МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

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ТЕХНОЛОГИЯ ДЕРЕВООБРАБОТКИ

ТЕКСТЫ И ЗАДАНИЯ НА АНГЛИЙСКОМ ЯЗЫКЕ

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Содержит аутентичные тексты на английском языке и задания к ним, предусматривающие контроль прочитанного материала. Имеются задания для развития навыков устной речи. Пособие содержит иллюстративный материал в виде рисунков и фотографий.

Учебное пособие подготовлено на кафедре иностранных языков и предназначено для студентов, обучающихся по направлению 35.03.02 «Технология лесозаготовительных и деревообрабатывающих производств».

ПРЕДИСЛОВИЕ

Данное учебное пособие содержит тексты, соответствующие по своей тематике направлению обучения “Технология лесозаготовительных и деревообрабатывающих производств”. В текстах сообщается о развитии лесообрабатывающей промышленности за рубежом, представлены вузы, готовящие специалистов по данному направлению. Имеются тексты, представляющие информацию о видах древесины, применении дерева в различных сферах, оборудовании, используемом для деревообработки и многом другом. Тексты взяты из интернет источников, представленных в конце пособия. Все тексты являются аутентичными. Они слегка адаптированы для учебных целей.

В разделах пособия имеются задания для проверки понимания материала. Имеются лексические упражнения. Предлагаются задания для развития навыков устной речи. Учебное пособие предназначено для изучения студентами I–II курсов технологического факультета.

Part I. WOOD, ITS CHARACTERISTICS AND USE

Unit I. Wood formation

Прочитайте текст

Introduction

Wood is a hard, fibrous tissue found in many plants. It has been used for centuries for both fuel and as a construction material for several types of living areas such as houses, known as carpentry. It is an organic material, a natural composite of cellulose fibers (which are strong in tension) embedded in a matrix of lignin which resists compression. In the strict sense wood is produced as secondary xylem in the stems of trees (and other woody plants). In a living tree it transfers water and nutrients to the leaves and other growing tissues, and has a support function, enabling woody plants to reach large sizes or to stand up for themselves. Wood may also refer to other plant materials with comparable properties, and to material engineered from wood, or wood chips or fiber.

People have used wood for millennia for many purposes, primarily as a fuel or as a construction material for making houses, tools, weapons, furniture, packaging, artworks, and paper. Wood can be dated by carbon dating and in some species by dendrochronology to make inferences about when a wooden object was created. The year-to-year variation in tree-ring widths and isotopic abundances gives clues to the prevailing climate at that time.

Formation

Wood, in the strict sense, is yielded by trees, which increase in diameter by the formation, between the existing wood and the inner bark, of new woody layers which envelop the entire stem, living branches, and roots. Technically this is known as secondary growth; it is the result of cell division in the vascular cambium, a lateral meristem, and subsequent expansion of the new cells.

Growth rings

Where there are clear seasons, growth can occur in a discrete annual or seasonal pattern, leading to growth rings; these can usually be most clearly seen on the end of a log, but are also visible on the other surfaces. If these seasons are annual these growth rings are referred to as annual rings. Where there is no seasonal difference growth rings are likely to be indistinct or absent.

If there are differences within a growth ring, then the part of a growth ring nearest the center of the tree, and formed early in the growing season when growth is rapid, is usually composed of wider elements. It is usually lighter in color than that near the outer portion of the ring, and is known as earlywood or springwood. The outer portion formed later in the season is then known as the

latewood or summerwood. However, there are major differences, depending on the kind of wood.

Knots

A knot is a particular type of imperfection in a piece of wood; it will affect the technical properties of the wood, usually for the worse, but may be exploited for artistic effect. In a longitudinally sawn plank, a knot will appear as a roughly circular "solid" (usually darker) piece of wood around which the grain of the rest of the wood "flows" (parts and rejoins). Within a knot, the direction of the wood (grain direction) is up to 90 degrees different from the grain direction of the regular wood.

In the tree a knot is either the base of a side branch or a dormant bud. A knot (when the base of a side branch) is conical in shape (hence the roughly circular cross-section) with the tip at the point in stem diameter at which the plant's cambium was located when the branch formed as a bud.

During the development of a tree, the lower limbs often die, but may persist for a time, sometimes years. Subsequent layers of growth of the attaching stem are no longer intimately joined with the dead limb, but are grown around it. Hence, dead branches produce knots which are not attached, and likely to drop out after the tree has been sawn into boards.

In grading lumber and structural timber, knots are classified according to their form, size, soundness, and the firmness with which they are held in place. This firmness is affected by, among other factors, the length of time for which the branch was dead while the attaching stem continued to grow.

Wood Knot

Knots materially affect cracking (known in the US as checking, and the UK as shakes) and warping, ease in working, and cleavability of timber. They are defects which weaken timber and lower its value for structural purposes where strength is an important consideration. The weakening effect is much more serious when timber is subjected to forces perpendicular to the grain and/or tension than where under load along the grain and/or compression. The extent to which knots affect the strength of a beam depends upon their position, size, number, and condition. A knot on the upper side is compressed, while one on the lower side is subjected to tension. If there is a season check in the knot, as is often the case, it will offer little resistance to this tensile stress. Small knots, however, may be located along the neutral plane of a beam and increase the strength by preventing longitudinal shearing. Knots in a board or plank are least injurious when they extend through it at right angles to its broadest surface. Knots which occur near the ends of a beam do not weaken it. Sound knots which occur in the central portion one-fourth the height of the beam from either edge are not serious defects.

Knots do not necessarily influence the stiffness of structural timber, this will depend on the size and location. Stiffness and elastic strength are more dependent upon the sound wood than upon localized defects. The breaking strength is very susceptible to defects. Sound knots do not weaken wood when subject to compression parallel to the grain.

In some decorative applications, wood with knots may be desirable to add visual interest. In applications where wood is painted, such as skirting boards, fascia boards, door frames and furniture, resins present in the timber may continue to 'bleed' through to the surface of a knot for months or even years after manufacture and show as a yellow or brownish stain. A Knot Primer paint or solution, correctly applied during preparation, may do much to reduce this problem but it is difficult to control completely, especially when using mass-produced kiln-dried timber stocks.

Unit I

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is wood?
2. What is it used for?
3. What gives clues to the prevailing climate at that time?
4. What is secondary growth?
5. What can be seen on the end of a log?
6. Are there differences within a growth ring?
7. What do we call a knot?
8. Do dead branches produce knots?
9. Do knots affect cracking?
10. Do knots influence the stiffness of structural timber?

IV)Соедините следующие слова.

fibrous	composite
construction	plants
secondary	rings
natural	season
woody	branch
annual	tissue
growing	material
side	growth
structural	defects
serious	applications
decorative	purposes

V) Сделайте сообщения по следующим темам.

1. Wood and its use.
2. Wood knots.

Unit II. Heartwood and sapwood

Прочитайте текст

Heartwood and Sapwood

A section of a Yew branch shows 27 annual growth rings, pale sapwood and dark heartwood, and pith (centre dark spot). The dark radial lines are small knots.

Heartwood (or old xylem) is wood that, as a result of tylosis, has become more resistant to decay. Tylosis is the deposition of chemical substances (a genetically programmed process). Once heartwood formation is complete, the heartwood is dead. Some uncertainty still exists as to whether heartwood is truly dead, as it can still chemically react to decay organisms, but only once.

Usually heartwood looks different; in that case it can be seen on a cross-section, usually following the growth rings in shape. Heartwood may (or may not) be much darker than living wood. It may (or may not) be sharply distinct from the sapwood. However, other processes, such as decay, can discolor wood, even in woody plants that do not form heartwood, with a similar color difference, which may lead to confusion.

Sapwood is the younger, outermost wood; in the growing tree it is living wood, and its principal functions are to conduct water from the roots to the leaves and to store up and give back according to the season the reserves prepared in the leaves. However, by the time they become competent to conduct water, all xylem tracheids and vessels have lost their cytoplasm and the cells are therefore functionally dead. All wood in a tree is first formed as sapwood. The more leaves a tree bears and the more vigorous its growth, the larger the volume of sapwood required. Hence trees making rapid growth in the open have thicker sapwood for their size than trees of the same species growing in dense forests. Sometimes trees (of species that do form heartwood) grown in the open may become of considerable size, 30 cm or more in diameter, before any heartwood begins to form, for example, in second-growth hickory, or open-grown pines.

The term heartwood derives solely from its position and not from any vital importance to the tree. This is evidenced by the fact that a tree can thrive with its heart completely decayed. Some species begin to form heartwood very early in life, so having only a thin layer of live sapwood, while in others the change comes slowly. Thin sapwood is characteristic of such species as chestnut, black locust, mulberry, osage-orange, and sassafras, while in maple, ash, hickory,

hackberry, beech, and pine, thick sapwood is the rule. Others never form heartwood.

There is no definite relation between the annual rings of growth and the amount of sapwood. Within the same species the cross-sectional area of the sapwood is very roughly proportional to the size of the crown of the tree. If the rings are narrow, more of them are required than where they are wide. As the tree gets larger, the sapwood must necessarily become thinner or increase materially in volume. Sapwood is thicker in the upper portion of the trunk of a tree than near the base, because the age and the diameter of the upper sections are less.

When a tree is very young it is covered with limbs almost, if not entirely, to the ground, but as it grows older some or all of them will eventually die and are either broken off or fall off. Subsequent growth of wood may completely conceal the stubs which will however remain as knots. No matter how smooth and clear a log is on the outside, it is more or less knotty near the middle. Consequently the sapwood of an old tree, and particularly of a forest-grown tree, will be freer from knots than the inner heartwood. Since in most uses of wood, knots are defects that weaken the timber and interfere with its ease of working and other properties, it follows that a given piece of sapwood, because of its position in the tree, may well be stronger than a piece of heartwood from the same tree.

It is remarkable that the inner heartwood of old trees remains as sound as it usually does, since in many cases it is hundreds, and in a few instances thousands, of years old. Every broken limb or root, or deep wound from fire, insects, or falling timber, may afford an entrance for decay, which, once started, may penetrate to all parts of the trunk. The larvae of many insects bore into the trees and their tunnels remain indefinitely as sources of weakness. Whatever advantages, however, that sapwood may have in this connection are due solely to its relative age and position.

If a tree grows all its life in the open and the conditions of soil and site remain unchanged, it will make its most rapid growth in youth, and gradually decline. The annual rings of growth are for many years quite wide, but later they become narrower and narrower. Since each succeeding ring is laid down on the outside of the wood previously formed, it follows that unless a tree materially increases its production of wood from year to year, the rings must necessarily become thinner as the trunk gets wider. As a tree reaches maturity its crown becomes more open and the annual wood production is lessened, thereby reducing still more the width of the growth rings. In the case of forest-grown trees so much depends upon the competition of the trees in their struggle for light and nourishment that periods of rapid and slow growth may alternate. Some trees, such as southern oaks, maintain the same width of ring for hundreds

of years. Upon the whole, however, as a tree gets larger in diameter the width of the growth rings decreases.

Different pieces of wood cut from a large tree may differ decidedly, particularly if the tree is big and mature. In some trees, the wood laid on late in the life of a tree is softer, lighter, weaker, and more even-textured than that produced earlier, but in other trees, the reverse applies. This may or may not correspond to heartwood and sapwood. In a large log the sapwood, because of the time in the life of the tree when it was grown, may be inferior in hardness, strength, and toughness to equally sound heartwood from the same log. In a smaller tree, the reverse may be true.

Unit II

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is heartwood?
2. Does heartwood look differently?
3. How can you define sapwood?
4. Is all wood in a tree first formed as sapwood?
5. May trees become of size 30cm in diameter?
6. Where is sapwood thicker?
7. What may afford an entrance for tree decay?
8. Are the annual rings of growth for many years quite wide?
9. When do they become narrower?
10. May different pieces of wood cut from a large tree differ from each other?

IV)Соедините следующие слова.

chemical	formation
radial	functions
color	growth
wood	age
heartwood	lines
principal	substances
rapid	difference
relative	production

V) Сделайте сообщения по следующим темам.

1. Heartwood formation.
2. Sapwood and its principal functions.

Unit III. Wood characteristics

Прочитайте текст

Hard and Soft Woods

There is a strong relationship between the properties of wood and the properties of the particular tree that yielded it. For every tree species there is a range of density for the wood it yields. There is a rough correlation between density of a wood and its strength (mechanical properties). For example, while mahogany is a medium-dense hardwood which is excellent for fine furniture crafting, balsa is light, making it useful for model building. The densest wood may be black ironwood.

It is common to classify wood as either softwood or hardwood. The wood from conifers (e.g. pine) is called softwood, and the wood from dicotyledons (usually broad-leaved trees, e.g. oak) is called hardwood. These names are a bit misleading, as hardwoods are not necessarily hard, and softwoods are not necessarily soft. The well-known balsa (a hardwood) is actually softer than any commercial softwood. Conversely, some softwoods (e.g. yew) are harder than many hardwoods.

Engineered wood products have properties that usually differ from those of natural timbers.

Color

In species which show a distinct difference between heartwood and sapwood the natural color of heartwood is usually darker than that of the sapwood, and very frequently the contrast is conspicuous. This is produced by deposits in the heartwood of chemical substances, so that a dramatic color difference does not mean a dramatic difference in the mechanical properties of heartwood and sapwood, although there may be a dramatic chemical difference.

Some experiments on very resinous Longleaf Pine specimens indicate an increase in strength, due to the resin which increases the strength when dry. Such resin-saturated heartwood is called "fat lighter". Structures built of fat lighter are almost impervious to rot and termites; however they are very flammable. Stumps of old longleaf pines are often dug, split into small pieces and sold as kindling for fires. Stumps thus dug may actually remain a century or more since being cut. Spruce impregnated with crude resin and dried is also greatly increased in strength thereby.

The wood of Coast Redwood is distinctively red in color.

Since the latewood of a growth ring is usually darker in color than the earlywood, this fact may be used in judging the density, and therefore the hardness and strength of the material. This is particularly the case with coniferous woods. In ring-porous woods the vessels of the early wood not

infrequently appear on a finished surface as darker than the denser latewood, though on cross sections of heartwood the reverse is commonly true. Except in the manner just stated the color of wood is no indication of strength.

Abnormal discoloration of wood often denotes a diseased condition, indicating unsoundness. The black check in western hemlock is the result of insect attacks. The reddish-brown streaks so common in hickory and certain other woods are mostly the result of injury by birds. The discoloration is merely an indication of an injury, and in all probability does not of itself affect the properties of the wood. Certain rot-producing fungi impart to wood characteristic colors which thus become symptomatic of weakness; however an attractive effect known as spalting produced by this process is often considered a desirable characteristic. Ordinary sap-staining is due to fungous growth, but does not necessarily produce a weakening effect.

Structure

Wood is a heterogeneous, hygroscopic, cellular and anisotropic material. It is composed of cells, and the cell walls are composed of micro-fibrils of cellulose (40% – 50%) and hemicellulose (15% – 25%) impregnated with lignin (15% – 30%).

Sections of tree trunk

In coniferous or softwood species the wood cells are mostly of one kind, tracheids, and as a result the material is much more uniform in structure than that of most hardwoods. There are no vessels («pores») in coniferous wood such as one sees so prominently in oak and ash, for example.

The structure of hardwoods is more complex. The water conducting capability is mostly taken care of by vessels: in some cases (oak, chestnut, ash) these are quite large and distinct, in others (buckeye, poplar, willow) too small to be seen without a hand lens. In discussing such woods it is customary to divide them into two large classes, ring-porous and diffuse-porous. In ring-porous species, such as ash, black locust, catalpa, chestnut, elm, hickory, mulberry, and oak, the larger vessels or pores (as cross sections of vessels are called) are localized in the part of the growth ring formed in spring, thus forming a region of more or less open and porous tissue. The rest of the ring, produced in summer, is made up of smaller vessels and a much greater proportion of wood fibers. These fibers are the elements which give strength and toughness to wood, while the vessels are a source of weakness.

Magnified cross-section of Black Walnut, showing the vessels, rays (white lines) and annual rings: this is intermediate between diffuse-porous and ring-porous, with vessel size declining gradually

In diffuse-porous woods the pores are evenly sized so that the water conducting capability is scattered throughout the growth ring instead of being

collected in a band or row. Examples of this kind of wood are basswood, birch, buckeye, maple, poplar, and willow. Some species, such as walnut and cherry, are on the border between the two classes, forming an intermediate group.

Unit III
Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What kinds of wood can you name?
2. What is called softwood?
3. How can you characterize hardwood?
4. Is there a color difference between heartwood and sapwood?
5. What kind of wood is distinctively red in color?
6. What does abnormal discoloration of wood often denote?
7. What kind of material is wood?
8. Are there vessels (pores) in coniferous wood?
9. What trees are ring-porous species?
10. Is birch a kind of diffuse-porous wood?

IV)Соедините следующие слова.

mechanical	products
commercial	timbers
wood	pines
natural	properties
longleaf	softwood
growth	resin
crude	woods
finished	ring
coniferous	surface
insects	discoloration
abnormal	attacks
porous	size
vessel	tissue

V) Сделайте сообщения по следующим темам.

1. Hard and soft woods.
2. Wood color and discoloration.
3. Wood structure.

Unit IV. Earlywood and latewood in softwood

Прочитайте текст

In temperate softwoods there often is a marked difference between latewood and earlywood. The latewood will be denser than that formed early in the season. When examined under a microscope the cells of dense latewood are seen to be very thick-walled and with very small cell cavities, while those formed first in the season have thin walls and large cell cavities. The strength is in the walls, not the cavities. Hence the greater the proportion of latewood, the greater the density and strength. In choosing a piece of pine where strength or stiffness is the important consideration, the principal thing to observe is the comparative amounts of earlywood and latewood. The width of ring is not nearly so important as the proportion and nature of the latewood in the ring.

If a heavy piece of pine is compared with a lightweight piece it will be seen at once that the heavier one contains a larger proportion of latewood than the other, and is therefore showing more clearly demarcated growth rings. In white pines there is not much contrast between the different parts of the ring, and as a result the wood is very uniform in texture and is easy to work. In hard pines, on the other hand, the latewood is very dense and is deep-colored, presenting a very decided contrast to the soft, straw-colored earlywood.

It is not only the proportion of latewood, but also its quality, that counts. In specimens that show a very large proportion of latewood it may be noticeably more porous and weigh considerably less than the latewood in pieces that contain but little. One can judge comparative density, and therefore to some extent strength, by visual inspection.

No satisfactory explanation can as yet be given for the exact mechanisms determining the formation of earlywood and latewood. Several factors may be involved. In conifers, at least, rate of growth alone does not determine the proportion of the two portions of the ring, for in some cases the wood of slow growth is very hard and heavy, while in others the opposite is true. The quality of the site where the tree grows undoubtedly affects the character of the wood formed, though it is not possible to formulate a rule governing it. In general, however, it may be said that where strength or ease of working is essential, woods of moderate to slow growth should be chosen.

Earlywood and latewood in ring-porous woods

Earlywood and latewood in a ring-porous wood (ash) in a Fraxinus excelsior; tangential view, wide growth rings.

In ring-porous woods each season's growth is always well defined, because the large pores formed early in the season abut on the denser tissue of the year before.

In the case of the ring-porous hardwoods there seems to exist a pretty definite relation between the rate of growth of timber and its properties. This may be briefly summed up in the general statement that the more rapid the growth or the wider the rings of growth, the heavier, harder, stronger, and stiffer the wood. This, it must be remembered, applies only to ring-porous woods such as oak, ash, hickory, and others of the same group, and is, of course, subject to some exceptions and limitations.

In ring-porous woods of good growth it is usually the latewood in which the thick-walled, strength-giving fibers are most abundant. As the breadth of ring diminishes, this latewood is reduced so that very slow growth produces comparatively light, porous wood composed of thin-walled vessels and wood parenchyma. In good oak these large vessels of the earlywood occupy from 6 to 10 per cent of the volume of the log, while in inferior material they may make up 25 per cent or more. The latewood of good oak is dark colored and firm, and consists mostly of thick-walled fibers which form one-half or more of the wood. In inferior oak, this latewood is much reduced both in quantity and quality. Such variation is very largely the result of rate of growth.

Wide-ringed wood is often called «second-growth», because the growth of the young timber in open stands after the old trees have been removed is more rapid than in trees in a closed forest, and in the manufacture of articles where strength is an important consideration such "second-growth" hardwood material is preferred. This is particularly the case in the choice of hickory for handles and spokes. Here not only strength, but toughness and resilience are important. The results of a series of tests on hickory by the U.S. Forest Service show that:

«The work or shock-resisting ability is greatest in wide–ringed wood that has from 5 to 14 rings per inch (rings 1.8-5 mm thick), is fairly constant from 14 to 38 rings per inch (rings 0.7-1.8 mm thick), and decreases rapidly from 38 to 47 rings per inch (rings 0.5-0.7 mm thick). The strength at maximum load is not so great with the most rapid-growing wood; it is maximum with from 14 to 20 rings per inch (rings 1.3-1.8 mm thick), and again becomes less as the wood becomes more closely ringed. The natural deduction is that wood of first-class mechanical value shows from 5 to 20 rings per inch (rings 1.3-5 mm thick) and that slower growth yields poorer stock. Thus the inspector or buyer of hickory should discriminate against timber that has more than 20 rings per inch (rings less than 1.3 mm thick). Exceptions exist, however, in the case of normal growth upon dry situations, in which the slow-growing material may be strong and tough».

The effect of rate of growth on the qualities of chestnut wood is summarized by the same authority as follows:

«When the rings are wide, the transition from spring wood to summer wood is gradual, while in the narrow rings the spring wood passes into summer wood abruptly. The width of the spring wood changes but little with the width of the

annual ring, so that the narrowing or broadening of the annual ring is always at the expense of the summer wood. The narrow vessels of the summer wood make it richer in wood substance than the spring wood composed of wide vessels. Therefore, rapid-growing specimens with wide rings have more wood substance than slow-growing trees with narrow rings. Since the more the wood substance the greater the weight, and the greater the weight the stronger the wood, chestnuts with wide rings must have stronger wood than chestnuts with narrow rings. This agrees with the accepted view that sprouts (which always have wide rings) yield better and stronger wood than seedling chestnuts, which grow more slowly in diameter».

Earlywood and latewood in diffuse-porous woods

In the diffuse-porous woods, the demarcation between rings is not always so clear and in some cases is almost (if not entirely) invisible to the unaided eye. Conversely, when there is a clear demarcation there may not be a noticeable difference in structure within the growth ring.

In diffuse-porous woods, as has been stated, the vessels or pores are even-sized, so that the water conducting capability is scattered throughout the ring instead of collected in the earlywood. The effect of rate of growth is, therefore, not the same as in the ring-porous woods, approaching more nearly the conditions in the conifers. In general it may be stated that such woods of medium growth afford stronger material than when very rapidly or very slowly grown. In many uses of wood, total strength is not the main consideration. If ease of working is prized, wood should be chosen with regard to its uniformity of texture and straightness of grain, which will in most cases occur when there is little contrast between the latewood of one season's growth and the earlywood of the next.

Unit IV
Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Закончите предложения:

1. The latewood will be denser than… .
2. The strength is in the walls, … .
3. The width of ring is not… .
4. The quality of the site where the tree grows… .
5. In ring-porous woods each season’s growth is… .
6. The latewood of good oak is dark colored and firm and… .
7. Wide-ringed wood is often called… .
8. The width of the spring wood changes but… .

9. Drying produces a decided increase in… .
10. The greatest increase due to drying is… .

IV) Соедините следующие слова.

marked	cavities
cell	difference
visual	pines
slow	timber
hard	inspection
important	growth
young	consideration
natural	rings
narrow	deduction
water	effect
softening	content

V) Сделайте сообщения по следующим темам.

1. Расскажите об особенностях древесины хвойных пород.
2. Расскажите о кольцесосудистой древесине.

Unit V. Water content

Прочитайте текст

The churches of Kizhi, Russia are among a handful of World Heritage Sites built entirely of wood, without metal joints.

Water occurs in living wood in three conditions, namely: (1) in the cell walls, (2) in the protoplasmic contents of the cells, and (3) as free water in the cell cavities and spaces. In heartwood it occurs only in the first and last forms. Wood that is thoroughly air-dried retains from 8-16% of water in the cell walls, and none, or practically none, in the other forms. Even oven-dried wood retains a small percentage of moisture, but for all except chemical purposes, may be considered absolutely dry.

The general effect of the water content upon the wood substance is to render it softer and more pliable. A similar effect of common observation is in the softening action of water on paper or cloth. Within certain limits, the greater the water content, the greater its softening effect.

Drying produces a decided increase in the strength of wood, particularly in small specimens. An extreme example is the case of a completely dry spruce block 5 cm in section, which will sustain a permanent load four times as great as that which a green (undried) block of the same size will support.

The greatest increase due to drying is in the ultimate crushing strength, and strength at elastic limit in endwise compression; these are followed by the

modulus of rupture, and stress at elastic limit in cross-bending, while the modulus of elasticity is least affected.

Unit V
Exercises

I) Прочитайте текст и переведите его на русский язык письменно.

II) Дайте определения следующим словам:

Joints, wood, purposes, effect, observations, action, specimens, limit.

III)Составьте сообщение на английском языке о содержании воды в дереве и представьте его устно.

Unit VI. Uses of wood

Прочитайте текст

Fuel

Main article: Wood fuel

Wood has a long history of being used as fuel, which continues to this day, mostly in rural areas of the world. Hardwood is preferred over softwood because it creates less smoke and burns longer. Adding a woodstove or fireplace to a home is often felt to add ambience and warmth.

Construction

Wood can be cut into straight planks and made into a wood flooring.

Wood has been an important construction material since humans began building shelters, houses and boats. Nearly all boats were made out of wood until the late 19th century, and wood remains in common use today in boat construction.

Wood to be used for construction work is commonly known as lumber in North America. Elsewhere, lumber usually refers to felled trees, and the word for sawn planks ready for use is timber.

New domestic housing in many parts of the world today is commonly made from timber-framed construction. Engineered wood products are becoming a bigger part of the construction industry. They may be used in both residential and commercial buildings as structural and aesthetic materials.

In buildings made of other materials, wood will still be found as a supporting material, especially in roof construction, in interior doors and their frames, and as exterior cladding.

Wood is also commonly used as shuttering material to form the mould into which concrete is poured during reinforced concrete construction.

Framing

A two-story wooden-frame house under construction—the location of the upper floor platform is readily discerned by the wide joists between the floors, and the upper structure rests on this platform.

Framing, in construction known as light-frame construction, is a building technique based around structural members, usually called studs, which provide a stable frame to which interior and exterior wall coverings are attached, and covered by a roof comprising horizontal ceiling joists and sloping rafters (together forming a truss structure) or manufactured pre-fabricated roof trusses—all of which are covered by various sheathing materials to give weather resistance.

Modern light-frame structures usually gain strength from rigid panels (plywood and other plywood-like composites such as oriented strand board (OSB) used to form all or part of wall sections, but until recently carpenters employed various forms of diagonal bracing (called wind braces) to stabilize walls. Diagonal bracing remains a vital interior part of many roof systems, and in-wall wind braces are required by building codes in many municipalities or by individual state laws in the United States.

Light frame construction using standardized dimensional lumber has become the dominant construction method in North America and Australia because of its economy. Use of minimal structural materials allows builders to enclose a large area with minimal cost, while achieving a wide variety of architectural styles. The ubiquitous platform framing and the older balloon framing are the two different light frame construction systems used in North America.

Walls

Wall framing in house construction includes the vertical and horizontal members of exterior walls and interior partitions, both of bearing walls and non-bearing walls. These stick members, referred to as studs, wall plates and lintels (headers), serve as a nailing base for all covering material and support the upper floor platforms, which provide the lateral strength along a wall. The platforms may be the boxed structure of a ceiling and roof, or the ceiling and floor joists of the story above. The platform, also provides the lateral support against wind and holds the stick walls true and square. Any lower platform supports the weight of the platforms and walls above the level of its component headers and joists.

Framing lumber should be grade-stamped, and have a moisture content not exceeding 19%.

Exterior wall studs

Wall framing in house construction includes the vertical and horizontal members of exterior walls and interior partitions. These members, referred to as

studs, wall plates and lintels, serve as a nailing base for all covering material and support the upper floors, ceiling and roof.

Exterior wall studs are the vertical members to which the wall sheathing and cladding are attached. They are supported on a bottom plate or foundation sill and in turn support the top plate. Studs usually consist of 2 × 4 in (51 × 100 mm) or 2 × 6 in (51 × 150 mm) lumber and are commonly spaced at 16 in (410 mm) on centre. This spacing may be changed to 12 in (300 mm) or 24 in (610 mm) on centre depending on the load and the limitations imposed by the type and thickness of the wall covering used. Wider 2 × 6 in (51 × 150 mm) studs may be used to provide space for more insulation. Insulation beyond that which can be accommodated within a 3.5 in (89 mm) stud space can also be provided by other means, such as rigid or semi-rigid insulation or batts between 2 × 2 in (51 × 51 mm) horizontal furring strips, or rigid or semi-rigid insulation sheathing to the outside of the studs. The studs are attached to horizontal top and bottom wall plates of 2 in (nominal) (38 mm) lumber that are the same width as the studs.

Interior partitions

Interior partitions supporting floor, ceiling or roof loads are called loadbearing walls; others are called non-loadbearing or simply partitions. Interior loadbearing walls are framed in the same way as exterior walls. Studs are usually 2 × 4 in (51 × 100 mm) lumber spaced at 16 in (410 mm) on centre. This spacing may be changed to 12 in (300 mm) or 24 in (610 mm) depending on the loads supported and the type and thickness of the wall finish used.

Partitions can be built with 2 × 3 in (51 × 76 mm) or 2 × 4 in (51 × 100 mm) studs spaced at 16 or 24 in (400 or 600 mm) on center depending on the type and thickness of the wall finish used. Where a partition does not contain a swinging door, 2 × 4 in (51 × 100 mm) studs at 16 in (410 mm) on centre are sometimes used with the wide face of the stud parallel to the wall. This is usually done only for partitions enclosing clothes closets or cupboards to save space. Since there is no vertical load to be supported by partitions, single studs may be used at door openings. The top of the opening may be bridged with a single piece of 2 in (nominal) (38 mm) lumber the same width as the studs. These members provide a nailing support for wall finish, door frames and trim.

Lintels (headers)

Lintels (or, headers) are the horizontal members placed over window, door and other openings to carry loads to the adjoining studs. Lintels are usually constructed of two pieces of 2 in (nominal) (38 mm) lumber separated with spacers to the width of the studs and nailed together to form a single unit. The preferable spacer material is rigid insulation. The depth of a lintel is determined by the width of the opening and vertical loads supported.

Unit VI

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. Can wood be cut into straight planks?
2. Are all boats made of wood?
3. Is new domestic housing in many parts of the world today made from timber-framed construction?
4. Where are engineered wood products used?
5. Is wood used in roof construction?
6. What is a vital interior part of many roof systems?
7. What does wall framing in house construction include?
8. What are exterior wall studs?
9. What walls are called loadbearing walls?
10. What parts of the building are called lintels?

IV)Соедините следующие слова.

construction	housing
domestic	members
structural	material
boat	trusses
weather	laws
roof	construction
state	resistance
minimal	walls
architectural	framing
exterior	cost
wall	styles
interior	insulation
rigid	partitions

V) Сделайте сообщения по следующим темам.

1. Расскажите о применении дерева как топлива.
2. Сообщите о применении дерева в строительстве.

Unit VII. Framing members and platform framing

Прочитайте текст

The requirement for long framing members

In certain larger buildings, a noticeable down-slope of floors towards central walls, caused by the differential shrinkage of the wood framing members at the perimeter versus central walls can be seen. Larger balloon-framed buildings will have central bearing walls which are actually platform framed and thus will have horizontal sill and top plates at each floor level, plus the intervening floor joists, at these central walls. Wood will shrink much more across its grain than along the grain. Therefore, the cumulative shrinkage in the center of such a building is considerably more than the shrinkage at the perimeter where there are many fewer horizontal members. Of course, this problem, unlike the first three, takes time to develop and become noticeable.

Present day balloon framing buildings have considerably higher heating costs, due to the lack of insulation separating a room from its exterior walls.

Since steel is generally more fire-resistant than wood, and steel framing members can be made to arbitrary lengths, balloon framing is growing in popularity again in light gauge steel stud construction. Balloon framing provides a more direct load path down to the foundation. Additionally, balloon framing allows more flexibility for tradesmen in that it is significantly easier to pull wire, piping and ducting without having to bore through or work around framing members.

Platform framing

In Canada and the United States, the most common method of light-frame construction for houses and small apartment buildings as well as some small commercial buildings is platform framing.

The framed structure sits atop a concrete (most common) or treated wood foundation. A sill plate is anchored, usually with 'J' bolts to the foundation wall. Generally these plates must be pressure treated to keep from rotting. The bottom of the sill plate is raised a minimum 6 inches (150 mm) above the finished grade by the foundation. This again is to prevent the sill-plate from rotting as well as providing a termite barrier.

The floors, walls and roof of a framed structure are created by assembling (using nails) consistently sized framing elements of dimensional lumber (2×4, 2×6, etc.) at regular spacings (12 in, 16 in, and 24 in on center. Sometimes the lesser known -19.2" on center-method is used), forming stud-bays (wall) or joist-bays (floor). The floors, walls and roof are typically made torsionally stable with the installation of a plywood or composite wood skin referred to as sheathing. Sheathing has very specific nailing requirements (such as size and

spacing); these measures allow a known amount of shear force to be resisted by the element. Spacing the framing members properly allows them to align with the edges of standard sheathing. In the past, tongue and groove planks installed diagonally were used as sheathing. Occasionally, wooden or galvanized steel braces are used instead of sheathing. There are also engineered wood panels made for shear and bracing.

The floor, or the platform of the name, is made up of joists (usually 2x6, 2×8, 2×10 or 2×12, depending on the span) that sit on supporting walls, beams or girders. The floor joists are spaced at (12 in, 16 in, and 24 in on center) and covered with a plywood subfloor. In the past, planks set at 45-degrees to the joists were used for the subfloor.

Where the design calls for a framed floor, the resulting platform is where the framer will construct and stand that floor's walls (interior and exterior load bearing walls and space-dividing, non-load bearing partitions). Additional framed floors and their walls may then be erected to a general maximum of four in wood framed construction. There will be no framed floor in the case of a single-level structure with a concrete floor known as a slab on grade.

Stairs between floors are framed by installing stepped stringers and then placing the horizontal treads and vertical risers.

A framed roof is an assembly of rafters and wall-ties supported by the top story's walls. Prefabricated and site-built trussed rafters are also used along with the more common stick framing method. Trusses are engineered to redistribute tension away from wall-tie members and the ceiling members. The roof members are covered with sheathing or strapping to form the roof deck for the finish roofing material.

Floor joists can be engineered lumber (trussed, I-joist, etc.), conserving resources with increased rigidity and value. They allow access for runs of plumbing, HVAC, etc. and some forms are pre-manufactured.

Double framing is a style of framing used to reduce heat loss and air infiltration. Two walls are built around the perimeter of the building with a small gap in between. The inner wall carries the structural load of the building and is constructed as described above. The exterior wall is not load bearing and can be constructed using lighter materials. Insulation is installed in the entire space between the outside edge of the exterior wall and the inside edge of the interior wall. The size of the gap depends upon how much insulation is desired. The vapour barrier is installed on the outside of the inner wall, rather than between the studs and drywall of a standard framed structure. This increases its effectiveness as it is not perforated by electrical and plumbing connections.

Materials

Light-frame materials are most often wood or rectangular steel tubes or C-channels. Wood pieces are typically connected with nails or screws; steel pieces are connected by screws. Preferred species for linear structural members are softwoods such as spruce, pine and fir. Light frame material dimensions range from 38 mm by 89 mm (1.5 in by 3.5 in; i.e., a two-by-four) to 5 cm by 30 cm (two-by-twelve inches) at the cross-section, and lengths ranging from 2.5 m (8.2 ft) for walls to 7 m (23 ft) or more for joists and rafters. Recently, architects have begun experimenting with pre-cut modular aluminum framing to reduce on-site construction costs.

Wall panels built of studs are interrupted by sections that provide rough openings for doors and windows. Openings are typically spanned by a header or lintel that bears the weight of structure above the opening. Headers are usually built to rest on trimmers, also called jacks. Areas around windows are defined by a sill beneath the window, and cripples, which are shorter studs that span the area from the bottom plate to the sill and sometimes from the top of the window to a header, or from a header to a top plate. Diagonal bracings made of wood or steel provide shear (horizontal strength) as do panels of sheeting nailed to studs, sills and headers.

Unit VII

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is platform framing?
2. Where does the framed structure sit?
3. Is the bottom of the sill plate raised?
4. How are the floors, walls and roof made?
5. How are stairs between floors framed?
6. What is a framed roof?
7. Why are trusses used?
8. What is double framing?
9. What load does the inner wall carry?
10. Where is the insulation installed?

IV)Соедините следующие слова.

platform	structure
commercial	sheathing
framed	braces
standard	framing

steel	buildings
plywood	members
horizontal	subfloor
ceiling	risers
vertical	treads
floor	lumber
engineered	rigidity
increased	joists
inner	barrier
vapour	pieces
steel	wall

V) Сделайте сообщения по следующим темам.

1. Расскажите о каркасном строительстве.
2. Расскажите об установке изоляции в зданиях.

Unit VIII. Light-gauge metal stud framing

Прочитайте текст

Wall sections usually include a bottom plate which is secured to the structure of a floor, and one, or more often two top plates that tie walls together and provide a bearing for structures above the wall. Wood or steel floor frames usually include a rim joist around the perimeter of a system of floor joists, and often include bridging material near the center of a span to prevent lateral buckling of the spanning members. In two-story construction, openings are left in the floor system for a stairwell, in which stair risers and treads are most often attached to squared faces cut into sloping stair stringers.

Interior wall coverings in light-frame construction typically include wallboard, lath and plaster or decorative wood paneling.

Exterior finishes for walls and ceilings often include plywood or composite sheathing, brick or stone veneers, and various stucco finishes. Cavities between studs, usually placed 40–60 cm (16–24 in) apart, are usually filled with insulation materials, such as fiberglass batting, or cellulose filling sometimes made of recycled newsprint treated with boron additives for fire prevention and vermin control.

In natural building, straw bales, cob and adobe may be used for both exterior and interior walls. The part of a structural building that goes diagonally across a wall is called a T-bar. It stops the walls from collapsing in gusty winds.

Roofs

Roofs are usually built to provide a sloping surface intended to shed rain or snow, with slopes ranging from 1 cm of rise per 15 cm (less than an inch per linear foot) of rafter length, to steep slopes of more than 2 cm per cm (two feet per foot) of rafter length. A light-frame structure built mostly inside sloping walls comprising a roof is called an A-frame.

Roofs are most often covered with shingles made of asphalt, fiberglass and small gravel coating, but a wide range of materials are used. Molten tar is often used to waterproof flatter roofs, but newer materials include rubber and synthetic materials. Steel panels are popular roof coverings in some areas, preferred for their durability. Slate or tile roofs offer more historic coverings for light-frame roofs.

Light-frame methods allow easy construction of unique roof designs. Hip roofs, which slope toward walls on all sides, are joined at hip rafters that span from corners to a ridge. Valleys are formed when two sloping roof sections drain toward each other. Dormers are small areas in which vertical walls interrupt a roof line, and which are topped off by slopes at usually right angles to a main roof section. Gables are formed when a length-wise section of sloping roof ends to form a triangular wall section. Clerestories are formed by an interruption along the slope of a roof where a short vertical wall connects it to another roof section. Flat roofs, which usually include at least a nominal slope to shed water, are often surrounded by parapet walls with openings (called scuppers) to allow water to drain out. Sloping crickets are built into roofs to direct water away from areas of poor drainage, such as behind a chimney at the bottom of a sloping section.

Structure

Light-frame buildings are often erected on monolithic concrete slab foundations that serve both as a floor and as a support for the structure. Other light-frame buildings are built over a crawlspace or a basement, with wood or steel joists used to span between foundation walls, usually constructed of poured concrete or concrete blocks.

Engineered components are commonly used to form floor, ceiling and roof structures in place of solid wood. I-joists (closed-web trusses) are often made from laminated woods, most often chipped poplar wood, in panels as thin as 1 cm (0.4 in), glued between horizontally laminated members of less than 4 cm by 4 cm (two-by-twos), to span distances of as much as 9 m (30 ft). Open web trussed joists and rafters are often formed of 4 cm by 9 cm (two-by-four [sic]) wood members to provide support for floors, roofing systems and ceiling finishes.

Unit VIII
Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What do wall sections usually include?
2. What do steel floor frames usually include?
3. What do interior wall coverings typically include?
4. What do exterior finishes for walls and ceilings often include?
5. What is called T-bar?
6. What are roofs usually built for?
7. What is called an A-frame?
8. What panels are popular roof coverings?
9. What do flat roofs include?
10. What material is used for I-joists?

IV)Соедините следующие слова.

floor	plates
bottom	material
bridging	joists
two-story	members
spanning	system
floor	construction
squared	finishes
stucco	filling
fiberglass	faces
cellulose	batting
fire	walls
exterior	prevention
roof	blocks
concrete	section
sloping	designs

V) Сделайте сообщения по следующим темам.

1. Расскажите о том, как сооружаются крыши.
2. Расскажите о строительстве зданий.

Unit IX. Engineered wood and wood products

Прочитайте текст

Wood used in construction includes products such as glued laminated timber, laminated veneer lumber, parallam and I-joists. On the one hand these allow the use of smaller pieces, and on the other hand allow bigger spans. They may also be selected for specific projects such as public swimming pools or ice rinks where the wood will not deteriorate in the presence of certain chemicals. These engineered wood products prove to be more environmentally friendly, and sometimes cheaper, than building materials such as steel or concrete.

Wood unsuitable for construction in its native form may be broken down mechanically (into fibers or chips) or chemically (into cellulose) and used as a raw material for other building materials such as chipboard, engineered wood, hardboard, medium-density fiberboard (MDF), oriented strand board (OSB). Such wood derivatives are widely used: wood fibers are an important component of most paper, and cellulose is used as a component of some synthetic materials. Wood derivatives can also be used for kinds of flooring, for example laminate flooring.

Next generation wood products

Further developments include new lignin glue applications, recyclable food packaging, rubber tire replacement applications, anti-bacterial medical agents, and high strength fabrics or composites. As scientists and engineers further learn and develop new techniques to extract various components from wood, or alternatively to modify wood, for example by adding components to wood, new more advanced products will appear on the marketplace.

Furniture and utensils

Wood has always been used extensively for furniture, including chairs and beds. Also for tool handles and cutlery, such as chopsticks, toothpicks, and other utensils, like the wooden spoon.

In the arts

Artists can use wood to create delicate sculptures. Stringed instrument bows are often made from pernambuco or brazilwood.

Main article: Wood as a medium

Wood has long been used as an artistic medium. It has been used to make sculptures and carvings for millennia. Examples include the totem poles carved by North American indigenous people from conifer trunks, often Western Red Cedar (Thuja plicata), and the Millennium clock tower, now housed in the National Museum of Scotland in Edinburgh.

It is also used in woodcut printmaking, and for engraving.

Certain types of musical instruments, such as those of the violin family, the guitar, the clarinet and recorder, the xylophone, and the marimba, are made mostly or entirely of wood. The choice of wood may make a significant difference to the tone and resonant qualities of the instrument, and tonewoods have widely differing properties, ranging from the hard and dense african blackwood (used for the bodies of clarinets) to the light but resonant European spruce (Picea abies) (traditionally used for the soundboards of violins). The most valuable tonewoods, such as the ripple sycamore (Acer pseudoplatanus), used for the backs of violins, combine acoustic properties with decorative color and grain which enhance the appearance of the finished instrument.

Despite their collective name, not all woodwind instruments are made entirely of wood. The reeds used to play them, however, are usually made from Arundo donax, a type of monocot cane plant.

Sports and recreational equipment

Many types of sports equipment are made of wood, or were constructed of wood in the past. For example, cricket bats are typically made of white willow. The baseball bats which are legal for use in Major League Baseball are frequently made of ash wood or hickory, and in recent years have been constructed from maple even though that wood is somewhat more fragile. In softball, however, bats are more commonly made of aluminium (this is especially true for fastpitch softball).

Many other types of sports and recreation equipment, such as skis, ice hockey sticks, lacrosse sticks and archery bows, were commonly made of wood in the past, but have since been replaced with more modern materials such as aluminium, fiberglass, carbon fiber, titanium, and composite materials. One noteworthy example of this trend is the golf club commonly known as the wood, the head of which was traditionally made of persimmon wood in the early days of the game of golf, but is now generally made of synthetic materials.

Medicine

In January 2010 Italian scientists announced that wood could be harnessed to become a bone substitute. It is likely to take at least five years until this technique will be applied for humans.

Unit IX

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What products does wood used in construction include?
2. Did engineered wood products prove to be more environmentally?

3. Are such products cheaper than others?
4. May wood be broken down mechanically?
5. Where can wood derivatives be used?
6. Is wood used for furniture?
7. Can artists use wood for making sculptures?
8. Are musical instruments made of wood?
9. Is sports equipment made of wood?
10. What did Italian scientists announce in January 2010?

IV) Соедините следующие слова.

building	products
wood	flooring
engineered	materials
laminate	wood
wooden	sculptures
delicate	instruments
musical	spoon
totem	properties
clock	color
acoustic	poles
decorative	tower
sports	sticks
hockey	equipment

V) Сделайте сообщения по следующим темам.

1. Расскажите о том, какие деревянные изделия используются в строительстве.
2. Расскажите о применении дерева в спортинвентаре.

Unit X. Woodworking projects and plans

Прочитайте текст

Woodworking is a technique of building, carving or generating anything using wood. Wooden items are noticed all over the place these days. If you want to enrich the appearance of a room in your property, then there is no doubt you can locate anything created of wood.

Right now woodworking tools are utilized most frequently to make furniture in the house. You will also see a variety of woodworking equipment at development websites. Most woodworking equipment is electrical power driven. Some of the frequent woodworking resources that are normally employed on

building web sites are chain saws, nail guns, rotary instruments, routers, biscuit jointer and sanders. A woodworking tool is utilized for cutting, polishing, carving, sanding and for quite a few other apps. Without having these woodworking tools you basically can not make wood products. All these resources are simply obtainable in market.

Before running these instruments you should have very good knowledge about how to use these resources. If you don't have appropriate expertise, it could lead to you damage and the finish consequence will search amusing. Normally competent personnel these as carpenters, train for years to a higher common to cope with instruments efficiently adequate to produce good quality products.

These resources are normally used to make goods such as cabinets, chairs, dining tables. And the greater good quality of wooden utilized and top rated craftsmanship, you can assume the cost to match!

It is always better to do woodworking with right woodworking plan. A woodworking project will involve finding out the specifications of the product, preparing programs and executing them. Provided below are some of the points concerned in woodworking projects.

The very first matter in woodworking projects is determining exactly what is expected. For this you will have to look at the diverse things the purpose for which the products is about to be applied. In addition, you nonetheless contemplate what capability will be essential what layout will be suitable, and so on.

The organizing is a quite important aspect of any woodworking tasks. For the duration of this, you must consider into account the desires, availability of time, income, and so on. All of them play an important role.

You must compose needs and the specs, with your motivation. Also sketching the whole product is a extremely useful issue in getting ready programs. Put together proper sketches of the plan. This sketch needs to have the measurements and also each part of the items.

The upcoming step following preparation of the approach will be, purchasing the resources, which you are likely to use. There is a great deal of wide variety of timber and wood products available for creating furniture. You ought to select what satisfies the needs for expense and power.

For woodworking projects, you will also want to acquire some resources. There is a great selection for the instruments as properly. Some are low cost while some are costly. Even though planning the options alone you really should make these programs that, you will not require using the expensive resources. Alternatively if you previously have some resources with you they may not have been used for fairly some time.

Then the upcoming step in woodworking jobs is their execution. This is the most exiting and the primary element of woodworking tasks. Excellent care is

expected whilst doing it. Any blunder while execution can be pricey. Do not try anything diverse from what you have provided in the options.

Right after this, the subsequent phase is supplying a correct end to the piece. For this, the end can alter the complete look of the furnishings. Picking an appropriate finish can totally transform the glimpse of the total piece, so select wisely!

Unit X

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. Are wooden items noticed all over the place?
2. What for are woodworking tools utilized?
3. Is wood used for making dining tables?
4. Should you do woodworking with right plan?
5. What will a woodworking project involve?
6. What is the first matter in woodworking project?
7. Is the organizing a quite important aspect of any woodworking tasks?
8. Are woodworking tools costly?
9. What is the upcoming step in woodworking jobs?
10. Should you select instruments basely?

IV)Соедините следующие слова.

woodworking	instruments
web	personnel
rotary	projects
competent	sites
good	aspect
important	programs
ready	quality
proper	resources
expensive	step
upcoming	sketches

V) Сделайте сообщения по следующим темам.

1. Расскажите о планировании работ по деревообработке.
2. Назовите инструменты, используемые при обработке дерева.

Unit XI. Woodworking machines

Прочитайте текст

A Woodworking machine is a machine that is intended to process wood. These machines are usually powered by electric motors and are used extensively in woodworking. Sometimes grinding machines (for grinding woodworking tools) are also considered a part of woodworking machinery.

Types of woodworking machinery

1) Artisanal and hobby machines

These machines are used both in small-scale commercial production of timber products and by hobbyists. Most of these machines may be used on solid timber and on composite products. Machines can be divided into the bigger stationary machines where the machine remains stationary while the material is moved over the machine, and hand-held power tools, where the tool is moved over the material.

Hand-held power tools:

– Biscuit joiner
– Domino jointer
– Chain saw
– Hand-held circular saw
– Electric drill
– Jig saw
– Miter saw
– Nail gun
– Hand-held electric plane
– Reciprocating saw
– Rotary tool
– Router
– Hand-held sanders, including belt sander, orbital sander, random orbit sander

2) Stationary machines:

– Bandsaw
– Combination machine
– Double side planer
– Drill press
– Drum sander
– Bench grinder
– Jointer
– Wood lathe

– Mortiser
– Panel saw
– Pin router
– Radial arm saw
– Scroll saw
– Spindle moulder (Wood shaper)
– Stationary sanders, including stroke sanders, oscillating spindle sander, belt sander, disc sander (and combination disc-belt sander).
– Table saw
– Tenoner
– Thicknesser or Thickness planer
– Round pole milling machine
– Round pole sanding machine

3) Panel Line Woodworking machines

These machines are used in large-scale manufacturing of cabinets and other wooden or panel products.

4) Panel surface processing

1.Panel dividing equipment, classified by number of beam, loading system, saw carriage speed;

2. Double end tenoner, classified by conveyor type

Rolling chain system conveyor speed 40 to 120 m/min

Sliding chain system conveyor speed 10 to 30 m/min

5) Panel edge processing equipment, classified by conveyor speed:

1. High speed edgebander conveyor speed >= 100 m/min
2. Heavy duty edgebander conveyor speed >= 24 m/min
3. Light duty edgebander conveyor speed < 20 m/min (i.e. 8, 12 or 16 m/min)

6) Panel boring equipment, classified by number of boring heads:

1. Single line boring machine
2. Multi line boring machine

7) Panel automatic packing equipment.

Unit XI

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is woodworking machine?
2. Are there machines powered by electric motors?
3. What types of woodworking machinery do you know?
4. Can you describe stationary machines?

5. Are there hand-held power tools?
6. What hand-held power tools do you know?
7. What are stationary machines?
8. Where are panel line woodworking machines used?
9. What is the speed of panel edge processing equipment?
10. What is the classification of panel boring equipment?

IV) Соедините следующие слова.

woodworking	motors
electric	production
commercial	machine
solid	products
composite	joiner
domino	timber
chain	gun
nail	tool
rotary	saw
drill	sander
drum	press
bench	router
pin	grinder
surface	speed
conveyor	processing

V) Сделайте сообщения по следующим темам.

1. Расскажите, какие инструменты используются для деревообработки.
2. Представьте классификацию деревообрабатывающих инструментов.

Unit XII. INSTALLATION OF EQUIPMENT

Прочитайте текст

Set-up and start-up of technical equipment is an important stage in the construction of a facility. Currently, there are many good companies on the market offering set-up services such as:

Job execution in any region during any season.

Arrangement of complex set-up works including electrical mains installation.

Analysis of previously performed work.

Maintenance training of company’s employees.

Supervision of works by foreign specialists.

Detachment of specialists to any location in the world for hardware disassembly and later installation.

Set-up of used equipment without technical documentation.

Manufacture of non-standard frameworks.

Installation of equipment of any degree of complexity.

Assembly of any additional equipment; preparing equipment for launch; readying equipment for production.

Warranty and post-warranty maintenance.

Innovative solutions.

Flexible payment plans.

The company may specifically focuses on the installation of wood processing equipment and possesses a solid experience in this sector.

Systems of aspiration

Aspiration is the «greatest feat» in ventilation systems. Quality planning, installation and inspection of such systems require tremendous theoretical expertise and practical experience.

Never entrust aspiration operations to people and companies without special expertise and experience.

The purpose of aspiration is to localize harmful emissions, that is, to prevent the transition of harmful emissions from their source into the air of the workspace and the surrounding environment.

The primary measure of effectiveness of an aspiration plant is the purification rate – how clean the air in the workspace and surrounding environment is of harmful substances.

Unit XII
Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What equipment is an important stage in the construction of a facility?
2. Is the analysis of previously performed work important?
3. Is maintenance training of companies employees necessary?
4. Is there supervision of works by foreign specialists?
5. What kinds of works does the installation of equipment include?
6. Is there warranty and post-warranty maintenance after job execution?
7. Should specialists take innovative solutions?
8. Are payment plans flexible?
9. Does installation of such systems require theoretical experience and practical experience?

10. What is the purpose of aspiration?

IV) Соедините следующие слова.

technical	stage
important	execution
job	equipment
electrical	specialists
company's	documentation
foreign	mains
technical	employees
warranty	solutions
innovative	maintenance
solid	emissions
payment	plans
harmful	experience

V) Сделайте сообщения по следующим темам.

1. Установка технического оборудования – важный этап в строительстве.

2. Очистка воздуха в рабочих помещениях.

Unit XIII. Furniture

Прочитайте текст

Furniture is the mass noun for the movable objects intended to support various human activities such as seating and sleeping. Furniture is also used to hold objects at a convenient height for work (as horizontal surfaces above the ground), or to store things.

Furniture can be a product of design and is considered a form of decorative art. In addition to furniture's functional role, it can serve a symbolic or religious purpose. Furniture can be made from many materials, including metal, plastic, and wood. Furniture can be made using a variety of woodworking joints which often reflect the local culture.

History

Furniture in fashion has been a part of the human experience since the development of non-nomadic cultures. Evidence of furniture survives from the Neolithic Period and later in antiquity in the form of paintings, such as the wall Murals discovered at Pompeii; sculpture and examples have been excavated in Egypt, in modern day Turkey.

– Neolithic period

Fig. 1
Skara Brae house Orkney Scotland evidence of home furnishings i.e. a dresser containing shelves

A range of unique stone furniture has been excavated in Skara Brae, a Neolithic village located in Orkney. The site dates from 3100–2500 BC and due to a shortage of wood in Orkney, the people of Skara Brae were forced to build with stone a readily available material that could be worked easily and turned into items for use within the household. Each house shows a high degree of sophistication and was equipped with an extensive assortment of stone furniture, ranging from cupboards, dressers and beds to shelves, stone seats, and limpet tanks. The stone dresser was regarded as the most important as it symbolically faces the entrance in each house and is therefore the first item seen when entering, perhaps displaying symbolic objects, including decorative artwork such as several Neolithic Carved Stone Balls also found at the site.

– Classical world

Ancient furniture has been excavated from the 8th-century BC Phrygian tumulus, the Midas Mound, in Gordion, Turkey. Pieces found here include tables and inlaid serving stands. There are also surviving works from the 9th-8th-century BC Assyrian palace of Nimrud. Recovered Ancient Egyptian furniture includes 3rd millennium BC beds discovered at Tarkhan as place for the deceased, a. c. 2550 BC gilded bed and to chairs from the tomb of Queen Hetepheres, and many examples (boxes, beds, chairs) from c. 1550 to 1200 BC from Thebes. Ancient Greek furniture design beginning in the 2nd millennium BC, including beds and the klismos chair, is preserved not only by extant works, but by images on Greek vases. The 1738 and 1748 excavations of Herculaneum and Pompeii revealed Roman furniture, preserved in the ashes of the 79 A.D. eruption of Vesuvius, to the eighteenth century.

– Early modern Europe

Fig. 2
Florentine cassone from the 15th century

The furniture of the Middle Ages was usually heavy, oak, and ornamented with carved designs. Along with the other arts, the Italian Renaissance of the fourteenth and fifteenth century marked a rebirth in design, often inspired by the Greco-Roman tradition. A similar explosion of design and renaissance of culture in general, occurred in Northern Europe, starting in the fifteenth century. The seventeenth century, in both Southern and Northern Europe, was characterized by opulent, often gilded Baroque designs that frequently incorporated a profusion of vegetal and scrolling ornament. Starting in the eighteenth century, furniture designs began to develop more rapidly. Although there were some styles that belonged primarily to one nation, such as Palladianism in Great Britain or Louis Quinze in French furniture, others, such as the Rococo and Neoclassicism were perpetuated throughout Western Europe.

– 19th century

The nineteenth century is usually defined by concurrent revival styles, including Gothic, Neoclassicism, and Rococo. The design reforms of the late century introduced the Aesthetic movement and the Arts and Crafts movement.

– Early North American

This design was in many ways rooted in necessity and emphasizes both form and materials. Early American chairs and tables are often constructed with turned spindles and chair backs often constructed with steaming to bend the wood. Wood choices tend to be deciduous hardwoods with a particular emphasis on the wood of edible or fruit bearing trees such as Cherry or Walnut.

– Modernism

Fig. 3
Red and Blue Chair (1917), designed by Gerrit Rietveld

The first three-quarters of the twentieth century are often seen as the march towards Modernism. Born from the Bauhaus and Art Deco/Streamline styles came the post WWII "Mid-Century Modern" style using materials developed during the war including lamenated plywood, plastics and fiberglass. Transitional furniture is intended to fill a place between Traditional and Modern tastes.

– Ecodesign

Fig. 4
Stainless Steel Table with FSC Teca Wood - Brazil Ecodesign

With the great efforts from people, governments and companies, in order to manufacture products with more sustainability, there is a new line of furniture design that is based on environmentally friendly design, that is called Ecodesign and its use is increasing year after year.

– Contemporary

One unique outgrowth of post-modern furniture design is Live edge, heralding a return to natural shapes and textures within the home.

– Asian history

Fig. 5
Sendai-dansu for kimono has the elaborate ironwork, handles on side for transportation, and lockable compartment.

Asian furniture has a quite distinct history. The traditions out of India, China, Pakistan, Indonesia (Bali and Java) and Japan are some of the best known, but places such as Korea, Mongolia, and the countries of South East Asia have unique facets of their own.

The use of uncarved wood and bamboo and the use of heavy lacquers are well known Chinese styles. It is worth noting that China has an incredibly rich and diverse history, and architecture, religion, furniture and culture in general can vary incredibly from one dynasty to the next.

Traditional Japanese furniture is well known for its minimalist style, extensive use of wood, high-quality craftsmanship and reliance on wood grain instead of painting or thick lacquer. Japanese chests are known as Tansu, known for elaborate decorative iron work, and are some of the most sought-after of Japanese antiques. The antiques available generally date back to the Tokugawa era and Meiji era.

Types of wood to make furniture

All different types of woods have unique signature marks, that can help in easy identification of the type. There are hardwoods and softwoods. Both are used in furniture manufacturing, and each has their own specific uses.

Unit XIII

Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is furniture?
2. What for is furniture also used?
3. Can furniture be a product of design?
4. Can furniture serve a symbolic or religious purpose?
5. What materials are used for making furniture?
6. What ancient furniture did the excavation reveal?
7. How did the furniture of middle ages look like?
8. When did furniture designs begin to develop more rapidly?
9. What is the general characteristic of Chinese styles?
10. What is the characteristic feature of traditional Japanese furniture?

IV)Соедините следующие слова.

movable	activities
human	height
convenient	objects
decorative	role
functional	culture
local	art
stone	ornament
scrolling	designs
furniture	movement
aesthetic	furniture
chair	plywood
laminated	taste
modern	back
stainless	shape
natural	steel

V) Сделайте сообщения по следующим темам.

1. Расскажите, что представляет собой мебель и для чего она используется.
2. Расскажите о мебели древности.

Unit XIV. Furniture classification

Прочитайте текст

By Usages:

– Living Room

A living room, also known as sitting room, lounge room or lounge, is a room for entertaining guests, reading, watching TV or other activities. The term front room can also be used to describe a living room, because in many homes the living room is at the very front.

In modern homes and apartments, the living room has replaced the old-fashioned front parlor. In the 19th century, the front parlor was the room in the house used for formal social events, including where the recently deceased were laid out before their funeral. The term marks the twentieth-century effort of architects and builders to strip the parlor of its burial and mourning associations. This room was relabeled with the more affirmative term "living room" in the 20th century. (Nazi political concept)

Furniture in living room includes:

- sofa;
- sectional;
- loveseat;
- sleeper;
- chair;
- recliner;
- chaise;
- ottoman;
- futon;
- sofa table;
- coffee table;
- TV console;
- wall unit;
- media cabinet;
- computer cabinet.

– Bedroom

A bedroom is a private room where people usually sleep for the night or relax during the day.

Many houses in North America, Australia and Europe have at least two bedrooms — usually a master bedroom (dedicated to the heads of the household, such as a husband and wife) and one or more bedrooms for either the children or guests.

In some jurisdictions there are basic features (such as a closet and a «means of egress») which a room must have in order to be qualified as a bedroom. In many states, such as Alaska, bedrooms are not required to have closets and must

instead meet minimum size requirements. Nevertheless, some real estate agents may stretch the definition when listing a home for sale.

Furniture and other items in bedrooms vary greatly, depending on taste and local tradition.

Furniture in bedroom includes:

- Bed;
- Dresser;
- Armoire;
- Chest;
- Cedar Chest;
- Dresser Mirror;
- Nightstand;
- Cheval Mirror;
- Jewelry Armoire.

– Dining Room

A dining room is a room for consuming food. In modern times it is usually adjacent to the kitchen for convenience in serving, although in medieval times it was often on an entirely different floor level. Historically the dining room is furnished with a rather large dining table and a number of dining chairs; the most common table shape is generally rectangular with two armed end chairs and an even number of un-armed side chairs along the long sides.

Furniture in dining room includes:

- Arm Chair;
- Side Chair;
- China Cabinet;
- Buffet Server;
- Dining Table.

– Home Office

An office is generally a room or other area in which people work. The home office is a modern idea that people can work or read at home.

Furniture in home office includes:

- Computer Furniture;
- Desk & Credenza;
- Office Chair & Seating;
- Office Set;
- Bookcase;
- File Cabinet;
- Office Table.

By Materials:

1) Wooden Furniture;
2) Bamboo Furniture;

3) Panel Furniture;
4) Upholstered Furniture;
5) Wicker or Rattan Furniture;
6) Metal Furniture · Plastic Furniture;
7) Glass Furniture.

By Styles:

There are several different types of furniture available today to suit diverse styles and tastes:

- Contemporary
- Traditional
- Urban
- Country and Cottage
- Transitional
- Eclectic
- Rustic
- Amish
- Art Deco
- Colonial

Unit XIV
Exercises

I) Найдите в тексте интернациональные слова и переведите их.

II) Найдите в тексте субстантивные словосочетания, выпишите их и переведите.

III)Дайте ответы на следующие вопросы:

1. What is a living room?
2. What has the living room replaced?
3. What was the front parlor used for?
4. What does furniture in living room include?
5. What is a bedroom?
6. What furniture is used in bedroom?
7. What is a dining room intended for?
8. What furniture is used in the dining room?
9. What kind of room is an office?
10. What furniture does home office include?

IV)Соедините следующие слова.

living	parlor
front	room
sofa	cabinet
computer	table
real	mirror

dresser	estate
floor	level

V) Сделайте сообщения по следующим темам.

1. Расскажите, что представляет собой гостиная.
2. Расскажите о мебели в гостиной.
3. Расскажите о мебели в спальне и офисе.

Unit XV. Vocabulary exercises

I. Выучите следующие слова.

Fibrous tissue – волокнистая ткань
Strict sense – строгий смысл
Stem – ствол
Support – поддержка
Enabling – позволяющий
Comparable – аналогичный
Properties – свойства
Wood chips – древесная стружка
Fiber – волокно
Purpose – цель
Fuel – топливо
Tool – инструмент
Weapon – оружие
Yield – получают
Woody layers – древесные слои
Branches – ветви
Roots – корни
Cells – клетки
Surface – поверхность
Growth rings – древесные кольца
Annual rings – годичные кольца
Wide – широкий
Outer – внешний
Knots – сучки
Imperfection – дефект
Plank – доска
Longitudinally sawn – продольный распил
Bud – почка
Grading – сортировка
Lumber – пиломатериалы
Structural timber – строительные лесоматериалы
Soundness – прочность

Firmness – твердость
Cracking – трещина
Heartwood – ядро
Sapwood - заболонь древесины
Hard – лиственный
Soft – хвойный
Density – плотность
Resinous – смолистый
Fat lighter – прочность
Rot – гниль
Flammable – легковоспламеняющийся
Stump – пень
Dug – выкопанный
Cut – вырубка
Ring-porous species – кольцесосудистые породы
Vessels – сосуды
Cross-section – сечение
Walnut – орех
Rays – лучи
Diffuse-porous –рассеяннососудистые
Water-content – влагосодержание
Church – церковь
Joint – соединение
The protoplasmic contents of the cells – химически связанная вода
Free water in the cell cavities – свободная вода в полостях клеток
Woodstove – дровяная печь
Fireplace – камин
Ambience – уют
Wood flooring – деревянный настил
Framing – каркас
Studs – стойки
Plywood – фанера
Oriented stand boards – ориентированные стружечные плиты
Exterior wall studs – стойки наружной стены
Members – элементы
Consist – составлять
Lintels – перемычки
Headers – балки-перемычки

II. Переведите с русского языка на английский следующие предложения.

1. Древесина – это твердая волокнистая ткань.
2. Древесину получают из деревьев разных пород.
3. Там, где происходят сезонные изменения, дерево имеет годичные кольца.
4. Сучок – это дефект древесины.
5. Древесина красного дерева имеет красный цвет.

6. Структура твердой древесины является более сложной.
7. В России, в Кижах церкви построены полностью из дерева.
8. Древесина используется в качестве топлива в течение многих лет.
9. Древесина является важным строительным материалом.
10. Многие музыкальные инструменты изготавливаются из дерева.
11. Спортивный инвентарь, например, лыжи, хоккейные палки и другое оборудование изготавливались из дерева.
12. Дерево также используется для изготовления мебели.

Part II. NOTABLE WOODWORKERS

Text 1. Alvar Aalto

Alvar Aalto portrayed on a stamp published in 1976.

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

span – размах, промежуток; охватывать
onward – вперед, далее
glassware – стеклянная посуда
postmistress – начальник почтового отделения
to enrol – зачислять, записывать
to accomplish – завершать, выполнять, совершать
to seal – запечатывать, заделывать, предрешать, заключать
manor – усадебный дом
chief constable – начальник полиции
ridge – выступ; ridged – остроконечный
to epitomize – воплощать
proposal – предложение
undulating – холмистый
to bend – сгибаться, наклоняться, гнуться, изгибаться
plywood – фанера
spatial – пространственный

purist – пурист
daring – дерзкий, смелый
kidney – почка
adjacent – смежный
rustic – деревенский
to allude – намекать, ссылаться, упоминать
vernacular – национальный язык, местный диалект
dormitory – общая спальня, общежитие
to lean – наклоняться, прислоняться, опираться, склоняться
void – пустота, пробел; недействительный
clad – облаченный (в)
grid – сетка, сеть, решетка
idiosyncratic – индивидуальный, особенный
beech – бук
rough-hewn – неотесанный, некультурный
birch – береза
rod – прут, палка
withe – жгут, ивовый прут
to acclaim – приветствовать, провозглашать
to cope with – справляться с
to abuse – злоупотреблять, ругать, оскорблять
eponym – эпоним
centenary – столетие
amalgamation – объединение, слияние

2. Прочитайте и переведите текст.

Hugo Alvar Henrik Aalto (3 February 1898 – 11 May 1976) was a Finnish architect and designer, as well as a sculptor and painter. His work includes architecture, furniture, textiles and glassware. Aalto's early career runs in parallel with the rapid economic growth and industrialization of Finland during the first half of the twentieth century and many of his clients were industrialists; among these were the Ahlström-Gullichsen family. The span of his career, from the 1920s to the 1970s, is reflected in the styles of his work, ranging from Nordic Classicism of the early work, to a rational International Style Modernism during the 1930s to a more organic modernist style from the 1940s onwards. What is typical for his entire career, however, is a concern for design as a Gesamtkunstwerk, a *total work of art*; whereby he – together with his first wife Aino Aalto – would design not just the building, but give special treatments to the interior surfaces and design furniture, lamps, and furnishings and glassware. The Alvar Aalto Museum, designed by Aalto himself, is located in what is regarded as his home city Jyväskylä.

Life

Alvar and Elissa Aalto in the 1950s

The signature of Alvar Aalto on the wall of Jyväskylä's theatre building.

Alvar Aalto Studio, Helsinki (1954–56)

Alvar Aalto Studio, Helsinki (1954–56)

Main Building of the Jyväskylä University (1955)

Auditorium of the Viipuri Municipal Library in the 1930s.

Hugo Alvar Henrik Aalto was born in Kuortane, Finland. His father, Johan Henrik Aalto, was a Finnish-speaking land-surveyor and his mother, Selly (Selma) Matilda (née Hackstedt) was a Swedish-speaking postmistress. When Aalto was 5 years old, the family moved to Alajärvi, and from there to Jyväskylä in Central Finland. Aalto studied at the Jyväskylä Lyceum school, completing his basic education in 1916. In 1916 he then enrolled to study architecture at the Helsinki University of Technology. His studies were interrupted by the Finnish War of Liberation, which he fought in. He fought on the side of the *White Army* and fought at the Batttle of Lankiphja and the Battle of Tampere. He built his first piece while still a student, a house for his parents, at Alajärvi. Afterwards, he continued his education, graduating in 1921.

After graduating, Alvar toured Sweden and Western Europe for two years, and for a period of time worked at the Office of Projects in Göteborg, Sweden. In 1922, he accomplished his first independent piece at the Industrial Exposition in Tampere. In 1923 he returned to Jyväskylä, where he opened his first architectural office. Jyväskylä would become a notable city for his architecture, with more buildings designed by him than in any other city. In 1925, he married architect Aino Marsio. Their honeymoon journey to Italy sealed an intellectual bond with the culture of the Mediterranean region that was to remain important to Aalto for the rest of his life. The Aaltos moved their office to Turku in 1927, and started collaborating with architect Erik Bryggman. The office moved again in 1933 to Helsinki.

The Aaltos designed and built a joint house-office (1935–36) for themselves in Munkkiniemi, Helsinki, but later (1954–56) had a purpose-built office built in the same neighbourhood - the latter building nowadays houses the Alvar Aalto Academy. Aino and Alvar Aalto had 2 children, a daughter Johanna "Hanni" Alanen, born Aalto, 1925, and a son Hamilkar Aalto, 1928. In 1926 the young Aaltos designed and had built a summer cottage in Alajärvi, Villa Flora. In 1938, he visited the United States. Aino Aalto died of cancer in 1949. In 1952 Aalto married architect Elissa Mäkiniemi (died 1994), who had been working as an assistant in his office. In 1952 Aalto designed and had built a summer

cottage, the so-called Experimental House, for himself and his new wife in Muuratsalo in Central Finland. Alvar Aalto died on 11 May 1976, in Helsinki.

Career

Early career: classicism

Although he is sometimes regarded as among the first and most influential architects of Nordic modernism, a closer examination of the historical facts reveals that Aalto (while a pioneer in Finland) closely followed and had personal contacts with other pioneers in Sweden, in particular Gunnar Asplund and Sven Markelius. What they and many others of that generation in the Nordic countries had in common was that they started off from a classical education and were first designing in the so-called Nordic Classicism style – a style that had been a reaction to the previous dominant style of National Romanticism– before moving, in the late 1920s, towards Modernism. On returning to Jyväskylä in 1923 to establish his own architect's office, Aalto busied himself with a number of single-family homes, all designed in the classical style, such as the manor-like house for his mother's cousin Terho Manner in Töysa in 1923, a summer villa for the Jyväskylä chief constable in 1923 and the Alatalo farmhouse in Tarvaala in 1924. During this period he also completed his first public buildings, the Jyväskylä Workers' Club in 1925, the Jyväskylä Defence Corps building in 1926 and the Seinajoki Defence Corp building in 1924-29. Aalto also entered several architectural competitions for prestigious state public buildings, both in Finland and abroad, including the two competitions for the Finnish Parliamentary building in 1923 and 1924, the extension to the University of Helsinki in 1931, and the building to house the League of Nations in Geneva, Switzerland, in 1926-27. Furthermore, this was the period when Aalto was most prolific in his writings, with articles for professional journals and newspapers. Among his most well-known essays from this period are "Urban culture" 1924), "Temple baths on Jyväskylä ridge" (1925), "Abbé Coignard's sermon" (1925), and "From doorstep to living room" (1926).

Villa Mairea in Noormarkku

Detail of Baker House facade on the Charles River

Auditorium of the University of Technology, Helsinki, Finland (1949-66)

House of Culture, Helsinki

Finlandia Hall (1962–71)

The Aalto-Theater opera house in Essen, Germany

Early career: functionalism

The shift in Aalto's design approach from classicism to modernism is epitomized by the Viipuri Library (1927–35), which went through a transformation from an originally classical competition entry proposal to the completed high-modernist building. Yet his humanistic approach is in full evidence in the library: the interior displays natural materials, warm colours, and undulating lines. Due to problems over financing and a change of site, the Viipuri Library project lasted eight years, and during that same time he also designed the Turun Sanomat Building (1929–30) and Paimio Sanatorium (1929–32). Thus, the Turun Sanomat Building first heralded Aalto's move towards modernism, and this was then carried forward both in the Paimio Sanatorium and in the on-going design for the library. Although the Turun Sanomat Building and Paimio Sanatorium are comparatively pure modernist works, they too carried the seeds of his questioning of such an orthodox modernist approach and a move to a more daring, synthetic attitude. It has been said that his work on two of these three buildings (not the Viipuri Library) showed similarities to Walter Gropius' style, in particular his work on the Bauhaus school of design in Dessau. His work on the Viipuri building started to show his individuality in a departure from the European norms.

During the 20's he also focused a lot of his energy on his furniture designs, in particular his bent plywood chairs that were distributed and manufactured by Artek, starting in 1935.

Through Sven Markelius, Aalto became a member of the Congres International d'Architecture Moderne (CIAM), attending the second congress in Frankfurt in 1929 and the fourth congress in Athens in 1933, where he established a close friendship with László Moholy-Nagy, Sigfried Giedion and Philip Morton Shand. It was during this time that he followed closely the work of the main driving force behind the new modernism, Le Corbusier, and visited him in his Paris office several times in the following years.

It was not until the completion of the Paimio Sanatorium (1932) and Viipuri Library (1935) that Aalto first achieved world attention in architecture. His reputation grew in the USA following the critical reception of his design for the Finnish Pavilion at the 1939 New York World's Fair, described by Frank Lloyd Wright as a "work of genius". It could be said that Aalto's international reputation was sealed with his inclusion in the second edition of Sigfried Giedion's influential book on Modernist architecture, *Space, Time and Architecture: The growth of a new tradition* (1949), in which Aalto received more attention than any other Modernist architect, including Le Corbusier. In his analysis of Aalto, Giedion gave primacy to qualities that depart from direct

functionality, such as mood, atmosphere, intensity of life and even national characteristics, declaring that "Finland is with Aalto wherever he goes".

In 1938, the Museum of Modern Art, in New York organized an exhibit that eventually went on a 12-city tour. Afterwards he visited America for the first time and gave a series of lectures at Yale.

Mid career: experimentation

During the 30's Alvar spent a lot of time experimenting with laminated wood, making sculptures, and abstract reliefs, characterized by irregular curved forms. Utilizing this knowledge he was able to solve technical problems concerning the flexibility of wood and also of working out spatial issues in his designs. Aalto's early experiments with wood and his move away from a purist modernism would be tested in built form with the commission to design Villa Mairea (1939) in Noormarkku, the luxury home of the young industrialist couple Harry and Maire Gullichsen. It was Maire Gullichsen who acted as the main client, and she worked closely not only with Alvar but also Aino Aalto on the design, inspiring them to be more daring in their work. The original design was to include a private art gallery, but this was never built. The building forms a U-shape around a central inner "garden" the central feature of which is a kidney-shaped swimming pool. Adjacent to the pool is a sauna executed in a rustic style, alluding to both Finnish and Japanese precedents. The design of the house is a synthesis of numerous stylistic influences, from traditional Finnish vernacular to purist modernism, as well as influences from English and Japanese architecture. While the house is clearly intended for a wealthy family, Aalto nevertheless argued that it was also an experiment that would prove useful in the design of mass housing. It created zones for different activities within the structure.

His increased fame led to offers and commissions outside Finland. In 1941 he accepted an invitation as a visiting professor to MIT, in the USA. This was during the Second World War, and he involved his students in designing low-cost, small-scale housing for the reconstruction of war-torn Finland. While teaching at MIT, Aalto also designed the student dormitory, Baker House, completed in 1948. The dormitory lay along the Charles River and its undulating form provided maximum view and ventilation for each resident. This building was the first building of Aalto's redbrick period. Originally used in Baker House to signify the Ivy League university tradition, on his return to Finland Aalto used it in a number of key buildings, in particular, in several of the buildings in the new Helsinki University of Technology campus (starting in 1950), Säynätsalo Town Hall (1952), Helsinki Pensions Institute (1954), Helsinki House of Culture (1958), as well as in his own summer house, the so-called Experimental House in Muuratsalo (1957).

In the 50's he immersed himself in his sculpting, be it with bronze, marble, or mixed media. This paid off as he produced an outstanding piece for the memorial of the Battle of Suomussalmi (1960), located on the battlefield. It consists of a leaning bronze pillrr on a pedestal.

Mature career: monumentalism

The early 1960s and 1970s (up until his death in 1976) were marked by key works in Helsinki, in particular the huge town plan for the void in centre of Helsinki adjacent to Töölö Bay and the vast railway yards, and marked on the edges by significant buildings such as the National Museum and the main railway station, both by Eliel Saarinen. In his town plan Aalto proposed a line of separate marble-clad buildings fronting the bay which would house various cultural institutions, including a concert hall, opera, museum of architecture and headquarters for the Finnish Academy. The scheme also extended into the Kamppi district with a series of tall office blocks. Aalto first presented his scheme in 1961, but it went through various modifications during the early 1960s. Only two fragments of the overall plan were ever realized: the Finlandia Hall concert hall (1976) fronting Töölö Bay, and an office building in the Kamppi district for the Helsinki Electricity Company (1975). The Miesian formal language of geometric grids employed in the buildings was also used by Aalto for other sites in Helsinki, including the Enso-Gutzeit building (1962), the Academic Bookstore (1962) and the SYP Bank building (1969).

Following Aalto's death in 1976 his office continued to operate under the direction of his widow, Elissa, completing works already to some extent designed. These works include the Jyväskylä City Theatre and Essen opera house. Since the death of Elissa Aalto the office has continued to operate as the Alvar Aalto Academy, giving advice on the restoration of Aalto buildings and organising the vast archive material.

Awards

Aalto's awards included the Royal Gold Medal for Architecture from the Royal Institute of British Architects (1957) and the Gold Medal from the American Institute of Architects (1963). He was elected a Foreign Honorary Member of the American Academy of Arts and Sciences in 1957. He also was a member of the Academy of Finland, and was its president from 1963 to 1968. From 1925 to 1956 he was a member of the Congrès International d'Architecture Moderne.

Works

Aalto's career spans the changes in style from (Nordic Classicism) to purist International Style Modernism to a more personal, synthetic and idiosyncratic Modernism. Aalto's wide field of design activity ranges from the large scale of city planning and architecture to interior design, furniture and glassware design

and painting. It has been estimated that during his entire career Aalto designed over 500 individual buildings, approximately 300 of which were built, the vast majority of which are in Finland. He also has a few buildings in France, Germany, Italy and the USA.

Aalto's work with wood, was influenced by early Scandinavian architects; however, his experiments and departure from the norm brought attention to his ability to make wood do things not previously done. His techniques in the say he cut the beech tree, for example, and also his ability to use plywood as structural and aesthetic. Other examples include the rough-hewn vertical placement of logs at his pavilion at the Lapua expo, looking similar to a medieval barricade, at the orchestra platform at turku and the Paris expo at the World Fair, he used varying sizes and shapes of planks. Also at Paris and at Vill Mairea he utilized birch boarding in a vertical arrangement. Also his famous undulating walls and ceilings made of red pine. In his roofing, he created massive spans (155 foot at the covered statium at Otaniiemi) all without tie rods. His stairway at Villa Mairea, he evokes feelings of a natural forest by binding beech wood with withes into columns.

Aalto claimed that his paintings were not made as individual artworks but as part of his process of architectural design, and many of his small-scale "sculptural" experiments with wood led to later larger architectural details and forms. These experiments also led to a number of patents: for example, he invented a new form of laminated bent-plywood furniture in 1932. His experimental method had been influenced by his meetings with various members of the Bauhaus design school, especially László Moholy-Nagy, whom he first met in 1930. Aalto's furniture was exhibited in London in 1935, to great critical acclaim, and to cope with the consumer demand Aalto, together with his wife Aino, Maire Gullichsen and Nils-Gustav Hahl founded the company Artek that same year. Aalto glassware (Aino as well as Alvar) is manufactured by Iittala. Aalto was one of the first architects outside of Germany, France, and Holland to master modern architecture.

Aalto's 'High Stool' and 'Stool E60' (manufactured by Artek) are currently used in Apple stores across the world to serve as seating for customers. Finished in black lacquer, the stools are used to seat customers at the 'Genius Bar' and also in other areas of the store at times when seating is required for a product workshop or special event.

Aalto was influential in bringing modern art to the Finnish people, in particular the work of his friends, Alexander Milne Calder and Fernand Léger.

Significant buildings

KUNSTEN Museum of Modern Art Aalborg, Denmark (1958–72)

Table and chairs designed by Alvar Aalto

Tea cart (tea trolley)

Armchair 400 with reindeer fur

Aalto vase

Quotes

- "God created paper for the purpose of drawing architecture on it. Everything else is at least for me an abuse of paper." Alvar Aalto, *Sketches*, 1978.

- "We should work for simple, good, undecorated things" and he continues, "but things which are in harmony with the human being and organically suited to the little man in the street." Alvar Aalto, speech in London 1957.

Memorials

Aalto has been commemorated in a number of ways:

- Alvar Aalto is the eponym of the Alvar Aalto Medal, now considered one of world architecture's most prestigious awards.

- Aalto was featured in the 50 mk note in the last series of the Finnish markka (before its replacement by the Euro in 2002).

- The centenary of Aalto's birth in 1998 was marked in Finland not only by several books and exhibitions but also by the promotion of specially bottled red and white Aalto Wine and a specially-designed cup-cake.

- In the year of his death, 1976, Aalto was commemorated on a Finnish postage stamp.

- Aalto University, a new Finnish university (an amalgamation of Helsinki University of Technology, Helsinki School of Economics and TaiK) established in 2010, is named after Alvar Aalto.

- An Alvar Aallon katu (Alvar Aalto Street) can be found in three different Finnish cities: Jyväskylä, Oulu and Seinäjoki.

3. Ответьте на вопросы по тексту.

1. Where was Hugo Alvar Henrik Aalto born ?
2. What is Alvar Aalto famous for ?

3. What can you say about the styles of his work?
4. What is typical for his entire career ?
5. What can you say about his family ?
6. Where did Aalto study ?
7. What can you say about his early career ?
8. During the 30's Alvar spent a lot of time experimenting with laminated wood, making sculptures, and abstract reliefs, characterized by irregular curved forms, didn't he ?
9. What can you say about his awards ?
10. What can you say about Aalto's work with wood ?

Text 2. Norm Abram

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

to integrate – интегрировать, объединяться
barn – амбар, сарай
scrap – клочок, лоскуток; драка, стычка
pile – куча, груда, свая
rundown – сокращение
crew – экипаж, команда, бригада
fixture – оборудование
to launch – спускать, начинать, предпринимать, выпускать, запускать
spin-off – побочный результат
showcase – витрина, показательный пример
commencement – начало; торжественное вручение дипломов
renown – слава
commitment – преданность, обязательство
steadfast – стойкий, твердый
kayak – каяк
plaid – шотландтка (ткань)
sitcom – комедия положений

2. Прочитайте и переведите текст.

Norman L. "Norm" Abram (born October 3, 1949 in Woonsocket, Rhode Island) is an American carpenter known for his work on the PBS television programs *This Old House* and *The New Yankee Workshop*. He is referred to on these shows as a "master carpenter".

Abram was born in Woonsocket, Rhode Island and raised in Milford, Massachusetts. He attended high school in Milford and studied mechanical engineering and business administration at the University of Massachusetts Amherst, where he became a brother of the Pi Lambda Phi fraternity. After

college, Abram worked for three years as a site supervisor for a multimillion-dollar New England-based construction firm. In 1976, Abram then went into business for himself, founding the general contracting firm Integrated Structures Inc. In 1979, Abram took a construction job building a small barn in the backyard of the television producer Russell Morash, the creator of public television's *This Old House*. Impressed by Abram's small scrap pile and efficient work habits, Morash invited Abram to help with the renovation of a rundown Victorian house in Boston's historic Dorchester section, with a WGBH camera crew recording the process for the first *This Old House* project with host Bob Vila. Morash then approached Abram with the idea of Norm the carpenter appearing as a regular on the *This Old House series*, and Norm has been a fixture on the show ever since. In 1988, Russell Morash planned to launch a spinoff of *This Old House* called *The New Yankee Workshop*, and he needed a convenient place to videotape so they used the shop in the small barn that Abram built in 1979 in Morash's backyard. The shop's layout and equipment were mostly Abram's preferences. *The New Yankee Workshop* first aired in 1989 with Abram as the host. *The New Yankee Workshop* showcased a furniture or other project over the course of one or more episodes, and emphasized the use of power tools and equipment. The show aired for 21 seasons on PBS.

Norm Abram has authored eight books about carpentry: *Ask Norm*, *The New Yankee Workshop*, *Classics From The New Yankee Workshop*, *Mostly Shaker From The New Yankee Workshop*, *Outdoor Projects From The New Yankee Workshop*, *Norm Abram's New House*, *Measure Twice, Cut Once*, and *The New Yankee Workshop Kids' Stuff*. He has also contributed to *Complete Remodeling* and *Complete Landscaping*, both published in 2004 by This Old House Books in conjunction with Sunset Books. Abram also serves on the editorial board of *This Old House* magazine, published by This Old House Ventures, Inc., also authoring the popular column, "Norm's Notebook." Abram is also on the board of trustees of Old Sturbridge Village in Sturbridge, Massachusetts, and delivered the 2001 commencement speech at The North Bennet Street School in Boston, which is renowned for its commitment to teaching craftsmanship. In a playful turn with his celebrity, Abram voiced the character of himself in the *Freakazoid!* episode "Normadeus". He had also appeared on *Between the Lions* and twice on *Where in the World is Carmen Sandiego?* (two WGBH programs); and starred in a series of Foot Locker commercials titled "House of Hoops". Norm also was on *Fetch! With Ruff Ruffman* on the episode "This Old... Lemonade Stand". He also appeared in 2010 on an episode of the Food Network show "Ace of Cakes" titled "Indy, Ice and Improve". The American Academy of Ophthalmology awarded Norm Abram its first ever Eye Smart Distinguished Service Award on April 23, 2009. The award was presented for "his steadfast commitment to safety and the prevention of eye injuries."

Abram lives with his wife, Elise, in a custom modified-classic two-story Colonial, timber-framed, home that he built in Carlisle, Massachusetts. They enjoy cooking and entertaining, visiting art galleries and museums, as well as boating, fishing, and kayaking. Norm enjoys listening to music of various genres ranging from Jazz to Blues, and appreciates the works of various artists, such as Bruce Springsteen and Paul McCartney. Norm enjoys following the Boston Red Sox, and occasionally catches a couple home games per year at New England's beloved Fenway Park. His fondness of plaid shirts is well-known and at times parodied, a prime example being the character Al Borland from the 1991-'99 ABC sitcom *Home Improvement*.

Near the beginning of each episode of *The New Yankee Workshop*, Abram recites a standard monologue about safety. The exact wording has varied over the years, but most of the time it is substantially as follows:

"Before we use any power tools, let's take a moment to talk about shop safety. Be sure to read, understand, and follow all the safety rules that come with your power tools. Knowing how to use your power tools properly will greatly reduce the risk of personal injury. And remember this: there is no more important safety rule than to wear these — safety glasses." (occasionally added) "And also hearing protection when necessary."

3. Ответьте на вопросы по тексту.

1. Norm Abram is an American carpenter, isn't he ?
2. What is he famous for ?
3. What can you say about Abram's early life and education ?
4. Norm Abram has authored eight books about carpentry, hasn't he ? Can you name some of them ?
5. What can you say about his awards and recognition ?

Text 3. John Boson

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

carver – резчик
to assure – обеспечивать
apprenticeship – ученичество, срок учения
secular – светский, мирской
receipts – денежные поступления, платежи
gilt – позолота

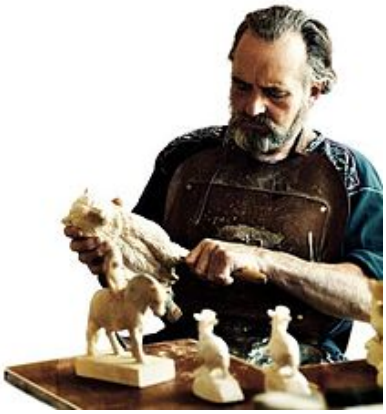
2. Прочитайте и переведите текст.

John Boson was a cabinet maker and carver whose work is associated with that of William Kent. It is said that if he had not died at such a relatively young age then his place would have been assured in the history of furniture making in the United Kingdom. He was born around the year 1705 and it is most likely that he learned his trade and served his apprenticeship near the naval shipyards of Deptford, for by the 1720s he had a yard and workshop in Greenwich. His name first appeared as that of a carver when he worked on St. George's Church, Bloomsbury in London. In 1725 his first domestic work is recorded when he made carvings for 4 St James's Square, London. He was at the same time one of the craftsmen employed to work on the Fifty New Churches designed by Sir Christopher Wren. He did not neglect the secular and domestic market and he is recorded as a worker at East India House, Leadenhall Street in 1730; this time with a partner named John How. He is well known for his carved chimney-pieces and there are good examples in the 'Great Room' at Baylies, Stoke Poges, Buckinghamshire and another example at Sir Michael Newton's seat of Culverthorpe, Lincolnshire. The 1730s were the years of Boson's greatest success and it was during this time that he regularly carried out work for Frederick, Prince of Wales at his houses at Leicester Fields, Kew Palace, and Cliveden, Buckinghamshire. There are very few pieces that are recorded as being the work of John Boson and only seven pieces remain complete with their receipts. One of these is a large carved and gilt mirror that is in the collection of the Victoria and Albert Museum, London.

3. Ответьте на вопросы по тексту.

1. What is John Boson famous for ?
2. He was one of the craftsmen employed to work on the Fifty New Churches designed by Sir Christopher Wren, wasn't he ?
3. What time can be characterized as Boson's greatest success ?
4. What Boson's work is the most known ?

Text 4. Henning Engelsen



Henning Engelsen

Engelsens Workshop

Goats carved in wood by Henning Engelsen, 1958

Horse carved in wood by Henning Engelsen, 1980

1. Прочитайте и переведите текст.

Henning Engelsen (1918–2005) was a Norwegian woodcarver and illustrator, born in Sandefjord, Norway. He started his woodcarving career in 1947 in a small workshop at Toten in the eastern part of Norway, where he founded the wood carving company Henning. From the start his idea was to create a world of wood carved figures that radiate joy and humanity and inspire us to rise above the ordinary. His rich and manifold production counts hundreds of different motives, illustrating animal life, myths and Norwegian folklore. During the 1950s and 1960s Henning grew steadily and was soon to be the

leading enterprise on the Norwegian souvenir market, exporting figurines to all over the world. At the time, Engelsen had more than 25 craftsmen working in his studio. He ran Henning with great success until 1988. Two of his three daughters; Christl Engelsen, Angelina Engelsen and his son-in-law, Bjarne Espedal, are now running the workshop, keeping Engelsens manifold production alive.

2. Ответьте на вопросы по тексту.

1. Where was Henning Engelsen born ?
2. When did he start his career ?
3. What was his creative idea ?
4. Henning had the leading enterprise on the Norwegian souvenir market, exporting figurines to all over the world, hadn't he ?

3. Расскажите о работе Хеннинга Энгельсена на английском языке.

Text 5. Tage Frid

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

silversmith – серебряных дел мастер
apprenticeship – ученичество, срок учения
inception – открытие, основание, начало
distinction – отличие, честь

2. Прочитайте и переведите текст.

Tage Frid (1915–2004) was a Danish-born woodworker who influenced the development of the studio furniture movement in the United States.

Son of a silversmith, at the age of 13, he started a five-year apprenticeship in Copenhagen followed by work in cabinet shops; worked for nearly a decade at the Royal Danish Cabinetmakers, then spent time in Iceland before immigrating to the United States in 1948 at the request of the American Craft Council. Frid headed the program in woodworking of the School for American Craftsmen in Alfred, New York; later moving with this program to Rochester Institute of Technology. In 1962 he became a professor of Woodworking and Furniture Design at the Rhode Island School of Design, remaining until 1985.

When teaching, he emphasized a craftsman's need to learn all the available tools and methods one could use to complete a given task. Thus, the person can work in any shop situation and produce the same quality. Frid's students include noted American studio furniture makers such as Hank Gilpin, Jere Osgood, Alphonse Mattia, William Keyser, John Dunnigan, and Rosanne Somerson. He was an editor of *Fine Woodworking* magazine from its inception in 1975 to his

death. In 2001, Tage Frid was honored by The Furniture Society with its Award of Distinction. The Permanent collection of the Museum of Fine Arts, Boston owns some of his designs, most of which represent the Danish modern style.

3. Ответьте на вопросы по тексту.

1. Where was Tage Frid born ?
2. When did he start his career ?
3. Frid headed the program in woodworking of the School for American Craftsmen in New York, didn't he ?
4. Did he become a professor of Woodworking and Furniture Design at the Rhode Island School of Design in 1962 ?
5. Can you name Frid's students ?

Text 6. Greta Hopkinson

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

tactile – осязательный, тактильный
grappling hook – крюк
barbed wire – колючая проволока
imposing – внушительный, величественный
contemplation – размышление, созерцание
to interrogate – допрашивать
to enhance – увеличивать, улучшать

2. Прочитайте и переведите текст.

Greta Hopkinson (1901–83) was a wood sculptor. She is now largely unknown but her work deserves recognition for its focus on liberating the tactile, sensual qualities inherent in wood.

Greta was born in West Didsbury, Manchester in 1901. Her father was a British Engineer (designer of a shell propelled grappling hook used during WWI to remove barbed wire fences) and her mother an acclaimed Swedish singer. Greta went to Sandcotes School in Parkston, Dorset and then studied languages at Newnham College, Cambridge, becoming one of its youngest female graduates. For a while she was employed as Secretary to the Editor of the New Statesman, Clifford Dyce Sharp. She married a Doctor, Harry Hopkinson, in the 1920s and travelled Europe with him. After the War they lived on the Isle of Wight before retiring to Pine Cottage, a house on the edge of the New Forest and previously the home of Gordon Jacob, the well-known British composer. Greta Hopkinson died in the mid 1990s in Brockenhurst, Hampshire.

It wasn't until after the death of her husband that she focused attention on becoming a wood-carver. In the process of mastering traditional techniques and achieving proficiency to the point of producing realistic figures, she became increasingly certain that imposing shape and structure on the wood ran counter to its own beauty and organic form. Her work then took a more naturalistic turn. Living in the New Forest she had access to a wonderful source for her art and imagination and the dead wood she collected from the rivers and streams, of all shapes and sizes, was taken home for contemplation and working. Each piece would be cleaned, interrogated with carving tools and gradually evolved and enhanced using natural polishes until she had revealed its essence. One of her pieces was gifted to the Commonwealth Institute for the Blind - its tactile quality revealing both her artistic values and love of the wood itself.

3. Ответьте на вопросы по тексту.

1. Was Greta Hopkinson a wood sculptor ?
2. Where was she born ?
3. Was her father a British Engineer ?
4. What can you say about her education ?
5. One of her pieces was gifted to the Commonwealth Institute for the Blind, wasn't it ?

Text 7. James Krenov

A Krenov-style wooden smoothing plane.

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

bundle – узел, вязанка, пачка
jack-knife – складной нож
chandler – москательщик
to hike –совершать длинный путь пешком
trout – форель
to strike out – вычеркивать
to toil – работать в поте лица
to revere – почитать, чтить

ostentatious – броский, показной
stain – пятно
to extol – превозносить
to seek out – разыскивать
grueling – изнурительный, тяжелый
crude – сырой, примитивный, грубый
to alienate – отчуждать, отталкивать

2. Прочитайте и переведите текст.

James Krenov (October 31, 1920 – September 9, 2009) was a woodworker and studio furnituremaker.

James Krenov was born on October 31, 1920, in the village of Uelen, Siberia, the only child of Dimitri and Julia Krenov. He and his family left Russia the following year, and after some time in Shanghai, China, they moved to a remote village in Alaska, where his parents worked as teachers. They lived in Alaska for seven years. James remembered airplane drops of goods and supplies onto the snow for the villagers. In one of those bundles was a good steel jack-knife. "From the time I was 6, I was making my own toys with the jackknife," James told. "It was a joy to me that I could rely on my hands and my eyes to produce things." Eventually, the family moved to Seattle. James spent his teen years there, where he developed a love for the sea and began building model boats at first, graduating to sailboats before long. As a young man during World War II, Krenov served as a Russian interpreter for the military when Russian ships docked in Seattle. He also worked for a ship chandler and spent a great deal of time surrounded by boats. It influenced his aesthetic. He loved the lines of boats: “There's hardly a straight line on them, but there's harmony. People think right angles produce harmony, but they don't. They produce sleep," Krenov said.

In 1947 James and his mother moved to Europe. In Paris, in 1949, he met his future wife, Britta. They were married on March 2, 1951. Jim and Britta traveled together in Italy and France, and spent many summers in the mountains of Sweden where they liked to hike and he fished for trout in the mountain streams. Always a writer, Krenov published several articles and a novel chronicling these travels.

A friend in Sweden got Krenov a job building wooden architectural models for a restaurant designer; later Krenov got himself a spot at the Stockholm design school run by Carl Malmsten, considered the father of Scandinavian furniture design. He attended the famous Malmsten school for two years and then struck out on his own, keeping a shop in his basement. Toiling anonymously for years, he gradually built a reputation for his simple design.

Once established as a master woodworker, Krenov also began sharing his expertise. "Krenov really helped re-create an interest in fine woodworking that had largely died out by the 1950s," says Frank Ramsay, president of the Bay Area Woodworkers Association, "Such a change from the 'make a box, cover it with plywood and paint it' era of the 1960s." Over time, Krenov received numerous requests to document his design philosophy in book format. In 1976, Krenov's first book, "A Cabinetmaker's Notebook" was published. The positive response to that first book surprised Krenov, and he ended up writing four more books including a final book that showcased the work of his students,"With Wakened Hands." Krenov taught and lectured about his approach to woodworking at places such as the Rochester Institute of Technology in New York, Boston University, UC Santa Cruz, Graz, Austria, as a Fulbright guest at New Zealand's Craft Council, Takayama, Japan, and Anderson Ranch, Colorado. "I traveled all over the world to talk about my work," Krenov said. "These weren't high occasions - just people interested in talking with a craftsman. I'm known as the guy who is always interested in the thing that is both beautiful and useful."

In 1981, Krenov was invited to start the Fine Woodworking Program at the College of the Redwoods in Fort Bragg, California. Over the years, people from all over the world would come to the school. He retired from the College of the Redwoods in 2002 but continued to work in wood almost to the end of his life, from a shop at his home. His work is displayed in museums in Sweden, Norway, Japan, and the United States, as well as in the homes of some royal families. He became an Elected Fellow, American Craft Council in 2000, and was the first non-British recipient of the Annual Award of the Society of Designer-Craftsman's Centennial Medal in 1992. Krenov was presented with The Furniture Society's Award of Distinction in 2001. In 2003, Fine Woodworking magazine asked Krenov how he would like to be remembered... He responded, "As a stubborn, old enthusiast." Krenov died in Fort Bragg, California on September 9, 2009. He was 88 years old.

Krenov is revered by many craftsmen for his inspiration to bring into one's work simplicity, harmony and above all, a love of wood. Krenov's books *A Cabinetmaker's Notebook* and *The Impractical Cabinetmaker* shun ostentatious and overly sculpted pieces, stains, sanded surfaces, and unbalanced or unproportional constructions. Krenov felt that details such as uniformly rounded edges, perfectly flat surfaces, and sharp corners remove the personal touch from a piece of furniture. His books extol the virtues of clean lines, hand-planed surfaces, unfinished or lightly finished wood, and techniques that Krenov referred to as "honest".

Although he made a living of his craft, Krenov referred to his attitude towards his work as that of an amateur, feeling that the competitive attitude of a professional causes one to compromise one's values as a craftsman. He avoided calling the conception and creation of a piece as "design," preferring a more inclusive term "composing." Composing, explained Krenov, is reacting to the wood, a continual re-evaluation and improvisation open to wherever the wood takes the composer. In his cabinets and other pieces, Krenov paid careful attention to variations in woodgrain and color in his search for "harmony" in a piece. A self described "wood nut," he often sought out woods that are rare, highly figured, or containing unique coloration. Krenov was also highly critical of those who seek "originality" at the expense of well made furniture.

Although Krenov believed machinery has its place in the shop, (namely to efficiently complete the relatively grueling and crude early stages of stock removal and thicknessing) he felt an over-dependence on power tools removes the "fingerprints" left on the finished piece that only handwork can leave, and alienates the craftsman from his work. Krenov criticized the trend in woodworking schools toward the early use of power tools, instead of building a foundation of hand skills. Instead of focusing on which machinery one should buy, he put emphasis on having well-tuned equipment. Graduates from Krenov's College of the Redwoods classes have gone on to professional furniture-making, writing craft books, and teaching in many programs throughout the world.

3. Ответьте на вопросы по тексту.

1. Was James Krenov a woodworker and studio furnituremaker ?
2. What is James Krenov's motherland ?
3. How long did Krenov and his parents live in Alaska ?
4. Where did he spend his teen years ?
5. During World War II Krenov served as a Russian interpreter for the military, didn't he ?
6. What did influence his aesthetic ?
7. Where did he meet his future wife ?
8. Did Krenov publish several articles and a novel chronicling his travels in Sweden ?
9. What can you say about his career ?
10. When was Krenov’s first book published ? Do you remember its title ?
11. In 1981 Krenov was invited to start the Fine Woodworking Program at the College of the Redwoods in Fort Bragg, California, wasn't he ?
12. Is his work displayed in museums in Sweden, Norway, Japan, and the United States, as well as in the homes of some royal families ?
13. Krenov was the first non-British recipient of the Annual Award of the Society of Designer-Craftsman's Centennial Medal in 1992, wasn't he ?

14. When was Krenov presented with The Furniture Society's Award of Distinction ?

15. Did Krenov die in Russia ?

16. Why is Krenov revered by many craftsmen ?

17. What can you say about his professional features ?

18. Graduates from Krenov's College of the Redwoods classes have gone on to professional furniture-making, writing craft books, and teaching in many programs throughout the world, haven't they ?

Text 8. Mark Lindquist

1. Прочитайте и переведите текст.

Mark Lindquist (born in 1949) is an American sculptor in wood, artist, author, and photographer. Lindquist is a major figure in the redirection and resurgence of woodturning in the United States beginning in the early 1970s. His communication of his ideas through teaching, writing, and exhibiting, has resulted in many of his pioneering aesthetics and techniques becoming common practice. In the exhibition catalog for a 1995 retrospective of Lindquist's works at the Renwick Gallery of the Smithsonian American Art Museum, his contributions to woodturning and wood sculpture are described as "so profound and far-reaching that they have reconstituted the field". He has often been credited with being the first turner to synthesize the disparate and diverse influences of the craft field with that of the fine arts world. Among his notable early achievements are the introduction of the aesthetic of Asian ceramics into American woodturning and, along with his father, the notable wood turning pioneer Mel Lindquist, the development of new tools and techniques that expanded the vocabulary of woodturning, and the pioneering of the use of spalted wood. Mark's work is characterized by an empathy with the natural aesthetics of wood, technical innovation, and art historical connections.

Mark Lindquist developed techniques for large-scale woodturning and, in the early 1980s, applied these techniques to create his massive, textured "Totemic Series Sculptures" in the Modernist tradition of Brâncu□i. Beginning in 1985, Lindquist created his "Ichiboku Series" sculptures, six- to eight-foot-tall (1.8–2.4 m) sculptures from a single block of wood, applying the philosophy and techniques of ninth century Japanese Buddhist woodcarving to the formal concepts of Modernism. Unlike his earlier works, woodturning was not the primary method for their creation. When these sculptures were exhibited in 1990 along with seven other influential sculptors of the decade (including Raoul Hague and Ursula von Rydingsvard), Lindquist's "Ichiboku" pieces distinguished themselves from others in the exhibition, and most wood artists of the time, by their identification with the spirit of the tree, a concept he adopted from the Japanese. Rather than imposing an external idea upon the wood, he

"was engaged in a dialogue with trees"; this approach was antithetical to the mainstream of 20th century art, which was intellectually removed from the appreciation of nature. Lindquist is a member of The Honor Society of Phi Kappa Phi. Lindquist's work can be found on permanent display in many American museums and public collections including the Metropolitan Museum of Art, New York City, the M.H. de Young Memorial Museum, San Francisco, the Smithsonian American Art Museum, Washington D.C., Museum of Fine Arts, Boston and the Victoria and Albert Museum.

2. Ответьте на вопросы по тексту.

1. Is Mark Lindquist an American sculptor in wood ?
2. What can you say about Lindquist's achievements ?
3. Did Mark Lindquist develop techniques for large-scale or small-scale woodturning ?
4. Can you find Lindquist's work on permanent display in many American museums and public collections ?

3. Перескажите текст на английском языке.

Text 9. Sal Maccarone

A 1990 Sal Maccarone sculpture, commissioned for the Tenaya Lodge in Yosemite National Park

"A Sequence of Sensations", 2001 Sal Maccarone kinetic sculpture. Wood, glass, ceramics, metal, and paint. Los Angeles, California

Wood & glass display case designed and built in 2010 by Sal Maccarone for the Ahwahnee Hotel in Yosemite National Park

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

meticulously – тщательно
frenzy – бешенство, неистовство
hardcover – в жестком переплете, в твердой обложке
awareness – сознание
to reside – проживать
walnut – грецкий орех

2. Прочитайте и переведите текст.

Sal Maccarone is an American author, furniture maker, sculptor and kinetic artist. He is best known as a master craftsman, and for his internationally distributed woodworking books such as *Tune Up Your Tools*, and *How to Make $40,000 a Year Woodworking*, both published by F & W publications, *Betterway Books*, in Cincinnati, Ohio. He is also known for his woodworking technique

articles published both online since 1994 and by the national magazine Popular Woodworking. Articles such as his "Evolution of an Entryway" have also been published in industry specific journals.

He attended San Jose State University and achieved a Bachelor of Fine Arts degree in 1972. During 1973 and 1974 while enrolled in the Master of Fine Arts Program for sculpture at (SJSU), where he studied under Professors Sam Richardson, John Battenberg, and Fletcher Benton, all internationally recognized sculptors. While studying for his masters degree in sculpture he became involved in the kinetic sculpture movement of the 1960s. Always using wood as the main media for his sculpture, he also incorporates metal, glass, plastic, and natural stone. His meticulously engineered kinetic sculptures are best described as a combination of fine furniture pieces which contain an impossible bottle type environment that is viewed through glass. The cabinet always remains stationary while the artwork within is kinetic. When turned on, the pieces sequenced with a combination of light and mechanical movement. He gained national recognition for his furniture, and sculpture in 1977 when he and his work were featured on the KPIX-TV program Evening Magazine. He was the co-founder of Bears in the Wood a small chain of retail stores in the San Francisco Bay Area which served as the showrooms for furniture that he both designed and built. The stores also sold Teddy Bears which were imported from around the world. The merchandise was displayed within an environment which featured a three story waterfall, and a full scale log cabin. These were the first stores in the country to market "just" Teddy Bears. The airing of that TV special set off a national *Teddy Bear* store frenzy in the United States from coast to coast which began in 1976, and continues until the present.

In 1979 his work was featured in the Fine Woodworking "Design Book Two" printed by the Taunton Press. This hardcover book featured photographs of the best work in wood by selected craftsmen from across the United States, and Canada. In 1990 his woodwork, and sculpture at the Tenaya Lodge in Yosemite was featured first in the Fresno Bee newspaper, and then on the KGPE CBS TV47 program, *Eye on the Valley*. The program was filmed at Sal's studio in Mariposa, California in March 1990. Beginning in 1997, after the publication of his first national woodworking book, he began teaching woodworking technique. Touring the country with The Woodworking Shows, a Los Angeles based traveling trade organization, he gave three day woodworking seminars in twenty-one different US cities each season. He continued teaching and traveling the country on an average of twice each month until October 2002.

In 2009 he began a syndicated newspaper column called, "How Art Shapes Our Lives". The column is published once each week in the California central valley, Sierra foothills, and the Yosemite area. The column is designed to help

build an awareness of the fine arts and the "Bigger Picture" while pointing to something local that can be observed. In 2010 he designed and built the two wood and glass display cases which reside as part of the permanent collection in the Great Lounge of the Ahwahnee Hotel. These furniture pieces were the first new additions to grace the Great Lounge since 1927. Both matching cases are made of native walnut and are primarily used to display the historic baskets made by the Miwok people who once lived in Yosemite Valley. In 2011 the display cases were designated as "Reserve Property" of the hotel and are now part of the United States national heritage. He has been in the business of designing and building commissioned pieces of furniture, and sculpture since 1972. His woodwork and kinetic sculpture can be viewed in many public, and private collections throughout the United States, and British Columbia. His woodwork portfolio has been used as reference within the Marriott International interior design library system since 1990. As a member of the American Institute for Conservation he has also served as a conservator of furniture for the Ahwahnee Hotel in Yosemite National Park, and has helped to preserve such National treasures as the three Craftsman style harvest tables which were built in 1926 by L & J.G. Stickley especially for the hotel.

3. Ответьте на вопросы по тексту.

1. Is Sal Maccarone an American author, furniture maker, sculptor and kinetic artist ?
2. What is he famous for ?
3. What do you know about his education ?
4. Did Sal Maccarone always use wood as the main media for his sculpture ?
5. When did he gain national recognition for his furniture and sculpture ?
6. His woodwork and kinetic sculpture can be viewed in many public, and private collections throughout the United States and British Columbia, can't it ?

Text 10. John Makepeace

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

premises – помещение
predominantly – преимущественно
fibre – волокно
to flex – разминать
indigenous – туземный, местный
sustainable – жизнеспособный

2. Прочитайте и переведите текст.

John Makepeace OBE, (6 July 1939, Solihull Warwickshire), is a British furniture designer and maker. He bought Parnham House, Dorset in 1976 and founded the Parnham Trust and the *School for Craftsmen in Wood* (opening 19 September 1977, later to become Parnham College) to provide integrated courses in design, making and management for aspiring furniture-makers, alongside but separately from his own furniture workshops. One of the early students was Viscount Linley, nephew to the Queen of England.

Makepeace ceased running the Trust in 2000 when it moved to the new campus at Hooke Park under a new director who handed the premises over to the Architectural Association, the international school of architecture, for their practical modules. John Makepeace constantly explores the issues of function, structure and expression predominantly for private clients. The work is innovative and exclusive. Paradoxically he once designed furniture for the retail market including Habitat, Heals and Liberty's. He has taken the art of lamination and forming to a high art. Lamination is the process of layering wood together - the wood layers can be thin enough to bend easily and the glue lines thin enough to be invisible. When the layers are bent, two-dimensional curves of great strength result. Layers can also be twisted to create free-flowing three-dimensional curves especially relevant to generating shapes to provide good support in the backs of chairs. This means that fibres flex the natural line of wood.

His influences and inspirations are many ; 'dynamic traditions - buildings, modern architecture, science, structural engineering, behavioural patterns and the human form' (from Furniture Today). Makepeace has been influential since the Seventies British Craft Revival; this continues through the growth of numerous workshops in Britain today, not least because of his entrepreneurial leadership encouraging more creative and professional practice by furniture-makers. John Makepeace continues to design and make furniture exploring form, structure and a range of indigenous and sustainable resources.

3. Ответьте на вопросы по тексту.

1. Is John Makepeace a British furniture designer and maker ?
2. What do you know about his career ?
3. What is lamination ?
4. What can you say about his influences and inspirations ?

Text 11. Sam Maloof

Sam Maloof rocker

The street-side view of the Sam Maloof house

The rear of the Sam Maloof site showing the roofs of his shops and museum. Note the roof lines.

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

to salvage –спасать
intersection – пересечение
to dub –дублировать; давать прозвище
fellowship – содружество,членство

2. Прочитайте и переведите текст.

Sam Maloof (January 24, 1916 – May 21, 2009) was a furniture designer and woodworker. He was born Samuel Solomon Maloof, a member of the large Maalouf family, in Chino, California, to Lebanese immigrants. He attended high school first at Chaffey High School in Ontario, California, where he took his first woodworking class and was recognized by his art teacher as having extraordinary skill. Later he attended Chino High School. Shortly after completing high school, he began working in the art department of the Vortox Manufacturing Company in Claremont, California. He was drafted into the United States Army on October 11, 1941. After serving in the Pacific theater and then transferring to a post in Alaska, Maloof left the army in 1945 to return to Southern California.

Maloof married Alfreda Louise Ward on June 27, 1948 and the couple moved into a house at 921 Plaza Serena, Ontario, California, where Sam set up a furniture workshop in the garage. Mostly from necessity, Maloof designed and built a suite of furniture for his home using salvaged materials. Commissioned pieces followed and, from 1949 to 1952, Maloof continued working in the garage of his Ontario home. In 1953, Maloof relocated to Alta Loma, California. Over time, he added 16 rooms, including a furniture-making shop and studio, to the original 6-room house. In 2000, when the path of the new CA-210 freeway extension included the Maloof property, the home was moved about 3 miles to its current location at 5131 Carnelian Street (at the northeast corner of the intersection with Hidden Farm Road), where it serves as the office of the Sam and Alfreda Maloof Foundation for Arts and Crafts as well as the Sam Maloof Historic Residence and Woodworking Studio, which offers tours.

Maloof's work is in the collections of several major American museums, including the Metropolitan Museum of Art, the Los Angeles County Museum of Art, the Philadelphia Museum of Art, and the Smithsonian American Art Museum. In 1985 he was awarded a MacArthur "Genius" grant. Presidents Jimmy Carter and Ronald Reagan have both owned Maloof rockers. He was described by the Smithsonian Institution as "America's most renowned contemporary furniture craftsman" and People magazine dubbed him "The Hemingway of Hardwood." But his business card always said "woodworker." "I like the word," he told a Los Angeles Times reporter, his eyes brightening behind large, owl-eyed glass frames. "It's an honest word." In 1985 Mr. Maloof became the first craftsman to receive a MacArthur fellowship; and despite such recognition, he declined to identify himself as an artist. His autobiography was titled *Sam Maloof: Woodworker.*

3.Ответьте на вопросы к тексту.

1. Was Sam Maloof a furniture designer and woodworker ?

2. What is his motherland ?

3. What can you say about his education and career ?

4. Can you name major American museums where Maloof's works can be found ?

5. In 1985 Mr. Maloof became the first craftsman to receive a MacArthur fellowship, didn't he ?

Part III. TEXTS FOR READING

Text 1. The History of American Woodworking Academy

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

Creek –залив, бухта, речка

Carpenter – плотник

Day off – выходной

Calling – призвание, занятие

Skyrocket – стремительно подняться, быстро расти

Tuition – обучение

Cooperate with – сотрудничать с

Employer – работодатель

Schedule – расписание, график, перечень

Appointment – назначение, должность, прием

2. Прочитайте и переведите текст.

American Woodworking Academy began its foundation long before it was opened in 1993. Its founder, Christopher J. Fuchs, who is a Master Woodworker, was born in 1958 in a small rural farm to the west of St. Louis, MO. Chris helped to build wooden houses and creek boats. He was the youngest of nine children whose father was a commercial carpenter and Chris' mother tried to give him a good education. So Chris entered a local community college at an architectural department in 1977. His study gave him an even greater desire to work with wood. With two brothers already carpenters, Chris joined the carpenter community of St. Louis in 1978. He spent the last five years doing fine finishing carpenter work for one of the biggest house builders in St Louis.

Chris' love for wood and its beauty lead him to become a woodworking instructor in 1990. In spite of the well-paid job he decided to conduct classes. Most of his family and friends thought he had made the wrong decision. While working sixty hours a week and spending his days off at the workshop, Chris knew he had found his calling, no matter what the pay was. Within two years his

pay had skyrocketed and his classes were in huge demand. No one ever knew that woodworking would be so popular.

In 1993 he opened his own school proudly named "AMERICAN WOODWORKING ACADEMY" symbolizing hard work, pride and the American dream. The academy grew to 5,000 sq ft and improved its Master Woodworking Program. In 2004 the academy was moved to the south to Fenton, Missouri, where Chris grew up.

The school taught adult students for three local community colleges and still teaches for two of those today. The school has expanded its work in union with Vocational Rehabilitation, Veterans, including company tuition plans that help students to get a Master Degree in Woodworking . The academy has also worked with tuition plans from U.A.W. plants, TFC credits for student loans and a wide variety of smaller companies that offer educational benefits. A great deal of tool companies cooperate with AMERICAN WOODWORKING ACADEMY nowadays. Offering a wide variety of tools with many brand names has helped students to get to know new products for their shops and their educational use.

Chris travels the Midwest promoting woodworking education at many woodworking shows. Students, instructors or employers of graduates interested in joining Chris' team may write or schedule appointments at the Fenton location.

3. Ответьте на вопросы по тексту.

1. When was American Woodworking Academy opened?
2. Who is a founder of the Academy?
3. What can you say about Christopher J. Fuchs' family?
4. Chris entered a local community college at an architectural department in 1977, didn’t he?
5. Did Chris join the carpenter community of St. Louis in 1978?
6. What do you know about the career of Christopher J. Fuchs as a woodworking instructor?
7. Did his friends and family think he had made the wrong or right decision? Why? What is your opinion?
8. The Academy was moved to the west in 2004, wasn't it?
9. What can you say about the cooperators of the Academy?
10. Does Chris travel the Midwest promoting woodworking education?
11. Would you like to join Chris' team? Why? Try to express your own opinion.

4. Закончите предложения.

1. American Woodworking Academy was opened … .
2. Christopher J. Fuchs was born in … .
3. Chris' love for wood and its beauty lead him … .
4. Within two years his pay … and his classes … .

5. In 1993 he opened his own school proudly named "AMERICAN WOODWORKING ACADEMY" symbolizing … .

6. Offering a wide variety of tools with many brand names has helped students … .

5. Определите, является ли данное утверждение : 1) истинным, 2) ложным, 3) в тексте нет информации.

1. American Woodworking Academy was opened in 1993.
2. The founder of American Woodworking Academy is Christopher Wren.
3. During his free time Chris usually read travel books.
4. In 1977 Chris entered a local community college at a building department.
5. In 2004 the Academy was reorganized into the University.
6. A great deal of tool companies cooperate with American Woodworking Academy nowadays.

6. Найдите в тексте интернациональные слова, выпишите их и сделайте правильный перевод.

7. Найдите в тексте причастия, определите их формы и функции в предложении, переведите на русский язык.

8. Составьте план к тексту, выделив главные мысли в каждом абзаце.

9. Найдите в тексте предложения, описывающие карьеру основателя Американской Академии деревообработки.

10. Побеседуйте с другом об истории развития Американской Академии деревообработки, используя лексику и информацию из текста .

Text 2. Dealing with Uneven Shrinkage or Swelling of Woods

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами.

uneven – неровный, неоднородный
shrinkage – усадка, сжатие
swelling – разбухание
wood stock – лесосырье, бревно
to warp – искривляться, деформироваться
to cup – покрывать
to bow – согнуться
to twist - крутить
to kink – перекручивать
inevitable – неминуемый
three dimensional – пространственный, трехмерный

hardwoods – твердые породы дерева
softwoods – мягкая древесина
plywood – фанера
susceptible – восприимчивый
trunk – ствол
sap – сок, живица
heartwood – ядро древесины
humid – влажный, сырой
radial – радиальный, лучевой
longitudinal – продольный
tangential – направленный по касательной
axis – ось
shrinkage – усадка, сокращение
lumber – лесоматериал, пиломатериал
grain – волокно, структура
quarter-sawn lumber – пиломатериал радиального распила
sought after – востребованный
hewn – тесанный
to glue up – заклеивать, запечатывать
width – ширина
to flip – перевернуть, подбросить
clue – информация, ход мыслей
to stock with – снабжать
to crack – давать трещину
pith – сердцевина
discard – брак, что-либо ненужное
approximate – примерный, приблизительный

2. Прочитайте и переведите тексты, используя слова, данные выше.

Dealing with Uneven Shrinkage or Swelling of Woods

Every woodworker has experienced the problems that accompany uneven shrinkage or swelling of wood stock. When wood dries unevenly, it can warp, cup, bow, twist, kink or check. The key to building quality woodworking projects is to recognize when any of these problems might affect your work and to prepare for the inevitable.

Keep in mind that the following information relates to dimensional wood stock, both hardwoods and softwoods. Plywood and other manufactured wood stocks are less susceptible to moisture, related movement.

Why Does Wood Shrink or Swell?:

When it is still alive as part of a tree trunk, wood is basically a series of thin tubes that circulate sap & fluids from the roots of the tree to the upper branches. As we discussed in our article on Heartwood and Sapwood, stock found closer to the outer portions of the trunk are more active and pass more sap than the heartwood found closer to the center of the trunk.

Your woodworking projects will react accordingly. Projects built from heartwood are going to be far less susceptible to shrinking and swelling than projects made from sapwood, as the heartwood is less likely to retain moisture.

Acclimatization of Wood:

Ideally, wood should not only be dried properly before building a project, but it should become acclimatized to the environmental surroundings in which the project will be used permanently. For instance, a project that is built in a humid environment like Florida will likely react quite severely if it is to be put to use in a dry environment like the Arizona desert.

Instead, the wood should be purchased and stored for a few weeks in the location where the final project will be used before beginning the project. This way, the wood will be far less likely to move after the project is completed.

Radial, Longitudinal and Tangential Shrinkage:

All wood stock is three dimensional, and knowing how wood shrinks and swells along these three dimensions will help you prepare for problems.

Longitudinal (along the long axis of the stock) shrinkage is very minimal. In most cases, from freshly-cut green wood to properly oven-dried, you can expect only a very slight amount of movement along the length of a board.

To determine the radial and tangential directions of a piece of stock, you need to look at the end grain. The radial direction is perpendicular to the growth rings, where tangential is parallel to the rings.

Keep in mind that movement along the tangential axis is almost always going to be greater than along the radial direction. By looking at the direction that the growth rings are oriented in the board, you can get an idea of how the board will react as the tangential movement exceeds the radial movement. Tip: Movement is one of the many reasons why quarter-sawn lumber is so sought after (and expensive). Because of the way quarter-sawn wood is hewn from a log, the growth rings are relatively square to the sides of the board. As such, the board will swell or shrink relatively evenly across the entire board.

How Does This Information Help?:

Knowing how a board may shrink or swell will help you determine where (or whether) a board should be used on a woodworking project. For instance, if you're gluing up a table-top from a series of tangentially-cut boards, you're

likely to experience some cupping (the center rising away from the ends, causing a slight arc in the width of the board) as the wood swells or shrinks.

If you have a number of tangentially-cut boards that may experience similar cupping, flipping every other board upside down (so that one will cup upwards while the next will cup downwards), you can diminish the possibility of a large bow in the table top. Another clue to watch for is the distance between the growth rings. Stocked with tighter growth rings are much less susceptible to movement. So, a tangentially-cut board with wide growth rings can expect much more uneven movement, often resulting in cracking (called checking) when cupping becomes excessive.

When you have such a board that looks like it may eventually check in the center (particularly if the center portion is cut from the pith, or center, of the trunk), you may wish to cut smaller parts out of the edges of this board and discard the center portion. Nothing will ruin the aesthetics of a project faster than a crack in a prominent piece of wood in the project.

Where to Learn More :

There is a definitive, classic work on the properties of wood and how wood moves when it shrinks or swells. Learn more by reading Understanding Wood: A Craftsman's Guide to Wood Technology by R. Bruce Hoadley. This book is more of a reference material than a "page turner," but I know of no other text that covers the properties of wood better. Hoadley includes a very useful full-page chart that shows the approximate shrinkage of numerous types of wood stock as it dries from green to oven-dry, along all three dimensions. This is one book that I'd recommend every woodworker have at least one copy in their shop.

3. Ответьте на вопросы к текстам:

1. What problems can woodworkers deal with?
2. What is the solution of these problems?
3. Are plywood or other manufactured wood stocks susceptible to moisture?
4. Why does wood shrink or swell?
5. Does the environmental surroundings have their influence on wood?
6. Is longitudinal shrinkage minimal or maximal?
7. How can you determine radial and tangential movement?
8. How can you apply this information?
1. 9. What other sources of information do you know?

4. Закончите предложения.

1. Every woodworker has experienced the problems…
2. When wood dries unevenly, it can …
3. Projects built from heartwood…

4. Wood should become acclimatized…
5. To determine the radial and tangential directions…
6. Keep in mind that movement along the tangential axis…
7. Movement is one of the many reasons why…
8. Knowing how a board may shrink or swell will help…
9. If you have a number of tangentially-cut boards…
10. Stocked with tighter growth rings…
11. Nothing will ruin the aesthetics of a project faster…
12. Learn more by reading…

5. Определите, является ли данное утверждение: 1) истинным, 2) ложным, 3) в тексте нет информации.

1. When wood dries unevenly, it can't warp, cup, bow, twist, kink or check.

2. Ignore that the following information relates to dimensional wood stock, both hardwoods and softwoods.

3. Ideally, wood should not only be dried properly before building a project, but it should become acclimatized to the environmental surroundings in which the project will be used permanently.

4. Projects built from heartwood are going to be far more susceptible to shrinking and swelling than projects made from sapwood, as the heartwood is less likely to retain moisture.

5. Movement is one of the many reasons why quarter-sawn lumber is so affordable (and cheap).

6. Stocked with tighter growth rings are much less susceptible to movement.

7. So, a tangentially-cut board with wide growth rings can expect much more uneven movement, often resulting in cracking (called checking) when cupping becomes excessive.

8. Keep in mind that movement along the tangential axis is almost always going to be greater than along the radial direction.

Text 3. How to Close an Open Mitered Corner

1. Прочитайте и переведите текст, используя слова, данные ниже:

mitered corner – угол в 45 градусов
miter – скос
trim – украшение, отделка, аккуратный
meticulously – тщательно, аккуратно
slightly – слегка, немного
to warp – деформировать, искажать
laundry room – прачечная

biscuit joiner – ламельный фрезер
biscuit – стыковая накладка из фанеры
adjustable – регулируемый, приспособляемый
incredibly – невероятно
slot – прорезь, паз
dowel – дюбель
guideline – рекомендация
to accommodate – подгонять, приспосабливать
thumb – что-то неудобное, больной палец
flush – внезапный прилив, повышение уровня
trim – отделка, украшение
plywood – фанера
criss-cross – перекрестный
to tack – наметывать, прикреплять
clamp – зажим, скоба
to release – освобождать
to caulk – заделывать
finish nail – обивочный гвоздь
to tighten – затягивать, закреплять
un-stained wood – немореное дерево, непротравленное дерево
blemish – недостаток, дефект
to penetrate – проникать внутрь
to sand – посыпать песком
to stain – окрашивать
nail set – добойник
wood filler – древесный заполнитель, порозаполнитель
scrap – лом, обрезки, отходы

2.Прочитайте и переведите текст.

When working with mitered corners, particularly when applying trim pieces to a project, even the most meticulously matched miters may open up when installed. This can happen for a number of reasons, the most likely being that the trim pieces are slightly twisted or warped.

The project in the above image is a plywood shelf, being wrapped by some mitered 1x2 trim. Whether you need them in the garage, laundry room, wood shop, utility room, house pool or wherever else you can imagine, utility shelves are incredibly useful. However, there is a lot more to make a strong and yet aesthetically-pleasing utility shelf than attaching some wood to a couple of shelf standards. The trim is accurately mitered, but after attaching the trim to the plywood with biscuits, the bottom edge of the mitered corner separated about 1/16 of an inch. While it's a gap that could easily be caulked in

a painted project, this shelf is going to be stained. As such, the gap will stand out like a sore thumb. When using biscuits, you should always use the largest biscuits you can. In most cases, you'll use a 20 biscuit, but if this is too large, you can try a 10 or even 0 biscuit (for the smallest joints). Your biscuit joiner should be adjustable to accommodate all three common biscuit sizes. A plate joiner, often referred to as a biscuit cutter, is a tool that has little use beyond the one task that it is designed to complete, but it performs that task so incredibly well, that it is one of the few single-task woodworking tools that I'd recommend for every workshop. This specialized mini-saw cuts thin slots in the edges of stock to hold a biscuit, which is used much like a dowel to hold two pieces of stock together.

As far as how far apart to space the biscuits, this is really up to you, as long as you follow some basic guidelines. The biscuits on the edges of the joint should be no more than 2-3" from the edge of the joint. Once you've determined the positions for the edge biscuits, you can evenly space an appropriate number of biscuits between the two end biscuits, spacing them between anywhere 6-12" apart.

Fortunately, there is a very simple solution for this problem using a pair of 4d finish nails. I merely tightened the gap with a pair of clamps, and then tacked one finish nail through each trim board into the opposite board. This criss-cross tacking will hold the mitered corner once the clamps are released. Be sure to set the nails using a nail set, then fill the nail holes with wood filler. Wood fillers typically don't take stain as well as the surrounding wood. Wood fillers placed on unfinished wood that are allowed to dry and then sanded flush will often cause the area surrounding the filled hole to appear discolored after the finish is applied.

There are a number of techniques for dealing with these problems, and what works on one project may not necessarily work well on another. However, by testing on scrap stock, you should be able to find a solution that will fit the needs of your woodworking plans.

TIP: If you're staining the project, you may have better success in disguising the wood filler if you stain the piece, then fill the nail holes and then touch up the filler with stain, as opposed to filling the holes and then sanding the filler flush. (The reason for this is that wood filler that is applied to un-stained wood will often penetrate the pores around the hole before it is sanded. Because wood filler doesn't take stain well, this will actually make the blemish of the filled nail into even more of a blemish than staining first.)

3. Ответьте на вопросы по тексту.

1. What are the reasons of opening up the miters?
2. How can you avoid such a problem?
3. What should you fill the nail holes with?

4. What do you know about biscuit joiner?
5. Do wood fillers take stain as well as the surrounding wood?

4. Закончите предложения.

1. When working with mitered corners, even the most meticulously matched miters…
2. When using biscuits, you should…
3. Your biscuit joiner should be adjustable…
4. The biscuits on the edges of the joint should be…
5. If you're staining the project, you may have better success in…
6. Because wood filler doesn't take stain well…

Text 4. Intarsia Woodworking

1. Прочитайте и переведите текст, используя слова, данные ниже:

Intarsia – разновидность инкрустации на мебели и других деревянных предметах: фигурные изображения или узоры из пластин дерева, разных по текстуре и цвету, врезанные в деревянные поверхности.

scrollsaw – пила
jigsaw – ажурная пила, ножовка
to inlay – вкладывать, вставлять, выстилать
intricate – замысловатый, сложный
tabletop – крышка стола, поверхность
to plot – составлять план, делать схему
tight – плотный, сжатый
curve – закругление, изгиб
sander – пескоструйный аппарат
template – шаблон, лекало
to stain – окрашивать, пятнать
three dimensional – трехмерный

Intarsia woodworking is a method of cutting or otherwise altering pieces of wood to create a pattern or design. It is a type of inlaying process that involves setting wood of contrasting tones next to each other; the wood is often highly polished for an attractive finish. An intarsia woodworking craftsman uses a scrollsaw and/or jigsaw to cut the often intricate pieces, and doing so often takes a significant amount of skill and practice. The process of intarsia has been in use for centuries in various cultures throughout the world.

The practice is very often used to create pieces of decorative furniture such as tabletops or cabinet doors. The process of intarsia woodworking often starts with plotting a design that will be cut into the wood, and deciding what types of wood will be best for the design. A scrollsaw will be used for much of the

intarsia woodworking cutting, though a jigsaw can be used for some as well. The scrollsaw is a specially designed saw useful for cutting intricate designs and tight curves, and it features a bed or platform on which the wood will rest during the cutting process. This helps to be ensured that the user has accurate control over the piece during the cutting process.

A jigsaw is another type of cutting tool that may be used for intarsia woodworking, though this tool is not capable of making cuts as intricate as the scrollsaw. Sanders such as belt sanders, palm sanders, or sanding blocks must also be used during the intarsia woodworking process to create a smooth surface before the individual pieces of wood are fitted into place. The idea behind this method is to place contrasting colors of wood next to each other to create a piece that looks almost three dimensional. The process usually involves selecting at least two different types of wood, though in some cases, one type of wood can be used and simply stained or otherwise colored differently.

Many intarsia woodworkers, especially those new to the craft, use patterns or templates that help them to guide the cuts properly. This template is usually made from a thin paper that can be glued to the piece of wood, though in some cases a woodworker may simply draw the template onto the wood and make the cuts against the pencil marks. Especially skilled intarsia woodworkers may be able to make the cuts without any template at all, though this is rare.

2. Ответьте на следующие вопросы к тексту:

1. What is Intarsia woodworking? Have you heard of it before?
2. What does intarsia woodworking craftsman use?
3. What is the process of intarsia very often used for?
4. Describe intarsia process.
5. Is a jigsaw the same or another type of cutting tool? What is the difference between a scrollsaw and a jigsaw?
6. What do intarsia woodworkers use for guiding the cuts properly?
7. What other methods of wood cutting do you know?

3. Закончите предложения:

1. Intarsia woodworking is a method…
2. An intarsia woodworking craftsman uses…
3. The process of intarsia woodworking often starts with…
4. The scrollsaw is a specially designed saw…
5. A jigsaw is another type of cutting tool that may be used for intarsia woodworking…
6. Sanders such as belt sanders, palm sanders, or sanding blocks must also be used…
7. The process usually involves selecting at least two different types of wood…
8. Many intarsia woodworkers, especially those new to the craft, use patterns…

9. This template is usually made from a thin paper…

4. Определите, является ли данное утверждение: 1) истинным, 2) ложным, 3) в тексте нет информации.

1. Intarsia woodworking is a type of inlaying process that involves setting wood of contrasting tones next to each other.

2. An intarsia woodworking craftsman uses only a jigsaw to cut the often intricate pieces, and doing so often takes a significant amount of skill and practice.

3. The process of intarsia has been recently used in various cultures throughout the world.

4. The practice is very often used to create pieces of decorative furniture such as tabletops or cabinet doors.

5. The template is usually made from a thick paper that can be glued to the piece of wood, though in some cases a woodworker may simply draw the template onto the wood and make the cuts against the pencil marks.

Text 5. Preservation Processes

1. Прочитайте и переведите текст, используя слова, данные ниже.

to utilise – использовать
stain – пятно
moisture – влага
schedule – распорядок, график
pressure – давление
fluctuation – колебание, перепады
distinctive – отличительный, своеобразный
The Bethell – after John Bethell, 19th century American inventor : a method of preserving wood.
radiata pine – сосна лучистая
penetration – проникновение
the Rueping process – after Max Rüping, 20th century German timber engineer, its originator.
hazard – риск, опасность
retention – удерживание
application – применение
Boron esters – эфир Бора
kiln – печь
dimensional – пространственный
volatile – непостоянный, изменчивый

solvent – растворитель, растворяющий
spray – распылитель
dip – глубина, основание
to stack – нагромождать
fillet – утолщение
vapour – испарение
diffusion – диффузия. рассеивание
precipitate – осадок
leachable – выщелачиваемый

There are a number of types of treatment techniques utilised in wood preservation:

Pressure Impregnation – uses vacuum and pressure to obtain chemical penetration of permeable timbers, while controlling the amount of preservative retained. The timber must be free of stain and have a moisture content of less than 25%. Many treatment schedules are used, the pressure fluctuations and timing being distinctive in each.

The Bethell process is the most important of the treatment processes and achieves about 90% of the theoretical maximum uptake in radiata pine. The Lowry treatment is designed to achieve maximum penetration with a low retention of preservative. Retention is around the 60% of theoretical maximum. The Rueping process is used principally with preservative suspended in hot oil such as creosote and PCP where a low net retention is desired for some hazard categories. Net retention here is as low as 40-50%. The Alternating Pressure method utilises repeat applications of pressure and vacuum to force preservative into green wood.

Vapour Phase – utilises the fact that some Boron esters boil at low temperatures. The liberated gas can be drawn into timber where it reacts with water and condenses. For this reason, timber must be very dry (<5-6% moisture content) or only low penetration is achieved. Treatment of framing timber in the drying kiln is possible and can offer considerable cost savings.

Vacuum treatments – utilise volatile organic solvents to transport the preservative into the wood. It is designed to treat dry profiled or machined wood. TBTO is typically used, being introduced to the timber by either a double vacuum or low pressure cycle. The advantage of this technique is that there is no dimensional swelling as associated aqueous treatments and the wood can be painted within a couple of days of treatment.

Diffusion – is used to introduce boron salts to green timber. The timber is sprayed or dipped in the preservative solution and block stacked (without fillets). The wood is then tightly wrapped and left for a number of weeks during which the boron salts diffuse into the wood. Thicker timber may require a second dip to top up the salt levels. For this technique to be successful the timber must have a moisture content of over 50%. If even just the timber surface dries out, the process may not work at all, or be uneconomically slow. Another method using the diffusion process is called double diffusion. This works in the same manner except two successive chemical treatments are used. The second chemical treatment (Na^2Cr^2O7/Na^2CrO^4 and Na^2HasO^4) precipitates with the first ($CuSO^4$) to form a non-leachable preservative.

2.Ответьте на следующие вопросы к тексту:

1. How many types of treatment techniques are there in wood preservation?
2. What does pressure impregnation mean?
3. What processes are used in pressure impregnation?
4. What process of the treatment is the most important?
5. For what reason must timber be very dry in vapour phase?
6. Do you know the advantage of technique vacuum treatment?
7. What can you tell about diffusion process?
8. Is there another method of diffusion?

3. Закончите предложения.

1. Pressure Impregnation - uses vacuum and pressure…
2. The Bethell process is the most important of the treatment processes…
3. Lowry treatment is designed to achieve maximum penetration…
4. The Rueping process is used principally with…
5. The Alternating Pressure method utilises repeat applications…
6. Treatment of framing timber in the drying kiln is…
7. Vacuum treatments – utilise volatile organic solvents…
8. The advantage of this technique is that there is no…
9. Diffusion - is used to introduce…
10. Thicker timber may require…
11. Another method using the diffusion process is called…
12. The second chemical treatment precipitates with…

Text 6. Trulast Technology

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами.

perennial – вечный, многолетний

proprietary – патентованный, характеризующий чью-л. собственность

inherent – неотъемлимый, присущий, свойственный (in, to – кому-л., чему-л.)

board – доска, плоский предмет

to shrink – усаживаться, уменьшаться

to swell – надуваться, разбухать

to compromise – компроментировать, подвергать риску, опасности

lumber – амер. пиломатериалы, строевой лес, бревна

acetylate – ацетилировать

scads – разг. большое количество, масса, груда

hydrophilic – гидрофильный, водолюбивый

hydrophobic – гидрофобный

pulp – мякоть, кашица

affinity – сходство

to interact (with) – взаимодействовать

envelope – конверт, пленка

thermal – термический, тепловой

pervasive – проникающий повсюду, всеобъемлющий

cellular – клеточный, имеющий клеточное строение

waterproof – водонепроницаемый, непромокаемый

to shed – распространять, излучать, испускать

deck – любой тип настила, платформа

to soak – впитывать, всасывать

torrent – стремительный поток

2. Прочитайте и переведите текст, используя слова, данные выше. Perennial Wood looks like regular wood—because it is wood. What makes Perennial Wood so special is that it has been modified throughout on the molecular level to resist the harmful effects of moisture with proprietary TruLast Technology.

Using heat, pressure and an organic compound, TruLast Technology permanently expands the wood's cell walls to a fixed position—helping the wood minimize water absorption.

The result is that Perennial Wood boards and components remain straighter, smoother and harder, and are three times more resistant to shrinking and swelling—without compromising the wood's natural appearance.

What is TruLast Technology?

True. The performance inherent in Perennial Wood is made possible through a wood modification process. But does this change the wood into something else? False. We are not alchemists. (We’re scientists!) Perennial Wood is still wood — just modified.

We call this modification process TruLast Technology, a process based on wood acetylation.

True. TruLast Technology is a new development in the outdoor lumber business. But is it new science? False. The wood acetylation process we use today is based on the knowledge Eastman Chemical Company developed over the last 80 years of acetylating wood pulp.

What it is

Wood naturally contains scads of water-loving molecules (called hydrophilic groups) in its cellular structure. These hydrophilic groups help manage the movement of water through an organism, which is vital in a living tree. But in lumber, wood can swell as water binds with these groups. TruLast Technology, however, replaces these hydrophilic groups with hydrophobic (water-fearing) groups.

If it helps, think of the hydrophilic group as dog molecules and the hydrophobic group as cat molecules.

With little affinity for water, these new hydrophobic groups prevent water from binding to the wood. And no more swelling.

Acetylation, in other words, fundamentally changes the way water interacts with wood. The result is real wood that has been permanently changed at the cellular level to protect against swelling and warping, as well as rot and decay organisms.

What it is not

TruLast Technology is not pressure treating or thermal modification. It's not a surface or envelope treatment. Rather, it's a pervasive change in the wood chemistry, protecting wood in a whole new way by creating a physical and cellular barrier to water transport.

If you think it is mere waterproofing, well, that would be false. Liquids will still soak into the empty channels of Perennial Wood. It simply doesn't swell. (And because it's not waterproofing, that means traditional paints and stains still work with Perennial Wood.)

So even if a big wet dog continues to shed a torrent of spray on your deck or you experience decades of rain and snow, your deck made of Perennial Wood will remain stable – even down to the molecular level.

3. Ответьте на вопросы к тексту.

1. What do you know about TruLast Technology? Have you heard about it before?
2. What process is TruLast Technology based on?
3. Tell some information about TruLast Technology process.
4. How does acetylation change the wood?
5. What other technologies do you know?
6. Is Perennial Wood waterproofing?

4. Закончите предложения.

1. Using heat, pressure and an organic compound, TruLast Technology…
2. The result is that Perennial Wood boards and components remain straighter…
3. We call this modification process TruLast Technology…
4. The wood acetylation process we use today is based on…
5. Wood naturally contains…
6. TruLast Technology, however, replaces…
7. Acetylation, in other words, fundamentally changes the way…
8. So even if a big wet dog continues to shed a torrent of spray on your deck…

5.Определите, является ли данное утверждение: 1) истинным, 2) ложным, 3) в тексте нет информации.

1. Perennial Wood doesn't look like regular wood.
2. Using heat, pressure and an organic compound, TruLast Technology permanently expands the wood's cell walls to a fixed position—helping the wood minimize water absorption.
3. TruLast Technology is new science.
4. Wood naturally contains scads of water-loving molecules (called hydrophilic groups) in its cellular structure.
5. TruLast Technology is pressure treating or thermal modification.
6. It’s not a surface or envelope treatment.

Text 7. Petrified Wood and Forest

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

odd – чуждый, необычный, странный

cretaceous Lakota Sandstone deposits – меловые песчаники Лакоты (Сев. Амер.)

fossil – ископаемые

to petrify – превращаться в камень, каменеть

cycadeoid – цикадофит, саговниковое растение

average – средний, нормальный

bald – бесцветный, лысый

cypress – кипарис

to calcify – превращаться в известь, отвердевать

cell – ячейка, сота, биол. клетка

to zoom in – увеличить масштаб изображения

cellular tissue – клетчатка, рыхлая соединительная ткань

conifer – хвойное дерево

cypress – кипарис

to decay – гл. гнить, сущ. разрушение, разложение, гниение

deposit – месторождение, залежь

paleocene – геологическая эпоха Палеоцен, продолжавшаяся приблизительно между 65 и 55 млн. лет тому назад

metasequoia – Метасеквоя, род хвойных деревьев семейства Кипарисовые

hemlock – ядовитое растение Гемлок или Болиголов

yew – медленнорастущие кустарники Тис

Plate Tectonics – тектоника плит, наука о движении тектонических плит

advent – наступление (какой-либо эпохи), приход, прибытие

triassic – Триасовый период, первый период мезозойской эры

to deteriorate – портить, повреждать

to disintegrate – разделять на составные элементы, нарушать целостность

to dissolve – разлагаться, растворяться

to evaporate – испаряться

extinct – вымерший, пресекшийся (о роде)

glitter – блеск, гл. блестеть

hollow – пустой, сущ. пустое пространство, выемка

latitude – географ. широта, свобода, самостоятельность

log – бревно, гл. заготавливать лес

pollen – бот. пыльца, гл. опылять

precipitation – резкое падение, хим. осаждение;

rot – гниение, разложение, гл. портиться, разлагаться
sediment – осадок, геол. осадочная порода, отложение
solid – твёрдый, прочный, плотный
specimen – образец, тип, экземпляр
stump – пень, дерево с обрезанной верхушкой
subsequent – более поздний, последующий, являющийся результатом
supposedly – по общему мнению, предположительно
tissue – ткань, материя, сеть, плетение
impurity – загрязнённость, смешивание, неоднородность

Let us talk about how petrified wood is made and where it comes from. How odd petrified wood can be, what makes petrified wood change color and where it is usually found.

What is petrified wood, the word, to petrify, literally means, "turn to stone." Petrified wood, then, is wood that has turned to stone. The early Cretaceous Lakota Sandstone deposits, which are found on the outside edge of the Black Hills, probably contain the oldest petrified wood specimens in the state. These fossils formed between 120 and 130 million years ago. Species of these deposits include bald or white cypress, several species of palm, and several species of cycadeoids.

The petrifying wood process starts out when a stump or a log lies on the floor or has fallen to the ground and is left there with water trapping the tree's original plant structure and if the oxygen in the tree is cleared out with the water materials then the tree gets hollow and starts to petrify as seen in these descriptions below. When a tree falls to the ground in some rare cases it will be covered up with mud before it has a chance to decay. If the tree is covered up quickly enough it will retain its own shape while under the mud. If we zoom in and look at the tree cells very closely we will see that they start to become hollow as the cells deteriorate or break down. If we could only look at this tree closer we would see that the cells that make the tree brown would be made of cellulose. When the tree decays, cells turn hollow and are full of calcite and silicon and water.

When the water evaporates it leaves behind minerals that fill up the cells and now the tree is full of rock.

Oxygen, which causes oxidation or rotting of all types of materials, would keep the dead plant material from decaying before it was preserved. Most fossil wood is found in ancient rivers and flood plains environments.

Minerals, including silica dissolved from volcanic ash, absorbed into the porous wood over hundreds and thousands of years, crystallized within the cellular structure, replacing the organic material. Sometimes crushing or decay

left cracks in the logs. Here large jewel-like crystals of clear quartz, purple amethyst, yellow citrine, and smoky quartz formed.

When the tree reacts with the water, three things may happen.

1. The log may disintegrate and not be fossilized.
2. The log may be reduced by compression to a coal or it may become petrified, if petrification takes place.
3. Minerals from the water are deposited in fluid fills the openings in the wood.

This is called permineralization and it preserves the tissues in the wood, in other situations minerals may also replace the woody tissues of the log, this process is called replacement. The mineral replacement process is very slow, probably taking millions of years.

The mineral content of petrified wood is easily identified using a mass spectrometer or X-ray diffraction technology. Silica, in the form of silicon dioxide (SiO2), commonly known as quartz, is the most common replacement mineral. Often traces of other minerals give petrified wood its unique color and characteristics. Iron oxide will cause red, brown, yellow and earth tones. Copper and chrome oxide create green, silicates of aluminum produce white, and manganese dioxide makes black.

Where is Petrified Fossil wood found?

Most Petrified Fossil wood is mostly found in Hell Creek in Northwest South Dakota, where supposedly the last of the dinosaurs had lived at that time, until they all died. Petrified wood from Paleocene Epoch deposits can be found on the prairies of western South Dakota, especially in the mid-northwest tier of counties and in the Badlands. These Paleocene fossils are the youngest and they are found in the Cretaceous deposits. These types of Petrified wood began to form 65 million years ago. The younger fossils include conifer species, such as metasequoia, sequoia, hemlock, yew, and pine. Only seven species of tree have been identified through petrified wood, over 200 species of plants have currently been identified from other Triassic fossils, such as leaves, pollen, and spores.

Why Does South Dakota Have Such Different Fossil Species?

Plate Tectonics make the land solid and stable in reality. The parts are massive plates that are moving very slowly. Here is a brief definition of Cretaceous, the period of the Mesozoic Era, from 140 million to 65 million years ago, characterized by the greatest development and subsequent extinction of dinosaurs and the advent of flowering plants and modern insects. The entire North American continent was located much farther south thus was a few degrees to the south of our present latitude and was much closer to sea level. Apparently, during the Cretaceous Period, they experienced higher average

temperatures and greater precipitation than occur there today. Over the great expanse of geologic time, the North American plate acted as a huge barge, carrying the fallen trees that were buried under sediments. Each piece is like a giant crystal, often sparkling in the sunlight as if covered by glitter. The rainbow of colors is produced by impurities in the quartz, such as iron, carbon, and manganese.

What is petrified forest?

A petrified forest is a forest made out of fossil or petrified wood. In other words, a petrified forest is a forest made out of stone trees. Petrification is a natural process that occurs when all organic material in a tree dies and is replaced by a combination of quartz, copper, iron, and other minerals. Once the process has been finalized, petrified wood is no longer considered wood, and it becomes classified as a stone. In fact, petrified wood is Washington's official stone. All petrified forests are national monuments and are carefully protected.

The world's most impressive petrified forest is in Santa Cruz, Argentina. With trees that are over 10 feet (3 meters) in diameter, the Patagonian petrified forest is one of the best giant examples of wood-stone in the world. As a comparison, the Petrified Forest National Park in northeastern Arizona, considered the best example of petrified wood in North America, boasts trees that barely reach six feet. Canada has the largest petrified forest in the world, covering an area of thousands of kilometers and dating back to the Eocene period. Other significant examples of petrified forest include Petrified Forest of Lesvos (Greece), Thiruvakkarai Village (India), Curio Bay (New Zealand), and Nová Paka (Czech Republic).

2. Прочитайте и переведите текст, используя слова, данные выше.

3. Ответьте на вопросы к тексту.

1. What does "petrified wood" mean?
2. When does the petrifying wood process start?
3. When do cells turn hollow and become full of calcite and silicon and water?
4. What things may happen with the trees, that react with water?
5. How can the mineral content of petrified wood be identified?
6. Where is Petrified Fossil wood found?
7. What is petrified forest?
8. Where is the world's most impressive petrified forest situated?

4. Закончите предложения:

1. Petrified wood, then, is wood that…
2. The petrifying wood process starts out when…
3. If the tree is covered up quickly enough it will…

4. A petrified forest is a forest…
5. When the water evaporates it leaves behind minerals…
6. Petrification is a natural process that occurs…
7. The world's most impressive petrified forest is in…
8. The world's most impressive petrified forest is in…

5.Перескажите текст на английском языке.

Text 8. The Alpine School of Woodcarving

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

Chip – щепка, стружка
Carving – резьба , резная работа
Dedicated to – посвященный (чему-либо)
Worldwide – по всему миру
Advanced – продвинутый
Knowledgeable – хорошо осведомленный
Appreciate – оценивать, ценить, понимать, принимать во внимание

2. Прочитайте и переведите текст.

The Alpine School of Woodcarving, Ltd. is the oldest establishment in North America specializing in and dedicated to the education, training, teaching and encouragement of chip carving. It was founded and is operated by Wayne Barton, who took his formal woodcarving training in Brienz, Switzerland. Wayne has been awarded numerous national and international honors throughout North America and Europe, winning first place in every competition he has ever entered. His carvings are part of many private and public collections and have appeared in special exhibition at the Swiss National Museum in Zurich, Switzerland. More than any other chip carver specializing in chip carving today, his books, carvings and name are recognized worldwide.

The Alpine School of Woodcarving, Ltd. conducts both two day and week long classes on chip carving. These are available for beginning and advanced students. The beginning classes are designed to teach all the fundamentals and techniques necessary to understand and produce any type of chip carving. The advanced classes are for those students knowledgeable in the fundamentals of chip carving who want to learn design and application. Applicants interested in woodcarving have an opportunity to contact the school directly. One can get information about the week long classes in Park Ridge and about weekend classes in many other American areas. The Alpine School of Woodcarving, Ltd. is proud to bring its students the finest tools and products available today to make chip carving the most enjoyable experience. The school appreciates the opportunity to serve any chip carving needs.

3. Ответьте на вопросы к тексту.

1. Does **t**he Alpine School of Woodcarving, Ltd. specialize in the education, training, teaching and encouragement of chip carving?
2. Who is the founder of this school?
3. Wayne Barton was educated in Brienz, Switzerland, wasn't he?
4. Are Wayne's carvings part of many private and public collections?
5. Are Wayne's carvings and books recognized all over the world?
6. Would you like to become a student of **t**he Alpine School of Woodcarving, Ltd. ? Why?
7. Would you like to be a sponsor of **t**he Alpine School of Woodcarving, Ltd. ? Why?
8. Do you know anything about the history of this school? Try to find some information.
9. Do you know any other American Schools of Woodcarving? Are there such schools in Russia?

4. Подберите антонимы к следующим словам:

the youngest, South, few, private, unknown, advanced.

5. Найдите в тексте предложения с пассивным залогом. Поставьте данные предложения в активный залог. Сделайте все необходимые преобразования.

6. Перескажите текст на английском языке.

Text 9. Wood

1. Прочитайте новые слова, познакомьтесь с их русскими эквивалентами. Выучите данные слова наизусть.

fiber (fibre) – волокно, клетчатка
fibrous – волокнистый, фиброзный
tissue – бумажная салфетка, (анат.)ткань
stem – ствол,стебель
root – корень
fuel – топливо
embedded – заделанный, устоявшийся
ligneous – древесный
shrub – куст
abundant – обильный, изобилующий(чем-либо)
harvest – собирать урожай
carbon – углерод
yield – урожай, доход; сдаваться, приносить,отступать
density – плотность
conifer – хвойное дерево
deciduous – листопадный
interweave – вплетать, вставлять

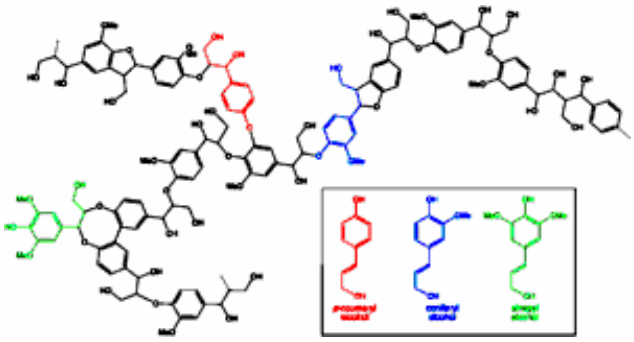
extractive industries – добывающие отрасли промышленности
resin – смола
rosin – канифоль
exude – источать, выделять, издавать

2. Прочитайте и переведите текст.

Wood is a hard, fibrous structural tissue found in the stems and roots of trees and other woody plants. It has been used for thousands of years for both fuel and as a construction material. It is an organic material, a natural composite of cellulose fibers (which are strong in tension) embedded in a matrix of lignin which resists compression. Wood is sometimes defined as only the secondary xylem in the stems of trees, or it is defined more broadly to include the same type of tissue elsewhere such as in tree roots or in other plants such as shrubs. In a living tree it performs a support function, enabling woody plants to grow large or to stand up by themselves. It also mediates the transfer of water and nutrients to the leaves and other growing tissues. Wood may also refer to other plant materials with comparable properties, and to material engineered from wood, or wood chips or fiber.

The Earth contains about one trillion tonnes of wood, which grows at a rate of 10 billion tonnes per year. As an abundant, carbon-neutral renewable resource, woody materials have been of intense interest as a source of renewable energy. In 1991, approximately 3.5 billion cubic meters of wood were harvested. Dominant uses were for furniture and building construction. A 2011 discovery in the Canadian province of New Brunswick uncovered the earliest known plants to have grown wood, approximately 395 to 400 million years ago. People have used wood for millennia for many purposes, primarily as a fuel or as a construction material for making houses, tools, weapons, furniture, packaging, artworks, and paper. Wood can be dated by carbon dating and in some species by dendrochronology to make inferences about when a wooden object was created. The year-to-year variation in tree-ring widths and isotopic abundances gives clues to the prevailing climate at that time.

There is a strong relationship between the properties of wood and the properties of the particular tree that yielded it. The density of wood varies with species. The density of a wood correlates with its strength (mechanical properties). For example, mohagony is a medium-dense hardwood that is excellent for fine furniture crafting, whereas balsa is light, making it useful for model building. One of the densest woods is black ironwood.It is common to classify wood as either softwood or hardwood. The wood from conifers (e.g. pine) is called softwood, and the wood from dicotiledons (usually broad-leaved trees, e.g. oak) is called hardwood. These names are a bit misleading, as hardwoods are not necessarily hard, and softwoods are not necessarily soft. The well-known balsa (a hardwood) is actually softer than any commercial softwood. Conversely, some softwoods (e.g.yew) are harder than many hardwoods.



Chemical structure of lignin, which comprises approximately 30% of wood and is responsible for many of its properties. Aside from water, wood has three main components. Cellulose, a crystalline polymer derived from glucose, constitutes about 41–43%. Next in abundance is hemicellulose, which is around 20% in deciduous trees but near 30% in conifers. It is mainly five-carbon sugars that are linked in an irregular manner, in contrast to the cellulose. Lignin is the third component at around 27% in coniferous wood vs 23% in deciduous trees. Lignin confers the hydrophobic properties reflecting the fact that it is based on aromatic rings. These three components are interwoven, and direct covalent linkages exist between the lignin and the hemicellulose. A major focus of the paper industry is the separation of the lignin from the cellulose, from which paper is made. In chemical terms, the difference between hardwood and softwood is reflected in the composition of the constituent lignin. Hardwood lignin is primarily derived from sinapyl alcohol and coniferyl alcohol. Softwood lignin is mainly derived from coniferyl alcohol.

Aside from the lignocellulose, wood consists of a variety of low molecular weight organic compounds, called extractives. The wood extractives are fatty acids, resin acids, waxes and terpenes. For example, rosin is exuded by conifers as protection from insects. The extraction of these organic materials from wood provides tall oil, terpentine, and rosin.

3. Ответьте на вопросы по тексту

1. What is wood? Can you define this word?
2. Wood has been used for thousands of years for both fuel and as a construction material, hasn' t it?
3. Have woody materials been of intense interest as a source of renewable energy?
4. What purposes do people use wood for?
5. What can you say about the history of wood?
6. What is called softwood? Give some examples, please.
7. What is called hardwood? Give some examples, please.
8. What can you say about the chemistry of wood?

4. Найдите в тексте интернациональные слова, выпишите их и сделайте правильный перевод.

5. Подберите антонимы к следующим словам:

Hard, man-made, weak, narrow, the latest, useless, unknown, high, short.

6. Составьте план к тексту, выделив главные мысли в каждом абзаце.

7. Сделайте небольшое сообщение на тему «Дерево», опираясь на свой план.

БИБЛИОГРАФИЧЕСКИЙ СПИСОК

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