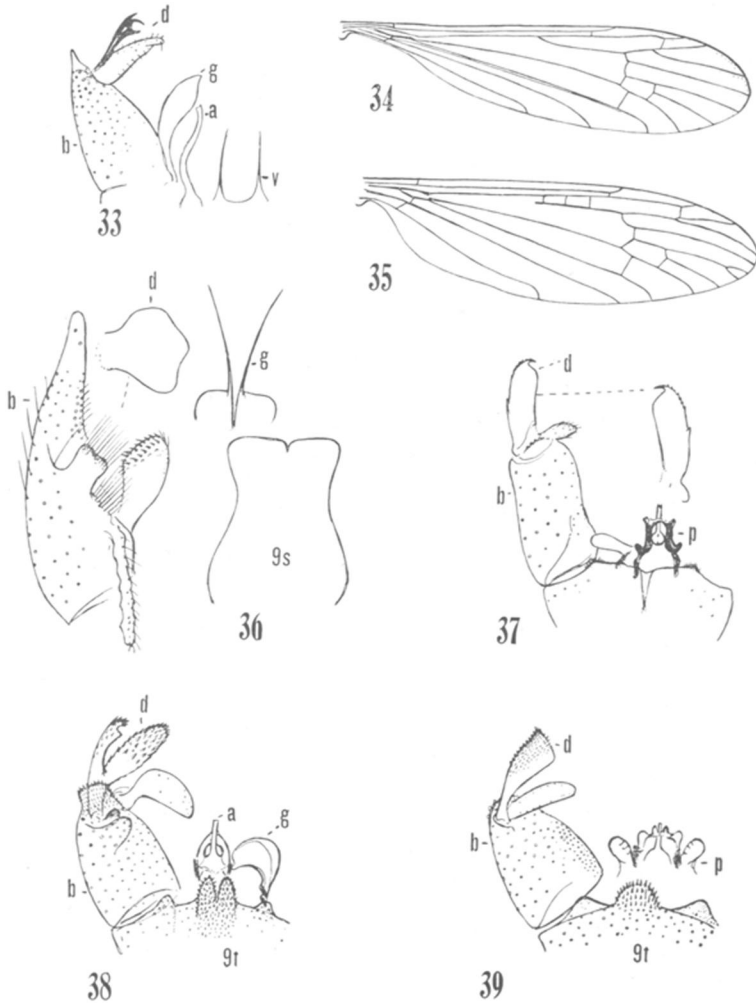
Dactylolabis postiana Alexander, 1944.—Willamette Valley: Vernonia, April 1, 1938 (K. Gray & J. Schuh); type. Southern Oregon: Oregon Caves, May 18, 1947 (*Malkin*). Cascades: McCredie Springs, April 26, 1947 (*Malkin*).

Dactylolabis pteropocila (Alexander, 1921).—Willamette Valley: Peavine, Sta. 1, May 5, 1945, on sword fern, April 30, May 2, 1946; Sta. 3, April 26, 1946, April 24, May 3-20, 1947, May 11-25, 1948; Sta. 4, May 2, 1947 (F). Corvallis, April 29, 1940 (*Don Barber*); Marys River, April 18, 1947 (R. F. Bruce); Silver Creek Falls, May 9, 1948 (F).

Phylolabis fenderiana Alexander, 1949.—Cascades: Mount Hood-Sahale Falls, 4,575 ft., July 17, 1947, July 31, 1948 (A & F); part of type material.

Phyllolabis latifolia Alexander, 1920.—Willamette Valley: Peavine, Sta. 4, April 18, 1947 (F). Forest Grove, March 28, 1919 (Cole); type.

Male hypopygium (Fig. 36) complex in structure and describable in general terms only because of the condition of the material available. Appendage of the ninth sternite, 9s, broad, widest across the base, thence slightly narrowed at midlength, beyond which it again widens slightly; apex nearly truncate, divided into two broad lobes by a narrow median split; entire surface provided with long delicate pale setae. Basistyle, b, produced far beyond the point of insertion of the dististyle into a flattened blade that narrows to the glabrous obtuse tip; surface of style at near the level of the dististyle with dense



Figs. 33-39.—33. *Paradelphomyia (Oxyrhiza) deprivata* sp. nov., male hypopygia. 34. *P. (Oxyrhiza) deprivata* sp. nov., venation. 35. *Limnophila (Elaeophila) aldrichi abrupta* Alexander, holotype, venation. 36-39. Male hypopygia: 36. *Phyllolabis latifolia* Alexander. 37. *Limnophila (Elaeophila) aldrichi abrupta* Alexander. 38. *L. (Elaeophila) bifida* Alexander. 39. *L. (Elaeophila) shannoni* Alexander (See fig. 1 for explanation of symbols).

brushes of setae, including a series of longer ones and an outer lobe that bears short more powerful bristles, the two sets obscuring the base of the dististyle which is shown separately in the figure; basad of the dististyle on the mesal face with a long pendulous cylindrical setiferous lobe that is directed cephalad. Dististyle, *d*, a broadly flattened pale blade, the stem short and stout, the surface glabrous or virtually so. Gonapophyses, *g*, unusually weak and slender, appearing as nearly straight rods, the tips abruptly pale and slightly constricted.

Limnophila (Elaeophila) aldrichi aldrichi Alexander, 1927.—Coast: Coquille River, Sitkum, August 4, 1948 (*H. W. Thorne*); High Heaven, July 12, 1949 (*F*). Willamette Valley: Silver Creek Falls, 1,000 ft., August 2, 1948 (*A*). Cascades: Dutchman's Flat, Century Drive, 6,100 ft., August 5, 1948 (*A* & *F*); Metolius River, August 3, 1948 (*F*). Crater Lake-Park Headquarters, 6,500 ft., August 2, 1946 (*A*); Pole Creek Meadows, 5,900 ft., August 7, 1948 (*A* & *F*). Wallowas: Lostine Valley, 5,000 ft., August 18, 1948 (*A*).

Limnophila (Elaeophila) aldrichi abrupta Alexander, 1949.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946 (*A*); type. As stated in the original description (Alexander, 1949: 310), the venation of the holotype specimen was apparently abnormal (Fig. 35). The male hypopygium is shown (Fig. 37).

Limnophila (Elaeophila) aleator Alexander, 1945.—Blue Mts.: Mosquito Creek, Whitney, May 30, 1949 (*Baker*).

Limnophila (Elaeophila) angustior Alexander, 1919.—Willamette Valley: McMinnville, June 7, 1945 (*F*). Blue Mts.: Spring Creek, 3,900 ft., July 25, 1948 (*Baker*); Pendleton, along the Umatilla River, July 5, 1948 (*A*); Upper Walla Walla River, above Milton, 1,276 ft., July 4, 1948 (*A*); Whitney, June 19, 1949 (*Baker*).

Limnophila (Elaeophila) bifida Alexander, 1921.—Coast: Gunaldo Falls, May 13, 1949 (*F*); High Heaven, May 4, 1947 (*F*); Pacific City, May 23, 1948 (*F*); Tierra del Mar, May 13, 1949 (*F*). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (*A* & *Baker*); Whitney, June 19, 1949 (*Baker*).

Male hypopygium (Fig. 38) with the caudal border of the tergite, *9t*, produced into two approximated submedian lobes that are densely spiculose; lower and poorly developed lobes lying more laterad. Basistyle, *b*, terminating in a subquadrate darkened lobe that is densely covered with short dark setae; mesal face of style near outer end with a rounded lobe that is provided with scattered coarse setae; a smaller darkened glabrous lobe near the base of the latter. Outer dististyle, *d*, deeply bifid, the outer arm more slender and a little shorter, its outer face and tip spiculose; inner arm large, the surface and margins with conspicuous appressed spines. Inner dististyle a flattened cleaverlike darkened blade. Gonapophyses, *g*, appearing as broadly flattened plates with rounded margins.

Limnophila (Elaeophila) shannoni Alexander, 1921.—Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., July 18, 1947 (*A*); Tilly Jane Creek, 5,600 ft., July 18, 1947 (*A*). Wallowas: Eagle Cap Wilderness Area, 5,000 ft., June 28, 1948 (*A*).

Male hypopygium (Fig. 39) with the median lobe of the ninth tergite, *9t*, semioval, densely set with spinous setae, the subtriangular lateral lobes with short setulae. Dististyles, *d*, slightly subterminal in position, the outer a darkened club that is expanded outwardly, its apex truncated; outer surface and apex with microscopic appressed spinulae to produce a scabrous appearance. Inner dististyle nearly as long, narrowed outwardly.

Limnophila (Elaeophila) superlineata Doane, 1900.—Willamette Valley: Peavine, no station, May 5, 1945, on sword fern; Sta. 1, April 15, May 2, 1946, April 22, May 1, 1947 (*F*). Happy Valley, McMinnville, April 14, 1946 (*F*). Southern Oregon: Siskiyou Summit, June 10, 1945 (*F*).

Limnophila (Prionolabis) antennata Coquillett, 1905.—Cascades: Salt Creek Falls, 3,900 ft., August 7, 1948 (*M. M. Alexander*). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (*A* & *Baker*); Pine Creek, 4,600 ft., June 25, 1948 (*A*).

Limnophila (Prionolabis) barberi Alexander, 1916.—Willamette Valley: Peavine, Sta. 1, May 23, 1947; Sta. 3, May 23, 1946; Sta. 3A, June 11, 1946 (*F*).

Male hypopygium (Fig. 40) with the lobes of the ninth tergite, *9t*, low and rounded; ninth sternite entire or with the border very gently concave. Outer dististyle, *d*, appearing as a slender rod, its tip blackened and provided with a few scattered setae; at base of style with a large oval fleshy setiferous lobe. Inner dististyle unequally bilobed, the outer lobe a straight blackened rod, the tip obtuse. Gonapophysis, *g*, a simple pale gently curved rod or very narrow blade. Aedeagus, *a*, dilated, varying somewhat in size in different specimens.

Limnophila (Prionolabis) boharti Alexander, 1943.—Cascades: Mount Hood-Tilly Jane Creek, 5,600 ft., July 18, 1947, July 29-30, 1948 (*A*); flying about the bases of

tees at dusk; wings of females reduced in size; Timberline Lodge, 5,500 ft., August 7, 1946 (*F* & *Macnab*); swept from clumps of bear-grass, *Xerophyllum*. Dutchman's Flat, Century Drive, 6,100 ft., August 5, 1948 (*F*); Mount McLoughlin, June 25, 1939 (*Aitken* & *Bohart*); types. Crater Lake-Lake Trail, on cliffs and banks, 6,100-6,600 ft., July 12, 1947 (*A*).

Male hypopygium (Fig. 41) with the lobes of the ninth tergite, *9t*, relatively narrow. Outer dististyle, *d*, unusually simple, the armature of outer half including a low darkened flange that is produced into one or two blunt teeth; appressed lobe on outer face at base elongate. Inner dististyle produced into a long slender fingerlike lobe that bears several erect setae. Gonapophysis, *g*, with the stem very slender, before tip much expanded, thence extended into a long straight point.

Limnophila (Prionolabis) hepatica Alexander, 1919.—Coast: Three Rivers, May 23, 1948 (*F*). Willamette Valley: Archer's Camp, Creswell, April 26, 1942 (*J. E. Davis*).

Male hypopygium (Fig. 42) somewhat as in *indistincta* but with all features accentuated and exaggerated. Ninth tergite, *9t*, with the lobes closely approximated. Basistyle, *b*, with a brush of long yellow setae on outer apical angle and with a dense brush or close comb of yellow setae on mesal face, with still other groups of setae near the outer part of the style. Outer dististyle more dilated before the shortened apex. Inner dististyle, *id*, unusually short and massive, the setal brush unusually abundant and dense; apex of style very obtuse. Gonapophysis, *g*, appearing as a slender yellow rod, a trifle more dilated at near midlength. A massive central structure, bilobed at apex and with the surface densely setuliferous, is represented in *indistincta* by a smaller and less developed organ (not shown in figure).

Limnophila (Prionolabis) indistincta Doane, 1900.—Coast: Gunaldo Falls, July 14, 1949 (*F*); High Heaven, June 22, 1945, July 12, 1949 (*F*); Saddle Mt. (Boyer), November 18, 1933, June 21-28, 1934, July 21, August 15, 1935, August 7-16, 1937, July 19, 1938 (*Macnab and associates*); Saddle Mountain State Park, July 24, 1949 (*F*). Willamette Valley: Peavine, Sta. 1, July 12, 1946, May 22, 1947; Sta. 3, May 29, July 13, 1945, June 7, July 2, 1946, June 16, 1948, July 2, 1949; Sta. 3A, June 4, July 5, 1946, May 29, June 17, 1947, June 8, July 16, 1948 (*F*). Silver Creek Falls, July 8, 1949 (*F*). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (*F*); Beaver Creek, 1,150 ft., July 16, 1947 (*A* & *F*); Robin Hood Camp, August 8, 1946 (*A* & *F*); Still Creek, July 16, 1947 (*A* & *F*). Odell Lake, 4,760 ft., July 14, 1947, August 6, 1948 (*A*); Salt Creek Falls, 3,800 ft., July 14, 1947, August 7, 1948 (*A* & *F*).

Male hypopygium (Fig. 43) with the tergal lobes, *9t*, appearing as flattened hairy blades. Basistyle, *b*, with a modified setiferous lobule on mesal face. Outer dististyle a slender glabrous blade, the apex narrowed into a gently curved blackened rod. Inner dististyle, *id*, short and compact, on outer margin near base with a brush or pencil of unusually long yellow setae; a small group of long setae on ventral margin. Gonapophysis, *g*, appearing as an expanded yellow blade, the outer margin microscopically serrulate or crenulate.

Limnophila (Prionolabis) oregonensis Alexander, 1940.—Coast: Deer Creek, McMinnville, May 6, 1945 (*F*); Saddle Mt. (Boyer), April 21, May 6, 1934, May 19-26, 1935, May 24, June 16-24, 1936, June 7, 1937 (*Macnab and associates*); Tierra del Mar, June 30, 1949 (*F*). Willamette Valley: Peavine, Sta. 3, April 28, May 21, 1945, on sword fern; April 17, 1946; Sta. 3A and 4, April 17, 1946, April 19, 1947 (*F*). Cascades: North Santiam, May 30, 1949 (*F*).

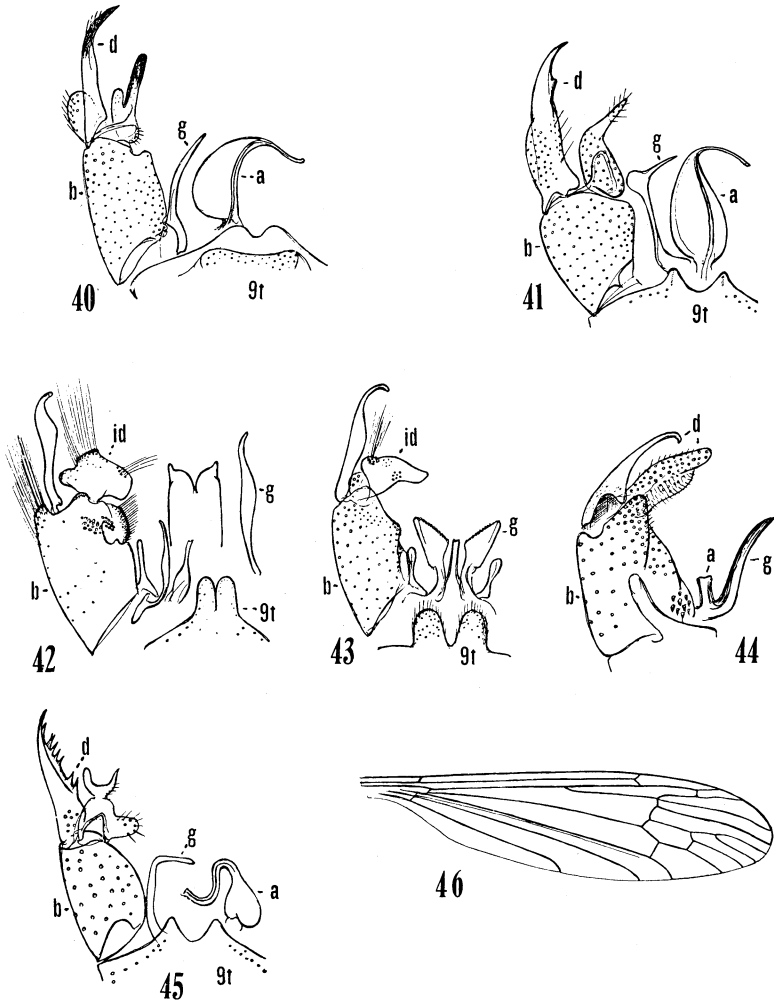
Male hypopygium (Fig. 45) with the tergal lobes, *9t*, relatively narrow, separated by a broad notch. Outer dististyle, *d*, conspicuously toothed on more than the distal half of the mesal edge, the number and size of the points slightly variable; lobe on outer face of style at base lacking. Inner dististyle with the outer part conspicuously bilobed, the outer lobe more slender and pointed, provided with long setae; pendant lobe of style conspicuous, obtuse. Gonapophysis, *g*, appearing as a long slender rod, before tip strongly bent, thence gradually narrowed to the blunt tip. Aedeagus, *a*, relatively small, as compared with other species of the subgenus.

Limnophila (Prionolabis) scaria Alexander, 1945.—Coast: High Heaven, June 7, 1945 (*F*); Tierra del Mar, June 30, 1949 (*F*). Willamette Valley: Peavine, Sta. 3, May 24, 1947 (*F*).

Limnophila (Prionolabis) vancouverensis Alexander, 1943.—Coast: Coos Bay, May 23, 1947 (*Malkin*); Glenada, May 23, 1947 (*Malkin*); Gunaldo Falls, June 30, 1949 (*F*); Saddle Mt. (Boyer), May 27, June 21, 1934, June 19, July 14, 1935, May 24, July 5-13, 1936 (*Macnab and associates*), determined earlier as *cressoni*; part of type material. Willamette Valley: Peavine, Sta. 1, May 4-14, 1945, April 23-30, 1946; Sta.

3, April 22, May 16, 1946; Sta. 3A, May 29, 1947; Sta. 4, May 2, 1947 (F). Corvallis, April 29 (Cole auct.), determined by Alexander as *cressoni* in Cole List (1921); Dayton, Willamette River, April 24, 1949 (F); Low Pass Summit, April 13, 1947 (Malkin); Silver Creek Falls, June 23, 1939 (Aitken & Bohart); part of type material. Cascades: Elk Lake, Marion Co., 3,850 ft., July 3, 1938 (M. C. Lane), part of type material; Prospect, May 22, 1921 (Dyar), part of type material; Salt Creek Falls, 3,800 ft., July 14, 1947 (A).

Limnophila (*Dendrolimnophila*) *albomanicata* (Alexander, 1945).—Coast: Gunaldo Falls, July 14, 1949 (F); High Heaven, July 12, 1949 (F); Jessie M. Honeyman State Park, August 12, 1948 (F); Wheeler, July 24, 1949 (F). Willamette Valley: Peavine,



Figs. 40-45.—Male hypopygia: 40. *Limnophila* (*Prionolabis*) *barberi* Alexander. 41. *L. (Prionolabis) bobarti* Alexander. 42. *L. (Prionolabis) hepatica* Alexander. 43. *L. (Prionolabis) indistincta* Doane. 44. *L. (Phylidorea) rubida* Alexander. 45. *L. (Prionolabis) oregonensis* Alexander. 46. *Ulomorpha aridela* Alexander, holotype, venation (See fig. 1 for explanation of symbols).

Sta. 3A, July 5, 1946, June 17, July 7, 1947, July 9, 1948 (F). Silver Creek Falls, 1,200 ft., August 2, 1948 (A & F). Cascades: Mount Hood-Beaver Creek, 1,150 ft., August 7, 1946, July 16, 1947, August 1, 1948 (A & F); Still Creek, 3,600 ft., July 16-17, 1947 (A & F). Salt Creek Falls, 3,800 ft., August 7, 1948 (F).

Limnophila (Phylidorea) claggi Alexander, 1930.—Coast: Gualdo Falls, June 30, 1949 (F); Pacific City, May 23, 1948 (F). Willamette Valley: Peavine, Sta. 1, May 23, 1947; Sta. 2, June 1-19, 1945, May 10, 1946, April 26, 1947; Sta. 3, May 16-29, 1946, May 7-30, 1947, June 4, 1948, June 6, 1949; Sta. 3A, May 21, June 11, 1946, May 19, 1947, June 2-30, 1948, May 24, 1949 (F). Happy Valley, McMinnville, April 14, 1946 (F); McMinnville, June 14, 1948 (F); Silver Creek Falls, July 8, 1949 (F). Southern Oregon: Ashland-Lake of the Woods, June 11, 1945 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946, July 17, 1947, July 31, 1948 (A & F); Horsethief Meadows, 3,400 ft., July 18, 1947 (F); Sahale Falls, 4,575 ft., July 17, 1947 (A & F). Odell Lake, 4,760 ft., July 13, 1947 (A). Crater Lake-Pole Creek Meadows, 5,900 ft., August 3, 1946 (A). Eastern Oregon: Ochoco National Forest, June 14, 1947 (F). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948, May 22, June 15, 1949 (A & Baker); Pine Creek, 4,900 ft., June 13, 1947, June 25, 1948 (Baker); Balloon Tree Trail, 5,000 ft., July 3, 1948 (A). Wallows: Wallowa Lake, 4,410 ft., June 28, 1948 (A).

Limnophila (Phylidorea) euxesta Alexander, 1924.—Coast: High Heaven, May 4, 1947 (F); Pacific City, May 23, 1948 (F). Willamette Valley: Peavine, Sta. 1, May 22, July 13, 1945, May 24, June 20, 1946, May 15-23, 1947; Sta. 2, June 18, 1946, May 21-26, 1947; Sta. 3, May 29, June 26, 1946, May 14, 1947, June 25, 1948, July 2, 1949; Sta. 3A, May 21, July 5, 1946, May 5, June 17, 1947, May 12-24, June 30, July 14-16, 1948 (F). McMinnville, May 24, 1947 (F); Silver Creek Falls, August 1, 1948 (A & F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (F); Hood River, June 30, 1917 (Melander); Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (A & F); Still Creek, 3,600 ft., July 16, 1947 (A & F). Kelly Creek, June 22, 1947 (F); Metolius River, 2,600 ft., July 15, 1947, August 3, 1948 (F); Prospect, May 23, 1921 (Dyar); type material.

Limnophila (Phylidorea) flavipila Doane, 1900 (as *flavipila*).—Willamette Valley: Panther Creek, McMinnville, July 14, 1948 (F).

Limnophila (Phylidorea) nycteris Alexander, 1943.—Southern Oregon: Ashland-Lake of the Woods, June 10, 1945 (F); Siskiyou Summit, June 10, 1945 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 31, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker).

Limnophila (Phylidorea) olympica Alexander, 1949.—Southern Oregon: Blue Creek, Siskiyou National Forest, August 9, 1948 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (A & F). Elk Lake, Century Drive, 4,900 ft., August 5-6, 1948 (F).

Limnophila (Phylidorea) pacalis Alexander, 1949.—Blue Mts.: Langdon Lake, 4,990 ft., July 17, 1948 (Lane); August 17, 1948 (A); types.

Limnophila (Phylidorea) rubida Alexander, 1924.—Coast: High Heaven, August 6, 1946 (A & F). Willamette Valley: Peavine, Sta. 2, August 6, 1946; Sta. 3, June 14, July 2-16, August 13, 1946, July 8, 1947, July 2, 1949; Sta. 3A, July 12, 1945, August 12, 1946, July 24, August 30, September 13, 1948 (F). Silver Creek Falls, 1,200 ft., August 1, 1948 (A & F). Southern Oregon: State Line Creek, August 9, 1948 (A & F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (F); Beaver Creek, 1,150 ft., August 7, 1946 (A); Still Creek, 3,600 ft., July 31, 1948 (A & F). Marion Creek, August 17, 1947 (Albright); Prospect, May 23, 1921 (Dyar), type; Willis Creek, North Santiam, August 17, 1947 (Albright).

The male hypopygium is shown (Fig. 44).

Limnophila (Phylidorea) snoqualmiensis Alexander, 1945.—Coast: Charleston, June 23, 1948 (Macnab). Willamette Valley: Peavine, Sta. 1, May 31, June 5, 1945, May 2, June 10, 1946, May 22, June 24, 1947; Sta. 2, May 31, 1946 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946 (A & F). Clackamas Lake, 3,300 ft., August 8, 1946 (A & F). Blue Mts.: Spring Creek, 3,900 ft., June 24, 1948 (A).

Limnophila occidens Alexander, 1924.—Coast: High Heaven, July 12, 1949 (F); Wheeler, July 24, 1949 (F). Willamette Valley: Peavine, Sta. 1, June 4, July 3, 1946, May 22, June 19, 1947; Sta. 3, May 16, July 16, 1946, May 24, July 1, 1947, June 16-29, July 14, 1948, July 2, 1949; Sta. 3A, June 11, July 13, September 17, 1945, June 19, July 13, September 24, 1946, June 30, July 7-24, 1947, June 8-24, July 9-16, 1948,

June 27, 1949 (F). Silver Creek Falls, 800 ft., August 2, 1948 (A & F); Willamette River, south of Dayton, June 4, 1948 (F); Zena, June 5, 1948 (F). Cascades: Mount Hood-Bear Creek, July 16, 1947, August 1, 1948 (A & F); Hood River Meadows, July 17, 1947, July 31, 1948; Horsethief Meadows, July 18, 1947 (F); Robin Hood Forest Camp, 3,560 ft., August 8, 1946, July 17, 1947 (A & F); Still Creek, July 16, 1947, July 31, 1948 (A & F); Tilly Jane Creek, 5,600 ft., July 29, 1948 (A & F). Dutchman's Flat, Century Drive, 6,100 ft., August 5, 1948 (F); Marion Creek, August 17, 1947 (Albright); Metolius River, 2,600 ft., June 15, 1947 (F). Crater Lake-Annie Springs, 6,000 ft., August 1-3, 1946 (A); Cold Springs, 5,900 ft., August 7, 1948 (A & F); Lost Creek, August 2, 1946 (A); Pole Creek Meadows, 5,900 ft., August 3, 1946 (A), July 12, 1947 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A), July 25, August 29, 1948, June 5, 1949 (Baker); Balloon Tree Trail, 5,000 ft., July 3, 1948 (A). Wallawas: Aneroid Lake Trail, 7,000 ft., July 26, 1949 (Baker); Enterprise, 4,200 ft., June 29, 1948 (A); Lostine, July 2, 1948 (A); Wallowa Creek, 4,675 ft., June 29, 1948 (A).

Limnophila tetonicola Alexander, 1945.—Cascades: Mount Hood-Sahale Falls, 4,575 ft., July 17, 1947, July 31, 1948 (A & F); in small swarms over stream below the falls, resting on boulders in stream bed; Stream below timberline, 5,000 ft., July 16, 1947 (A); Tilly Jane Creek, 5,600 ft., July 18, 1947, July 29, 1948 (A & F); flying in small swarms at sunset. Crater Lake-Above Annie Springs, 6,200 ft., August 2, 1946 (A); swept from low herbage along stream. Wallawas: Aneroid Lake Trail, 7,000 ft., July 26, 1949 (Baker).

Pilaria imbecilla (Osten Sacken, 1859).—Coast: High Heaven, June 22, 1945 (F). Willamette Valley: Peavine, Sta. 1, May 29, July 3, 1946 (F).

Pilaria microcera Alexander, 1924.—Coast: Pacific City, May 23, 1948 (F). Willamette Valley: Peavine, Sta. 1, May 27, July 3, 1947, July 2, 1948; Sta. 3, June 20-21, July 16, 1946, May 14, 1947; Sta. 3A, October 3, 1946, May 29, 1947 (F). Cascades: Mount Hood-One mile south of the Wapinitia cutoff, August 7, 1946 (F); Still Creek, July 16, 1947, July 31, 1948 (A & F). Little Deschutes River, August 4, 1946 (A); Metolius River, 2,600 ft., August 3-14, 1948 (A & F); Prospect, May 23, 1921 (Dyar), type. Blue Mts.: Spring Creek, 3,900 ft., June 15, 1949 (Baker).

Ulomorpha aridela Alexander, 1927.—Coast: Marshfield, June 27 (J. M. Aldrich); type. The wing is shown (Fig. 46).

The relationships existing between the various western species or forms in this genus are still not fully understood. The species are separated among themselves by the presence or absence of cell M_1 of the wings (cell M_1 preserved in *aridela* and *nigrodorsalis*, lacking in *sierricola* and *vanduzeei*) and in the presence or lack of blackened praescutal stripes.

Ulomorpha nigrodorsalis Alexander, 1949.—Coast: Gunaldo Falls, June 30, 1949 (F); Tillamook, September 19-21, 1949 (Davis). Willamette Valley: Peavine, Sta. 3, May 29, July 16, 1946, June 18, July 1, 1947, September 10, 1948, June 6, 1949; Sta. 3A, May 29, 1947 (F). Cascades: Mount Hood-Bear Springs, 3,200 ft., August 8, 1946 (A); Hazel Creek, near Dexter, 990 ft., August 5, 1946 (A).

Some of the specimens have the praescutal stripes paler than in others and thus approach the more southern *Ulomorpha quinque-cellula* Alexander (as Peavine, Sta. 3, June 16, 1948).

Ulomorpha sierricola Alexander, 1918.—Coast: High Heaven, August 6, 1946, July 12, 1949 (A & F). Willamette Valley: Peavine, Sta. 1, June 10, July 18, 1946, May 22-27, 1947; Sta. 3, May 29, June 13, 1946, July 8-12, 1947, June 25, 1948, July 2, 1949; Sta. 3A, June 15, 1948 (F). Willamette River, June 4, 1948 (F). Cascades: Mount Hood-Bear Creek, August 1, 1948 (A & F); Hood River Meadows, July 17, 1947 (A & F); Horsethief Meadows, August 9, 1946, July 18, 1947 (A & F); Multnomah Falls, August 9, 1946 (F); Oneonta Gorge, July 19, 1947 (A); Still Creek, 3,600 ft., July 16-17, 1947 (A & F); below timberline, 5,000 ft., August 7, 1946 (A & F). Metolius River, 2,600 ft., August 3, 1948 (A & F); Odell Lake, August 4, 1946 (A); Schweitzer Creek, Willamette River, 1,000 ft., August 5, 1946 (A); Tombstone Meadows, South Santiam, August 17, 1947 (Albright). Blue Mts.: Spring Creek, 3,900 ft., June 25, July 25, 1948 (Baker); South Fork of the Upper Walla Walla River, 1,450 ft., July 4, 1948 (A).

Ulomorpha vanduzeei Alexander, 1920.—Willamette Valley: Silver Creek Falls, August 2, 1948 (A). Southern Oregon: State Line Creek, 1,700 ft., August 7, 1948

(A & F). Cascades: Odell Lake, Jungle Creek, 4,800 ft., August 6, 1948 (F); Salt Creek Falls, 3,800 ft., August 7, 1948 (A).

Hexatoma (Eriocera) austera (Doane, 1900) (*obscura* Williston, 1893).—Coast: Castle Rock, May 13, 1949 (F). Willamette Valley: Willamette River, near Dayton, on gravel bar, April 17, 1948 (*Dorothy McKey-Fender*); associated with *Protanyderus ripio*. Wallawas: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (A); Five miles east of Minam, Wallowa Canyon Fount, 2,700 ft., July 21, 1929 (*Scullen*).

Hexatoma (Eriocera) eriophora (Williston, 1893).—Eastern Oregon: Grant Co., July 1, 1914 (*W. J. Chamberlin*). Blue Mts.: Anthony Lake, 7,100-8,650 ft., August 4, 1929 (*Scullen*); Upper Walla Walla River, August 17, 1948 (A).

Hexatoma (Eriocera) sculleni Alexander, 1943.—Coast: High Heaven, August 6, 1946 (A); a single wing caught in a spider's web close to stream. Cascades: Cascadia, 800 ft., August 15, 1924 (*Scullen*), type; North Santiam, near summit of highway, August 17, 1947 (*Kenneth Albright*).

Hexatoma (Eriocera) solor Alexander, 1943.—Coast: Mount Alesia, August 8, 1932 (*James Roaf*), type; Oregon State Agricultural College.

Hexatoma (Eriocera) velveta (Doane, 1900).—Willamette Valley: Corvallis, May 28 (*A. L. Lovett*); Happy Valley, McMinnville, May 12, 1946 (F); Summit, 650 ft., June 23, 1929 (*Scullen*).

ERIOPTERINI

Crypteria americana Alexander, 1917.—Coast: Carlton-Meadow Lake Road, October 13, 1945 (F); Saddle Mt. (Boyer), September 29, October 29, 1934, October 30, 1937 (*Macnab and associates*). Willamette Valley: Peavine, Sta. 1, September 18, October 12, 1945; Sta. 3, November 8, 1945, October 16, 1946; Sta. 3A, October 1-18, 1946 (F). Mount Angel, 165 ft. (*F. Epper*); type.

Cladura (Cladura) macnabi Alexander, 1944.—Willamette Valley: McMinnville, October 3, 1936 (*Macnab*); type.

Cladura (Cladura) nigricauda sp. nov.—General coloration of thorax reddish brown, variegated with darker; antennae 12-segmented, the fusion-segment elongate, with nine free segments beyond it; wings whitish subhyaline, with weak darkened seams along veins *Cu* and *2nd A*; *R*₅ strongly arcuated at origin; *R*₂₊₃₊₄ about one-half longer than *R*₂₊₃; outer abdominal segments, including the hypopygium, black; male hypopygium with the tergal lobes almost glabrous; gonapophysis very large, unequally bispinous, the axial spine largest.

♂. Length, about 6-6.5 mm.; wing, 7-7.5 mm.; antenna, about 1.3-1.4.

Rostrum brown, pruinose; palpi dark brown. Antennae (Fig. 48) dark brown, the scape weakly pruinose; 12-segmented, there being nine segments beyond the fusion, the latter evidently composed of five segments, of which the last is indicated by an incomplete suture, the others only by the setal arrangement. Head dark gray.

Pronotum pale brown, more yellowed on the margins, the surface sparsely pruinose. Mesonotum reddish brown, the praescutum with a conspicuous darker brown median stripe; scutal lobes with darkened centers; scutellum restrictedly darkened medially; medio-tergite dark brown, the margins and the pleurotergite yellow. Pleura yellow, restrictedly darkened on the anepisternum and again on the ventral sternopleurite. Halteres uniformly pale yellow. Legs with the coxae and trochanters yellow; remainder of legs yellow, the tips of both femora and tibiae restrictedly more darkened, tarsi passing into black; legs relatively long and slender, only moderately hairy; no tibial spurs; claws long and slender. Wings (Fig. 47) whitish subhyaline, the prearcular field and vein *Sc* more whitened; weak darkened seams along veins *Cu* and *2nd A*; veins brown, paler at and near the wing base. Venation: *R*₅ strongly arcuated at origin; *R*₂₊₃₊₄ about one-half longer than *R*₂₊₃; cell *M*₁ varying from a trifle longer than its petiole to about twice this length; *m-cu* oblique, about one-fourth its length beyond the fork of *M*.

Abdomen dark brownish gray, the hypopygium almost uniformly black. Male hypopygium (Fig. 49) with the tergite, *9t*, having the lobes small, separated by a low V-shaped notch, almost glabrous. Basistyle, *b*, slender, without the conspicuous apical lobe found in *bradleyi* and *macnabi*. Dististyle, *d*, arcuate, gradually narrowed to the obtuse tip which is set with abundant blackened spinulae; concave or mesal face of style with conspicuous long erect setae, these small and little evident on the outer face. Gonapophy-

sis, g, very conspicuous, unequally bifid, the axial spine largest, incurved, the small lateral spine about one-third as large.

Holotype, ♂, Peavine Ridge, Station 3A, October 12, 1946 (K. M. Fender). *Paratopotypes*, ♂♂, October 1, 18, 21, 1946 (Fender).

The most similar species are *Cladura* (*Cladura*) *macnabi* Alexander and *C. (Pterochionea) bradleyi* (Alexander), which differ very conspicuously in the structure of the male hypopygium and likewise in the antennae. These two species further differ among themselves in various details of structure of the male hypopygia, as follows: *C. (C.) macnabi*.—Tergal lobes scarcely evident; gonapophysis very small and simple, broadest at base, narrowed and becoming paler at outer end, finally produced into a long slender spine; apex of dististyle with a group of very small short spinous points. *C. (P.) bradleyi*.—Tergite with a concentration of long black setae on the lobes, forming distinct tufts or brushes; gonapophysis appearing as a broad flattened plate, the outer margin with microscopic denticles, of which two are larger; at base of phallosome with two further strong slender spines.

It is becoming increasingly difficult to separate the two supposed subgenera *Cladura* Osten Sacken and *Pterochionea* Alexander, and it will probably be found necessary to abandon the latter group.

Cladura (*Cladura*) *oregona* Alexander, 1919.—Coast: Lee's Camp, September 18-25, 1949 (Davis); Saddle Mt. (Boyer), October 14, 1933, September 22, 1935, September 10, 1936 (*Macnab and associates*). Willamette Valley: Peavine, Sta. 3, October 3-12, November 8, 1945; Sta. 3A, October 1-12, 1946 (F). Forest Grove, September 30 (Cole); type. Cascades: Mount Hood-Clear Lake, 3,300 ft., October 7, 1945 (F).

Cladura (*Pterochionea*) *bradleyi* (Alexander, 1916).—Cascades: Still Creek, 3,600 ft., October 6, 1945 (F).

Chionea macnabeana Alexander, 1946.—Coast: Wilson River, Tillamook Burn, 2,125 ft., February 8, 1946 (*Macnab*); type.

Lipsothrix fenderi Alexander, 1945.—Coast: Chetco River, August 11, 1948 (F); Jessie M. Honeyman State Park, August 12, 1948 (F); Lee's Camp, September 18-25, 1949 (Davis). Willamette Valley: Peavine, Sta. 3, September 18-23, 1945; Sta. 3A, September 18-October 12, 1945; October 1-12, 1946, September 10-13, 1948 (F); types. Albrights, Dayton, September 19, 1946 (F). Cascades: Tombstone Meadows, South Santiam, August 17, 1947 (F).

Lipsothrix nigrilinea (Doane, 1900).—Coast: Gunaldo Falls, June 6, July 14, 1949 (F); High Heaven, July 12, 1949 (F). Willamette Valley: Peavine, Sta. 1, June 17, July 3, August 6, 1946 (F). Silver Creek Falls, Lower South Falls, 800 ft., August 2, 1948 (A & F).

Gonomyia (Idiocera) brookmani Alexander, 1944.—Blue Mts.: Little Phillips Creek, above Elgin, 2,850 ft., July 2, 1948 (A).

Male hypopygium (Fig. 50) with the apex of the lobe of the basistyle, *b*, extended into a pale acute point. Three dististyles, *d*, or arms, the two heavily blackened ones broadly united basally, the outer style or arm stouter, its apex truncate; inner arm more slender, bispinuous at apex; inner dististyle a broadly expanded pale triangular blade, provided with long conspicuous setae. Aedeagus, *a*, elongate, pale, the apex a recurved slender point. In the present specimen, the acute pale tip of the lobe of the basistyle is not clearly visible.

Gonomyia (Idiocera) coloradica Alexander, 1920.—Cascades: Tumalo Creek, near Bend, 3,610 ft., August 15, 1948 (A).

Gonomyia (Idiocera) gothicana Alexander, 1943.—Cascades: Trout Creek Forest Camp, South Santiam, 1,245 ft., August 2, 1948 (A).

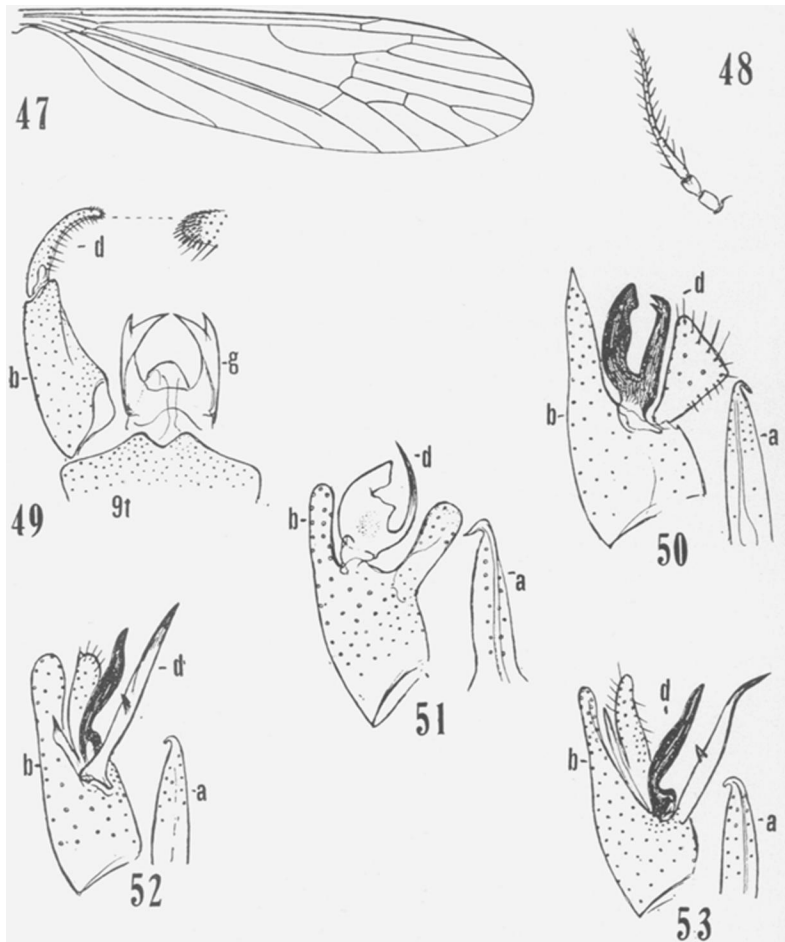
Gonomyia (Idiocera) lindseyi Alexander, 1944.—Blue Mts.: Mosquito Creek, Whitney, June 19, 1949 (Baker). Known hitherto only from the unique type, Modoc Co., California, 5,000 ft., July 1922.

There are slight differences in the male hypopygia of the two known specimens and these are shown in the accompanying drawings. In the type (Fig. 52), the apex of the lobe of the basistyle, *b*, is broadly obtuse. Four dististyles, *d*, or major branches of the same, the longest a relatively narrow straight blade, the tip acute, at near midlength bearing a strong black spine; next longest or second style a simple blackened rod that is strongly constricted or sinuous at near one-third the length, the tip subacute; third style a broadly flattened pale blade, subequal in size and shape to the lobe of the basistyle, provided with pale setae; fourth style a slender pale rod, the acute tip pointed and

blackened. Aedeagus, *a*, slender, entirely pale, the apex a short curved hook. The second or Oregon specimen (Fig. 53) has the outer lobe of the basistyle, *b*, narrow; third dististyle, *d*, narrower; apex of fourth style more extended, and the lateral spine of the second style stouter. Because of this insufficient material, it cannot be stated as to whether the above represents normal variation within a single species or whether distinct races are involved.

Gonomyia (Idiocera) shannoni Alexander, 1926.—Willamette Valley: Peavine, Sta. 3A, June 7, July 2, 1946, June 24, 1948, July 12, 1949 (*F*). Cascades: Crater Lake-Pole Creek Meadows, 5,900 ft., August 3, 1946, July 12, 1947 (*A*); August 7, 1948 (*A & F*).

Male hypopygium (Fig. 51) with the outer lobe of basistyle, *b*, a fleshy pale lobe, the tip broadly obtuse. Two dististyles, *d*, the outer one a large complex blackened structure shaped about as figured, including a broadly flattened outer arm with the apex trun-



Figs. 47-53.—47. *Cladura (Cladura) nigricauda* sp. nov., venation. 48. *C. (Cladura) nigricauda* sp. nov., antenna. 49-53. Male hypopygia: 49. *Cladura (Cladura) nigricauda* sp. nov. 50. *Gonomyia (Idiocera) brookmani* Alexander, holotype. 51. *G. (Idiocera) shannoni* Alexander. 52. *G. (Idiocera) lindseyi* Alexander, holotype. 53. *G. (Idiocera) lindseyi* Alexander (See fig. 1 for explanation of symbols).

cated, and a basal elongate slender spine, the margin between these two points further produced into a triangular point; disk of style broadly expanded, provided with microscopic setae. Inner dististyle generally similar in shape and appearance to the lobe of the basistyle, appearing as a flattened pale blade, its apex obtuse. Aedeagus, α , narrowed outwardly, the apex a spinous point.

Gonomyia (Gonomyia) aciculifera Alexander, 1919.—Willamette Valley: Peavine, without station number, May 21, 1945 (F). Southern Oregon: Store Guich Forest Camp, swept from willows along the Illinois River, August 9, 1948 (A & F). Cascades: Westfir, 1,000 ft., August 5, 1946 (A).

Gonomyia (Gonomyia) bihamata Alexander, 1943.—Willamette Valley: Peavine, Sta. 1, June 24, 1947; Sta. 3, July 16, 1946; Sta. 3A, May 23, 1947 (F). Cascades: Mount Hood-Tilly Jane Creek, 5,600 ft., July 18, 1947 (A). Dutchman's Flat, 6,100 ft., August 5, 1948 (A & F). Crater Lake-Annie Springs, 6,000 ft., August 1, 1948 (A); Castlecree Garden, 6,800 ft., July 12, 1947 (A); Pole Creek Meadows, 5,900 ft., July 11, 1947, August 7, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A & Baker); Anthony Lake, 7,100 ft., August 7, 1929 (Scullen); Lime, Burnt River, 2,400 ft., June 24, 1948 (A); Whitney, June 19, 1949 (Baker). Wallows: Wallowa Creek, at spring, 4,675 ft., June 29, 1948 (A).

Gonomyia (Gonomyia) flavibasis Alexander, 1916 (*tuberculata* Alexander, 1925).—Willamette Valley: Peavine, Sta. 3, May 14, 1947; Sta. 3A, August 6, 1946, June 15, July 24, 1948 (F); McMinnville, July 14, 1944 (F); Orchard View, McMinnville, May 4, 1949 (F); Panther Creek, McMinnville, July 14, 1948 (F). Blue Mts.: Spring Creek, 3,900 ft., June 15, 1949 (Baker); Upper Walla Walla River, 1,450 ft., August 17, 1948 (A).

Gonomyia (Gonomyia) percomplexa Alexander, 1945.—Coast: Coquille River, Sitkum, August 5, 1948 (H. W. Thorne). Willamette Valley: Peavine, June 6, 1945 (F), type; Sta. 1, June 10, July 3, 1946, June 19, July 3, 1947; Sta. 3, June 17, July 16, 1946; Sta. 3A, May 21, July 5, 1946 (F). McMinnville, Panther Creek, July 14, 1948 (F); Silver Creek Falls, July 8, 1949 (F); Willamette River, 5 miles south of Dayton, June 4, 1948 (F). Cascades: Mount Hood-Polally Forest Camp, 3,000 ft., August 9, 1946 (A); Salt Creek Falls, 3,800 ft., August 7, 1948 (A).

Gonomyia (Gonomyia) poliocephala Alexander, 1924.—Willamette Valley: Peavine, no station, June 1, 1945 (F), McMinnville, May 9, 1945 (F). Cascades: Trout Creek Forest Camp, South Santiam, 1,245 ft., August 2, 1948 (A). Blue Mts.: Upper Walla Walla River, 1,450 ft., July 4, 1948 (A). Wallows: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (A).

Gonomyia (Gonomyia) virgata Doane, 1900.—Coast: Eel Creek Forest Camp, August 11, 1948 (F); Gunaldo Falls, June 6, 1949 (F); Pacific City, May 23, 1948 (F); Wheeler, July 24, 1949 (F). Willamette Valley: Peavine, Sta. 1, June 20, 1946; Sta. 3, June 13, July 2, 1947, June 4, 1948; Sta. 3A, October 1, 1946, May 29, 1947 (F).

Rhabdomastix (Sacandaga) fasciger Alexander, 1920 (*subfasciger* Alexander, 1927).—Coast: Chetco River, August 11, 1948 (F); Coquille River, Sitkum, August 2, 1948 (H. W. Thorne); High Heaven, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Saddle Mountain State Park, July 24, 1949 (F). Willamette Valley: Peavine, no station, May 16, 1945 (F). Cascades: Mount Hood-Beaver Creek, 1,150 ft., July 16, 1947 (A); Multnomah Falls, 100 ft., August 9, 1946 (F). Cultus Lake, 4,670 ft., August 6, 1948 (A); Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Blue Mts.: Upper Walla Walla River, above Milton, 1,275 ft., July 4, 1948 (A).

Rhabdomastix (Sacandaga) leonardi Alexander, 1930.—Blue Mts.: Little Phillips Creek, 2,850 ft., July 3, 1948 (A); Pendleton, along Umatilla River, 1,070 ft., July 5, 1948 (A). Wallows: Hurricane Creek, 5,460 ft., July 11, 1949 (Sperry); Johnson Park, Wallowa River, 2,750 ft., August 18, 1948 (A).

Rhabdomastix (Sacandaga) setigera Alexander, 1943.—Coast: Jordan Creek, Wilson River, September 5, 1948 (F); Lee's Camp, September 18-25, 1949 (Davis). Generally similar to the type (Gothic, Colorado) but even larger and with the details of venation slightly different. The male hypopygia are very similar in both lots of specimens. Attention is called to the prominent setigerous tubercles on the caudal margin of the inner dististyle.

Rhabdomastix (Sacandaga) trichophora Alexander, 1943.—Cascades: Cascadia, 800 ft., August 2, 1948 (F); Dutchman's Flat, August 5, 1948 (A); Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Crater Lake-Annie Springs, 6,000 ft., August 1, 1946 (A).

Cryptolabis (Cryptolabis) bisnuata Doane, 1900 (*pachyphallus* Alexander, 1943).—

Coast: Humbug Mountain State Park, August 11, 1948 (F). Eastern Oregon: Ochoco Forest Camp, Ochoco Mts., 4,000 ft., August 15, 1948 (A). Wallowas: Johnson Park, Wallowa River, 2,750 ft., August 20, 1948 (A).

Cryptolabis (Cryptolabis) retrorsa Alexander, 1950.—Southern Oregon: Store Gulch Forest Camp, Siskiyou National Forest, 950 ft., August 9, 1948 (A & F); in great numbers along margins of Illinois River, swept from willow, alder and ash; type material.

Erioptera (Gonempeda) burra Alexander, 1924.—Coast: Castle Rock, May 13, 1949 (F); Tierra del Mar, May 13, 1949 (F). Willamette Valley: Peavine, Sta. 1, May 8, June 1, 1945, April 23, May 2, 1946, May 10, 1949; Sta. 3A, May 3, 1946 (F). Muddy Valley, McMinnville, May 9, 1945 (F). Southern Oregon: Ashland-Lake of the Woods, June 10, 1945 (F). Eastern Oregon: Malheur National Forest, Seneca, June 12, 1947 (F); Ochoco National Forest, June 14, 1947 (F). Blue Mts.: Whitney, June 19, 1949 (Baker). Wallowas: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (A).

Erioptera (Empeda) alcia Alexander, 1914.—Willamette Valley: Peavine, Sta. 3A, May 16, 1945, May 12-15, 1946 (F). Forest Grove, June 3, (Cole); Grand Island, Willamette River, June 5, 1949 (F); Happy Valley, McMinnville, May 12, 1946 (F); Henderson Bridge, June 16, 1948, May 22, 1949 (F); Panther Creek, McMinnville, May 23, 1949 (F).

Male hypopygium (Fig. 54) with the outer dististyle, *d*, much as in other species of the subgenus, unequally bilobed at tip, the outer arm elongate, the shorter inner one darkened at apex and produced laterad into a small acute spine. Inner dististyle of unique conformation, very broad-based, the outer apical angle produced into a very powerful, strongly sinuous arm that gradually narrows into the acutely pointed blackened tip.

Erioptera (Mesocyphona) distincta Alexander, 1912.—Blue Mts.: Mosquito Creek, Whitney, June 19, 1949 (Baker); Spring Creek, 3,900 ft., June 15, 1949 (Baker).

Erioptera (Mesocyphona) dulcis Osten Sacken, 1877.—Willamette Valley: Peavine: Sta. 1, July 12, 1946; Sta. 3, July 2-16, September 13, 1946, June 12, July 8, 1947, June 29, 1948, July 2, 1949; Sta. 3A, July 11, September 18, October 17, 1945, July 5, August 6, 1946, May 29, June 17, 1947, July 9-16, August 30, September 13, 1948, June 27, 1949 (F). Silver Creek Falls, August 2, 1948 (A & F). Southern Oregon: O'Brien, 1,475 ft., August 9, 1948 (A & F). Cascades: Mount Hood-Below timberline, 5,000 ft., August 7, 1946 (A); Still Creek, 3,600 ft., July 16, 1947 (A & F); Summit Meadow, June 29, 1947 (F). Metolius River, 2,600 ft., August 3, 1948 (A & F). Blue Mts.: Spring Creek, 3,900 ft., June 24-27, July 25, 1948, June 15, 1949 (Baker); Pine Creek, June 30, 1949 (Baker & Sperry). Wallowas: Enterprise, 4,200 ft., June 29, 1948 (A).

Erioptera (Mesocyphona) melanderiana Alexander, 1944.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947, July 31, 1948 (A & F). Odell Lake, Lazy Creek, 4,800 ft., August 4, 1946 (A). Crater Lake-Castlecrest Garden, 6,800 ft., August 2, 1946 (A); Pole Creek Meadows, 5,900 ft., August 3, 1946, July 12, 1947 (A), August 7, 1948 (A & F).

Erioptera (Erioptera) dyari Alexander, 1924.—Willamette Valley: Peavine, Sta. 3, September 27, October 23, 1945, May 23, July 21, September 13, 1946 (F). Cascades: Metolius River, River Island Forest Camp, August 4, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., August 10, 1949 (Baker).

Erioptera (Erioptera) oregonensis Alexander, 1920.—Coast: Grand Ronde, March 31, 1949 (F); High Heaven, Edmunds Ranch, April 1, 1949 (F); Saddle Mt. (Boyer), April 11, May 2, 1937 (Macnab); Sand Lake, April 12, 1949 (F); Tillamook, March 26, 1919 (A. C. Burrill), type; Wallace Bridge, March 31, 1948 (F). Willamette Valley: Peavine, Sta. 3, February 12, 1946, April 13, 1949 (F). Happy Valley, McMinnville, April 14, 1946 (F).

Male hypopygium (Fig. 55) with the dististyles, *d*, nearly terminal, the outer style large, blackened, on outer face at near midlength with a low lobe, the apex broadly flattened and provided with parallel rows of spinous setae. Inner dististyle a simple rod, about the apical third expanded, with a strong seta at apex; surface nearly glabrous, the face of the expanded portion with microscopic setulae. Gonapophysis, *g*, on slides each appearing as a triangular blackened blade, the tip acute, the blades divergent. Aedeagus small.

Erioptera (Erioptera) septemtrionis Osten Sacken, 1859 (*subseptemtrionis* Alexander, 1920.—Willamette Valley: Peavine, no station, April 19, May 4, 1945 (F). Happy

Valley, McMinnville, April 14, 1946 (F); Silver Creek Falls, May 9, 1948 (F). Southern Oregon: O'Brien, 1,475 ft., August 9, 1948 (A & F). Blue Mts.: Spring Creek, 3,900 ft., July 15, 1948, May 9, 1949 (Baker); Little Phillips Creek, 2,850 ft., July 2, 1948 (A); South Fork of Upper Walla Walla River, 1,450 ft., July 4, 1948 (A). Wallowas: Enterprise, 4,200 ft., June 29, 1948 (A); Lazy T Ranch, July 11, August 28, 1949 (Sperry).

Erioptera (Symplecta) cana (Walker, 1848) (All American records for *hybrida* Meigen, 1804, and *punctipennis* Meigen, 1818).—Willamette Valley: Peavine, June 18, 1948; Sta. 3, July 12, 1945, April 20, 1948; Sta. 3A, May 3, 1946 (F). McMinnville, Fender home, November 10, 1942, April 14, May 15, 1945, May 26-29, 1948, chiefly at light (F); Corvallis, May 29, (Cole auct.); Willamette River, 3 miles south of Dayton, June 3, 1948 (F). Southern Oregon: Ashland-Lake of the Woods, June 10, 1945 (F). Cascades: Mount Hood-Cloud Cap Inn Junction, August 9, 1946 (F); Hood River, June 8 (Cole); Hood River Meadows, July 17, 1947 (A & F); Polally Forest Camp, 3,000 ft., August 9, 1946 (F); Robin Hood Forest Camp, 3,560 ft., July 17, 1947 (A); Timberline Lodge, 5,500 ft., August 7, 1946 (A). Cascadia, 800 ft., August 2, 1948 (A & F); Devils Garden, Century Drive, August 5, 1948 (A); Metolius River, August 3, 1948 (A & F); Tumalo Creek, Bend, 3,610 ft., August 14, 1948 (A). Crater Lake Park Headquarters, 6,500 ft., August 2, 1946 (A). Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F); Fremont National Forest, June 12, 1945 (F); French Glen, June 12, 1947 (F); Mountain Creek, August 16, 1948 (A); Ochoco National Forest, June 14, 1947 (F); Warner Lakes, June 12, 1947 (F). Blue Mts.: Spring Creek, 3,900 ft., June 5, 1949 (Baker); Huntington, June 17, 1939 (Knowlton); Lime, along Burnt River, 2,400 ft., June 17, 1939 (Knowlton), June 24, 1948 (A); Pendleton, July 5, 1948 (A); Starr Creek, Malheur National Forest, May 30, 1949 (Baker); Upper Walla Walla River, August 18, 1948 (A); Whitman National Forest, June 14, 1947 (F). Wallowas: Aneroid Lake Trail, 7,000 ft., July 26, 1949 (Baker); Enterprise, 4,200 ft., June 29, 1948 (A); Lazy T Ranch, July 13, August 28-31, 1949 (Sperry); Lostine Valley, 5,000 ft., July 1, 1948 (A).

Erioptera (Trimicra) pilipes (Fabricius, 1787), var.—Coast: Langlois, June 22, 1939 (Knowlton); Neskowin, August 17, 1948 (James). Willamette Valley: Henderson Bridge, June 16, 1948, May 22, 1949 (F).

Erioptera (Psiloconopa) bispinigera Alexander, 1930.—Cascades: Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Eastern Oregon: Malheur National Forest, Seneca, June 12, 1947 (F); Ochoco National Forest, June 14, 1947 (F). Blue Mts.: Spring Creek, 3,900 ft., June 25, 1948 (A). Little Phillips Creek, 2,850 ft., July 3, 1948 (A); Whitney, June 19, 1949 (Baker). Wallowas: Eagle Cap Wilderness Area, 5,000 ft., June 28, 1948 (A); Lostine, 3,375 ft., July 2, 1948 (A).

Erioptera (Psiloconopa) carbonipes Alexander, 1929.—Willamette Valley: Henderson Bridge, 2 miles west of Amity, June 16, 1948, May 22, 1949 (F).

Erioptera (Psiloconopa) irata Alexander, 1949.—Coast: Eel Creek Forest Camp, August 11, 1948 (F). Willamette Valley: Peavine, Sta. 1, April 23, July 26, 1946, June 19, 1947 (F). Happy Valley, McMinnville, April 14, August 6, 1946 (F); Hendersons Bridge, May 22, 1949 (F); Panther Creek, McMinnville, July 14-25, 1948, May 23, 1949 (F). Cascades: Hazel Creek, near Dexter, July 15, 1947 (A); Westfir, 1,000 ft., August 5, 1946 (A).

Erioptera (Psiloconopa) manitobensis Alexander, 1929.—Blue Mts.: Dixie, May 18, 1949 (Davis); Lime, Burnt River, 2,400 ft., June 24, 1948 (A); Pendleton, Umatilla River, July 5, 1948 (A); Upper Walla Walla River, above Milton, 1,275 ft., July 4, 1948 (A).

Erioptera (Psiloconopa) megarhabda (Alexander, 1943).—Cascades: Cascadia, 800 ft., August 2, 1948 (A & F); Trout Creek Forest Camp, 1,245 ft., August 2, 1948 (A). Blue Mts.: Little Phillips Creek, 2,850 ft., July 2, 1948 (A).

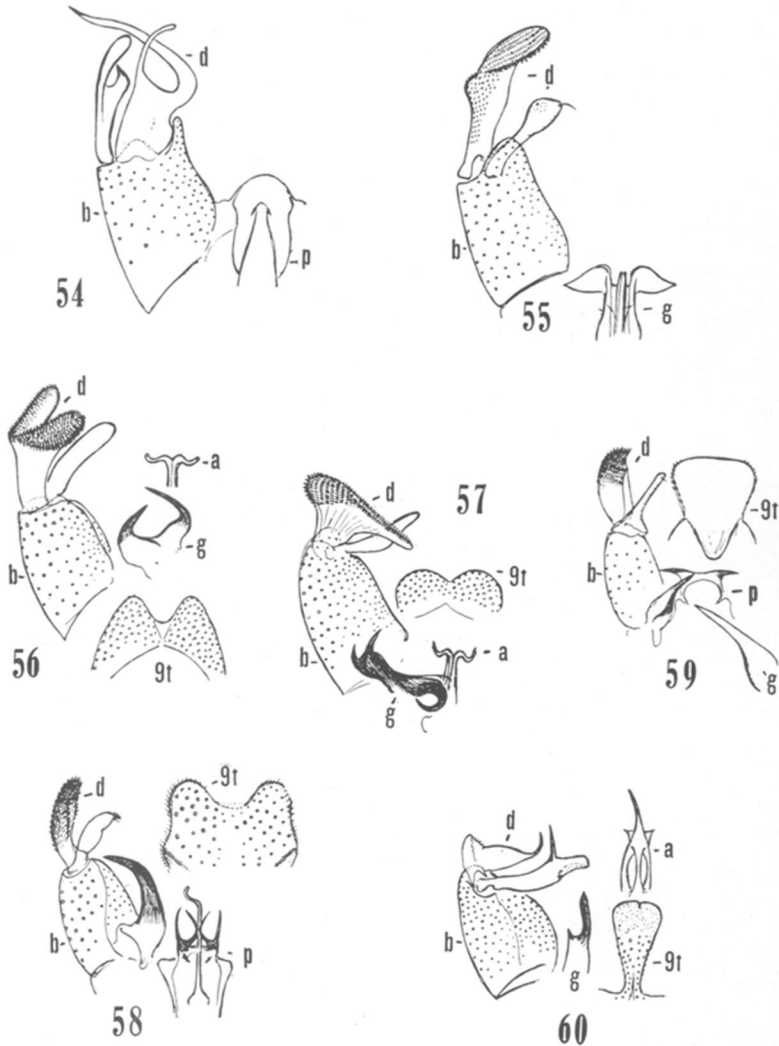
Erioptera (Psiloconopa) rainieria Alexander, 1943.—Cascades: Dutchman's Flat, 6,100 ft., August 5, 1948 (A & F); Little Deschutes River, August 4, 1946 (A); Odell Lake, Lazy Creek, 4,800 ft., August 4, 1946 (A). Crater Lake-Lost Creek, 5,900 ft., August 2, 1946 (A); Pole Creek Meadows, 5,900 ft., August 3, 1946, August 7, 1948 (A). Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F).

Erioptera (Psiloconopa) shoshone Alexander, 1945.—Willamette Valley: Willamette River, near Dayton, on gravel bars, April 17, 1949 (F). Wallowas: Johnson Park, Wallowa River, 2,750 ft., August 18, 1948 (A).

Erioptera (Psiloconopa) unduligera Alexander, 1945.—Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F); type.

Erioptera (Psiloconopa) zukeli Alexander, 1940.—Blue Mts.: Upper Walla Walla River, 1,450 ft., July 4, August 17, 1948 (A). Wallowas: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (A).

Erioptera (Hesperoconopa) dolichophallus Alexander, 1948.—Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., July 18, 1947 (F); Robin Hood Camp, 3,560 ft., July 18, 1947, along margins of the Hood River (F); Sahale Falls, 4,575 ft., July 17, 1947, July 31, 1948 (F); Salmon River, July 30, 1948 (F); Still Creek, July 16, 1947 (A & F). Metolius River, 2,600 ft., June 14, 1945, August 3, 1948 (F).



Figs. 54-60.—Male hypopygia: 54. *Erioptera (Empeda) alicia* Alexander. 55. *E. (Erioptera) oregonensis* Alexander. 56. *Ormosia (Rhypholophus) oregonica* Alexander. 57. *O. (Rhypholophus) hoodiana* Alexander. 58. *O. (Ormosia) albrighti* sp. nov. 59. *O. (Ormosia) bucera* sp. nov. 60. *O. (Ormosia) curvata* Alexander (See fig. 1 for explanation of symbols).

Erioptera (Hesperoconopa) pilipennis Alexander, 1918.—Cascades: Hood River, June 2, 1917 (through Cole); type.

Ormosia (Rhypholophus) bifidaria Alexander, 1919.—Cascades: Mount Hood-Timberline Lodge, 5,500 ft., August 7, 1946 (A & F); among mountain hemlock and limber pine, swept from beds of bear grass and *Calochortus*. Dutchman's Flat, 6,100 ft., August 5, 1948 (A). Blue Mts.: Anthony Lake, 7,000 ft., June 27, 1948 (A & Baker).

Ormosia (Rhypholophus) fumata (Doane, 1900).—Coast: High Heaven, July 12, 1949 (F); Saddle Mountain State Park, July 24, 1949 (F). Cascades: Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., August 29, 1948 (Baker); Langdon Lake 4,990 ft., August 16, 1948 (A).

Ormosia (Rhypholophus) hoodiana Alexander, 1944.—Cascades: Mount Hood-Hood River, July 29, 1921 (Melander), types; Hood River Meadows, 4,480 ft., July 17 1947 (A & F).

Male hypopygium (Fig. 57) with the outer dististyle, *d*, large, its lower angle greatly extended and narrowed, the surface, especially of the outer angle, covered with scales arranged in parallel rows. Inner dististyle narrow, gently curved. Gonapophyses, *g*, appearing as two strong plates that form a virtually continuous straight angle, the outer arms blackened, bispinous, the mesal portion produced into a strongly curved slender hook. Branches of aedeagus, *a*, short.

Ormosia (Rhypholophus) oregonica Alexander, 1944 (*fugax* Alexander, 1946).—Willamette Valley: Peavine, Sta. 3, September 10-18, 1945 (F), types of *fugax*. Cascades: Hazel Creek, near Dexter, August 5, 1946 (A); Willis Creek, North Santiam, August 17, 1947 (F). Crater Lake, 6,400-6,600 ft., August 29, 1930 (Scullen), type of *oregonica*.

Male hypopygium (Fig. 56) with the caudal margin of the tergite, *9t*, deeply notched. Outer dististyle, *d*, broadly expanded, the two apical lobes not greatly different in size, provided with unusually abundant and dense black spinous setae. Inner dististyle a relatively broad flattened blade. Gonapophysis, *g*, bispinous, the outer spine slender and simple (*fugax*) or unequally bispinous (*oregonica*); inner spine longer, strongly bent near base. Branches of aedeagus, *a*, relatively short.

Ormosia (Rhypholophus) paradisea Alexander, 1920 (*garretti* Alexander, 1926).—Cascades: Mount Hood-Sahale Falls, 4,575 ft., July 17, 1947 (F); Tilly Jane Creek, 5,600-5,700 ft., July 18, 1947, July 29-30, 1948 (A & F); abundant, swarming, in cases very close to banks of melting snow.

Ormosia (Rhypholophus) suffumata Alexander, 1943.—Blue Mts.: Spring Creek, 3,900 ft., September 6-19, 1948 (Baker). Willows: Lostine Valley, 5,500 ft., August 18, 1948 (A).

Ormosia (Ormosia) absaroka Alexander, 1943.—Willamette Valley: Peavine, no station, May 5, 1945, on sword fern (F). Cascades: Mount Hood-Tilly Jane Creek, 5,600 ft., July 29, 1948 (A); Timberline Lodge, 5,500 ft., July 16, 1947, swept from fir and mountain hemlock (A & F). Crater Lake-Annie Creek, 6,000 ft., August 1, 1946 (A); Lake Trail, 6,200-6,600 ft., July 12, 1947 (A). Blue Mts.: Spring Creek, 3,900 ft., April 26, 1949 (Baker); Anthony Lake, 7,000 ft., June 27, 1947, swept from beds of *Allium* and *Saxifraga* in boggy area (A & Baker); Langdon Lake, 4,970 ft., July 2, 1948; a single very large specimen swept from marsh vegetation (A).

Ormosia (Ormosia) albertensis Alexander, 1933.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., August 8, 1946 (A & F); Robin Hood Camp, 3,560 ft., August 8, 1946 (A & F). Little Deschutes River, August 4, 1946 (A); Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A). Crater Lake-Annie Creek, 6,000 ft., August 1-3, 1946 (A). Willows: Aneroid Lake Trail, 7,000 ft., July 26, 1949 (Baker).

Ormosia (Ormosia) albrighti sp. nov.—Belongs to the *similis* group; thorax very pale buffy yellow; antennae elongate; wings grayish subhyaline, the veins pale brown, relatively inconspicuous; cell M_2 open by the atrophy of the basal section of M_3 ; An_1 veins convergent; male hypopygium with a single very powerful blackened horn on mesal face of basistyle; phallosome relatively small, consisting of a blackened central plate, each outer lateral angle of which is produced into two slender spines.

♂. Length, about 5 mm.; wing, 5.8 mm.

Rostrum and palpi brown. Antennae with scape and pedicel yellow; first flagellar segment elongate, brown; remainder of antenna broken but it is evident that the organ is elongate. Head above dark gray.

Thorax very pale buffy yellow, only a little darker than the pretergites. Halteres with stem pale, knob very weakly darkened. Legs with the coxae and trochanters yellow;

remainder of legs obscure yellow, the femoral tips more darkened. Wings grayish subhyaline, the stigmal region darker; veins pale brown, relatively inconspicuous. Venation: Cell M_2 open by atrophy of basal section of M_3 ; vein *2nd A* sinuous on more than the outer third.

Abdomen, including hypopygium, medium brown. Male hypopygium (Fig. 58) with the caudal margin of tergite, $9t$, broadly emarginate, the lobes obtuse. Mesal face of basistyle, b , bearing a single very powerful blackened horn from an expanded base, the horns directed caudad and slightly outward. Outer dististyle, d , relatively long, with abundant blackened scalelike setae over most of their length. Inner dististyle a pale blade, blackened and acute at apex. Phallosome, p , relatively small, as compared with the horn of the basistyle, consisting of a blackened central plate, the outer lateral angle produced caudad into two slender spines, the outer and less curved one pale at tip. Aedeagus long and slender, very strongly bent near apex.

Holotype, ♂, Salt Creek Falls, 3,800 ft., July 14, 1947 (C. P. Alexander); on wet rocky ledges along trail to the foot of the falls.

I am pleased to name this fly for Mr. Ray Albright, to whom I am much indebted for various interesting Oregon Tipulidae. The closest relative is *Ormosia (Ormosia) furibunda* sp. nov. which is readily told by the quite different male hypopygium.

***Ormosia (Ormosia) bucera* sp. nov.**—Allied to *leptorhabda*; thorax almost uniformly brownish yellow, scarcely patterned; wings with a strong fulvous brown suffusion; cell M_2 open by the atrophy of m ; male hypopygium with the tergite broad, the caudal border truncate; outer dististyle a flattened scooplike structure, its apex broadly truncate; phallosome with a depressed central plate whose outer angles are produced laterad into strong spines; apophyses appearing as even larger spines that are directed mesad and caudad.

♂. Length, about 4.5-4.7 mm.; wing, 4.7-5 mm.

Rostrum and palpi brownish black. Antennae broken. Head dark brown.

Thorax almost uniformly brownish yellow, scarcely patterned; pseudosutural foveae pale, tuberculate pits more evident, reddish brown. Pleura somewhat clearer yellow than the dorsum. Halteres with stem pale, knob infuscated. Legs with coxae and trochanters yellow, remainder of legs brownish yellow. Wings with a strong fulvous brown suffusion, the prearcular and costal regions somewhat clearer yellow; stigmal region pale brown, inconspicuous; veins pale brown, more brownish yellow in the brightened fields. Venation: R_{2+3+4} longer than basal section of R_5 ; cell M_2 open by atrophy of m ; $m-cu$ about one-fourth its length beyond the fork of M ; Anal veins divergent.

Abdominal tergites brown, the sternites more yellowed; hypopygium yellow. Male hypopygium (Fig. 59) with the tergite, $9t$, broad, slightly expanded outwardly, the caudal border truncate, with very short and inconspicuous fimbriations, those of the sides longer and more evident. Outer dististyle, d , a flattened scooplike structure, its apex truncate, the surface with rows of blackened spinous setae, some of which are larger and more conspicuous. Inner dististyle a broad-based structure that narrows abruptly into a long straight rod, the tip obtuse; lower surface with scattered setae, including a larger one near tip. Phallosome, p , having the depressed central plate with its outer angles produced laterad into strong spines; on either side of the phallosome with even larger spines that are directed mesad and caudad.

Holotype, ♂, Beaver Creek, Mount Hood, 1,150 ft., August 7, 1946 (C. P. Alexander). *Paratopotype*, a broken ♂, July 16, 1947 (Alexander & Fender); *paratypes*, ♂♂, Bear Creek, 1,400 ft., August 1, 1948 (C. P. Alexander).

Most nearly allied to *Ormosia (Ormosia) leptorhabda* Alexander, 1943, differing in the details of structure of the male hypopygium.

Ormosia (Ormosia) curvata Alexander, 1924.—Coast: Grand Ronde, March 31, 1949 (F). Willamette Valley: Peavine, Sta. 2, March 21, 1947 (F).

Male hypopygium (Fig. 60) with the tergite, $9t$, large, its appendage elongate-triangular in outline, the base narrow, the apex with a narrow median split; outer third of lobe with abundant fimbriations, the basal half with fewer but larger setae. Basistyle, b , projecting slightly beyond the point of insertion of the dististyles. Outer dististyle, d , consisting of a scooplike base and an extended outer part that narrows into a strong curved hook. Inner dististyle larger, appearing as a stout arm, its outer margin beyond midlength with a long acute black spine; lower margin of apex beyond this point with pale membrane. Gonapophysis black, unequally bispinous, the outer spine a small acute

point. Aedeagus, *a*, unusually small and weak, especially the slender apex, the latter at base with a flattened plate that is extended into small lateral points.

Ormosia (Ormosia) davisii sp. nov.—Belongs to the *similis* group, allied to *unicornis*; male hypopygium with the outer arm of the outer dististyle a curved black rod that bears two or three strong appressed spines; inner arm short-stemmed, the apex a broadly flattened blade that is extended into two powerful spines; inner dististyle a long slender rod, at near midlength of outer face bearing an erect spine.

♂. Length, about 4.5 mm.; wing, 5.2 mm.; antenna, about 1.1 mm.

Rostrum and palpi black. Antennae short, black; flagellar segments with long verticils and a shorter abundant whitish pubescence. Head dark brown.

Thoracic notum almost uniformly dark grayish brown, the pretergites not brightened; postnotum and pleura slightly paler. Halteres yellow. Legs with the coxae pale brown; trochanters yellow; remainder of legs brown, femoral bases obscure yellow, broadest on the posterior legs. Wings tinged with brown, the prearcular field more yellowed; stigma darker brown; veins brown, those at the base pale. Venation: R_{2+3} subequal to vein R_2 ; cell M_2 open by the atrophy of basal section of vein M_3 ; Anal veins divergent, vein 2nd *A* virtually straight.

Abdomen dark brown. Male hypopygium (Fig. 63) with the median lobe of tergite, *9t*, elongate, narrowed at base, gently widened outwardly, the apex bilobed by a median notch (this probably broader than figured, due to deformation on slide). Basistyle, *b*, at apex produced into a stout lobe. Dististyles, *d*, subterminal, the outer one profoundly bilobed, the outer arm a curved black rod that bears two or three strong appressed spines; inner arm short-stemmed, the apex a broadly flattened blade that extends into two powerful spines, as figured. Inner dististyle a long slender rod, at near midlength of outer face bearing an erect spine, the apex of the style beyond this point more membranous, especially on the lower half. Gonapophysis, *g*, terminating in two unequal spines, the axial one much longer and stouter.

Holotype, ♂, Silver Creek Falls, 1,000 ft., July 8, 1949 (*K. M. Fender*).

This interesting *Ormosia* is named for Mr. John E. Davis, to whom I am indebted for several interesting Tipulidae from many parts of Oregon. It is closest to *Ormosia (Ormosia) unicornis* sp. nov., which differs in the details of structure of the male hypopygium, particularly the entire outer arm of the outer dististyle.

Ormosia (Ormosia) decussata Alexander, 1924.—Coast: Cannon Beach, August 6, 1940 (*Townes*); High Heaven, July 12, 1949 (*F*); Salmon River, near Boyer, August 12, 1948 (*F*). Willamette Valley: Peavine, no station, September 18, October 12, 1945; Sta. 3A, July 24, 1948 (*F*). Silver Creek Falls, August 2, 1948 (*F*). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (*A*). Metolius River, August 3, 1948 (*A* & *F*).

Ormosia (Ormosia) defrenata Alexander, 1948.—Blue Mts.: Spring Creek, 3,900 ft., August 29, 1948 (*Baker*). Wallawas: Lostine Valley, above French Forest Camp, 5,500 ft., August 19, 1948 (*A*).

Ormosia (Ormosia) divergens (Coquillett, 1905).—Cascades: Mount Hood-North Fork of Iron Creek, 4,400 ft., July 31, 1948 (*A*). Wallawas: Spring at Power Plant, Wallawa Creek, 4,675 ft., June 29, 1948 (*A*); Hurricane Creek, 5,460 ft., July 11, 1949 (*Sperry*).

Ormosia (Ormosia) flaveola (Coquillett, 1900).—Coast: High Heaven, April 1, 1949 (*F*). Willamette Valley: Silver Creek Falls, May 9, 1948, July 8, 1949 (*F*).

Ormosia (Ormosia) furibunda sp. nov.—Belongs to the *similis* group; general coloration of the thoracic dorsum medium brown; antennae (male) elongate, nodulose; wings with cell M_2 open by atrophy of basal section of M_3 ; vein 2nd *A* strongly sinuous on outer third; male hypopygium with the phallosome consisting of two pairs of heavily blackened rods or apophyses, the smaller inner pair bearing a slender lateral branch; outer portion of aedeagus strongly sinuous.

♂. Length, about 4.5-5 mm.; wing, 5.2-6 mm.; antenna, about 3-3.5 mm.

Rostrum and palpi brown. Antennae (male) elongate, nearly two-thirds as long as the wing; scape and pedicel obscure yellow, flagellum brownish black; flagellar segments swollen basally, narrowed on more than the outer half; longest verticils unilaterally distributed, a trifle exceeding the segments. Head dark brown.

Thorax medium brown, without evident pattern; lateral praescutal borders and the pleura more brownish yellow to obscure yellow. Halteres pale, knobs weakly darkened. Legs with the coxae and trochanters obscure yellow; remainder of legs yellow, the tarsi

passing into dark brown. Wings (Fig. 61) with a weak brownish tinge, the stigma darker brown; costal border slightly more infuscated than remainder of ground; veins brown. Venation: Cell M_2 open by atrophy of basal section of M_3 ; vein $2nd\ A$ strongly sinuous on outer third.

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 62) with the tergite, $9t$ broad, the caudal margin with a broad V-shaped notch, the lateral lobes broad. Outer dististyle, d , small, the setae or setoid spines that form the vestiture very small. Inner dististyle obtuse at tip. Phallosome, p , complex, comprised of two pairs of gonapophyses, these heavily blackened, the outer pair larger; inner apophyses bearing a small lateral branch that becomes pale on its outer half. Aedeagus, a , slender, straight on more than the basal half, the outer portion strongly sinuous.

Holotype, ♂, Peavine Ridge, Station 3A, July 5, 1946 (K. M. Fender). *Paratypes*, 2 ♂♂; 1 ♂, June 27, 1949 (K. M. Fender).

Ormosia (Ormosia) furibunda is readily told from all other regional species having elongate nodulose antennae in the male by the structure of the hypopygium, particularly the complex phallosome. In its general appearance it is most like *O. (O.) decussata* Alexander, *O. (O.) longicornis* (Doane), and *O. (O.) pugetensis* Alexander, yet is entirely distinct from all.

Ormosia (Ormosia) fusiformis (Doane, 1900).—Coast: Saddle Mt. (Boyer), October 26, 1935 (Dirks-Edmunds). Willamette Valley: Peavine, Sta. 1, June 20, 1946, May 22, June 24, 1947; Sta. 2, April 26, 1947; Sta. 3, July 2, September 13, October 28, 1946, May 3, 1947, May 25, June 29, 1948, June 6, 1949; Sta. 3A, July 12, October 10, 1945, May 15, June 19, October 3-18, 1946, May 5-23, June 17, 1947, July 16, September 10, 1948; Sta. 4, April 19, 1947 (F). Happy Valley, McMinnville, May 12, August 6, 1946 (F); McMinnville, May 16, 1945, on skunk cabbage (F); Silver Creek Falls, July 8, 1949 (F). Cascades: Mount Hood-Bear Creek, 1,400 ft., August 1, 1948 (A & F); Still Creek, 3,600 ft., July 16, 1947, July 31, 1948 (F); Wapinitia Cutoff, August 7, 1946 (F). Indian Ford, 3,240 ft., August 5, 1948 (A & F); Metolius River, 2,600 ft., August 3, 1948 (A & F); Willis Creek, August 17, 1947 (Albright). Blue Mts.: Langdon Lake, 4,990 ft., July 2, 1948 (A); Little Phillips Creek, 2,850 ft., July 3, 1948 (A); Upper Walla Walla River, above Milton, 1,275 ft., July 4, 1948 (A).

Ormosia (Ormosia) gerronis sp. nov.—Belongs to the *similis* group; mesonotum reddish brown, dorsal pleurites weakly infuscated, the more ventral ones yellowed; antennae (male) of moderate length; wings with cell M_2 open by atrophy of basal section of M_3 , Anal veins convergent; male hypopygium having the phallosome consisting of a central blackened rod, at near midlength produced laterad into short-triangular blackened spines.

♂. Length, about 5 mm.; wing, 5.5 mm.

Rostrum brown; palpi black. Antennae (male) with scape brownish yellow, the succeeding three segments dark brown, the remainder broken; basal two flagellar segments long-fusiform, with long verticils; the organ, when entire, evidently reaching backward at least to base of abdomen. Head dark brown.

Pronotum light brown, the scutellum and pretergites pale yellow. Mesonotum chiefly reddish brown, the humeral region of praescutum a little more brightened; praescutum with indications of three darker stripes, the median one deeper in front. Dorsal pleurites and ventral half of pleurotergite weakly infuscated, the ventral pleurites and dorsopleural membrane yellow. Halteres infuscated. Legs with the coxae and trochanters pale yellow; remainder of legs brown to dark brown. Wings with a weak brownish tinge, the stigmal region still darker; veins pale brown. Venation: Sc_1 ending nearly opposite R_2 ; R_{2+3+4} about one-half longer than the basal section of R_5 ; cell M_2 open by the atrophy of basal section of M_3 ; Anal veins convergent.

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 65) with the caudal margin of tergite, $9t$, with a shallow U-shaped notch, the lateral lobes relatively broad, truncated at tips, the outer margin narrowly dusky. Basistyle, b , on mesal face with two unequal spines, the more caudal one larger, directed backward, the small slender anterior spine directed mesad and then caudad. Phallosome, p , of distinctive form, consisting essentially of a central blackened rod, at near midlength produced laterad into short-triangular blackened spines; central produced portion before apex with a small subterminal spine on either side.

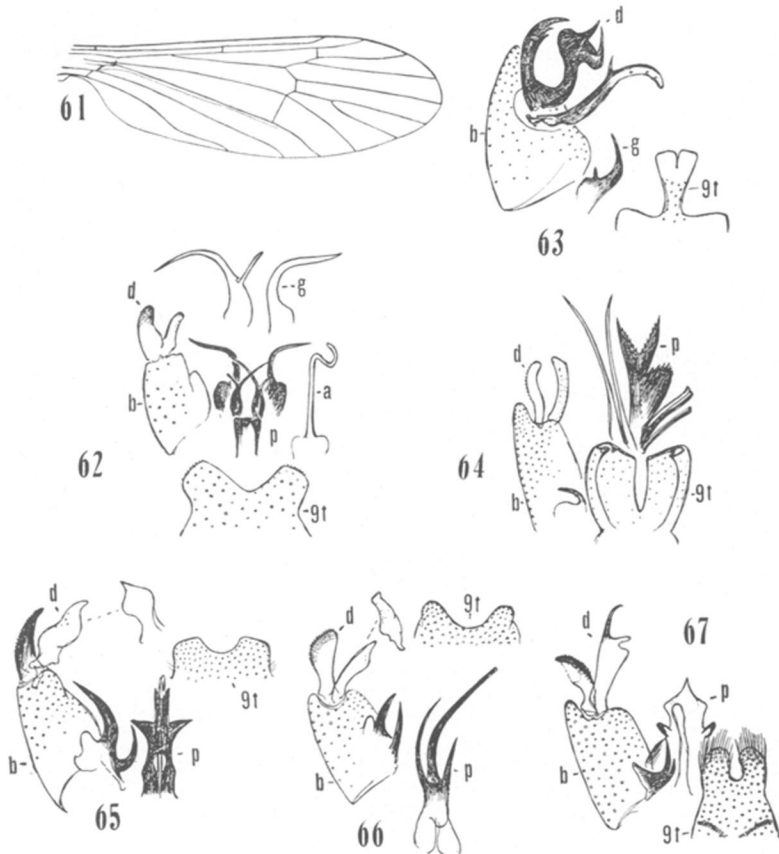
Holotype, ♂, Humberg Mountain State Park, August 11, 1948 (K. M. Fender).

Most similar to *Ormosia (Ormosia) heptacantha* Alexander and *O. (O.) nonacantha* sp. nov., differing chiefly in the details of structure of the male hypopygium.

Ormosia (Ormosia) hallabani Alexander, 1943.—Cascades: Metolius River, 2,600 ft., June 14, 1945 (F).

Ormosia (Ormosia) hispa Alexander, 1945.—Willamette Valley: Peavine, Sta. 1, June 4, July 3, 1946, May 15-27, June 19, 1947; Sta. 2, June 4-27, July 6, 1946; Sta. 3A, June 11, 1946 (F). McMinnville, July 2, 1949 (F); Panther Creek, McMinnville, May 23, 1949 (F).

Male hypopygium (Fig. 64) with the tergite, *9t*, very large, pale, scooplike, profoundly divided into two halves by a deep notch, the inflexed margin of each half with two lobes or denticles. Both dististyles, *d*, of approximately the same size, the outer pale, its surface with delicate setulae; inner style a darker rod, its apex obliquely obtuse, the surface with scattered microscopic punctures. Phallosome, *p*, conspicuous, consisting of two elongate narrow ribbonlike blades that jut far beyond the other elements, gradually narrowed into needlelike points; in addition, a heavy blackened central mass, consisting of a ribbed central plate that is forked at tip, on its lower margin with a very high similarly ribbed crest or flange, in slide mounts directed laterad, as figured, the margin erose or irregularly toothed; two further darkened rods near base of phallosome, the upper one



Figs. 61-67.—61. *Ormosia (Ormosia) furibunda* sp. nov., venation. 62-67. Male hypopygia: 62. *Ormosia (Ormosia) furibunda* sp. nov. 63. *O. (Ormosia) davisi* sp. nov. 64. *O. (Ormosia) hispa* Alexander. 65. *O. (Ormosia) gerronis* sp. nov. 66. *O. (Ormosia) nonacantha* sp. nov. 67. *O. (Ormosia) perspectabilis* Alexander (See fig. 1 for explanation of symbols).

larger. Gonapophysis with the blackened spinous lobe microscopically ribbed or roughened.

Ormosia (Ormosia) manicata (Doane, 1900) (*deviata* Dietz, 1916; *fuscipyga* Alexander, 1924).—Coast: High Heaven, July 12, 1949 (F); Tahkenitch Lake, August 5, 1940 (Tonnes). Willamette Valley: Peavine, Sta. 1, April 23, June 20, July 3-18, 1946, May 15, 1947, July 2, 1948, June 6, July 7, 1949; Sta. 3, May 7, June 19, July 17, September 10-12, 1945, September 13, 1946, July 8, 1947, July 2, 1949; Sta. 3A, July 14, 1948 (F). McMinnville, May 30, 1948, July 2, 1949; Muddy Valley, McMinnville, May 9, 1945; Panther Creek, McMinnville, July 25, 1948 (F). Silver Creek Falls, August 2, 1948 (F); Willamette River, Dayton, April 24, 1949 (F). Cascades: Mount Hood-Clackamas Lake, 3,300 ft., August 8, 1946 (A & F); Robin Hood Forest Camp, 3,560 ft., August 8, 1946, July 17, 1947 (A & F). Blue Mts.: Spring Creek, 3,900 ft., June 24, September 19, October 17, 1948, June 15, 1949 (Baker); Upper Walla Walla River, near Milton, 1,275 ft., July 4, August 18, 1948 (A).

Ormosia (Ormosia) modica (Dietz, 1916) (*stylifer* Alexander, 1919).—Coast: High Heaven, June 22, 1945 (F). Willamette Valley: Peavine, Sta. 1, May 2, June 4, July 1, 1946, May 15-22, 1947, May 22, June 2, 1948; Sta. 2, May 26, 1947; Sta. 3A, May 23-29, June 30, 1947, June 15-30, 1948, June 27, 1949 (F). Forest Grove, June 3 (Cole), type of *stylifer*; Hendersons Bridge, May 22, 1949 (F); McMinnville, skunk cabbage association, May 16, 1945, May 26-29, 1948, July 2, 1949 (F); Muddy Valley, McMinnville, May 9, 1945 (F); Willamette River, south of Dayton, June 4, 1948 (F); Zena, June 5, 1948 (F).

***Ormosia (Ormosia) nonacantha* sp. nov.**—General coloration pale reddish brown; antennae (male) elongate; wings with a weak brownish tinge; cell M_5 open by atrophy of basal section of M_3 ; male hypopygium with two strong black spines on mesal face of basistyle; phallosome consisting of five long blackened rods or spines, including two pairs of apophyses and the central aedeagus.

♂. Length, about 4.5 mm.; wing, 4.5 mm.; antenna, about 3 mm.

Rostrum and palpi brownish black. Antennae (male) dark brown or brownish black, elongate, approximately two-thirds the body or wing; flagellar segments fusiform, with unusually long outspreading white setae. Head brownish gray.

Thoracic dorsum almost uniformly pale reddish brown, the cephalic portion of praescutum very vaguely pruinose and slightly more darkened; pleura clearer yellow. Halteres infuscated, the base of stem narrowly yellow. Legs with coxae and trochanters pale yellow; remainder of legs broken. Wings with a weak brownish tinge, the prearcular and costal fields, with the stigma, a trifle more darkened; veins brownish yellow. Venation: R_2 subequal in length to R_{2+3} ; cell M_2 open by atrophy of basal section of M_3 ; $m-cu$ about one-fifth its length before the fork of M ; Anal veins slightly convergent, the distal third of 2nd A sinuous.

Abdomen, including hypopygium, medium brown. Male hypopygium (Fig. 66) with the caudal margin of tergite, $9t$, with a broad and shallow emargination, the lateral lobe thus formed unusually narrow. Basistyle, b , on mesal face with two strong black spines, the more caudal one stouter and slightly more curved. Phallosome, p , consisting of five long blackened rods or spines, the longest being interpreted as being the aedeagus; the remaining four spines are paired (a single pair shown in figure), the ventral spine longer, more slender and slightly curved, the upper spines straight, all acute at tips.

Holotype, ♂, Humbug Mountain State Park, August 11, 1948 (K. M. Fender).

Among the various species of *Ormosia* having a pair of spines on each basistyle of the male hypopygium, the present fly is closest to the more southern *Ormosia (Ormosia) burneyensis* Alexander and *O. (O.) heptacantha* Alexander, differing conspicuously in the structure of the phallosome.

Ormosia (Ormosia) onerosa Alexander, 1943.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 31, 1948 (A); North Fork of Iron Creek, July 31, 1948 (F); Sahale Falls, 4,575 ft., July 31, 1948 (A); Tilly Jane Creek, 5,700 ft., July 30, 1948 (A & F). Dutchman's Flat, 6,300 ft., August 5, 1948 (F); Elk Lake, 4,900 ft., August 6, 1948 (A). Crater Lake-Pole Creek Meadows, 5,900 ft., August 7, 1948 (A).

Ormosia (Ormosia) perspectabilis Alexander, 1944.—Coast: Saddle Mt. (Boyer), September 29, October 13, 1934, October 6, 1935, September 20, 1936 (*Macnab and associates*); types.

Male hypopygium (Fig. 67) with the ninth tergite, $9t$, broad-based, narrowed into the apical lobe which is deeply notched by a rounded emargination; lobes with conspicuous setae and fimbriations, the outer ends of lobes paler and more membranous. Basistyle with the lateral apophyses on mesal face, b , appearing as a sclerotized rod that is extended

into two unequal black spines, the small more cephalic one closely appressed to the major spine. Remainder of phallosome, *p*, a depressed-flattened plate that terminates in an acute point, on lateral margin of the plate with a small blackened lobe. Outer dististyle, *d*, small, its outer apical portion blackened and provided with microscopic appressed points, the apex below this pale and membranous to present a notched appearance. Inner dististyle much larger, terminating in a conspicuous black outer spine and a slightly shorter pale fingerlike lobe that bears a few microscopic punctures.

Ormosia (Ormosia) pleuracantha sp. nov.—Size relatively large (wing, male, over 5.5 mm.); general coloration dark plumbeous gray; antennae (male) relatively elongate; wings with a brownish tinge, the stigma darker brown; cell M_2 open by atrophy of basal section of M_3 ; vein *2nd A* sinuous on more than the outer third; male hypopygium with the tergite only shallowly emarginate; mesal portion of basistyle with a blackened bispinous plate; outer dististyle black, bispinous; gonapophyses appearing as small yellow blades that narrow to the acute tips.

♂. Length, about 4.6-5 mm.; wing, 5.6-6 mm.; antenna, about 2.3-2.5 mm. Rostrum and palpi black. Antennae (male) relatively long, approximately one-half the length of body, black throughout; flagellar segments elongate, more narrowed at the ends, especially the outer end; longest verticils of the intermediate segments a little less than twice the segments. Head dark gray.

General coloration of thorax dark plumbeous gray, the praecutal stripes very poorly indicated; pretergites obscure yellow; pseudosutural foveae blackened. Halteres yellow, the knobs weakly more darkened. Legs with the coxae testaceous yellow; trochanters yellow; remainder of legs obscure yellow, the tips of the femora and tibiae a little more darkened; tarsi brown. Wings (Fig. 68) with a brownish tinge, the stigma darker brown, preceded and followed by somewhat paler areas; costal border, except before the stigma, infuscated; prearcular field more yellowed; veins stout, brown, yellowed in the prearcular area. Venation: R_2 a little longer than R_{2+3} ; cell M_2 open by atrophy of basal section of M_3 ; vein *2nd A* sinuous on more than the outer third.

Abdomen, including the hypopygium, black. Male hypopygium (Fig. 69) with the tergite, *9t*, extensive, the caudal border only feebly emarginate, with low pale lateral lobes that are densely provided with delicate silken setae, with stronger yellow bristles more basad, the latter decussate at the midline. Basistyle, *b*, with the mesal face bearing a blackened bispinous plate, the outer spine about one-half longer and somewhat stouter than the cephalic one. Outer dististyle, *d*, a heavily blackened bispinous plate. Inner dististyle larger, pale yellow, the membrane without sensory pores, such as are found in many species of the *similis* group. Gonapophysis, *g*, appearing as small narrow yellow blades that narrow to the acute tips; aedeagus even smaller, narrowed to the apex.

Holotype, ♂, Peavine Ridge, Station 1, June 20, 1946 (*K. M. Fender*). *Paratopotypes*, ♂♂, June 20-26, 1946, June 24, July 3, 1947 (*Fender*); *paratype*, ♂, State Line Creek, southern Oregon on California border, August 9, 1948 (*C. P. Alexander*).

This fly is entirely distinct from the other described species, differing especially in the structure of the male hypopygium, particularly the tergite, basistyle, and the dististyles. Superficially it most resembles species such as *Ormosia (Ormosia) lanuginosa* (Doane).

Ormosia (Ormosia) profunda Alexander, 1943.—Coast: Pacific City, May 23, 1948 (*F*).

Male hypopygium (Fig. 70) with the tergal lobe, *9t*, profoundly bilobed by a relatively narrow median split, the entire surface of the lobe with long scattered setae from conspicuous punctures. Basistyle, *b*, produced slightly beyond level of point of insertion of the dististyles as a short slender lobe. Outer dististyle, *d*, pale, its surface with delicate setulae, unequally bilobed by a deep marginal notch, the longer blade narrowed to the tip. Inner dististyle dark-colored, irregular in outline, the outer half more expanded, at near midlength with a small darkened point or tooth; outer margin roughened by numerous wartlike tubercles. Gonapophyses appearing as curved black hooks, as in the *manicata* group. Phallosome, *p*, yellow horn color, consisting of two equal narrow blades, acute at tips, and a shorter flattened central lobe, the apex of which is microscopically fimbriate or roughened.

Ormosia (Ormosia) proxima Alexander, 1924.—Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., July 18, 1947 (*A & F*); Sahale Falls, 4,575 ft., July 17, 1947, July 31, 1948 (*A & F*). Wallows: Wallowa Creek, 4,635 ft., June 27-28, 1948 (*A*).

Male hypopygium (Fig. 71) with the tergal lobe, *9t*, widened outwardly, the apex bilobed. Outer dististyle a darkened blade, expanded outwardly, the margin usually four-toothed, in cases merely three-toothed. Inner dististyle, *d*, larger, the outer apical angle

produced into a sharp point or spine, the lower angle pendant, bilobed at tip. Gonapophysis, *g*, unequally bispinous, the inner spine much longer and stronger, gently curved. Aedeagus, *a*, very long and slender.

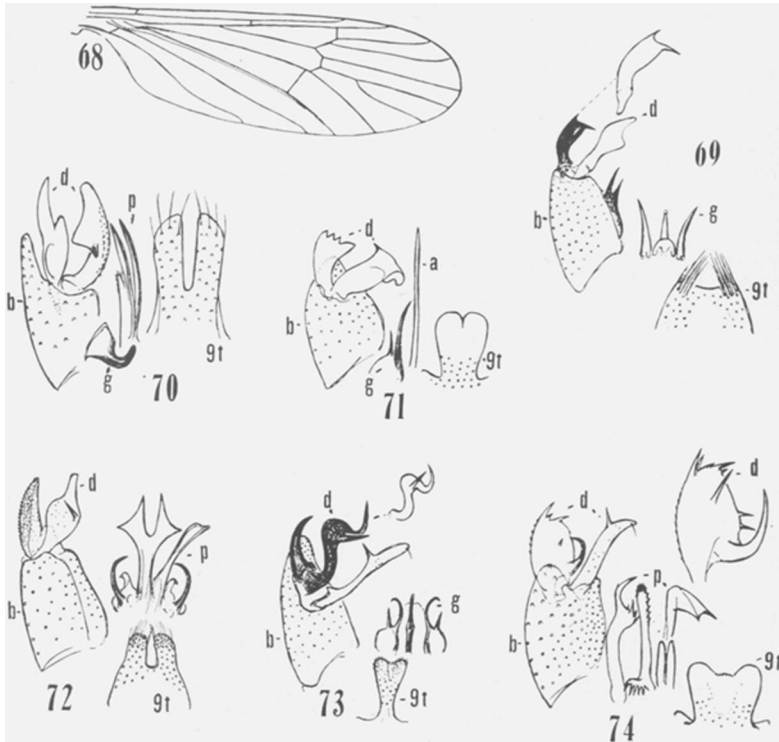
The most similar described species is *Ormosia (Ormosia) fragmentata* Alexander, 1940, of northern Korea.

Ormosia (Ormosia) pugetensis Alexander, 1944.—Willamette Valley: Peavine, Sta. 3, September 13, 1946 (*F*). Cascades: Mount Hood-Still Creek, 3,600 ft., July 17, 1947, July 31, 1948 (*A*).

Ormosia (Ormosia) subcornuta Alexander, 1920.—Coast: Grand Ronde, March 31, 1949 (*F*); Wallace Bridge, March 31, 1949 (*F*). Willamette Valley: Peavine, Sta. 2, March 21, 1947 (*F*). Forest Grove, March 20-26, 1919 (*Cole*), type material; Hillsboro, April 1, 1919 (*Cole*), type. Cascades: Westfir, 1,000 ft., August 5, 1946 (*A*).

Male hypopygium (Fig. 74) with the outer dististyle, *d*, a strongly bispinous plate, the extremes of armature in various specimens being shown, in the more accentuated cases with the discal spine long and slender, in other cases so reduced as to be barely visible. Inner dististyle with the spine lying far distad, only a little more than its own length before the tip. Phallosome, *p*, complex, about as figured (only three elements shown, or one-half of the whole structure).

The present fly is wide-spread over the Vancouverian region. The Rocky Mountain *Ormosia (Ormosia) sentis* Alexander, 1943, presumably represents a geographic race of this species.



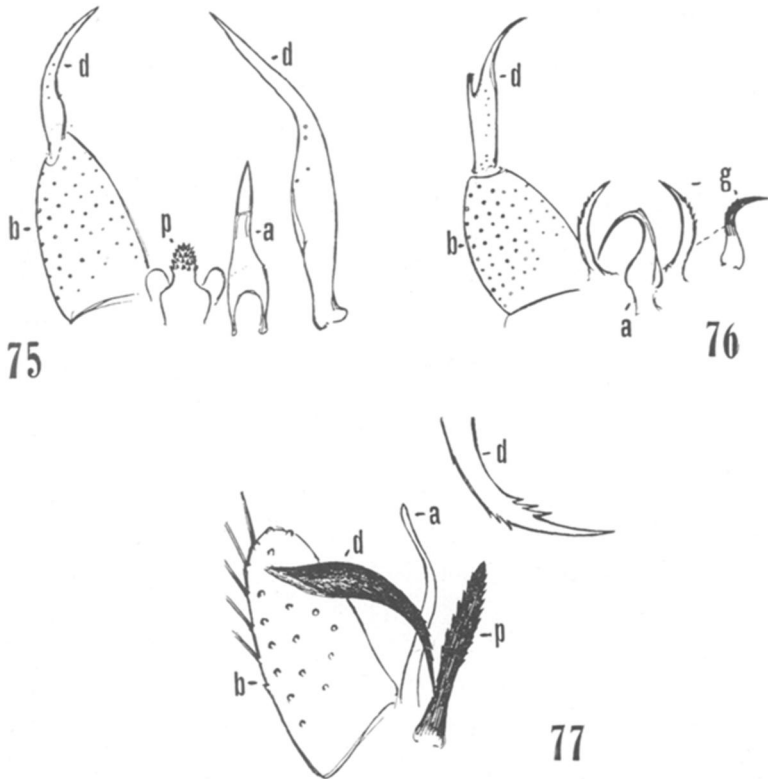
Figs. 68-74.—68. *Ormosia (Ormosia) pleuracantha* sp. nov., venation. 69-74. Male hypopygia: 69. *Ormosia (Ormosia) pleuracantha* sp. nov. 70. *O. (Ormosia) profunda* Alexander. 71. *O. (Ormosia) proxima* Alexander. 72. *O. (Ormosia) upsilon* Alexander. 73. *O. (Ormosia) unicornis* sp. nov. 74. *O. (Ormosia) subcornuta* Alexander (See fig. 1 for explanation of symbols).

Ormosia (*Ormosia*) *unicornis* sp. nov.—Belongs to the *similis* group, allied to *davisi*; thorax almost uniformly dark brown, the humeral and lateral portions of the praescutum more reddened; wings with a brownish tinge, the stigma darker; cell M_2 open by atrophy of basal section of M_3 ; male hypopygium with the outer dististyle bifid, its outer arm a strong curved black horn, the inner arm a long sinuous blackened rod that bears a strong lateral spike at near midlength.

♂. Length, about 4 mm.; wing, 4.6 mm.

Head broken. Thorax almost uniformly dark brown, the humeral and lateral portions of the praescutum more reddened. Halteres yellow. Legs with the fore and middle coxae dark brown, the posterior pair obscure yellow; trochanters yellow; remainder of legs broken. Wings with a brownish tinge, the stigma darker brown; prearcular field slightly more yellowed; veins brown, more brightened in the prearcular field. Venation: Sc_1 ending opposite or just beyond R_2 , Sc_2 about opposite two-fifths the length of R_3 ; cell M_2 open by the atrophy of the basal section of M_3 ; *m-cu* sinuous, at the fork of M ; vein *2nd A* sinuous on outer third, the veins weakly convergent.

Abdominal tergites and hypopygium dark brown; basal sternites more yellowed. Male hypopygium (Fig. 73) with the tergite, $9t$, produced into a narrow spatula, the apex of which is slightly emarginate and with more than the outer half densely setuliferous. Outer dististyle, *d*, bifid, the outer arm a strong curved blackened horn; inner arm a long, very strongly sinuous blackened rod, very gradually narrowed to the terminal spine, on the face at near midlength bearing a further strong spike. Inner dististyle a long narrow arm, on outer margin at near two-thirds the length with an erect black spine; apical third a flattened paddlelike blade, provided with numerous small setigerous punctures. Gona-



Figs. 75-77.—Male hypopygia: 75. *Tasiocera* (*Dasymolophilus*) *miseranda* Alexander. 76. *T.* (*Dasymolophilus*) *squirei* Alexander. 77. *T.* (*Dasymolophilus*) *subnuda* Alexander (See fig. 1 for explanation of symbols).

pophysis, *g*, unequally bispinous, the inner spine long and slender, gently curved, the outer spine less than one-half as long, straight.

Holotype, ♂, Westfir, on Middle Fork of the Willamette River, 1,000 ft., August 5, 1946 (C. P. Alexander); type associated with *Ormosia subcornuta* Alexander.

The closest ally of this fly is *Ormosia (Ormosia) davisi* sp. nov., which differs in relatively slight characters of the male hypopygium. A further ally is *O. (O.) tricornis* Alexander, of the coastal redwood belt of northern California, which similarly differs in hypopygial characters.

Ormosia (Ormosia) upsilon Alexander, 1946.—Coast: Gales Creek, Wilson River, September 5, 1948 (F). Willamette Valley: Peavine: Sta. 3, September 24, October 11, 1945 (F); types.

Male hypopygium (Fig. 72) with the tergite, *9t*, conspicuously emarginate to form two apical lobes, their apices with abundant roughened setae. Outer dististyle, *d*, a flattened scooplike blade, its outer surface with microscopic roughenings. Inner dististyle larger, broadest at midlength, where the inner margin is produced into a reflexed blackened spine, the apex of the style beyond this point strongly narrowed. Phallosome, *p*, consisting of a large lyriform central plate, each lateral arm bispinous; lateral gonapophyses consisting of slender blackened hooks.

Tasiocera (Dasymolophilus) miseranda Alexander, 1950.—Coast: High Heaven, May 4, 1947 (F); Sourgrass Creek, Gunaldo Falls, May 17, 1948; Tierra del Mar, May 13, 1949 (F); type material. Male hypopygium (Fig. 75); the allied more southern *Tasiocera (Dasymolophilus) subnuda* (Alexander) is shown for comparison (Fig. 77).

Tasiocera (Dasymolophilus) squiresi Alexander, 1948.—Willamette Valley: Peavine, Sta. 1, April 15, 1946 (F), types; May 1, 1947; Sta. 2, May 26, 1948, May 17, 1949; Sta. 3, May 16, 1946, April 30, May 3-14, 1947, May 11-25, 1948; Sta. 3A, May 15-22, 1946, May 12-19, 1947 (F). Male hypopygium (Fig. 76).

Molophilus (Molophilus) colonus Bergroth, 1888 (*comatus* Doane, 1900).—Coast: Saddle Mt. (Boyer), April 27, 1935 (*Macnab*). Willamette Valley: Peavine, Sta. 3A, October 3, 1945, September 9, 1948 (F). McMinnville, May 30, 1949 (F); Silver Creek Falls, May 9, 1948 (F). Southern Oregon: Malone Spring Forest Camp, August 8, 1948 (A). Cascades: Mount Hood-Hood River, October 1 (*Cole*). Tumalo Creek, Bend, 3,610 ft., August 15, 1948 (A); Metolius River, August 3, 1948 (A & F). Crater Lake-Pole Creek Meadows, 5,900 ft., August 7, 1948 (A). Wallowas: Enterprise, 4,200 ft., June 19, 1948 (A).

Molophilus (Molophilus) falcatus Bergroth, 1888.—Willamette Valley: Silver Creek Falls, July 8, 1949 (F). Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947, August 8, 1948 (A & F); North Fork of Iron Creek, July 30, 1948 (F); Still Creek, 3,600 ft., July 17, 1947 (A & F); Stream below timberline, 5,000 ft., July 16, 1947 (A). Metolius River, 2,600 ft., June 14, 1945 (F); North Santiam, May 30, 1949 (F). Wallowas: Wallowa Creek, 4,675 ft., June 29, 1948 (A).

Molophilus (Molophilus) harrisoni Alexander, 1945.—Eastern Oregon: Malheur National Forest, Seneca, June 12, 1947 (F). Blue Mts.: Lime, Burnt River, 2,400 ft., June 24, 1948 (A); Pendleton, Umatilla River, 1,070 ft., July 5, 1948 (A); Rieth, Umatilla River, July 5, 1948 (A); Upper Walla Walla River, above Milton, 1,275 ft., July 4, 1948 (A); Whitney, June 19, 1949 (*Baker*). Wallowas: Johnson Park, Wallowa River, 2,750 ft., August 18, 1948 (A).

Molophilus (Molophilus) kulshanicus Alexander, 1949.—Cascades: Mount Hood-Hood River Meadows, 4,480 ft., July 17, 1947 (A), part of type material; Tilly Jane Creek, 5,700 ft., July 30, 1948 (A).

Molophilus (Molophilus) neofalcatus nom. nov. for *suffalcatus* Alexander, Can. Ent., 78: 159; 1946; nec *subfalcatus* Alexander, Rev. de Entomologia, 11: 906-907; 1940).

Coast: High Heaven, May 4, 1947 (F). Willamette Valley: Peavine, no station, May 3-16, 1945, swept from sword fern (F), types; Sta. 2, April 26, 1947; Sta. 3, April 13, 1949; Sta. 3A, April 17, May 21, 1946, April 25, May 5-19, 1947, April 27, June 2, 1948, May 6, 1949 (F). Happy Valley, McMinnville, April 14, 1946 (F). Cascades: Mount Hood-Sahale Falls, 4,575 ft., July 17, 1947 (A); Still Creek, 3,600 ft., July 17, 1947 (F). Metolius River, June 14, 1945 (F), part of type material.

Molophilus (Molophilus) nitidulus Alexander, 1944.—Eastern Oregon: Ochoco Mountains, June 14, 1947 (*Albight*). Wallowas: Johnson Park, Wallowa River, 2,750 ft., July 2, 1948 (A).

Molophilus (Molophilus) nitidus Coquillett, 1905.—Coast: High Heaven, June 22,

1945, May 4, 1947 (F). Willamette Valley: Peavine, Sta. 1, May 11-24, June 4-20, 1946, May 22-23, 1947; Sta. 2, June 18, 1946; Sta. 3, May 15-21, June 19, 1945, May 16-29, 1946, May 3-30, 1947, June 4-16, 1948; Sta. 3A, May 23, 1947 (F). Forest Grove, May 4 (Burrill); Happy Valley, McMinnville, May 12, 1946 (F). Cascades: Mount Hood-Hood River, June 2 (Cole auct.); North Fork of Iron Creek, July 30, 1948 (F).

Molophilus (Molophilus) oregonicolus Alexander, 1946.—Willamette Valley: Peavine, Sta. 2, April 16-26, 1947 (F), abundant; Sta. 3, June 2, 1945, type; Sta. 3A, May 12, 1947 (F). Superficially, much resembling *Tasiocera (Dasymolophilus) squiresi* Alexander.

Molophilus (Molophilus) paulus Bergroth, 1888.—Coast: Saddle Mountain State Park, July 24, 1949 (F). Cascades: Mount Hood-Horsethief Meadows, July 18, 1947 (F); Lost Prairie, August 3, 1948 (A).

Molophilus (Molophilus) perflaveolus Alexander, 1918 (*auricomus* Alexander, 1926).—Coast: Castle Rock, June 6, 1949 (F); Coquille River, Sitkum, August 2, 1948 (H. W. Thorne); Gunaldo Falls, July 14, 1949 (F); High Heaven, May 4, 1947, July 12, 1949 (F); Humbug Mountain State Park, August 11, 1948 (F); Saddle Mountain State Park, July 24, 1949 (F); Three Rivers, May 17, 1948 (F); Tierra del Mar, June 30, 1949 (F); Willamette Valley: Peavine Sta. 1, May 26, June 1, 1945, April 30, July 18, 1946, May 22, July 3, 1947; Sta. 3A, June 19, July 5, 1946, May 29, June 12-17, July 7, 1947 (F). Happy Valley, McMinnville, May 12, 1946 (F); Henderson Bridge, June 16, 1948 (F); Silver Creek Falls, August 2, 1948, July 8, 1949 (F); Willamette River, south of Dayton, June 4, 1948 (F). Southern Oregon: State Line Creek, August 9, 1948 (A & F). Cascades: Mount Hood-Bear Creek, July 16, 1947, August 1, 1948 (A & F); Beaver Creek, July 16, 1947 (F); Polally Forest Camp, August 9, 1946 (A & F); Sahale Falls, July 17, 1947, July 31, 1948 (F); Still Creek, July 16, 1947 (A & F). Big Meadows, North Santiam, August 3, 1948 (A & F); Dell Creek, July 14, 1947 (A); Hazel Creek, Dexter, July 15, 1947 (A); Metolius River, 2,600 ft., August 3, 1948 (A); North Santiam, May 30, 1949 (F); Salt Creek Falls, July 14, 1947, August 7, 1948 (A & F); Tumalo Creek, Bend, August 15, 1948 (A). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (A), June 15, 1949 (Baker); Little Phillips Creek, 2,850 ft., July 3, 1948 (A); North Powder River, 3,800 ft., June 27, 1948 (A); South Fork of Upper Walla Walla River, 1,450 ft., July 4, 1948 (A); Whitney, June 19, 1949 (Baker). I now consider *Molophilus auricomus* Alexander, of the southeastern United States, as being synonymous with the present fly. This type of discontinuity of distribution is found in other animals, such as the roach, *Cryptocercus punctulatus* Scudder.

Molophilus (Molophilus) rainierensis Alexander, 1943.—Willamette Valley: Peavine, no station, September 24, October 10, 1945; Sta. 3A, August 20, September 17, October 12, 1946, September 9, 1948 (F). Silver Creek Falls, 800 ft., August 2, 1948 (A & F). Cascades: Mount Hood-Bear Springs, 3,200 ft., August 8, 1946 (A); Hood River Meadows, 4,500 ft., July 17, 1947 (A & F). Big Meadows, North Santiam, August 3, 1948 (A & F); Metolius River, 2,600 ft., August 3, 1948 (A & F). Crater Lake-Pole Creek Meadows, 5,900 ft., August 3, 1946, August 7, 1948 (A).

Molophilus (Molophilus) rostriferus Alexander, 1943.—Southern Oregon: Ashland-Lake of the Woods, June 10, 1945 (F). Eastern Oregon: Bly, 4,355 ft., June 13, 1945 (F); Fremont National Forest, June 12, 1945 (F); Malheur National Forest, June 12, 1945 (F). Blue Mts.: Anthony Lakes, 7,000 ft., June 12, 1939 (Lane & Lanchester); Mottet Ranger Station, June 29, 1939 (Lanchester); Langdon Lake, 4,970 ft., July 3-4, 1948 (A), June 8, 1949 (Baker & Lane); exceedingly abundant on marsh vegetation near lake margin.

Molophilus (Molophilus) sackenianus Alexander, 1926 (*distilobatus* Alexander, 1945).—Coast: Boyer, May 9, 1949 (F); Gunaldo Falls, May 17, 1948, May 13, 1949 (F); High Heaven, May 4, 1947, July 12, 1949 (F); Saddle Mountain State Park, July 24, 1949 (F). Willamette Valley: Peavine, no station, September 10, 1946; Sta. 1, May 27, 1947; Sta. 2, April 26, 1947; Sta. 3, May 14, 1947; Sta. 3A, June 19, 1946, June 2, August 30, 1948 (F); Dayton, April 20, 1947 (F); Silver Creek Falls, May 9, August 2, 1948 (A & F), July 8, 1949 (F); Willamette River, near Dayton, April 24, 1949 (F). Cascades: Mount Hood-Horsetail Falls, August 9, 1946 (A & F). Indian Ford, 3,240 ft., August 5, 1948 (F); House Rock Forest Camp, August 3, 1948 (A).

Molophilus (Molophilus) spiculatus Alexander, 1918.—Coast: Coquille River, Sitkum, August 4, 1948 (*H. W. Thorne*); Humbug Mountain State Park, August 11, 1948 (*F*). Willamette Valley: Peavine, Sta. 1, April 23, May 2, June 20, 1946; Sta. 2, June 15-27, 1946; Sta. 3, May 24, 1947; Sta. 3A, June 19, July 5, 1946 (*F*). McMinnville, in skunk cabbage association, May 13, 1945 (*F*); Muddy Valley, McMinnville, May 22, 1945 (*F*). Cascades: Mount Hood-Horsethief Meadows, 3,400 ft., July 18, 1947 (*F*); Still Creek, 3,600 ft., July 17, 1947 (*A & F*). Metolius River, August 3, 1948 (*A*); Salt Creek Falls, 3,800 ft., August 7, 1948 (*A & F*); Tombstone Meadows, South Santiam, August 17, 1947 (*Albright*). Blue Mts.: Spring Creek, 3,900 ft., June 24-26, 1948 (*A & Baker*). Wallawas: Aneroid Lake Trail, 7,000 ft., July 26, 1949 (*Baker*); Hurricane Creek, 5,460 ft., July 11, 1949 (*Sperry*); Lostine, 3,375 ft., July 2, 1948 (*A*); Wallowa Creek, 4,410 ft., June 28, 1948 (*A*).