津軽平野岩木川河床に現れた完新世の埋没林の古植物学的研究

J. Phytogeogr. & Taxon.
38 : 107-118, 1990

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Palaeobotany of Holocene Buried Forests on the River-bed of the Iwaki River, Tsugaru, Northern Japan

辻　誠一郎*・鈴木三男**・能城修一***：津軽平野岩木川河床に現われた完新世の埋没林の古植物学的研究

Abstract

Two buried forests from about 2500 years ago were discovered on the river-bed of the Iwaki River, Tsugaru Plain, northern Japan. At two sites along the river, fossil woods were collected mainly from erect stumps and sometimes from detached woods, and were identified anatomically. Most of these fossils are *Fraxinus* ; some are various kinds of dicotyledons and two kinds of conifers, *Picea* and *Cryptomeria japonica*. These dicotyledons are all deciduous trees and are now distributed mainly in the cool-temperate forests in Japan. The results indicate existence of riverside or swamp cool-temperate forests at these sites. Geological and palynological studies on the Holocene sediments at one of the sites have clarified the exact horizon of the buried forests and vegetational changes during the late Holocene period. They show that a forest similar to the reconstructed one persisted for two and half millennia, from about 5000 years ago to about 2500 years ago.

Key Words: Buried forest—Fossil woods—*Fraxinus*—Holocene—Pollen analysis —Tsugaru

Introduction

Buried erect stumps have been discovered on the river-bed of the Iwaki River in the center of the Tsugaru Plain, Aomori Prefecture (Fig. 1). During a study of the geomorphic development of the Tsugaru Plain in the Holocene period, UMITSU (1974, 1976) uncovered buried forests with radiocarbon dates of about 2500 years BP. During his field survey he collected fossil wood samples from the river-bed at Banryu Bridge near Itayanagi, and offered them to the authors for a palaeobotanical study. TUJI and MIYAJI also collected wood samples from the river-bed at Tsuruju Bridge near Tsuruta. These materials facilitated reconstruction of forests that existed at about 2500 years ago, and clarification of a vegetational change during the last two and half millennia in the Tsugaru Plain.

Geology and Geomorphology

The Iwaki River flows northward through the central part of the Tsugaru Plain, Aomori Prefecture. Two sites, A and B, for the palaeobotanical study of the buried forests are located on its river-bed (Fig. 2). Site A is at the upper right side of Tsuruju Bridge near Tsuruta (Tsuruda), and site B is at the upper right side of Banryu Bridge near Itayanagi (Fig. 2). The former is at the northern and lower reach of the Iwaki River, and the latter is at the upper reach, about 7.5 km to the south. UMITSU (1974) divided the alluvial plain in this area into two terraces, upper and lower alluvial surfaces, according to their level and sedimentary composition. Each surface is classified into two geographic units, a natural levee along the Iwaki River and a back marsh widely distributed around it. According to UMITSU (1974), forests flourished on the flat floor of a valley dissecting the upper alluvial surface, and then were buried by coarse sediments of gravel and sand forming the lower alluvial surface, which UMITSU(1976) called Top sand and gravel. The buried forests of the two sites are contemporaneous because of their formation on the same floor of the dissected valley. Sediments

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Fig. 1　Exposed buried erect stumps just above the Tsuruju Bridge (photo by M. UMITSU, July 1975)

of the upper alluvial surface, namely Middle mud and Middle sand, are composed mainly of clay, slit and sand, and are regarded as having been deposited during the Jomon transgression (UMITSU, 1976). The age of their upper limit was estimated at about 5300 years BP on the basis of radiocarbon dating on a peat material obtained from the uppermost layer of the Middle mud (UMITSU, 1976).

The age of the buried forests can be estimated at about 2500 years BP, which corresponds to the Latest Jomon Period, on the basis of two radiocarbon datings on wood materials obtained from stumps near site A. One is dated to 2240±90 years BP on a wood material identified as *Ulmus davidiana* var. *japonica* (UMITSU, 1974), and another is 2480±80 years BP on a wood material identified as a dicotyledon (TADA and OYA, 1975).

Figure 3 shows the detailed geology and stratigraphic horizons of the buried forests observed at three trench excavations (Nos. 1-3) in site A. The deposits are divided lithologically into 6 layers in ascending order, as follows: grey-white silt intercalated with thin sand lamina (F), alternation of brown silty peat and grey-white peaty silt including many fragments of wood (E), grey-white silt (D), grey sandy silt partially with silt and sand lamination, and grey-white silt partially with clayey silt (C), dark grey-brown silt (B), and blue-grey sandy silt (A). Layer A conformably overlies layer B and covers the many stumps collected for this study. Layers F to C correspond to the

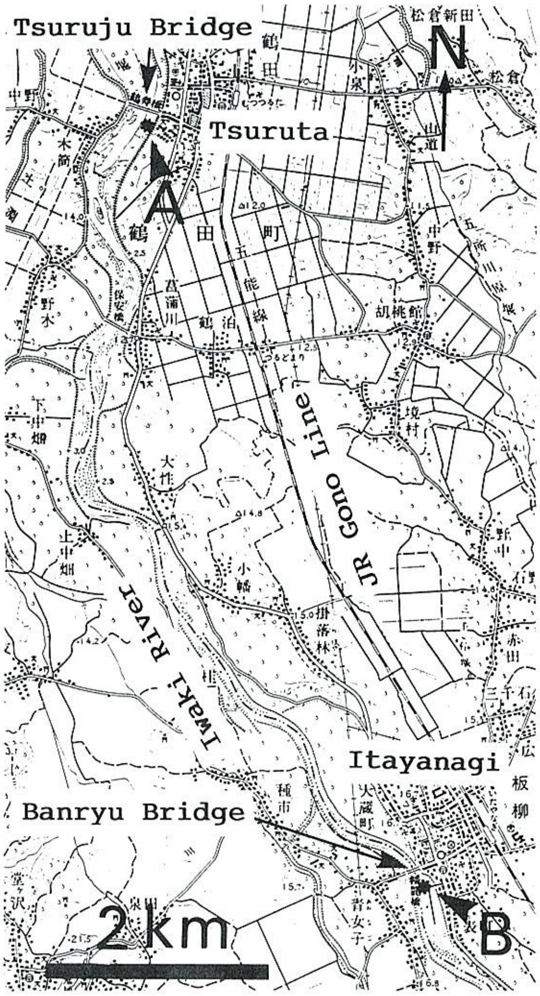


Fig. 2　Location map of sites A and B. (map -Goshogawara 1/50,000, Aomori No. 12)

Middle mud and/or the Middle sand, while layers A and B correspond to the Top sand and gravel and/or the Top mud of UMITSU (1976), respectively. Layer B is correlated with the lower part of the Top mud because of the same sedimentary facies. UMITSU (1976) reported the radiocarbon age on a wood material obtained from the base of the Top mud to be 2900±85 years BP. The silty peat sample from the uppermost part of layer E is dated back to 5060±160 years BP (code no. Gak -7638), corresponding to the age of the uppermost part of the Middle mud and the Middle sand. Some plant macrofossils obtained from layer E were identified as *Alnus japonica* fruits and seeds, *Cyperus* seeds and *Polygonum* cf. *maackianum* seeds. Eight wood samples obtained from this layer were also tentatively identified: six were stemwoods of *Alnus* sect. *Gymnothyrsus*, and the other two were stemwoods of *Fraxinus*.

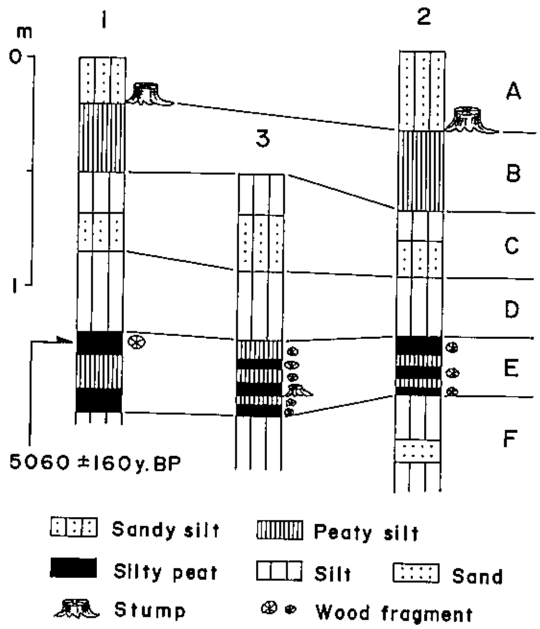


Fig. 3 Columnar sections of trenches 1, 3 and 2 at site A.

Materials and Methods

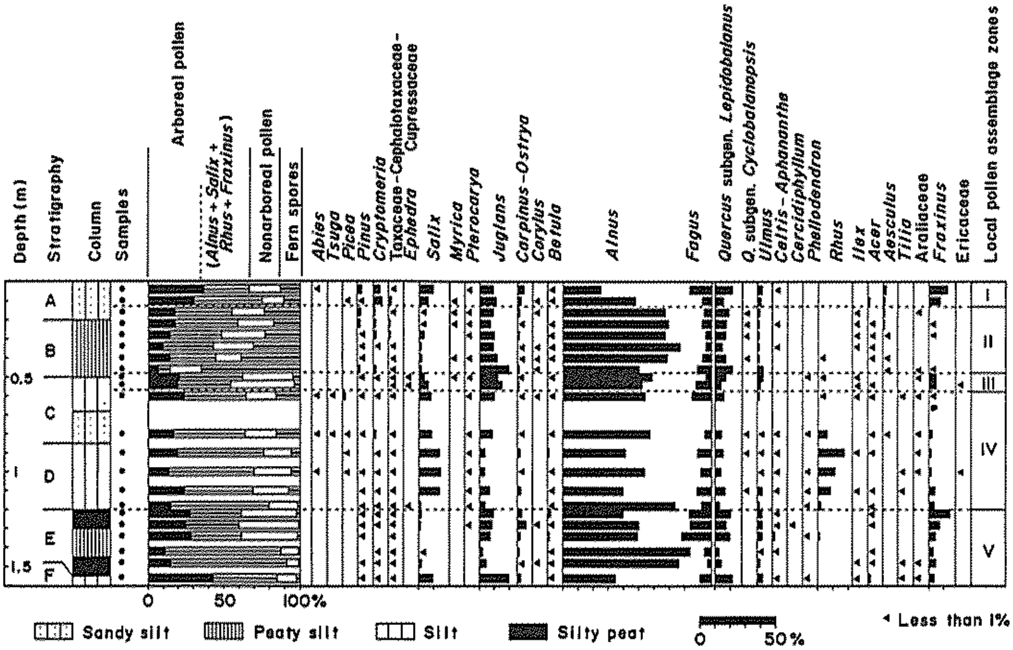
Twenty-two samples for pollen analysis were collected successively in the No. 1 trench at site A. All of the samples were boiled in a 10% KOH solution, followed by treatment with HF to remove siliceous matter, and subsequently by the acetolysis method. All specimens are deposited at Osaka City University. Occurrences of fossil pollen grains are shown in percentage diagrams. Percentages of arboreal pollen are calculated based on total arboreal pollen counts, and percentages of non-arboreal pollen are based on total pollen and spore counts.

Fossil woods were collected at two sites. At site A, 49 wood samples were mapped and collected by TSUJI and MIYAJI on July 22, 1980. Thirty-six of them were obtained from erect stumps, and the remaining 13 were from detached stem or branch woods. Distribution of these woods is shown in Fig. 9, using size classes based on diameter. From site B, 48 wood samples were mapped and collected by Masatomo UMITSU on July 1975. All of these samples were obtained from erect stumps, as shown in Fig. 10. All of the wood samples were sectioned with razor blades and mounted with gum-chloral, and then observed by means of a light microscope.

Results

Pollen Analysis

Fossil pollen grains extracted from 22 samples were identified into 52 taxa, including 30 arboreal and 22 non-arboreal taxa. Many fossil fern spores were also found, but they were expressed as one group, fern spores, in the pollen diagram (Fig. 4). The diagram shows stratigraphic occurrences of identified taxa. Almost all samples are generally characterized by abundant *Alnus* and common occurrence of such broad-leaved trees as *Salix, Juglans, Fagus, Quercus* subgen. *Lepidobalanus,* and *Fraxinus,* and of such herbaceous plants as Gramineae, Cyperaceae, *Artemisia* and ferns. Five local pollen assemblage zones, V, IV, III, II and I in ascending order, are established on the basis of stratigraphic occurrences of wetland arboreal and non-arboreal taxa. Each zone can also be distinguished by its percentages of arboreal and non-arboreal pollen grains and fern spores. These zones correspond to the stratigraphical layers respectively as follows: zone V to layers F and E; zone IV to layers D and C, except for the upper part of layer C corresponding to zone III; zone II to layer B and the lower part of layer A; zone I to the remaining upper part of layer A. Zone V is characterized by relatively high fre-



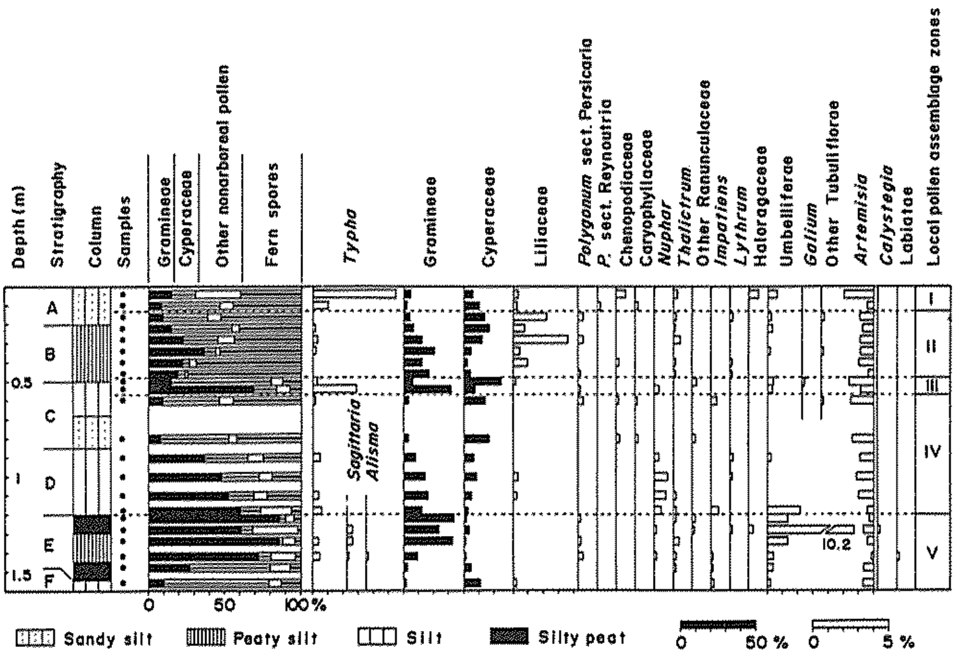


Fig. 4 Pollen and spore diagram of trench 1 at site A. Percentages of arboreal taxa are based on total arboreal counts, and others on total pollen and spore counts.

quencies of *Fraxinus*, Gramineae and Umbelliferae pollen that grade downward to low frequencies, and by the occurrences of *Sagittaria*, *Alisma* and *Polygonum* sect. *Persicaria*. Zone IV is characterized by relatively high frequencies of *Salix*, *Rhus*, *Nuphar* and *Artemisia*, and fern spores. In zone IV conifer pollen grains of *Abies*, *Tsuga* and *Picea* occur, although they are scarce.

In zone III, *Fraxinus*, Gramineae Cyperaceae and *Typha* occur at high frequencies. Zone II is distinguishable from other zones by its relatively high frequencies of such herbaceous taxa as Gramineae, Cyperaceae and Liliaceae. Zone I characteristically contains *Cryptomeria, Salix* and *Fraxinus* pollen in relatively high frequencies.

Fossil wood assemblages

Among a total of 97 wood samples, 15 woody taxa are identified, as shown in Table 1. Brief anatomical descriptions of these taxa are given in the following paragraphs, accompanied by microscopic photographs of typical samples in Figs. 5-8. Distribution maps of the identified woods are shown in Figs. 9 and 10 along with their sizes.

Anatomical description of fossil wood

Picea. Coniferous wood with vertical and horizontal resin canals having thick-walled epithelial cells; transition from early- to latewood rather gradual; cross-field pits small piceoid to taxodioid, 2-6 in one cross-field; bordered pits of ray tracheids narrow with square edges.

Cryptomeria japonica (GORD.) CARR. Coniferous wood without resin canals; transition from early- to latewood moderately abrupt; latewood distinct; cross-field pits large taxodioid, usually two in one cross-field, having oblique to horizontal large apertures.

Juglans ailanthifolia CARR. Diffuse-porous wood with sparse, large, round pores; pores solitary or 2-3 in radial multiples; perforation plates simple; axial parenchyma vasicentric and in tangential lines of one cell width; rays homogeneous, 1-5 cells wide.

Salix. Diffuse-porous wood with evenly distributed, small, round pores; pores solitary, or 2-3 in radial multiples; perforation plates simple; rays heterogeneous and uniseriate; vessel-ray pits large and dense.

Alnus sect. *Gymnothyrsus*. Diffuse-porous wood with sparse, small, square pores; pores solitary or 2-6 in radial multiples; perforation plates scalariform with about 20 bars; intervessel pits small and dense; rays homogeneous, uniseriate and aggregate.

Quercus sect. *Prinus*. Ring-porous wood with one row of large round earlywood pores, and small square latewood pores; pores solitary; perforation plates simple; rays homogeneous, uniseriate and very large, compound.

Table 1. Fossil woods discovered along the Iwaki River.

Taxon	Abbrev. *	Site A Tsuruju B.	Site B Banryu B.
Picea	Pi		1
Cryptomeria japonica			1
Juglans ailanthifolia	J		3
Salix	S	9	1
Alnus sect. *Gymnothyrsus*	Al		2
Quercus sect. *Prinus*	Q		2
Fagus	Fa		1
Ulmus			1
Morus bombycis	M		3
Cercidiphyllum japonicum	Ce		1
Phellodendron amurense	Ph		1
Acer	Ac	1	2
Hovenia			1
Cornus controversa			1
Fraxinus		39	27
Total		49	48

* Abbreviations used in Figs. 9 and 10.

Fagus. Diffuse-porous wood with numerous, small round pores; pores almost solitary; perforation plates mostly simple, occasionally scalariform with about 10 bars; rays homogeneous, uniseriate and large compound.

Ulmus. Semi-ring-porous wood with sparse, large round pores; pore diameter decreases unevenly toward growth ring boundaries; pores solitary or in clusters of 2-6; perforation plates simple; axial parenchyma vasicentric, occasionally with large crystals in strands; rays homogeneous 1-5 cells wide.

Morus bombycis KOIDZ. Ring-porous wood with one to several rows of large round earlywood pores, and small round latewood pores; earlywood pores in clusters of 2-10; perforation plates simple; spiral thickenings distinct in narrow vessels; rays heterogeneous and tall, 1-6 cells wide; uniseriate wings 1-2 cells high.

Cercidiphyllum japonicum SIEB. et ZUCC. Diffuse-porous wood with evenly distributed, numerous, small, square pores; pores solitary; perforation plates scalariform with 30-40 bars; spiral thickenings at tapering ends of vessel elements; rays heterogeneous, 2 cells wide.

Phellodendron amurense RUPR. Ring-porous wood with 1-2 rows of large round earlywood pores and very small latewood pores in tangential bands; perforation plates simple; narrow vessels with spiral thickenings; rays homogeneous, 1-4

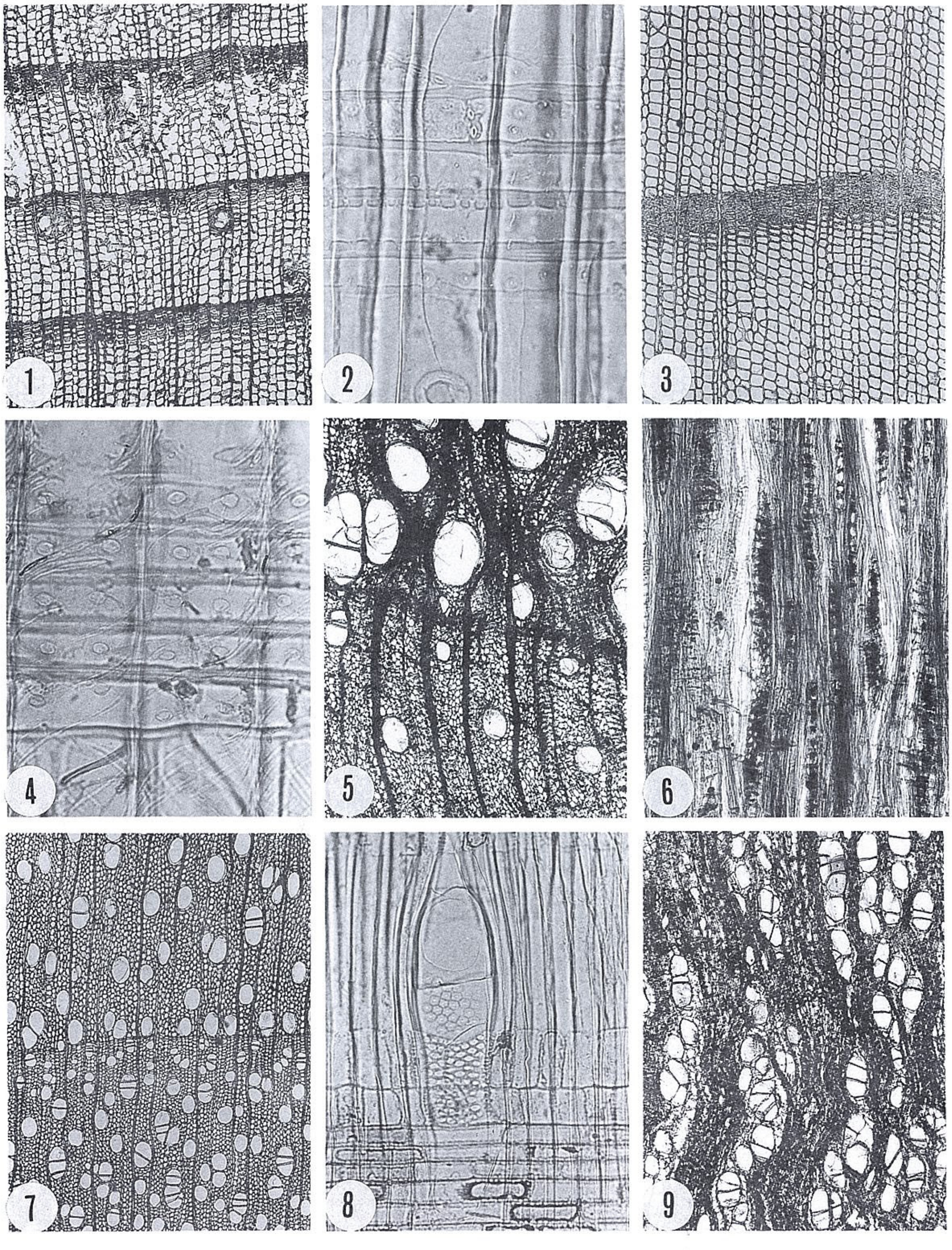


Fig. 5　Microphotographs of fossil woods, 1. 1-2 : *Picea* (no.B-15) ; 3-4 : *Cryptomeria japonica* (no. B-10) ; 5-6 : *Juglans ailanthifolia* (no. B-1) ; 7-8 : *Salix* (no.8T) ; 9 : *Alnus* sect. *Gymnothyrsus* (no. B-5). 1, 3, 5, 7, 9 : cross section (×40) ; 2 and 4 : radial section (×400) ; 6 : tangential section (×100) ; 8 : radial section (×200).

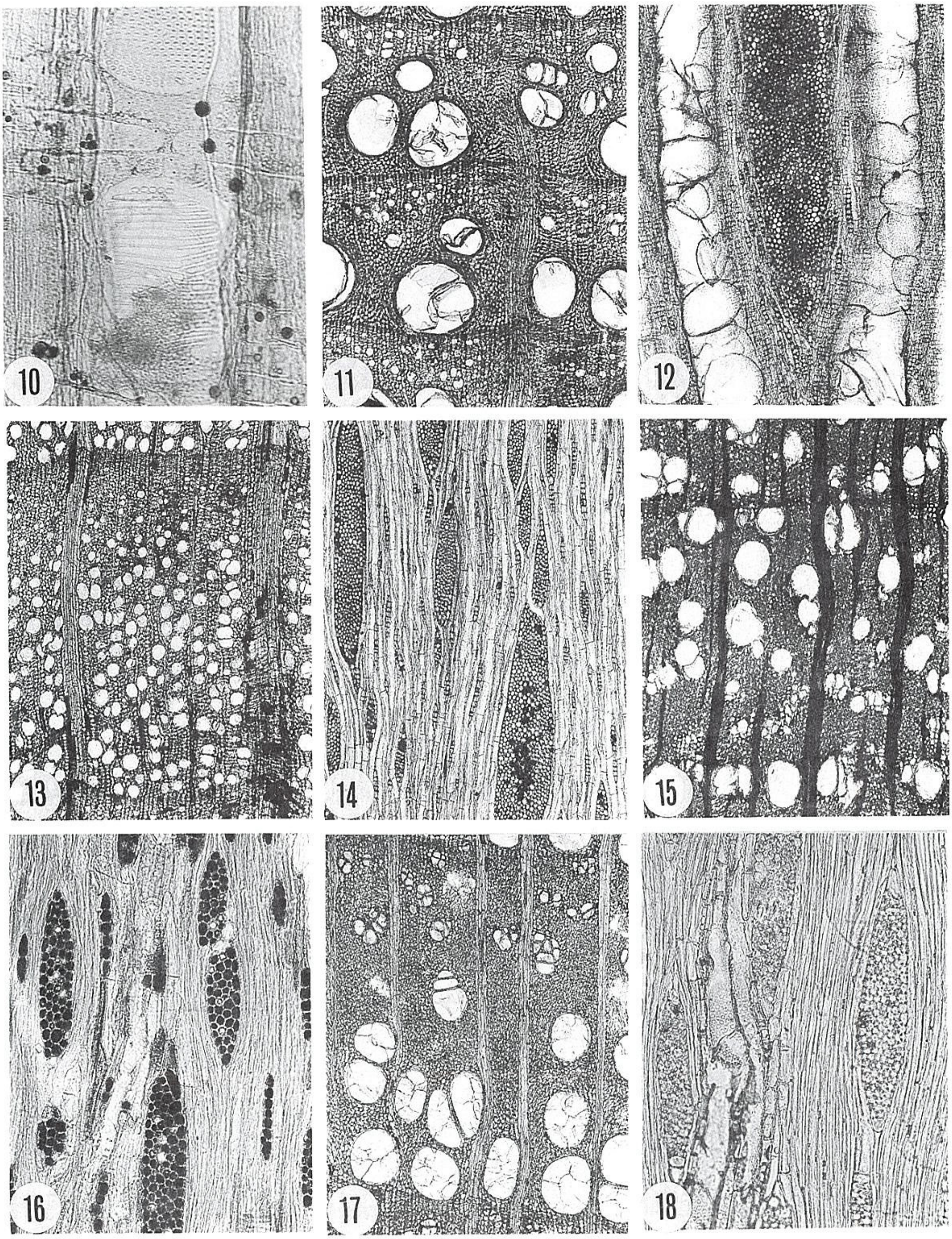


Fig. 6 Microphotographs of fossil woods, 2. 10 : *Alnus* sect. *Gymnothyrsus* (no. B-5) ; 11-12 : *Quercus* sect. *Prinus* (no. B-12) ; 13-14 : *Fagus* (no.B-37) ; 15-16 : *Ulmus*(no.B-8) ; 17-18 : *Morus bombycis* (no. B-14). 10 : radial section (×200) ; 11, 13, 15, and 17 : cross section (×40) ; 12, 14, 16, and 18 : tangential section (×100).

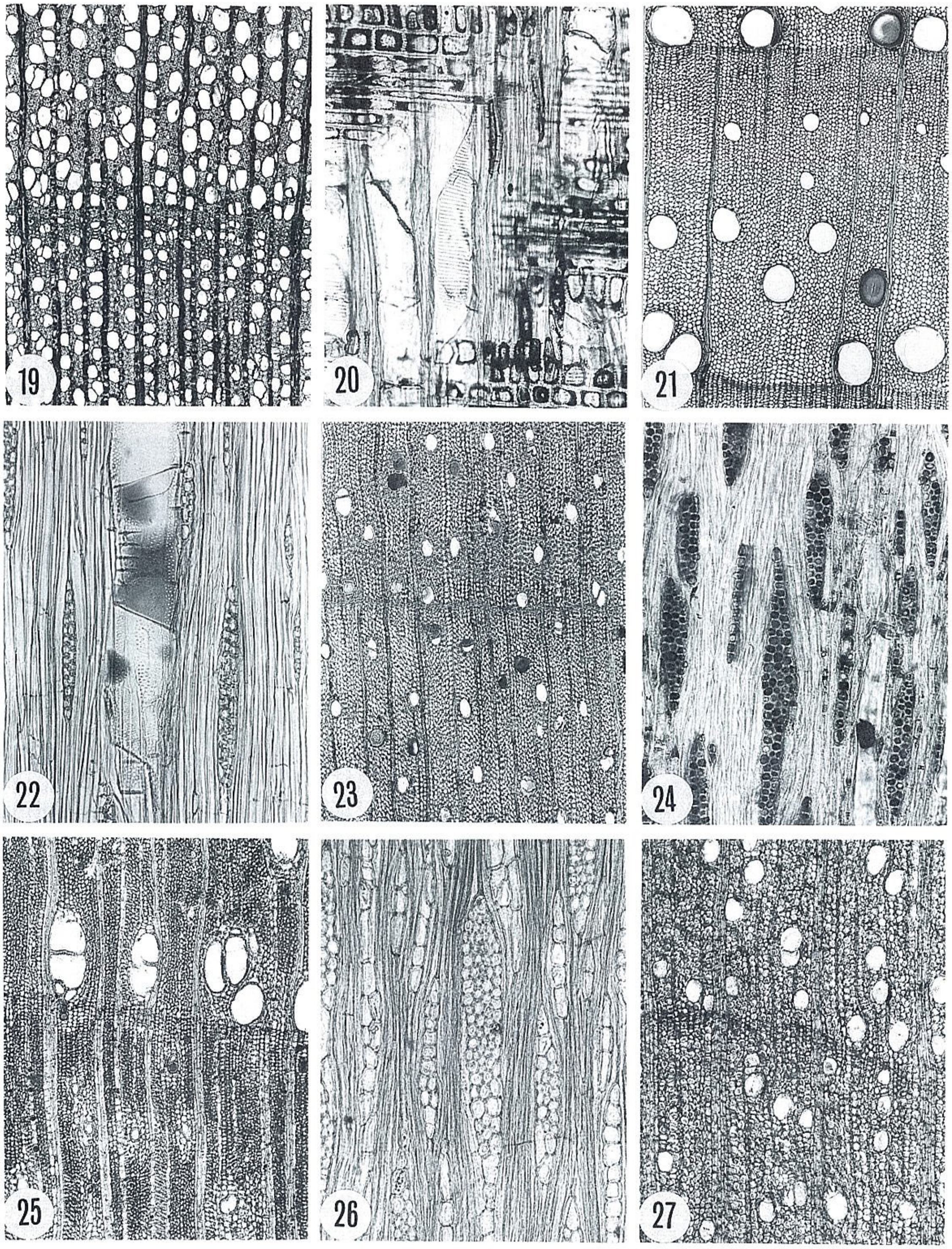


Fig. 7　Microphotographs of fossil woods, 3. 19-20 : *Cercidiphyllum japonicum* (no. B-25) ; 21-22 : *Phellodendron amurense* (no. B-17) ; 23-24 : *Acer* (no. 55S) ; 25-26 : *Hovenia* (no. B-9) ; 27 : *Cornus controversa* (no. B-3). 19, 21, 23, 25, and 27 : cross section (×40) ; 20 : radial section (×200) ; 22, 24, and 26 : tangential section (×100).

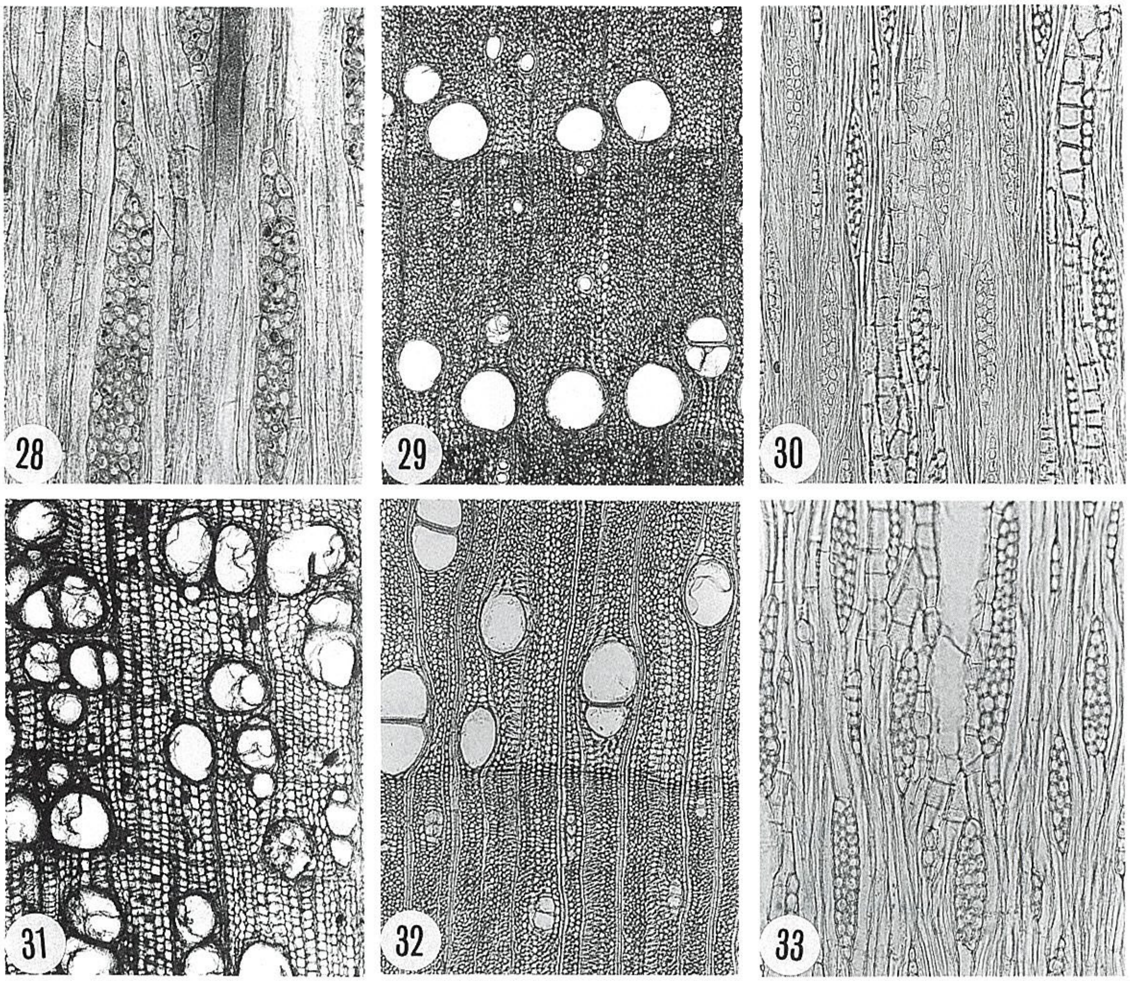


Fig. 8 Microphotographs of fossil woods, 4. 28 : *Cornus controversa* (no. B-3, tangential section, ×100). 29-33 : *Fraxinus*. Typical stemwood (29-30, no. B-26), typical rootwood (31, no. B-44), a different stemwood with wider rays (32-33, no. 44S). 29, 31 and 32 : cross section (×40) ; 30 and 33 : tangential section (×100).

cells wide, fusiform.

Acer. Diffuse-porous wood with sparse small round pores; pores solitary or 2-5 in radial multiples; perforation plates simple; fine spiral thickenings present on vessel walls; rays homogeneous, 1-4 cells wide.

Hovenia. Ring-porous wood with large earlywood pores and thick-walled small round pores; pores solitary or 2-3 in radial multiples; perforation plates simple; axial parenchyma vasicentric, and aliform to confluent; rays heterogeneous, 1-4 cells wide; uniseriate wings mostly 1-5 cells high.

Cornus controversa HEMSLEY. Diffuse-porous wood with sparse middle-sized round pores; pores solitary, occasionally in radial couples; perforation plates scalariform with 30-40 bars; rays heterogeneous, 1-4 cells wide, uniseriate wings usually 1-3 cells high.

Fraxinus. Ring- to diffuse-porous wood with thick-walled, large pores; pores solitary or 2-4 in radial multiples; perforation plates simple; axial parenchyma vasicentric, occasionally aliform to confluent or in tangential bands in the latewood; rays almost homogeneous, 1-4 cells wide.

Fossil wood assemblage

At site A, 49 fossil woods were identified. The fossil wood assemblage of this site is quite simple and uniform, consisting mainly of *Fraxinus* (39 samples) and *Salix* (9 samples), with only one *Acer* (Table 1). These *Fraxinus* are fairly evenly distributed in this site (Fig.9). Most of them are

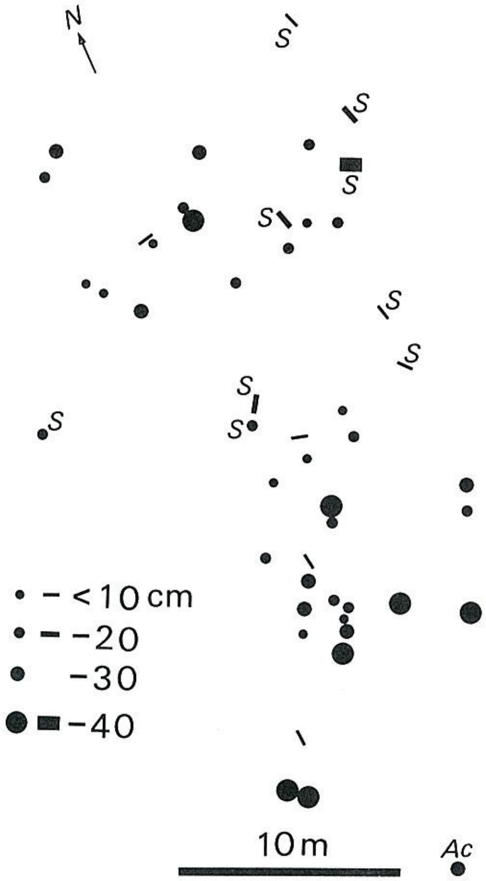


Fig. 9 Distribution of buried woods at site A. Solid circles show erect stumps, and thick bars show detached stems or branches. *Fraxinus* is without an alphabetical abbreviation, while other taxa are indicated by the abbreviations in Table 1.

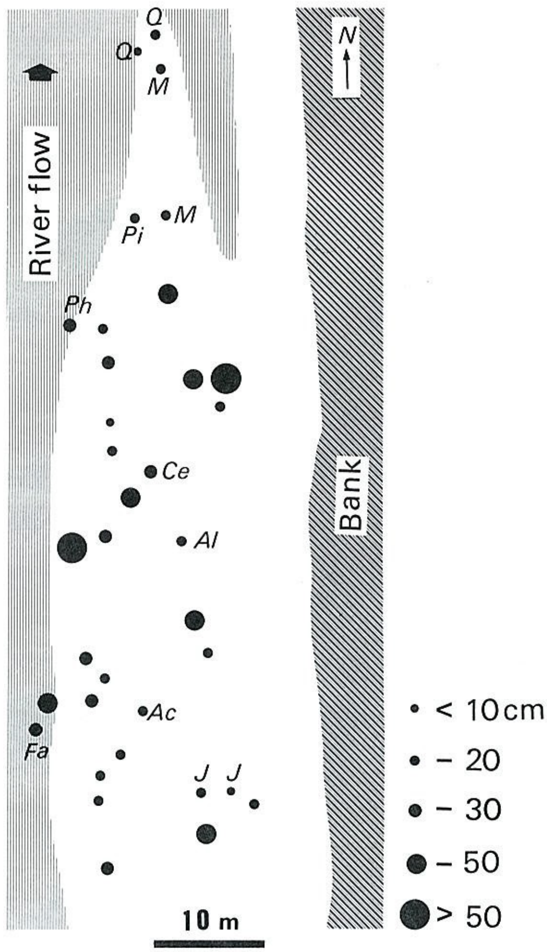


Fig. 10 Distribution of buried woods at site B. Solid circles show the erect stumps. *Fraxinus* is without an alphabetical abbreviation, while other taxa are indicated by abbreviations in Table 1. (Original map drawn by M. UMITSU).

erect stumps ranging from small to large in size, sometimes up to 50 cm in diameter, and some are detached stems or branches with diameter less than 10 cm. *Salix* woods are distributed in the northern half of this site, and its detached stems or branches and erect stumps are usually smaller than those of *Fraxinus* except for a large trunk. At site B, erect stumps include various taxa (Table 1). Although *Fraxinus* is also dominant (27 samples), with size ranging from small to very big, the other 21 stumps consist of two coniferous taxa, *Picea* and *Cryptomeria japonica*, and 12 dicotyledonous taxa, *Juglans ailanthifolia, Morus bombycis, Alnus* sect. *Gymnothyrsus, Quercus* sect. *Prinus, Acer, Salix, Fagus, Ulmus, Cercidiphyllum japonicum, Phellodendron amurense, Hovenia,* and *Cornus controversa* (Fig.10).

Discussion

The composition of fossil woods at the two sites is basically similar in the dominance of *Fraxinus*. An almost pure *Fraxinus* stand with some *Salix* can be reconstructed at site A, and a mixed deciduous forest with few conifers, also dominated by *Fraxinus*, can be reconstructed at site B. Compositions of fossil woods and also of pollen assemblages of the overlying sediments (layer A) show dominance of *Fraxinus, Salix, Alnus* and some other taxa usually found in riverside and/or swamp forests in Japan. It is difficult to identify species of fossil *Fraxinus* by wood structure or pollen morphology, but it must be *F. mandshurica* because this is the most common species in marshy and wet places in northern Tohoku and Hokkaido Districts. In these regions almost pure *F. mandshurica* stands with some *Salix* and/or *Alnus* are often observed at the wettest places beside a river or a marsh, with tree species increasing with the distance from the water. Thus site A probably represents a stand in a more humid place, and site B at a drier one because of the mixture of many other tree species in the messic forests, such as *Fagus, Quercus, Acer,* and *Hovenia*. The result of the pollen analysis at site A reveals that such riverside or swamp forests had continuously persisted for two and half millennia, from about 5000 years ago to the time when these buried forests established themselves.

Most of the identified taxa, including *Fraxinus*, are distributed within or around the Tsugaru Plain at the present time, except for *Picea* and *Cryptomeria japonica*. The nearest distribution of the former is the southern part of Oshima Peninsula of Hokkaido or Mt. Hayachine, Iwate Prefecture, although both of them are about 150 km from site B. That of the latter is in the mountain regions of the southern Aomori Prefecture (KURATA, 1971). The results indicate that *Picea* and *Cryptomeria japonica* grew in the Tsugaru Plain at about 2500 years ago.

The reconstructed forest at site A was established after the deposition of layer B, and grew before the deposition of layer A: most trees of the forest rooted into layer B, and its composition is more like that of the pollen assemblage in layer A. Although layer A is rather thin (30 cm at most) and we could not observe its upper limit in the studied area, the thickness of the Top sand and gravels which constitute the lower alluvial surface in this region reaches about 3 m (UMITSU, 1974). The reconstructed forests in our study were buried by coarse sediments, which should be the Top sand and gravels and should have continued over layer A. UMITSU (1974) considered that the buried forests developed on the flat valley floor formed by the dissection of the upper alluvial surface during a geomorphologically stable phase. However, deposition of layer B on the valley floor, corresponding to the lower part of the Top mud, precedes that of the buried forests. Formation of buried forests is usually induced by a rapid deposition of sediments on the forests. The result of pollen analysis indicates that the riverside or swamp forests composed of *Alnus* and other tree species had constantly existed in this area during the sedimentary phase, except for the erosional phase of the valley. Thus the reconstructed forests in the two sites can be regarded as forests established in one of the gentle sedimentary phases.

We are indebted to Associate Professor Masatomo UMITSU, Nagoya University, for providing the materials with useful data and information, and also for permission to use his photographs. Thanks are also due to Dr. Naomichi MIYAJI, Hokkaido National Agricultural Experimental Station, for help in collecting samples.

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摘 要

青森県津軽平野の中央を流れる岩木川の河床では渇水期になると所々に埋没林が現われることがある。これらは放射性炭素による年代測定などにより約2500年前のものとみなされている。著者らは津軽平野のほぼ中央の鶴田にある鶴寿橋と，その南方，板柳の幡龍橋のそばの2個所でこれら埋没林の古植物学的検討を行った。調査地点A，Bには直径50 cmに達する直立した根株と倒木が散在し，それらの一部を切り取り，薄片を作成して顕微鏡で同定した結果，A地点ではそのほとんどがトネリコ属で，それにヤナギ属が混じり，B地点でもトネリコ属が圧倒

的に多いものの，オニグルミ，ヤマグワ，ハンノキ属，コナラ類，カエデ属など落葉広葉樹が13種類，針葉樹ではトウヒ属とスギの2種類が見られた。このことからいずれもが現在の東北・北海道地方に広くみられるヤチダモを主体にした冷温帯性の河辺林や湿地林で，A地点ではそれのほぼ純林であることから，きわめて水湿に近いところに立地していたのに対し，B地点では様々な冷温帯性の樹種が多く混ざることから，前者よりはやや水辺から離れた所のものであったろうと推定された。また，現在では渡島半島中央部か岩手県早池峰山まで行かなければ見られないトウヒ属が当時の津軽平野の平地部に分布していたことが分かったことは，植物相の完新世における変遷を明らかにする上で興味深い資料となる。

一方，これら埋没林が立地する地層について地質学的検討とともにその花粉分析も行った。その結果，津軽平野においては，上位沖積面を岩木川が下刻してできた解析谷底は約5000年前以降埋積されて下位沖積面が形成されるが，この埋積の過程で断続的にハンノキ属を主体にした湿地林の形成がみられ，今回調査した埋没林はそれらの中の一時期のものであることが明らかになった。

(Received May 28, 1990)

○阿部近一　**徳島県植物誌**　教育出版センター（〒771-01　徳島市川内町平石流通団地27），平成2年7月5日発行。A4判，580頁＋写真・図版135頁。定価10,000円（税込み）。

私は昭和17年夏，愛媛県八幡浜出身の友人を誘って，剣山に登った。生憎，雨天で，ここで初めて御目にかかった御二人の方ともども外に出ることが出来ぬまま，山小屋に閉じこめられてしまった。この御二人は貝の研究で知られる黒田徳米博士と，御案内の為に御同行されていた阿部近一さんであった。私はこの時，阿部さんが昭和12年に発行された"阿部植物誌"を持参していたので，御両人が貝の話をされているのを傍で伺っていると，この本の著者である阿部さんと結びつかなかった。しかし，その後間もなく，阿部さんの勝れた業蹟の一つであるタヌキノショクダイの発見が，陸貝の採集中であったことをうけたまわり，この発見が偶然でないことを知った。私もこの植物が見たくて，大竜寺山には再三登ったが，ある時，台風の通過直後に行って，倒木に着出していたヒトツバノキシノブを見つけたのは思い出深いことであった。余談はさておき，阿部さんは徳島県での植物だけでなく，動物にも御造詣深い大博物学者として敬服申し上げる方である。

本著は申すまでもなく，上述の"阿部植物誌"が源となっていると思うものの，その刊行より50年，半世紀の間積み上げられた該博な御智識の総集編として，世に問われた名著と確信するが故に，双手を挙げて御購読されることを御奨めする次第である。

○　石川の生物編集委員会　**石川の生物**　石川県高等学校教育研究会生物部会（〒921 金沢市窪6丁目218，石川県立金沢錦丘高等学校内），平成2年7月31日発行。A4判，304頁＋カラー写真版8頁。頒価5,000円（〒込み）。送金は北国銀行円光寺支店普通口座157-962，石川県高等学校生物部会（髙木政喜）あて。

日本生物教育会第45回全国大会が，石川県金沢市で開催されるに当り，これを記念し，石川県の生物相の概要を紹介する目的で編集された。

この企画はおよそ5年前にたてられ，以来，石川県高等学校教育研究会生物部会では研究グループを結成し，この出版に向って調査・研究を続けてこられた。執筆は部会員が，それぞれ得意とする分野を担当したことは勿論であるが，互に協力されたことにより，各部門が網羅され，広範な内容は出版を良く果されているものと思われる。特に私は編集に当られた委員各位の御苦心談をいろいろ伺っているだけに，その労を高く評価申上る者である。

○　寺下友三郎　**奥能登の植物**　自己出版，平成2年8月30日発行。A4判，100頁＋図版7頁（カラー2頁，白黒5頁）。頒価2,000円（〒込み）。

著者は教職40年。本務の余暇に，努めて奥能登地域の植物を見続けて来られた。本書は御退職を機会に，この間の知見をまとめて置きたいという，御考えから刊行を考えられたことと推察する。

内容は先づ奥能登の自然環境を，次いでその植生を記述し，終りに植物目録・巨樹目録となっている。

御入手御希望の方は著者宛（振替口座金沢8―15747）に御送金されると送本申し上げる由である。

○　斉藤信夫　**花神巡礼ー草木との語らいー**　たねの会（〒030-13　青森県東津軽郡蟹田町蟹田62-2），平成2年4月28日発行。B6判，213頁。頒価1,500円（〒別）。

毎年きまったように繰り広げられる色彩豊かなドラマは何者かが，後から糸を引いているようで，著者はその何者かを花神と考えている。本著は下北半島の植物が，四季の変化に対應しつつ，生活を続けている有様を，自分自身の目で確かめつつ記録した短篇集で，48篇収められている。（里見信生）