

II.—*On Fossil Plants from the Similkameen Valley and other places in the Southern Interior of British Columbia.*

By SIR J. WILLIAM DAWSON, C.M.G., F.R.S., &c.

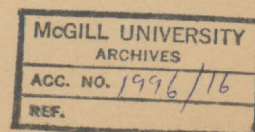
(Read May 28, 1890.)

In the year 1877 a small collection of plants from the Similkameen River, in British Columbia, collected by Dr. G. M. Dawson, was placed in my hands for examination. A rough list of these plants was prepared, including nineteen species, most of which were, however, too imperfect for certain determination.¹ One of the species, an *Equisetum*, of which there were a number of specimens, was described as *E. Similkamense*; the others were referred, with more or less hesitation, to previously described Tertiary species. The general aspect of the collection was stated to be Miocene, or, possibly, Oligocene. These plants, with others from Quesnel, Blackwater and North Thompson Rivers, were subsequently noticed in my memoirs on "Fossil Plants from British Columbia," in these Transactions for 1882. In 1888 an additional collection was obtained, including some of the former species and others not previously seen, and enabling more satisfactory comparisons to be made. I propose in the present paper to notice these specimens, and to discuss their bearing on the age of the Tertiary Lake Basins of British Columbia. It is proper to state here that since the publication of the Report of 1877-78, specimens from Chignek Bay and Unga Islands in Alaska have come into the hands of the late Prof. Lesquereux, which seem to be of similar age, and include several of the same species. They have been described by him in the 'Proceedings of the U. S. National Museum' (Vol. 5, 1882), and have been subsequently noticed in the 'Reports of the U. S. Geological Survey,' Vol. viii, "Cretaceous and Tertiary Floras." Lesquereux does not seem to have seen my contribution on the Similkameen plants in the Canadian Report, but has evidently met with some of the same species. These papers will be referred to in the following pages, as well as notices of "Fossil Plants from Oregon," contributed by Dr. Newberry to the 'Bulletin of the U. S. Geological Survey,' No. 51, 1888.

It would appear from these papers that in Alaska, as in British Columbia, there are deposits containing fossil plants which range from the lower Cretaceous, equivalent to the Kootanie and Queen Charlotte Groups of British Columbia, to the Miocene Tertiary, and the collections which have been described by Heer in the 'Flora Alaskana,' as well as those in the papers above referred to, represent in all probability these horizons, as well as intermediate portions of the Laramie and Eocene. In the State of Washington the Laramie would seem, according to Newberry, to be represented in the so-called Puget Group. The plants of the Similkameen beds of British Columbia, which have also afforded a rich insect fauna, described by Dr. Scudder,² are therefore of interest, not only

¹ 'Report Geol. Surv. Can.,' 1877-78, p. 186, B.

² 'Report Geol. Surv. Can.,' 1877-78, p. 115, B, &c.



with respect to the evidence which they afford as to a particular portion of the fossil flora of Canada, but as throwing light on that of Alaska and Oregon.

Prof. Penhallow, of McGill University has kindly examined and described for me some of the more difficult and critical new species, to which his name will be found attached. The drawings for the figures are by Mr. L. M. Lamb, artist to the Geological Survey.

CRYPTOGAMIA.

Equisetum Similkamense. 'Rep. Geol. Survey,' 1877-8, p. 187, B. (Fig. 1.)

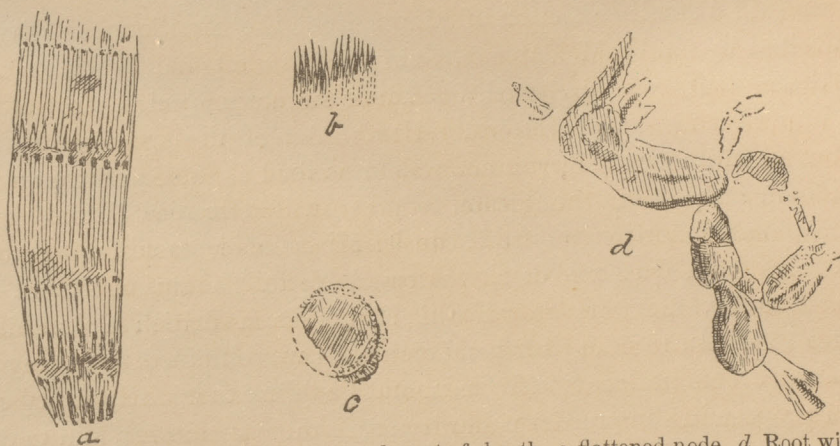


FIG. 1.—*Equisetum Similkamense*. a, Stem, b, part of sheath, c, flattened node, d, Root with tubers.

Stems naked or with remains of slender branchlets; ordinary diameter, fifteen millimetres, but some much larger; lacunæ and ribs, as many as sixty in large stems; walls thin, with small exterior lacunæ; nodes in some stems as close as one centimetre, but often further apart; sheaths, about six millimetres in length, with about thirty-five teeth, varying from a long and very acutely-pointed tapering form to a short form with somewhat obtuse tips, one-nerved.

Rhizomata, smooth, obscurely striate, with oval or rounded tubercles or bulbs in rows on the sides of branches; rootlets slender and branching.

The stems and roots of this fine species are very abundant, in a brown, laminated shale from the south fork of the Similkameen River. They are associated with grass-like plants and with coniferous and dicotyledonous leaves, probably blown or drifted into the pond or swamp in which the Equiseta were growing. The specimens of this plant are abundant and well-preserved, and very characteristic of the locality. When flattened obliquely, the stems often appear as rows of discs (Fig. 1c.)

Of the described species known to me, *E. Winkleri*, Heer, and *E. limosellum*, Heer, the variety with large, round sheaths, make the nearest approach to the present species.

It is just possible that the fragments from Alaska noticed by Prof. Lesquereux in the Report above referred to, under the name *Equisetum globulosum*, may belong to the above species, but the material is not sufficient for comparison, and the root tubercles are more globular in form.

Azollophyllum primævum. Penhallow, Gen. et. Sp. (Fig. 2.)

Plants moss-like, 1-2 cm. high, pinnately branched and deltoid in outline. Leaves small, imbricated in two rows and 2-lobed, the lobes round or ovoid. Capillary rootlets numerous. Conceptacles conspicuous and of two kinds.

FIG. 2.—*Azollophyllum primævum*.

“ The specimens upon which the above description is based are from the collection of Dr. G. M. Dawson, and were placed in my hands for determination by Sir Wm. Dawson. They were obtained from the Miocene Tertiary near Stump Lake, British Columbia, in 1888, and are imbedded in a ferruginous slaty matrix. Some of the specimens show simple impressions only, but the greater number show the carbonized remains of the original plants, among which the fruit, consisting of conceptacles of two dimensions, is conspicuous. The plant was one of such extreme delicacy, that only here and there are the leaves well defined, but the determinable characters bear so close a resemblance to the modern *Azolla Caroliniana* as to justify the name given. It is also of considerable interest to note, as pointed out to me by Sir William Dawson, that this furnishes the earliest record of a plant bearing such close affinity to *Azolla*, at present known, while it also serves as a connecting link with other plants of a similar character, previously recognized as occurring in earlier formations.” (D.P.P.)

Hypnum Columbianum. Penhallow. (Fig. 3.)FIG. 3.—*Hypnum Columbianum*.

“ A specimen in the Peter Redpath Museum, donated by the Geological Survey of Canada, and collected by them at Quesnel, B.C. The plant is imbedded in a very fine argillaceous matrix, and is somewhat diffusely branching. The branches are slender and arise from opposite sides of the stem. The principal axis is for the most part obscure. Leaves lanceolate, appressed or slightly spreading. Fruit not recognizable, though possibly present, as indicated by a number of dark bodies of indeterminate form.”

"In the absence of fruit, only the general characters of the plant can be depended upon as a guide to its determination. These show it to be a Hypnum somewhat closely approaching *H splendens*." (D.P.P.)

CONIFERÆ.

Salisburya adiantoides. (?) Ung. (Fig. 4.)

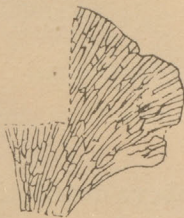


FIG. 4.—*Salisburya adiantoides*.

The few specimens, while undoubtedly of this genus, are not perfect, and it is impossible to separate them from the above species of the Miocene of Europe, and credited by Ward to the Fort Union Laramie. It is so near the modern *S. adiantifolia*, that it is doubtful if it should be separated from it.

North Fork of Similkameen R.

Pinus trunculus. S.N. (Fig. 5.)



FIG. 5.—*Pinus trunculus*. a, Leaves, b, fruit.

Needles of a species of *Pinus* appear in the specimens from Stump Lake, and in some cases the sheath or base of attachment remains with three needles proceeding from it. In the same beds are found winged seeds, which may have belonged to this species. The seed, including the wing, is two centimetres long, straight above and regularly curved

below from the point of the wing to the seed, which occupies about one-fourth of the length. The wing is obscurely striate longitudinally. These characters indicate a pine of the type of *Pinus rigida* or *P. taeda*, or nearly allied to these and belonging to sub-genus *Taeda* of Endlicher. Pines of this type are believed to have existed from the Jurassic period, but are perhaps most characteristic of the Middle Tertiary. They still abound in the American flora. The seed is near in form to that of *P. Montana*, Muller, which, according to Heer, occurs in Spitzbergen in Tertiary deposits.

This species also occurs in collections made by Mr. Bowman at Tranquille River.

Taxodium distichum (Miocenum), Heer. (Fig. 6.)



FIG. 6.—*Taxodium distichum*.

Branchlets of this common species are frequent from the shale of North Fork, Similkameen River, and also from Stump Lake. They present the usual characters seen in this species, which seems to range from the Laramie to the Modern.

The same species occurs in collections of Mr. Bowman at Tranquille River, and also at Coal Mine, Coldwater River.

Glyptostrobus? (Fig. 7.)



FIG. 7.—*Glyptostrobus*, Sp.

Branchlets and cones occur at North Fork of Similkameen River and at Stump Lake, which are sufficiently near to *G. Europæus* of the European Miocene, but the cones are not sufficiently well preserved to determine the genus with certainty, and the leaves are a little more obtuse than in the specimens figured by authors. It is indeed just possible that in the absence of determinable fruit we may mistake for *Glyptostrobus* branches of *Sequoia* or of *Thuja*.

In the specimens from Stump Lake are branchlets of a Conifer, with somewhat broad, decurrent, spirally arranged leaves, with a strong midrib and very obtuse point. They may be referred to genus *Sequoia*, but do not agree with any species known to me. They might be regarded as an overgrown or exaggerated form of *S. Langsdorffii*, and are possibly young, vigorous twigs of this or one of the allied species.

Sequoia Sp. (Fig 8.)

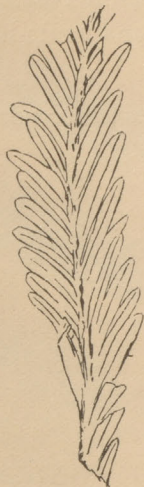


FIG. 8.—*Sequoia*, Sp.

Specimens probably belonging to the same species occur in the collection of Mr. Bowman at the Tranquille River, and also at Coal Mine, Coldwater River.

The above species are sufficient to indicate an abundance of coniferous trees in the vegetation that surrounded the ancient Similkameen Lake.

ANGIOSPERMEÆ.

Myrica (Comptonia) Cuspidata, Lesquereux. 'Proceedings U. S. National Museum,' Vol. 5, p. 445. (Fig. 9.)



FIG. 9.—*Myrica (Comptonia) Cuspidata*.

Several leaves in the collections from Similkameen River correspond so closely with Lesquereux's description of the above species from Coal Harbour, Unga Island, Alaska,

that I can scarcely doubt their identity. Lesquereux's specimens were, however, imperfect, and I may extend his description as follows:—

Leaves about 6 cm. long, narrow (1 cm. in greatest breadth), linear, terminated by a long acuminate point, basal lobes, opposite, triangular, with curved base and slightly pointed upward, so that the pair has a broad heart-shape. Two or three basal lobes are of this character; above this the lobes become more curved and pointed and turned upward, and are alternate. They are divided quite or almost to the midrib. The middle lobes show two or three delicate veins, the upper curving to the point, the lower curving almost parallel with the base; surface apparently smooth; texture somewhat coriaceous.

This species is a near ally of *C. Aeningensis*, Heer, from the locality whose name it bears, and of Miocene age. It is also near to *C. obtusiloba*, Brngt., from the Miocene of Bilin and Sotzka, in Bohemia, and to *C. dryandroides*, Unger, from the latter place. So near indeed are all these forms, that they may be varieties of one species. All the European species named are Miocene.

Comptonia Columbiana, s. n. (Fig. 10.)



FIG. 10.—*Comptonia Columbiana*, s. n.

Leaf 7 cm. long, about 1 cm. broad or a little more, slightly larger and more densely arranged, and less coriaceous than the preceding, and differing in the form of the lobes, which are larger, alternate, curved upward, and with one or two notches at the point of each. Nerves two, and only slightly curved, the upper stronger than the lower, and running to the point or points of the lobe.

From North Similkameen and also from Kamloops.

This leaf is closely allied to *C. Matheriana*, Schimper, from the Oligocene of Armissan, and is also allied to *C. partita*, of Lesquereux, which, however, has only one nerve in each lobe, and is denticulate on the lower margin. The lobes of our species are also a little larger and more parallel-sided. I mention these differences, as in my former list I referred fragments of this leaf to Lesquereux's species, which is from Elko, Nevada, in beds believed to be Miocene. Our species is also not far removed from *Comptoniophyllum Japonicum* of Nathorst, from a corresponding horizon in Japan.

I regard these two species of *Comptonia* as of some importance, with reference to the age of the deposits in which they occur. The genus *Myrica* extends from the Upper Cretaceous to the present day, but the peculiar type represented by the genus or subgenus

Comptonia, though appearing in the Eocene, seems to culminate in the Miocene, or Oligocene and Miocene, where species allied to our common *C. asplenifolia* occur in great numbers, both in Europe and America, while in the latter they have not as yet been recognized in any older formation. The presence, therefore, of two species of this type is in itself a strong evidence of Miocene, or, at least, Oligocene age.

Lomatia spinosa? Lesqr. "Report on Cretaceous and Tertiary Plants," Vol. viii, 'U. S. Geol. Survey.'

This species is represented only by a few fragments which appear, however, to have the characteristic form of that described by Lesquereux from the probably Miocene beds of Florissant.

Antholithes. Sp. (Fig. 11.)



FIG. 11.—*Antholithes*.

A slender peduncle, with lateral fruits or pairs of fruits, subtended by long narrow pointed bracts. I mention this here as it may have belonged to *Lomatia* or to *Comptonia*.

Populus obtrita. s. n. (Fig. 12.)

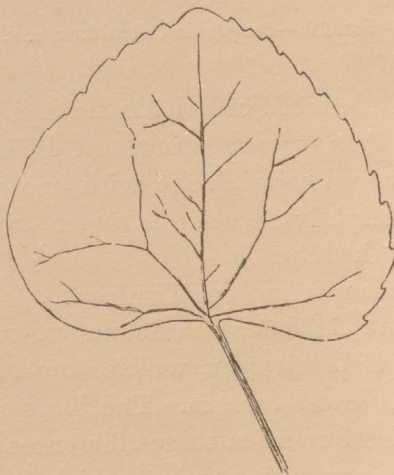


FIG. 12.—*Populus obtrita*.

This species may be described as follows:—Leaf broader than long, with concave basal margin, so as to give a somewhat broadly kidney-shaped form; but when perfect there is a slight acuminate point at the apex, though this is not always distinct. Margin obtusely dentate below, the teeth turning slightly upwards. On the sides and upper part these

teeth are represented merely by a rounded crenulation. Principal ribs three, with two minor ones at base, all wavy or undulated, and branching obtusely towards the margin. Petiole slender and apparently very long.

This leaf is that which from imperfect specimens I identified with *P. latior* of Brongniart, but it is quite distinct from that species in venation. It is, however, near in venation to *P. aetica*, Heer, and is probably the same leaf referred by Lesquereux in the paper already cited on Alaska plants to that species. It is also closely allied to *P. melanarioides* of Lesquereux, and to *P. tremulifolia* of Saporta (not of Brongniart). The former is from Point of Rocks, Arkansas. It is also near to one of the varieties of *P. speciosa* of Ward, from Clear Creek, Montana. In short it belongs to a type of poplar leaf rare in the modern world but very common in Tertiary times, and found represented by many specific and varietal forms throughout the Eocene and Miocene periods. In regard to specific distinctions, these leaves are so variable and so near to each other that it is perhaps not easy to determine to what extent the forms distinguished by different names are really distinct; and in giving a name to the present species I do so without any certainty that it may not really be conspecific with some of those above named.

The wide diffusion of leaves of this type in the Kainozoic period gives them comparatively little value as indicators of precise geological age. Their abundance, especially to the exclusion of the more modern types, may, however be held to indicate deposits of older or middle Tertiary age.

Populus daphnogenoides? Ward. (Fig. 13.) "Types of Laramie Flora." 'Bul., Am. Geol. Survey,' No. 37, p. 20. Plate vii.

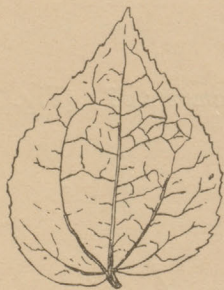


FIG. 13.—*Populus daphnogenoides*.

I refer to this species, with some doubt, a smaller and somewhat narrower leaf than the above, pointed at apex and with margin sharply dentate, but like the preceding, with three principal veins, and rudiments of a basal pair. Ward's leaf is from Seven Mills Creek, Montana, from a formation probably older than that of the Similkameen district.

This leaf, like the former, is not one which can give much idea of precise age. Indeed, the study of the varieties in recent species causes me to agree with Lesquereux that poplar leaves are so variable in the same species and at the same period, and in some cases so similar to leaves of other genera, that little confidence can be placed in specific determinations, based on either venation or marginal characters, except in so far as what may be termed subgeneric types are concerned.

All that can be safely said as to the above species is that they have a different aspect from those so abundant in the Upper Laramie east of the Rockies, and which I have noticed in previous papers.

One difference which applies more or less to the whole Similkameen assemblage is the indication of a more arid and possibly cooler climate than that of the Laramie east of the Rockies, as if the present conditions of the interior of British Columbia were already in some degree established on the borders of the Tertiary Similkameen lake.

Ceanothus? (Fig. 14.)

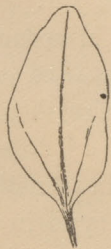


FIG. 14.—*Ceanothus*.

Leaf about three centimetres long, oval, pointed below. Margin entire, but slightly waved, as if from a tendency to lobation. Texture apparently coriaceous, with traces of two veins originating above the base of the leaf and curving parallel with its sides.

Has some resemblance to *Paliurus Florissanti* of Lesquereux and *Cinnamomum Scheuchseri* of Heer; but its general affinities may be regarded as quite uncertain.

North Fork Similkameen River.

Cinnamomum? (Fig. 15.)



FIG. 15.—*Cinnamomum*.

A fragment of a leaf with elongate or lanceolate form, three ribs and entire or scarcely toothed edges. May be compared with *C. affine* Lesq., but is not certainly the same. This leaf has indications of the basal vein noticed by Lesquereux in one of his specimens. His

specimens were from the Laramie of Golden, Colorado, but he compares the form with *C. Mississippiense*, and also with such European forms as *C. spectabile*, Heer, from the Swiss Molasse.

North Fork Similkameen River.

Planera longifolia, Lesq. (Fig. 16.)



FIG. 16.—*Planera longifolia*.

This leaf is certainly not distinguishable from some of the forms from the Green River Group (Oligocene), included by Lesquereux in this species, which seems to be the American analogue of *P. Ungerii* of the Miocene of Europe.

North Fork Similkameen River.

Quercus Dalli, Lesq. (Fig. 17.)

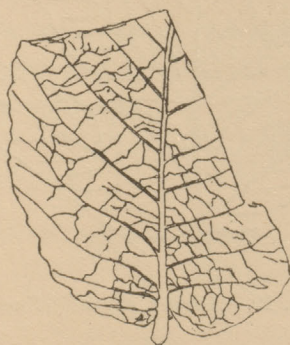


FIG. 17.—*Quercus Dalli*.

This leaf is described by Lesquereux from Cook's Inlet, Alaska. The leaf figured seems to belong to the same species, which Lesquereux compares with Heer's *Q. Grænlandica* and *Q. Olafseni* from Greenland, which, however, differ in form and venation. He also compares it with European Tertiary leaves referred to the genus *Paulinia*; but it certainly has little resemblance in venation to either genus.

North Fork Similkameen River.

Alnites curta, s. n. (Fig. 18.)

Leaf small 2 c. m. long and a little more than one broad. Form oval, slightly cordate and oblique below, obtusely pointed above. Midrib and petiole strong, veins about 9 on each side, opposite below, tending to alternate above, slightly curved and mostly bifurcat-

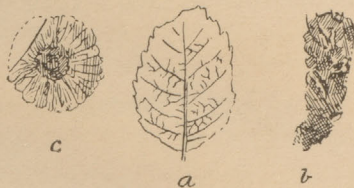


FIG. 18.—*Alnites curta*. a, Leaf, b, staminate, c, section of do.

ing toward the margin, which has rounded teeth in which the divisions of the veins terminate. Allied to *Alnus truncata*, Lesq., from Florissant. Lesquereux compares his species to *Betula crenata* and *B. similis* of Goepfert, from the Miocene Tertiary of Bilin, etc.

With these are found what appear to be catkins of *Alnus* or *Betula* and a few scattered seeds.

North Fork Similkameen River.

Acerites Negundifolium, s. n. (Fig. 19.)

FIG. 19.—*Acerites Negundifolium*.

Leaf about 7 centimetres in length, five-lobed, lobes narrow, elongate, veins in two sets, two below and two more than a centimetre higher at angle of 40° to 45° from stem. The minor venation is obscure, but the veinlets are pinnate and diverge at a somewhat more acute angle than the veins. The margin seems to be dentate. This leaf, which is not so well preserved as some of the others, may possibly be that of an *Aralia*, but its association with the seed next described tends to favour its affinity to the maples. The leaf is not unlike the terminal part of the leaf of *Negundo*, hence the name applied to it.

From Stump Lake, B.C.

Acer, (fruit.) (Fig. 20.)

Fruit of medium size, seed elongate oval and pointed, wing broadly rounded at distal end and strongly oblique. Possibly the fruit of the last species.

From Stump Lake.

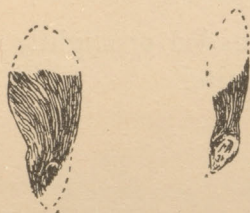


FIG. 20.—*Acer*.

Carpinus grandis, Ung. (Fig. 21.)

FIG. 21.—*Carpinus grandis*.

An imperfect specimen, seems referable to this well known European species. It is at least closely allied. Lesquereux has referred to this species leaves from American Tertiary localities, from Alaska southwards.

From Stump Lake.

Nelumbium pygmæum, s. n. (Fig. 22.)

FIG. 22.—*Nelumbium pygmæum*.

Leaf orbicular, petiole subcentral, veins about 14, netting toward the margin, which seems entire or slightly undulate. Diameter about 2 centimetres.

Mill Creek, Ulupsaw, Similkameen River.

(The following are from the earlier collections, and represented by few and imperfect specimens.)

Vaccinophyllum qucestum, s. n. (Fig. 23.)

Small, nearly circular, base rounded or slightly cordate; nerves in three pairs, much curved. Margin above slightly serrate.

Similkameen River.

Ulmites pusillus, s. n. (Fig. 24.)



FIG. 23.



FIG. 24.

A small inequilateral leaflet with curved midrib, broadly lanceolate, toothed, rounded at base, acute at apex.

North Similkameen River.

Ailanthophyllum incertum, s. n. (Fig. 25.)

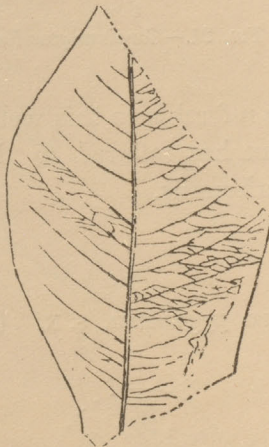


FIG. 25.—*Ailanthophyllum incertum*.

Leaf about 3 inches long, apparently $1\frac{1}{2}$ inches broad in the middle, and narrowing to either end. Veins pinnate at an obtuse angle (60° to 65° .) Intermediate veins very delicate and short. Surface with open delicate netting. The venation is like *Ailanthus longifolius* of Lesquereux, but the form is quite different.

Tranquille River, collected by A. Bowman.

Carpolithes dentatus, Penhallow. (Fig. 26.)

Specimens in the Peter Redpath Museum from the Geological Survey collections of 1888. These specimens were obtained from near Stump Lake, and are embedded in a ferruginous clay matrix. They are obviously winged fruits or seeds. None of them are perfectly preserved, but from three of the most perfect the following characters have been obtained :—



FIG. 26.—*Carpolithes dentatus*.—(Enlarged).

“Fruit oblong, apex acute; the carpel extended into a veniform wing. Margin of the wing strongly toothed, the teeth acute, sinuses broad towards the base, but becoming narrower at the summit. Veins prominent. The whole fruit measures 7x10 mm.”

“In the accompanying figure there appears what looks like a secondary wing projecting from the fruit on the left. This is in all probability a portion of the pericarp which was displaced by pressure, as other specimens show nothing of the kind. This fruit in some respects approaches *Carpinus*, but not sufficiently to justify reference to that genus. It may, therefore, be referred provisionally to the genus *Carpolithes* as *C. dentatus*.” (D.P.P.)

Various species represented by fragments. (Fig. 27 to 31.)

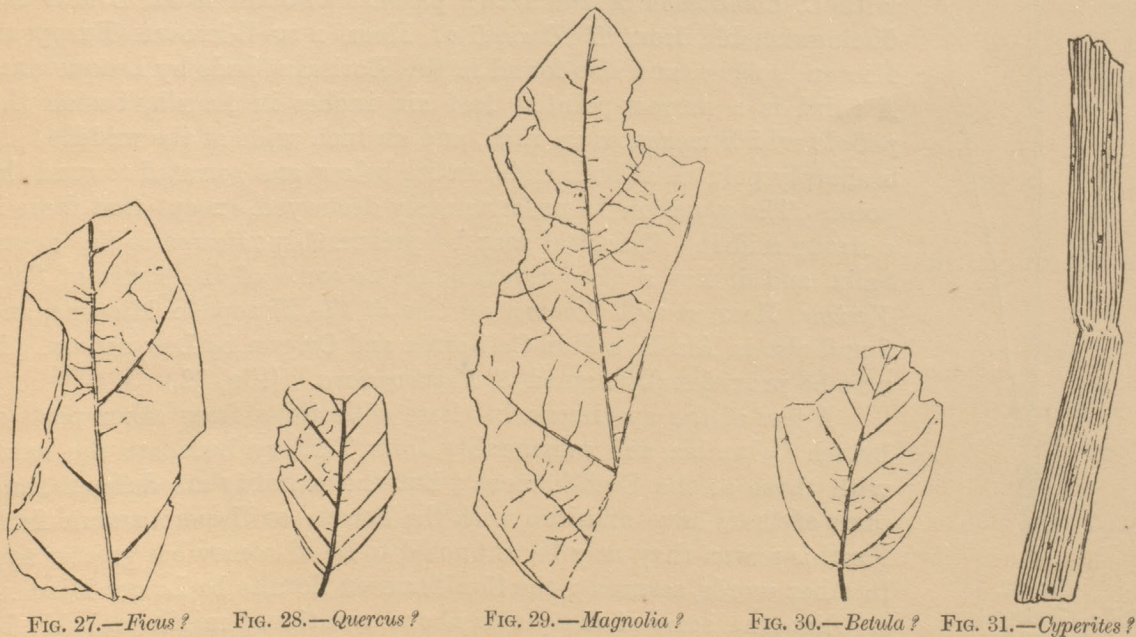


FIG. 27.—*Ficus* ?

FIG. 28.—*Quercus* ?

FIG. 29.—*Magnolia* ?

FIG. 30.—*Betula* ?

FIG. 31.—*Cyperites* ?

Among these are leaves referable, with more or less doubt, to *Ficus*, *Quercus*, *Magnolia* and *Betula*; but in a fragmentary condition. The *Ficus*-like leaf is very similar to

F. asiminifolia of Lesquereux from California. There are also fragments of monocotyledonous leaves, which may be designated as Cyperites, but without any distinctive characters. (Figs. 27 to 31.)

General Remarks.

The climatal character of the Similkameen flora may be described as warm temperate. The foliage, it will be seen, is generally of small size, compared with that of the Cretaceous and Laramie, and would seem to indicate a dry climate, possibly with hot summers and cold winters; in this respect resembling the climate of the interior of British Columbia at present, though probably less severe in winter. This would accord with the orographical conditions of the interior of British Columbia in the later Eocene and Miocene periods, as detailed by Dr. Dawson in his paper on the Physiographical Geology of the region in the present volume.

In the 'Reports of the Geological Survey' of 1875-6 (p. 259), and in that of 1877-8, already referred to, as well as in my paper on Cretaceous and Tertiary plants of British Columbia, 'Trans. R. S. C.' 1883, reference will be found to plants collected by Dr. G. M. Dawson in beds of Tertiary age at Quesnel, Blackwater River, and the Indian reserve North Thompson. Among these *Castanea Ungerii* Heer from Alaska, or an allied species is very plentiful. In addition to the plants referred to in the above reports, a few additional specimens from Kamloops have been placed in my hands with those from the North Similkameen. One of these is a *Comptonia*, apparently the same with *C. Columbiana* of the above pages. Another is an *Ulmus* not distinguishable from *U. Braunii* of Heer, a well-known European Miocene species, and also found in the Florissant beds by Lesquereux. A third is a narrow-pointed leaf six inches in length, beside the petiole which measures an inch, and an inch wide at the middle. It is sharply pointed at both ends, entire below and serrated toward the point. The venation is unfortunately destroyed, except that there is a strong midrib. This leaf may be presumably referred to the genus *Salix*, and it has a close resemblance to some of the forms of *Salix Varians*, Heer, a well known species of the European Miocene, and found also in Alaska and in California and Oregon by Lesquereux. It may be provisionally named *S. Kamloopsiana*. (Fig. 32.)

A few of the specimens in these collections, from other parts of British Columbia and presumably from Tertiary beds, are the same with those at the Similkameen; but the majority are different, and some of them have affinities with the Eocene or Upper Laramie flora. For this reason they may be supposed to be of somewhat greater age. In other words, assuming the Similkameen flora to be Lower Miocene or Oligocene, some of the plants above mentioned might probably be Eocene, and would represent a more equable and moist climate. I would not, however, insist too strongly on this, since in a region like British Columbia, local conditions may produce great differences both in climate and flora.

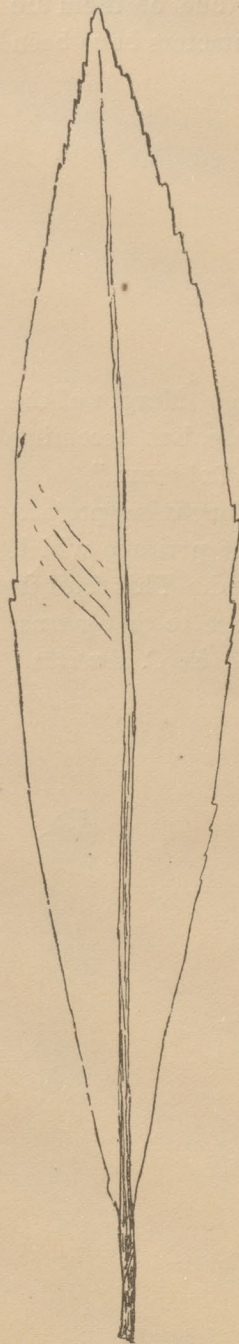
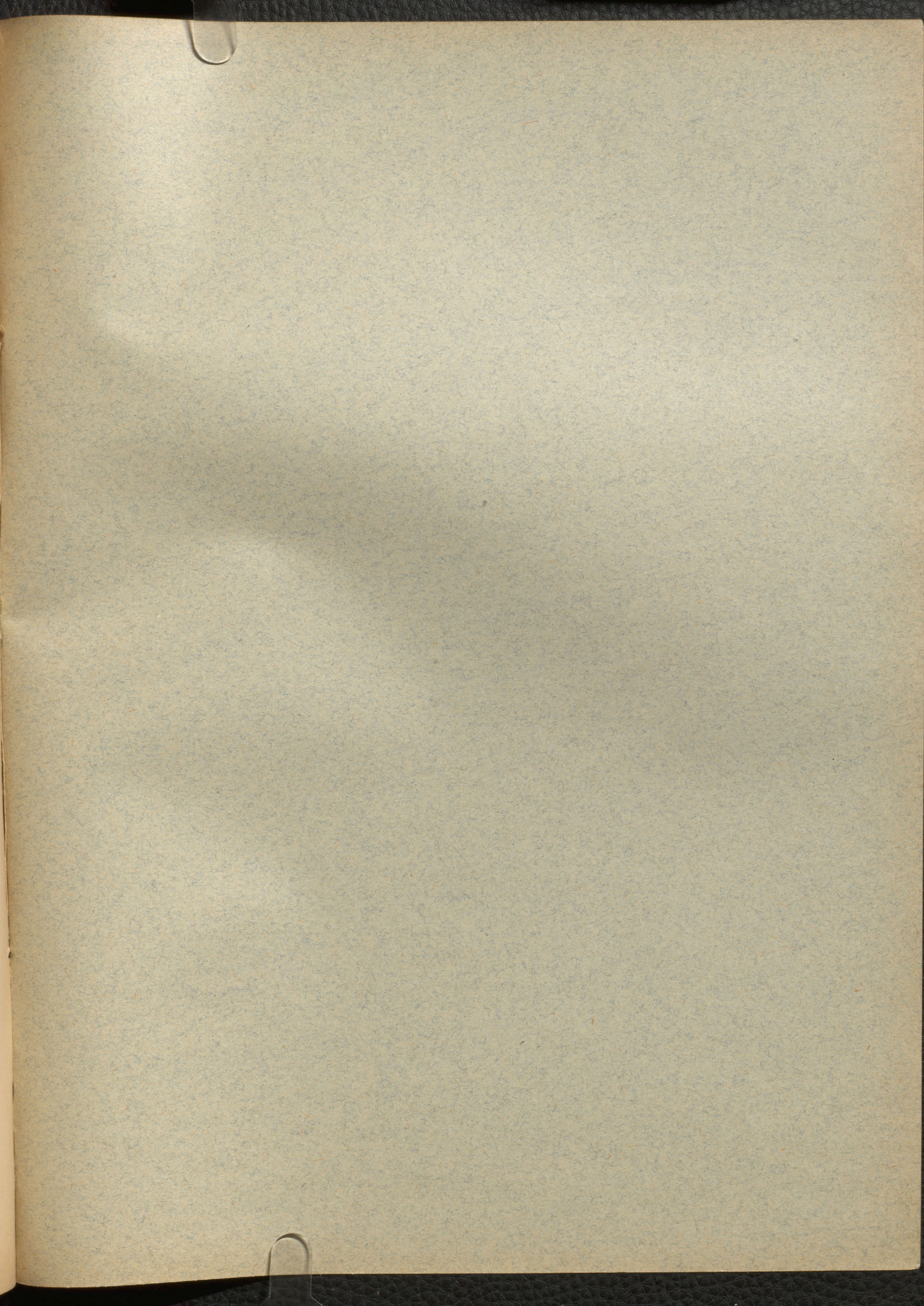


FIG. 32.
Salix Kamloopsiana.

It may further be affirmed that the Similkameen flora is closely allied to those described by Lesquereux as the Green River and Florissant floras, and which he regards as Oligocene or Upper Eocene. It is to be hoped that ere long the discovery of Mammalian remains may throw further light on the precise age of the Tertiary lake basins of British Columbia.





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