

Л.И. Сологуб

**SCIENCE
FOR UNIVERSITY STUDENTS**

PART II

Самара
2005

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Кафедра иностранных языков

Л.И. Сологуб

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FOR UNIVERSITY STUDENTS**

**PART II
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Учебное пособие по практическому курсу «Иностранный язык (английский)» подготовлено в соответствии с государственным стандартом высшего образования и типовой программой вуза. Пособие имеет целью предложить студентам современную информацию оригинального источника, научить их извлекать и осмысливать научные сведения. Тексты отобраны для перевода в устной и письменной формах из наиболее популярных для массового чтения рубрик научных журналов «This Week in Science», «Book Review», «Editorials».

Пособие рассчитано на работу с текстами в аудитории (совместно с преподавателем) и дома (самостоятельно). Оно может быть использовано студентами-биологами как дневной, так и вечерней форм обучения, а также слушателями, обучающимися по дополнительной образовательной программе «Переводчик в сфере профессиональной коммуникации», аспирантами и соискателями.

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Рецензенты: д-р филол. наук, проф. А.Д. Наумова;
канд. пед. наук, доц. С.П. Максакова

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ВВЕДЕНИЕ

Профессиональное чтение оригинального текста, как известно, сводится к изложению его основных мыслей на иностранном языке (summaries) или переводу с одного языка на другой (translation).

Перевод используется в учебной работе как средство выявления уровня понимания текста. Перевод оригинальной литературы связан с определенным рядом трудностей, которые зависят от степени владения данным видом речевого общения – собственно переводом, типа самого текста, а также наличия лингвистической подготовки и фоновых знаний читателя – его «тезауруса».

Работая с пособием, Вам предстоит делать точный перевод некоторых текстов полностью, совершать выборочный перевод при изучении всего текста и, наконец, делать краткий реферативный перевод больших по объему текстов. Сложное содержание текстов требует от читателя умелых действий по их осмыслению, поэтому Вам предстоит составлять модель текста по ключевым словам. Эта модель позволит Вам представить содержание текста в краткой форме и использовать ее как опору при изложении сути информации.

Излагая текст-реферат на русском языке, Вы можете воспользоваться сведениями, полученными из первого задания по определению поднятой автором проблемы, главной мысли текста и его кратким содержанием, привлекая модель.

Работая в аудитории вместе с преподавателем, Вы также будете передавать содержание текстов с русского языка на английский. При этом Вам рекомендуется ориентироваться на детскую аудиторию, поскольку тексты заимствованы из «Энциклопедии для детей».

Кроме этого, пособие будет содержать небольшие тексты, связанные с определениями «науки» и «жизни». Предполагается, что такие тексты будут переводиться прямо с листа.

Домашняя (самостоятельная) работа студентов сопровождается ключами-ответами по некоторым заданиям. Выражаем надежду, что как задания, так и ответы к ним будут полезны при изучении предложенных материалов.

IN CLASS ACTIVITIES

Section I

Text 1

Mosquito Survival

Relations among parasites and their hosts (cover) are not simple to predict; many environmental factors come into play and affect the survival equation. For example, *Aedes sierrensis* mosquitos are subject to fatal parasitic infections by the protozoan *Lambornella clarki*, but under some conditions, notably limited food supplies, populations with infections can actually produce more and in some cases larger adult mosquitos than do populations that are uninfected. This surprising outcome was observed by Washburn *et al.* who compared survival and fitness of adults that developed from infected and uninfected mosquito populations in both laboratory and manipulated field settings. When the mosquitos developed with an adequate food supply, individuals from uninfected populations survived the best. When food was scarce, not only were survivors from infected populations more fit but they were as or more abundant than survivors from uninfected populations. The fatal infections in the population apparently worked to increase the per capita food supply. Effective biological control of mosquitos, therefore, will have to take into account how resource availability and other environmental parameters work to shift the balance in host-parasite relations.

Ruth Levy Guyer

I. *Read the text - summary and state what information it carries.*

II. *Choose the correct answer*

1. *The main idea of the text is that:*

- a. *uninfected populations survive the best*
- b. *an adequate food supply always effects population survival*
- c. *survivors from infected population are less fit*
- d. *when food is scarce survivors from infected populations are abundant*

2) *The text suggests that:*

- a. *the per capita food supply increased when populations were uninfected*
- b. *the per capita supply increased when populations were infected*
- c. *the per capita food supply increased when food was adequate*
- d. *the per capita food supply increased when food was scarce*

III. Find in the text these pieces in English:

- 1. начать действовать*
- 2. оказывать влияние на выравнивание выживания*
- 3. подвергаться роковым инфекциям*
- 4. как в лабораториях, так и в садках*
- 5. принимать во внимание*
- 6. наличие ресурсов*

IV. Translate the text into Russian.

Text 2

Transitory Pine Forests

In northern Scotland some 4000 years ago, the range of Scots pine forests first rapidly expanded and then retreated by about 80 kilometers during a 600-year period. Although there is no pollen evidence for the existence of the forests, stumps of fossil pine trees in peat attest to their presence. About 4400 years ago the bog surfaces grew drier, and soil conditions, were conducive to rapid growth of pines. Then around 4000 years ago another change occurred, causing the trees to begin to die out. By 3800 years ago the northern region apparently had no pine forests; the forests had returned to their original more southerly position, where they are still found today. Gear and Huntley propose that the driving forces for the rise and fall of the pine forests were shifting climates caused by changes in atmospheric circulation; they note that other evidence from northern Europe supports the notion that climate changed rapidly at that time. Although the forests responded reasonably rapidly to climate changes, the speed of the response – several hundred meters per year – is not one that would be fast enough to keep pace with changes that could come as a result of greenhouse warming.

Ruth Levy Guyer

I. Read the text-summary and state what it is about

II. Choose the correct answer

- 1) The main idea of the text is that:*
 - a. the forests die out*
 - b. the forests may rise and fall*
 - c. the forests expand and retreat*
 - d. the forests grow rapidly*

- 2) *We can conclude from the text that:*
- a. *the forests travel because the bog surfaces grow drier*
 - b. *the forests become transitory because they respond to climate changes*
 - c. *the forests travel because soil conditions are conductive*
 - d. *the forests become transitory because they grow rapidly*

III. *Find in the text these pieces in English:*

1. *перемещающиеся хвойные леса*
2. *пни ископаемых сосен в торфяниках*
3. *свидетельства об их присутствии*
4. *возвращаться на исходную позицию чуть южнее*
5. *движущая сила упадка и расцвета*
6. *скорость реакции – несколько сотен метров в год*
7. *идти наравне (не отставать)*

IV. *Translate the text into Russian*

Text 3

Suspension Feeding

Suspension-feeding blackfish extract their food, tiny plankton, from large volumes of water that they suck into their oral cavities. It had been thought that cartilaginous structures on the gill arches of the oral cavity acted as mechanical sieves to physically trap plankton particles. However, videos of the flow of fluid inside the oral cavity, made by Sanderson *et al.*, indicate that the blackfish gill-arch structures are not sieves separating water and particles but are barriers that alter the direction of flow of incoming materials. Particle-laden water was directed by the arches to the mucus-lined roof of the oral cavity (the palatal organ) where large clumps formed as small particles were brought together by mucus. Later, these clumps progressed down the esophagus. The measuring and visualization devices used in these studies can be adapted for the study of filtration strategies in other suspension-feeding fishes, bivalves, and birds.

Ruth Levy Guyer

I. *Look through the text-summary for its main information*

II. *Choose the correct answer:*

- 1) *The main idea of the text may be formulated so:*
 - a. *suspension feeding black fish get their food from sea weeds*
 - b. *suspension feeding black fish extract their food from other large fish*
 - c. *suspension feeding blackfish extract their food from large volumes of water*
 - d. *suspension feeding blackfish get their food from people*

2) *We learn from the text that:*

- a. *cartilaginous structures on the gill arches act as mechanical sieves*
- b. *blackfish gill arch structures are the water in the oral cavity*
- c. *black gill arch structures are barriers to alter the direction of incoming material*
- d. *cartilaginous structures on the gill arches serve as some filtrating mechanism*

III. *Find in the text the English counter-parts of these bits of the Russian translation:*

1. *всасывать в ротовую полость*
2. *строматевые осуществляют свое питание по типу суспензии, отбирая свою пищу из огромных потоков воды*
3. *насыщенными частицами воды*
4. *эти комки спускаются в пищевод*
5. *измерительные приборы и видеоаппаратура*
6. *питающиеся по типу суспензии рыбы, двустворчатые моллюски и птицы.*

IV. *Translate the text into Russian*

Text 4

Ocean Actions and Animal Roads

The formation of food webs in the ocean near reefs, islands, and headlands is greatly affected by local fronts; these fronts are boundaries between two different water masses and are generated by interaction of local currents with local topography. Wolanski and Hamner explain how fronts, formed for example by boundary mixing or the interaction of warm lagoon waters with colder shelf waters, affect the distribution of organisms and particulates throughout the water column. Rather than dispersing floating eggs, larvae, and plankton as do currents in the open sea, locally formed eddies and jets redistribute sediments and sweep together floating particulate materials, concentrating them. Zoocurrents or “animal roads” form, and these concentrations of plankton and other animals help to define the boundaries, direction, and site of local flows. The physical phenomena operating: around ocean topographic features concentrate organisms that are low on the food chain and therefore also the larger animals – fishes, whales, and sea birds – that eat the food sources assembled there.

Ruth Levy Guyer

- I. *Read the text and say what new information you have learnt.*
- II. *Choose the correct answer:*
- 1) *The main thought of the text is that*
 - a. *water flows effect the distribution of organism*
 - b. *“animal roads” help to define local flows position*
 - c. *ocean actions and zoo currents interact*
 - d. *the formation of food webs in the ocean is greatly effected by local fronts*
 - 2) *We also get to know that :*
 - a. *local fronts are boundaries between two different water masses*
 - b. *they sweep together floating materials*
 - c. *the concentrations of plankton defines the boundaries, directions and site of local flows*
 - d. *the larger animals assemble in concentration of low on the food chain organisms*
- III. *Translate these things into English, use the text:*
1. *Вблизи рифов, островов и мысов*
 2. *Распределение организмов и корпускулярных существ*
 3. *Образовавшиеся на местности маленькие водовороты и струи воды*
 4. *Перераспределяют осадочные отложения и сливаются вместе*
 5. *Здесь имеет место физическое явление*
 6. *Поглощать пищевые ресурсы накопленные там*
- IV. *Translate the text into Russian.*

Text 5

Evolutionary Innovations

Evolutionary Innovations. Matthew H. Nitecki, Ed. University of Chicago Press, Chicago, 2003

The 2002 Field Museum spring systematics symposium was devoted to the theme of innovation in evolution, and the book that has resulted is presented as a “cross section of present-day ideas” on the subject. In an opening paper Joel Cracraft defines evolutionary innovations broadly as “the appearance of new characters or structural/functional complexes” and considers the concept of “key innovations” from ontological, methodological, and empirical points of view, rendering (in apparent opposition to some subsequent contributions to the volume) an unfavorable judgment on its utility. Under the heading Genetics and Development Brian Charlesworth traces and comments on ideas about the evolutionary genetics of adaptations, Rudolf Raff *et al.* discuss heterochrony with reference to current studies of sea urchins, and Gerd Müller presents a “side-effect hypothesis” according to

which qualitatively new structural features arise as “by-products of epigenesis that appear when quantitative modifications of developmental processes reach a threshold of the affected system.” A section headed Morphology and Physiology contains four papers, in the first of which James Cheverud discusses generic constraints on the appearance of new trait combinations and presents some results of a study of papionin primates that bear on the matter. Karel Liem then takes up the issue of key innovations with reference to genealogical and ecological hierarchy, proposing the integrative approach “symecomorphosis.” Jeffrey Jensen also discusses key innovations, expounding the procedure of “historical testing” as an alternative to reliance on “subjective adaptive arguments.” Warren Burggren and William Bemis conclude the section with a discussion of the potential of comparative physiology in evolutionary studies. In the final pair of papers in the volume Adolf Seilacher discusses “the sand-dollar syndrome: a polyphyletic constructional breakthrough” and David Jablonski and David Bottjer discuss the ecology of evolutionary innovation from a paleobiological point of view. The volume opens with an introduction in which the editor recounts some earlier history of the subject and gives an overview of Ac contributions. It concludes with an index.

Meg Lowman

*Department of Biology,
Williams College,
Williamstown*

I. Read the book review and state what information it carries.

II. Answer these questions:

- 1. What is the way the book is presented?*
- 2. What kind of evolutionary “key innovations” are given by Joel Cracraft?*
- 3. What ideas does Brain Charles trace and comment on?*
- 4. What do Rudolf Raff et.al. discuss?*
- 5. What side – effect hypothesis does Gerd Müller present?*
- 6. What does James Cheverud discuss?*
- 7. What does Karel Liem take up?*
- 8. What’s the way Jeffrey Jensen discusses key innovations?*
- 9. How do Warren Burggren and William Bemis conclude the section?*
- 10. What is the way Adolf Seilacher and David Jablonski discuss evolutionary innovations?*

III. Find in the text the English counter-parts of the bits of the Russian translation:

- 1. был посвящен теме инновации в эволюции*
- 2. в первом докладе*
- 3. рассматривает понятие «ключевые инновации» с онтологической, методологической и эмпирической точек зрения*
- 4. выражая по существу отрицательное мнение по поводу его использования*

5. под заглавием *Генетика и Развитие*
6. качественно новые структурные черты возникают как побочные продукты эпигенеза
7. количественные изменения процесса развития достигают порогового уровня воздействующей системы
8. разъясняя процедуру «исторического исследования» как альтернативу ситуации, когда полагается на «субъективно адаптивные аргументы»
9. том открывается вступлением, в котором редактор делает обзор истории вопроса
10. предлагает перечень вкладов академии

IV. Choose any definition of evolutionary innovations and translate it into Russian.

Text 6

Visual Perception

Foundation of Vision. Brian A. Wandell. Sinauer, Sunderland, MA, 2002

We see wonderfully well and without obvious effort, yet vision is arguably the most difficult task the brain faces. In *Foundations of Vision* Brian Wandell has done a fine job of explaining both the complexities of the problem and the state of our current knowledge. Viewed from afar, the cover of Wandell's book displays a picture of an eye, an appropriate subject. But as you approach, the eye is increasingly camouflaged by the hundreds of separate tiny images from which it is constructed. The small component pictures (illustrations from the book) are monochrome images of different colors and contrasts. At the near distance required to resolve their individual characteristics, the great eye itself virtually disappears. This clever design is a useful metaphor for the visual system. When we examine the visual mechanism closely, although we understand much about its component parts, we fail to fathom the way in which they fit together to produce the whole of our complex visual perception.

Wandell divides his consideration of the visual system into three parts. The first describes the optics of the eye, the retinal photoreceptors and their responses, and the color matching that is so well explained by reference to this level. The second section what Wandell refers to as representation, including information about analysis in the neural retina and the visual cortex, basic facts about behavioral pattern sensitivity, and a discussion of multiresolution image representations. Here he introduces computational models related to human vision, presenting both the underlying ideas and some of the algorithms that are used. The third section of Wandell's book considers the most difficult problem of all, namely, how we interpret the information that is present in the visual

representation. Color, motion, and depth are discussed in some detail and there are interesting short descriptions of the strange perceptual phenomena associated with certain neurological abnormalities and of ever popular visual illusions. The book concludes with a series of useful appendixes describing shift-invariant linear systems, display calibration, classification, signal estimation, motion-flow-field calculation, and sampling and aliasing.

Foundations of Vision is unusual in combining competent treatments of the basic physiology and psychophysics of vision with a lucid presentation of ideas from computational vision, all with the ultimate goal of understanding high-level visual perception. It will be of particular value to students because it presents a broad range of fundamental data and ideas and because it demonstrates how to compute solutions to many standard problems. But Wandell's new book is not just for students, it is a well-written, carefully crafted discussion of the problems of vision and the current state of our understanding. It has much to offer everyone who wonders how this most remarkable of all senses works.

Karen K. De Valois

*Department of Psychology,
University of California, USA*

I. *Read the book-review and state what information it carries.*

II. *Answer these questions:*

- 1) *What does the cover of Brian Wandell's book display?*
- 2) *Why is the clever design called a useful metaphor for the visual system?*
- 3) *What about the first part of his consideration of the visual system?*
- 4) *What does he refer to in the second section?*
- 5) *What kind of problem is considered in the third part?*
- 6) *What unusual is in "Foundation of Vision"?*

III. *Find in the text the English counter-parts of these bits of the Russian translation:*

1. *без зримых усилий*
2. *В.В. проделал отличную работу как в объяснении сложности проблемы так и в констатации нашего современного знания*
3. *издали обложка представляет собой глаз, весьма убедительно*
4. *но, когда Вы приближаетесь, глаз демонстрирует Вам заретушированные крошечные фрагменты*
5. *при близком расстоянии большое изображение глаза как бы само собой исчезает*
6. *странные явление восприятия, связанное с определенными неврологическими нарушениями и столь распространенной зрительной иллюзорностью*

IV. *Translate the third paragraph of the text into Russian.*

Text 7

Molecular Gerontology

Molecular Biology of Aging. Caleb E. Finch and Thomas E. Johnson, New York, 2000

The promise that complex biological processes may be understood – at least in broad outline – at a molecular or biochemical level has begun to be fulfilled for some areas of biology. Thus, the molecular biology of development and cancer are tangible and viable fields, although still in their infancy. In other areas, the promise is as yet mostly unrealized, but the hope that molecular biology will soon help penetrate the mysteries of brain function or aging, for example, is stronger than ever.

Readers expecting to find in the present volume molecular paradigms for organismal or cellular aging will be largely disappointed, however. The book is more a testimony to hope in the power of molecular biology than a documentation of its achievements in aging research.

The book covers a diverse range of topics in genetics, biochemistry, and cell biology as they relate to aging in intact organisms or cultured cells. The diversity of topics reflects the pleiotropic effects of aging – even when studied in simple cell culture systems. There are chapters on the genetics of life-span in yeast, nematodes, insects, and mice; the incidence and repair of radiation-induced and oxidative damage to DNA, proteins, and cell membranes; the control of DNA replication and cell proliferation; selective and programmed cell death; and the control of general and specific gene expression. Even with such a broad range of topics, the book falls short of being really comprehensive. For the knowledgeable reader, however, most of the chapters will serve as accessible and concise introductions or updates.

In most of the book's 27 chapters, the authors clearly relate their data to organismal or cellular aging, if not directly through experimental design, then indirectly through often (but not always) lucid discussions. There are a few chapters that clearly show the successful and promising use of molecular biology to study aging. The best of these is a chapter that describes the cloning of a gene that extends the lifespan of the nematode *Caenorhabditis elegans*. A few other chapters describe preliminary data on how cloning and a genetically malleable organism can be used to isolate similar candidate genes.

The majority of the chapters describe studies in which a molecular biological approach is apparent, but only in a very preliminary form. Some of these chapters are certainly stimulating, but a molecular framework for understanding the age-related phenomenon under study must often be teased out by the reader. For example, there are studies describing age-associated alterations in the mRNA levels for several genes, some of which – such as those involved in the stress response or in protection from oxidative damage – are

good candidates for playing important roles in aging. However, few studies have gone beyond simple measurements of mRNA abundance. On the other hand, there are chapters describing novel ways to measure the accumulation of mutations in intact organisms or the use of transgenic animals to study transcriptional control, but none report results of these techniques applied to aging organisms or cells. The value in many of these chapters lies not so much in their content as in the implications of the approach and the data for directions for future research. And recent studies from these authors and other laboratories suggest that the data in some of these chapters are indeed interesting springboards for more molecular analyses.

If this book has a dearth of chapters on novel genes, their introduction into cells or organisms, the identification of age-specific regulatory DNA sequences or nucleic acid binding proteins, and other hallmarks of the arrival of molecular biology to a field, it reflects the situation of molecular aging research. Important steps have clearly been taken, and if the molecular biology of aging advances as fast as, for example, the molecular biology of cancer, one may expect this book to be out of date very soon. On the other hand, the assumption that molecular biology will unravel the mysteries of aging as rapidly as it has the mysteries of cancer may be naive. For the time being, this book should give investigators both within and outside the field of basic aging research some interesting systems and molecular hints to think about.

Judith Campisi

*Division of Cell and Molecular Biology,
Lawrence Berkeley Laboratory,
Berkeley.*

I. Read the book-review and state what information it carries.

II. Answer these questions:

- 1) What has begun to be fulfilled for some areas of biology?*
- 2) Why will be readers largely disappointed in the authors' view?*
- 3) What does the book cover?*
- 4) What is the best chapter in the authors' view?*
- 5) What is the way the data in some chapters are called by the reviewers?*

III. Find in the text the English counterparts of these bits of the Russian translation:

- 1. молекулярная биология развития и рака являются осязаемыми и жизнеспособными областями*
- 2. книга представляет собой скорее всего свидетельство надежд в области молекулярной биологии, а документ о ее достижениях в исследовании старения*
- 3. книга покрывает разнообразный спектр тем в генетике, биохимии и биологии клетки*
- 4. отражает, питающиеся разнообразной пищей, следствия старения*

5. главы, посвященные генетике продолжительности жизни
6. книге не хватает абсолютной ясности
7. большинство глав послужат в качестве введений, доступных, кратких, сообщат Вам полезные новости (по проблемам)
8. авторы приводят данные из клеточной теории старения в ходе прозрачных (ясных) обсуждений
9. ценность многих глав состоит вовсе не в их содержании, а в подаче подходов и данных, которые могут быть полезны в будущих исследованиях

IV. Translate the text last paragraph into Russian

Text 8 **Andrei Sakharov, 1921-1989**

Heroes are essential to the improvement of society. They represent humankind at its best, a distillation of the diverse qualities that lead a person to behavior that teaches and inspires. In the modern world of media hype and investigative reporting, heroes are hard to find. Either they are suspected of being ordinary souls with good public relations agents or statuesque figures whose feet of clay will be exposed just, when schoolchildren are being asked to emulate them. In this age of skepticism a man who became a hero, who never disappointed his followers, and whose influence was consistent and increasing at the time of his untimely death was Andrei Sakharov. He was a distinguished scientist and a great human being.

Sakharov received the kudos of his country for his outstanding work in physics, which led to, among other things, the Soviet hydrogen bomb. Whether the world was better off with that application is a matter for speculation, but in the eyes of the Soviet-Union it provided "the equalizer." The stalemate between the superpowers produced an era of relative world peace (defined as the absence of a major war) for an unprecedented period in modern times. Sakharov could have spent the rest, of his life basking in the tributes of his countrymen; but when he saw abuse of power, he chose instead to use his prestige to fight the authorities who had recently honored him.

He was treated with unbelievable, indignity and cruelty. He and his family were constantly harassed, as were visitors to his Moscow home. He was not allowed to continue his scientific work. His papers and personal effects were stolen from him by, order of the state. He was exiled, and he and his wife were denied needed medical attention. Throughout this period he acted with steadfastness and will. His words became rallying points for scientists worldwide, and Sakharov became their symbolic leader in the cause of scientific freedom. When praised for his courage, he replied with modesty, naming others less known who had been imprisoned for similar actions and statements.

To the credit of Mikhail Gorbachev, this disgraceful situation was reversed. Sakharov was allowed to return to his home, to speak freely, and even to travel abroad. Again that would have been a time to relax. Instead, Sakharov responded in characteristic fashion, praising acts of democracy, returning from trips abroad even though he could never be sure of his future in his homeland, and continuing to criticize where he saw only partial movement toward the democracy for which he yearned. His enormous stature stemmed not only from his past as a physicist, but also from the excellence of his judgment in dissent. He never simply railed against the system, but always had constructive alternatives to propose.

In the modern world, integrity and courage, are usually expressed in intellectual and moral terms. We moderns are rarely subjected to the physical hardships and dangers that challenged our ancestors? Even challenges to moral courage can be daunting, as the McCarthy era in this country proved only too well. At that time Edward R. Murrow, a distinguished journalist, and Herbert H. Lehman, a governor of New York, stood out as individuals willing to risk careers by speaking out when too many others were silent, Sakharov risked not only a career but physical harm. Nevertheless, his conscience, not his welfare, guided his actions. His acts of dissent started when the most confirmed optimist considered them hopeless, symbolic gestures devoid of any chance of success. The events of recent days in Eastern Europe and Russia changed the picture. How much of this change was generated by Sakharov's courageous idealism, how much by the stark reality of economic disaster, and how much by the new ideas of Gorbachev only history can decide. At this time all three appear to have played major roles. Andrei Sakharov set a standard for the modern hero. Few will achieve his level, but many will fight injustice more fiercely because of his example.

DANIEL E. KOSHLAND, JR.

I. Read this editorial-text and grasp the basic information given in it.

II. Choose the right answer:

- 1) The problem which is raised by the author is the problem of:*
 - a. interrelations between the people and scientists*
 - b. interrelations between the state power and scientists*
 - c. interrelations among scientists*
- 2) The main thought of the text is that:*
 - a. A. Sakharov was a distinguished scientist and a great human being*
 - b. He became the leader in the cause of scientific freedom*
 - c. A. Sakharov set a standard for the modern hero.*
- 3) The text suggest that heroes are essential to the improvement of society because:*
 - a. they represent humankind at its best*
 - b. their behavior teachers and inspires*
 - c. they are examples to emulate them*

III. Find in the text the English counter-parts of these bits of the Russian translation:

1. создавать «уравнитель»
2. период относительного затишья в мире
3. невероятное унижение достоинства
4. к чести
5. никогда просто не поносил систему
6. вызовы к моральному состоянию могут быть обескураживающими
7. отчаянной храбрости идеализм
8. бороться с несправедливостью более упорно

IV. To sum up the information choose some key-words and arrange a model of the text. You may also use the ready-made model of it. Now sum up the text information in Russian.

For ideas

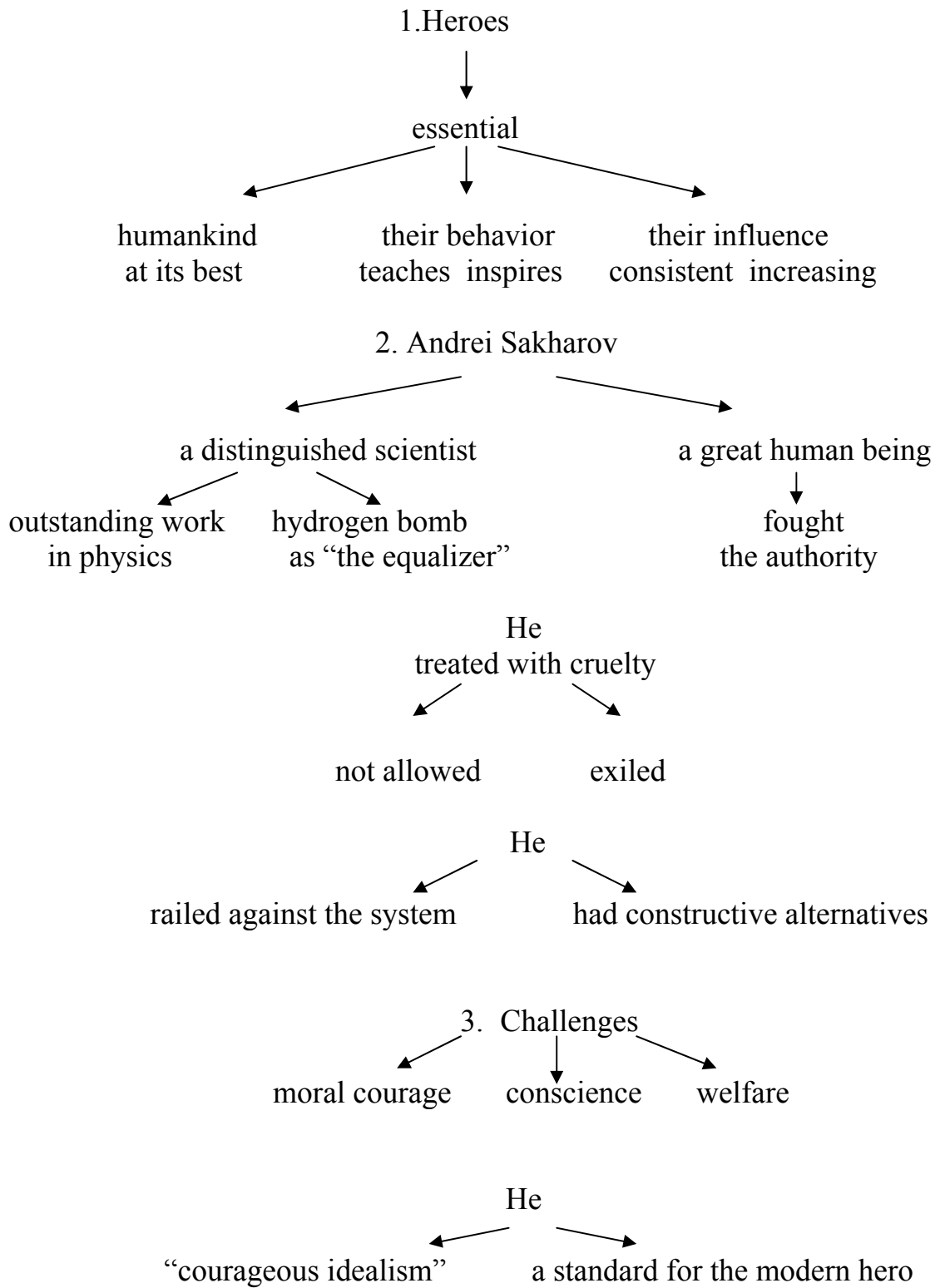
Science

“Science is systematic classification of experience” (G. Lewes)

“Science is organized knowledge” (H. Spencer)

The general meaning of the word science is knowledge. Here there are two aspects of science that deserve to be distinguished. First, science is viewed as a body of knowledge which has accumulated over the centuries. Second, science is viewed as a way of gaining knowledge. (General Biology. W.W. Bloom and K.H. Krekeler)

Модель текста
“Andrei Sakharov, 1921-1989”



Text 9

The Arctic: A Key to World Climate

The Arctic is part of a great -global heat engine. Changes in the arctic atmosphere, ocean, sea ice, and permafrost are early precursors to climate change elsewhere. In the past, those changes have been drastic. Only 18,000 years ago, virtually all of Canada and some of the United States were covered by a thick layer of ice.

At the recent AAAS Annual Meeting, a symposium brought together some of the leading research scientists active in studies of resources and climate. In one of the sessions, speakers reviewed information about the evolution of the arctic climate.

A principal impression that could be drawn from the symposium was that the current hypothesis concerning effects of greenhouse gases on arctic behavior is probably simplistic and may be quite wrong. The public has been told repeatedly that a result of increased greenhouse gases would be a substantial rise in sea level due to melting of polar ice. A related statement frequently made is that the increase in polar temperatures would be substantially greater than those of global averages. For example, one estimate is that an average rise of 2°C would be accompanied by a 10°C increase in the Arctic. That estimate may or may not adequately take into account climatic feedback mechanisms. At the symposium this point was raised implicitly by John T. Andrews, who stated that the Greenland Ice Sheet and the Laurentide Ice Sheet advanced during a period of warm water influx into Baffin Bay at the end of the last interglaciation.

The vapor pressure of water is quite sensitive to temperature. Condensing moisture in the form of snow provides a surface cover that highly reflects solar energy leading to a regional cooling. The reflectivity of ordinary soil is about 0.1. The albedo of snow is about 0.8. At present, some of the arctic land areas that have averaged annual temperatures of about - 14°C receive only 10 centimeters of total H₂O per year. Most of the time the surface is bare and is a good absorber of solar heat. Were more precipitation to occur, the total heat absorbed by the surface would decrease. With greater moisture in the air, there would be more clouds. The net effects of these are controversial. Some say that more clouds would reflect more energy away from the earth. Others point out that added moisture would enhance a greenhouse effect in the Arctic. In any event, the factors controlling arctic climate are complex.

One of the obstacles to confidence in predicting the future of the arctic climate is an imperfect knowledge of the past. We know that 70 million years ago, the climate was mild and the Arctic Ocean was ice-free. Sediments formed about 5 million years ago contained glacially related materials. We know little about what happened in the long interval, and knowledge concerning more recent events is sketchy. No long cores have been obtained from the Arctic Ocean. The impediment is the perennial ice sheet that covers most of that ocean.

The thickness is usually about 3 to 4 meters, and the sheet tends to keep moving. At the geographic North Pole, the depth of the ocean is about 3500 meters.

Our best source of evidence concerning the last million years is found in near-shore sediments, and particularly on fossil-bearing terraces. Molluscan fossils are particularly useful. Different molluscan species have different temperature affinities. In addition, they contain partially hydrolyzed proteins. The degree of racemization of isoleucine is a function of times and temperatures. The shells also contain strontium as a trace element which provides a dating potential. Oxygen isotope ratios of shells reveal temperatures present during their formation.

The importance of understanding the past, present, and future of the arctic climate requires that support for such activities have a top priority. Desirable efforts include more studies of fossils, an international program of deep drilling in the Arctic, more weather monitoring, and additional satellite surveillance of the polar region.

Philip H. Abelson

I. Read the editorial-text and state what information it carries.

II. Choose the right answer:

- 1) The problem which is raised by the author is the problem of*
 - a. our attitude to world climate*
 - b. our attitude to climate changes*
 - c. our attitude to changes in the arctic atmosphere*
- 2) The main thought if the text is that*
 - a. The Arctic is a key to world climate*
 - b. Prediction the future of the arctic climate is based on our knowledge of the past*
 - c. Changes in the arctic sphere are early precursors to climate change elsewhere*
- 3) The text also suggests that*
 - a. those climate changes in the past were drastic*
 - b. we should take into account climate feedback mechanisms*
 - c. factors controlling arctic climate are simple enough*

III. Find in the text the English counter-parts of these bits of the Russian translation:

- 1. часть глобально большой нагревающей машины*
- 2. нынешние гипотезы о влиянии парникового эффекта вероятнее всего упрощены, а возможно и совершенно несостоятельны*
- 3. существенный подъем уровня моря из-за таяния полярных льдов*

4. создает поверхностную оболочку, которая интенсивно отражает солнечную энергию.
5. дополнительная влага способствовала бы созданию парникового эффекта в Арктике
6. помехой является ежегодно возникающий ледяной покров
7. вблизи берега находящихся осадочных породах
8. поддержке подобной деятельности должно быть отдано первостепенное предпочтение

IV. Get ready to sum up the text information . Choose the key words and make up a model of the text or use the ready-made one. Give a summary of the text information in Russian.

For ideas

Scientific Research

In simplified form, the scientific process starts so. A scientist observes certain phenomena. He records and measures what he observes. Then he suggests an explanation a hypothesis.

The hypothesis is subjected to tests. The scientist test the hypothesis by more precise measurement. It is a special kind of observation under controlled conditions – an experiment.

Upon being tested, a hypothesis may have to be abandoned or modified, or it may be found to stand as formulated. If verified, a hypothesis is known as a theory, though in practice the two terms are used almost interchangeably. Theories which have been long accepted, are broad in their application, well-established theories are referred to as principles or laws.

Appreciation of the work the scientists are doing may also develop and scientists can learn to apply scientific principles in every day affairs.

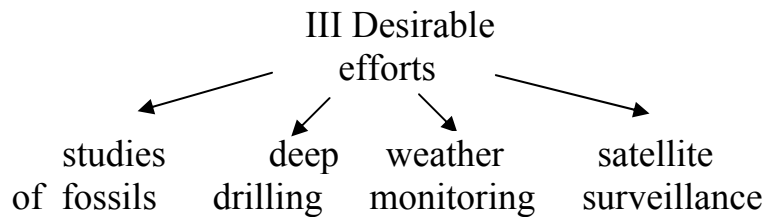
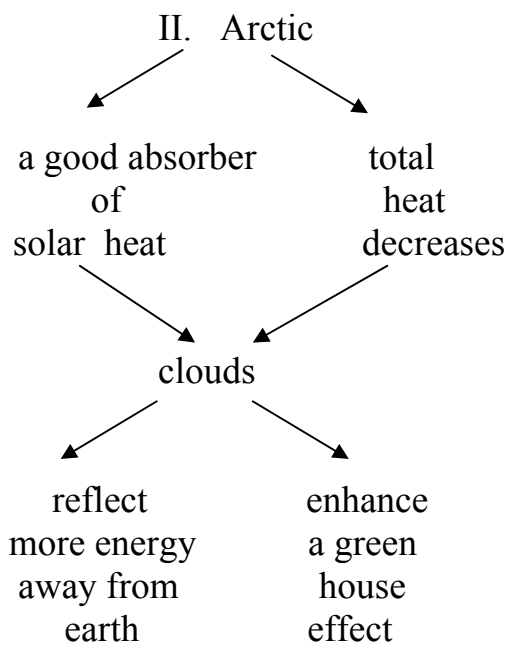
We can become aware of what kinds of evidence are necessary for arriving at concussion and should learn to be skeptical of ideas even though they have been held for a long period of time.

(W.W. Bloom, C.H. Krekeler General Biology)

Model of the text

“The Arctic: A Key to World Climate”

I. Changes
in the arctic sphere
↓
precursors
to
climate elsewhere



Text 10

Sustainable Future for Planet Earth

Participants at the United Nations Conference on Environment and Development (UNCED) to be held in Rio de Janeiro on 1 to 12 June 2006 will attempt to address many issues fundamental to achieving sustainable development. What of substance will be achieved is not now clear. The meeting will bring together representatives (perhaps heads of state) of about 150 countries, many of them with differing resources, needs, aspirations, and priorities. However, in view of growing global concern about environmental matters, the occasion will certainly be a great media event.

One of the reasons for questioning the likelihood of a substantive achievement at UNCED is the breadth of its projected agenda. A United Nations brochure lists topics that the conference will address, and these are paraphrased below:

- Protection of the atmosphere (climate change, depletion of the ozone layer, and transboundary air pollution); land resources (combating deforestation, soil loss, desertification, and drought); fresh water resources; and oceans, seas, and coastal areas and the rational use and development of their living resources.
- Conservation of biological diversity.
- Environmentally sound management of biotechnology and hazardous wastes (including toxic chemicals).
- Prevention of illegal traffic in toxic products and wastes.
- Improvement in the quality of life and human health and living and working conditions of the poor by eradicating poverty and stopping environmental degradation.

The U.N. agenda provided a stimulus for many disparate groups to hold meetings in advance of Rio. These included distinguished interfaith religious leaders, organized broadcast groups, and scientists and engineers. Examples follow:

On 20 June, the AAAS directorates for International Programs and for Science and Policy Programs hosted a 1-day symposium on UNCED. Speakers from the United Nations, the State Department, the International Council of Scientific Unions, and other organizations discussed the UNCED agenda and the role of nongovernmental organizations in preparing for the Rio meeting.

A “2006 Forum on Global Change and the Human Prospect” is planned for 16 to 18 November and will be held near Washington, D.C. Sigma Xi is the primary sponsoring scientific society. Co-sponsors include AAAS and about 40 other scientific and engineering societies whose total membership is about 1 million. The three plenary sessions are titled, respectively, “What Kind of a World Do We Have?”; “What Kind of a World Do We Want?”; and “What Must We Do to Get There?”. Workshop sessions will facilitate participation by attendees. The banquet speaker will be Maurice Strong, who heads the influential Secretariat of UNCED.

At the conclusion of the meeting the religious participants will issue a statement describing in detail “mounting evidence of environmental destruction and ever-increasing peril to life, whole species, whole ecosystems.” The statement will also note: “We believe a consensus now exists, at the highest level of leadership across a significant spectrum of religious traditions, that the cause of environmental integrity and justice must occupy a position of utmost priority for people of faith.” The religious leaders will include members of the Catholic, Greek Orthodox, Jewish, and Protestant faiths. They “reach, teach, and counsel many millions of people.” The impact of UNCED will also be enhanced by television programs on development and environment. Twenty films will be broadcast during a period of 2 to 4 weeks in May. Among them will be seven 50-minute films co-produced by BBC Television.

Perhaps the greatest impact of the media will occur at the time of the UNCED meeting in Rio and thereafter. Coverage of the event will be enormous. In addition to the official proceedings, a major secondary event involving 20,000 to 40,000 representatives of nongovernmental organizations will make news.

Philip H. Ableson

I. Read the text and grasp the basic information given in it.

II. Choose the right answer:

- 1) The problem raised by the author is of*
 - a. our attitude to the future of the planet Earth*
 - b. our attitude to the protection of the environment*
 - c. our attitude to the improvement of our life quality*
- 2) The main thought of the text is the following*
 - a. We should achieve some kind of sustainable development of our planet*
 - b. We should eradicate poverty and stop environmental degradation*
 - c. We should improve human health, living and working conditions*
- 3) The text also suggests that*
 - a. in view of growing global concern about environmental matters concern UNCED is of great importance*
 - b. role of nongovernmental organizations in preparing for the Conference is not so important*
 - c. coverage of the event will be enormous*

III. Find in the text the English counter-parts of these bits of the Russian translation:

- 1. достигать поддерживающего развития*
- 2. истощение озонового слоя*
- 3. борьба с потерей лесов*

4. *сохранение биологическое разнообразия*
5. *экологически здоровое управление биотехнологией*
6. *переработка вредоносных отходов*
7. *предотвращение нелегальных продаж токсических материалов и отходов*
8. *искоренение нищеты и прекращение экологической деградации*

IV. *To sum up the information choose some key-words and arrange them into the text model of the text or use the ready-made one. Sum up the text information in Russian.*

For ideas

The Beginning of Science – Hippocrates

The most important name associated with the rationalistic beginning of biology is that of Hippocrates. Virtually nothing is known about the man himself except that he was born and lived on the island of Cos in a temple to Asclepius, the Greek god of medicine. He was accepted as a priest there.

Nevertheless in Hippocratic view “No god influenced medicine”. To Hippocrates the healthy a body was one in which the components worked well and a diseased body was one in which they did not. It was the task of the physician to see where the flaws in the working were and then to take the proper action to correct them. The action consisted chiefly of allowing the patient to rest, seeing that he was kept clean, had fresh air, and simple and wholesome food. In short, the physician’s role, in his view, was to let natural law itself effect the cure.

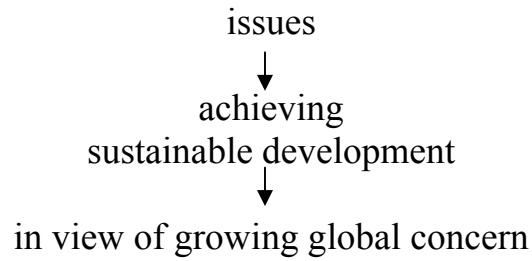
One of the oldest of Hippocratic writings deals with the disease epilepsy. The book, called “On the Sacred Disease”, was written about 400 B.C. , that is why the beginning of the science of biology we could point to the day 400 B.C. In this book he maintained that it was useless, generally, to attribute divine causes to diseases.

Hippocrates founded some medical traditional that persisted after his time. By the way, “Hippocrates oath” is still recited by medical graduates.

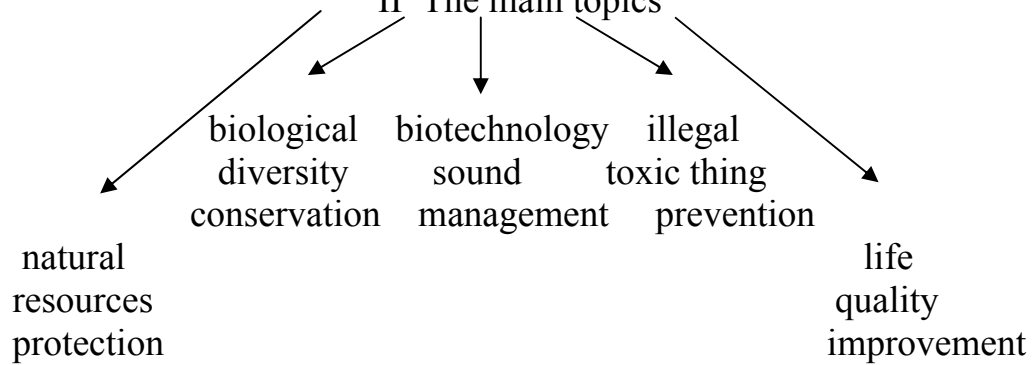
(I. Asimov “A short History of Biology”, chapter I, Ancient Biology”)

Model of the text
“Sustainable Future for Planet Earth”

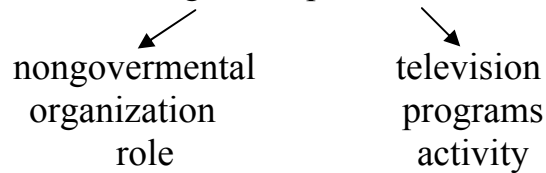
I UNCED



II The main topics



III Of great importance



Section II

For ideas

Life

We define life, after I. Asimov, as the property displayed by objects, made up of cells containing at least one active DNA, or RNA molecule, possessing the ability to move independently, sense, and respond adaptively, metabolize, grow, and reproduce.

(I. Asimov “Life and Time”, chapter Life)

Render these texts into English

Text1

Легенда о предках Гиппократата

Древние греки считали, что род Гиппократата идет от «великого и непорочного врача» Асклепия (Эскулапа – у римлян), а тот считался сыном самого бога света Апполона. По некоторым данным, Асклепий был реальной исторической личностью, впоследствии обожествленной. Согласно древнегреческой мифологии, медицине Асклепия обучил мудрый кентавр Хирон. Ученик даже превзошел своего учителя.

Однажды Асклепия пригласил на остров Крит царь Минос, у которого только что умер сын. Во дворце на своем посохе Асклепий увидел змею и убил ее. Но вскоре появилась еще одна змея с целебной травой во рту и воскресила убитую. Асклепий воспользовался этой же травой для воскрешения умершего сына Миноса.

За это дерзкое нарушение установленных законов мироздания громовержец Зевс испепелил Асклепия молнией. Для древних греков и римлян Асклепий стал богом врачевания. Его изображали с посохом, обвитым одной или двумя змеями.

Text 2

Ярусы жизни

Животные самых различных групп, осваивая жизненное пространство, используют все возможности жилого участка (биотипа). Представим себе наиболее простой биотоп, каким является луг. Здесь наблюдается несколько ярусов жизни. Есть там животные, которые всю жизнь проводят в почве (дождевые черви, личинки многих жуков и др.).

Муравьи обитают преимущественно на земле. Бескрылые насекомые, а также некоторые клещи держатся в слое мха, окутывающего основания стеблей травы. Тли, кузнечики и другие живут на листьях и стеблях растений. Есть и истинные любители цветков растений (например, некоторые пауки).

Еще ярче ярусность выражена в водоемах, особенно в море. Пассивно парящие в воде животные, обитающие в толще воды, называются планктоном. В составе планктона преимущественно мелкие формы, очень много простейших. Активнодвигающиеся в толще воды обитатели водоема именуется нектоном (например, головоногие моллюски). Наконец, обитатели дна представляют собой бентос, в составе которого многие сидячие животные (губки, кораллы и др.), а также передвигающиеся по дну (моллюски, ракообразные, черви).

Text 3

Зачем комарам жужжание?

Кто не слышал надоедливого жужжания мух и комаров! Но вот вопрос: зачем они жужжат? Ведь комару, например, гораздо выгоднее было бы подобраться к своей жертве бесшумно, незамеченным. Быть может, жужжание — это звук машущих крыльев? Но муха, потерявшая крылья, жужжать не перестает.

Приглядевшись, можно заметить, что у мухи звук жужжания издают специальные органы, расположенные позади крыльев, — жужжальца. По форме пара жужжалец похожа на гантели. Эти маленькие «гантели» вибрируют, как крылья.

Для чего они нужны? Вот как один исследователь в начале XX в. описал полёт мухи, лишённой жужжалец: «Взлетая с края стола, распутив крылья, быстрым полётом устремляется она в пространство. Но на расстоянии одного метра от стола она падает на землю и опрокидывается на спину. Затем поднимается на лапки и, сделав несколько шагов, снова пробует полететь. Но в первый раз насекомое находилось на возвышенном месте, откуда ему оставалось только броситься вперед. Теперь же оно на земле, и ему следует подняться. Оно прыгает вверх на 6 или 7 см, крылья колеблются, кажется, оно уже летит. Но ничуть не бывало: оно быстро падает вниз, в 10 см от того места, откуда взлетело».

Оказывается, жужжальца у мух и комаров — органы равновесия. Сохраняя при поворотах неизменное положение плоскости своих колебаний, они позволяют двукрылым быстро ориентироваться в пространстве.

Text 4

Каким видят мир животные?

Каждое животное видит мир по-своему. Сидя в засаде, лягушка видит только движущиеся предметы: насекомых, на которых она охотится, или своих врагов. Чтобы увидеть всё остальное, она должна сама начать двигаться.

Сумеречные и ночные животные (например, волки и другие хищные звери), как правило, почти не различают цветов.

А вот стрекоза хорошо различает цвета, но только... нижней половиной глаз. Верхняя половина смотрит в небо, на фоне которого добыча и так хорошо заметна.

О хорошем зрении насекомых мы можем судить хотя бы по красоте цветков растений — ведь эта красота предназначена природой именно для насекомых-опылителей. Но мир, каким они его видят, сильно отличается от привычного нам.

Цветки, которые опыляют пчёлы, обычно не окрашены в красный цвет: пчела этот цвет воспринимает, как мы — чёрный. Зато, вероятно, многие невзрачные на наш взгляд цветы приобретают неожиданное великолепие в ультрафиолетовом спектре, в котором видят насекомые. На крыльях некоторых бабочек (например, лимонницы, боярышницы) имеются узоры, скрытые от человеческого глаза и видимые только в ультрафиолетовых лучах.

Удивительным образом используют особенности зрения насекомых некоторые пауки, поджидающие своих жертв внутри цветков. Разумеется, будущая жертва, садясь на цветок, не должна замечать паука. Между тем на брюшках многих таких пауков бросаются в глаза яркие красные пятна. Чем это объяснить? Оказывается, когда на тех же пауков взглянули, так сказать, глазами насекомых, пятна стали совершенно незаметны. Зато птицам, которые могут склевать пауков, отпугивающие пятна заметны превосходно. Значит, паук «загримирован» для насекомых, но «ярко раскрашен» для птиц!

Кстати говоря, насекомые определяют положение солнца, чтобы находить дорогу, даже в пасмурные дни. Ультрафиолетовые лучи свободно проходят сквозь слой облаков. Когда муравьев в ходе опыта стали облучать сильными ультрафиолетовыми лучами, они побежали укрываться «в тень» не под защиту пропускавшей ультрафиолет тёмной дощечки, а под прозрачное, на наш взгляд, стекло, задерживавшее эти лучи.

Text 5

Легенды об омеле

Человек, оказавшийся в начале нашей эры в одной из священных дубрав древних галлов, мог стать свидетелем церемонии поклонения омеле — таинственному растению, поселяющемуся на ветвях деревьев. Галлы верили, что омела обладает всеисцеляющей силой, причём для излечения от любых болезней достаточно просто к ней прикоснуться.

Священнодействие происходило в день зимнего солнцестояния (22 декабря), когда заканчивается «царство ночи», после чего светлое время суток начинает постепенно увеличиваться. В это время целебная сила омелы считалась наибольшей. В дубраву пригоняли пару белых быков, которые никогда до того не носили ярма. Жертвенные животные как бы освящали всю церемонию. Жрец (друид), облачённый в белоснежные одежды, взбирался на дуб и золотым серпом срезал омелу, которую подбирали в белый платок. Ветвями вечнозелёной омелы украшали жилища, храмы.

Почитание омелы так и не исчезло до конца во Франции, хотя католические священники запретили даже вносить в церковь веточки этого «языческого» растения. «Новый год с омелой!» — так желали друг другу счастья в новом году французские крестьяне. До сих пор в Англии и Франции на Рождество над дверями домов можно увидеть веточку омелы. И в Австралии местные виды омелы служат «рождественскими деревьями».

Легенды и мифы об омеле слагали многие народы. Согласно скандинавской мифологии, однажды мудрому и храброму богу Бальдру была предсказана насильственная смерть. Его мать богиня Фригг взяла клятву со всех живых и неживых существ, со всех растений, растущих в воде и на земле, что они не причинят вреда её сыну. Только с ничтожной омелы, растущей на лещи деревьев, забыла она взять эту клятву.

Бальдр стал неуязвимым для любого оружия, и боги порой забавлялись стрельбой в него, которая не могла причинить ему вреда. Но злой и коварный бог Локи изготовил из прутика омелы смертоносную стрелу и незаметно подложил её в такой момент слепому богу Хёду. Выстрелил бог Хёд — и убил Бальдра.

А у древних греков и римлян омела послужила прототипом «золотой ветви». Дело и том, что хотя свежие листья омелы ярко-зелёного цвета, подсохшие, они становятся золотисто-желтыми и жёсткими, напоминая золотые. В поэме Вергилия «Энеида» предсказательница даёт такой совет мифологическому герою Энею, желающему увидеть умершего отца:

*Слушай, что делать тебе
придётся. В чаще таится
Ветвь, из золота вся,
и листья на ней золотые.*

Только золотая ветвь открывает живому человеку путь в подземное царство мёртвых.

Text 6 Панда

I

Большая панда, или бей-шунг (по-китайски — белый медведь), была обнаружена в 1869 г., а поймана впервые лишь через 68 лет. Одно время она считалась даже вымершей. Проходили годы, а охотники и натуралисты, отправлявшиеся в Южный Китай на её поиски, возвращались ни с чем. Только в 1937 г. поймали первую большую панду — юную самочку, которую назвали Сулинь. Но она недолго жила в неволе и через год умерла. У охотников за пандами теперь было больше опыта, и вскоре они поймали ещё одну самку, наречённую именем Мей-Мей.

Почти 100 лет учёные разгадывают одну из загадок природы, пытаясь установить происхождение большой панды. Обладая признаками медведей, енотов, кошек, куниц, она не принадлежит ни к тем, ни к другим.

Исследовав первые четыре шкуры бей-шунгов, добытые в Китае еще в конце прошлого века, учёные решили было, что большая панда — особая разновидность растительноядных медведей. Зверь получил название бамбукового медведя. Одно время бей-шунга считали даже древнейшим представителем медвежьего рода, чуть ли не предком современных медведей.

Но в 1936 г. американский специалист по сравнительной анатомии животных профессор Вильям Грегори после тщательных исследований пришёл к выводу, что большая панда — не медведь, а гигантский енот. Он нашел у него много анатомических признаков, свойственных американским енотам-полоскунам.

Слово «панда» происходит от местного названия этого зверя «ньяла-понча», что значит «пожиратель бамбука». Хотя панды по происхождению хищные животные, они вегетарианцы: едят в основном молодые ростки бамбука. Сначала непонятно было, как большая панда, напоминающая своим видом неуклюжего медведя, управляет с тонкими стеблями бамбука такими толстыми лапами. И управляет ловко: держит тонкий стебелёк в лапах и обкусывает. Делает она это с помощью как бы шестого пальца — одна кость запястья удлинилась и действует, как большой палец на нашей руке, противостоящий всем другим. Поэтому панда может крепко держать в лапах самые тонкие стебли бамбука: её «шестой палец» плотно прижимает их ко всем остальным пальцам на лапе.

II

Местные охотники говорят, что большая панда умеет залезать на деревья, где и спасается от собак. В холодные месяцы года, особенно когда в той местности, где она живёт, выпадает снег, панда надолго прячется в

пещерах или вместительных дуплах. Но впадает ли она в зимнюю спячку, как медведь, неизвестно. Возможно, на короткое время и впадает.

Пространство, обжитое большой пандой, невелико: с севера на юг оно простирается, по-видимому, лишь на 300 км. Врагов у большой панды мало. Кроме человека лишь два: леопард и красные волки. Но они довольно редки в тех краях. До сего времени лишь немногим больше 20 больших панд привезли из Китая в разные зоопарки мира.

Размером взрослая панда довольно внушительна: длина — почти 2 м, а вес — до 150 кг.

Кроме большой панды есть ещё малая панда. Она живёт на восточных склонах Гималайских и ближайших гор Западного Китая. Зверёк это небольшой: длина вместе с хвостом — около 1 м. Шерсть у него густо-пушистая, оттого малая панда кажется крупнее своих истинных размеров. Днём малые панды спят в дуплах или на развилках деревьев, в сумерках пробуждаются, прохаживаясь вперевалочку, ищут жёлуди, коренья, лишайники и, главное, сочные молодые побеги бамбука. При каждой, даже мимолётной, тревоге спасаются на деревьях. А если пути к отступлению отрезаны, защищаются отчаянно, отбиваясь лапами с острыми когтями.

Живут малые панды часто парами или семействами, стаями — никогда. Крик их — громкое, какое-то птичье верещание. Кроме двух видов панд других енотов в Старом Свете нет.

Text 7

Живые фонари

Морские глубины населены медузами, которые живут в постоянном мраке и холоде. Когда их поднимают со дна, они обнаруживают большое разнообразие форм: некоторые имеют вид тарелочек, другие — шлема, третьи — шара, потому и на медуз-то похожи очень мало. Медузы занимают главенствующее место среди обитателей дна морей, и ученые часто ломали головы, что же дало медузам возможность занять одно из первых мест по численности во мраке глубин? При детальном исследовании было выяснено, что глубоководные медузы не преследуют свою добычу, поскольку их движения очень медленны. Они подманивают ее к себе ярким светом.

Подобно тому, как слетаются самые различные насекомые на свет горящего фонаря, не свет медуз собираются рачки, а вслед за рачками и другие глубоководные животные, питающиеся рачками. Тут-то их и настигают щупальца медузы, собирающей улов с большей части водного пространства.

Text 8

Миноги

Миксины живут в морях и океанах, а миноги встречаются и в пресных водах. В отличие от миксин они имеют зрячие глаза. Причём не два, а три! Третий, теменной, развит слабее. Это древнейший орган, сохранившийся у очень немногих позвоночных.

Каждое лето европейские речные миноги собираются в стаи в Балтийском море и идут на нерест в реки. В сентябре студенты-биологи Петербургского университета по давней традиции, чтобы оповестить всех об этом событии, развешивают по коридорам шуточные объявления: «Не купайте в Неве ног, здесь разводятся миноги!» Действительно, миноги идут в Неву на нерест, только до него еще далеко: он происходит весной. Организм миноги, вошедшей в реку, перестраивается. Питание прекращается, кишечник отмирает, у самок созревает икра.

Нерест — дело серьёзное. Где попало откладывать икру минога не будет. Самец начинает строить гнездо. Облюбовав участок на каменистом дне, он энергично разрывает гальку и расчищает площадку диаметром 50 см. Оказавшиеся здесь камешки он захватывает своей ротовой присоской и уносит их прочь. Если появится другой самец, владелец гнезда присасывается к его телу и выталкивает его вон за пределы участка. Самка появляется, когда строительство гнезда близко к завершению. Выметав свои 20 тыс. икринок, миноги в полном изнеможении забиваются куда-нибудь в тёмное место и гибнут.

Из икринок выклевываются слепые и беззубые личинки миног — пескоройки, совершенно непохожие на родителей. Зарывшись в ил, они процеживают воду с пищевыми частицами сквозь жабры, добывая, таким образом пропитание. Так когда-то питались вымершие круглоротые и ныне питаются ланцетники. Через 3—4 года, дорастя до 15 см в длину, пескоройки превращаются во взрослых миног. Молодые миноги прощаются со своей рекой и устремляются в море. Теперь они становятся хищниками и нападают на рыб. Ротовая присоска морской миноги содержит до 125 острых сверлящих зубов. Присосавшись к телу жертвы, миноги могут терзать свою добычу днями и неделями. Когда миноги по построенному человеком каналу обошли Ниагарский водопад и проникли в Великие американские озёра, они уничтожили огромное количество ценных промысловых рыб и получили за что имя «чёрный бич Великих озёр». Миноги нападают даже на китов! На мясной диете минога быстро растёт и через год-два, достигнув иногда 1 м в длину, отправляется в последний путь, на нерест в родную реку. Есть и такие миноги, которые питаются только в состоянии личинок.

Миноги издавна считаются изысканным деликатесом, хотя, например, в США их не едят, считая «червями». Миног подают к столу в жареном, копчёном и маринованном виде, и это действительно вкусно. В России промысел миног ведётся в Неве (там добывают европейскую речную миногу), в Волге и Куре (а в этих реках — каспийскую).

Text 9

Киви

Вгруппу бескилевых птиц учёные зачислили также очень интересных пернатых — киви. Родина их — Новая Зеландия, и киви даже изображён на гербе этой страны.

У киви — прекрасное обоняние, а ведь это редкость для пернатых обитателей планеты. Ноздри у киви — не в основании клюва, как у большинства птиц, а на ее конце. Сунув длинный и гибкий «нос» в сырую землю, редкостная птица вынюхивает червей и насекомых. Ест и ягоды. Жизнь киви проходит неприметно: ночами в гуще трав и кустов слышится лишь звонкое «ки-ви» — свист самцов, но их самих увидеть трудно.

Днём киви спят в норах, под корнями, в кустах. Там и гнёзда устраивают, высланные травой, листвой. Дело самки — снести яйцо. Но какое яйцо! Вес его — 450 г: лишь вчетверо меньше веса птицы, одарившей им мир. Самец-киви насиживает тяжеловесное яйцо (редко два) целых 80 дней, ненадолго отлучаясь, чтобы поесть. В птичьем мире это один из самых «заботливых» отцов.

Птенец вылупляется из яйца оперённый не пухом, а, как и взрослые, волосовидными прядями перьев. Он не спешит покинуть гнездо: 5— 7 дней отсиживается в нём. Потом выбирается из него и отправляется с отцом на поиски пропитания.

Киви бегают суетливо, вперевалочку и от кустов и дыр под корнями, где прячутся днем, уходят недалеко. Крылья у этих птиц крохотные (длиной всего 5 см), почти незаметны. Но интересно, что киви унаследовали от некогда крылатых предков инстинктивную привычку, отдыха я, прятать клюв «под крыло»!

«Сегодня эти древние привлекательные птицы, — пишет известный немецкий учёный Готтфрид Мауэрсберггер, — наконец-то под строгой защитой законов, и тем не менее возможно, что вскоре их можно будет увидеть только на гербах и марках». Вымирают киви, и их очень жаль.

Text 10
Капуцины
Черная наукообразная обезьяна

Капуцины — самые известные обезьяны Нового Света. У них типично обезьянья внешность. Они похожи на хорошо всем известных мартышек и макаков. У них длинный хватательный хвост, которым некоторые капуцины могут даже брать пищу. Своё название обезьяны получили за своеобразие головных уборов: у одних видов — чёрную шапочку на голове, похожую на тонзуру — выстриженный круг на голове францисканских монахов ордена капуцинов; у других — хохол, напоминающий клобук с остроконечным капюшоном, одежду всё тех же монахов.

Капуцины — самые умные обезьяны Нового Света и по умственным способностям не уступают даже человекообразным обезьянам. Они постоянно пользуются камнями, чтобы расколоть орех, сбить с клетки замок, разбить заводную игрушку, чтобы выяснить, что там у неё внутри. Охотно подражают людям: стирают бельё, подметают пол, причёсываются и даже курят. У них развито чувство прекрасного. Один капуцин прославился как великий обезьяний художник. Если ему давали цветные мелки, он разрисовывал штрихами и линиями весь пол лабораторного помещения, создавая своеобразный орнамент, занимался этим часами и сердился, если ему мешали или портили картину. Капуцины любят душистые вещества и с удовольствием натирают тело лимоном, луком, лесными клопами, не отказываются и от одеколона.

Живут капуцины большими стадами и держатся вместе, а если во время кормёжки разбредутся, то поддерживают друг с другом звуковой контакт, аукаются. Стада капуцинов частенько объединяются с обезьянами других видов, например с саймири, затевают с ними совместные игры, но иногда ссорятся и устраивают шумные потасовки.

APPENDIX

TACTIC SUGGESTIONS TO STUDENTS ON TRANSLATION

Before considering the role and the place of translation in foreign language teaching it is necessary to state what is meant by "translation". By translation we mean the transmission of a thought expressed in one language by means of another language. In this way translation ensures comprehension between peoples speaking different languages. In order to transmit a thought from one language into another, one must understand this thought in the language from which one is to translate it and find equivalents to express it in the other language. Therefore translation is a complicated process; it requires the ability to think in both languages.

In foreign language teaching translation may be used, for instance; as a means of conveying the meaning of a word, a phraseological group, a grammar form, or a sentence pattern. Translation is then considered to be a means of teaching a foreign language. From the history of methods of foreign language teaching it is known that the approach to translation has undergone various changes at different times. Thus in the second half of the 18th, and the first half of the 19th century, translation was considered to be a method of instruction. A foreign language was taught through translation; in the grammar-translation method it was mainly from the mother tongue into the foreign language, and in the lexical-translation method — from the foreign language into the mother tongue.

At the end of the 19th and at the beginning of the 20th century direct methods appeared and spread throughout the world. Direct methods completely eliminated translation in foreign language teaching. Later on translation was admitted in foreign language teaching, in such methodological systems as H. Palmer's and M. West's, as a means of conveying the meaning of language units.

In Russia translation has never been taboo in foreign language teaching though its role and place varied. Thus in the conscious-translation method proposed by L. V. Tsherba translation played a great role in the teaching of foreign language, both for practical and educational ends. Practically translation was to be used as a means of conveying the meaning, as a leading type of exercise for consolidating the language material presented, as almost the only means of checking the pupils' knowledge of vocabulary, grammar, and the comprehension of what they read and heard. It was applied at every stage irrespective of pupils' age, language experience, language material, etc., and throughout the whole process of assimilation, namely: explanation, consolidation, or retention, and checking. Practice has proved, however, that the constant use of translation does not ensure the necessary conditions for pupils' direct comprehension of what they read and hear. As a result they can neither speak nor read the foreign language. Nor can they translate from one language

into the other since translation requires the ability to think in both languages. (This is possible on condition that pupils have ample practice for speaking, hearing, reading, and writing in the target language.)

To meet the programme requirements translation must now be utilized:

1. As a means of conveying the meaning of a word, a phraseological group, a grammar form, and a sentence pattern alongside with other means; translation being the most economical method from the point of view of the time required.

For example: a flower — цветок; Pete's brother — Петин брат; He happened to be busy — Случилось так, что он был занят.

Besides, translation ensures comprehension of a new language item.

For example: to go — уезжать, уходить, т. е. двигаться (передвигаться) от какого-либо места; to come — приходить, приезжать, т. е. двигаться к какому-либо месту; I am writing — Я пишу (сейчас, в данный момент).

Translation as a means of conveying the meaning may be used in two ways: translation proper and translation-interpretation.

The teacher uses translation proper when, for example, a new word has a more or less exact equivalent in the other language, e. g., *a flower* — цветок. No interpretation is needed.

The teacher uses translation-interpretation when there is something peculiar, specific about a word presented. It may be:

(a) an absence of an equivalent

For example, meal — (1) принятие пищи (Breakfast is the first meal. We have 3—4 meals a day. —Мы едим 3—4 раза в день. Hence there is an expression *meal-time*: *What is your usual meal-time* — Когда вы обычно едите?); (2) пища, которую принимают, едят (Make a meal of bread and butter. — Поешьте хлеба с маслом. He always enjoys his meals.—Он всегда с удовольствием ест.)

to rain (snow)—такого глагола в русском языке нет (it rains — идет дождь; it snows —идет снег)

(b) difference in the extent of meaning

For example, to go — передвигаться (удаляться от...) любым средством, двигаться, доходить до ..., to drive — вести что-либо (машину, автобус, троллейбус и др.). Hence driver — водитель, вагоновожатый, шофер, машинист; raw — сырой, необработанный; raw material—сырье; raw meat — сырое мясо

(c) difference in usage, i. e., a word forms specific combinations which do not exist in the Russian language. For example, *heavy rain*, *to pay attention*, *to meet requirements*, etc.

2. As a means of ensuring comprehension of difficult points in a text — through analysis and translation pupils gain comprehension, as is the case when they are given a text too difficult to understand without analysis and translation.

3. As a means of checking pupils' comprehension of what they read or hear alongside of other means.

These are the cases where translation is desirable and helpful in foreign language teaching. In consolidation or retention of language material no translation should be utilized, however. Various drill and speech exercises must be done within the target language. The teacher must do his best to create the atmosphere suitable for developing pupils' speaking and reading habits and skills.

It is necessary that pupils should follow the rule: "Learn to speak by speaking and read by reading." Translation provides neither the first nor the second. It only helps in obtaining knowledge of vocabulary and grammar, but it hinders the development of speech habits and skills, since instead of direct comprehension and expression of their thoughts pupils fall into the habit of translating everything they hear or read, and in this way do not get accustomed to associate the sequence of sounds they hear with the meaning it has in the foreign language, to associate the graphemes with the notions they convey. Under these conditions no speaking or reading is possible.

Consequently the teacher may use translation when explaining new material and checking his pupils' knowledge.

If we consider translation from the point of view of the relationship between the mother tongue and the foreign language, we distinguish the following types of translation:

(a) translation from the foreign language into the mother tongue; (b) translation from the mother tongue into the foreign language and (c) retranslation (i. e., first pupils translate from the foreign language into the mother tongue and then, after a while, back into the foreign language).

If we consider translation from the, point of view of its relation to the original, we distinguish:

1. Word for word translation (or literally translation), when all the lexical units of the foreign language are replaced by those of the mother tongue, the grammar structure being that of the foreign language.

For example, I have a sister. — Я имею сестру.

My mother is not at home, — Моя мама (есть) не дома.

He was called on by the teacher yesterday. — Он был спрошен учителем вчера.

Though word for word translation violates the syntax of the mother tongue, it transmits the meaning of a sentence. Besides, word for word translation is valuable in an educational respect as it gives a pupil an opportunity to compare all the elements of the language he studies with the corresponding elements of the mother tongue and in this way to see the difference between these languages.

2. Adequate translation which in contrast with word for word translation transmits the thought expressed in the foreign language by means of the corresponding equivalents of the mother tongue.

For example: I have a sister. — У меня есть сестра.

My mother, is not at home. - Мамы нет дома.

He was called on by the teacher yesterday. - Его вчера спрашивал учитель.

3. Free translation or free interpretation of the text in the mother tongue that was read or heard in the foreign language.

For example, pupils read a newspaper or an article and each says a few words on its contents.

4. Literary-artistic translation is a translation which requires special skills and knowledge and it cannot be included in school syllabus requirements.

Translation may be of two kinds: written and oral. They both may be used with the aim of checking pupils' comprehension, and their knowledge of vocabulary and grammar.

In conclusion, it should be said that translation is a means of teaching a foreign language and, as such, its various types and kinds may be recommended. The choice depends on: (1) the objective of the lesson, (2) language material, (3) stage instruction, (4) pupils' age, (5) pupils' progress in the target language, (6) time the teacher has at his disposal.

AT HOME

Text 1 Pesticide Bans

There are complicated health, safety, environmental, political, and economic issues associated with the use and withdrawal from use of pesticides. Pesticides increase agricultural productivity, but when health or environmental costs become unacceptable they can be banned; increasingly in recent years the banning of various pesticides has been suggested. Zilberman *et al.* consider the economic impacts of banning a single pesticide (the example used is parathion, a chemical that protects lettuce plants from aphids) and of broadly banning pesticides, as was proposed in California. The cost-benefit equations include diverse factors such as whether ready substitutes exist for the banned substances and whether consumers, producers, or only subsets of these groups will lose economically when a ban is imposed. Use fees and partial bans appear to be as or more effective than complete bans in achieving environmental and safety goals, and the authors propose that fees collected would best be applied to the development of alternative pest-management strategies.

Ruth Levy Guyer

I. *Read the text-summary and state what information it carries.*

II. *Choose the correct answer:*

1. *The main idea of the text is that*
 - a. *complete bans of pesticides should be imposed*
 - b. *use partial bans appear to be more effective*
 - c. *use fees seem the best*
 - d. *use both fees and partial bans of pesticides to be more useful.*
2. *The text suggests that:*
 - a. *pesticides can be banned if they increase agricultural productivity*
 - b. *pesticides can be banned if their substitutes are ready*
 - c. *we should ban pesticides when health or environmental costs become unacceptable*
 - d. *we should ban pesticides when consumers lose economically*

III. *Find in the text the English for the following:*

1. *использование или воздержание от использования пестицидов*
2. *когда это за счет здоровья окружающей среды*
3. *рассматривать экономический урон от запрета одного единственного удобрения*
4. *химическое средство, которое защищает салат от тли*

5. сопоставление проигрыша и выгоды включает разнообразные факторы
6. проигрывают экономически, если запрет будет введен

IV. Translate the text into Russian

Text 2

Viral Disease in Cats

The well-being of cats in an established cattery deteriorated after a cat developed diarrhea, anemia, neurologic abnormalities, and rhinitis and other infections, aborted a litter, and died; during the next years, nine other cats in the same pen developed similar disease and died. The virus responsible for the disease was isolated by Pedersen *et al.* and compared with the human AIDS virus; disease was transmitted experimentally to pathogen-free kittens. The new virus, called feline T-lymphotropic lentivirus (FTLV), is antigenically distinct from other cat viruses and from the AIDS virus. However, FTLV resembles the AIDS virus in morphology, in having a strong tropism for T cell, in mental requirements for the functioning of its reverse transcriptase, and in its ability to cause a disease similar to AIDS. Although this virus poses a threat to cat populations, it and the cats that harbor it may help in the study of AIDS.

Ruth Levy Guyer

- I. Read the text-summary and state what it is about
- II. Choose the correct answer:
 1. The main idea of the text is that
 - a. The well-being of cats becomes better because of their victories in viral diseases
 - b. The well-being of cats becomes worse because of viral diseases
 - c. The well-being of cats is threatened by usual diseases
 - d. The cats are subjected to diverse infections
 2. We can conclude from the text that:
 - a. The new virus is similar to the human AIDS
 - b. The new virus resembles the AIDS virus
 - c. FTLV is only distinct other cat viruses
 - d. FTLV is distinct both from the AIDS virus and from other cat viruses

III. Suggest the English for the following:

1. *вырождаться после инфекций*
2. *преждевременно давать жизнь своему потомству*
3. *в том же самом жилье*
4. *названный кошачьим*
5. *в формируемых требованиях*
6. *представлять собой угрозу популяции*
7. *кошачьи, которые приобрели его (заразились)*

IV. Translate the text into Russian

Text 3
Sex Determination in Fruit Flies

IN fruit flies, sex is not determined by X and Y chromosomes. It is determined by the ratio of X chromosomes to other non-sex-related (autosomal) chromosomes in the fly and by the actions of a number of regulatory genes. Two such genes that produce protein products that are known to bias sex determination toward the production of females are called *transformer* (*tra*) and *tra-2*. Exactly how the expression of these genes influences sex differentiation is now known. In studies by Hoshijima *et al.*, the products of *tra* and *tra-2* were shown to induce the maximum production of female-style messenger RNA molecules by the *doublesex* (*dsx*) gene. The *dsx* messenger RNA molecules are assembled in the female manner when the female-specific exon is spliced to a common exon; the gene products made from *tra* and *tra-2* activated the female-specific acceptor site on *dsx*, favoring its usage in assembly of the messenger RNA molecules. The resulting gene product promotes femaleness by repressing male-specific differentiation.

Ruth Levy Guyer

I. Read the text-summary and denote it's main information

II. Choose the correct answer:

- 1) The main thought of the text may be formulated so
 - a. *in fruit flies, sex is determined only by Y chromosomes*
 - b. *in fruit flies, sex idetermined both by X and Y chromosomes*
 - c. *it is determined only by the ratio of X chromosomes*
 - d. *it is determined by the ratio of X chromosomes to other no-sex related chromosomes and by actions of a number of regulatory genes*
- 2) We may suppose the text suggests that
 - a. *it is known how the genes expression influences sex differentiations*
 - b. *they induce the maximum production of female style messenger RNA molecules*

- c. *femaleness is achieved by some assembly of the messenger RNA molecules*
- d. *RNA molecules are not assembled in the female manner*
- III. *Find the following Russian things in the text:*
1. *ряд регулирующих генов*
 2. *обеспечивать склонность к формированию женских зародышевых клеток*
 3. *вызывать максимум образования*
 4. *ориентированный на женскую особь экзон спланируется в обнятый экзон*
 5. *совместно с носителем молекулы RNA*
 6. *способствовать женскому началу*
 7. *угнетая ориентированные на мужское начало признаки*
- IV. *Translate the text into Russian*

Text 4

Antarctic Ozone Hole

How much extra radiation from the sun hits Antarctica as a result of the ozone hole, and how does the solar irradiance there compare with the amount of ultraviolet light reaching the earth elsewhere? Each year in September (the start of spring in the Southern Hemisphere), the ozone hole begins to develop, in October ozone levels drop to a minimum, and in November the hole dissipates. Frederick and Snell calculated and compared ultraviolet irradiance at the earth's surface at McMurdo Station in Antarctica and levels at Miami, Florida, which is representative of a low to mid-latitude location. At McMurdo Station the sun is low in the sky (and has a high zenith angle), whereas over Miami the sun is high (and has a low zenith angle); thus, even when the ozone levels are most depleted, the amount of ultraviolet radiation reaching Antarctica is not much different from the amount that hits Miami at the summer solstice. Nonetheless, the increased radiation over Antarctica and the effective "longer summer" brought on by the ozone hole may cause problems for indigenous plants and animals that have adapted to a different environment.

Ruth Levy Guyer

- I. *Read the text-summary and state what information it carries*
- II. *Choose the correct answer:*
- 1) *The main thought of the text may be expressed so*
 - a. *as a result of the Ozone hole much extra radiation from the sun hits Antarctica*

- b. *the amount of ultraviolet light reaching the earth elsewhere is not very intensive*
 - c. *the amount of ultraviolet reaching Antarctica differs much from that which hits Miami*
 - d. *as a result of the Ozone hole little radiation from the sun reaches the Earth*
- 2) *We may also conclude from the text that*
- a. *in October ozone levels reach a maximum*
 - b. *In September the Ozone ceases to develop*
 - c. *In October Ozone levels drop to a minimum*
 - d. *In September the ozone hole begins to develop*

III. *According to the text the English for the following is:*

1. *дыра рассеивается*
2. *являться показательным*
3. *когда озоновые уровни наиболее истощены*
4. *при летнем солнцестоянии*
5. *создавать проблемы для местных растений и животных*
6. *уже освоились с иными условиями жизни*

IV. *Translate the text into Russian*

Text 5

The Perception of Odor

The Vertebrate Olfactory System. Chemical Neuroanatomy, Function and Development. Norrbert Halász. Akadémiai Kiadó, Budapest, 2000.

Lewis Thomas in his book *Late Night Thoughts on Listening to Mahler's Ninth Symphony* noted that "we might fairly gauge the future of biological sciences, centuries ahead, by estimating the time it will take to reach a complete, comprehensive understanding of odor." Since the days of Ramon Cajal, the striking laminated morphology and complex neuronal circuitry of the olfactory bulb, the first synaptic relay and information-processing station in the brain, have attracted the attention of neuroanatomists and neurophysiologists, and an enormous wealth of information regarding neural circuitry in the olfactory bulb accumulated over decades of research. The perception of odor has again become a topic of widespread interest, and advances in understanding odor recognition and olfactory transduction are occurring at an accelerated pace. This new surge

of interest in vertebrate chemoreception is fueled by a series of rapid successes in molecular studies of peripheral mechanisms.

The Vertebrate Olfactory System by Norbert Halász provides a timely, detailed compendium that integrates this vast amount of historic and recent information into a comprehensive description of the olfactory system. The painstaking detail with which different cell types and their connections are described and the more than 1000 references cited attest to the epic endeavor undertaken by Halász in writing this monograph.

The Vertebrate Olfactory System follows the publication of several other books on olfaction, including *Neurobiology of Taste and Smell* (T. E. Finger and W. L. Silver, Eds., Wiley-Interscience), an excellent introduction to vertebrate chemoreception, and *Molecular Neurobiology of the Olfactory System* (F. L. Margolis and T. V. Getchell, Eds., Plenum), a series of well-chosen chapters presenting recent promising advances in molecular explorations of the olfactory system. Halász's book differs from these earlier ones in its exhaustive documentation, which renders it particularly useful as a reference work for experts but exceeds the level of general introduction most useful to the novice. Such a reader would benefit from reading *Neurobiology of Taste and Smell* prior to tackling *The Vertebrate Olfactory System*.

Another distinguishing quality of this book stems from its having a single author. Though this has resulted in a coherent style and viewpoint, it has also resulted in a bias towards the author's own expertise. Of the nine chapters that constitute the work, the chapter describing morphological, immunohistochemical, and electrophysiological aspects of the olfactory bulb occupies almost two-thirds of the book, leaving information on other aspects of olfaction, such as peripheral mechanisms, the accessory olfactory system, behavior, and human olfaction, somewhat underrepresented. This chapter is definitely the strong point of the book. It contains the most comprehensive description to date of the neural inputs, outputs, and interconnections that make up the circuitry of the olfactory bulb and provides an encyclopedic documentation of the morphologies, connections, and neurotransmitter contents of virtually every cell of the olfactory bulb that has ever been described. It also connects well with the two chapters that follow it, which describe the olfactory tract and microcircuitry in olfactory cortical areas.

Throughout this book, Halász displays an almost uncanny familiarity with intimate details of decades of literature. He wisely steers clear of controversy and limits himself to well-established experimental facts in providing a unified overview of the functional anatomy of the olfactory system. In doing so, he has provided a monograph that will remain a valuable source of information for many years to come.

Robert R.H. Anholt
Department of Neurobiology,
Duke University,

I. *Read the text-review and state what information it carries.*

II. *Answer these question:*

- 1) *Might we fairly foresee the future of biological science?*
- 2) *What does “The vertebrate olfactory system” integrate?*
- 3) *What other sources of information on olfaction are mentioned in review?*
- 4) *What does “The Vertebrate Olfactory System” differ from the earlier ones?*
- 5) *What is advised to read prior to tackling “ The Vertebrate Olfactory System ”?*
- 6) *What is considered is another distinguishing quality of the book?*

III. *State which parts of the original text might be the counterparts of these bits of the Russian translation of the article*

1. *предугадывать будущее биологических наук*
2. *сложная система обонятельной луковицы*
3. *эта новая волна интереса*
4. *тщательно изложенные детали*
5. *представляя недавние перспективные успехи*
6. *такому читателю (новичку) лучше вначале прочесть...чтобы справиться*
7. *привело к связности стилевого оформления и изложения точки зрения*
8. *проявилось также в склонности представлять собственно авторский квалифицированный вывод*

IV. *Translate two last paragraphs since the words “Of the nine chapters...” into Russian.*

Text 6

Issues of Evolution

Genetics, Paleontology, and Macroevolution. Jeffrey Levinton. Cambridge University Press, New York, 2003

Levinton's title recalls a famous conference of the Modern Synthesis at which evolutionary geneticists and paleontologists united to support the neo-Darwinian theory that natural selection, acting on genetically variable individuals within populations, constitutes the primary causal factor of

evolution. Recently, many evolutionists (particularly developmental biologists and paleontologists) have rejected neo-Darwinism as a universal guide for studying evolution, finding its recognition of only a single important level of causality too restrictive. Macroevolutionary trends and novelties are investigated alternatively as the product of multiple, hierarchically organized causal forces that act at the genic, organismal, and species levels. Historical processes producing differential speciation and extinction among lineages on a geological time scale augment population-genetic processes as important causes of evolution. The higher-level processes may oppose and thereby cancel or reverse the effects of population genetic processes. Conflict between the neo-Darwinian and hierarchical theories has split evolutionary biology. Levinton seeks to reunify the field by introducing some explicitly hierarchical elements into neo-Darwinism while retaining natural selection as the primary cause of organismal evolution.

Developmental biology has challenged neo-Darwinism repeatedly from the work of Richard Goldschmidt to the currently popular theories of epigenesis. I found Levinton's discussion of Goldschmidt particularly insightful. Levinton shows that Goldschmidt argued simultaneously the now-discredited notion that higher taxa originate via special chromosomal mutations that produce aberrant "hopeful monsters" and the substantive position that developmental processes mediate gene expression and evolutionary directionality. The latter claim underlies recent structuralist epigenetic theories that attribute a large component of evolutionary directionality to constraints imposed by developmental processes rather than to natural selection. Saltational origin of novel structures is seen to result from the response of a developmental process to genetic perturbations that affect early ontogenetic stages. Levinton's theory includes an important evolutionary role for developmentally mediated constraints and discontinuities, but it remains firmly within the neo-Darwinian tradition by asserting that the alternative, complex phenotypes subject to developmental regulation are built gradually by natural selection and then tied to genetic switches that allow them to be suppressed and reactivated. Genetic switching is said to produce a false appearance of saltatory origin for key features. Levinton thereby rejects, in favor of population genetic mechanisms, the structuralist notion that generative processes intrinsic to organismal development can determine evolutionary novelties and trends.

Levinton acknowledges a role for evolutionary processes that transcend the species level in generating dominance patterns among taxa, but he maintains that no processes of differential speciation and extinction have assembled complex adaptations. He is particularly critical of punctuated equilibrium, which proposes that species maintain static morphologies that are disrupted only during infrequent events of branching speciation. Punctuated equilibrium views accumulated speciation rather than accumulated intraspecific evolution as the primary source of morphological change. Levinton accepts the phenomenon of

character stasis but attributes it to an intraspecific process, stabilizing selection, rather than to species-level constraints; character change is also viewed as an intraspecific phenomenon that is largely decoupled from branching speciation. I agree with Levinton that punctuated morphological evolution appears often to be decoupled from branching speciation in many taxa, but I dispute his charge that punctuated equilibrium resurrects the discredited essentialist notion that species have fixed, defining features. Punctuated equilibrium is based on the position that species are ontological individuals and on Ernst Mayr's populational model of peripatric speciation, both of which strongly reject essentialism.

I expect this book to be highly influential in its intended role as a blueprint for the study of macroevolution. It represents what is probably the strongest and most comprehensive defense of the neo-Darwinian position currently available. The hierarchical theories developed by paleontologists and developmental biologists in reaction to neo-Darwinism are also very strong, however, and I expect many macroevolutionists to continue to favor them. Levinton nonetheless contributes the important recognition that neo-Darwinism must accommodate hierarchy if it is to succeed as a blueprint for the reunification of evolutionary biology.

Allan Larson

*Department of Biology,
Washington University,*

I. Read the text and state what it is about

II. Answer the following questions:

- 1) What has split evolutionary biology in A. Larson's opinion?*
- 2) What does Levinton seek to?*
- 3) What does the reviewer find particularly insightful?*
- 4) What does Levingston acknowledge?*
- 5) What does Levingston reject?*
- 6) Does he accept the phenomenon of character stasis?*
- 7) What does A. Larson agree with Levingston and what does he dispute?*

III. State which parts of the original text might be the counter-parts of these bits of the Russian translation of the article

- 1. сторонники Левингстона снова созывают конференцию Современного Синтеза*
- 2. естественный отбор составляет исходный причинный фактор эволюции*
- 3. находя его признание в качестве единственного признака причинности слишком ограниченным*

4. увеличивать значимость популяционно-генетических процессов в качестве важных причин эволюции
5. воссоединить области введением некоторых явно иерархических элементов с быстро становящимися популярными теориями
6. реакция процесса на генетическое расстройство
7. производить ложное впечатление скачкообразного происхождения основных черт
8. сопровождающее равновесие основано на точке зрения, что виды являются онтологическими особями

IV. Translate the last paragraph of the article into Russian

Text 7 North American Plants

Flora of the Great Plains. The Great Plains Flora Association. University Press of Kansas , Lawrence, 2000.

Many people think of the Great Plains as interminable grainfields — the part you sleep (or daydream) through when driving across the country. This book demonstrates that the Plains are diverse and interesting and the composition of their flora is changing and worth notice. Moreover, it accomplishes this with a minimum of technical terminology, so the information is accessible to, and will interest, nonprofessional and professional alike. By including the transitional area between forest and grassland, the authors present a coherent picture of the complexity of variation and distribution of the plants, many of which have their easternmost or westernmost populations within the Flora's area. R. B. Kaul, in his chapter "Physical and floristic characteristics, of the Great Plains", points out that the flora is a relatively new one, composed of grassland species that replaced cool-temperate forest specks as the climate warmed at the end of the Pleistocene. General discussions that accompany the keys and descriptions often mention the apparent expansion or contraction of a taxon's range, making it clear that the flora is still evolving. The feeling of active change is maintained through discussions of probable hybridization and introgression and extent of morphological variation.

Flora of the Great Plains provides descriptions distributions, and identification for all vascular plants that occur spontaneously in the area between the eastern base of the Rocky Mountains, the western border of continuous eastern forests, the Canadian border, and northern Texas. It was

edited, and mostly written, by 14 taxonomists from 12 institutions, who formed the Great Plains Flora Association(GPFA).

By my count, 2933 species in 841 genera and 160 families are treated in detail, with many more mentioned in discussions. Families are circumscribed and arranged following Cronquist's *Integrated System of Classification of Flowering Plants*; the listing of genera and species is alphabetical. The descriptions are thorough and consistent. The GPFA members wrote most of the treatments, although other authorities contributed for some groups. The authors studied more than a million specimens in herbaria of the GPFA member institutions. Some of these were recent collections, made as part of the *Flora* project; most were earlier collections, many of which had not been consulted before for regional floras or even monographs. Recent literature was consulted and is cited. Names found in two dozen relevant floras are accounted for through synonymy, but the greatest contribution here may be the disposition of numerous taxa recognized by Rydberg in his *Flora of the Prairies and Plains of Central North America*, which until now was the only available reference for the area and which maintained an extremely narrow species concept. The present *Flora* will be of great value to agronomists and other land managers because it includes information on dangers of species poisonous to livestock and on potential weeds, phytopathology, and conservation status.

Distributions are given to the state level, except when they are restricted or disjunct, in which case counties are specified. A map showing the counties is unfortunately lacking. General distributions outside the Flora area are also given, and there are tantalizing references to what might be happening beyond the area. In many cases taxonomic within the area could not be solved because of lack of information on variation outside it. A complete list of "abbreviations for nomenclatural authorities" compiled by Ralph E. Brooks includes interesting biographical notes. Sporadic use of diacritical marks here and throughout the book is puzzling, however. The glossary, compiled by Eileen K. Schofield, is a handy addition, although illustrations would have been a great help to the nonprofessional reader.

We urgently need a continental Flora, for we, have no single reference that provides for plants as they occur throughout North America the kinds of information contained in the *Flora of the Great Plains*. Such a Flora is needed to provide a context for the details found in regional floras. Beyond being a reference that will be useful to a wide variety of readers for many years to come, the *Flora of the Great Plains* serves as an inspiration and a model for a Flora of North America, for it is the product of individuals who recognized a need and, with the support of their own institutions, private foundations, and the National Science Foundation, joined together to fill it successfully.

Nancy R. Morin
Missouri Botanical Garden,
St. Louis, MO 63166-0299

I. *Read the text-review and make out in its general contents*

II. *Answer the following questions:*

- 1) *What do people think of the Great Plains?*
- 2) *What does R. B. Kaul point out?*
- 3) *What kind of descriptions does "Flora of the Great Plains" provide?*
- 4) *How many species, genera and families are treated in detail?*
- 5) *Who has taken part in the book creation?*
- 6) *What book was the only available reference for the area?*
- 7) *For what specialists will the present Flora be of great value?*

III. *Find in the original text these counterparts of the words and phrases of its Russian translation*

1. *состав их флоры меняется и на нее стоит обратить внимание*
2. *информация доступна*
3. *ясная картина всей сложности изменчивости и распространения отмирающих растений*
4. *заменяли когда-то прохладные умеренно развитые участки леса*
5. *очевидное расширение или сужение объема любого исследуемого явления*
6. *по моим подсчетам*
7. *описания тщательны к исследованиям*
8. *включает информацию по поводу опасных видов ядовитых растений для домашнего рогатого скота*

IV. *Translate the last paragraph of the text into Russian.*

Text 8

Testing for Carcinogens with Rodents

The principal method of determining potential carcinogenicity of substances is based on studies of daily administration of huge doses of chemicals to inbred rodents for a lifetime. Then by questionable models, which include large safety factors, the results are extrapolated to effects of miniscule doses in humans. Resultant stringent regulations and attendant frightening publicity have led to public anxiety and chemophobia. If current ill-based regulatory levels continue to be imposed, the cost of cleaning up phantom hazards will be in the hundreds of billions of dollars with minimal benefit to

human health. In the meantime, real hazards are not receiving adequate attention.

The current procedures for gauging carcinogenicity are coming under increasing scrutiny and criticism. A leader in the examination is Bruce Ames, who with others has amassed an impressive body of evidence and arguments. Ames and Gold summarized some of their recent data and conclusions in *Science* (31 August, p. 970). Three articles in press in the *Proceedings of the National Academy of Sciences* provide an elaboration of the information with extensive bibliographies. The articles also provide data about other pathologic effects of natural chemicals.

A limited number of chemicals tested, both natural and synthetic, react with DNA to cause mutations. Most chemicals are not mutagens, but when the maximum tolerated dose (MTD) is administered daily to rodents over a lifetime, about half of the chemicals give rise to excess cancer, usually late in the normal life span of the animals. Experiments in which synthetic industrial chemicals were administered in the MTD to both rats and mice resulted in 212 of 350 chemicals being labeled as carcinogens. Similar experiments with chemicals naturally present in food resulted in 27 of 52 tested being designated as carcinogens. These 27 rodent carcinogens have been found in 57 different foods including apples, bananas, carrots, celery, coffee, lettuce, orange juice, peas, potatoes, and tomatoes. They are commonly present in quantities thousands of times as great as are the synthetic pesticides.

The plant chemicals that have been tested represent only a tiny fraction of the natural pesticides. As a defense against predators and parasites; plants have evolved a large number of chemicals that have pathologic effects on their attackers and consumers. Ames and Gold estimate that plant foods contain 5,000 to 10,000 natural pesticides and break-down products. In cabbage alone some 49 natural pesticides have been found. The typical plant contains a total of a percent or more of such substances. Compared to the amount of synthetic pesticides we consume, we eat about 10,000 times more of the plant pesticides.

It has long been known that virtually all chemicals are toxic if ingested in sufficiently high doses. Common table salt can cause stomach cancer. Ames and others have pointed out that high levels of chemicals cause large-scale cell death and replacement by division. Dividing cells are much more subject to mutations than quiescent cells. Much of the activity of cells involves oxidation, including formation of highly reactive free radicals that can react with and damage DNA. Repair mechanisms exist, but they are not perfect. Ames has stated that oxidative DNA damage is a major contributor to aging and to cancer. He points out that any agent causing chronic cell division can be indirectly mutagenic because it increases the probability of endogenous DNA damage being converted to mutations. If chemicals are administered at doses substantially lower than MTD they are not likely to cause elevated rates of cell death and cell

division and hence would not increase mutations. Thus a chemical that produces cell death and cancer at the MTD could be harmless at lower dose levels.

Diets rich in fruits and vegetables tend to reduce human cancer. The rodent MTD test that labels plant chemicals as cancer-causing in humans is misleading. The test is likewise of limited value for synthetic chemicals. The standard carcinogen tests that use rodents are an obsolescent relic of the ignorance of past decades. At that time, extreme caution made sense. But now tremendous improvements of analytical and other procedures make possible a new toxicology and far more realistic evaluation of the dose levels at which pathological effects occur.

Philip H. Abelson

I. Read the editorial text and make out what information it carries

II. Choose the right answer

- 1. The problem which is raised in the text is the problem of determining potential carcinogenicity by*
 - a. daily administration of huge doses of chemicals*
 - b. strict regulations*
 - c. questioning models*
- 2. The main thought expressed in the articles is*
 - a. Real cancer hazards are not receiving adequate attention*
 - b. Pathologic effects of natural chemicals have'n been studied trhoughly*
 - c. The maximum tolerated chemicals dose gives rise to excess cancer*
- 3. The text also suggests that:*
 - a. a large number chemicals evolved from plants is used as a defense against predators and parasites*
 - b. all chemicals are toxic if they are used gested in sufficiently high doses*
 - c. oxidative DNA is not a major contributor to aging and to cancer*

III. Find the English for the following Russian counter-parts

- 1. пугающие публикации привели общество в волнение и вызвали химиофобию (боязнь любых химических веществ)*
- 2. в разной пище, включая яблоки, бананы, морковь, сельдерей, кофе, салат, апельсиновый сок, горох, картофель и помидоры.*
- 3. химические вещества растительного происхождения – лишь крошечная частица естественных пестицидов*

4. *в сущности, все химически препараты токсичны, если...*
5. *обычная столовая соль может вызвать рак желудка*
6. *химический препарат может быть безвреден на уровне меньших доз*
7. *стандартные тесты на рак с использованием грызунов - устаревший атрибут невежественности прошедших десятилетий.*

IV. Choose the key-words to sum the information up, arrange them into a scheme. Check up your work use the key-model. Make up a summary translation of the text in Russian.

Text 9

To See Ourselves As Others See Us

The words of Robert Burns, “O wad some Pow’r the giftie gie us to see ourselves as others see us!” are as applicable to scientists as they are to all other individuals. As we make our New Year’s resolutions, this may be an important admonition to remember while we strive to preserve the health and vitality of scientific institutions. As science has become more visible and more powerful, it has also attracted more armchair critics and more adversaries. The visibility delights, but the criticism bewilders. We see ourselves as out to do good and to increase the standard of living, yet we are accused of torturing animals, polluting the environment, embarking on megaprojects of little interest to the populace, and tampering with the genetics of natural species. While most of these types of charges can be answered, and some of them are demonstrably false, most scientists would agree that others may have some substance. When the public has been asked to vote, it has supported science on most issues. But there appears to be growing skepticism toward science and a willingness by the public to believe illogical alternatives.

It is vital that scientists sensitize themselves to public concerns and address them in a compassionate and candid way. It is probably hopeless to convert the extremists — the no-animals-in-research, no-pesticides, no-genetic-engineering, and no-progress crowds — although careful answers to each of their positions should be developed. It is more important to understand why a portion of the general public is sympathetic to the argument that science can produce more harm than good.

The most unsettling feature of science is probably the rapidity at which it changes cultural values. When science was curing a few diseases and producing a few labor-saving gadgets it was viewed with unmitigated awe and respect. Now, the speed of scientific advances threatens to alter values faster than the social system can accommodate to such change. Sydney Brenner’s statement

that a modern computer hovers between the obsolescent and the nonexistent illustrates the speed of advances in modern science. If practitioners of science then talk in a language that is not easily understood or retreat into their laboratories, the problem is exaggerated. Birth control pills, automobiles, and increased longevity are all admirable, yet they have brought major changes in the sexual mores, family mobility, and lifestyle of all of us.

The practice of science is opportunistic. We solve the problem that is before our eyes and are not required to predict the widespread ramifications that result if the solution is more popular than we expect. No one can assess at the inception of an invention all of its social implications. We could not predict that an understanding of radio waves would change the way we communicate, that understanding control of bacterial growth would lead to a population explosion, or that a simple equation, $E = mc^2$, would change the nature of warfare. But as architects of change, we have occasionally oversold the product, implying that it will bring unmixed good, not acknowledging that a scientific advance is a Pandora's box with detriments or abuses as well as benefits. By confessing that we are not omniscient we may lose some awe and admiration, but we will gain in understanding and rapport.

Ultimately society controls the rules of scientific application mainly by its control of funding. We of course have the option to work for organizations of which we approve and the citizen's right of political advocacy. Scientists are the servants of society, not its masters, and we should remain so. But because we are close to the events of change, it is our special responsibility to spell out the disadvantages as well as the advantages of a new discovery as far as we can. What is good for science is not necessarily good for the country, and we should be particularly cautious in endorsing megaprojects (or microprojects) that compete for dollars in a significant way with other needs of society.

It is the nature of scientists to advocate change more than most people do. The increasing complexity of science, furthermore, requires language that is unfamiliar outside the scientific community. This tempts some to accuse us of being a secret cabal that embarks on projects society would reject if it had a chance to do so. The antidote is to explain the serendipitous nature of science, to display our own limitations with candor, to express our intensions and reservations in clear, nonspecialized terms, and to empathize and communicate with those whose lives will be changed by discoveries now being made in mysterious laboratories and published in esoteric journals.

Daniel E. Koshland, Jr.

I. Read the editorial text and state what information it carries.

II. Choose the right answer:

- 1) The problem which is raised in the text is the problem of*
 - a. interrelations between sciences and society*

- b. *interrelation between sciences and ordinary people*
- c. *our attitude to some scientific discoveries*
- 2) *The main idea of the article is*
 - a. *Scientists are the servants of society*
 - b. *In the nature of scientists to advocate change more than most people do*
 - c. *The speed of scientific advances threatens to alter values faster than the social system can accomodate to such change*
- 3) *The text also suggests that*
 - a. *science has become more visible*
 - b. *its visibility delights, but the criticism bewilders*
 - c. *scientists see themselves as people who do good and increase the standart of living*
 - d. *as for the oridinary people they accuse them of forturing animals, polluting the environment, engaging in projects of little interest and, changing the genetics of nature species*

III. Find in the text the English for these Russian counter-parts

1. *насильственно вмешиваясь в генетику естественных видов*
2. *вместо с тем на большинство подобных обвинений можно дать ответ*
3. *наименее регулируемое свойство науки это вероятно та скорость с которой они меняет ценности культуры*
4. *на нее смотрят с явным благоговением и уважением*
5. *менять ценности быстрее, чем социальная система способна приспособиться к таким изменениям*
6. *в качестве архитекторов таких перемен мы осознаем, что научный прогресс приносит урон наряду с выгодами*
7. *требовать язык (терминологию), который неизвестен вне научного объединения*
8. *противоядие состоит в том, чтобы объяснить суверенную природу науки, демонстрировать свою искренность, знакомить со своими намерениями и предостережениями ясным языком без профессиональной терминологии*

IV. Choose the key-words of the text and make a model of its information to sum it up in Russian. You may use the key-model to check yourselves.

Text 10

For Whom the Bell Tolls

Illegal entry, sting operations, deception, aggression, bloodsucking, and territorial greed are what the articles in this issue of *Science* are about. They are also about cost-effectiveness, altruism, fertility, resource allocation, and adaptive behavior. The ecology world is one in which there is only one standard of ethics: survival. Species that can put together the smartest programs are going to survive, often at the expense of others. Ivory-tower critics may talk about animal rights or plant rights, but the mosquito is not worried about infiltrating across a border, nor does the malaria parasite have fits of conscience because it may be a stowaway in the illegal action. Nor is the swatter of the mosquito particularly distressed by intruding on the reproductive cycle of this interesting species.

Understanding the behavior of species and the survival strategies that they have developed is essential for understanding the survival of all species including humans. For evolution has finally succeeded in producing a species, *Homo sapiens*, whose physical features are not that impressive but whose brain has made its proliferation incredibly more efficient than it is in other species. As a result, the population of the globe has lost proportion, and the number of human beings is threatening all other species. Estimates of global species numbers range from 5 million to 50 million in the world today but their numbers appear to be dwindling rapidly. Efforts to protect a few endangered species such as the red-cockaded woodpecker or the northern spotted owl can only succeed at great expense and with knowledge of their habitat needs. Specialized programs do not solve the problem of the relentless expansion of man, with his consequent destruction of tropical forests, his defiling of wilderness areas, and his pollution of the oceans. Ecology, the study of the delicate balance between species in the environment, shows that evolution has developed clever strategies, not all of them following the Marquis of Queensberry rules, to use resources to maximum effectiveness. Those strategies sometimes involve symbiosis, sometimes tacit agreements on territory, and sometimes murderous aggression, but all are based on the assumption that resources are limited so that the clever and the parsimonious will gain relative to the inefficient and wasteful.

Our ability to speak and write has tilted that equation so that we humans are reproducing profligately while other species die. Are we likely to stop in deference to other species? Curiously the animal rightists and anti-evolutionists think in parallel in regard to the exalted status of man. Animal rightists suggest that we have no right to attack other species. Anti-evolutionists say that we are so different that we cannot learn from the behavior of lower species. Both are partly wrong and partly right. Evolution makes no case for gifts of rights to other species, and we have learned much about human behavior from studies of

less complex species. But ecological studies also reveal that species adapt to threats to their own survival, and symbiosis is one of nature's prize stratagems.

Our great brains have allowed us to reproduce somewhat unchecked, but they should also allow us to modify behavior more than other species. The relentless extinction of species by destruction of their habitats is no longer a triumph for our species but a decisive warning to change our ways. Whether the greenhouse warming has really begun or is still hundreds of years in the future is almost irrelevant. It is bound to come, as has the destruction of arable soil by pollutants, and the drop in the quality of the air we breathe; these will worsen if we do not learn more respect for the ecosystem.

This issue of *Science* has a few articles, assembled with the help of Martha Coleman and Roger Lewin, on the forefront of one aspect of the vast subject of ecology. They emphasize the importance of understanding the value of species diversity, species interdependence, and species reproductive efficiency. Most species struggle to overcome poverty of resources and occupy niches that allow a critical number to survive in competition with other species. Modern civilization has upset that process so that many (although certainly not all) humans are living far beyond a survival level. The brain that allowed that situation needs now to curb a primordial instinct to increased replication of our own species at the expense of others because the global ecology is threatened. So ask not whether the bell tolls for the owl or the whale or the rhinoceros-; it tolls for us.

Daniel E. Koshland, Jr.

I. Read the editorial text to grasp the main idea and contents

II. Choose the right answer:

- 1) The problem which is raised in the text is the problem of*
 - a. the nature survival*
 - b. our Homo sapiens survival*
 - c. some species protection*
- 2) The basic thought expressed in the text is*
 - a. Understanding the behaviour of species and their survival strategies is very essential*
 - b. The ecology world is one in which there is only one standard of ethics: survival.*
 - c. The Bell tolls for us, people.*
- 3) The author also suggests that*
 - a. the population of the globe has lost proportion*
 - b. ecology is the study of the delicate balance between species in the environment*

- c. *it's important to understand the value of species diversity, species interdependence and species reproductive efficiency*

III. Find in the text what the English for is

- 1. по ком звонят колокола*
- 2. часто за счет других*
- 3. высокопарная критика может защищать права животных или растений*
- 4. хлопунка для мух, убивающая комара*
- 5. чей мозг способствовал более значительному увеличению численности вида по сравнению с другими*
- 6. эти стратегии включают симбиоз, сожительство по молчаливому согласию на одной и той же территории*
- 7. наша способность говорить и писать нарушила то равновесие*
- 8. много людей живут за чертой возможности выживания*

IV. Make up a model of the text key-words. Check it up. Get ready to sum up the text.

Key to the Tasks

Text 1 II 1 d 2 b, c

Text 2 II 1 b 2 b, d

Text 3 II 1 d 2 a, b

Text 4 II 1 a 2 c, d

Text 5 III 1. Gauge the future of biological science. 2. Complex circuitry of the olfactory bulb 3. This new surge of interest 4. The painstaking detail 5. Presenting recent promising advances 6. Such a reader would benefit from reading... prior to tackling... 7. Has resulted in a coherent style and viewpoint 8. Has also resulted in a bias towards the author's expertise

Text 6 III 1. Levingston's tide recall conference of the Modern Synthesis 2. Natural selection consists the primary causal factor of the evolution 3. Finding its level of causality important 4. Augment population-genetic processes as important causes of evolution 5. To reunify the field by introducing some explicitly hierarchical elements 6. The response of a developmental process на генетическое расстройство 7. To produce a false appearance of salutary origin for key features 8. Punctuated equilibrium is based on the position that species are onto logical individuals

Text 7 III

1. The composition of their flora is changing and worth notice
2. the information is accessible
3. a coherent picture of the complexity of variation and distribution of the plants
4. replaced cool-temperate forests specks
5. apparent expansion or contraction of a foxon's range
6. by my count
7. the descriptions are thorough and consistent
8. includes information on dangers of species poisonous to live stock

Key-model of text 8

“Testing for Carcinogens with Rodents”

I Determining substances carcinogenicity

↓
daily administration
of
huge chemical doses
↓
in bred rodents
for
a lifetime

II 1. All chemical
|
toxic
in high doses

↙ ↘
Large-scale cell death division replacement

3. Oxidative DNA
↓
contributor
to
aging and cancer

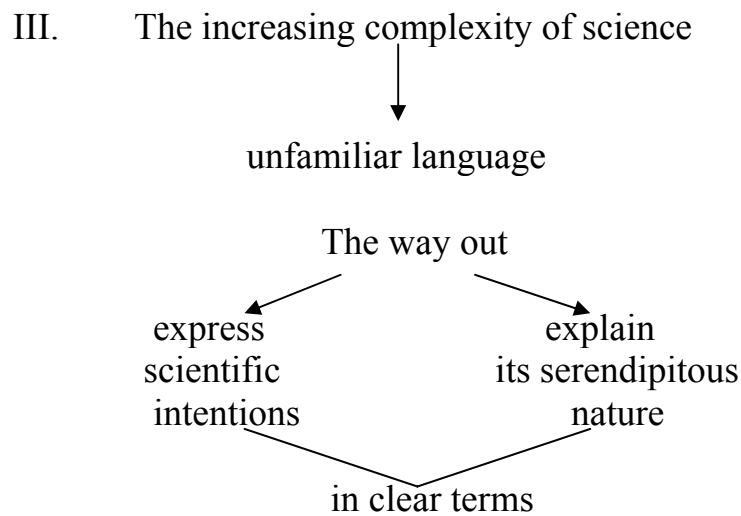
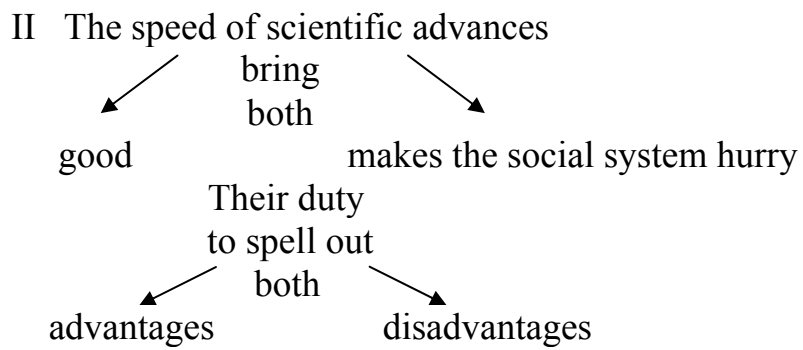
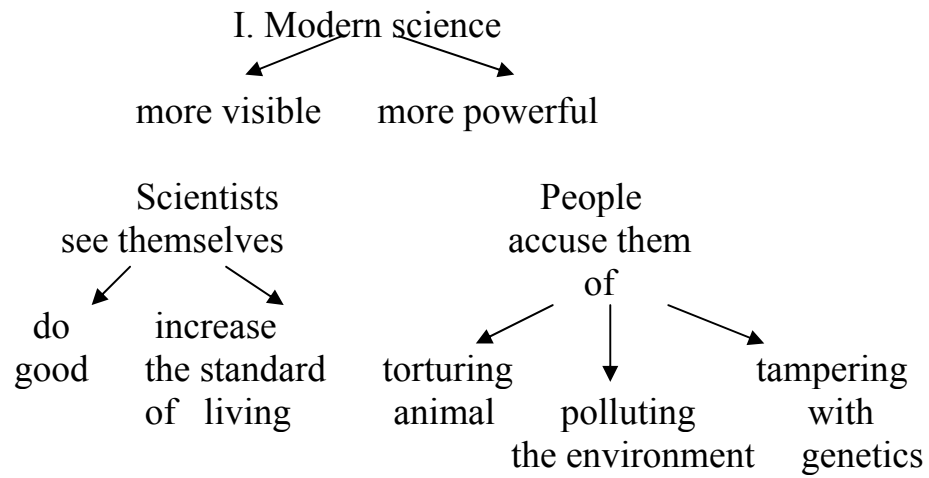
4. Chemicals
in lower doses

↓
harmless
↙ ↘
not cause not increase
cell death rates mutations

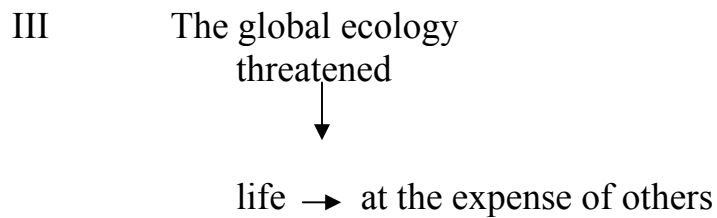
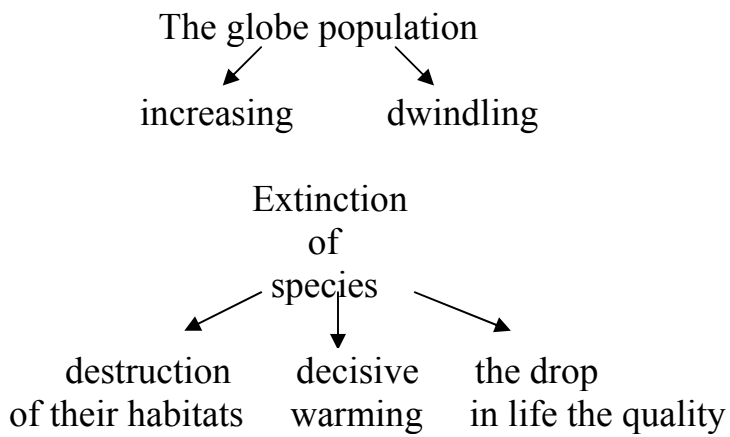
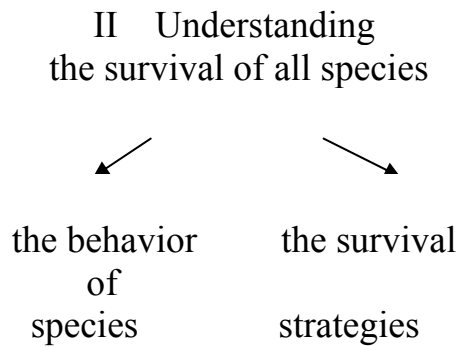
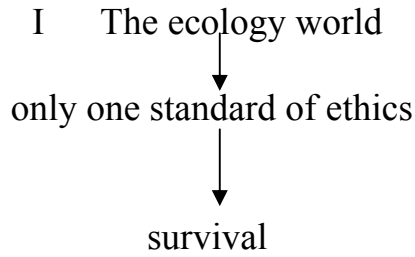
III A new toxicology
and
the dose levels
evaluation

↓
Pathological
chemical effects

Key-model of text 9
“To see Ourselves as Others See Us”



Key Model of text 10
“To Whom the Bell Tolls”



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