English for Academic purposes: A Guide for Post Graduate Students
Ответственный редактор: Пол Джон Тиббенхем

Елина Е.Н., Е.В., Пол Джон Тиббенхем, Озерская Е.В


В учебном пособии представлен обширный материал для подготовки к сдаче кандидатского экзамена по английскому языку, содержащий такие разделы, как ознакомление с английскими и британскими научными степенями, перевод на английский язык русских научных терминов, рекомендации по написанию научных статей, реферированию газет, упражнения для перевода научных текстов с русского языка на английский, тексты для аудирования, грамматические таблицы.

Для аспирантов, научных работников и преподавателей высшей школы.
Forward

Congratulations on your decision to become a scientist or researcher. From now on, you will be required to carry out different types of work connected to your research. Some of these are well-known to you, such as writing articles, carrying out experiments, or taking part in scientific conferences. However, there are some specific activities which you need to be specially trained in, such as writing academic essays, making reports, being able to give a brief summary or review of articles and to translate scientific literature, etc.

A scientist needs to be able to view ordinary things from different perspective and to pick up the unexpected and extraordinary aspects of scientific phenomena.

As Russia’s position in the world has changed, the possibility for exchanging views with people working in the same field as you has become not just a reality, but a necessity.

The aims of this guide are:
• to revise or remedy essential grammatical points that help postgraduates translate authentic scientific literature from English into Russian and vice versa;
• to provide practical advice for writing essays and reports, as well as improve language skills for making presentations at symposia, conferences and congresses;
• to activate target vocabulary drawn from the latest and relevant academic materials;
• to advance aural and oral skills;
• to reconstruct and summarize main ideas;
• to take part in discussions.

Elena Elina compiled sections: I, III (Listening to Academic English), IV (Video Segments: How About: Science and Technology), V (Texts for Discussion), Glossary, VI-VII Appendix Scripts, VIII (Exercises for Translation from Russian into English and Vice Versa).

Section II and Topics for discussion were provided by Elena Ozerskaya.

Paul Tibbenham revised the guidelines, the main corpus and rewrote sections of the course.

The authors are grateful to Anthony Mills, Master of Science, University of Oregon, USA, and Thomas Rebollini, Durham University, England for their helpful assistance and valuable advice on the making of this guide.

Any readers' advice and suggestions will be greatly appreciated by the authors.

We wish you every success in mastering academic English!
Contents

Forward 3

Section I

Unit I Possible Translations of Potentially Difficult Scientific Terms from Russian into English 7
Unit 2 Definitions of Degree, Diploma and Certificate 15
Unit III Particular Usage of “Graduate” and “Graduation” 21
Unit IV Science; scientific methods, hypothesis, theory 23
Unit V Research 29
Unit VI English Degrees 34
Unit VII American Degrees 38
Unit VIII Thesis 44
Unit IX Theses Defense 53

Section II

Recommendations on Writing Academic Essays, Reports and Summaries, Reading Periodicals and Participating in Discussions
Unit I Motivation for Becoming a Scientist 59
Unit II Essay Writing 61
Unit III Components of Argument and Discussion 65
Unit IV Reading and Abstracting Periodicals 74
Unit V Mapping the Development of User Constructs of Relevance Assessment as Informed by Topicality 81

Section III

Listening to Academic English
Unit I A News Report 88
Unit II A Feature Article 94
Unit III A News Bulletin 100
Unit IV A Letter of Application 104
Unit V Language of Informal Conversation: About A Letter of Application 109
Unit VI Lecture 114

Section IV

Video Segments: How About: Science and Technology
Section V

Texts for Discussion

21st Century Science: Where is Everybody? 136
21st Century Science: Consciousness 141
21st Century Science: Genetics Today 143
21st Century Science: Nanotechnology 146
21st Century Science: Key Concepts for the 21st Century 148
21st Century Technology: Beyond - the Kitchen of the Future 150
21st Century Technology: The worlds first hand-held printer! 152
21st Century Technology: NASA portal on it's way... 153
21st Century Technology: Mirror, mirror...what's on TV? 155
21st Century Technology: The Gauntlet 157
Globalization and Science: A Speeded-Up Virtuous Cycle 158

Topics for Discussion 163
Possible exam questions 164

Glossary:

Latin and English Equivalents; Russian–English Vocabulary 167

Appendix Scripts

Section VI

Unit I Wired Hockey Players 195
Unit II Sandblasting without Sand 196
Unit III Bee Baggies 197
Unit IV Moving Continents 198
<table>
<thead>
<tr>
<th>Unit V Hot Vents</th>
<th>199</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit VI Mural of Time</td>
<td>200</td>
</tr>
<tr>
<td>Unit VII Zooplankton</td>
<td>201</td>
</tr>
<tr>
<td>VIII Chinchillas and Hearing Loss</td>
<td>202</td>
</tr>
<tr>
<td>Unit IX Tracking the Gray Whales</td>
<td>203</td>
</tr>
<tr>
<td>Unit X Communicating with a Parrot</td>
<td>204</td>
</tr>
<tr>
<td>Unit XI The March of the Spiny Lobster</td>
<td>205</td>
</tr>
<tr>
<td>Unit XII Permanent Teeth Implants</td>
<td>206</td>
</tr>
<tr>
<td>Unit XIII The Chicken’s Day</td>
<td>207</td>
</tr>
<tr>
<td>Unit XIV The Rarest Mammal</td>
<td>208</td>
</tr>
</tbody>
</table>

**Section VII**

<table>
<thead>
<tr>
<th>Unit I A News Report</th>
<th>209</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit II A Feature Article</td>
<td>211</td>
</tr>
<tr>
<td>Unit III A News Bulletin</td>
<td>213</td>
</tr>
<tr>
<td>Unit IV A Letter of Application</td>
<td>215</td>
</tr>
<tr>
<td>Unit V A Letter of Application</td>
<td>217</td>
</tr>
<tr>
<td>Unit VI The Language of Informal Conversation: about A Lecture</td>
<td>219</td>
</tr>
</tbody>
</table>

**Section VIII**

| Exercises for Translation from Russian into English and Vice Versa | 221 |
| Bibliography                                                      | 285 |
Section I

Unit I
Possible Translations of Potentially Difficult Scientific Terms from Russian into English

Диплом

(First) degree or undergraduate degree are usually the most appropriate translations for the Russian диплом awarded after five year's specialised study at an institution of higher education. The use of diploma implies a shorter course, or one of a lower academic standard.

First or undergraduate should be included when it is necessary to distinguish this degree (= диплом) from a higher degree (ученая степень).

e. g. - I've only got a first/undergraduate degree.

Дипломная работа can be problematic to translate into English, because there is nothing of this kind in many higher educational establishments in England: in order to graduate, students only have to pass the necessary examinations. In some institutions, however, mainly newer ones, students also have to write a dissertation, that is a long piece of research work based on independent study or investigation, and this practice seems to be more and more wide-spread. Dissertation can therefore be used as a translation of дипломная работа. The SOED defines dissertation as "a discourse, a spoken or written treatment of a subject at length". In American English, however, dissertation is a work submitted for a doctoral or Masters degree. The only other solution seems to be some descriptive expression with graduation, for example, graduation paper/research work, although these are not set expressions.

Дипломный проект can be translated as graduation project. Remember, however, that this is also not a set expression and that project has a wider use in modern English.

защита дипломной работы / дипломного проекта

Even in some institutions where students write a dissertation, there is may not be an occasion corresponding to the Russian защита. The dissertation might simply be marked by the examiner(s) together with the student’s examination papers. However, at other institutions, there is a defence where students defend their dissertations.

Another possibility is to use the expression oral (examination) or viva, as in the case of thesis, but this has various disadvantages. Firstly, an oral examination (or viva) is not necessarily conducted like a защита. Secondly, it is not clear how to specify the idea of a first degree. Graduation/final oral (examination) or viva is possible, but this does not suggest the discussion of a dissertation or paper.
Moreover, it would be better to keep the expression graduation/final oral (examination) as a translation of the oral part of the государственный экзамен.

In view of these complications, there seems to be no good alternative to the literal translation defence of one’s dissertation or graduation paper/project. Remember, however, that this may not be entirely clear to English-speakers without an explanation.

окончить (университет/институт)

Graduation (from a university/college) can generally be used as a translation in formal or semi-formal style. In non-formal style, however, some other version is more appropriate, for example, to take one's degree/finals. In cases where the fact of having passed the examinations, etc. is not the central idea, English people often use the verb to be with at, or to go with to.

e. g. He \{was at / went to\} London University. Here it is assumed that he graduated (and some people who did not actually graduate from university but attended a higher education institution and left before their finals may use the phrase truthfully, yet imply successful completion of their studies).

ученая степень

Higher degree is probably the best translation.

Степень кандидата наук and кандидат наук are as a rule best translated literally as: degree of candidate of sciences or candidate's degree (less formal) and candidate of sciences.

Since these terms do not exist in English, and the word candidate has a more general meaning (that of a person applying for a job or position, or taking an examination), it will be necessary in many cases to explain to English people that a Russian candidate's degree is approximately equivalent to an English PhD (or doctorate). It may be justified in some cases, for example, when talking to English or American visitors, to use the word doctorate and doctor for convenience. However, if there are people present with the degree of доктор наук, such use will obscure the difference between the two Russian degrees.

When using the literal translation candidate of science, it may be necessary to explain also that science does not refer to the sciences in the modern English sense. For example, the British educationalist N. Grant, writing about the Russian degrees of candidate and doctor of science found it necessary to explain to his English readers that "in spite of their titles, these degrees are not limited to the scientific field".

Another useful alternative would be to use the transliterated form and italicise the word to indicate that it is a foreign expression (kandidat).

Степень доктора наук and доктор наук can be translated as: degree of doctor or doctorate and doctor (of sciences). However, it should be explained that although it is this is awarded for a thesis, it is not necessarily the same as an English or, in particular, American doctorate, to which it is more advanced.

When translating the names of particular degrees, it seems on the whole preferable to omit the word science, although it is not necessarily incorrect to include it.
e. g. кандидат/доктор филологических наук - candidate/doctor of philology

The literal translation philology is preferable here to arts or any of the other words discussed in connection with the translation of филологический факультет. Neither candidate/doctor of arts nor candidate/doctor of languages and literature are English terms, and in any case the words candidate and doctor are themselves literal translations here. However, candidate/doctor of philology will probably mean nothing to an English-speaker unfamiliar with the Russian system unless some explanation is given.

кандидат/доктор философских наук - candidate/doctor of philosophy

It may be necessary to explain that ‘doctor of philosophy’ is not the same as the English degree of that name.

кандидат/доктор психологических наук - candidate/doctor of psychology;
кандидат/доктор педагогических наук - candidate/doctor of education;

Pedagogy or pedagogical science is possible, although very learned, and not so easily understood.

кандидат/доктор юридических наук - candidate/doctor of law;
кандидат/доктор экономических наук - candidate/doctor of economics.

The name of the other degrees can be translated in a similar way.

диссертация

The usual British English equivalent is thesis, which is applied to both the Master's degree and the doctorate. Dissertation is used either as a general term, to denote any extended written treatment of a subject, or more specifically, to denote something of a lower academic standard than a thesis, especially at undergraduate level.

In American English, however, dissertation is used for a doctorate, whereas thesis denotes something of a lower standard, for example, for a Master's degree.

защита диссертации, защищать диссертацию.

In the United Kingdom, the thesis defence is called a viva voce (Latin for "by live voice") examination (viva for short). Oral (examination) could also be used as equivalent translations, as could defend and defence. However, in some cases, one can avoid difficulties by re-phrasing the sentence, e.g.

В 1995 году он защитил кандидатскую/докторскую диссертацию.
In 1995 he was awarded his candidate's/doctor's degree.

наука

When наука refers only to the natural sciences, the word science can be used without ambiguity. The first meaning of science given in the COD is “knowledge”. However, this is marked archaic. The second is: “systematic and formulated knowledge (natural, social, etc.); pursuit of this or principles regulating such pursuit”. This meaning coincides with that of the Russian наука. However, there is a marked difference in usage between the two words; whereas in Russian наука is used in this sense equally with or without a qualifying adjective or phrase, in English science in this sense is nearly always qualified.

e.g. natural science, linguistic science, social science, medical science, the science of language, the exact sciences
When used alone, *science* usually has the third meaning listed in the COD, viz: “the physical and natural science collectively”. The example given to illustrate this is: *Science now shares the curriculum with literature, history and maths.*

This is the meaning which *science* has in the name *faculty of science* and in the title *Department for Education and Science*. It corresponds in Russian not to *наука* but to *естественные науки*.

In education, *science* or *the sciences* are often contrasted with *art*, or *the arts*.

Not all *науки* can be translated in this way. We do not usually speak of economic sciences, historical sciences, geographical science, philosophical science, pedagogical science, philological science, psychological science, pedagogical science, although we may say, for example: *the science of economy/history*, etc. in the sense of a systematic study based on facts. The subjects listed above are usually referred to simply as *economics, history, geography, philosophy, education (science)/pedagogy, philology / (comparative & historical) linguistics, psychology, education*.

The branch of *наука* may be specified in other ways, not only by an adjective placed before the word itself, and here also science may be used as a translation, e.g.:

*Лингвистика* - *наука о языке*. *Linguistics is the science of language.*

*Социология* - *относительно молодая наука*. *Sociology is a relatively young science.*

When *наука* is used in a general sense, as in the expressions:

*заниматься наукой*

*наука и жизнь*

*посвятить себя науке*

*отрасль науки*

the question of translation is more complex, because there is no corresponding general term in modern English. *Science* has acquired a narrower application, and no other word has taken its place as a general term. Therefore the translation of *наука* depends on the aspect expressed in the given situation, the usual possibilities being *research, scholarship, learning and knowledge*.

**Research** is the most appropriate when we mean the carrying out of systemic investigations in some field. It is the best translation in such cases as

*to do research*

*to be engaged in research*

*to devote oneself to research*

**Academic work** is sometimes used in such cases, but this is less exact as a translation of *наука*, because it often includes not only research but teaching in a higher educational establishment.

**Scholarship** can be used to denote research, especially in the arts, or humanities, and could therefore replace *research* in the example *to be engaged in research* if the situation is appropriate. Note, however, that *scholarship* is also a translation of *стипендия*.

**Learning** is a possible translation in the example:

*e. learning and life*
This is by no means an ideal translation, since *learning* tends to refer mainly to arts subjects when used in this way. However, it may be taken here in its general, verbal sense, and in any case it is less ambiguous than *science*.

*Learning* can also be used in the example:

*branch of learning*

**Knowledge** could be used instead of *learning* in the above example. It also has the same meaning as *наука* in the sentence *А doctoral thesis must be an original contribution to knowledge.*

**Академия наук** can be translated literally as *Academy of Sciences*, since this is accepted as a loan translation for something which does not exist in Britain, along the same lines as the translation for the Pontifica Academia Scientiarum: the Papal Academy of Sciences. In Britain a similar function is fulfilled by the various *learned societies*, such as *the Royal Society*, for natural scientists, and being a member of a learned society is comparable to being a member of the Academy of Sciences.

Although the term *academy of sciences* is international, it is doubtful whether it would be correctly understood by the average English person, and an explanation may be necessary in some cases.

**Кандидат/доктор наук** are also translated literally in most cases, as *candidate/doctor of sciences*.

It could be correctly argued that *science* should be in the singular in the above examples, and that an alternative preposition with ‘academy’ may sound preferable (Academy for Science), however calque traditionally follows the grammar of the original phrase.

**научный**

**Scientific** has a general meaning, which can be applied to all branches of knowledge, and a second, more restricted one, which applies particularly to the natural sciences, and which is the most common.

The general meaning, as given in the COD, is: “according to rules laid down in science for testing soundness of conclusions; systematic, accurate”.

*e.g. a scientific study/investigation/approach to have a scientific mind*

This meaning corresponds to the Russian *научный*.

```
scientific
  \{method - научный метод
  approach - научный подход
  principles - научные принципы

It's unscientific. - Это Ненаучно.
```

Even here, however, the word *scholarly* is preferred by some people, especially with reference to the arts.

The second, restricted meaning is defined as “of, used or engaged in esp. the natural sciences”. Examples of this use are:

*scientific work/research
scientific progress
a scientific career
the scientific revolution
a scientific conference*
a scientific experiment
scientific books/instruments/equipment
a scientific achievement
scientific language/terms
a scientific journal/paper/article

Moreover, scientific in such cases does not necessarily imply research; it may mean simply “relating to the natural sciences”, in contrast to the arts.

We therefore need a different word for научный in such cases. As with наука, research is sometimes the best translation.

e.g. научная работа - research (work)
научный работник - research worker or researcher
старший/младший научный сотрудник - senior/junior research associate
научно-исследовательский институт - research institute

Scholarly work is used by some people in formal style in the sense of research (work).

Learned [ləːnɪd] is defined in the COD as: “deeply read, erudite, showing profound knowledge (of language, profession, etc.); pursued or studied by (of words in a language), introduced by, learned men”. It occur mainly in set expressions such as learned man/work (=book, etc.)/word/language and some others given below. It is used primarily with reference to the humanities, as indicated in Hornby’s definition: “having or showing much knowledge, esp. of the humanities”. It is a more appropriate translation of научный in the following expressions:

научное общество - learned society

However, this is not appropriate for a student society.

Студенческое научное общество is the best translated as student’s research society (although there are no such societies in England, student societies being mainly recreational).

научный труд - learned work

Note that work here is countable, in contrast to its uncountable use in research/scholarly work.

научный журнал - (learned) journal научное слово - learned word
научная статья - learned article научный язык - learned/academic language

Except for the first two expressions, learned here tends to refer mainly to arts subjects. Scientific can be used instead with reference to the natural sciences, but, as stated above, the resulting expressions will not necessarily imply investigation.

In the following cases the word научный need not be translated separately, because that concept is expressed by English noun.

научный доклад - paper научный журнал - journal

A journal is usually, although not always, learned. Less serious publications are generally called magazines.

научный руководитель - supervisor

However, supervisor is understood in this sense only within the context of higher education and research.

ученный
Unfortunately, there is no English word which applies equally to all branches of knowledge, and the word ученый must therefore be translated in different ways, depending on the context.

**Scientist** may be used of anyone specialising in the natural sciences at whatever level, for example:

1. a senior schoolboy/girl who is specialising in science subjects in preparation for a scientific career;
2. a student in the science faculty of a university, or a student of science at a college. Science student is more specific.
3. a teacher in one of the above faculties or colleges;
4. someone doing research in science;
5. someone whose work demands specialised knowledge of science, for example, in industry.

Thus, it is clear that in one sense scientist is a narrower term than ученый since it refers exclusively to the natural sciences. In another sense, however, it is a wider term, since it includes not only those engaged in research but also students and even, in some cases, schoolchildren.

**Scholar** is often the best translation with reference to the arts.

Sometimes the combined expression **scientists and scholars** is used with general reference. This awkward phrase indicates the need for a general term which the language has not yet produced.

**Researcher** is used to denote anyone who carries out any type of research in any field.

**Academic** (as a noun) can be used in some cases. Although it is not an exact equivalent, it has the advantage of referring equally to the arts and the science. Do not confuse **academic** with **academician**, the latter being a perfect translation of академик, i.e. a member of an academy. In the US, however, an academician could also be a lecturer from a higher education institution.

**специальность**

Специальность should rarely be translated as specialty, although in US and Canadian English it can mean a special interest or skill. The British equivalent of specialty is speciality, which in rather formal situations or old-fashioned English can also have the shade of meaning of занятие, профессия (e.g. My father was a historian of repute. His speciality was the history of Germany. – Мой отец был известным историком. Он занимался историей Германии.). Today, specialty/speciality usually means фирменное блюдо.

Appropriate translations for специальность as far as higher education is concerned could be chief/special subject or major, an Americanism becoming all the more widespread. These, however, seem to be most suitable for undergraduate level (I’m studying economics and languages, majoring in Japanese, with a subsidiaries in English and international law).

Специальность or специализация in the sense of профессиональная область is most probably best simply rendered as specialization (His specialization is gastroenterology).
Специализироваться (в чем-л., на чем-л.) is simply to specialize followed by the preposition in: (After he had worked as a doctor for some years, he decided to specialize in children's diseases. – После того, как он Несколько лет проработал врачом, он решил специализироваться на детских болезнях.)

Актуальность

Актуальный is a common ложный друг переводчика, since it means relevant, urgent, pressing, or to the point, or topical актуальный вопрос- topical, pressing, relevant, immediate, important issue), but not actual, however:

Актуальность should usually not be translated as urgency, a word which generally gives the impression you need to urinate within the next 10 seconds. Topicality is perhaps the best word to portray the Russian актуальность in the academic sense.

Аспирантура

Аспирантура is usually best put across as post-graduate course/study, although if you mean a group of people, you need post-graduate/research students. аспирант is post-graduate (student).
Unit 2

Definitions of Degree, Diploma and Certificate

1. Read the passages below and say what the main point is:

Degree

A degree is an academic qualification awarded on completion either of a higher education course (a first degree) or a piece of research (a higher/further degree). In practice the word degree alone generally implies a first degree, other degrees being referred to more specifically, as higher/further degree, doctorate, and so on.

Formerly degrees were awarded only by universities, but during the past 15-20 years they have gradually extended to polytechnics, colleges of education and colleges of higher education for courses of an equivalent standard.

Diploma

A diploma differs from a degree in that it is usually:
(1) vocational, or less academic, or considered to be of a lower academic standard;
(2) awarded by a non-university institution, or if by a university, after a shorter course of study than for a degree course.

One example is the Diploma in Art and Design (DipAD); another is the Diploma in Higher Education (DipHE), a new qualification introduced with the colleges of higher education and awarded after a two-year course corresponding to the first two years of a degree course (which usually lasts three years).

Certificate

Certificate is a very general word denoting any document which officially declares (or certifies) something, and is used in various expressions, including birth certificate, marriage certificate and medical certificate. In education it is used of a document certifying that a person has completed a course of study and/or passed a certain examination and, by extension, of the examination and qualification themselves. Thus public examinations taken in schools are called: GCSE – General Certificate of Secondary Education (16 years), GCE ‘A’-Levels (18 years). In higher and further education a certificate is similar to a diploma. Like a diploma, it is usually:
(1) vocational, or less academic, or considered to be of a lower academic standard than a degree;
(2) awarded by a non-university institution, or, if by a university, after a shorter course than a degree course. For example, the usual qualification awarded by a college of education is the teacher's certificate, and the qualification obtained by graduates after a one-year course in the university faculty/department of education is the postgraduate certificate in education (called the diploma in education in some universities). In technical institutions many people take the ordinary and higher national certificates.
If there is both a diploma and a certificate in the same subject, the diploma is usually of a higher standard, or awarded after a longer course.

**Glossary:**

Unless otherwise stated, all the following expressions may be used with all three words:

- **to give a degree** - widely used in non-formal style;
- **to award a degree** - widely used in the sense of give in formal and semi-formal style;
- **to be awarded a degree** is also used in the sense of to receive;
- **to confer a degree** - used occasionally in the above sense in formal style, mainly with reference to higher degrees. Not used of diplomas and certificates;
- **to be admitted to a degree/the degree of...** - used in official language in the same sense as *to be awarded a degree*.

  e.g. No student can be admitted to a first degree unless he has completed full-time attendance for at least three university sessions. (From the prospectus of Birmingham University). Not used of diplomas and certificates.

- **to study/read for a degree** Read is used only of degrees.
- **to take a degree (in smth.)** - to follow a degree course and pass the necessary examinations.
  
  e.g. She took {a degree in English / an English degree}.

  *To take one's degree* means to take the degree examinations, to graduate.
  
  e.g. - I took my degree in 1996.

  It is more common in such sentences than *to graduate* in everyday speech.

- **to get a degree (in smth.)** - widely used in informal style in the sense of receive.

- **to have a degree (in smth.)** - often used in such sentences as:
  
  - My brother has a degree in physics.

  In colloquial speech *My brother's got a degree* is the norm.

- **to hold a degree (in smth.)** - formal style, meaning "to have".

  It is less often applied to first degrees, diplomas and certificates than to higher degrees.

- **degree course** - a course of study which prepares students for a first degree;
- **degree examinations** - these are often called finals in non-formal style. They are longer examinations, very carefully set and conducted, and on the results of which degrees are awarded. Although most of the examiners are from the university concerned, there is also another university, to ensure objectivity;
- **degree ceremony** - a ceremony at which degrees are officially awarded. This is sometimes called a *graduation ceremony*. Diplomas and certificates are not usually awarded at special ceremonies;
- **degree certificate** - document certifying that the holder has been awarded a degree. *Certificate* is not generally used with *diploma*. Simply *diploma* is used to denote the document.
## General Comprehension Test

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A degree is</td>
<td>a) a document certifying smth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) an academic qualification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) a term denoting smth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) a stage in a scale</td>
</tr>
<tr>
<td>2</td>
<td>When is a degree awarded?</td>
<td>a) after completion of an essay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) after granting smth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) on completion of a research and educational course</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) after getting a licence</td>
</tr>
<tr>
<td>3</td>
<td>In what educational establishments are degrees awarded?</td>
<td>a) schools, polytechnics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) only by universities, colleges of education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) universities, colleges of education firms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) universities, colleges of education, polytechnics</td>
</tr>
<tr>
<td>4</td>
<td>A diploma is:</td>
<td>a) a plural form of a diplomat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) art or skill in smth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) a new qualification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) an educational certificate</td>
</tr>
<tr>
<td>5</td>
<td>A diploma usually differs from a degree in that it...</td>
<td>a) is of a higher standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) is awarded by university</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) is of a lower standard, awarded by non-university</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) is a vocational, less academic, awarded by non-university</td>
</tr>
<tr>
<td>6</td>
<td>A certificate is ...</td>
<td>a) a general word denoting any document</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) an award granting by a college of education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) a document certifying a completion of a course study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) a paperback file</td>
</tr>
<tr>
<td>7</td>
<td>Give an English equivalent for the following phrases:</td>
<td>a) свидетельство о браке</td>
</tr>
<tr>
<td></td>
<td>a)</td>
<td>b) медицинское свидетельство</td>
</tr>
<tr>
<td></td>
<td>b)</td>
<td>c) свидетельство о рождении</td>
</tr>
<tr>
<td></td>
<td>c)</td>
<td>d) свидетельство об образовании</td>
</tr>
</tbody>
</table>
8. What are public exams called?
   - a) The General Certificate of education
   - b) The Certificate of Secondary education
   - c) The General Certificate of secondary education

9. A certificate is similar to a diploma in that it is...
   - a) of prestigious standard awarded by university
   - b) vocational, awarded by university only
   - c) vocational, of a lower standard awarded by polytechnics
   - d) vocational, less academic awarded by non-universities

10. The obtained qualifications are called:
    - a) diploma in education, certificate in education
    - b) document in education, certificate in education
    - c) licence in education, diploma in teaching
    - d) certificate in education, degree in education

11. How can we put in English the Russian word “диплом”?
    - a) a degree, a certificate
    - b) a diploma, a certificate
    - c) first degree, a diploma
    - d) a document, a paper

12. Fill in the table with “degree/diploma/certificate”

<table>
<thead>
<tr>
<th>Formal</th>
<th>Semi formal</th>
<th>Non formal / informal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. A degree course is a course:
    - a) preparing students for high degrees
    - b) for research workers
    - c) of study preparing students for a first degree
    - d) preparing students for finals
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 14 | **Degree exams are...** | a) exams for a driving licence  
  b) finals for a first degree  
  c) graduation exams  
  d) entrance exams |
| 15 | **A degree ceremony is...** | a) graduation ceremony  
  b) a religious ceremony  
  c) for a newly-weds  
  d) a special ceremony for awarding certificate and diplomas |
| 16 | **A degree certificate is...** | a) a written document  
  b) a document certifying that the holder was awarded a degree  
  c) a medical certificate  
  d) a certificate for diplomas |
| 17 | **A peculiar phrase denoting that someone graduated at Oxford or Cambridge is...** | a) to calm down  
  b) to come over  
  c) to come down  
  d) to come across |
| 18 | **In American English, a graduate is associated with...** | a) only polytechnic graduates  
  b) only university graduates  
  c) college graduates  
  d) universities and polytechnic graduates |
| 19 | **The verb to graduate with the direct object means...** | a) оканчивать  
  b) завершать  
  c) выпускать  
  d) выпускаться |
| 20 | **Non-formal equivalents of the word graduation are...** | a) to graduate, to leave  
  b) to finish, to end  
  c) to take a degree, to leave  
  d) to end, to leave |

2. Look at the passages above and fill in the gaps with the words given:  
a degree;  
a diploma;  
a certificate
1. A ………………is an academic qualification awarded on completion of a higher education or a peace of research.
2. In practice the word degree ……………….a first degree.
3. A………………..is one of a lower academic standard.
4. A…………………denotes any document which certifies something.

4. Talk about what degree, certificate and diploma means and in what way they differ from each other.
Unit III

Particular Usage of “Graduate” and “Graduation”

I. Read the sentences and example with the words graduate and graduation and to memorize the expression with these words.

In Britain "to graduate" generally means: to complete a first degree course and the necessary examination, to take one's degree. It is used as follows:

a. I graduated in 1995; b. . . . from Oxford in 1995; c. . . . in English.

However, it is not usual to say I graduated from Oxford with no adverbial modifier. In such cases I was at Oxford or I took my degree at Oxford is preferred, at least in non-formal style.

d. I am {an Oxford graduate / a graduate of Oxford. - more formal}.

Even in case like (a) - (c) above, the verb to graduate is often replaced by some less formal word(s), for example:


(Here it is assumed that one graduated.)

g. I've got an English degree.

To come down (from Oxford/Cambridge) is also used in the sense of "to complete one's studies", "to graduate" in such sentences as:

h. On coming down from Oxford he worked for three years as a journalist.

This expression does not seem to be used of other universities.

Graduate, both as a verb and a noun, are traditionally associated only with universities, but since the introduction of degree courses at other institutions the use of graduate has been correspondingly extended. We may speak of university graduates and, for example, polytechnic graduates.

In American English graduate has a wider application, and is used of all colleges and even high schools. In addition the verb is used not only as illustrated above, but with a direct object, in the sense of "выпускать".

e. g.  i. The college graduated 300 teachers last year.

Graduation is used in such sentences as:

j. After graduation he took a teaching job.

This is rather formal style, and in non-formal style some other version would be more usual, for example:

k. After taking his degree  or  When he left university/college . . .

General Comprehension Test

| 1 | A peculiar phrase denoting that someone graduated from Oxford or Cambridge is...? | a) to calm down  
b) to come over  
c) to come down  
d) to come across |
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **2** | In American English graduate is associated with... | a) only polytechnic graduates  
|   |   | b) only universities graduates  
|   |   | c) colleges graduates  
|   |   | d) universities and polytechnic graduates  |
| **3** | The verb to graduate with the direct object means... | a) оканчивать  
|   |   | b) завершать  
|   |   | c) выпускать  
|   |   | d) выпускаться  |
| **4** | The non-formal equivalents of the word graduation are... | a) to graduate, to leave  
|   |   | b) to finish, to end  
|   |   | c) to take a degree, to leave  
|   |   | d) to end, to leave  |
Science; scientific methods, hypothesis, theory

Science (from the Latin scientia, 'knowledge'), in the broadest sense, refers to any systematic knowledge or practice. Examples of the broader use included political science and computer science, which are not incorrectly named, but rather named according to the older and more general use of the word. In a more restricted sense, science refers to a system of acquiring knowledge based on the scientific method, as well as to the organized body of knowledge gained through such research. Fields of science are commonly classified along two major lines:

- **Natural sciences**, which study natural phenomena (including biological life), and
- **Social sciences**, which study human behavior and societies.

These groupings are empirical sciences, which means the knowledge must be based on observable phenomena and capable of being experimented for its validity by other researchers working under the same conditions.[4]

Mathematics, which is sometimes classified within a third group of science called formal science, has both similarities and differences with the natural and social sciences. It is similar to empirical sciences in that it involves an objective, careful and systematic study of an area of knowledge; it is different because of its method of verifying its knowledge, using a priori rather than empirical methods. Formal science, which also includes statistics and logic, is vital to the empirical sciences. Major advances in formal science have often led to major advances in the physical and biological sciences. The formal sciences are essential in the formation of hypotheses, theories, and laws, both in discovering and describing how things work (natural sciences) and how people think and act (social sciences).

Science as discussed here this article is sometimes termed experimental science to differentiate it from applied science, which is the application of scientific research to specific human needs, though the two are often interconnected.

**Etymology**

The word science comes through the Old French, and is derived from the Latin word scientia for knowledge, which in turn comes from scio. 'I know'. The Indo-European root means to discern or to separate, akin to Sanskrit chyati, he cuts off, Greek schizein, to split, Latin scindere, to split. From the Middle Ages to the Enlightenment, science or scientia meant any systematic recorded knowledge. Science therefore had the same sort of very broad meaning that philosophy had at that time. In other languages, including French, Spanish, Portuguese, and Italian, the word corresponding to science also carries this meaning.

From classical times until the advent of the modern era, "philosophy" was roughly divided into natural philosophy and moral philosophy. In the 1800s, the term natural philosophy gradually gave way to the term natural science. Natural
science was gradually specialized to its current domain, which typically includes the physical sciences and biological sciences. The social sciences, inheriting portions of the realm of moral philosophy, are currently also included under the auspices of science to the extent that these disciplines use empirical methods. As currently understood, moral philosophy still retains the study of ethics, regarded as a branch of philosophy.

Today, the primary meaning of "science" is generally limited to empirical study involving use of the scientific method.

**Scientific method**

The Bohr model of the atom, like many ideas in the history of science, was at first prompted by and later partially disproved by experiment. The scientific method seeks to explain the events of nature in a reproducible way, and to use these reproductions to make useful predictions. It is done through observation of natural phenomena, and/or through experimentation that tries to simulate natural events under controlled conditions. It provides an objective process to find solutions to problems in a number of scientific and technological fields. Often scientists have a preference for one outcome over another, and scientists are conscientious that it is important that this preference does not bias their interpretation. A strict following of the scientific method attempts to minimize the influence of a scientist's bias on the outcome of an experiment. This can be achieved by correct experimental design, and a thorough peer review of the experimental results as well as conclusions of a study.

Scientists use models to refer to a description or depiction of something, specifically one which can be used to make predictions that can be tested by experiment or observation. A hypothesis is a contention that has been neither well supported nor yet ruled out by experiment. A theory, in the context of science, is a logically self-consistent model or framework for describing the behavior of certain natural phenomena. A theory typically describes the behavior of much broader sets of phenomena than a hypothesis–commonly, a large number of hypotheses may be logically bound together by a single theory. A physical law or law of nature is a scientific generalization based on a sufficiently large number of empirical observations that it is taken as fully verified.

Scientists never claim absolute knowledge of nature or the behavior of the subject of the field of study. Unlike a mathematical proof, a scientific theory is empirical, and is always open to falsification, if new evidence is presented. Even the most basic and fundamental theories may turn out to be imperfect if new observations are inconsistent with them. Critical to this process is making every relevant aspect of research publicly available, which permits peer review of published results, and also allows ongoing review and repeating of experiments and observations by multiple researchers operating independently of one another. Only by fulfilling these expectations can it be determined how reliable the experimental results are for potential use by others.

Isaac Newton's Newtonian law of gravitation is a famous example of an established law that was later found not to be universal–it does not hold in
experiments involving motion at speeds close to the speed of light or in close proximity of strong gravitational fields. Outside these conditions, Newton's Laws remain an excellent model of motion and gravity. Since general relativity accounts for all the same phenomena that Newton's Laws do and more, general relativity is now regarded as a more comprehensive theory.

**Philosophy of science**

The philosophy of science seeks to understand the nature and justification of scientific knowledge and its ethical implications. It has proven difficult to provide a definitive account of the scientific method that can decisively serve to distinguish science from non-science. Thus there are legitimate arguments about exactly where the borders are. There is nonetheless a set of core precepts that have broad consensus among published philosophers of science and within the scientific community at large.

Science is reasoned-based analysis of sensation upon our awareness. As such, the scientific method cannot deduce anything about the realm of reality that is beyond what is observable by existing or theoretical means. When a manifestation of our reality previously considered supernatural is understood in the terms of causes and consequences, it acquires a scientific explanation.

Resting on reason and logic, along with other guidelines such as parsimony, scientific theories are formulated and repeatedly tested by analyzing how the collected evidence compares to the theory. Some of the findings of science can be very counter-intuitive. Atomic theory, for example, implies that a granite boulder which appears a heavy, hard, solid, grey object is actually a combination of subatomic particles with none of these properties, moving very rapidly in space where the mass is concentrated in a very small fraction of the total volume. Many of humanity's preconceived notions about the workings of the universe have been challenged by new scientific discoveries. Quantum mechanics, particularly, examines phenomena that seem to defy our most basic postulates about causality and fundamental understanding of the world around us. Science is the branch of knowledge dealing with people and the understanding we have of our environment and how it works.

There are different schools of thought in the philosophy of scientific method. Methodological naturalism maintains that scientific investigation must adhere to empirical study and independent verification as a process for properly developing and evaluating natural explanations for observable phenomena. Methodological naturalism, therefore, rejects supernatural explanations, arguments from authority and biased observational studies. Critical rationalism instead holds that unbiased observation is not possible and a demarcation between natural and supernatural explanations is arbitrary; it instead proposes falsifiability as the landmark of empirical theories and falsification as the universal empirical method. Critical rationalism argues for the ability of science to increase the scope of testable knowledge, but at the same time against its authority, by emphasizing its inherent fallibility. It proposes that science should be content with the rational elimination of errors in its theories, not in seeking for their verification (such as claiming certain or
probable proof or disproof; both the proposal and falsification of a theory are only of methodological, conjectural, and tentative character in critical rationalism). Instrumentalism rejects the concept of truth and emphasizes merely the utility of theories as instruments for explaining and predicting phenomena.

Protoscience

Protoscience refers to historical philosophical disciplines, developed prior to the Age of Enlightenment, that with the development of scientific method developed into science proper (pre-scientific). A standard example is alchemy, which from the 18th century became chemistry, or pre-modern astrology which from the 17th century became astronomy.

By extension, "protoscience" may be used in reference to any "set of beliefs or theories that have not yet been tested adequately by the scientific method but which are otherwise consistent with existing science". [1]

Science and Intuition

Scientific intuition is protoscience, being the detection of new patterns – the eureka moment that allows the breakthrough in problem solving – which initiates a new line of fruitful scientific inquiry.

- Isaac Newton is said to have conceived of the acceleration of gravity after seeing an apple fall. This moment of insight into acceleration initiated a phase of protoscience until a hypothesis could be formulated with careful measurements and calculations that allowed experimental falsifiability, (repeatability) and verification.
- Charles Darwin conceived of his concept of evolution when on his journey in the ship Beagle to the Galápagos Islands he noticed that finches differed from one island to another. He strongly suspected that the different species of finches must have descended from a single species that was their common ancestor. The protoscientific hypothesis continued to prove useful when other forms of animals, including apes and humans, could be explained as sharing common descent. Only recently, with other scientific fields–especially DNA analysis which verified many of his speculations–did the concept move from protoscience to science with the Theory of Evolution accepted by the consensus of the scientific community today.

General Comprehension Test

<table>
<thead>
<tr>
<th></th>
<th>Science in the broadest sense refers to…</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a) a system of knowledge and a scientific method</td>
<td>a) a system of knowledge and a scientific method</td>
</tr>
<tr>
<td></td>
<td>b) a scientific method and practice</td>
<td>b) a scientific method and practice</td>
</tr>
<tr>
<td></td>
<td>c) any system of knowledge and practice</td>
<td>c) any system of knowledge and practice</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Science in the restricted sense refers to…</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>a) a systemic knowledge of practice</td>
<td>a) a systemic knowledge of practice</td>
</tr>
<tr>
<td></td>
<td>b) the organized knowledge</td>
<td>b) the organized knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>gained through research</strong>&lt;br&gt;c) knowledge based on the scientific method and gained through research</td>
<td><strong>3 Fields of science are classified into…</strong>&lt;br&gt;a) experimental and social sciences&lt;br&gt;b) formal and natural sciences&lt;br&gt;c) natural and social sciences</td>
<td><strong>The synonym of science as discussed in this article is…</strong>&lt;br&gt;a) an applied science&lt;br&gt;b) a formal science&lt;br&gt;c) an experimental science</td>
</tr>
<tr>
<td><strong>4 The word science is derived…</strong>&lt;br&gt;a) from French and it means knowledge&lt;br&gt;b) from Latin and it means I know&lt;br&gt;c) from Greek and it means philosophy</td>
<td><strong>5 The term &quot;natural science&quot; was given way by...</strong>&lt;br&gt;a) philosophy&lt;br&gt;b) ethics&lt;br&gt;c) natural philosophy</td>
<td><strong>7 The scientific method is…</strong>&lt;br&gt;a) the explanation of the events of nature&lt;br&gt;b) the objective process to find solutions to problems&lt;br&gt;c) the way which helps achieve scientific results</td>
</tr>
<tr>
<td><strong>8 A hypothesis is…</strong>&lt;br&gt;a) a scientific generalization based on empirical observation&lt;br&gt;b) a logically self-consistent model to describe the behaviour of natural phenomena&lt;br&gt;c) a contention which is neither supported nor ruled out by an experiment</td>
<td><strong>9 A theory is …</strong>&lt;br&gt;a) a system of knowledge&lt;br&gt;b) a self-consistent model to describe natural phenomena&lt;br&gt;c) an empirical observation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The aim of the philosophy of science is to…</td>
<td>a) understand and justify the nature of scientific knowledge and its ethical implication&lt;br&gt;b) to give a reasoned based analysis of sensation upon our awareness&lt;br&gt;c) to deduce anything about the realm of reality</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10</td>
<td>Protoscience means …</td>
<td>a) beliefs or theories which are coincided with existing science&lt;br&gt;b) beliefs or theories which have been tested&lt;br&gt;c) beliefs or theories which need to be tested yet</td>
</tr>
<tr>
<td>11</td>
<td>Scientific institution is…</td>
<td>a) a frustration&lt;br&gt;b) eureka&lt;br&gt;c) an initiative</td>
</tr>
</tbody>
</table>
Unit V

Research

The most detailed definition of this word is given by Webster: "studious inquiry or examination, esp. investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new facts, or practical application of such new or revised theories or laws".

In higher educational establishments research is often contrasted with teaching. E.g.:

a. The job combines teaching and research.
b. He spent so much time on teaching that there was not much left for research.

Another example can be found under research fellow in the next unit.

Research can be translated as исследование, (научно-) исследовательская работа, научная работа or наука depending on the context.

The word research is almost always uncountable, as in the examples given above. A particular investigation is not called “a research” but, “a piece of research” (or an investigation/study). The plural is very rare and probably tends to indicate diverse investigations carried out by different people or groups for differing reasons and by varying methods. The agents carrying out research, however, are frequently used countably in the plural. E.g.:

a. His researchers produced some interesting results.

Research may also be used as a verb, often into.

b. He is researching the {origin of language / problem of air pollution}.

More often, however, the expressions to do research in(to) or to be engaged in research are used in this sense.

The prepositions on, in and into are used with the noun research, as follows.
On is used with a more or less specific subject.
c. I'm doing research on place names/Shelly/the history

In is used with the field of investigation.
d. He is famous for his research in linguistics/history/microbiology.

Into occurs often, mainly with words such as problem, cause, relation, origin.
e. Recent research into the causes of disease has led to some important discoveries.

Research is used in the following expressions:

to do research (on/in into smth.)  E.g.:
a. He's doing research on programmed learning.
b. Very little research has been done in this field.

to do research with no adverbial modifier specifying the subject or field often means to be a postgraduate student, or, as this is also called, a research student.
c. Students who get first-class degrees are usually given the opportunity to stay on and(to) do research.
d. - What are you going to do next year?
I've applied to do research but I shan't know whether I've been accepted or not until the end of the month.

to be engaged in research (on/in/into smth.)
This has the same meaning as to do research but confined to formal style and is not used in the sense of to be a research student.
e. At the moment Professor Harris is engaged on (important) research on juvenile delinquency.

to carry out research (on/in/into smth.)
This is sometimes used as an alternative to to be engaged in research. It is also formal style.

research worker
This is sometimes used in such sentences as:
f. He wants to devote more time to his research work.

However, research alone is quite enough in such cases.

research worker
This means someone doing research, usually full-time, not in combination with teaching.

Research worker is a general term. Research workers at British universities are divided into two grades, usually called research associates and senior research associates. Some institutions use assistant instead of associate: research assistant and senior research assistant. In institutions which have both research associates and research assistants, research associates are more senior.

Another variation, used mainly in government research establishments for science and technology, is experimental officer and senior experimental officer.

When stating the profession of someone doing full-time research in the natural sciences, one can use the expressions research scientist, or the more specific research biologist/chemist/physicist.

e.g. He’s a research {scientist / biologist/chemist/physicist}.

There are no generally-used equivalents for the humanities.

Researcher is used in the sense of anyone doing research, whether a full-time research worker or, for example, a university teacher who also does research.

research student - a postgraduate, that is, someone doing research under the direction of a supervisor (AmE advisor) - "(научный) руководитель".

research fellow/fellowship
A research fellow is a postgraduate who has been awarded a research fellowship, meaning a special scholarship to do research for a certain period. Research fellow often do some teaching as well.

research subject/topic - a subject on which one is doing research, often one for a thesis

research establishment/organisation/institute, etc.

The field of research can be specified in one of the following ways:
1) academic research in a university or similar institution - research aimed at increasing general theoretical knowledge, not directly related to practical problems.
In certain contexts academic acquires a derogatory connotation, implying “purely theoretical, not leading to a decision, unpractical” (SOED).

An academic (adjective used as a noun) is a person engaged in academic work, either university teaching or research, or both. It is not generally used when stating a person’s profession. It is a broad term and is only used in certain situations, to distinguish those engaged in university work from those in other spheres of activity, such as industry, or politics. The vice-chancellor of a university is an academia, whereas the chancellor is not.

This word should not be confused with academician, which means a member of an academy, and usually refers in practice to members of foreign academies, such as the French Academy, or the Russian Academy of Sciences. However, it may refer to a member of the Royal Academy, or, to give it its full title, the Royal Academy of Arts. This is a society in London for the promotion of the visual arts, and the academicians are leading painters, sculptor and other artists.

2) medical/linguistic/historical/educational research, etc;
3) industrial research - research directly for industry.

Research Establishments

Research establishments and research organisation are general terms. Particular establishments or organisations are called by one of the following names:

- research institute - the most common e.g. The Grasslands Research Institute
- The Institute for Soil Research / of Cancer Research / of Historical Research
- research centre e.g. The Clinical Research Centre
- research station e.g. The Forest Research Station
- (research) unit e.g. The Unit of Plant Physiology

Unit tends to imply a smaller section within some larger establishments.

(research) laboratory e.g. The Road Research Laboratory

Government research establishments are generally grouped together in research associations, each governed by a research council, e.g. The Agricultural/Medical Research Council

General Comprehension Test

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | Research implies: | a) to inquire  
|   |   | b) to revise smth  
|   |   | c) to outlaw  |
| 2 | Fill in the proper preposition… | a) he is famous for his research … linguistics  
|   |   | b) he carries out research … the origin of these phenomena  
|   |   | c) she is doing research … cell’s structure  |
| 3 | Choose the wrong variant (with a mistake)… | a)he is doing research on programmed learning  
|   |   | b) he is conducting a research  |
| 4  | Synonyms of the verb to research are… | a) to be engaged in research  
b) to make research  
c) to carry out research |
| 5  | Research worker is someone doing … | a) full-time teaching  
b) full-time teaching and researching  
c) full-time researching |
| 6  | There are… grades of Research workers in British universities | a) 3  
b) 2  
c) 4 |
| 7  | Research workers are subdivided into associates… | a) research associates and senior research associates  
b) experimental officers and senior experimental officers  
c) research assistants and senior research assistants |
| 8  | Researcher is someone who carries out… | a) full time research  
b) only a full time academic work  
c) research as well as teaching |
| 9  | Research student is someone conducting… | a) research under supervision  
b) research in the natural science  
c) part-time research |
| 10 | Research fellow is a postgraduate doing | a) research for a certain period  
b) research and teaching being granted a special scholarship  
c) academic work under the direction of a supervisor |
| 11 | An academic is a person who ... | a) is a member of an Academy  
b) does academic work  
c) works in industry or politics |
| 12 | An academician is | a) a person working in industry  
b) a person working in academic sphere  
c) a member of an Academy |
English Degrees

I. Read the text below about English degrees.

Words and expressions:
- to be awarded a degree;
- find examination;
- on acceptance of a thesis;
- to be restricted to something;
- to be an original contribution to knowledge.

English Degrees

The English system of degrees may seem rather complicated, and therefore puzzling to foreigners. Here is a list of the different types of degrees, with brief explanations. It must be emphasised that this is only a general outline, and that practice varies to some extent from one institution to another.

First Degrees

A first degree is usually awarded at the end of a three-year course which most people start at the age of 18/19, after leaving school. In most institutions the awarding of the degree depends entirely on the final examination although some institutions now demand a dissertation too.

A first degree may also be called a Bachelor's degree, and the name of a particular degree is Bachelor (from Latin baccalaureus) followed by the name of the faculty. Thus a first degree in the faculty of arts is called a Bachelor of Arts, in the faculty of science a Bachelor of Science, and so on. These degrees are very often referred to by their initials, both in speech and writing:

- Arts - BA [ˈeɪrts - 'beɪə]  
  e. g. Bachelor of Science - BSc [ˌbiːs'siː]  
  Education - BEd [ˌbiː'ed]

Bachelor's degrees are at two levels: Honours and General/Pass. At some institutions an Honours degree is awarded after a more specialised course (an Honours course); at other the course is the same for everyone, Honours degree are given to those students who are more successful in their examinations.

Honours is abbreviated to Hons when given the letters BA, etc., for example, BA (Hons).

Higher Degrees

A higher degree is one which is awarded after further study, usually, although not always, involving research, and corresponds on the whole to the Russian учёная степень. Academic degree is not often used, but when it is it applies to all degrees, including first degrees. Higher degrees are sometimes also called further degrees.
Research degree is also used, but it is not an exact synonym of higher/further degree; it means a degree involving research, and not all (although most) higher degrees are research degrees (see below).

There are two types of higher degree: Master's degree and Doctors.

Master's degree

Originally this was a degree awarded on acceptance of a thesis based on a short period of research, usually soon after graduation. It was taken either as an additional qualification for a profession, for example, teaching, or as an introduction to real research, that is, work on a doctoral thesis.

In some universities this is still so. During recent years, however, there has been an increasing tendency to make the Master's degree an advanced examination degree, awarded after a year's postgraduate course of study, rather than a degree by thesis. Neither in its new nor its old form does it correspond to any Russian degree.

As in the case of the Bachelor's degree, the name of the particular degree depends on the faculty. Thus a Master's degree in the faculty of arts is called Master of Arts (MA), in the faculty of science Master of Science (MSc), and so on.

The place of the traditional MA, awarded on acceptance of a thesis, has been taken in some universities by a new Master's degree, the Master of Philosophy, or the MPhil [ˌem'fɪl], as it is usually called in conversation. The use of the word philosophy does not mean that the degree is restricted to philosophy. The name is the same for all faculties, and one may have an MPhil in English, or mathematics, or geography. From a practical point of view philosophy here means the same as наук in the names кандидат and доктор наук.

An MPhil thesis must contain original material, but is of a lower standard than the PhD (see below).

Doctorate

This is called in full Doctor of Philosophy, but is usually referred to as PhD [ˌpiːˈɑfɪl]. The word order is that of the original Latin (philosophiae doctor). As in the case of the MPhil described above, philosophy has no special reference to philosophy; the name is invariable for all faculties.

A PhD is awarded on acceptance of a thesis which must be an original contribution to knowledge. Research for this degree usually takes about three years, although the length of time needed varies considerably according to the subject. This degree is generally considered to be of an equivalent standard to the Russian кандидатская степень.

There is another type of doctorate, which is called in full a senior doctorate, to avoid confusion with PhD. The name of a particular senior doctorate depends on field of specialisation.

e. g. Doctor of Letters - for arts subjects or DLitt [ˌdiːˈlɪt] - from the Latin doctor litterarum;

Doctor of Science - for science subjects or DSc [ˌdiːsˈsiː]
These degrees are much higher than the PhD, and are comparable in importance to the Russian doctor's degree. However, they differ from the latter in that they do not involve the writing of a thesis. A person wishing to apply for such a degree submits his published works to a board, or committee, who then decide whether these works justify the award of the degree. There is no direct equivalent in England to the Russian doctorate.

**Procedure for Awarding Higher Degrees by Thesis**

The usual procedure in British universities is as follows. The candidate (that is, the person applying for the degree) submits his thesis to an examining board appointed by the board of studies (a committee of professors and lecturers, of which there is one for each subject). This examining board, or committee, as it is sometimes called, usually consists of two or three specialists in the candidate's field. They read the thesis and then summon the candidate to an oral examination), sometimes called a *viva* [ˈvaɪvə] or [viːvə] (from the Latin *viva voce*). At the oral/viva the candidate is questioned on his thesis, and sometimes on other related topics. Although the oral is open to the public, in practice only the candidate and the examiners usually attend. After the oral the examiners come to a joint decision and either accept or reject the thesis. Occasionally a thesis is referred back, which means that some fault(s) must be remedied before the thesis is accepted.

The expression to defend one's thesis is used in Britain nowadays only in the general sense of producing arguments to support one's thesis, answering objections. Moreover, *thesis* here may be understood not as the written work but in its original sense, defined by Hornby as "statement or theory (to be) put forward and supported by argument".

**General Comprehension Test**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English degrees are awarded…</td>
<td>a) after a two-year course b) ------a three-year-------- c) ------a four-year course</td>
</tr>
<tr>
<td>2. A First degree is called…</td>
<td>a) a candidate of science b) a Bachelor’s degree c) Doctors degree</td>
</tr>
<tr>
<td>3. There are …types of Bachelor’s degrees</td>
<td>a) 3 b) 4 c) 2</td>
</tr>
<tr>
<td>4. Higher degrees are called….</td>
<td>a) Honors b) General c) Further</td>
</tr>
<tr>
<td>5. A higher degree is a degree awarded after…</td>
<td>a) a 3-year course b) a piece of research c) a further study and sometimes</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 6 | Synonyms of higher degrees are…….                                       | a) Master’s  
b) Academic  
c) Research                             |
| 7 | There are ...types of Higher degrees                                      | a) 3  
b) 2  
c) 4                                             |
| 8 | The Master’s degree is awarded                                            | a) after finals  
b) on acceptance of a thesis  
c) after a year’s postgraduate course |
| 9 | The Master of Philosophy means a degree                                   | a) only for philosophy  
b) for humanities  
c) for all faculties |
| 10| Doctor of Philosophy is awarded                                           | a) after an original idea  
b) after a contribution to knowledge  
c) on acceptance of a thesis |
| 11| There …….types of PhD                                                    | a) 2  
b) 3  
c) 4                                              |
| 12| A degree for a Senior Doctorate demands                                   | a) writing a thesis  
b) publishing works  
c) research work |
| 13| Procedure for awarding higher degrees includes…. and name them…….       | a) 6 stages  
b) 5 stages  
c) 4 stages |
| 14| 14. VIVA means                                                            | a) a defense  
b) a question  
c) an oral exam |
Unit VII
American Degrees

Glossary
College, university school (U.S) are used interchangeably in the USA in conversation to mean high education.
Freshman
Sophomore
Senior
To submit
Administration test

I. Read the text below about American degrees.
In the US, students usually graduate from high school when they are 17 or 18 years of age, and many if not most continue on to some form of higher education. (In the US, we use the terms “college”, “university”, and “school” almost interchangeably in conversation to mean a place of higher education or learning. If someone looks young and they say they are in school, we would know that they are in primary or secondary [junior or senior high] school. If they look older and they say that they are in school, then we know that they mean a college or university). Though we generally use college and university to mean the same thing, a college is generally an institution that grants on Bachelor’s degrees. A university grants bachelors degrees, as well as master’s degree, and often doctorates. There are also community colleges that grant Associate degrees.

Briefly, these are the general types of institutions of higher learning in the United States. Later, each one will be discussed in more detail.

Community Colleges
Operated by state governments. Grants two-year Associate of Arts or Associate of Science degree.

Colleges
Often run by private organization such as churches, though these are not generally religious institutions - meaning that the classes are not primarily religious, but academic. Some colleges are devoted to training members of the clergy, but most are academic in focus. Grant 4-year Bachelor degree.

Universities
Private or public (government) run. Grant 4-year bachelors degree, and generally 2 year masters degree and doctorates (PhD) that are an additional minimum of three years after the baccalaureate degree, but most often, about one or two years after a masters.
The Baccalaureate or Bachelors Degree  
(Undergraduate Degree)

There are special names for each of the four years of a student’s course of study at the university. These are the same as those in high school. They are: First year: freshman; Second year: sophomore; Third: junior; Fourth year: senior.

For the Bachelor’s and Master’s degrees, there are generally two types, Master of Arts and Master of Science. To get a Bachelor’s of Science (BS) the student generally has to take, in addition to other required and elective courses, some mathematics courses, and a number of either science courses such as physics and chemistry, or else social science courses such as sociology and political science.

For a Bachelor of Arts (BA), the student generally takes two years of a foreign language and must pass an exam in it. They also must take other language or literature courses, just as those working on a BS must take a number of science courses.

For the Masters degrees, generally people obtain MS which has no requirements, unless they choose to take a language test and get the MA. No other work outside of the department’s curriculum is generally required. Generally, the courses that a student working on a BA or BS would take two writing classes; two or three math classes or a two years of a language; 15 classes within the major (the focus of the degree); six classes in science or literature/arts; a few other general requirements, and then the rest of the classes can be chosen from electives focused on a minor degree. Generally 186 credits are required, where each class is worth 3 credits (except languages which are 5) and there are three terms per academic year. Classes can also be taken during the summer. Many schools in the US are on a semester system (two terms per year), so the requirements are nearly the same, just adjust to the different schedule.

Here are the admission requirements for a student intending to enroll as a freshman at Washington State University. While all colleges and universities have slightly different admission requirements, the ones listed below are representative of what is typically required by state-run universities. Freshman Admissions Requirements: Freshman applicants will be required to submit a high school transcript showing completion of no less than the following course work in grades 9-12:

English: four years (three of which must be composition and literature).
Mathematics: three years college preparatory mathematics (one year of geometry and two years of algebra including an introductory science: biology, chemistry or physics).
Social Sciences: two years (including at least one year of history).
Foreign Languages: two years of a single foreign language (or approved sign language).
Fine Arts: one year of fine, visual or performing arts or one additional year of academic elective.

In addition to this course work, a college admissions test must generally be taken. These tests are administered by private organizations, not the individual university, and for these tests the student is given a score. Universities and colleges
set a minimum score that they require, and if the applicant’s score is higher than the minimum, and they have fulfilled the other requirements, such as those stated above, and have enough grade point average, then they will usually be admitted to the institution (if it is a public university).

Grade point average (GPA): In the United States, most high schools, as well as places of higher learning give out the following grades:

<table>
<thead>
<tr>
<th>Letter Grade (Explanation)</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.3</td>
</tr>
<tr>
<td>A (Excellent)</td>
<td>4</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B (Above Average)</td>
<td>3</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C (Average)</td>
<td>2</td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>D (Below Average)</td>
<td>1</td>
</tr>
<tr>
<td>F (Failure)</td>
<td>0</td>
</tr>
</tbody>
</table>

In general, the grade D- is not given, and some schools do not allow an A+ to be awarded. Schools require that students maintain a certain GPA or they will eventually be expelled if their grades continue to be lower than the limit set but the school. The minimum is typically 3.0.

Note: the term "grade" can mean the year in school for primary and secondary schools, as well as the letter score earned on an assignment, test, or in a class at the end of the term.

Master’s and Doctoral Degrees

A special type of master’s degree is called the Master of Business Administration (MBA). Below are the requirements and other information about MBAs from state schools. Most schools require:
1) Academic transcripts of all academic work, looking for evidence of some knowledge of economics and basic accounting and mathematical and computer proficiency.
2) Graduate Management Admissions test.
3) Letters of recommendation from two to three people such as professors or former employers who are familiar with your skills and the quality of your work.
4) Essay questions.
5) Work experience.
6) Students from countries where is English is not the official language are required to take the TOEFL.

Typical MBA class in the Lundquist College (University of Oregon).
68% Male students
32% Female students
70% Americans
30% Foreign students from 25 countries
Average age is 27 years
Average years of work experience is 4
Average GRA is 3.2
Average GMAT score is 570
Average TOEFL score is 620
Number of full-time professors is forty-five

Each department or school within a university will have different statistics, but these are provided since business degrees are some of the most popular for foreign students. Other programs with many non-American students are in mathematics, the physical sciences, and languages, particularly English.

Typical Course of Higher Education in United States

General Comprehension Test

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | In the USA, students usually graduate from high school … | a) at the age of 16-17  
    b) at the age of 17-18  
    c) at the age of 18-19 |
| 2 | College and school are synonyms for...  
    (BA or BS) | a) a primary or secondary school  
    b) a university  
    c) a junior or senior high school |
| 3 | A synonym for primary / secondary school is...  
    (MS, MA, MBA) | a) a university  
    b) a junior or senior high school  
    c) a college |
| 4 | Universities in the USA grant...  
    (PhD) | a) first degrees  
    b) high degrees  
    c) certificates |
| 5 | Universities run... | a) by private organizations  
b) by public government  
c) by religious organizations |
| 6 | Community colleges grant... | a) Bachelors degree  
b) Associate of Science degree  
c) Doctors |
| 7 | Community colleges run... | a) by private organizations  
b) by religious organizations  
c) by state government |
| 8 | In general colleges run... | a) by private organizations  
b) by state government  
c) by federal government |
| 9 | Colleges grant... | a) Associate degree  
b) Doctors  
c) Bachelors degree |
| 10 | There are ...types of the Master’s degree | a) 2  
b) 3  
c) 4 |
| 11 | A special type of the Master’s degree is called... | a) Master of Art  
b) Associate Degree  
c) Master of Business |
| 12 | It takes … years to obtain a Bachelor’s degree. | a) 3  
b) 4  
c) 5 |
| 13 | It takes … years to obtain a Master’s degree. | a) 5  
b) 6  
c) 7 |
| 14 | It takes ....years to obtain a Doctor’s degree. | a) 4-6  
b) 5-6  
c) 7-8 |
| 15 | A freshman is a student of the....year. | a) 1\textsuperscript{st}  
b) 2\textsuperscript{nd}  
c) 3\textsuperscript{rd} |
| 16 | A sophomore is a student of the...year. | a) 2\textsuperscript{nd}  
b) 3\textsuperscript{rd}  
c) 4\textsuperscript{th} |
| 17 | A Junior is a student of the... year. | a) 2\textsuperscript{nd}  
b) 3\textsuperscript{rd}  
c) 4\textsuperscript{th} |
| 18 | A Senior is a student of the ...year. | a) 2\textsuperscript{nd}  
b) 3\textsuperscript{rd}  
c) 4\textsuperscript{th} |
|   | Freshman applicants submits for admission to university... | a) a certificate  
b) a transcript  
c) an essay |
|---|----------------------------------------------------------|----------------------------------------------------------|

2. Talk about Bachelor’s, Master’s degrees and Doctorates.
A. Nature of an academic thesis

The thesis is the main idea of one's research. The thesis or dissertation is normally the culmination of a candidate's research; submission of the thesis represents the completion of the final requirement for the degree being sought. In certain faculties (such as fine or performance arts), the thesis may be a form of an artistic performance, a written work (of music, or of fiction, for example), or a painting or other artistic production.

The length of the thesis will vary depending on the specific degree. A thesis submitted as part of the requirements for an undergraduate degree is usually much shorter than that submitted as part of a Ph.D. (or other research-oriented doctorate). Length may be calculated in number of words, number of pages, or, when the thesis is written in a character-based language (such as Chinese or Japanese), number of characters.

Theses are most often written in the main language of instruction at the university granting the degree, but students of languages and linguistics, or those undertaking research in foreign languages, are sometimes permitted to submit the thesis in the language studied. In some countries it is a requirement to include at least some material in an international academic language; originally Latin and at one time French or German, this nowadays almost always means English. In countries where English is the predominant language of academic work, especially in the sciences, for example in the Netherlands or Scandinavia, an entire thesis may be submitted in English.

Procedure

Since the thesis is normally the culmination of the postgraduate’s work on a particular degree, the writing typically begins when all work has been completed. Thesising is the process of researching and writing a thesis. In consultation with the primary supervisor, the postgraduate decides on a general topic and undertakes appropriate research. When a draft of reasonable completeness has been finished and approved by the primary supervisor, the thesis is submitted for examination.
Typical Components

A typical thesis has a title page, an abstract, a table of contents, and a bibliography. Other components might include acknowledgements, a dedication, indexes and appendices, glossaries, lists of tables, images or figures, lists of abbreviations, and so on.

The title page of a thesis or other written work is the page at or near the front which displays its title, and author, as well as other information.

Title Pages in a Thesis

The title page of a thesis or essay is the work’s first page. It lists the title of the work, and the name of the author.

In the case of an academic paper, the title page also lists class information (such as the course name and number), identification information (such as the student number), the date, name of the professor, and name of the institution. The title page is not numbered.

Title pages are not required in all citation styles; instead, some styles require that the same information is placed at the top of the essay’s first page.

The title page for a thesis contains the full title, the author’s name and academic credentials, the degree-granting faculty and department name, the name of the university and date of graduation, and the universal copyright symbol (©). The thesis title page is usually page i, but is not numbered; the abstract (page ii) is the first numbered page.

General Comprehension Test

|   | A typical thesis consists of … | a) a title page, an abstract, a table of contents, bibliography  
b) a title page, an abstract, a table of contents, acknowledgements  
c) a title page, an abstract, a table of contents, chapters, conclusion, bibliography |
|---|--------------------------------|------------------------------------------------------------------|
| 1 | The title page is located …    | a) after a table of contents  
b) after an abstract  
c) at the front |
| 2 | It is called…                 | a) cover  
b) an acknowledgement  
c) a frontispiece |
| 3 |                               |
B. **A table of contents**, usually headed simply "Contents," is a list of the parts of a book or document organized in the order in which the parts appear. The contents usually includes the titles or descriptions of the first-level headers, such as chapter titles in longer works, and often includes second-level or section titles (A-heads) within the chapters as well, and occasionally even third-level titles (subsections or B-heads). The depth of detail in tables of contents depends on the length of the work, with longer works having less. Formal reports (ten or more pages and being too long to put into a [memo](https://en.wikipedia.org/wiki/Memo) or letter) also have tables of contents. Documents of fewer than ten pages do not require tables of contents, but often have a short list of contents at the beginning.

**Location**

In English language book-length works, the table of contents is at the beginning; in French and Spanish ones it is at the back, by the index. Magazines and journals often display the table of contents on the front cover, in which case it might be continued on the back cover if it does not all fit in the front. In longer works with many detailed sections, a top-level table of contents may appear in the normal position, which detailed table of contents appear at the beginning of each major part or chapter within the document. Within an English-language book, the table of contents usually appears after the [title page](https://en.wikipedia.org/wiki/Title_page), [copyright notices](https://en.wikipedia.org/wiki/Copyright_notice), and, in technical journals, the [abstract](https://en.wikipedia.org/wiki/Abstract); and before any lists of tables or [figures](https://en.wikipedia.org/wiki/Figure), the [foreword](https://en.wikipedia.org/wiki/Foreword), and the [preface](https://en.wikipedia.org/wiki/Preface).

**Content**

Printed tables of contents indicate page numbers where each part starts, while online ones offer links to go to each part. The format and location of the page numbers is a matter of style for the publisher. If the page numbers appear after the heading text, they might be preceded by characters called *leaders*, usually dots or *periods*, that run from the chapter or section titles on the opposite side of the page, or the page numbers might remain closer to the titles. In some cases, the page number appears before the text.
If a book or document contains chapters, articles, or stories by different authors, the author's name also usually appears in the table of contents. In some cases, tables of contents contain a description of the chapter's or first-level header's section content rather than subheadings.

Matter preceding the table of contents is generally not listed there. However, all pages except the outside cover are counted and the table of contents is often numbered with a lowercase Roman numeral page number. All popular word processors, such as Microsoft Word, WordPerfect, and StarWriter are capable of automatically generating a table of contents if the author of the text uses specific styles for chapter titles, headings, subheadings, etc.

**Examples**

Example with leaders:

Chapter 1: Getting Started . . . . . . . . . . . . . 1  
Introduction . . . . . . . . . . . . . . . . . . . . . . . . 2  
Next Steps . . . . . . . . . . . . . . . . . . . . . . . . . 3

Example without leaders:

Chapter 1: Getting Started  1  
Introduction  2  
Next Steps  3

Example with authors:

1. Introduction to Biology *Arthur C. Smith* 1  
2. Microbiology *Susan Jones* 10  
3. Advances in Biotechnology *T.C. Chang* 24

Example with descriptive text:

Chapter 1 3  
In which we first meet our hero and heroine, attend a gala feast, and begin an unexpected journey.

Chapter 2 12  
The journey takes an unusual turn, and new villainy is discovered.

**General Comprehension Test**

<table>
<thead>
<tr>
<th></th>
<th>A table of contents is headed…</th>
<th>a) contempt</th>
<th>b) concepts</th>
<th>c) contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. Bibliography (from Greek: βιβλιογραφία, bibliographia; lit. book writing) in its most general sense is the academic study of books as physical, cultural objects. On the whole, bibliography is not concerned with the literary content of books, but rather the "bookishness" of books. Bibliography is sometimes used to refer to a works cited page, but is more generally meant to refer to any catalogue of books that follows an organized bibliographic approach. The medium a bibliography can take varies, as it can be a reference list at the end of an article or book, a bound catalogue such as those shown on the right, or an internet database.

Bibliographic works differ in the amount of detail depending on the purpose, and can be generally divided into two categories: enumerative bibliography (also called compilative, reference or systematic), which results in an overview of publications in a particular category, and analytical, or critical, bibliography, which studies the production of books. Bibliographical works are almost always considered to be tertiary sources.

Enumerative Bibliography

A bibliography is a list, either indicative or comprehensive, of writings sharing a common factor: this may be a topic, a language, a period, or some other theme. One particular instance of this is the list of sources used or considered in preparing a work, sometimes called a reference list.
Citation formats vary, but an entry for a book in a bibliography usually contains the following information:

- author(s)
- title
- publisher
- date of publication

An entry for a journal or periodical article usually contains:

- author(s)
- article title
- journal title
- volume
- pages
- date of publication

A bibliography may be arranged by author, topic, or some other scheme. Annotated bibliographies give descriptions about how each source is useful to an author in constructing a paper or argument. These descriptions, usually a few sentences long, provide a summary of the source and describe its relevance.

Bibliographies differ from library catalogs by including all relevant items rather than all items present in a particular library. However, the catalogs of some national libraries effectively serve as national bibliographies, as the national libraries own almost all their countries' publications.

Analytical Bibliography

The critical study of bibliography can be subdivided into descriptive (or physical), historical, and textual bibliography. Descriptive bibliography is the close examination of a book as a physical object, recording its size, format, binding, and so on, while historical bibliography takes a broader view of the context in which a book is produced, in particular, printing, publishing and bookselling. Textual bibliography is another name for textual criticism.

General Comprehension Test

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | A bibliography is… | a) the examination and inquiry of books  
b) the critique and analyses of books  
c) the study and the description of books |
| 2 | A bibliography is of... types | a) 2  
b) 3  
c) 4 |
3. Enumerative is a synonym for...
   a) critical
   b) systematic
   c) analytical

4. Analytical bibliography stands for...
   a) enumerative
   b) systematic
   c) critical

5. Enumerative bibliography means...
   a) the description how to use each source
   b) an idea how to construct a paper
   c) the description of the relevance of each source to construct a paper

6. Analytical bibliography is subdivided into...
   a) systemic, historical, textual
   b) textual, enumerative, descriptive
   c) descriptive, historical, textual

7. Analytical bibliography means...
   a) the description of the source, the examination of a book as a physical object, the critique of the source
   b) the critique of the source, a summary of the source, the description of its relevance
   c) the close examination of a book as a physical object, the critique of a book, a broader view of printing and publishing

D. Other Names and Practice of Academic Theses Worldwide

The name for an academic thesis and the practice of its writing often vary across different countries and different academic degree obtained.

Canada

At English-speaking Canadian universities, writings presented in fulfillment of undergraduate coursework requirements are normally called papers, term papers or essays. A long paper presented for completion of an honours degree is sometimes called a major paper, or, more rarely, an undergraduate thesis or honours thesis. Major papers presented as the final project for a master’s degree are normally called theses; and major papers presenting the student’s research towards a doctoral degree are called theses or dissertations.
At Francophone Canadian universities, the procedure is roughly the same, however, the term applied to a study associated with masters work is referred to as a “mémoire,” and one associated with doctoral work is referred to as a “thèse.” Either work can be awarded a “mention d’honneur” (excellence) as a result of the decision by the examination committee, although these are rare.

A typical undergraduate thesis might be forty pages. Masters theses are approximately one hundred pages. PhD theses are usually over two hundred pages, and may reach nearly five hundred pages in exceptional cases.

UK

At UK universities, the term thesis is usually associated with a Ph.D. (doctoral) or M.Phil. degree, while dissertation is the more common term for the research project required for an undergraduate degree, although it is not always a necessity, and degrees can be certified for completing other equivalent work.

In recent years there has been a growth of websites which offer research help to students writing Dissertations especially in the UK where there is an emphasis on Coursework in terms of the marking and final degree grading. This has caused a great of media attention as Universities and Educators have suggested that they are used by ‘cheats’. One such site that offers research help to students is http://www.essaywriter.co.uk/ based in the UK.

US

In the majority of US doctoral programs, the term “dissertation” can refer to the major part of the student’s total time spent (along with 2–3 years of classes), and may take years of full-time work to complete. At some universities, dissertation is the term for the required submission for the doctorate and thesis refers only to the master’s degree requirement. At many others, the word thesis is used for both.

Graduate students in many programs throughout the US are either required to write a thesis at the end of their studies or have opportunity to take a “thesis track” leading to graduation. Students who opt for the thesis route often are seeking to continue on for doctorates or are seeking employment where such an experience is valued.

**General Comprehension Test**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At English speaking Canadian universities the term thesis means….</td>
</tr>
</tbody>
</table>
|   | a) undergraduate coursework  
|   | b) a long paper for the completion of an honor degree  
|   | c) major papers  |
| 2 | At UK universities the term thesis is associated with… |
|   | a) research project  
|   | b) undergraduate coursework  
|   | c) PhD or M.Phil  |
|   | At USA universities the term thesis is associated with… | a) Master’s degree  
b) Doctorate  
c) both |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Unit IX

Theses Defense

A thesis defense, also known as "defending one's thesis," oral defense, viva voce, and various other names, is a type of final examination for a doctoral candidate, and sometimes for a master's candidate. Certain undergraduate schools, whose students are largely expected to matriculate into graduate programs, also require students to defend theses.

A thesis defense differs from a typical examination in several respects. The biggest difference is that the candidate often knows more about the topic than the examiners ("the committee," or the "jury"), having researched the topic extensively, typically over a number of years; some candidates may have devoted the better part of a decade to the work being examined. The purpose of the thesis defense is to test the candidate's knowledge of his or her subject area and thinking in related areas, and to test the candidate's knowledge of and ability to explain his or her dissertation.

The examining committee normally consists of professors from the university, including the candidate's primary supervisor (without whose presence the defense cannot proceed) and members of his or her advisory committee, as well as professors from other departments or faculties and, sometimes, an external examiner (someone not otherwise connected to the university). Each committee member will have been given a completed copy of the dissertation prior to the defense, and will come prepared to ask questions about the thesis itself and the subject matter.

Although it is always the culminating part of the assessment, the nature and real importance of the oral examination varies greatly between countries. In North America it may take place in public or private, typically with a committee of about five (note, however, that in many schools masters thesis defenses are restricted to the examinee and the examiners, even where doctoral defenses are held in public). In the United Kingdom, there are only two or at most three examiners, and the examination is strictly in private, not least because there is a real chance of a candidate failing at this stage. In most countries of continental Europe, however, the thesis defense takes place in public, with the candidate's family and friends present as well as any interested faculty, and there is no question of the candidate failing - the real assessment has taken place beforehand, in determining whether the candidate should be allowed to go forward to public examination. However even in these cases the oral examination is not only ceremonial. The performance of the candidate (and indeed of the examiners) will be discussed vigorously afterwards and will help determine their future reputation. In several countries the decision on special honours ("cum laude" in all its local variations) is also made at the defence.

The oral examination is conducted primarily in the main language of instruction. However it is generally the case that at least one of the examining boards will be from another university, and in smaller countries that often means from another country, since there may be only one centre of expertise on a given
topic in a country. This often means that part of the examination has to be in a common language, usually English.

Even where oral examinations take place in private, their atmosphere tends to be formal. The candidate may be asked to give a short presentation on his or her thesis, usually lasting no more than thirty minutes, after which the examiners are free to ask questions. In some countries they will proceed by seating order, with external examiners given priority. Where thesis defenses are open to the public, they are often attended by friends or family of the candidate, members of the university, especially other students in the candidate's department, and members of the community. Audience members are often permitted to ask questions when all the examiners have finished.

At some US institutions a longer public lecture (known as a "thesis talk" or "thesis seminar") by the candidate will precede the defense itself, in which case only the candidate, the examiners, and other members of the faculty may attend the actual defense.

Questions are typically about the content of the dissertation and the claims made therein. Examiners may need clarification on a point or points, or may ask the candidate to explain his or her reasoning or research further. Questions are often friendly, but may also challenge the candidate's views, methods, or conclusions. Part of the evaluation is based on how well the candidate can defend his or her work.

In the U.K., Ireland and Hong Kong the thesis defence is called a *viva voce*, (Latin for "by live voice") examination (*viva* for short). Involved in the *viva* are two examiners and the candidate. One examiner is an academic from the candidate's own university department (not any of the candidate's supervisors) and the other is an external examiner from a different university.

In Bosnia-Herzegovina, France, Norway, Sweden, Denmark, Finland, Germany, and Switzerland the oral defense is known as a *soutenance*: an expert in the field, often from another university, is appointed who will present the dissertation, subject it to a critical examination and discuss it with the author. In the context of the disputation, the critical examiner is termed the *opponent*, and the author of the dissertation the *respondent*. The dissertation has to be generally available in its final or at least in a preliminary published form a few weeks before the disputation (3 weeks in Sweden), which is open to the public; after the opponent is finished, anyone present is allowed to ask critical questions (anyone who does is called an "opponent ex auditorio"–an opponent from the auditorium). The final grade is decided after the disputation in a meeting between the opponent and a grading committee of three or (sometimes) four people. In theory, also the points raised by *opponentes ex auditorio* affect the grade. It has happened that such opponent has caused the committee not to pass the *respondent*, although this would be quite extraordinary nowadays.

At the end of the defense, the candidate and other persons who are not members of the jury are asked to leave the room. Alternatively, the jury leaves the room for another chamber set aside solely for this decision. The committee then deliberates and reaches a decision (normally unanimous and sometimes called a
"verdict"), usually in the form of a number from one to five (this varies from school to school). Potential decisions include:

- **Accepted / pass with no corrections.**
  The thesis is accepted as presented. A grade of some kind may be awarded, though in many countries PhDs are not graded at all, and in others only one of the theoretically possible grades (the highest) is ever used in practice.

- **The thesis must be revised.**
  Revisions (i.e. correction of numerous grammatical or spelling errors; clarification of concepts or methodology, addition of sections) are required. One or more members of the jury and/or the thesis supervisor will make the decision on the acceptability of revisions and provide written confirmation that they have been satisfactorily completed. If, as is often the case, the needed revisions are relatively modest the examiners may all sign the thesis with the verbal understanding that the candidate will review the revised thesis with his or her supervisor before submitting the completed dissertation.

- **Extensive revision required.**
  The thesis must be revised extensively and undergo the evaluation and defense process again from the beginning with the same examiners. Problems may include theoretical or methodological issues. A candidate who is not recommended for the degree after the second defense must normally withdraw from the program.

- **Unacceptable**
  The thesis is unacceptable and the candidate must withdraw from the program.
  This verdict is given only when the thesis requires major revisions and when the thesis defense makes it clear that the candidate is incapable of making such major revisions.

The candidate is immediately informed of the results; in the event of a successful defense the candidate's supervisor will often greet the candidate with the words, "Congratulations, Doctor X". At this moment a bottle of champagne is often produced. In some countries (e.g. France and the Netherlands), the candidate is considered to become a Doctor of Philosophy at the instant that all committee members vote in the affirmative. In others (e.g. the UK), the degree must first be conferred by the university corporation. Finally, in some countries (e.g. the USA), practice varies between universities.

The likelihood of these different verdicts varies between countries. At most US institutions the latter two verdicts are extremely unusual, since the thesis supervisor (and the other members of the jury) will normally have reviewed the thesis before the thesis defense. Such an outcome is generally regarded as a major failure not only on the part of the candidate but also by the candidate's supervisor (who should have recognized the substandard quality of the dissertation long before the defense was allowed to take place). It is also fairly rare for a thesis to be accepted without any revisions; the most common outcome of a defense is for the examiners to specify minor revisions (which the candidate typically completes in a few days or weeks).
While the decision of the examiners is normally unanimous, the official rules at most US institutions allow the doctorate to be granted with positive votes from all but one of the examiners; it is therefore possible for a candidate to pass with one negative vote. The extremely rare cases where one examiner votes against a successful candidate can have a permanent effect on the relationships among the faculty members involved.

An unsuccessful defense is extremely unlikely in countries such as the Netherlands, where the oral defense ("promotie") typically happens after the thesis has already been approved by examiners. Candidates often try for a board of opponents as large, international and prestigious as possible. All professors are required to wear togas. The oral defense is ended after a preset amount of time by the University-appointed 'pedel' or custos who is in charge of the protocol and will end the defense with the words "Hora est!" (latin for it is time or the hour has come). In theory, the candidate does not have to answer the questions or even be present; (s)he can relegate this to his/her assistants called "paranimfen", who also act as a formal bodyguard due to the heated nature of some academic disputes in past times. Nowadays paranimfen are often chosen from friends and family, so the practice of having them answer questions is almost completely discontinued.

On the other hand, examinations at universities on the British pattern are by no means a rubber stamp. Whilst many theses are passed with some minor corrections or revisions required by the examiners, very few are passed with no corrections whatsoever, and indeed a pass-without-correction is considered a particular honour. Moreover, it is not uncommon for British theses to be failed, as well – in which case, either major re-writes are required, followed by a new viva, or else the thesis may be awarded the lesser degree of M.Phil (Master of Philosophy) instead, preventing the candidate from resubmitting the thesis.

In the case of a successful defense, frequently many of the questions and much of the discussion will focus less on the dissertation at hand and more on further avenues of research the author might wish to explore in the future.

Thesis Submission

Submission of the thesis is the last formal requirement for most students. By the final deadline, the student must submit a complete copy of the thesis to the appropriate body within the university, along with the appropriate forms, bearing the signatures of the primary supervisor, the examiners, and, in some cases, the head of the student's department. Other forms include library authorizations (giving the university library permission to make the thesis available as part of its collection), and copyright permissions (in the event that the student has incorporated copyrighted materials in the thesis).

There are strict requirements for theses, including pagination, layout, type and color of paper (especially the paper must be acid-free since a copy of the dissertation will become a permanent part of the library collection), order of components, and citation style, which vary from school to school. These requirements will normally be checked page by page by the accepting officer before the thesis is accepted and a receipt is issued. Theses which are incomplete or
incorrectly formatted will not be accepted. Failure to submit the thesis by the deadline will result in graduation (and granting of the degree) being delayed. Once all the paperwork is in order, copies of the thesis are made available in the University Library. Specialist abstracting services exist to publicise the content of theses beyond the university where they are produced.

**General Comprehension Test**

|   | A thesis defense is called… | a) vivate  
b) vivari  
c) viva |
|---|----------------------------|---------------------------------|
| 2 | A thesis defense differs from a typical exam in that the candidate … | a) often knows less that the examiner  
b) often knows nothing about the examiners  
c) often knows more about the topic that the examiners |
| 3 | The examiners are called… | a) supervisors and “jury”, the exam board  
b) the committee and the exam board  
c) jury, committee, board |
| 4 | The examination board consists of… | a) internal examiners, professors from all over the world, primary supervisor, researchers  
b) university’s professor, primary supervisor, members of advisory committee, an external examiner  
c) external examiners, lawyers researchers, advisory committee |
| 5 | The thesis defense can take place…in | a) private, on-line  
b) private, public  
c) public, on-line |
| 2 | There are…members of the committee, in the United Kingdom. | a) about 5  
b) almost 3  
c) only 2 |
| 3 | Viva voice is conducted… | a) primarily in the main language of instruction  
b) sometimes in English  
c) only in English |
| 4 | The presentation on smb’s thesis usually lasts… | a) more than 30 minutes  
b) only 30 minutes  
c) less than 30 minutes |
5 | A longer public lecture (thesis talk or seminar) will precede the defense itself at some institutions in … | a) Great Britain  
   b) USA  
   c) Europe  

6 | A decision is sometimes called … | a) a result  
   b) a conclusion  
   c) a verdict  

7 | There are usually…. potential decisions… | a) 2  
   b) 3  
   c) 4  

8 | The candidate is considered to become a Doctor of Philosophy that committee members vote… | a) in the negative  
   b) in the affirmative  
   c) with abstention  

9 | At US universities it is possible for a candidate to pass with… | a) 2 negative votes  
   b) 0 negative vote  
   c) 1 negative vote  

10 | An unsuccessful defense is unlikely in … | a) Norway  
   b) France  
   c) the Netherlands
Section II
Recommendations on Writing Academic Essays,
Reports, Summaries, Reading Periodicals and Participating in Discussions

Unit I
Motivation for Becoming a Scientist

Imagine such a situation: as a school-pupil, you were engaged in scientific experiments carried out by a group of young scientists. This research continued, and in some years you became used to this. By the end of university, you face the problem of employment. Then, one day you get the idea to...

Motivation is defined as “something that is given a motive or incentive to act”. People are different, and their motives for activities may be also different.

Questions:
1. Read the following text. Pay attention to the particular manner of presenting serious points in a figurative genre.
2. Try to innumerate all possible motivations of researching in Russia.

Suppose we wish to study the effect of an insecticide on cabbages. Do we wish to compare the insecticide with other established products? Which effects ought we to study? Answers to these questions serve to narrow the study to something attainable, begin to define the limits of the experiment and establish a design which can be repeated by others.

We are often concerned with causes and effects. In this case we are interested in whether application of the insecticide causes the death (an effect), of one, or more, cabbage pests.

It is often important to discover how two 'causes' may interact e.g. natural predators may be affected by the insecticide. If each cause acted as it would if the other were not there then the causes are said to be independent. If one cause affects the action of the other then they are said to interact. This interaction could be positive with one cause reinforcing the action of the other or it could be negative with one cause cancelling out the effect of the other. We must also be aware of unexpected effects e.g. the damage to useful organisms (soil decomposers or insect pollinators) or the hazard to human cabbage consumers.

As well as wishing to have some control over the causes and effects of the experiment, it is often the case that we wish to measure the effects produced by known amounts of the 'cause' or 'causes', e.g. What is the effect on a named cabbage pest when different doses of the insecticide are applied to the cabbage?

Once a set of objectives for the experiment has been established, we might see if there is any published work in the same, or a similar, area. This is known as a literature search. Have you any idea where you would start in this case?

An experiment is the best way of establishing a relationship between cause and effect. When it is not possible to conduct an experiment because of the difficulty of controlling the cause factors, we can resort to a survey. In a survey we observe (but do not control) the levels of the supposed causes and the results.
Surveys are generally used when studying human behaviour where it would not be possible to realistically control the causes (e.g. a study of the relationship between lung cancer and smoking. One could not hope to control the smoking practices of anyone). A survey is a poor, but often necessary, substitute for an experiment when investigating a cause-effect relationship. However, a survey is often adequate when the aim is to estimate some numerical characteristic of a population (e.g. the support for a particular political party.) When it is not practicable to survey the whole population (e.g. because it would be too expensive or it would take too long) then an estimate of the required numerical characteristic is obtained from a sample which is representative of the population.

It is sometimes the case that an investigation is so dangerous, expensive or on a scale too large to contemplate, (e.g. temperature distribution in a nuclear reactor, aeroplane flight training, planetary orbits) that a simulation, or model, that behaves in a similar fashion to the original system, can be examined and the results can correspond to the way the original system would have behaved. The model may not be a contraption. It may be an abstract description of some situation, some law, in mathematic form.

Essay question:
You should define clearly the metaphoric or literal meaning you are using and establish criteria for the investigation.

“Early to bed, early to rise, makes a man healthy, wealthy and wise.”
Tutor’s Instruction:
Opening Paragraphs: The Introduction

Every essay needs an introduction. It is essential requirement and a vital way of communicating your ideas clearly to the reader. It tends to show whether or not, or how much you are in control of your ideas and material. It should be relatively short, but should do more than merely repeat the question. It should encourage the reader to read on and is important to create a good initial impression.

In your introduction you should try to get immediately to grips with the question. You can do this in a number of ways by:

a) stating which particular aspect of the topic you intend to cover in your essay;
b) defining or clarifying important terms in the title;
c) making a short strong statement about the topic;
d) posing a challenging questions to the reader;
e) relating the questions to your own experience;
f) making an appropriate reference or quotation (although this must be extremely appropriate).

You must not:

a) suggest that you do not have adequate knowledge or interest in the topic;
b) make language errors, mis-spell, misinterpret one or more key words in the question;
c) leap straight away into the main body of your answer or immediately wander off the point;
d) attempt to alter the question to something else you would have preferred;
e) merely repeat the question without developing it.

Likewise, one should not begin with phrases along the lines of "Before we answer the question, we should look at such-and-such, or discuss this-or-that."

Of course the precise approach you adopt will vary according to the question and the nature of the topic, but whatever the question there are some key requirements for a good introduction and these are to:

- State which aspects of the subject you intend to deal with
- Define any terms which require to be clarified or explained
- Give a clear sense of direction where the arguments will lead
- Arouse the interest of the reader

The length of the introduction depends largely upon the length of the essay, but typically for an essay of up to 2000 words would probably only occupy one paragraph, with extended essays taking up no more than one page, while longer projects may have the introduction as a separate short chapter.

The following is suggested as an ideal and useful model for an opening paragraph. It deals with the subject of 'Give an account of some art form in
which you are particularly interested', but could easily be adapted for other similar questions.

The art form I have chosen to discuss is classical ballet. I shall look first of all at the origins of ballet and will then consider how it has changed since its beginnings. I shall devote some attention to modern trends which are of particular interest and suggest ways in which ballet may develop in the future. I shall also attempt to define where the particular fascination of ballet lies for me and why I enjoy it so much.'

Think of ways in which you could you modify the paragraph to fit another art form, movement, or indeed any other form of human activity, which you might have chosen.*

You can see that in some respects it could be better to write the introduction after you have completed the rest of your essay. This should always be the case with essays which you write in normal rather than in examination circumstances. In the examination you could of course leave 6 to 10 lines clear at the beginning to be filled in later. A few spare lines would not matter to the examiner, provided that you leave enough space and the initial impression does not look messy.

Intermediate Paragraphs : The body of your essay

NB: This is the part of your essay where the major content will be. In this part of the guide we are considering principally the approach to essay construction rather than the essay's content. The content aspects are pursued in more detail in subsequent chapters on each of the key areas of General Studies.

In an examination you should probably be aiming to write something between 500 - 800 words in length, and that would usually mean 5 or 6 paragraphs. Incidentally, always take heed of any word limits given. They should be strictly adhered to, since some of the marks awarded for the writing of the essay will probably somehow be connected to this. In extreme cases, if for example in an essay which is supposed to be 2000 words in length you have only written 1500 words, this means you have only written ¾ of the essay and can therefore only achieve a maximum of 75%; conversely, if you have written 3000 words, the marker has the right not to waste his time reading the last 1000 words and you will be marked on what he has read, i.e. not the conclusions, which are probably the most important part of the essay. Similarly, if there are instructions regarding formatting of essays (font, font size, margin size, line interval, etc), these must be adhered to.

It is essential to write in clear paragraphs. Without them written text is much harder to follow. Avoid single sentence paragraphs as far as possible. Also remember that each new paragraph should contain a new, separate point or thought. Additionally, of course it is desirable that each paragraph should follow on from the previous one as smoothly as possible, either developing or expanding the point of the previous paragraph, or conversely, providing opposing opinions or arguments.

Look at this slightly modified text from the beginning of the previous chapter. Is it not rather difficult to follow and tiring to read?
The authors of this guide believe that the candidates who do best in General Studies examinations are those who read regularly from a variety of sources in their spare time, as well as keeping abreast of human affairs and current events, through watching television, discussion and other means. Many of the skills tested in the examinations are based inevitably on the written word. Reading the work, therefore, of good quality writers of fiction, non-fiction, and journalism will help you to acquire more knowledge, aid and develop your ability to understand and reproduce more complex and sophisticated concepts and ideas, and improve your written style and ability to communicate these. These abilities relate very directly to the major skills tested in General Studies of essay writing and comprehension underpinned by wide general knowledge. It is perhaps inevitable that, since the advent of television, most of us read much less than people used to. It is quite notable from candidates' attempts at particular essay questions in General Studies that there is much reliance on knowledge and ideas gained solely from television. Television and radio are, of course, depending on what you choose to watch or listen to, tremendous sources of information and knowledge, as well as entertainment. However, candidates' attempts to answer questions, which appear to be based on having watched a single television programme on a related topic, are most often superficial and inadequate. We suspect that this is par for the course because we tend to use television or radio somewhat passively rather than actively, and reading is a more active pursuit. Because it is more active, reading appears to make more impact on our memory, and we can often recall what we have read more easily and in more detail.'

**Closing Paragraphs: The Conclusion**

The aim of your last paragraph should not to state anything new. You should merely try to sum up what you have said in the body of the essay and come to a general conclusion. This should not be a repetition of detailed points made in the essay, but rather a brief summary statement and conclusion of your views or arguments. The conclusion is not the place for afterthoughts. Additionally, the conclusion should be logical from the main arguments of the essay. Like your introduction, your closing paragraph will typically not be very long.

This essay has looked at the arguments for and against zoos. My conclusion, based on these arguments, is that, while there should certainly be strict control on zoos to keep them all in line with the best of modern standards, a good zoo can be seen to do much that is positive for animals as well as for the children and adults who visit it with such pleasure.

The following checklist of questions will be useful for essay evaluation:

- Have I written in clear paragraphs?
- Does each paragraph elaborate on one distinct idea?
- Have I got the right number of ideas for this length of essay?
- Have I defined my aims and outlined my plan at the beginning?
• Does my essay do what it says it is going to do?
• Have I come to a clear, logical conclusion?
• Is my essay the correct length?
Unit III

Components of Argument and Discussion

Recently, investigators have paid attention to argument, or namely its scientific modification—discussion. A scientist is not only a complete recluse, but he features certain passions and weaknesses. A real scientist appears to derive benefit for himself and for his science from arguments and debates. The ice has been broken!

For better understanding of general culture and cognitive value of an argument, some theoretical knowledge is necessary, but it’s not enough. It was Heraclite from Ephesus, a Greek philosopher, who said that multi-knowledge enrich the mind (bring intelligence). So, the only theoretical acquaintance with main principles of leading a reasonable argument doesn’t guarantee a success. To be experienced in taking part in a discussion you should practice whenever possible. Practice followed by analysis of your success and losses will be of great help and use to you.

Any argument, conversation, debate and discussion is a sort of communication. So, we argue, you debate, they discuss. We are opponents, supporters, competitors, members of an argument, i.e. we communicate with each other with the help of words and sentences. In all these cases we speak in turn. Where is a difference between all of them? We’ll try to define the essence of these notions. A conversation involves talking without strangers or outsiders. A debate, dispute or proceedings is always public because of including the members themselves. But argument, discussion and polemics may be held in both private and public.

Members of private discussion may be two or more but in this case they are partners and everybody has the right to speak. There are no mere spectators here.

Arguments, discussions and polemics are democratic. Their principle difference from other types of communication is in its form of behavior. Speaking in turn doesn’t mean that every following partner will contradict the previous one. He might develop a thought and prove its correctness. Such a communication resembles a dialogue but in reality it’s a monologue produced by different people. Any speaker builds on his speech over previous comments. This argument may be called a peaceful exchange of opinions. Sometimes meetings, conferences, debates and pleadings may be also held the same way.

However, arguments and discussions in point of fact can’t be held in such a peaceful form. Any argument necessarily contains criticism, objections, and even refutation and looks like a sequence of attacks, counter-attacks, defence and retreats. In this way an argument and discussion look like sporting competition.

Such competitive form of a dialogue is called polemics. It may start and develop at meetings, conferences and pleadings but sometimes an exchange of information and proposals are more attractive and useful than these heated battles. When we speak about an argument and a discussion, their principle similarity and
general difference from other forms of communication lies in the fact that both are possible only in the form of polemics.

So, we come close to a question about the difference between an argument and a discussion.

An argument is only held orally while a discussion might be written. This is a distinctive feature but not the main one. Oral communications are, in fact, not essential at all. To give a clear distinction between these two notions, we should forestall an inevitable demarcation with the help of a structure analysis.

There are three main relatively independent levels of a discussion:
- personal
- textual
- time-limit.

The first level represents all people present in the hall: members of discussion, spectators, and arbitrators. The latter persons don’t need any other way of communication except this one that is necessary to be refereed.

What components of a discussion may be singled out while analyzing a text?

1) vocabulary of the text: its notions and terms;
2) arguments, i.e. statements that serve as a basis for any following reasoning and conclusions;
3) logical transitions between statements: deductions and decisions; arguing and proof;
4) a topic of discussion, or a so-called “apple of discord”.

All these components may be considered as logical. There is one more textual component that has nothing to do with logics. It is regulations. The correct way to conduct a discussion accurately lies in a time-limit that includes a record of proceedings. It gives an opportunity to return to the text of a discussion, to analyze it.

Not all these components are absolutely necessary for a discussion. For example, we can manage without spectators and arbitrators if not for a court trial. Vocabulary is necessary, as there is no argument without words and terms.

As for reasoning, even logically groundless, it’s still the basis of any discussion. A topic is necessary, but not essential. Sometimes the topic is changed throughout a discussion; it is not always followed by supporters.

The situation is the same with time-limits. Some polemists simply ignore it. Moreover, it’s next to impossible to see a record of proceedings. So, the more suitable a topic is formulated, the more stable the regulations are, and so there are more chances for an argument to be turned into discussion. The difference between an argument and discussion is in their quality. Any discussion is a highly qualified argument.

The quality of discussion depends on the topic rather than its content and profundity. The degree of scientific mentality depends on formulation of questions and correct conduct of a dialogue. The accuracy of terminology used, well-grounded arguments, strict logical reasoning - these are factors creating a range of an argument; thus transforming it into a scientific discussion.
Generalizing all said above, we can define a discussion as a type of communication in a form of polemics. It’s characterized by a definite topic, logic of conduct and maintenance of time-limits.

**Aims and Reasons for Argument**

Arguments or discussions are varieties of conscious human activity. It means that any argument has or may have one or some aims. Two main aims are: a search of a truth in a dialectical argument; to win by all means in an eristic argument.

John Stuart Mill, the British philosopher, assessed an argument in a dialectical way – “the truth is born in an argument”. Many specialists agree with this statement, but not all of them.

This is Goethe’s idea that “there is an opinion that a truth lies between two extremes. This is not the case! There is a problem between them that is to be analysed”…

Mikhail Volkenshtein, a famous Soviet physicist, claimed that “the truth isn’t born in an argument, but it’s a result of hard work”.

David Bronstein and George Smolyan, writing about chess, give a maxim: “Discussion is only a way to weaken the opponents’ ideas”. It’s a joke but there is a sense in it.

Looking at another joke, in 1884 Moscow’s magazine Rossiya published Ivan Turguenev’s opus with Vladimir Stasov’s agreement: “Argue with the person brighter than you, he’ll win. But you can benefit from your own defeat. Argue with the person of your intelligence, you’ll take a pleasure from the battle, who-ever wins. Argue with a person of a lower wit; not for the victory but so that you can be of help to him. Argue even with a blockhead! You’ll get neither benefit nor glory- why not sometimes to amuse oneself a little! Never argue with Vladimir Stasov!”

We know that Turguenev’s characters are good experts in arguing, they often do it. They discuss rules and ways of arguments and therefore Turguenev’s credo may be worth noting.

There can be eight targets of discussion if they are formulated for every component of its structure, i.e. concerning vocabulary, argumentation of partners and so on. But we paid attention to three levels of components that would determine the main aims.

If a discussion is a multi-target action, possible reasons may be also eight according to a number of components. Personal and logic are the main ones. Discovering of a problem, lack of knowledge, a gap between knowledge and ignorance belong to cognitive or logical reasons. A vagueness of terminology, questionable argumentation, groundless reasoning and absence of necessary data about a subject under discussion may cause a problem.

Rude manners or hostile mood may become a personal or eristic reason of a verbal duel. Sometimes the aim of an eristic discussion is to attract an audience, to win it over to your side, to make them your supporters. Eristic discussions have nothing necessarily to do with something “bad”. Sometimes they are held with honorable reasons. But in our case it’s important to see them contrasting with dialectical discussions as cognitive and informative dialogues.
In the Beginning Was the Word

The importance of words is in what they represent to us. Words are signs of the world in our consciousness. They may represent different objects, not only real ones but also imaginable or mental. Nobody saw an electron, yet this word is not meaningless. We can comprehend its meaning, as we can grasp the sense of “perpetuum mobile”.

A meaning of a word is sometimes called a notion. It means that we have an idea about something, if we know the meaning of the word in question. When can we be sure that we know the meaning of a word? What is a notion? To have an idea about something, one should fulfil two conditions. Firstly, one should mentally single out all objects into one group. This task in itself is not easy. It’s important not to neglect or forget any of subjects of our mental group. When grouping these things, it’s impossible to include any objects similar to these ones, but in reality principally different ones.

If the first condition is fulfilled, we may say that we have an idea about this object. Animals also have ideas about subjects but not notions. For that we should have an indication of objects singled out into our grouping. Indications may be of two kinds: sufficient and essential. Essential indications are absolutely inseparable from an object. If it’s not present, an object can’t fit a certain grouping. Sufficient indications serve as a pass to a certain grouping. Thus, a notion is a result of mental generalization and grouping objects of some kind into a unified collection according to their characteristic and specific indications.

Scientific discussion in its lexical meaning differs from a usual everyday argument. Scientific vocabulary does not only consist of terms, though they constitute a significant and, moreover, central part of words used by scientists, and forms its backbone.

In discussion all words have to correspond with the speaker’s thoughts and must be correctly understood by his interlocutor. In short, vocabulary of a discussion must be mutually understandable.

Sometimes an original, independent idea demands not only new formulation, but also new notions, innovations in vocabulary (neologisms). A thought or contradiction with somebody else’s may appear in one’s consciousness but there is no worthy formulation for it. Sometimes once pronounced, it disappears forever because of its inaccuracy and ambiguity. A speaker tries to find an appropriate word for it by choosing close words, synonyms and, as a result, may be lucky to create a new notion.

It is a great success when one achieves a merging of an idea and its verbal expression! Any scientific process is mostly a collective activity. So, a scientific discussion is a dialogue between two or several authors when they add to each others’ arguments, make it more precise, and in other words, find the truth in a joint authorship.

In a discussion some text confusions are possible because its members may perceive a topic differently. In addition, the majority of words and terminology are polysemantic or may be homonyms in a wide meaning of a word. A word or even a phrase may be heard differently by an audience. If a speaker’s thought or
contradiction is misunderstood, a discussion will immediately lose its sense, being turned into a sort of nonsense. What can be advised here?

In case of confusion or misunderstanding it’s advisable to ask for a more precise definition or simply an explanation of a notion mentioned in order to avoid ambiguity. If an interlocutor doesn’t understand the opposite person, it’s better to admit it than to appear a slow-witted partner. Before a discussion it’s recommended to enlarge one’s knowledge on the topic with the aim to become firmly convinced in a position and be ready to reject everything that is not the only truth.

**Lexical Code of Discussion**

We’ll start with such a formulation for any discussion:

choose your words and expressions carefully or in a correct form;
speak clearly and logically.

This formulation realizes Lev Tolstoy’s thought that “the only means of communication for people is a word, and in order that this communication becomes possible, it’s necessary to use words in such a way so that they stimulate appropriate notions of other interlocutors”.

If it is a business or commercial polemics where an admissible agreement interests partners more than a truth, a principle of suitability of words is absolutely important. The main idea of this requirement is not to offend an interlocutor, not to insult him. According to this principle one ought not to call his opponent a retrograde or dogmatic person. Statesmen don’t like being called stereotyped “administration”. They may get offended or even aggressive and you’ll fail to reach an agreement.

Mark Fabius Quintilien, the ancient orator, said “…it’s required to avoid vile and mean words, i.e. words that don’t meet requirements of the rank of thing we are speaking about or dignity of persons whom we address.” These are wishes rather than rules of discussion that ought to be followed by any audience. They depend not on interlocutors’ erudition and their awareness of the topic under discussion, but mostly on their good will and sincerity of a wish through cognition.

If a person wants to raise a general culture of his way of thinking, he may be recommended to study a logical theory of notions. This is a theory that does include data about the most important forms of human mentality. It helps to operate with these notions and derive new and more complicated ideas based on simple or well-known previous ones. A doctrine about classification as a constituent part of the theory of notions may be of great help in any field of knowledge. An awareness of kinds of notions and ways of introducing new ones facilitates a realization of requirements constituting the code of discussion.

**Tricks in Discussion**

Infringement of discussion rules breaks the conduct of an argument and leads to misunderstanding. The latter may be situational or deliberate. It is difficult to differentiate between them in everyday life. But it’s better to treat with your interlocutor with respect in a discussion considering his mistake as a situational one.
However it’s possible to classify all infringements of discussion rules, mainly due to vocabulary. We shall call all of them tricks, even if they are done without any deliberate sense, through ignorance. Polysemy and homonymy provoke an opportunity for tricks and provide many examples.

In case of homonymy, one of the interlocutors substitutes one meaning of a word for another. It may cause an absurd or even ridiculous conclusion of a discourse. For example: “In a school text-book in physics it’s said that POWER is measured in units called DENES. Knowledge is power. It means that knowledge may be also measured in DENES.” It’s very easy to see that such a case becomes possible because of confusion of such two different meanings of the word “сила”. In the first sentence this special notion is presented by a symbol “F” in physics, that is really measured in such units. The second meaning is a sort of a synonym to words “благо, преимущество” that has nothing to do with measuring at all.

Another trick deals with demonstrative pronouns such as “this” or “that”. The usage of such word-indicators is situational and depends on the context in which they are used. It gives an opportunity to trick. Any time this pronoun is used, one should always explain what is meant or show the way where to look (for example, a direction). The same concerns word-indicators such as “tomorrow, ahead, here, left or right, etc.” To avoid duality of meanings one should be careful and delicate in his speech.

Intonation plays an important role in any communication. Sometimes it’s difficult to understand whether a sentence was said in a direct or figurative meaning. A language gives a chance for intonation “diversions”. Bernard Shaw, the famous British writer, in the introduction to his collection of plays wrote that “Yes” may be pronounced with 50 and “No” with 500 different ways though only one written way is known. An innocent phrase “…you are a well-known specialist” may come across both as an approval or an insult. It was earlier mentioned that in case of misunderstanding it’s advisable to ask for an explanation or repetition of what was said. If it concerns an intonation trick, you may be charged with insincerity, suspiciousness or lack of humour. If it’s so, one may use a counter-attack in arguing with his opponent. For example, “…this task was given to me as to an expert in this field. Who could cope with it better?” It would be effective, as everybody is able to contradict and, as a result, the question will be settled and a discussion will take a normal turn.

Intonation is similar to logical stress in a sentence. Sometimes it seems that each word of a sentence may be stressed due to the importance of its parts from a speaker’s point of view. In rear situations a case of an emphasis itself can cause a heated argument since a speaker’s logic, as a method of reasoning, may not be shared by his partners.

Synonymy can also become a trick, especially in the case where there is no stable term for a phenomenon. Before you start it’s better to agree about a certain definition of an item under discussion. One can easily manipulate synonymy for his own benefit, if these synonyms have different nuances, e.g. positive and negative:
- frank – direct;
- agreement – deal;
- criticism – slander;
- bargain – machination.

Words can break relations of colleagues. Words can bridge a gap of misunderstanding. So, be careful with using words in a discussion, especially if its aim is to reach a truth. It’s paradoxical but sometimes it helps you to comprehend your own opinion better in a course of an argument.

**What Are Your Arguments?**

In a discussion, generally speaking, a result depends on two conditions: validity of initial statements (arguments, grounds) and on logical impeccability of conclusions. If both conditions are fulfilled, the final statement in a chain of reasoning may be called a theorem, and a reasoning itself: its demonstration. The latter appears to be a sort of pyramid where all statements constitute a foundation, its arguments form a so-called building. The only obligatory requirement limiting a usage of arguments in a course of discussion is as follows: all arguments should be true judgements. Since ancient times a usage of false premises has a special name in logics – “error fundamentalis”. Errors are divided into two types: obvious and hidden. The latter is difficult to be revealed. It arises when arguments contradict each other, when they are not compatible in a system. According to one of the main laws in logics, inadmissibility of contradictions, the incompatibility of judgements proves that one or some of them are false. There are no parallels between true and false statements. Starting with false statements and logically thinking, one might get both true and false conclusions. For example, “The sky is brown.” It’s possible to make a true conclusion that a sky is not red, green or striped. At the same time along with these true statements one can make the only false one that the sky is not blue.

If a speaker refers to articles of the Constitution or other documents that are considered to be laws, these statements are considered to be true without any doubt. Such universally recognized statements of great trust without limits in usage are called axioms.

There is one more often mentioned variety of arguments that are – facts. They are everything that can be seen or heard. They do not need to be proved. They are testified by witnesses, data, and agents’ information. Validity of facts is an obligatory condition for accuracy of conclusions. Usually there are some requirements to facts that don’t necessarily guarantee but raise their trustworthiness and serve as basis for further reasoning. These requirements are as follows: reliability of fact resources, suitable for analysis of phenomenon, reality of their bonds with an assertion under proof. If these requirements are not followed, it gives rise for a new group of tricks.

Generalizing all this, we can say that theorems, axioms and system of facts are so-called roots for cultivating trees of reasoning and conclusions.
It is Allowed in Discussion

Is it correct to answer a question with a question? Sometimes it’s absolutely necessary when a question is not correctly formulated. Maybe there is an unknown term in a question. Some polemists use this method as an opportunity to think an answer over even if they heard it properly. Sometimes it’s used as a trick to gain time for a counter-attack. Mostly, the question-to-question approach is followed by an apology or excuses of being absent-minded that moment in order to delay an answer of a speaker, to confuse him by making repeat again the previously said. As a result, a speaker may loose his thought and give his opponent a chance to get revenge.

Any discussion or debate is a public action. Therefore there are some requirements for public speeches:
- clarity;
- correctness of main arguments arrangement;
- coherence of train of thoughts.

Each argument may be understood by an audience but their arrangement is so complicated that clarity of a separate one can’t help proving it, and hinders its cogency. The method of repetition is used to facilitate a situation. An audience trusts what was repeated three times. Thus dragging out a speech gives a speaker a chance to persuade even a hesitating interlocutor.

Another way of increasing coherence is intensification. An analyzed phenomenon is given extreme features or characteristics. This way combines with an alternative one “… not a theft but a plunderer; …not a murderer but a hard-hearted executioner of citizens and allies before we now accuse…” It illustrates an intensification of speech that impresses an audience and makes them think about the first alternatives that were rejected.

In conclusion we should say that an argument is the best training for the mind, its reactions, critical talents, abilities to see errors in reasoning, correct them and form a train of thoughts.

We argue because we can’t help but argue. It’s useful or should be useful. So, it’s necessary to raise its cultural level.

Study logic; try to enrich your mind with its laws and instructions.

Follow rules and principles of cognitive argument. It will open new truths for you, at the same time it will give you a pleasure of live communication, a feeling of happiness from a strength and flexibility of your intelligence.

Do's and Don’ts of a good discussion
- try to be correct and polite during the discussion;
- give the turn to your supporters or opponents to express their opinions;
- agree (disagree) with members of discussions;
- don’t be confused to contradict the contrary opinion;
- try not to interrupt your interlocutors without special reason;
- use only literary and generally accepted vocabulary;
- avoid using such expressions as “you are not right”, “don’t contradict me”, “What a nonsense!” etc.
Unit IV
Reading and Abstracting Periodicals

There are four kinds of speech activity. They are: reading, writing, speaking, audition (power of hearing; listening). As for reading, this phenomenon is complex and complicated. The German psychologist E. Meimann called it “…the psychological world in a miniature”. But at the same time the influence of social factors to motivation, interests, demands and spiritual values of a reader is great. In the process of reading different analyzers such as vocal organs, vocal-hearing and visual are activated by the corresponding centers of cerebral cortex. It provides a person with the complex mental activity in the process of reading. When reading to oneself a person might see, hear, pronounce and comprehend what is written. At this time the image of text’s content is formed in his mind. The famous Russian psychologist A. Leontyev said:” …from the very beginning we operate something that is implied by the text. That is, the dialectical world of events, situations, ideas, feelings, motives and values of a person. “

In the process of perception and transformation of the text information we reveal the essence of the text. It is the main result of any reading transformation, providing the real understanding of the read information and forming the image of the content. At the moment of reading some mental operations take place such as: analysis, synthesis, comparison, classification, conclusion, and some others. They result in evaluation of the text.

There are some methods of text compression for proper understanding of the content. First, the abundance of the information. It may reach a point of 60-70% of the text concerning a linguistic aspect. The role of abundance is to selectively concentrate to some parts of the text revealing the main ideas. It helps to omit the minor information and to underline the prior one. The abundance of meaning may be different to readers according to their basic and background knowledge of the subject matter.

To catch the main idea easier and quicker one should know how to do it. First, it is better to use key words and expressions. They have the main meaningful and emotional work. They depend on the text. This is a classical example of the sentence meaning depending on a position of a comma put right after the first or second word, “Казнить нельзя помиловать”. Therefore one should be careful while choosing key words and expressions analyzing them any time. Compression of the text is based on the proper key words. Underlying of subjects and predicates is done at the sentence, paragraph and text levels. The subject is defined as something what is said about in the sentence, and the predicate is something what is said about the subject. The subject of the whole text is its theme of the text and predicate is revealing of this theme. Underlying the system of Subject-Predicate relations a reader penetrates into the meaning of the text.

This process may be very difficult and it should be specially taught. One of the effective methods of text comprehension is the reading algorithm. This is one variant of reading algorithms.
The given algorithm permits a reader to treat a reading as an activity and governs the process raising its effectiveness. Here we shall speak about an algorithm of the text perception. It consists of four blocks, where every one corresponds to stages of intellectual activity:

- **READ**
- **ASSIMILATE**
- **WRITE OUT**
- **UNDERSTAND**
- **THINK OVER**
- **EVALUATE**

The process raising its effectiveness. Here we shall speak about an algorithm:

1. determining of purposes and tasks of reading corresponds to motivation and projects of a reader;
2. approximate reading (relevant) gives the opportunity to evaluate the correspondence of a publication to the reader’s needs: whether to read further or stop it;
3. perception of meaning (pertinence) provides forming evaluation of the text information to the reader’s needs, revealing the fact of project realization;
4. evaluation block means that the stage the project corresponds to its realization, i.e. the checking of reading results.

If you look at the chart, you will see that the entrance to the algorithm is determined by readers’ motivation that is given in the first block. It correlates with the second and the third ones directly. Its correlation with the fourth block is realized through the previous two by means of feedback.

The second stage of reading forms the reader’s system of expectations towards the content of the text. In other words it may be presented as the prognostic level of information.

In the third block there are four sub–blocks. The first one reveals the general level of information (why it is said). The second sub-block (what is said) reveals the concept level. The third one reveals the factual level. The fourth sub-block may be treated as a content-forming one revealing the formal structure of the text. The correlation between the second and the third blocks help us to analyze the text in the process of reading both from the part of the form and the content. Also it helps us to see the hierarchial structure of meaning of the text that provides its better understanding. The exit from the algorithm opens into a practical or some other spheres of our life.

Reading periodicals has its own specific features. First, periodical issues focus on current events if we speak about newspapers or weekly publications. Here some short-term information is usually meant. Therefore, linguistic and comprehension difficulties are presupposed by using the subject matter schematically. Sometimes only some hints may be published to avoid scandals or legal punishment. Implication and euphemisms in newspapers are often met. The reason of their usage may be disputable but it is a reality. To translate such an information, one should know realia of life properly or do it intuitively. In some time this information becomes out-of-date and loses its importance and topicality. It occurs difficult to comprehend the essence of the text.
If it is a periodical scientific journal, the aspect is a bit different. The actuality of the information published is organized by the scientific objective. It has less peculiarities than mass media issues. You may use the ordinary chart or algorithm for this type of reading. But mind you that it is addressed to experts or professionals and may be reduced in general meaning or may imply some background information. It is normal and may cause troubles in comprehension only with beginners or non-experts.

Algorithm of Text Reading

Determination of purposes and tasks

- **Approximate reading**
  - Author
  - Title of the text
  - Publication data
  - Summary
  - Preface
  - Table of contents

- **Sense perception**
  - Main idea and the aim of communication (why it is said)
  - Main judgement to reveal the main idea (what is said)
  - Details and illustrations
  - General background of the text content

Evaluation block

- Interest, significance, accessibility, cogency
Oceans are 'soaking up less CO2'  

The amount of carbon dioxide being absorbed by the world's oceans has reduced, scientists have said.

University of East Anglia researchers gauged CO2 absorption through more than 90,000 measurements from merchant ships equipped with automatic instruments.

Results of their 10-year study in the North Atlantic show CO2 uptake halved between the mid-90s and 2000 to 2005.

Scientists believe global warming might get worse if the oceans soak up less of the greenhouse gas.

Researchers said the findings, published in a paper for the Journal of Geophysical Research, were surprising and worrying because there were grounds for believing that, in time, the ocean might become saturated with our emissions.

'Saturated' ocean

BBC environment analyst Roger Horrabin said: "The researchers don't know if the change is due to climate change or to natural variations.

"But they say it is a tremendous surprise and very worrying because there were grounds for believing that in time the ocean might become 'saturated' with our emissions - unable to soak up any more."

He said that would "leave all our emissions to warm the atmosphere".

Of all the CO2 emitted into the atmosphere, only half of it stays there; the rest goes into carbon sinks.

There are two major natural carbon sinks: the oceans and the land "biosphere". They are equivalent in size, each absorbing a quarter of all CO2 emissions.

Key Expressions to the Text:
Carbon dioxide absorption
(saturated) world ocean
mid 90-s to 2005
global warming effect
soak up less of gas
climate change or natural variations
CO2 emissions
carbon sinks

Main Ideas of the Text:
- carbon dioxide absorption by the world ocean has reduced for the previous 10 years;
- the world ocean might be saturated with CO2 emissions;
- all the emissions of CO2, exceeding the usual norms, might warm the atmosphere.
Summary Sample:

The two major natural carbon sinks, the world ocean and biosphere, absorb a quarter of all CO2 emissions. The world ocean, according to the results of researchers and environment analysts, halved the soaking of CO2 for the previous decades. This process might have been caused by climate change or natural variations. In some time the world ocean would be saturated with emissions and, if it is so, extra emissions left in the atmosphere could result in the global warming effect.

Note: to halve – делить пополам; to gauge - проверять размер; измерять

Essay Question:
"What literary qualities help to make a book a "good read"? Refer at least two examples of literature that you have enjoyed.

Case Study

Why do people read at all? There are many different reasons. People read to find out, to gain information or ideas; they read to learn, to examine, to study ideas in detail; and they read to be entertained, for diversion, amusement, stimulation and relaxation, or in simple words, for pleasure.

In this essay I shall concentrate on the latter reason - reading for entertainment and pleasure - which is normally what people have experienced when they describe a book as a 'good read'. Phrases like: 'It was so interesting, I couldn’t put it down' spring to mind. This is what people often say when they have completed an enjoyable read. They have become engrossed, taken out of their own world into another existing entirely in their imagination; stimulated by things described by the written word in front of them, and compelled to read on to bring these things to some form of resolution or conclusion.

The material does not have to be a novel or short story, it can be a newspaper article, a biography, a historical study or an essay, or a poem, and to some extent it will depend crucially on the particular preference and interests of the reader. People often have preferred topics or subjects of interest they might be humour, horror stories, science fiction or romance. To illustrate what I mean by a 'good read', I have selected some examples from different types of fiction which chose to read for no other reason than personal pleasure and relaxation, and which I particularly enjoy.

An exciting or intriguing plot, or storyline, is a typical ingredient which makes a book compelling to read and 'difficult to put down'. Jeffrey Archer is a popular best-selling novelist, who has an ability to concoct compulsive plots. Who will eventually become Prime Minister in 'First Among Equals', or will the main characters succeed in their deception to recover their stolen investments in 'Not a Penny More, Not a Penny Less'? These are definitely not ‘great’ novels, indeed in some respects they are quite superficial and deficient. They are written to a formula to some extent, and the characters are rather ‘flat’ and stereo-typed. Even the plot of 'Not a Penny More ...' is somewhat unrealistic. Nevertheless, the twists and turns of fortune, the uncertainties,
the desire for the villain to get his come-uppance, all of these compel you to read on, and the final outcome, where justice is done, is quite satisfying.

I particularly enjoy political thrillers, and of course the plots are important here, as well as the background themes or settings, which provide an extra dimension. Gerald Seymour's 'The Contract' is about a secret service attempt to persuade a Russian Scientist to defect to the West, and 'Harry's Game' is about an attempt to track down an IRA killer in Belfast. Both are very exciting as the web begins to close around the undercover agents, and both are given settings based on recent political circumstances, which make them real and believable. There are lots of examples of this type of writing on the shelves of major booksellers.

Characters and human relationships are also important ingredients, and often the most memorable parts of a 'good read'. Who could fail to be moved by Tolstoy's Anna Karenina, Natasha and Pierre in War and Peace', or Hardy's Tess of the d'Urbervilles? Not quite on the same level perhaps, but immensely enjoyable for me, was David Lodge's 'Nice Work', which charts the improbable but highly amusing relationship between a managing director of a Midlands engineering firm and a University lecturer sent on an industrial secondment. It is a comedy of social and class misunderstanding but contains very sharp observation of human and social values and behaviour, and at the same time is both cutting and sympathetic. You end up liking both characters and the ending gives you a particularly warm and satisfying feeling, even if it is (or perhaps because it is) almost impossibly sentimental.

Few of the above examples, if any, are likely to stand the tests of time and place and qualify as universally 'great' literature, but I found them all immensely enjoyable to read for the different reasons and qualities which I have sought to identify. The craft of the author is to bring events, characters, settings and ideas to 3fe. in an easy-to-read and believable form.

A 'good read' stimulates the imagination and takes you into another invented, but temporarily whole and real world, which helps to eliminate the pressures of the present world.

This is why people enjoy a 'good read'.

Questions:

1. Can you attempt a definition in 50-100 words of what a “good read” might be for yourself and others? Is there a difference between a “good read” and a “good book”?

2. Draw a spidergram to make a list of various literary qualities which books may have
Literary qualities
Unit V

Mapping the Development of User Constructs of Relevance Assessment as Informed by Topicality

This paper reports on research examining the dynamism of a user's view of topicality exhibited in the information retrieval experience of individual searchers. Experienced researchers presenting complex search requests to an electronic information retrieval system are observed. The information retrieval activities of an individual searcher are situated within the complex and constructive information seeking process. Viewed holistically within this process, that individual's relevance assessments are social constructions which are fluid, interactive and dynamic. To explore relevance and topicality within the broader context of information retrieval, the searcher's full experience must be recorded and evaluated. This paper discusses preliminary findings from pilot testing attempting to 'capture' this broader context. Within a qualitative framework, I will explore evolving views of 'topic' throughout the individual information seeking process.

Thesis Summary

Relevance is a fundamental concept in information science which, despite more than forty years of debate, is still not fully understood. Notions like topicality, pertinence, or situational relevance have appeared in the literature over time, but support for one view has often meant excluding all others. For example, relevance is currently recognized as a multidimensional and dynamic concept extending beyond the traditional definition so closely associated with topic-matching and an identification of relevance as the relation between a document and a search question (Schamber et al., 1990). With this user-centred shift, topicality has been dispensed with even though criteria derived from users in real search situations show that subject content and related qualities remain important. I believe that the notion of topical relevance is more dynamic than thus far considered in much of the literature. Green and Bean (1995), for instance, contend every imaginable relationship between a document and a search question can be considered relevant.

My thesis will focus on the interactive construction of meaning attributed to the 'topic' of an individual search. A 'symbolic interactionist' framework will allow me to explore the context and the process behind an action -- in this instance, relevance assessment. In this way I hope to get closer to the human factors associated with information retrieval and the search process. Symbolic interactionism recognizes that people are constantly involved in processes of interpretation and definition as they move from one situation to another. Individuals shape the meaning and action associated with their relevance judgements through unique experiences and interpretations (Blumer, 1969; Denzin, 1989). Meanings of 'relevance' change throughout an information search as a result of their encounters with people, things and ideas (Cool, 1993). Using the symbolic interactionist
framework, I can view information retrieval as social communication. Relevance will be defined as a "social object" and relevance

**Relevance, Information Retrieval and the Search Process**

Information retrieval is viewed as a communication process in which judgements of relevance are made. The judgements upon which my research intends to focus are those made by the individual searcher performing information searches in an electronic environment. Individual views of 'topic' are shaped through the information seeking process, making the search a learning process (Blumer, 1969; Kuhlthau, 1991). The notion of 'topic matching' may be a useful method of identifying documents held within a retrieval system. However, seeking out the human meaning of 'topical relevance' requires a better understanding of the learning process associated with individual relevance assessments. The articulation of what is 'on the topic' for a particular search and the selection of 'relevant' information are influenced by interactions during the information retrieval process as well as the broader information search process. This thesis aims to develop a thorough exploration of those user constructs in the context of

My research applies an ethnographic approach to study information retrieval and record the 'experience' using human-computer-interaction facilities. Given the unique character of each person and their individual search, any attempt to understand how an individual derives topicality priorities must explore all phenomena influencing that person's relevance assessments during their information search. A naturalistic inquiry is required to study the complex interplay of all elements in a real, and not contrived, context. Recognizing that human activity is not context free, a naturalistic inquiry seeks out all factors involved in interaction (Guba & Lincoln, 1985; Erlandson et al, 1993; Mellon, 1990). Understanding the meaning of 'topical' for a user will require a thorough understanding of the context within which these individual decisions are made. In my research, developing an understanding of changing topicality priorities involves three elements:

1. detailed explanations about each individual's approach to information evaluation in a real (personal) situation (to elicit relevance assessment criteria from users);
2. direct observation throughout each subject's search process; and
3. observation of personalized information seeking sequences within each individual's framework of evaluation and use.

This research attempts to study relevance by absorbing and integrating theories from associated disciplines and bringing to the foreground the notions of human behaviour which have been shown to be so significant in the user-centred view of information retrieval (Barry, 1994; Park, 1994; Schamber, 1994; Sugar, 1995). Notions from computer science, ethnography and sociology, for instance, enrich the exploration of human factors in electronic information environments
(Monk & Gilbert, 1995). Such an approach suggests a bridge between research on the information search process and user-centred relevance criteria. By applying other frameworks, a new means for evaluating and critiquing relevance criteria can be derived.

**Work Plan and Progress to Date**

I recently completed method testing which involved observing the search behaviour of two individuals. This experience clarified the data collection strategy, which is the focus of my work for the next few months. Asking questions and engaging in conversation with participants about the individual's information retrieval practices, decisions, thoughts and reactions during searching proved enlightening and in fact essential to understanding the context of the searches.

The first stage of data collection will involve detailed observation of three participants. An emerging theory about user constructs of topicality will be tested in the second phase of data collection with three or more additional participants later this year. I am presently arranging access to a group of experienced researchers who regularly conduct searches in electronic environments. Their search process will be recorded from first interactions with an electronic database through to decisions to take actual items or documents away for further review or study. The interaction will be recorded using video and audio facilities in a human-computer-interaction laboratory. Screen activity will be recorded electronically. Discussions with participants during their searching will be used to develop the case studies about individual views of 'topicality.' Questions will revolve around each person's criteria for selecting and rejecting items judged 'relevant' by the retrieval system in use.

Detailed case studies in the first phase of the research will describe not only the criteria used to select items but also assumptions (as expressed by the research participant) that influence individual decisions to select or reject an item. All changes in the search query and evaluation criteria will be recorded and explored with each participant. Observation of a search will finish when the subject decides to take a book out of the library, photocopy an article, or download a document identified as 'relevant' to the search. The language of each individual searcher's interaction with an information retrieval system will be used to describe the process. By encouraging participants to 'think aloud' during their searches, I hope to develop a better understanding of the individual context of relevance judgements.

**Applying Naturalistic Inquiry Methods**

A significant stage in the development of my research design has involved establishing the 'natural' context of the phenomenon under investigation and determining how and where data can be collected. In their discussion of relevance, Sperber & Wilson (1986) note that communication involves inferring meaning from the context in which it occurs. Human-computer-interaction research and usability studies suggest that observations of the system-searcher interaction in a computer
facility can capture a 'natural' context (Bloomberg, 1995). While the individual interactions with information on the screen and not the system interface are the focus of my inquiry, attempting to 'capture' the full information retrieval experience can benefit greatly by following the example of usability research to conduct research in a computer search facility. A workable replication of the 'natural' context of the individual search experience can be created if:

- searcher-system environment is similar to the individual's usual environment;
- search problem is a 'real' question for the individual, not imposed by researcher;
- the task (a computer search) is not performed in isolation from the process of information retrieval.

While conceding that this environment cannot be considered the 'natural' environment of the individual searcher, use of a computer search facility appears to preserve the main elements of the searcher-system interaction. It is particularly important that the individual is still able to pursue a 'real' search problem posing search questions and using databases of her own choosing. Moreover, much of the physical context of the individual's search can also be preserved in such a facility. Computer equipment can be arranged to mimic speed and interface, for instance. Observing the information search in this environment facilitates recording of search requests and all possible modifications from the first request through to the selection of 'suitable' information for searcher. Recording interactions using the video and audio facilities of such a facility also simplifies analysis of screen activity as well as discussions with participants during their searching. This approach thus offers a greater capacity

**Pilot Testing**

The current focus of my research has been devising a method for observing how people interpret 'topic' during information retrieval. Instead of exploring evaluation criteria directly associated with a document, this inquiry aims to:

- examine the whole process of shaping the topic;
- describe the communication between system and searcher regarding that 'topic';
- relate user constructs to a system description of 'topic'.

In a pilot test, conducted in June 1998, the data collection method that seemed to address these aims was evaluated for suitability.

Attempting to 'capture' the full retrieval experience of the participant involves discussions with a participant during the individual search. The plot was divided into four sections:

- interview just prior to the search
• search session
• post-test interview
• subsequent review of retrieved items.

The interview with the participant was used to learn what was 'known' about the subject of the search and to gain insight into his experience, expectations, and attitudes to electronic searching. The search was conducted in a computer facility recording all activity on screen and all discussions with the participant. The searcher was encouraged to discuss thoughts, reactions and actions during the search process. In addition to pursuing the individual's search process, the post-test interview explored the searcher's reactions to the test. The review of retrieved items involved asking about the items related to the desired topic. The first three stages were conducted consecutively over a period of four hours. The final stage was conducted at a later date.

Recording of this search session was linked to a usability software package known as DRUM- Diagnostic Recorder for Usability Measurement. The tool helps organize and analyze activities during the search session, by facilitating the logging of significant 'events' during the test. Preliminary evaluation of pilot test results suggests a valuable link between naturalistic inquiry of information retrieval and established usability testing methods.

Preliminary findings also indicated there are indeed significant benefits to observing searches of individuals in this environment, namely a computer search facility. The pilot participant, an experienced researcher who is a frequent searcher of electronic databases, appeared comfortable with conducting his search in the facility. The databases and interface were no different from that of his office workstation. He was eager to begin his search and appeared unfazed by the video and audio recording equipment. In the interview and discussion after the search session, he made no comment about feelings of discomfort or unease.

During the computer search session, the participant voiced his thoughts and described his actions at stages of the search. In addition, he was asked to explain individual actions throughout the session. Despite this potential for disrupting the 'natural flow' it was also evident that the dialogue between researcher and participant was necessary for identifying the individual's thoughts, reactions and actions throughout the search. During the search session, there were many occasions when the searcher's evaluations and selection decisions were markedly changed. To better understand this dynamism, it became imperative to ask the searcher to explain actions and choices. This provided a valuable discussion about the participant's search behaviour and selection decisions.
Capturing Relevance Assessment in the Broader Information Retrieval Experience

In my research, relevance assessment is related to contextual factors of information seeking in electronic environments. My exploration of the interaction of an information seeker with an electronic information retrieval system extends beyond the initial interaction to include the broader context of information retrieval one which situates the activities observed within a search process involving much more than electronic information retrieval of information. My preliminary findings suggest that studies of user-centred relevance which address evaluation criteria only after a particular information retrieval system has been selected are not adequately addressing the concept. Many decisions about 'relevance' are made even before the search begins. To explore relevance and topicality within the broader context of information retrieval, the searcher's full experience must be recorded and evaluated. Recognizing the significance of context also suggests the importance of situating individual information re

Questions:
1. Write one sentence or question for each passage. Follow Tutor’s instructions for a better result.
   Tutor’s Instructions: Paragraph Structure

The topic is the main idea of the paragraph
A topic statement should include:
- key words related to the topic
- a complete statement of the main idea in one or two sentences
- a clue as to how the topic will be developed, i.e. are you defining something, contrasting things, telling a narrative, or what?

A good topic statement should enable the reader to identify what the paragraph is about and how the topic will be developed. This means that he or she can decide to skip it if they are not interested in the details. The paragraph may be developed in various ways. If, for example, you are discussing causes and effects, you can help your reader if you “signpost” this by using expressions like because, due to, as a result, give rise to or “if …., then…” clauses.

Not all well-organized paragraphs start with a topic statement. The paragraph that begins an articles or report often provides a frame for the entire text. Such an opening paragraph starts out with a number of general, background sentences and gradually becomes more specific about the subject of the text. The topic sentence of this opening paragraph is usually found at the end of the paragraph.

The beginning of a sentence, like the beginning of a paragraph, is the most powerful position. This is where your reader finds out what it is that you are talking about, i.e. what the topic is. This is where you should put known (given or old) information. Having got their bearings, the reader is then prepared for new information (for the punch line).
E.g. In recent years, the number of students applying to Ph.D. programs has increased steadily, while the number of places available has remained constant. This situation has resulted in intense competition for admission.

The phrase above in bold contains a summary word that refers back to and summarizes the idea in the previous sentence and so helps a text to cohere. Additionally, the word that “refers back” may tell the reader how the writer interprets the previous sentence.

1. Try to determine the topicality of your research. Consult your scientific supervisor.
2. Use the terms of the text.
3. Do some dictionary research to find definitions of the basic terminology of the text.
4. Why is it difficult to determine topicality?
5. Actual problems in science are not always evident, are they?
In Britain, as in many other countries, a very varied range of newspapers and magazines is published. The contents of these publications are also extremely varied. Consequently, it is difficult to decide how best to give an impression of anything as wide as 'The Language of the Press'.

Most people would agree, however, that the main function of the press is to provide information about events that have recently taken place and the specimen passage in Part One, Unit One will give some idea of the kind of language very often used for this purpose. The extract has been written to suggest the way in which news is reported in a typical local newspaper; but something very much like it could be found in most of the popular national daily papers.

Paxton: a fictitious town.
a Guy Fawkes Night bonfire: one of our most regularly observed national customs is to light bonfires on November 5th – the anniversary of the plot to blow up the Houses of Parliament. Guy Fawkes was one of the conspirators, hence the name of the event, which is also known as bonfire-night.
in support of local (charities: these bonfires are usually for private entertainment, but occasionally they are organized on a larger scale and admission fees are charged as a means of collecting money for charity.
builders' merchant: someone who stocks and sells materials used for building.
fireworks: a regular feature of bonfire-night celebrations.

General

All news reporting in the popular press has to convey a good deal of information in the most readable and readily interesting way. One of the consequences, which it was not possible to reproduce completely in the printed version of the news report, is the clear and attractive lay out usually adopted, with careful arrangement into narrow columns, and the use of different sizes of type for the main headlines, the subheadings, and sometimes even in the body of the article itself. All this helps to attract the casual reader’s attention and guide it rapidly through the matter on the page. The matter itself tends to be split up – especially at the beginning of an article – into a large number, short paragraphs, frequently consisting of only a single sentence. And the connection between the paragraphs and sentences is made as smooth as possible, so that the reader, when attracted, is led quickly and easily into the rest of the report.

A great deal of reporting has in addition to be written very hastily and packed into a limited amount of space. As a result of the haste, reporters frequently have little opportunity to indulge in their own stylistic preferences, and come to rely upon
a well-tried range of set phrases and grammatical constructions; and the
compression gives rise to such features as headlines,
where the tendency is to abbreviate language as far as the meaning will allow—and
sometimes even farther.

Although newspapers, and what they contain, vary enormously, nearly all of
them are affected to some degree by the pressures we have just mentioned. In
consequence, the parts concerned with news reporting tend to be written in a kind of
English which has a number of clearly marked stylistic features, and which most
people are able to identify without much difficulty.

**Vocabulary**

Blaze: this noun is often preferred in news reporting, presumably because it is more
expressive, or more vividly descriptive, to the usual word 'fire'.

charity bonfire: a bonfire to raise money for charity.
bystanders: spectators.
battled: an expressive word which introduces a note of slight exaggeration. Cf. the
comment on Blaze, 1 above.
a dense pall: a dense cloud. The noun 'pall' originally meant a cloth used for
covering something, but now the figurative use – a cloud which acts as a covering –
is the most usual one, and it nearly always occurs in the phrase 'a dense pall of
smoke'.
to damp down: to spray with water.
to run into: to amount to. Contrast the different sense of this verb in line 6 of the
news bulletin.
egligible: very small.
given that: provided that.
well aware of: fully aware of.
to go on using: to continue using. Cf. 'to keep on...'
Mr Green said that he could see no harm in it: i.e., Mr Green did not think
bonfires were dangerous. Such usages as 'I can see no harm in it', 'There's no harm
in it' are more frequent in speech than in writing; and here, of course, it is Mr
Green's speech that is being reported.
had raised: had resulted in the collection of.
the proceeds: the money collected.
good causes: charities.
elements: identifiable sections of the community are often referred to, in written
English, as 'elements', for instance 'the conservative element', 'the student
element'.
high-spirited: usually means 'exuberant', but is sometimes used as a euphemism
for 'excitable' or even 'violent'.
out of hand: beyond control.
Grammar

Blaze at charity bonfire damages warehouses: an instance of what might be called the 'abbreviated' grammar of headlines. A fully grammatical version of this headline would have to read something like: 'A blaze at a charity bonfire damages warehouses', where the 'missing' indefinite article has been replaced before blaze and charity. This version also calls attention to the fact that the present tense form damages is being used in a special way, to denote something that actually happened in the past. This again is very characteristic of headline grammar, which is a study in itself and can be only briefly touched on in these notes.

Note the shortness of this and the succeeding paragraphs. It is not until later in the extract that paragraphs get longer, and even then they do not become long as compared with, say, those in the extract from a book on literary style. In fact one has to read as far as line 24 before coming to a paragraph which contains more than one sentence.

the blaze – the largest: a great deal of use is made of dashes in press reporting. Here, the dash adds on an afterthought; in 13, two dashes are used to enclose a parenthetic phrase – a paint-store. Dashes seem to have the effect of separating words and phrases more sharply from the neighbouring text than do commas. Their use is less governed by 'rules' than is that of commas, and they may partly suggest the usage of speech: cf. the remarks on use of dashes in some of the informal correspondence in Part Three.

Damage: a subheading which is even more grammatically 'abbreviated' than the headline in line 1. This consists of a single noun. Cf. the remarks about 'similar sentences' in the notes on the football commentary.

Local builders' merchant Mr Arthur Peel: it is a habit of news reporters to include a lot of information about people they mention by putting it in as adjective like words and phrases which precede and modify the name of the person. The habit is more marked in some American newspapers, where one occasionally reads such things as 'shapely, blue-eyed, blonde, twice-divorced, actress Sally Smith'.

'Difficult to estimate at this stage': reporters tend to quote words spoken, or supported to have been spoken, by people engaged in the events being reported on, and they use a rich variety of means to introduce the quotations. Sometimes it is done reasonably explicitly, as in this instance, and sometimes quite explicitly, as in the paragraph beginning on 24 (by said Mr Peel). At other times, however, the occurrence of quotation marks may leave one wondering exactly what was said, e.g. in lines 33-4; and in 35-6 there is a lingering suggestion of quotation even though no quotation marks are used.

Interviewed at the scene last night: a characteristic trick of reporters is (o begin a sentence with an adverbial phrase consisting of a participle, usually a past participle, followed by some kind of complement. Cf. Asked about the advisability..., 40. The habit becomes extreme in travelogue writing

'Award of danger': note how this phrase has been singled out of the quotation in the next paragraph and abbreviated to make it suitable for use as a subheading.
Mr Green, 43: the age of a person is often given in this characteristic way, where the numeral which modifies the noun follows it. Popular cf. the notes on 47 and 35-6.

Said Mr Green: perhaps the most striking feature of news reporting style is to reverse normal subject – verb order of the statement in English by introducing the verb as first word of the sentence. This only occurs with verbs that are general of the 'saying' type; it would sound rather odd if done with 'think', and it would be quite unacceptable with the vast majority of verbs, such as 'walk', or 'frighten'. Note that this is not a frequent feature; in fact it does not turn up very often at all in much that is written in English newspapers.

**Listening: intonation**

There is a headline to this article, and three sub-headings. LISTEN to your recording and see if you can hear, from the speaker’s intonation, what they are. Listen more than once. Write the four headings down, and then check them in the Key.

**Listening Parenthesis and Quotation**

Now open the Coursebook again, and play the recording, READING and LISTENING at the same time. Consult the Vocabulary notes if necessary. READ too the Grammar notes, particularly the notes on parenthesis, 9, and quotation, 23.

In this exercise, we do not want you to answer questions. Just notice how the speaker signals parenthesis and quotation, by pauses and by changes in intonation.

I)... the blaze – the largest in this part of Kent for more than five years.
II)... one of which – a paint-store – could have exploded.
III)... damage was (pause)'difficult to estimate at this stage'.
IV)... the fire was (pause) 'very unfortunate'. etc.

**General Comprehension**

You may do this with your Course book open, but try not to look at the notes. Choose the correct answer (a, b, c or d) to each of the following questions.

i) The bonfire was organized to:
   a. raise money for good causes,
   b. celebrate Guy Fawkes' birthday.
   c. please local youth groups.
   d. stop people throwing fireworks.

ii) The fire chief, when consulted beforehand, had
   a. strongly opposed the whole plan.
   b. provided the bonfire himself.
   c. said that nothing except wood should be used.
   d. told the organizers to find another site.

iii) The probable reason for the fire spreading was
   a. there were strong winds.
   b. a paint-store exploded.
c. burning paper was thrown.
d. the stewards could not control the crowd.
iv) The fireman who was kept in hospital
a. had been burned by sparks.
b. had been overcome by smoke.
c. had received an eye injury.
4. had been hit by a firework.

**Fill in the Gaps**

With your Course book shut, fill in each of the numbered gaps with one word only.

Flames from a Guy Fawkes night bonfire, organized (1) support (2) some local charities, spread (3) nearby warehouses. Firemen fought the flames (4) hours before getting them (5) control, and this morning firemen are still damping (6) the debris. The damage is likely to run (7) several thousand pounds.

Mr Banks is responsible (8) safety measures in the district.

Youths threw fireworks (9) each other.

Mr Banks pointed (10) that there was no other open space.

He could see no harm (11) having a bonfire, and it had never got (12) (13) hand before.

**Dictionary work: in-prefixes**

Do inflammable materials, 15, burn easily or not? You ought to be able to discover the answer by reading the passage. If you look up in- in OALDCE, p. 1033, you will see that it does not always have a negative meaning. Using OALDCE to help you, arrange the following words into two groups:

I) those with a negative meaning;
II) those where the in- (il-, im-) are not negative.

inflammable interested illuminate immigrate inhabitable
illegal inclined infect integrate illusion immobile
impressed inaccurate informed inspired intentional

**Rewriting: Direct/Indirect speech**

Rewrite the following in indirect (reported) speech.

Example: ‘We always have stewards at the gates whose job it is to refuse entry to rowdy elements.’

Answer: Mr Green said that they always had stewards at the gates whose job it was to refuse entry to rowdy elements.

i) ‘It seems unlikely that much of this can have escaped damage, in which case the cost is likely to run into several thousand pounds.’

ii) ‘This event has become a part of local social life, and the proceeds from it have helped many good causes. It would be a pity to think-of banning the bonfire as a result of one accident.

And rewrite the following examples of reported speech as direct speech.

iii) Mr Fred Banks said that he thought the fire was very unfortunate.
iv) Mr Ron Green denied that anybody had put paper on the bonfire.
Mr Ron Green said: ...
Unit II
A Feature Article
Explanatory Notes

Most newspapers, while devoting the major part of their space to recent events, usually manage to find room on the inside pages for articles which concentrate on some single interesting topic. The English term for these is 'feature articles'.

They are usually informative; but often the impression one gets is that the writer’s main concern is to entertain his readers. As one would expect, the balance between information and entertainment varies widely from newspaper to newspaper, and from article to article.

The topics, too, of course, are varied. Sometimes they relate to events currently in the news; but this is by no means always so. Perhaps more often they concern things which are of perennial interest; and sometimes it seems that writers are actually seeking to create interest in the topics they have chosen by writing about them.

Those opposed to English cooking: English people have always been fond of jokes about English food. There is also a widely-held belief, half-serious, half-jocular that all foreigners disapprove of English food. It is being suggested that the kind of people here – all of them, incidentally, identified by reference to their time-honoured professions – are likely to be among the more staid, conservative sections of the community, both socially and linguistically.

The Old Road: a famous London street, where lots of ordinary people may be found drinking in ordinary pubs.

The phrase-book bizarre: a reference to the fact that books of useful phrases for foreigners have acquired a reputation for sometimes containing oddly useless bits of language.

Someone addicted to tweeds and the phrase 'Old chap': i.e. a rather 'upper-class' member of society. Tweeds is a reference to the type of clothing associated with the popular image of 'the country gentleman'; and it is being suggested here that 'Old chap' is to be regarded as a similar social marker, but of a linguistic kind.

The University of Chester: fictitious, as is the research project.

Language Notes
General

The language found in feature articles has many of the characteristics of that used for news reporting; and indeed it would be surprising if this were not so, since both appear in newspapers and are written by journalists. Although feature articles do not usually contain such a large amount of quoted material as is found in many news reports, the ways of introducing it are often very similar, and 11|b tends to give a strongly identifiable stylistic flavour. Dashes, also, are fairly freely used, and for a similar range of purposes.
There are, however, some differences of style as a rule. Perhaps the most noticeable is that many feature articles, no doubt as a result of their purely entertaining purpose, have a tendency to be rather chatty, and to indulge in sudden changes of style that might be thought inappropriate in a news report. For instance, in the present example, notice how the colloquial expressions boozer, 25, and just the job, 40, have been introduced for deliberate effect into contexts which are rather more formal in tone. Another fairly obvious difference is that the very short paragraphs found in the type of reporting represented by Part One, Unit One, would be most unlikely in a feature article.

One important point should be mentioned; since journalists can usually spend more time on writing a feature article than they can on most news reports, and also, incidentally, probably have rather more space at their disposal, they are able to give a freer reign to their own individual stylistic tastes. For this reason, it is much harder to say with certainty what are the main stylistic characteristics of feature articles as compared with news reports, and the present example should be approached with this caution in mind.

**Vocabulary**

He will not be enough of a gastronomic sophisticate: i.e. his taste for good food will not be sufficiently refined. Cf. this use of enough with 'He was man enough to admit his mistake'; 'He was coward enough to run away', etc. Note the use of sophisticate as a noun: the link with gastronomic results in a rather learned-looking phrase which is saying something quite simple, and which suggests the writer was trying to achieve some kind of stylistic effect. enjoins enjoyment: cf. the last comment. Here, a rarely-used word 'enjoin', which, amongst other things, means 'prescribe', has been chosen probably because of its partial resemblance in sound and spelling to the word it is used with. universal: i.e. capable of being used by all socially neutral: containing no implications about social status, either of the speaker or of the person spoken to.

Stockbrokers: people who act for clients in buying stocks and shares.
dons: the word 'don' was used as a term for senior academics, especially at the universities of Oxford and Cambridge; but it is now sometimes used of university lecturers generally.
crusty: irritable.

Club: the reference here is not to clubs in general but to those institutions which provide a secluded social gathering-ground for a membership consisting of influential businessmen, senior members of the professions, politicians, etc. These clubs are usually highly exclusive, hence the reference to 'four walls'. boozer: a public house. This is a colloquial word, found more often in speech than in writing, and it has been used here to suggest a very ordinary place for drinking – as opposed to the clubs mentioned above.

Down: note this use of 'down', which is common in phrases like ‘it’s just down the road', meaning ‘it’s at a point further along the road'. 'Down', and also its counterpart 'up', are frequently used in this and similar ways, as rather vague indicators of place or direction, e.g. 'He went down (up) the road, 'She lives down
(up) the lane', 'I travelled down (up) to Bristol', etc. the mildly locuiar: i.e. something that would be said with a slight feeling that a joke was being made. The awkward: producing a feeling of uneasiness in the user. The phrase-book bizarre: something so strange that it would be unlikely ever to be used in normal circumstances. Note that the adjectives just mentioned jocular, awkward, bizarre are being used in an absolute or generic sense, as may be seen from the construction in which each occurs: definite article plus adjective. Compare 'We must help the old and needy', 'The dead must be remembered'. 'Here's mud in your eye', 'Here's the skin off your nose': the origin of these expressions is very obscure. If anyone were to use them nowadays, they would almost certainly do so as a joke.

Sink: an expressive colloquialism for 'drink quickly or deeply', used here to contrast with sip.

A sneaking suspicion: a set phrase meaning 'a slight suspicion'.

breezy: hearty, jovial.

Tweed: сложное от твидового шерстяного материала.

'Old chap': there are several greetings of this form in English, in which 'old' is used not in its normal sense, but as a term of respect. These include 'old man', 'old boy', 'old girl' etc., and all carry overtones of the public school and upper middle classes, and are perhaps generally thought of as being either slightly comic, or too bluff and hearty.

Valedictory vocabulary: words used for taking leave of people. A rather high-sounding phrase, being used here for stylistic effect. Cf. comments on 8, 16 above.

just the job: a colloquial phrase meaning 'the very thing', 'exactly what is needed'.

Baby-talk: the special language used to amuse young babies, in which 'Buеabelle' means 'good night'. The writer here is being deliberately biased against the usage of 'Bye bye', and his strictures should not be taken too seriously. Even though he may personally disapprove of the usage, it is now extremely widespread in informal situations. (Compare the conclusion of the telephone conversation in Part Two, Unit Two with the conclusions of Units Five and Six in Part Three.)

Grammar

Notice that the passage opens with a question. This tells us almost for certain that this is not from a news report, which would be far more likely to open with a statement.

Notice, too, that the second sentence is also a question; but this time it is addressed directly to the reader in an attempt to make involved in a way that would be inappropriate for a news report.

The use of a dash in this line to join on another clause that there is an element of doubt about him, which is a kind of expansion of the preceding clause, is typical of the language of the press. Look at the ways in which dashes are used elsewhere in the passage, and see what was said about their use in news reports.

It's: a contracted form of 'is' is used here probably to help give: an impression of speech. Notice that in this and the following line no quotation marks are used, and that the attempt is to suggest what someone might have said – this is not
meant to be quotation of any words actually. Cf. the ways of introducing quotations in lines 57 and 60, and the remarks on the subject in Unit One.

The clause ‘that it is somehow a shade too breezy’ is grammatically parallel with the preceding 'that' clause, which is dependent on suspicion; but note that it is made part of a separate sentence. In this way it is also made to sound more of an afterthought, and the effect is what may be called 'chatty', perhaps suggesting spoken English style,

**General Comprehension**

Do this exercise with your Course book open, but without looking at the notes again. Choose the correct answer (a, b, c or d) to each of the following questions.

I) a 'gastronomic sophisticate', 8,
   a. - knows about and enjoys good food.
   b. suffers from indigestion.
   c. has lost his pleasure in eating.
   4. only eats specially prepared diets.
II) The English are 'unfortunate', 22, because
   a. they do not have good health.
   b. their food is terribly bad.
   c. they lack a suitable phrase to use when drinking.
   d. the ordinary pubs are not like clubs.
III) When drinking together, English people usually say
   a. All the best!
   b. Cheers!
   c. Down the hatch!
   d. Good health!
IV) 'linguistic gaps'
   a. awkward pauses in conversation.
   b. things you must not say, because they are rude.
   c. meaningless expressions to keep the conversation going.
   4. phrases which would be useful, but are missing.

**Fill in the Gaps**

With your course book shut, fill in each of the numbered gaps with one word only.

Has (1) ever occurred (2) you that there is no simple way (3) expressing your hope (4) someone will enjoy (5) he (6) about (7) eat? If you (8) entertaining and say to your guest as you put his dinner (9) him: I hope you like it, then he will probably think one (10) two things – (11) that there is an element of doubt (12)-the meal, or that there is an element of doubt about him.'
Rewriting

Rewrite each of the sentences below, beginning each new sentence as indicated. Make any necessary changes, but do not change the general meaning.
i)-She told him she hoped he liked it.
   -She said: ' ...
i) The food is too bad for anyone to enjoy it.
The food is so bad ...
ii) We English seem to be victims of some strange deficiencies in our vocabulary.
   It seems...
iii) There are many areas in which social contact isn't exactly helped by the English language.
   There are many areas in which the English language...
iv) Has it ever occurred to you that you could be wrong?
   Have you...
v) He will not be gastronomically sophisticated enough to appreciate it.
   He will not be enough...

Vocabulary: Usual Meanings

A number of words in this text are used with rather secondary meanings. Using OALDCE if you need it, use the following words with their more usual meanings to complete the following sentences. Use each word once only.
• a) Breezy  b) crusty  c) sink   d) sneak    e) stuffy
I) This room is very ...: please open a window.
II) There’s quite a wind: it will be ... on top of the cliff.
III) I can’t eat ... bread with my false teeth!
IV) People though that nothing could ... the. Titanic.

Style: Slang

READ again the General Language notes on p.13 about colloquial expressions in feature articles. Some words in this article are classified us slang by OALDCE.
Which word in each of the following groups is the most colloquial, or 'slangy’?

i) a. formal   b. old-fashioned  c. pompous  d. stuffy.
ii) a. boozer   b. inn   c) pub   d. public-house
iv) a. exactly right b. just' the job, c. the very thing d. what I want
LISTENING: QUOTATIONS
With your Course book open, LISTEN to the article on your recording.
Again, (as in the previous unit), notice how the reader pauses to signal quotations.
'Bon appetit'1; 'I hope you like it', 10; 'Salud', 20; etc.
Listening: Linking /R/
Although /r/ at the end of a word is not pronounced in standard English, it is frequently pronounced when the following word begins with a vowel. The speaker
on this recording is talking very carefully, and sometimes omits an /r/ where most English people would say one. Nevertheless – despite her efforts – she usually pronounces a linking /r/. LISTEN carefully to the whole text, noticing her pronunciation of the following. She only fails to use linking /r/ in three places – can you spot where there is no linking /r/?

ever occurred, 2 there is, 2 are entertaining, 3 eater, and, 12 for a phrase, 15 matter of, 18 your eye, 30 or its, 32 better or, 41 more acceptable, 44 lecturer at, 52 number of, 56 after all, 57 aware of, 58 compare English, 59
The extract given in this unit is meant to represent the kind of news reporting—impartial, factual, rather formal and restrained in presentation— that has always been characteristic of sound broadcasting in this country. Lately there has been a growing trend towards rather longer programmes of a more documentary nature, bringing in frequent reports from outside correspondents; but short, compact bulletins, taking up about ten minutes altogether, and given mainly by a single reader may still be heard daily from the BBC.

The M1 motorway: the first motorway to be built in Britain. At present it extends from London to Yorkshire, and will eventually reach Scotland.

The Newport Pagnell service area: one of the points at which petrol, food and similar essentials may be obtained by motorway users.

Single-lane working: British motorways usually have three (but sometimes only two) 'lanes' for traffic in each direction, plus a 'hard shoulder' or auxiliary lane on which vehicles are allowed to stop in an emergency.

The flashing amber light signals: these are placed at regular intervals beside the motorway and are switched on to indicate that the maximum speed limit has been reduced temporarily because of dangerous conditions.

The first National Conference on Motorway Use: fictitious, as is Sir John Stone, 20. the inside lane: the lane nearest to the side of the motorway, into which all vehicles should move when not overtaking other traffic. It is sometimes known as the 'slow' lane. The outside lane, 32, which is the one nearest to the central reserve, is correspondingly called the 'fast' lane.

Whitewall: the location in London of many government offices and Civil Service' departments: the administrative centre of the country.

Language Notes

General

The language used in broadcast news bulletins is essentially a language of factual statement. It is written in the first place by someone who knows that he must provide clear information for the person who is going to hear it, and that he must also write it down in such a way that it will be easy to read. The result is fairly straightforward and uncomplicated grammar. The sentences are never excessively long, because a listener cannot ask for a repeat if he forgets what was said at the beginning, and they tend not to be unduly complicated in their structure since a long series of subordinate clauses may become difficult to follow.

Usually, a considerable amount of care is also taken to avoid ambiguities that might perplex the listener and cause him to lose the thread of what is being reported.

At the same time, such bulletins are usually read by highly skilled newsreaders who are capable of making the sense clear by careful control of rhythm.
and intonation. As a result, the writers do not have to oversimplify the language they use. In fact, sentences are often fairly long, and one notable feature is the way in which quite lengthy pieces of information may be inserted as some kind of parenthesis, adding to what is being said in the main part of the sentence. An expert news reader, by slight changes in his voice, is able to indicate to the listener when a parenthesis begins and when it ends, and thus guide his attention and understanding through the whole sentence. Another notable feature is the ability of good newsreaders to mark in their reading the beginning and end of each new paragraph or topic.

The ability to be clearly heard is extremely important for newsreaders, and this they achieve both by careful articulation of individual words, and by breaking their material up into phrases which are well defined by means of intonation patterns. Variety in the use of these patterns also helps newsreaders to sound interesting another important requirement.

**Vocabulary**

Articulated lorry: a lorry in which the engine and driving cab are connected to the rear section by means of movable joint. In general use, the word 'articulated' nearly always occurs as part of the compounds 'articulated lorry' or 'articulated vehicle'.

jack-knifed: a jackknife is a knife in which the blade folds into the handle. Here, the word is being used as a verb to describe the way in which the two sections of the lorry folded together (as the result of a skid or similar mishap).

Pull up: stop.-ran into: cf. Unit One.

Pile-up: a collision in which many vehicles were involved. A pile-up may mean simply an accumulation, as in 'There was a pile-up of goods because of the rail strike', but it is perhaps most commonly used to refer to a road-accident. the central reserve: a strip which separates the two halves of a motorway the southbound carriageway: the part of the motorway along which vehicles travel in a southerly direction. Note that the term 'carriageway' can normally only be used in connection with roads which are divided in the centre.

Slip roads: the roads by which traffic enters or leaves a motorway.

multiple pile-up: cf. multiple collision, 1, and major pile-up.

Lane discipline: the reference here is to the way in which drivers follow or fail to follow, the rules which apply when moving out of one traffic lane into another.

pulling-out: moving from an inside lane to an outside lane in order to overtake a vehicle in front.

To cut in: to return, after overtaking, to a position only just in front of the overtaken vehicle, leaving insufficient space for safety.

Issue: a favourite term in news reports for what might be called elsewhere a 'topic', 'subject', 'problem', etc. Similarly, there is a tendency to say that statements, etc. have been 'issued' rather than 'made' or 'published', (e.g. a pamphlet issued by the Conservative Central Office,) on balance: on the whole, on average.

Badly hit: badly affected.

Link-up: widely used for any kind of joining-together. Cf. 'a link-up of European television networks' etc.
Grammar
Notice how the sentence which begins in this line is divided up by the reader into a number of phrases, each clearly marked by its intonation pattern, although there are no punctuation marks in the text, apart from the final full-stop.

The main divisions in the intonation could be indicated thus: The accident occurred/about three miles south of the Newport Pagnell Service Area/when an articulated lorry/carrying a load of steel bars/jack-knifed/and overturned.

The sentence beginning in this line is a good example of how sentence length in news bulletins is sometimes increased by the insertion of information which is in some way parenthetic – in this instance it is done by means of the relative clause which was restricted to single-lane working because of' repairs and resurfacing.

Note the way in which the reader signals the end of one paragraph – mainly by lowering the pitch of his voice on the sentence The conference is continuing- and the beginning of the next – by the sharp rise in pitch, especially on the word Now.

Now, the Common Market negotiations: a sentence which has no main verb. Sentences of this kind have only recently begun to appear in broadcast news bulletins, where they are used to fulfill a similar function to headlines in newspapers. Cf. the note on the use of such sentences in spoken commentary.

Listening Comprehension
Try to decide what are the four main topics of this news bulletin. Write them down as briefly as possible.

Now READ the Explanatory notes and the General Language notes, noticing particularly what is said at the top of p. 21 about the way intonation is used to mark the beginning and end of each new paragraph or topic. LISTEN again if you could not decide on your answers to the first time.

Listening: Phrasing
No languages are spoken all on the same note or pitch. The voice goes up and down when speaking, as it does when singing. In some African and oriental languages (e.g. Chinese) a pitch change on a word (tone) – for example a RISE (´) or a FALL (´) – can change its dictionary meaning. In most European languages (including English) this does not happen. 'Book' still means 'book' however you say it!

Yet pitch is still important in English. Variations of pitch are linked to whole phrases or sentences, and these intonation patterns convey information both about the grammar of the utterance and something about the speaker’s attitudes.

In this exercise we want you to LISTEN to the way the reader divides his text into phrase-groups, each with its own pitch-change. Do not try to identify the actual intonation patterns (i.e. whether the pitches are rising or falling).

Simply listen for the phrasing. Copy out the sentence in lines 43-48 (But the Council... the fifth year) and mark the end of each phrase-group with a bar.
Vocabulary: Motorway
READ the bulletin through, and study the Vocabulary and Grammar notes. Then shut your Course book for this exercise. Fill in the gaps in the following sentences with suitable motorway vocabulary. You will need two words for all the sentences except (iii). The answer to (iv) is in the notes, not in the text.
i) We need petrol and a meal: where is the next...?
ii) If you are going to drive slowly, keep in the...
iii) We're going in the wrong direction: we need the northbound...
v) You're not allowed to park on the...
v) Let's leave the motorway by the next...

Dictionary Work Except in an Emergency
Some of the following words occur in this unit and all are in OALDCE. Using the dictionary to help you if necessary, complete the following sentences as indicated, using words from these lists.
verbs: overbalance overcome overload overtake overturn; cut down cut in; pull in pull out pull-up; run across
run into run over
nouns: mix-up link-up pile-up
i) A lorry over... when it was trying to over...
ii) The car failed to pull... at the lights.
iii) The bus ran... another vehicle and caused a...-up.
iv) What terrible motorway drivers! They pull... and cut... all the time.
v) A child was run... and killed.

General Comprehension
Do this with your Course book open. Choose the correct answers (a, b, c or d) to the following questions.
i) The southbound carriageway was restricted to single-lane working, 8,
a. because of the lorry accident.
b. for repair work.
c. by steel barriers.
d. by several minor accidents.
ii) The Metropolitan Traffic Area Adviser particularly criticized car drivers for
a. giving no signals when cutting in.
b. failing to use the inside lane enough.
c. forgetting to look at the traffic.
d. overtaking impatiently.
iii) The Common Market negotiations referred to here were about
a. whether Britain wanted to join.
b. whether the 'Six' wanted Britain to join.
c. Britain’s contribution to the annual budget.
d. what fee Britain should pay to join.
iv) The National Farmers' Union believed that joining the Market would be bad for British producers of
a. fruit and vegetables.
b. barley and wheat.
c. milk, butter and cheese.
d. cattle and pigs.

Rewrite each of the sentences below, beginning each new sentence as indicated. Make any necessary changes, but do not change the general meaning.

i) Some of the steel bars from the load were flung by the impact across the central reserve into the southbound carriageway.
The impact...

ii) With both carriageways blocked, police closed the motorway for a time.
Because...

iii) He said that there was evidence that many of the basic disciplines of motorway use had yet to be learned.
He said: '...

iv) It is thought that the object of his journey is to attempt to reduce the disagreement.
The object of...

v) Horticulture... is likely to be badly hit in the event of a link-up.
It is likely...

Unit IV

A Letter of Application

Explanatory Notes

Applications for jobs are most often made on a form provided by the organization to which the application is being made. For more senior appointments, however, applicants are often expected to write a letter which contains all the relevant information about their training, qualifications, reasons for applying and so on. The result is the specialized kind of business letter which appears in this unit.

The writer of this letter discusses his application in the telephone conversation in Part Three, Unit Seven.

The post of Manager: a personnel manager is in charge of matters relating to the staff and workpeople of an industrial or commercial organization such as recruitment, training, welfare and so on. This particular post is fictitious, as are the educational establishments, qualifications and companies referred to. The towns, however, are real. Croydon, 3, is a suburb of London, while Harrogate, 8, Leeds, 33, and Begley, 46, are towns in Yorkshire, 16, etc. the Sunday Chronicle: a fictitious newspaper.

A large part of this letter, as of most letters of application, is taken up with the record of experience and qualifications known as a curriculum vitae.

testimonials: letters of recommendation, by people in responsible positions, which an applicant is usually asked to supply. He also has to quote the names of referees, 69, who are prepared to answer questions about him.
**General**

Letters of application will usually have many of the linguistic characteristics of business letters, which were outlined in the Notes to Part Two, Unit One. But such letters are very important to the writer, who in most cases will have spent far more time and care in organizing his information and smoothing out awkwardness of style than can be devoted to the average business letter.

The result, in a good letter of application, will be a piece of very formal, very discreet self-advertisement, which goes to extremes of orderliness and politeness. The concern for order is likely to emerge most clearly in the curriculum vitae, the characteristic section contained by all such letters which outlines the applicant's experience and provides details of the qualifications he has obtained.

In his concern to give a good impression the writer is likely to avoid too much business jargon, so that although a considerable number of the words and phrases that are a necessary part of written commercial language are bound to occur, they will probably be less frequent than in business letters generally.

**Vocabulary**

Dear Sir: cf. the Vocabulary note on 1 in Part Two, Unit One. The relationship between an applicant and the person to whom he addresses his letter – who is most likely to be an official representing the organization, and perhaps not otherwise concerned with the appointment – is usually very formal.

Personnel Manager: the use of capitals here indicates that the writer is treating this as a title.

He has been fairly consistent in this respect throughout the letter: notice the distinction he draws between Business College, 22, which is part of a title, and business college, 31, where the term is being used in a general sense. This kind of consistency would perhaps be unlikely in an informal letter.

Sunday Chronicle: this is identified as a title only by capitalization. The writer could have followed the convention of single underlining, which is adopted in typescript or manuscript to indicate a title which would be printed in italics.

Selected: less formally, 'chose' could have been used.

Submit: dissertations are usually 'submitted'.

Dissertation: the term used for an extended essay in which the results of a piece of research are presented and discussed. Where the essay forms the whole or a major part of the examination, it is more often called a 'thesis'.

Original: i.e. work which departed from, or extended any previous research in the field.

Paper: the usual term for a scholarly article.

Whilst: probably less frequent and more formal than 'while'.

work schedules: the detailed plans by which the series of operations carried out in the manufacture of finished products are timed and related to each other.

On the clerical and administrative side: a rather less formal way of putting it than is adopted with the departments concerned with production.
Liaison: not just 'cooperation' – the term as it is used here nearly always implies also the exchange of information.
Kept me closely in touch with: cf. Vocabulary note on 3, Unit One.
The sequences of preposition plus noun plus preposition referred to there might be a little less frequent in letters of application, where the writer may well be trying to avoid too much business jargon;
out-of-work: i.e. activities engaged in outside working hours. Contrast this with the non-hyphenated version of the phrase used in such sentences as 'He is out of work', meaning 'He is unemployed'.
University: cf. note on 2 above.
literature: i.e. books and articles written with special reference to his occupation. Contrast the use of 'literature' to refer generally to any writing, prose or poetry, that has an aesthetic purpose.
Extended my commitment: i.e. the writer has increased the amount of social work that he has been doing. Cf. the corresponding verb which appears in sentences such as 'I am committed to taking part in the meeting next week'.

**Grammar**

The grammatical characteristics of this letter, apart from the reservations made above, are fairly similar to those outlined in Part Two, Unit One. The following points may be worth adding:

Note the extreme care with which the paragraphing has been made to coincide with the divisions in the information. The principles by which writers determine paragraph divisions are by no means entirely clear, but not all varieties of written English show such an exact correspondence between natural divisions in the subject-matter and actual arrangement of blocks of language on the page. The correspondence is probably closest in writing which sets out to be highly informative, as in the present instance, and in scientific writing. In some varieties, the correspondence may become very loose indeed – for instance, in informal letters, many of which may abandon any pretence of paragraphing altogether.

Note the characteristic phrases, and even 'standard sentences' appropriate to a letter of application, such as 'I should like to be considered for...', 2, The relevant information... is as follows..., I should like to mention in this connection, 60, I hope that the information I have provided... is sufficient for your purposes, but I shall... be glad to expand it should you wish.

**General Comprehension**

Do this with your Course book open, but try not to look at the notes while you are doing it. Choose the correct answer (a, b, c or d) to each of the following questions.
1) The writer of the letter got a distinction
   a. in his final examination in sociology.
   b. for this dissertation about industrial relations.
   c. in the two optional courses he took.
   d. for a newspaper he edited in Yorkshire.
II) At the North Yorkshire Business College he
a. was only in one class,
b. got a first-class diploma.
c. concentrated on office management.
d. enjoyed practicing sport in the fields.

III) He wants to leave his present job, because
a. he does not like the kind of labour he has to recruit.
b. he wants more responsibility and scope.
c. the job is too similar to his previous one.
d. he has been there for four years.

IV) His leisure interests include
a. reading poetry and novels.
b. writing articles for journals.
c. reading literary journals.
d. writing testimonials.

Dictionary Work
– The following words occur in this letter:
a. personnel b. social c. industrial d. Production e. responsible
Use OALDCE to make sure you know the difference between them and:
f. personal g. sociable h. industrious i. productivity j. responsive
Now, with OALDCE shut, choose the right words for the following. Use each word once only.
i) The manager is... for 500 people.
ii) The army employs a number of civilian...
iii) She’s tremendously... and can’t bear being alone.
iv) Most... disputes seem to be about pay these days.
v) Mark the letter '...' so that no-one else will read it.
vi) This factory will cease... if it receives no more orders.
vii) He’s not very….but he hard if he has to.
viii) He's just not... to kindness: you’re wasting your time.
ix) He works long hours and does not have much time for... activities.
x) If this country cannot increase ... our goods will be too expensive in world markets.

Study the Vocabulary note 2 about the use of capital letters. They are also: used: at the beginning of a new sentence; for proper names (people, places, book titles, days, months and their abbreviations, etc.; for titles, for I but not for other personal pronouns; for initials, if they stand for some sort of title (GB, UN etc.). They are optional in such abbreviations as p.t.o/PTO. Write out the following incorrectly printed sentences, using capitals as necessary.
I) the university of essex is one of the universities founded after the second world war.
II) captain john smith is a captain in the r.n.
III) as you like it is at the royal shakespeare theatre from thursday week.
IV) what is the air fare to new york from london by british airways?
V) the beginning of autumn is October, I always think.

**Fill in the Gaps**
With your Course book shut, fill in each of the gaps with one word only.
My reasons for refusing your offer are as (1)
The war lasted (2) 1939 to 1946.
Please call some time (3) four and five o'clock.
He does not take much (4) in union affairs.
I hope to (5) my ideas into effect.
Your coat is very (6) to the one you had last year.
I’d rather learn something practical (7) as car maintenance.
In the (8) of any further business, I declare this meeting closed.

**Listening: Shifting Stress**
LISTEN to the recording again, with your Course book open, and notice where the main stress falls on the following related words.
ADvertise, 3 adVERtisement, 58
APplicants, 58 aPPLY, 55 appliCAtion, 57
‘’THEory”, 10 consIDER, 2 sociOLogy, 7 considerAtion, 57
SOcial, 19 reSPONSible, 39 responsibility, 53 theoRETical, 25 socioLOGical, 10
Now mark the stress on the following pairs of words. (One of each pair is in the text. Note the use of each pair if necessary.)
i) educate education, 5
ii) inform information, 5, 59, 70
iii) satisfy, 13 satisfaction
iv) industry industrial, 16, 23
v) supplement, 25 supplementary
vi) modify modification, 27
vii) contribute, 63 contribution
viii) active activity, 60
ix) occupy occupation, 62
x) voluntary, 65 volunteer
xi) public publication, 64
Unit V
A Language of Informal Conversation:
About A Letter of Application
Explanatory Notes

This telephone conversation resembles that in Unit IV to the extent that it is between two close friends, and yet is like that in Unit VI in having been made for a definite purpose. Note that this time the caller is giving the information, not asking for it.

Peatley two seven one: although these days all telephone exchanges in Britain have been converted to all-figure numbers, until relatively recently some rural ones were still identified by a name. This is a fictitious exchange name.

Croydon: for places mentioned.

It is in London: wages in general are higher in the London area than in most other parts of the country.

Like wages, house prices in the London area are higher than elsewhere; and the rush hour, 70, when people go to or from work, is more hectic and uncomfortable than in most places.

The moors: there is a great deal of open moorland in Yorkshire within easy reach of the large towns, and Sunday morning walks there are popular.

Cf. pop out of the back door and run up a mountain, 77.

The Home Counties: the counties adjacent to London.

One where the beer wasn't too cold: connoisseurs of English beer insist that it should be kept at a critical temperature that to many foreigners seems distinctly warm.

The insistence is perhaps stronger in the north than in the south of the country, where ale and bitter is more popular. To anyone holding this belief, ice in the beer, cf. 93, would be the ultimate offence.

You're on: a way of accepting a challenge – it is obvious that Joe regards the invitation to go on a tour of the 'boozers' as being partly in the nature of a challenge.

General
The only thing that needs to be noted about the language in this instance is that there is a considerable use of idiom that at times perhaps has a slight air of being old-fashioned, e.g. on the receiving end, 20, in the hot seat, 22, do anyone a bad turn, 47, as well as other items mentioned specifically for this reason in the vocabulary notes. Have a bash, 56, and guff; 57 may also sound rather outdated to some people.

Vocabulary
How’s things: a colloquial variant of 'How are you'.
put me with a chance: given me a chance.
short-listed: placed on the 'short list' of people who are selected from all the other applicants and given an interview.

For goodness sake: a mild exclamation often used to express varying degrees of exasperation. The intonation here suggests that the phrase is being used humorously.

On the receiving end: in the position of receiving something.

in the hot seat: a colloquial relaπηor used of any uncomfortable situation.

I shouldn't worry too much about it if I were you: this sentence, or something very much like it, is used so often in these circumstances that it amounts almost to a fixed phrase.

With your qualifications: the sense is that there are unlikely to be many applicants with such good qualifications', rather than 'with the same qualifications'.

We'll see: i.e. we'll see eventually what happens. Often used as a way of expressing doubt about the outcome of something.

Mm: note the rise-fall intonation pattern, expressing admiring approval.

loaded: i.e. loaded with money; a colloquialism.

I don't know about: a standard phrase for expressing doubt about whatever it introduces.

Scope: opportunity.

Old Billings: a common informal way of referring to people, especially men.

The adjective 'old' does not necessarily carry its normal sense, and its use in this way often implies a measure of affection. Contrast the uses mentioned in the vocabulary note on 'Old chap', Part One, Unit Two, 36.

Do anyone a bad turn: harm anyone. Cf. 'good turn'.

A stick-in-the-mud: someone lacking in enterprise and averse to change. It is a classic instance of the kind of English 'idiom' which used to be collected in phrase books; and it sounds rather odd and a little old-fashioned, as so many phrase-book idioms do, probably because they are not used very much nowadays. The most famous of all is perhaps 'It’s raining cats and dogs' which no Englishman would ever be likely to say any longer unless he was trying to be funny.

Move with the times: keep pace with current thinking. Another idiom that to some people might sound a little old-fashioned.

Too true: an emphatic way of agreeing.

Have a bash: have a try.

Good for you: a common way of expressing approval of someone’s actions.

Fed: gave.

Guff a colloquialism for 'information'; often used with the implication of irrelevance.

60 lay it on too thick: exaggerate.

go off: take a disliking to.

64 cake walk it: the sense here is 'get the job easily'. A 'cake walk' is a simple undertaking.

Keep my fingers crossed: the reference is to the traditional belief that crossing one’s fingers is a way of guarding against bad luck.

65 at any rate: in any case, anyway.
70 a bit of a bind: a nuisance.
76 steady on: a means of asking someone to be slower or more cautious in their behaviour or statements.
77 pop out: cf. similar phrases in the previous unit.
88 lousy: an expressive colloquialism for poor.
95 boozers: cf. Part One, Unit Two, 25.
97 ring o+: i.e. end the conversation.
98 turn in: go to bed.

**General Comprehension**

Choose the correct answer (a, b, c or d) to each of the following questions. Do this with your Course book open, but try not to look at the notes again.

i) Bob says, that
   a. he will probably get on the short list.
   b. he has little chance of an interview.
   c. he has a good chance of getting the job.
   d. sometimes he falls off his seat at interviews.

ii) Joe encourages him by saying.
   a. he is not really the type of person to worry.
   b. the other applicants will probably not be so well qualified.
   c. the job has been specially created for him.
   d. the firm has a duty to give him an interview.

iii) the rates, refer to
   a. rents for flats etc.’
   b. rates payable to local authorities.
   c. London salary scales.
   d. speed at which people work.

iv) He will accept changes here means
   a. He will agree to changes in the future.
   b. He does accept new ideas but slowly.
   c. He is going to agree in future.
   d. He is trying to change things.

**Comprehension: Fixed phrases**

i) I don't know about (that), means
   a. I rather doubt that.
   b. I know nothing at all about that.
   c. This is news to me.
   d. I don’t understand it.

ii) Too true, means
    a. I entirely agree.
    b. That is also true.
    c. That is not really true.
    d. I think it is exaggerated.

iii) Good for you! means
a. It would be useful for you.
b. It will do you good.
c. Well done.
d. How efficient.
iv) at any rate here means
a. in any case
b. in some way
c. somehow or other
d. for a time

Vocabulary: Idioms

Choose the correct word to complete these idiomatic phrases. (Course book shut.)
i) I don't like being in the……………. seat.
   a. cold     b. frozen        c. hot        d. warm
ii) You've got to move with...
   a. time     b. times        c. the time    d. the times.
   iii) Keep your fingers... for me.
   a. across    b. cross      c. crossed    d. crossing
   iv). Don’t... it on too thick.
   a. lay       b. place     c. put       d. spread

Names:

Did you notice that Bob signed himself Robert Dean in his letter of application? Many English names have informal versions', which may be used by the person's close friends. There is no real usage rule about this, other than calling people by what they request to be called and not calling them by names they do not wish to be called.

Some Roberts would be Bob to their friends, and Robert to those who knew them less well. Others would be Robert to everyone; some might be Воб to everyone.

Can you say what the more formal versions of the following names are?
Many of them appear in the Course. There is a useful list in OALDCE if you are stuck.
Men’s names: Alf, Bill, Chris, Ed, Harry, Jim, Joe, Pete, Steve, Ted.
Women’s names: Betty, Cathy, Chris, Jenny, Kate, Liz, Maggie, Molly.

Style: Colloquial

Which is the most colloquial word in each set?
i) You didn't believe all that silly... of 'the salesman, did you?
   a. guff     b. information    c. nonsense    d. talk
ii) We had... weather on holiday; it rained every day.
   a. awful    b. horrible'    c. lousy      d. poor
   iii) The exam isn't very hard; why don’t you...?
   a. make an attempt b. make an effort c. have a bash. d. have a try
   iv It’s a/an... not having a car, but we can go by train.
Listening: Question Tags

Listen carefully and decide which of these are spoken with a FALLING intonation and which with a RISE.

i) Croydon, wasn't it?
ii) And it was for a manager, wasn't it?
iii) You’re not scared of interviews, are you?
iv) But you didn't lay it on too thick, did you?
v) You've got to be prepared to move around, haven't you?
vi) You don't call that walking, do you?

Styles: A Comparison

Can you tell from the style which of these passages comes from the business letter, and which from the telephone-conversation?

a. I like working at Yorkshire Engineering, but I’d like more scope for putting a few ideas into practice.
b. I feel that at this stage in my career I should like more responsibility and greater scope for putting into effect some of the more up-to-date ideas that are now being developed.
Unit VI

Lecture

Explanatory Notes

This conversation, although by no means a learned discussion, is in places slightly more serious than the previous two. The subject matter is a little more weighty, and also one or two points are being disputed, not simply talked about or chatted over, with arguments and counter-arguments being put forward. The conversation is still being carried on in a fairly informal way, however, and those taking part are on close terms with each other.

The lecturer being talked about appeared in Part One, Unit Six.

Bloomsbury: the name given to an area in London. The development referred to took place in the eighteenth century, when the landlords granted leases (cf. leasehold, 51) to speculators, who built houses to a standardised design, carefully laid out around a number of squares (cf. ideas on town planning, 50).

undergraduates: students who have not yet gained their first university degree.

The postgraduates referred to in the next line are students who possess their first degree (i.e. have 'graduated') and who are working for a higher degree.

the Union: here the reference is to the 'Union building' — the building which houses the students' organisation and its associated facilities.

General

In a few places the language used in this conversation increases very slightly in its formality as compared with Units One and Two in this part of the course; a number of sentences become slightly longer, there is a slight increase in grammatical complexity here and there, and some rather more learned vocabulary gets used. But there is little departure from normal conversational style, and most of the characteristics mentioned so far as being typical of conversation are present.

Vocabulary

Do you: note the pronunciation of the weak form of ‘do’ here. It would have been possible to use the spelling 'd'you', but this is not as fully institutionalized as some weak form spellings, such as 'I'd, 'wasn't', etc., and so has been avoided in an attempt to keep the spelling looking as normal as possible.

because: another weak form which is not represented here in the spelling. In its most reduced form 'because' becomes 'cos' — and this spelling is sometimes used; but again, it is not a fully accepted written form.

General overview: a comprehensive picture or plan (of what the lectures were about). This is a rather formal, lecturing-type phrase, helping to indicate the slightly more serious subject matter of this conversation as compared with the previous two.

I couldn't see the town for the buildings: an adaptation, appropriate to the context, of the proverb ‘I couldn’t see the wood for the trees', used when someone is so confused by detail that they cannot see what is happening in a general sense.

take: consider. A frequent way of presenting something for consideration in conversational English.
not at all: 'is here simply adding emphasis to 'not'. Contrast the superficially similar phrase in Part Two, Unit Two, 92.
Sit back: a common colloquial phrase that means 'wait (for something)', and seems to embody the notions of relaxation, and, quite often, that what is being waited for is something pleasant.
Bang: a colloquial way of commenting on the suddenness or unexpectedness of something.
Up your neck: an expressive colloquialism for 'deeply involved with' or 'overwhelmed'. Cf. 'up to my eyes', as in 'I can't see you this evening, I'm up to my eyes in work'.
Minute: note that this is the adjective, distinguished by pronunciation from the noun which is spelt in the same way. Rather a more formal word than might have been found in the previous two conversations. In this respect cf. also bombarding, 19, terminology, 20.
Rubbish: an emphatic way of saying that the other person is talking nonsense.
Now, now: frequently used as an admonitory phrase to children. The speaker is using it humorously here.
An impartial academic level: cf. note on 19 above. The speaker is again being humorous and ironic.
starts off: informal for 'begins'.
on the right foot: in the correct manner. Note that 'right' here is not the word which is the counterpart of 'left'.
Increase the pressure: the sense is 'introduce material equiring a higher level of understanding'.
Here we go again: a phrase that is used to comment on the fact that something tiresome which has just stopped is about to begin again — in this case, Jane's argument.
Put us all in our places: correct us.
Shut up: note the emphatic intonation.
On about: colloquial for 'talking about'.
Piles on: colloquial for 'increase'.
Submerged: a rather formal word, as are the technical architectural terms which follow.
I didn't know whether I was coming or going: a common conversational way of saying 'I was confused'.
Pushing his lecture plan under your nose: to push something under someone's nose is to present it to them in an irritatingly obvious or repetitive way.
Brought all the threads together: related all the details and arguments to each other.
She has got something there: i.e. she has said something that is worth considering, and may well be true.
Nice and general: cf. 29 in the previous unit.
Cram in: force in.
Getting somewhere: making progress towards an identifiable object. The repetition of the phrase in the next line plays on the fact that the 'object' in question may be
either abstract, like a piece of knowledge, or learning, or specific, like a cup of coffee.
A coffee: i.e. a cup of coffee. Cf. 'a beer', 'a lemonade', 'a whisky', etc.; but note that one cannot say 'a tea', 'a water', in the same sense.
Oh no, let’s not go to the Union: note the disapproval conveyed by the intonation.
call in the library: more colloquial than 'call in at the library', which itself is quite informal.
Chasing me: a colloquial way of saying that the library authorities have been pressing her to return the book.
Get a move on: hurry up.
In the soup: in trouble.
The quad: an abbreviation for 'the quadrangle' — the square around which college buildings are often arranged in this country.

Grammar

Not much: a sentence of the kind discussed in Part Two, Unit Seven which appears to be lacking some essential part. Although not as frequent as in the language of advertising, and, perhaps, commentary, these sentences do turn up " in conversation. One obvious opportunity for them is in replies to questions, as here. The person who answers can, in a way, take advantage of the grammar already provided by the question, and reply with a word or phrase which is immediately meaningful, following the question, but which might otherwise need putting in a sentence before it could be understood, E.g.: 'How much sugar do you need', B 'Two pounds'. Cf. also, in 69, /just past Barkers.
That course he gave on town planning last year: another of the sentences just referred to. This one is an example of a fairly frequent grammatical habit in conversation — to use a noun group (which refers to some person, object, etc.) as a sentence, and then add any necessary information, comments, etc. in further sentences, in the manner adopted here.
Which you could have got from a book: an instance of the impersonal 'you' (referred to in the Grammar Notes in the previous unit). There are numerous other examples the rest of the extract.
Jane: a use of the vocative. In conversations between two people, not a great deal of use is made of vocatives as a rule, since it is obvious who is being spoken to. With three or more people, however, when one's remarks are addressed to a particular individual rather than to the company as a whole, it becomes necessary to signal this fact, and the simplest way is to use his name as a vocative. Note that as a result of there being three speakers, there are more vocatives in this unit than in the other conversations.
It is worth examining this speech to see the grammar in the first part — as far as about — becomes slightly more complex, probably because an argument is being advanced, and then returns to the expected conversational practice of shorter sentences loosely linked together.
Er, the leasehold system: the hesitation noise here probably indicates that the speaker had to search momentarily for the right word. Cf. the next line.
Section IV

Video Segments: How About: Science and Technology

Unit I

Wired Hockey Players

Previewing Activities
Check to make sure you know the following words and try to use them in meaningful sentences:
collect — bring together
exceptional — unusually good
react — act in answer to something else
keep track of — keep informed about
mask — covering to hide or protect the face
monitor — watch or listen to
outstanding — very good

Finding the Information
Watch and listen to the video for the following information:
1. Guess the meaning of these words in context: treadmill, exhale, beat.
2. Why did Dr. John Downs want to "wire up" a hockey player?
3. Why did the scientists collect his exhaled air?
4. Why do they want to monitor other athletes?

Taking Notes
Watch and listen again to fill in the blanks below:
1. What are the purposes of the following?
a. the treadmill
b. the mask
c. the radio transmitter under the uniform
2. What are the results of their findings?
a. at rest
b. at certain other moments
3. Future information gathering:
4. Use of future information:

Talking it over
1. Is it more important for a child to be a good athlete or a good student?
2. Do you think sports receive too much emphasis these days?
3. Should all children be required to play sports?
Unit II
Sandblasting without Sand

Previewing activities
Check to make sure you know the following words and try to use them in meaningful sentences:
adjust — change a little
driveway — private road from a street to a house or garage
force — power
lungs — organ in body for breathing
stream — fast and strong flow
substitute — put something/someone in place of another
tiny — very small

Finding the information
Watch and listen to the video for the following information:
1. Guess the meaning of these words in context: hose, blast, sandblasting, pellet.
2. What was used as a substitute for sandblasting?

Taking notes
Watch and listen to the video again to fill in the blanks below:
1. Disadvantages of sandblasting:
a. _______________________________________________________________
b. _______________________________________________________________
2. Advantages of dry ice:
a. _______________________________________________________________
b. size of pellets
c. _______________________________________________________________
Unit III
Bee Baggies

Previewing activities

A. Discuss what you know about bees.
B. Check yourself whether you know these words or not.

<table>
<thead>
<tr>
<th>bee</th>
<th>sting</th>
<th>to give off</th>
<th>larva</th>
</tr>
</thead>
<tbody>
<tr>
<td>hive</td>
<td>gland</td>
<td>to secret</td>
<td>fungus-fungi</td>
</tr>
<tr>
<td>lining</td>
<td>thimble-sized</td>
<td>to hatch</td>
<td></td>
</tr>
<tr>
<td>scent</td>
<td>mating-season</td>
<td>vial</td>
<td></td>
</tr>
</tbody>
</table>

2. Finding information

Watch the video. Find out the information about:
A. Where Colletes were found?
   - Who found them?
   - What is she?
   - What department did she work at?
B. Put the following sentences into sequence:
The female deposits an egg in the bag-shaped lining.
The mated female digs a nest.
She lines the bottom of the nest with a liquid.
The sealed bag keeps out moisture.

Taking notes

Watch again and fill the blanks

1. A similar technique has been used for ___________ of years by a ___________

2. Most of the _______________ different kinds of bees make their nests underground.
3. Dr. ______________ found more than ______________ nests.
4. She had these ______________ bee ‘baggies’ analyzed.

1. Explain what ‘baggies’ mean.
2. Is a sandwich in plastic bag a fairly modern invention or is it a technique used for millions of years by a bee?
3. What do people usually think about bees habitat?
4. Where do many kinds of bees make their nests?
5. Where and by whom were Colletes found?
6. What happens each spring?
7. How do the mail bees find the females?
8. What does she use to collect specimen?
9. How does the mated female dig a net?
10. Where does she deposit an egg? And with what?
11. What’s the function of the sealed bag?
12. What is the difference in size between a bee bag and a sandwich bag?
13. Is there any difference in the material they are made of according to the analysis?
14. Do you know other kinds of insects that seal their young in ‘baggies’?
15. Does it mean that synthetic fibers is always man-made?

C. Name some man-made materials and some natural substances.
Give your opinion on man made material (merits-demerits) and natural substances.
Unit IV
Moving Continents

Previewing activities
Check to make sure you know the following and try to use them in meaningful sentences:
continent – one of the seven large land masses (Africa, Europe, Asia, etc.)
crust – hard outer covering
lava – hot liquid rock
molten – melted
volcanic eruption – explosion from a mountain in which lava escapes

Finding the information
Watch and listen to the video for the answers to these questions:
1. What does the flow of lava prove?
2. How are the continents like pieces of a jigsaw puzzle?
3. Why will maps in the future look strange?

Taking notes
Watch and listen again to fill in the blanks below:
1. The earth moves during
   a. ______________________________________
   b. ______________________________________
2. Two hundred million years ago
   a. ______________________________________
   b. ______________________________________

Talking it over
1. Start from a period of 200 million years ago and describe the process mentioned in video.
2. Have you ever been in an earthquake or natural disaster? Describe your experience.
3. Working in pairs, practice interviewing. Conduct an interview in which one of you is a reporter and the other is a victim of a natural disaster.
Unit V
Hot Vents

Previewing activities
A. What are hot springs? Are there any in your country? Locate Yellowstone Park on a map of the United States.
B. Discuss or guess the meaning of the following words: geothermal energy, food chain, worms, dust (noun and verb), insecticide, gills.

Finding the information
Watch and listen to the video. Then fill in the blanks below:
If you've ever __________ plants with an ______________containing sulphur, you've never forgotten its distinctive, unpleasant______________. It's difficult to imagine a ______________ __________based on sulphur, but there is one, and it's __________ __________ __________ __________ __________ __________.

Taking notes
Listen carefully and fill in the blanks with a, an, the, or Ø (no article):
_________ bacteria are __________ beginning of __________ food chain for__________ variety of _________ animals, many of which were seen for _________ first time by _________ variety of scientists.
Unit VI
Mural of Time

Previewing activities
Discuss murals: Where are they usually found? What murals are you familiar with?

Finding the information
A. Watch and listen to the video for the answers to these questions:
1. What was the challenge for artist John Gurchee?
2. Where is his mural?
B. Listen again and arrange the following words and phrases in sequence:
• birds and other mammals
• fish
• amphibians and reptiles, including dinosaurs, squid, and sea scorpions
• jellyfish
• warm-blooded mammals, including man
• animals with shells and skeletons

Talking it over
Write or say another way:
1. 600 million
2. a canvas 27 feet tall
3. 500 million
4. 40 thousand
5. the mural of time which is 600 million years long.

Summarize briefly the main ideas in this report.
Unit VII
Zooplankton

**Previewing activities**

Check to make sure you know the following words and try to use them in meaningful sentences:
- appreciate — enjoy and value something
- environment — all the things around you
- food chain
- prey — animal hunted and eaten by another animal (see 3 above).
- propel — push forward
- shark
- source — place from which something comes
- wander — more around without aim

**Finding the information**

Watch and listen to the video. Then guess the meaning of the following words:

1. tiny  
   a) very big   b) very small

2. tentacles  
   a) small arms used for moving, touching, etc.  
   b) large mouths used for eating, biting, etc.

3. range  
   a) change  
   b) vary
lookout
a) guard b) fish

zooplankton
a) animals that hunt fish
b) animals that wander

Taking notes
Watch and listen again to fill in the blanks below:
1. How many kinds of zooplankton are there? ____________________________
2. Zooplankton:

<table>
<thead>
<tr>
<th>Form</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>foot</td>
<td>____________________________</td>
</tr>
<tr>
<td>paddle</td>
<td>____________________________</td>
</tr>
<tr>
<td>tentacles</td>
<td>____________________________</td>
</tr>
</tbody>
</table>
3. Reasons people look at photographs of zooplankton:
   a. ___________________________________________
   b. ___________________________________________

Listen again and write the noun that follows each of these adjectives:
bizarre
unique
spectacular
decaying
major
related
intrinsic

Talking it over
1. Some scientists fear that pollution may damage zooplankton. How will that affect us?
2. Make a list of popular hobbies. What are the advantages and disadvantages of each.
   For example:
   Photography
   
<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Can be a hobby all your life.</td>
<td>a. Expensive</td>
</tr>
<tr>
<td>b. __________________________</td>
<td>b. __________________________</td>
</tr>
<tr>
<td>c. __________________________</td>
<td>c. __________________________</td>
</tr>
</tbody>
</table>
3. Many people are afraid of the water. Describe some common fears about water and the reasons they are so common.
Unit VIII
Chinchillas and Hearing Loss

Previewing activities

A. Discuss the sense of hearing.
B. Study the following words and expressions: auditory, sense, pitch, loudness level, frequency, cycles per second, just above, tone, decibels, thunder.
Now listen while your teacher reads the following passage first at normal speed, and then a second time, with pauses between sentences. Listen carefully and take notes of all the important facts.

Audio
Audio is Latin for "I hear." The sense of hearing is called the auditory sense.
Two measurements of hearing are important. The first is the frequency (f- r- e- q-u- e-n-c-y).
This is the tone or pitch of a sound. It measured in cycles per second, abbreviated cps.
The lowest frequency on a piano is 28 cps and the highest is 4096 cps.
The human ear can hear sounds as low as 20 cps and as high as 20,000 cps. Many animals can hear sounds as frequencies even higher than 20,000.
Loudness of sound is the second important measurement. Loudness is measured in decibels. (de-c-i - b-e-l- s), abbreviated db. The point where the normal ear can just begin to hear a soft sound is just above zero db. Here are some comparative loudness levels. A whisper is at a loudness level of around 12 db. Ordinary conversation is around 55 db.
The sound of an average truck is around 70 db. An airplane engine is about 110 db and thunder is around 115 db. If a person has a hearing loss over 35 db, he should seek medical advice.
C. Look at your notes and answer the following questions:
1. What is the frequency range of the piano?
2. What is the frequency range the human ear can hear?
3. How loud is a whisper? (Express your answer in decibels.)
4. How loud is thunder? (Express your answer in decibels.)

Finding the information
Watch and listen to the video, then answer the following questions:
1. Why did researchers choose the chinchilla?
2. What is the result of exposure to excessive noise?

Taking notes
Watch and listen again, then fill in the following blanks:
1. Nerve cells in the ear send ___________________________ to the brain.
2. After exposure to excessive noise, these cells may be ________________.
3. Continuous exposure to sounds above 65 – 75 decibels may result in to the
_________________________ _____________________
_________________________ _____________________

Talking it over
1. Do you think noise limits for workers should be lowered (where they exist)?
2. What do you know about treatment and schools for the deaf?
Unit IX
Tracking the Gray Whales

Previewing activities

Bring in information you can find on whales to share with the group.

Finding the information
A. Watch and listen to the video. Note how this vocabulary is used in context:
   to tag, tagging
   to migrate, migration
   to unravel
   to track
   lagoon
   blow-hole

B. Watch and listen again. Then answer these questions:
   1. How much does the whale weigh?
   2. Where do the gray whales spend the winter?
   3. When do they begin to migrate?
   4. What does "tagging" mean here?
   5. Where does the gray whale spend the summer?

Taking notes
Watch and listen again; then fill in the blanks.
Tracking one whale, Dr. Mate found that in 41 days, it reached ________________;
after ______________ days, it reached ________________.
After ______________ days, it reached ________________.

Talking it over
Summarize orally the information gathered about whales.
Unit X

Communicating with a Parrot

Previewing activities
A. Discuss pets in general. What do they understand? Do you talk to them?
B. Have you read any research on communicating with animals? Which one?

Taking notes
Watch and listen again, and write down everything Alex the parrot says:
1. ______________________________ (Banana)
2. ______________________________ (Walnut)
3. ______________________________ (Water)
4. ______________________________ (Wanna [want to] go gym)
5. ______________________________ (Corn)
6. ______________________________ (Yellow)
Unit XI

The March of the Spiny Lobster

Previewing activities
A. Review the Lesson, "Tracking the Gray Whale."
B. What do you know about the migration of birds? Why, when, and where do they migrate?
C. Discuss or guess the meaning of these words and try to use them in meaningful sentences:
   lobster, n.  chill, n., v.
   larva, n.  trigger, n., v.
   predator, n.  march, n., v.
   den, n.  track, n., v.
   antenna, n.

Finding the information
Watch and listen to the video. Then answer these questions:
1. What is the form of the baby lobster?
2. How long does it take to reach adulthood?
3. How long can it live?
4. How much can it weigh?

Taking notes
A. Watch and listen again.
B. Write down what causes the spiny lobster to migrate:
   1. colder ________________and darkened________________
   2. changes in ________________ and ________________turbulency

C. Listen again and write down the information:
   1. Each lobster keeps in line by____________________
   2. There can be as many as____________________in a line.
   3. The marches can last ______________________ ________________.
   4. They have been tracked for more than miles__________________.
Unit XII

Permanent Teeth Implants

Previewing activities
A. Discuss teeth and dentistry: Do you know people who have false teeth? What kind?
B. Now look at the following words
porous, adj.
get rid of, v.
denture, n.
cement, v., n.
stain, n., v.
screw, v., n.
insert, n.
insert, v.
implant, n.
implant, v.

Finding the information
Watch and listen to the video. Then answer these questions:
1. How many Americans wear dentures?
2. What alternatives are there?
3. What percent of these implants have been successful?

Taking notes
Listen again and fill in the blanks:
Procedure
1. The base is made of a special porous ___________________.
2. The upper piece into it ____________________.
3. After six weeks the bone has grown around and into the porous base to form .

4. The screw is and a new screw .

5. Finally the artificial is .

Listening for stress patterns:
Watch and listen again. Which do you hear, a or b?
1. They are a) inserted b) inserted into the bone of the jaw.
2. The a) insert b) insert and the bone must join together.
3. Seventy percent of the a) implants b) implants have been successful.
4. Special patients now have permanent tooth a) implants b) implants.
(Notice that in contrasting pairs of this type, nouns are usually stressed on first syllable while verbs are stressed on the second syllable.)

talking it over
Would you like to try teeth implants? Why or why not?
Unit XIII
Cockroach on a Treadmill

Previewing activities
A. Discuss what you know about cockroaches. Are they useful to human beings?
B. Discuss or guess these words and try to use them in meaningful sentences:
treadmill
metabolism
mask
energy
oxygen

Find the information
Watch and listen to the video. Then answer these questions:
1. What was being measured in the mask?
2. Why can't a mask be used in the case of the cockroach?
3. What do they use instead?

Taking notes
Watch and listen again. Then write down three characteristics of a cockroach:
1. ________________ legs.
2. ________________ a few ounces.
3. ________________ through openings along its body.

Talking it over
1. What were the findings?
2. What determines how much energy is used by an animal or insect?
3. How does the cockroach compare with a man in his use of energy?
Unit XIV
The Chicken's Day

Previewing activities
A. Discuss "biological clocks."
B. Are you a "morning person"? When do you have more energy? Have you ever worked a "night shift"?
C. How much sleep do you need to feel well?

Find the information
Watch and listen to the video. Then answer these questions:
1. How does a sundial work?
2. Why did the researcher want to experiment with chickens?

Taking notes
1. Prepare a bar graph to show the hens' best cycle:
   ____________ hours of ________________
   ____________ hours of ________________
   ____________ hours of light
   ____________ hours of darkness
2. With the 28-hour cycle, hens laid _____________ eggs with _____________ shells.

Talking it over
What other procedures may be used to produce "better" chickens and eggs?
Unit XV
The Rarest Mammal

Previewing activities
A. Discuss what you know about endangered/extinct species of animals.
B. Study the following words:
prairie — a large area of level grassland
ferret — small animal, like a polecat, which can be tamed for hunting rodents
weasel — small, carnivorous animal that eats rats
live/laiv, adj. having life
glimpse, и.— a quick look
emerge, v.— — to come out into view
spot, v.— — to locate or identify

Find the information
A. Watch and listen to the video. Then try to use the new vocabulary in meaningful sentences related to the report.
B. Watch and listen again. Then answer these questions:
1. What does a ferret look like? What is it related to?
2. What did ferrets eat?
3. What happened to the prairie dog?
4. Why is the study being done?

Matching beginnings and endings
1. Experts had feared a. that had been killed by a dog.
2. Their chief source of food b. are most active at night.
3. A rancher found a ferret c. with spotlights.
4. Ferrets d. 22 adults and 38 young ferrets.
5. The filming had to be done e. this cousin of the weasel had become extinct.
6. Scientists have located f. was the prairie dog.
Section V

Texts for Discussion

21st Century Science: Where is everybody?

If civilizations exist in our galaxy with levels of technology at least equal to our own, we might be able to detect some of them using radio telescopes. And if civilizations exist with technologies far in advance of our own, we might expect them to have colonized millions of habitable worlds in the Milky Way, and even to have visited our own planet. Yet there is no evidence in the astronomical, geological, archaeological, or historical records that extraterrestrial civilizations exist or that visitors from other worlds have ever been to Earth. Does that mean, as some have concluded, that ours is the only civilization in the galaxy? Or could there be a natural self-regulating mechanism that limits the intensive colonization of other worlds?

In 1961 radio astronomer Frank Drake devised an equation to express how the hypothetical number of observable civilizations in our galaxy should depend on a wide range of astronomical and biological factors, such as the number of habitable planets per star, and the fraction of inhabited worlds that give rise to intelligent life. The Drake Equation has led to serious studies and encouraged the search for extraterrestrial intelligence (SETI). It has also provoked ridicule and hostility. Novelist Michael Crichton recently denounced the equation as "literally meaningless," incapable of being tested, and therefore "not science." The Drake equation, he said, also opened the door to other forms of what he called "pernicious garbage" in the name of science, including the use of mathematical climate models to characterize global warming.

Crichton rightly pointed out that any numerical "answers" produced by the Drake Equation can be no more than guesses, since most of the terms in the equation are quantitatively unknown by many orders of magnitude. But he is utterly wrong to claim that the equation is "meaningless." An equation describes how the elements of a problem are logically related, whether or not we know their numerical values. Astronomers understand perfectly well that the Drake Equation cannot prove anything. Instead, we regard it as the most useful way to organize our ignorance of a difficult subject by breaking it down into manageable parts. This kind of analysis is standard, and a valued technique in scientific thinking. As new observations and insights emerge, the Drake Equation can be modified as needed or even replaced altogether. But it provides the necessary place to start.
When Drake first proposed his equation, we had no way to estimate any of its terms beyond the first one, representing the rate of star formation in our galaxy. Then in 1995, astronomers began to discover planets in orbits around other stars. These results now promise to sharpen our estimates for the second term in the equation, denoting the number of habitable worlds per star. Who knows what unforeseen discoveries will tell us about the other terms in the equation?

In Classical antiquity, when Aristarchus conceived the heliocentric view of the solar system and Democritus developed an atomic theory of matter, they had no possible way to test their ideas. The necessary observational tools and data would not exist for another two thousand years. Of course, the Crichtons of antiquity denounced such speculations as pernicious. But when the time finally came, the ancient ideas were still there, quietly waiting to inspire and encourage Copernicus and Galileo, and the pioneers of modern atomic theory, who took the first steps to test the theories. It may take centuries, but eventually the Drake Equation and all its elements will be testable.

We can express the Drake Equation in several ways, all of which are more or less equivalent. Here is one form: \[ N = R_s \cdot n_h \cdot f_l \cdot f_i \cdot f_c \cdot L \] where \( N \) is the number of civilizations in our galaxy, expressed as the product of six factors: \( R_s \) is the rate of star formation, \( n_h \) is the number of habitable worlds per star, \( f_l \) is the fraction of habitable worlds on which life arises, \( f_i \) is the fraction of inhabited worlds with intelligent life, \( f_c \) is the fraction of intelligent life forms that produce civilizations, and \( L \) is the average lifetime of such civilizations.

The rate of star formation in our galaxy is roughly ten per year. We can define habitable worlds conservatively as those with liquid water on the surface. Many more worlds probably have liquid water only below the surface, but any subterranean life on such worlds would not be likely to produce an observable civilization. Recent discoveries of other planetary systems suggest that habitable worlds are common and that it is at least one such planet in a hundred stars.

The remaining terms in the equation depend on the biology and social development of other worlds, and here we are profoundly ignorant. Our local experience may provide some guidance, however. We know that life on Earth arose almost as soon as conditions allowed - as soon as the crust cooled enough for liquid water to persist. This fact suggests that conditions for the origin of life on other habitable worlds are not restrictive, and that the value of \( f_l \) is closer to one than to one in a thousand. But that is merely a guess. No one knows how life began on Earth, and we cannot generalize from a single case.

The conditions for intelligent life are probably more restrictive. On Earth this step first required the evolution of complex animals, which began about three billion years after the origin of life, and then the development of brains capable of abstract thought, which took another half billion years. Among the millions of animal species that have lived on Earth, probably only one ever had intelligence sufficient to understand the Drake Equation. This suggests that \( f_i \) might be a small fraction.

The probability that intelligent life develops a civilization depends on the evolution of organs to manipulate the environment. On Earth, whales and dolphins
may well have intelligence sufficient for abstract thought, but they lack the means to make tools. Humans, with dexterous hands, began making tools over a million years ago. Starting about ten thousand years ago, civilizations based on agriculture arose several times independently, in Mesopotamia, Egypt, China, Mexico, Peru, and New Guinea. This suggests that the value of it is large, but again we should not generalize from the experience of only one intelligent and manipulative species.

We now come to the most intriguing term, the average lifetime $L$ of a civilization.

The Drake Equation assumes that, whatever the other factors, the number of civilizations presently in our galaxy is simply proportional to their average lifetime. The longer they live, the more civilizations exist at any given time. But what is the life expectancy of a civilization? On Earth, dozens of major civilizations have flourished and died within the last ten thousand years. Their average lifetime is about four centuries. Few if any civilizations on Earth have ever lasted as long as two thousand years.

History and archaeology show that the collapse of any given civilization causes only a temporary gap in the record of civilizations on Earth. Other civilizations eventually arise, either from the ruins of the collapsed one or independently and elsewhere. Those civilizations also eventually collapse, but new ones continue to emerge.

For example, in the eastern Mediterranean at the end of the Bronze Age, the prevailing Mycenaean civilization suffered widespread catastrophic collapse around 1100 BC. During a few centuries of "darkness" that followed, the population was illiterate, impoverished and relatively small -- but not extinct. Classical civilization gradually arose and flourished, and gave rise to the Roman Empire, which itself collapsed in the fifth century AD. Another period of impoverished Dark Ages followed, but eventually trade and literacy revived, leading to the Renaissance. Each revival of civilization was stimulated in part by the survival of relics from the past.

Our global technological civilization, with its roots in the Mediterranean Bronze Age, is now arguably headed for collapse. But that will not be the end of civilization on Earth -- not as long as the human species survives. And the biological lifetime of our species is likely to be several million years, even if we do our worst.

We should therefore distinguish between the longevity of a single occurrence of civilization and the aggregate lifetime of a sequence of civilizations. Almost all discussions of the Drake Equation have overlooked this distinction and therefore significantly underestimated $L$.

The proper value of $L$ is not the average duration of a single episode of civilization on a planet, which for Earth is about 400 years. Rather, $L$ is much larger, being the sum of recurrent episodes of civilization, and constitutes a substantial fraction of the biological lifetime of the intelligent species. The average species lifetime for mammals is a few million years. Suppose the human species lasts another million years and our descendants have recurrent episodes of civilization for more than 10 percent of that time. Then the average effective lifetime of civilization on Earth will exceed 100,000 years, or 250 times the
duration of a single episode. Other factors being the same, this generally neglected consideration should increase the expected number of civilizations in our galaxy by at least a hundredfold.

While the aggregate lifetime of civilization on a planet may be only a hundred thousand years, we should allow the possibility that a small minority of intelligent life forms, say one in a thousand, has managed to use their intelligence and technology to survive for stellar evolutionary timescales -- that is, on the order of a billion years. In that case, the average effective lifetime of civilizations in our galaxy would be about a million years.

If we now insert numbers in the Drake Equation that represent the wide range of plausible estimates for the various terms, we find that the number N of civilizations in our galaxy could range anywhere from a few thousand to about one in ten thousand. The latter (pessimistic) case is equivalent to finding no more than one civilization in ten thousand galaxies, so that ours would be the only one in the Milky Way. In the former (optimistic) case, the nearest civilization might be close enough for us to detect its radio signals. Estimates for N thus range all over the map. While this exasperates critics who demand concrete answers from science, it does not invalidate the conceptual power of the Drake Equation.

If many civilizations have arisen in our galaxy, we might expect that some of them sent out colonies, and some of those colonies sent out still more colonies. The resulting waves of colonization would have spread out across the Milky Way in a time less than the age of our galaxy. So where are all those alien civilizations? Why haven't we seen them? The physicist Enrico Fermi first posed the question in 1950. Many answers have since been proposed, including (1) ours is the first and only civilization to arise in the Milky Way, (2) the aliens exist but are hiding, and (3) they have already been here and we are their descendants. In his book Where is Everybody? Stephen Webb considers fifty proposed solutions to the so-called "Fermi Paradox" but he leaves out the most thought-provoking explanation of all, one that I call the Cosmic Quarantine Hypothesis.

In 1981, cosmologist Edward Harrison suggested a powerful self-regulating mechanism that would neatly resolve the paradox. Any civilization bent on the intensive colonization of other worlds would be driven by an expansive territorial impulse. But such an aggressive nature would be unstable in combination with the immense technological powers required for interstellar travel. Such a civilization would self-destruct long before it could reach for the stars.

The unrestrained territorial drive that served biological evolution so well for millions of years becomes a severe liability for a species once it acquires powers more than sufficient for its self-destruction. The Milky Way may well contain civilizations more advanced than ours, but they must have passed through a filter of natural selection that eliminates, by war or other self-inflicted environmental catastrophes, those civilizations driven by aggressive expansion. That is, the acquisition of powerful technology ultimately selects for wisdom.

However, suppose an alien civilization somehow finds a way to launch the aggressive colonization of other planetary systems while avoiding self-destruction. It would only take one such case, and our galaxy would have been overrun by the
reproducing colonies of the civilization. But Harrison proposed a plausible backup mechanism that comes into play in the event that the self-regulating control mechanism fails. The most evolved civilizations in the galaxy, he suggested, would notice any upstart world that showed signs of launching a campaign of galactic conquest, and they would nip it in the bud. Advanced intelligence might regard any prospect of the exponential diffusion throughout the Milky Way of self-replicating colonies very much as we regard the outbreak of a deadly viral epidemic. They would have good reason, and presumably the ability, to suppress it as a measure of galactic hygiene.

There may be many highly evolved civilizations in our galaxy, and some of them may even be the interstellar colonies of others. They may control technologies vastly more powerful than ours, applied to purposes we can scarcely imagine. But Harrison's regulatory mechanisms should preclude any relentless wave of colonization from overrunning and cannibalizing the Milky Way. By most appearances, the dominant civilization on our planet is of the expansive territorial type, and is thus headed for self-destruction. Only if we can intelligently regulate our growth-obsessed and self-destructive tendencies is our civilization likely to survive long enough to achieve interstellar communication.

Questions:

1) Are there habitable worlds in the Milky Way?
2) What’s the application and role of the Drake Equation in science?
3) What’s the main factor of life in our Galaxy?
4) Do alien civilization exist?
Consciousness is widely viewed as the last frontier of science. Modern science may have split the atom and solved the mystery of life, but it has yet to explain the source of conscious feelings. Eminent thinkers from many areas of science are turning to this problem, and a wide range of theories are currently on offer. Yet skeptics doubt whether consciousness can be tamed by conventional scientific techniques, and others whether its mysteries can be understood at all.

What is Consciousness?

The best way to begin is with examples rather than definitions. Imagine the difference between having a tooth drilled without a local anaesthetic and having it drilled with one. The difference is that the anaesthetic removes the conscious pain ... assuming the anaesthetic works!

Again, think of the difference between having your eyes open and having them shut. When you shut your eyes, what disappears is your conscious visual experience.

Sometimes consciousness is explained as the difference between being awake and being asleep. But this is not quite right. Dreams are conscious too. They are sequences of conscious experiences, even if these experiences are normally less coherent than waking experiences. Indeed, dream experiences, especially in nightmares or fantasies, can consciously be very intense, despite their lack of coherence - or sometimes because of this lack. Consciousness is what we lose when we fall into a dreamless sleep or undergo a total anaesthetic.

The Indefinability of Consciousness

The reason for starting with examples rather than definitions is that no objective, scientific explanation seems able to capture the essence of consciousness.

For example, suppose we try to define consciousness in terms of some characteristic psychological role that all conscious states play - in influencing decisions, perhaps, or in conveying information about our surroundings.

Or we might try to pick out conscious states directly in physical terms, as involving the presence of certain kinds of chemicals in the brain, say.

Any such attempted objective definition seems to leave out the essential ingredient. Such definitions fail to explain why conscious states feel a certain way.

Couldn't we in principle build a robot which satisfied any such scientific definition, but which had no real feelings?
Imaging a computer-brained robot whose internal states register "information" about the world and influence the robot's "decisions". Such design specifications alone don't seem to guarantee that the robot will have any real feelings.

The lights may be on, but is anyone at home? The same point applies even if we specify precise chemical and physical ingredients for making the robot.

Why should an android become conscious, just because it is made of one kind of material rather than another?

There is something ineffable about the felt nature of consciousness. We can point to this subjective element with the help of examples. But it seems to escape any attempt at objective definition.

Louis Armstrong (some say it was Fats Waller) was once asked to define jazz.

Man, if you gotta ask, you're never gonna know.

We can say the same about attempts to define consciousness. ...

**Question:** What are the problems with our Consciousness?
Genetics began by being ignored. Now it has the opposite problem. Mendel was dismissed because his work seemed unimportant, but today genes are everywhere and the public is fascinated by their promises and disturbed by their threats. Scientists have been quick to emphasize both. Not for nothing has it been said that the four letters of the genetic code have become H, Y, P and E.

The last decade's advances have been amazing. We have the complete sequence of the DNA letters of the 60,000 or so working genes needed to make a human being, and will soon have that of all the so-called "junk" DNA sequence (which may reveal that it does more than its name implies). 10,000 different diseases have an inherited component, and - in principle at least - we know the genes involved.

That raises both hopes and fears. For diseases controlled by single genes, such as sickle-cell anaemia or cystic fibrosis, it has become easier to identify both carriers and foetuses at risk. Because any gene can be damaged in many ways - for example, there are more than 1,000 known mutations for cystic fibrosis - the tests are not straightforward, and often the best that will be possible is to tell people that they are carriers, rather than to reassure them that they are not. The decisions as to whether to become pregnant or to continue with a pregnancy will, however, become somewhat easier as the tests become less ambiguous.

Tests are commercially available for genes predisposing to cystic fibrosis and breast cancer; and the development of DNA "chips" that can screen many genes at once means that more will soon be on sale. Medicine will have to deal more and more with those who have - rightly or wrongly - diagnosed themselves as at risk.

Most people, we now realize, die of a genetic disease, or at least of a disease with a genetic component. For some, it will become possible to tell them of their plight - but why should we want to do so? Sometimes, the information is helpful. Those who inherit a disposition towards certain forms of colon cancer, for example, can be helped by surgery long before the disease appears. For other illnesses, people at high risk can be warned to avoid an environment dangerous to them. Smoking is dangerous, but a few smokers get away with it. However, anyone who carries a changed form of an enzyme involved in clearing mucus from the lungs will certainly drown in their own spit if they smoke - and that might be enough to persuade them not to. However, knowledge can be dangerous, particularly when health insurance gets involved.
The most successful kind of medicine has always been prevention rather than cure. Genetics is no different, and the hope of replacing damaged DNA by gene therapy is still around the corner, where it has been for the past ten years. Genetic surgery - the ability to snip out pieces of DNA and move them to new places - has done remarkable things, but so far has done little to cure disease.

It might, though, help prevent the world's population from starving, at least according to enthusiasts for genetically modified (GM) foods. They may be right. It has proved remarkably easy to move plant genes around. Already there are crops that have been altered to make them resistant to parasites, or to artificial weedkillers (which means that the fields can be sprayed, leaving the crop unharmed). Commercial optimism has, in Europe if not the United States, been matched by public concerns about health risks. Why people are worried by the remote risk that GM foods might be dangerous to eat when they are happy to eat cheeseburgers that definitely are, mystifies scientists, but science is less important than what consumers are willing to accept. Unless attitudes change, the hope of putting genes for, say, essential nutrients into Third World crops will probably not be fulfilled.

If interfering with plants alarms society, to do the same with animals outrages a vocal part of it. We still know rather little about how a fertilized egg turns into an adult, with hundreds of different kinds of tissue, each bearing exactly the same genetic message but with jobs as different as brain cells and bone. Although it has long been possible to grow adult plants and even frogs from single cells, the notion that it might be possible to do so with mammals seemed a fantasy - until the birth of Dolly the sheep in 1997. Then, with the simple trick of inserting the nucleus from an adult cell into an emptied egg and allowing it to develop inside a foster-mother, a sheep was made without sex: it was cloned. Cloned sheep or cows might be important in farming, and might be used to make multiple copies of animals with inserted human genes for proteins such as growth hormone (which are already used in "pharming", the production of valuable drugs in milk). The publicity that followed Dolly led to immediate condemnation of the idea of human cloning, often without much thought as to quite why it should be so horrific. After all, we are used to identical twins (who are clones of each other), so why should an artificial version cause such horror? In the end, again, public opinion moulds what science can do, and the prospect of cloning a human being seems remote.

And why might anyone want to do it? Claims of an army of identical Saddam Husseins verge on the silly, and others of replicating a loved child who died young also seem unlikely. However, the technique has great promise in medicine. Cells of the very early embryo (stem cells, as they are called) have the potential to divide into a variety of tissues, and can be grown - cloned - in the laboratory, or even manipulated with foreign genes. Perhaps they could make new skin or blood cells, or, in time, even whole organs. Because this involves the use of very early embryos, made perhaps by artificial fertilization in the laboratory and not needed for implantation into a mother, it has become mixed up with the
abortion debate. In the United States, the "Pro-Life" lobby has succeeded in denying funds from government sources for such work.

Genetics is always mixed up with politics. It has been used both to blame and to excuse human behaviour. The claim (in the end not confirmed) of a "gay gene" led to two distinct responses among the homosexual community. Some feared that the gene would be used to stigmatize them, but most welcomed the idea that their behaviour might be coded into DNA, as it meant that they could not be accused of corrupting those not already "at risk". Such opposing views apply just as much to the supposed genes that predispose to crime - are they evidence that the criminal cannot be reformed and must be locked away for ever, or should they be used in mitigation to argue that he was not acting according to his own free will?

Science has no answer to such questions, and in the end the most surprising result of the new genetics may be how little it tells us about ourselves.

**Question:**
Give merits and demerits of cloning.
Manufactured products are made from atoms. The properties of those products depend on how those atoms are arranged. If we rearrange the atoms in coal we can make diamond. If we rearrange the atoms in sand (and add a few other trace elements) we can make computer chips. If we rearrange the atoms in dirt, water and air we can make potatoes.

Today’s manufacturing methods are very crude at the molecular level. Casting, grinding, milling and even lithography move atoms in great thundering statistical herds. It's like trying to make things out of LEGO blocks with boxing gloves on your hands. Yes, you can push the LEGO blocks into great heaps and pile them up, but you can't really snap them together the way you'd like.

In the future, nanotechnology will let us take off the boxing gloves. We'll be able to snap together the fundamental building blocks of nature easily, inexpensively and in almost any arrangement that we desire. This will be essential if we are to continue the revolution in computer hardware beyond about the next decade, and will also let us fabricate an entire new generation of products that are cleaner, stronger, lighter, and more precise.

It's worth pointing out that the word "nanotechnology" has become very popular and is used to describe many types of research where the characteristic dimensions are less than about 1,000 nanometers. For example, continued improvements in lithography have resulted in line widths that are less than one micron: this work is often called "nanotechnology." Sub-micron lithography is clearly very valuable (ask anyone who uses a computer!) but it is equally clear that lithography will not let us build semiconductor devices in which individual dopant atoms are located at specific lattice sites. Many of the exponentially improving trends in computer hardware capability have remained steady for the last 50 years. There is fairly widespread confidence that these trends are likely to continue for at least another ten years, but then lithography starts to reach its fundamental limits.

If we are to continue these trends we will have to develop a new "post-lithographic" manufacturing technology which will let us inexpensively build computer systems with mole quantities of logic elements that are molecular in both size and precision and are interconnected in complex and highly idiosyncratic patterns. Nanotechnology will let us do this.

When it's unclear from the context whether we're using the specific definition of "nanotechnology" (given here) or the broader and more inclusive definition (often used in the literature), we'll use the terms "molecular
nanotechnology" or "molecular manufacturing." Whatever we call it, it should let us:

- Get essentially every atom in the right place.
- Make almost any structure consistent with the laws of physics and chemistry that we can specify in atomic detail.
- Have manufacturing costs not greatly exceeding the cost of the required raw materials and energy.

There are two more concepts commonly associated with nanotechnology:

- Positional assembly.
- Self replication.

Clearly, we would be happy with any method that simultaneously achieved the first three objectives. However, this seems difficult without using some form of positional assembly (to get the right molecular parts in the right places) and some form of self replication (to keep the costs down).

The need for positional assembly implies an interest in molecular robotics, e.g., robotic devices that are molecular both in their size and precision. These molecular scale positional devices are likely to resemble very small versions of their everyday macroscopic counterparts. Positional assembly is frequently used in normal macroscopic manufacturing today, and provides tremendous advantages. Imagine trying to build a bicycle with both hands tied behind your back! The idea of manipulating and positioning individual atoms and molecules is still new and takes some getting used to. However, as Feynman said in a classic talk in 1959: "The principles of physics, as far as I can see, do not speak against the possibility of maneuvering things atom by atom." We need to apply at the molecular scale the concept that has demonstrated its effectiveness at the macroscopic scale: making parts go where we want by putting them where we want!

The requirement for low cost creates an interest in self replicating manufacturing systems, studied by von Neumann in the 1940's. These systems are able both to make copies of themselves and to manufacture useful products. If we can design and build one such system the manufacturing costs for more such systems and the products they make (assuming they can make copies of themselves in some reasonably inexpensive environment) will be very low.

**Questions:**
What is a nanotechnology?
What are the spheres of its application?
Newton's Mechanics
The theory of motion presented by Sir Isaac Newton in his great Principia (1686). It consists of a set of mathematical laws describing the rigidly deterministic motion of objects under the action of forces against the backdrop of an absolute space and absolute time. Newtonian mechanics governed the way in which scientists described the physical world for more than two centuries, until it was overthrown by experimental and theoretical developments in the early part of the 20th Century.

Quantum Theory
Quantum theory describes the behaviour of matter on very small scales. The quantum world essentially comprises two distinct notions. One of these is that matter and energy are not smoothly distributed but are to be found in discrete packets called quanta. The other is that the behaviour of these quanta is not predictable as in Newton's theory, but that only probabilities can be calculated.

The Big Bang
The Big Bang is a term, originally coined by Sir Fred Hoyle, that describes the standard picture of the cosmos and how it evolves. Currently expanding and cooling, the universe was hotter and denser in the past. Clues to its high-energy phase can be found in its expansion, in the relic radiation that pervades all space, and in the trace quantities of light atoms cooked in the primordial nuclear furnace. The early stages of the Big Bang are used by particle cosmologists to study the character of the fundamental forces of nature. The Big Bang model breaks down at the very beginning of space and time because of the existence of a singularity. It is therefore seriously incomplete, and will remain so unless and until a quantum theory of gravity has been worked out.

Black Holes
Black holes are regions of space-time where the effect of gravity is so strong that light cannot escape. Black holes are thought to exist in nature, but though the evidence for them is compelling, it remains circumstantial. For theorists, black holes provide natural test cases in which to try to explore the consequences of fitting Einstein's general theory of relativity together with the principles of quantum mechanics. Hawking himself showed that quantum effects can allow black holes to radiate, so that they are not entirely black.

Relativity
Albert Einstein developed the theory of relativity in a series of monumental papers in the early part of the 20th century, beginning with the publication of the
special theory of relativity in 1905 and culminating in the general theory of 1915. Relativity theory is a theory of space and time. It deprived physics of the absolute meaning of these concepts that was embedded in Newtonian mechanics. Dealing not with space and time separately, but with a hybrid concept called space-time (which can be curved and warped), relativity replaced Newton's law of gravity with a theory of how space can be distorted by the presence of mass.

**Singularities**
A singularity is a point or region of space-time where the mathematical equations of a theory break down because some quantity becomes infinite. The centre of a black hole is an example of such a singularity in the general theory of relativity, as is the origin of the universe in the Big Bang model. Penrose and Hawking have proved a number of theorems about the nature and occurrence of these singularities. Their existence in Einstein's theory suggests that general relativity may be incomplete. A quantum theory of gravity is required to describe the properties of matter at the enormous densities that pertain at the Big Bang or in a black hole.

**Unified Theories**
As physics has grown through the 20th century, it has brought more and more disparate phenomena within the scope of unified theories. The first major step in this programme was the unification of the theories of electricity and magnetism by James Clerk Maxwell, to produce a theory of electromagnetism. Theories now exist in which electromagnetism and the nuclear forces can be described in terms of a single set of mathematical formulae. Physicists would like to include the one force missing from this treatment so far - gravity - but this force has so far eluded attempts to include it. If and when gravity is unified, a 'Theory of Everything' would be the result.

**Quantum Gravity**
The 'missing link' in the chain of reasoning leading to a Theory of Everything is a mathematical description that combines the general theory of relativity with the ideas of quantum mechanics. Although much effort has been expended in the search for such a theory, formidable mathematical difficulties have defeated many attempts. Only in a few special cases have gravity and quantum theory been combined in an intelligible way.

**Question:**
What are key concepts of our university? What is their significance for the mankind?
Salton Inc., a leading marketer and distributor of branded, high-quality small appliances, today introduced its BeyondConnected Home product line, a group of networked home products designed to make life simpler, more convenient and fun. Primarily focused in the kitchen, Beyond Connected Products - the Beyond Icebox CounterTop, Beyond Microwave, Beyond Bread Maker, Beyond Coffee Maker, and Beyond Home Hub - will be available at retailers in the second quarter of this year. The 2004 Beyond ICEBOX FlipScreen is available now through 275 dealers nationwide.

"People today face increasingly demanding schedules and these new products are designed with that in mind," said Bob Lamson, managing director of Beyond. "They keep up with the pace of life so families can enjoy those few precious moments they get without worry."

In a connected home, networking creates communication between appliances, electronics, security and HVAC systems so the home instinctively knows what needs to be done and when to do it. Salton's initial focus with the Beyond line is connectivity in the most popular room of the house - the kitchen. While excellent everyday products on their own, Beyond products really come alive when networked together, sharing vital information and delivering the convenience of a truly connected home.

A new version of Beyond's flagship kitchen entertainment centers, the ICEBOX CounterTop, is designed for the counter rather than mounting under kitchen cabinetry. And for those who prefer overseeing their Beyond products from the comfort of their bedroom, the Home Hub provides that freedom. Both the new ICEBOX CounterTop and the Home Hub can be used as command centers for Beyond appliances, each of which communicates wirelessly with the other Beyond products. In the near future they will communicate with products of other manufacturers as well.

With broadband Internet access, television, a DVD and CD player, FM radio and home video monitoring capabilities, the Microsoft CE .NET based ICEBOX - both the new CounterTop and 2004 FlipScreen models - brings information, communication and entertainment to busy families, making life in the kitchen more convenient and exciting. The washable keyboard and remote means even spills can't stop the fun.
The Beyond Microwave cooks perfectly and evenly every time with the simple swipe of the barcode on a package of food. It comes programmed with 4,000 barcode settings in memory and updates itself with thousands more when networked with the Home Hub or ICEBOX CounterTop. Users can even add their own UPCs and program cooking times so favorite meals are heated to perfection time and time again.

Perfect, no fuss baking is easier than ever with the Beyond Bread Maker. The Bread Maker is preprogrammed with hundreds of UPC codes from bread and cake mixes so flawless baking is as simple as a scan and a beep. New UPCs are automatically added when networked and are easily programmed so there's no product that won't turn out fresh and ready to eat when you are.

The Beyond Coffee Maker conforms to busy schedules with flexible seven-day-a-week programming. 6 a.m. Monday, 7:30 a.m. Friday, 10:00 a.m. Saturday: each day of the week can be programmed with unique brew and shut-off times so coffee is ready right when the user wakes up, or as they head out the door. And if someone forgets to add water for brewing the next day, their Home Hub or CounterTop ICEBOX will remind them.

Besides being a control center for the Connected Home, the Beyond Home Hub doubles as a high-quality clock radio and CD player that's perfect for the bedroom. Leveraging Microsoft Windows CE .NET technology, the Home Hub delivers personalized news, weather, stocks, and more - all the critical information needed to start the day. It is the first tool that connects the bedroom to the rest of the home, adding convenience and control without having to run around the house.

"Contemporary families want life at home to be less complicated so they can focus on the people and things that really matter," added Lamson. "Beyond products are making that possible."

In addition to their practicality, Beyond Connected Home products are designed to complement today's contemporary kitchen. The connected appliances have a sleek stainless steel and black design and LCD screens with bright blue backlights.

**Question:** Do these innovations ease women’s work in the kitchen?
PrintDreams, the developer of the Random Movement Printing technology RMPT™, has announced the release of PrintBrush™, the world's smallest and only fully format-independent printer. PrintBrush™.

The printer has the length of a normal ballpoint pen while its width and height are more or less equivalent to the width of a modern mobile phone. The total volume is less than 300 c.c. and weighs around 350 grams. This first version of PrintBrush™ was designed to roughly fit into a shirt pocket while it still remains a clear potential for size and weight reduction in coming versions that will allow an even more comfortable fit.

Internet content, SMS, pictures and other information is downloaded to the PrintBrush™ from PDAs, mobile phones and laptop computers through a Bluetooth™ wireless link. Then, by following the RMPT™ principle, the device is hand operated by sweeping it across any type of print media, no matter its shape, size or thickness. The printout will then start to appear right behind the sweeps.

The device takes into account all thinkable parameters of the hand movement, including rotation and sudden changes of speed and acceleration. The result image on the printed media is always very much alike its digital counterpart.

Since the first prototype was showed last year at the CeBIT in Hannover, Germany, the RMPT™ technology has been developed fast onward. The great breakthrough came for few weeks ago when the company released its OptoNav sensor, which is an extremely accurate optical navigation sensor aimed to push further the RMPT™ technology into a greater level of print quality and performance.

"PrintDreams business model is to license RMPT™ technology to OEM (Original Equipment Manufacturer) that will develop, manufacture and distribute the final products under own brand name. We have during the last year established contacts with global manufacturers that recognize the potential in RMPT™ based printer products for various applications. The PrintBrush™ represents an essential step in our go to market plan by demonstrating performance and functionality that meets user expectation for a truly mobile printer. We are expecting the first RMPT™ based printer products to be launched on the market early 2005" says CEO PrintDreams Jan Erik Hedborg.

**Question:** Do these innovations really ease our work?
21st Century Technology: NASA portal on its way...

eTouch Systems Corp., and Speedera Networks, the emerging leader in global content delivery services, have announced that they have partnered to provide a comprehensive SpeedSuite edge delivery solution for NASA as part of a program to consolidate all 3,000 of the space agency's Web sites and make them accessible through a single portal. After the recent deployment of Speedera's services, the NASA portal experienced a three-fold improvement in performance. Web page download times are now between 0.8 and 1.0 seconds and NASA has broken into the top ten U.S. Government Web sites with the fastest average performance, as ranked by the Keynote Government Internet Performance Index (KG40).

The NASA Portal Project contract was awarded to eTouch, the prime contractor, which is also providing the content management system. eTouch partnered with Speedera to provide a broad suite of content delivery network (CDN) services. Other eTouch partners included in the project are Sprint Corp., which is providing Web site hosting services, and Critical Mass, Inc., which is responsible for providing the interface architecture and the NASA audience-tested user interface.

As part of this project, eTouch is using Speedera's SpeedSuite solution to provide NASA a comprehensive suite of CDN services that includes whole site delivery, streaming media, load balancing and advanced site monitoring. Key to this solution is the SpeedSuite Traffic Balancer service, which provides global load balancing between two origin sites housed in two Sprint datacenters. It intelligently routes client requests to the fastest available customer site, shifting traffic from an overloaded or failed site to overcome network congestion and site outages, thus maximizing performance and availability.

Planned since last summer, the NASA portal project originated with a mandate from NASA top officials to make the portal a key element in inspiring the next generation of explorers.

The NASA portal project is one of many in the growing initiative towards making government and its agencies more accessible to the public. In NASA's case, the public benefits through simpler, faster and more reliable access to the vast breadth of information available through NASA's sites, which can amount to millions of documents. To ensure that the public will always be able to access this content, the contract requires 99.995% availability.

"Consolidating Web site delivery is more efficient using Speedera's global content delivery network, and provides an optimal architecture to meet high traffic
demands from planned and unplanned events," said Aniruddha Gadre, President of eTouch. "NASA needed a complete and elegant solution that streamlines both content management and content delivery."

"Agencies like NASA have realized this comprehensive solution for an integrated portal is needed for bringing order to the chaos of too many Web sites," said Ajit Gupta, CEO and president of Speedera Networks. "Also, by housing frequently requested content on multiple servers distributed worldwide, Speedera shortens the distance between Internet users and the data they seek in order to improve performance and reliability. By outsourcing the management of the site, the Federal Government can stretch budget dollars in this lean economy rather than spend money on building and maintaining an expensive Web site infrastructure."

"NASA is in the business of space exploration," Gupta continued. "Speedera is in the business of helping Internet explorers get to their destination fast and reliably."

**Question:** What are NASA’S plans?
Royal Philips Electronics have introduced the Mirror TV, a versatile 17-, 23- or 30-inch LCD display integrated into a mirror. The Mirror TV uses a unique polarized mirror technology, which transfers close to 100 percent of the light through the reflective surface. It is the first product created at the Philips HomeLab, the company's research incubator for future electronic products and technologies, to reach the commercial market. The Mirror TV, which was demonstrated for the media in New York and Europe today, is ideal for non-traditional viewing spaces when it is installed flush to the wall.

Philips decided to commercialize the product after testing a more sophisticated prototype with more than 200 consumers in its HomeLab research facility, a fully functioning two-bedroom home that doubles as a scientific laboratory. Philips HomeLab enables researchers to observe (with 34 hidden cameras and an observation area) how people interact with new devices. Consumers who used the Mirror TV prototype appreciated the ability to watch the news and traffic while also shaving or brushing their teeth.

Philips, the world's largest supplier of television display solutions for the hotel industry, initially plans to market the Mirror TV to hotels, but also sees a market for the product in customized home environments within the next few years.

"The Mirror TV is an important step forward for consumer technologies, and for Philips," said Dr. Gottfried Dutiné, CEO of Philips Consumer Electronics, "From a technology perspective, the Mirror TV craftily combines two important everyday functionalities; it's also an early example of the Philips vision of Ambient Intelligence in that the 'technology' is embedded and easy to use. Having been tested with 'real' people in the HomeLab, the Mirror TV also signifies Philips' ongoing commitment to understanding consumers-and providing products and devices that meet their needs."

Mirror TV enhances aesthetics and utilizes space. Philips Mirror TV provides the solution to the ever-shrinking spaces in hotels and retail environments. The design hides the electronics, giving spaces an architecturally refined display and enhancing the upscale ambiance that hotels and retail environments strive to provide guests. At up to 30 inches, the Mirror TV could be placed on the wall as a centerpiece.

The Mirror TV introduced today can provide a range of functions beyond TV programming. In a hotel, for example, it can be used for bill payment or pay-
per-view movies. It can also be used as a desktop/workstation application. Individuals can link their laptop or home PC to the Mirror TV with a special connector that enables the mirror to become an LCD monitor, providing a large display for presentations or surfing the web.

For home use, Philips is currently testing more advanced versions that could connect the user wirelessly to the mirror, providing everything from news to traffic reports and health data, such as blood pressure or weight. Or, the mirror could display a cartoon that encourages children to brush their teeth longer and more effectively. Company officials estimate that the home version may be available before 2005.

Philips has not yet announced pricing guidelines for the Mirror TV because at this early stage, each unit will be custom-built to meet the design specifications of the given space. Deliveries are expected to begin in the fourth quarter this year.

**About Philips HomeLab**

Philips HomeLab, in Eindhoven, the Netherlands, is an integral part of Philips' R&D process. Created one year ago to test its new technology prototypes in the most realistic possible way, HomeLab looks and feels like a regular home with modern furniture in every room, Van Gogh prints on the walls, and even a fully stocked kitchen. Temporary "residents" can stay at the facility for anywhere from four hours to two weeks, depending on the type of research being conducted. During their residence, individuals or families go about life as usual, while interacting with the new technologies Philips has installed in the facility.

The facility is essential in speeding up the time-to-market for technological innovation. HomeLab puts the consumer at the center of the product development cycle by evaluating how individuals interact with new technologies. Depending on their behavior, the researchers may decide to re-tool the prototype, scrap the concept or move ahead in the product's development.

Innovations from HomeLab are steps toward an Ambient Intelligence culture, which is how Philips envisions the future. Ambient Intelligence is defined as world in which electronics are sensitive to people's needs, personalized to their requirements, can anticipate their behavior and respond to their presence - signifying a real improvement in people's everyday lives.

**Question:** What are the functions of the Mirror TV?
21st Century Technology: The Gauntlet

The Commander Gauntlet™ is the latest wireless accessory to come from Network Anatomy, the Pleasanton, CA-based award-winning designer and manufacturer of advanced interoperable communication systems.

The one-size-fits-all gauntlet is a wireless system that contains a two-way radio, cellular and satellite technologies, a PC-based interactive monitor, an interlaced audio/video camera, integrated power systems and extreme lighting to provide its user with "out-front" communications access without restricting hand movements or use of fingers.

The waterproof gauntlet is ruggedized to withstand bumps and impacts, measures 15 inches in length and is pliable enough to provide unrestricted hand and wrist movement. The material used in constructing the gauntlet was chosen to provide a snug fit on any adult forearm for extended periods of time without constricting blood flow.

Doug Linman, CEO and chief designer of the high-tech device says that the inspiration for the lightweight accessory comes directly from the field.

"These wireless devices were designed to work as an extension to our CommanderPacks™ in any harsh environment where the user has to be on the move or has to use both hands, such as in a Search and Rescue operation, in fire zones or any emergency situation. The user can make or receive a call using radio, cellular or satellite frequencies, light the area and transmit video images, access incident forms from their on-board PC - even e-mail documents from their forearm - without having to stop or open their CommanderPack."

The CommanderPack is the first lightweight, self-contained communications system designed for deployment anywhere on earth at a moment's notice. The 11 lb. system is worn like a backpack and comes with a helmet nest featuring a micro video camera, microphone and extreme lighting. The communications and information management gear can be accessed by opening the waterproof pack or by wireless controls from the optional gauntlet.

Question:

1) What is the Gauntlet?
2) Where is it used?
Globalization and Science: A Speeded-Up Virtuous Cycle

Ramamurti Shankar

*YaleGlobal*, 28 March 2003

Globalization, meaning the economic, social and technological revolution of recent decades, has shrunk the world. It is not surprising that those who have helped make the world a smaller place have also benefited enormously. For scientists all over the world, the internet and electronic publication revolution have proved a boon - expanding the areas of research and accelerating the pace of knowledge exchange.

Scientists have been one of the early beneficiaries not only because of the technological advantage they have but because of the universality of the problems they address and the language they speak - mathematics.

Let us begin with the following fundamental fact: the laws of science are the same all over the world. For subjects which deal with inanimate things, like Physics, one can go further and say the laws are the same all over the visible universe. These laws are best expressed in the universal language of mathematics. Consequently, physicists all over the world (or the universe), thinking in different mother tongues and working under a variety of conditions, will discover the same laws. For example the Raman Effect, which describes the change in frequency of light as it is scattered by a medium, was discovered in a makeshift laboratory in Calcutta but would have been the same had it been found in Pasadena (and it would have earned the same Nobel Prize). It is also believed that the laws of nature are not only the same everywhere, but also unchanging over time. Thus the globalization of science, in this sense, started when the universe began with the Big Bang about 14 billion years ago.

With Nature playing the role of ultimate arbiter, one may naively think that it is a level playing field for all practitioners. Indeed, the discovery and recognition of the Raman Effect seems to corroborate this. Unfortunately, however, in reality there are many inequities that place scientists in some locales at a distinct disadvantage. These inequities are related to the exponential growth of scientific activity arising from the following inalienable dictum: the greater the sphere of knowledge, the larger its contact with the area of darkness. Thus each new answer brings with it more questions, and the quest for truth grows in its scope, breadth, and pace. This basic fact led to a severe communication problem. Thanks to the revolutionary effects of the internet, however, Physics and other disciplines have a powerful new tool for daily information exchange.

To appreciate the innovation, one must understand how physicists normally operate. Typically someone does an experiment that yields an unexpected result. For example, in the case of superconductivity one finds that as the wire is cooled down, the electrical resistance drops gradually and then suddenly plunges to zero, meaning a current can flow without a voltage to drive it! This result is then sent to a journal, refereed by peers and eventually published. It is then reproduced in other laboratories. Meanwhile, theories are espoused to explain what is going on in the
wire. Each conjecture is sent to some journal, refereed, and then published. Sometimes the answer to our research questions come in one fell swoop from one source, and in other cases (e.g., superconductivity) they take several decades to fall into place, and come from multiple authors dispersed the world over.

It is in this process of interactive progress that scientists in the Third World began to feel at a disadvantage as the pace of research picked up, starting in the 1960's. First, they got copies of the journals months after they were published. If they had a clever response to what was published, they could send it in to some journal. The refereeing took some more months since it was done by regular mail. Eventually, the journal carried the paper. But the author had to pray that his colleagues in the West had not had the same idea in the intervening months. Matters became worse a few decades ago, when the custom of sending out preprints began in the West. Preprints were non-refereed previews of the works circulated by the authors to a few chosen colleagues. If you were not in the club, you were not privy to this information and had to wait for it to appear in the journals, while those in the club had access to possibly valuable data or theoretical ideas. Even if you were in the club, but lived in the Third World, it took some time for you to get the preprints by sea mail. If you sent your own preprints (on what looked like recycled toilet paper) they just did not carry the same authority as the glossy and beautifully typeset or laser-printed ones from the West.

When the internet came along, all this was truly revolutionized. In 1991 Paul Ginsparg, then at the Los Alamos National Lab set up a website (called xxx.lanl.gov) where authors could upload their papers. Here is how the system works: If you want to publish a result in his archives, you create a source file, usually in a language called TeX and send it to his machine electronically. The next morning readers all over the world will see the abstract of your paper, along with abstracts of all other papers sent in the last 24 hours. If their interest is aroused, they can click another button that will show them the whole paper. This will not be a TeX file, which is an amalgam of text and commands, but the finished product (where what you see is what you get) thanks to the TeX program devised by another genius, Donald Knuth. The reader can either move on, or print it out and file it. The author is free to submit the article to a regular journal, and when the paper is published there, indicate so on Ginsparg's machine. This has been going on for nearly ten years now. Ginsparg wrote the entire program on his own, without funding from anyone, in his spare time. It was nothing short of visionary to think of it, and nothing short of brilliant to execute it and set up machinery that never has crashed as far as I know. By using TeX, (whose files contain ASCII characters only) as the medium of communication, he made sure people with any kind of hardware, anywhere in the world, could participate.

Ginsparg's system is a great equalizer. Consider some physicist from the Third World. He no longer has to wait four to six months before he gets the copy of the new papers. If he has a clever response, he does not have to wait another four to six months (possibly longer, if referees had questions) to get his response published. This debilitating delay of nearly a year (which can be a kiss of death in today's fast-paced environment) is completely wiped out in the electronic version.
The "inner circle" of people on the preprint list is no more. As for the appearance of the paper, the situation is completely reversed: the paper from the West is printed by the Third World user on Third World paper with a Third World printer and vice versa! Some of these considerations also apply to physicists in lesser known universities in the West. In the electronic archive, as seen on the computer screen, all articles look the same; all are treated the same way and all take the same time to see the light of day, i.e., less than a day. There was a time when you had to choose between paying huge page charges and having your paper face further delays. Publishing on the network costs nothing.

The inventor of this system of scholarly interchange, Paul Ginsparg, was honored with a MacArthur Prize in 2001. The revolution he initiated in a corner of particle physics has since spread to many sister disciplines. If scientific discoveries speeded up the process of globalization in the 20th century, in a virtuous cycle the globalization of communication has accelerated the process of scientific discoveries.

Ramamurti Shankar is Chairman of the Department of Physics at Yale University.

Question:

Only a small proportion of young people in European countries become pure scientists; a larger proportion undertake employment associated with technology. What are your arguments for or against this situation? Use the information of the following text for illustrations.

**Essential principles of science and technology**

Science is defined as an attempt to provide systematic, justifiable explanations of natural phenomena. The discussion showed that this attempt used a method based upon experiment, observation and deduction. The experiment is designed so that it is repeatable and free of cultural or subjective bias. An account of the experimental design and the results are published so that others can test their integrity and perhaps build, upon the results to further increase scientific knowledge. Science attempts to be general and systematic.

Ancient civilizations practised healing, star watching and engineering. The European scientific revolution between about 1650 and 1800 replaced speculative philosophy with a new combination of observation, experimentation and rationality. Indeed, science, especially physics, had been included in the term natural philosophy until this revolution.

Modern science is divided into separate areas of study such as astronomy, biology, chemistry, geology, physics and mathematics. These may be regrouped under the headings life sciences and earth sciences.

The life sciences, a term that covers the living world as a whole, would include biology, zoology, botany and more recent specializations like biophysics, ecology and sociobiology.
Earth sciences, a term that covers the study of the planet Earth as a whole, would include geology, geophysics, geochemistry, meteorology, oceanography and palaeonthology. The life sciences and the earth sciences are collectively referred to as the natural sciences.

Physical sciences is a term that covers mathematics, chemistry and physics.

The application of science for practical purposes is known as technology - the use of tools, power and materials for harnessing nature for the benefit of mankind. Ensuring that the three fundamental needs of food, shelter and clothing are met requires fairly complex technological systems.

The distinction's made between high technology and low technology. The first is capital intensive, highly automated and specialized - modern industrialized societies depend upon it. The second is labour intensive and non-specialized and is a characteristic of some developing countries. Intermediate technology is a term used to describe attempts to adapt scientifically advanced inventions to less developed areas by using local materials and methods of manufacture (e.g. constructing a pipeline out of hollowed bamboo to supply a village with water.)

It is possible to take a grander view of technology as a carrier of culture as well as being responsible for our increasing material well-being. You might consider the moral problem of how equitably technology is distributed. – Biotechnology. This is the industrial use of living organisms to manufacture food, drugs or other products. It is going to become increasingly important as a means of solving some of our more pressing problems (e.g. renewable organic matter will be used for manufacturing industry - plastics, fabrics - chemical production and some fuels). Countries like Brazil already grow maize and sugar crops to convert to alcohol to fuel road vehicles. The brewing and baking industries have used the yeast microorganism for fermentation and the dairy industry has used a range of bacteria and fungi to convert milk into cheeses and yoghurts. Enzymes, whether extracted from cells or produced artificially are central to many applications and recent advances in genetic engineering include single celled organisms with modified DNA (see later) used to produce insulin, human growth hormone and other drugs.

Computer technology. This has revolutionized communications, as did the printing press before it and transport has been made easier by a series of inventions. The inventions of increasingly reliable scientific instruments for measurement, particularly of time and position, have contributed to advances in many scientific fields. Any one of these italicized areas is worthy of being examined in more depth than there is space for in this paper.

The scientific method indicates the way knowledge builds up and is shared and ratified by publication of experimental results. Many inventions or discoveries are the fruits of generations of experimental investigations carried out by many people preparing the ground for those that followed. Whilst luck can be an element, discoverers are rarely ignorant of either the circumstances or the consequences of their invention or discovery.

Essay Question:
Write 150-200 words about your understanding of the science objective.
Essay Sample:

'Science', says Lord Acton 'is the combination of a great mass of facts into the unity of a generalization, a principle, or a law, which will enable us to predict with certainly the recurrence of like events under given conditions'. Science always gropes after laws, and always seeks to predict, is by no means deprived of its name and character if it fails to attain these goals. The name and character of science are not denied to meteorology because generalizations concerning the climate (particularly in England) are impossible, because the laws according to which sunshine and storm succeed one another are as yet undiscovered, and because the weather forecasts of the experts are apt to be more incorrect the more precise they try to be. In spite of all this, meteorology is admitted to be a science. For 'science' can quite accurately and adequately be defined as 'systematized, organized, formulated knowledge'. It is enough to give the status of a science to a subject of study that it should be pursued with single-mindedness towards the ascertainment of truth; that it should be marked by a diligent search for all relevant facts; that it should be built up with a critical judgment from which all presuppositions and prejudices have been eliminated; and that it should be, as far as its content permits, reduced to the simplicities of uniformities, categories and laws. There is no justification on these counts for excluding any subject whatsoever from the rank of the sciences. And if some subjects have to be excluded, their exclusion will be due solely to the fact that, when exposed to those tests of a science which have been enumerated - search for truth, accumulation of fact, critical judgment, elimination of prejudice - their content vanishes away.

Questions for discussion:

1. Terrorism is number one danger in the world.

2. Globalization is an inevitable process of modern times.

3. Healthy mode of life.

4. Genetically modified food stuffs; its influence on our health.

5. Role and place of Russia in the modern world.

6. Environmental protection: is it our right or duty?

7. What is more humane: a capital punishment or life-long imprisonment?

8. Domination of American pop culture over world young generation.


10. What is your attitude to euthanasia?
10. Drug abuse. Yes to life, no to drugs.

11. Are aggression, violence, vandalism provoked with books and mass media?

12. Can we say about “computer or internet addiction” today? Weight up pros. & cons.

13. Epidemic of AIDS: is it a myth or reality?

Topics for Discussion:

1. Administrative and research institutions under the Academy of Sciences.
2. Aims of research centres.
3. Academic titles and degrees.
4. Prizes for outstanding discoveries.
5. American and British academic degrees.
6. The organization of research in America and Great Britain.
7. Recent developments in your field of science.
8. Your contribution to your branch of science by your thesis.
10. The subject of your thesis.
Possible Exam Questions

thesis? 64. In what journals your paper will be published? 65. When the journal with your paper will come out? 66. How many reprints of the paper are you going to get? 67. Has your research been successful? 68. Have you ever thought of changing your occupation? 69. Have you worked much lately? 70. Have written many scientific papers? 71. Have made any progress in English? 72. Have you ever been to any English speaking countries? 73. Have you talked to native English speakers? 74. Have you read many books in English? 75. Have you had any practice in English lately? 76. Have you ever been on leave of absence at any lab abroad? 77. Have you had any difficulties in your work lately? 78. Have you resolved all of your difficulties? 79. Have you ever met famous scientists? 80. Have you ever attended international conferences? 81. Have you made any discovery in science yet? 82. Has your supervisor been helpful in your research? 83. Has your supervisor seen your recent results yet? 84. Has he often discussed your work with you? 85. What scientific conferences have been held in your field recently? 86. What results have been obtained from recent studies? 87. What new studies have been undertaking by you recently? 88. What research is being carried out by you now? 89. Is similar work being done anywhere else? 90. Are any changes being made in the organization of research work recently? 91. Are computers being widely used in research now? 92. How long you might work on the present subject? 93. What preliminary conclusions can be drawn from your work? 94. What results are to be expected from your work? 95. How long might it take you to complete the work? 96. Have you to work day and night at your thesis? 97. What part of work is to be done this year? 98. What improvements should be introduced in the research process? 99. What is necessary to make your work more effective? 100. What should be done to bring your work to conclusion? 101. What should be done to encourage further research in your field? 102. What is necessary to broaden and deepen one’s knowledge of the subject? 103. What should be done to further develop international contacts among scientists? 104. Why do scientists exchange preprints of their papers? 105. Why scientific conferences be held regularly? 106. Why should scientists exchange views and information? 107. Why are abstracts of papers published prior to a conference? 108. What results do you expect when you complete your work? 109. What will you do when your work is successfully completed? 110. Where do expect to apply your knowledge of English when you complete this course? 111. To what journal will you send your paper when you finish writing it? 112. What questions will you discuss with your foreign colleagues when you see them? 113. When will you consider your work competed? 114. When are you going to write another paper? 115. When do expect conclusive results? 116. Will you write a paper if you get new results? 117. Will you give up your research if it is not successful? 118. Will you be satisfied if you complete the work successfully? 119. To what journal will you send your paper if you write one? 120. What will you do if your results prove invalid? 121. What will you do if you encounter great difficulties? 122. What will you do if someone asks you to give a popular lecture on your subject? 123. What will you do if someone asks you to write a
popular scientific article? 124. What is the motive force of progress in science? 125. What is the “correspondence principle” and how it works in your field of research? 126. Can science do without theories and hypotheses? 127. Give a definition of science? 128. What does science study and how does it differ from technology? 129. What are the necessary components of scientific research? 130. What are the aims and means of science? 131. What was the role of an individual in the progress of science in the past and what is it at present? 132. How is an individual’s research correlated with group studies? 133. What is scientific intuition and how much depends on “good luck”? Give a few examples of scientific discoveries and tell how they were made. 134. What was man’s attitude to nature throughout his history? What is now and why? 135. What are the effects of technical progress on nature and human life? 136. What are the dangers of uncontrolled technical development? 137. What measures could be taken to solve certain problems mankind is faced with, for instance, air and water pollution? Illustrate your accounts with concrete examples. 138. What would you do to acquire a deeper and broader knowledge in your field? 139. What would you do to get comprehensive knowledge in adjacent areas? 140. What would you suggest for improving the state of research in your field? 141. What would you suggest for upgrading research in your field? 142. Would you accept a failure? 143. Would you take the risk of criticizing an authority? 144. Would you do any popular writing now? 145. Would you give up your scientific career now? 146. Do you think you could make a discovery in science? 147. Could you describe the state of research in your field? 148. Could you give a review of current literature on your subject? 149. Would you be able to solve your research problem in the near future? 150. What recent discoveries could you name in your area of research? 151. Which of the recent works you would consider outstanding? 152. Could scientists solve their problems better if they studied them jointly? 153. Scientific information is accumulating so rapidly. I wonder what scientists are going to do about it in some years from now. 154. In ancient times there was just one science, philosophy; now there are scores of them. I wonder what science will look like in one hundred years from now. 155. There are no sharp boundaries between sciences nowadays. I wonder if it will eventually come to one big science again. 156. Are there any limits to human inventiveness and resourcefulness? 157. What qualities should a researcher possess today and why? 158. Is collaboration important in research and how is it realised? 159. What are the ways of exchanging scientific information?
<table>
<thead>
<tr>
<th>Latin Term</th>
<th>English Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ab initio</td>
<td>at first, from the beginning</td>
</tr>
<tr>
<td>A.D. (Anno Domini)</td>
<td>of our Era</td>
</tr>
<tr>
<td>addenda</td>
<td>an addition, appendix</td>
</tr>
<tr>
<td>ad hoc</td>
<td>to the point</td>
</tr>
<tr>
<td>ad infinitum</td>
<td>for ever, indefinitely</td>
</tr>
<tr>
<td>ad interim</td>
<td>meanwhile, in the meantime</td>
</tr>
<tr>
<td>a.m. (ante meridiem)</td>
<td>in the morning</td>
</tr>
<tr>
<td>a posteriori</td>
<td>from the experience, empirically</td>
</tr>
<tr>
<td>a priori</td>
<td>in advance, before the experiment</td>
</tr>
<tr>
<td>C. (circa)</td>
<td>nearly, about</td>
</tr>
<tr>
<td>e.g. (exampli gratia)</td>
<td>for example</td>
</tr>
<tr>
<td>et al. (et alia)</td>
<td>and others</td>
</tr>
<tr>
<td>etc. (et cetera)</td>
<td>and so on</td>
</tr>
<tr>
<td>et seq. (et sequentia)</td>
<td>and the subsequent</td>
</tr>
<tr>
<td>exterior</td>
<td>outward aspect, outside, outer</td>
</tr>
<tr>
<td>extra</td>
<td>additional</td>
</tr>
<tr>
<td>fauna</td>
<td>animals</td>
</tr>
<tr>
<td>flora</td>
<td>plants</td>
</tr>
<tr>
<td>habitat</td>
<td>place of living</td>
</tr>
<tr>
<td>id. (idem)</td>
<td>the same author, book, etc.</td>
</tr>
<tr>
<td>i.e. (id est)</td>
<td>that is</td>
</tr>
<tr>
<td>in ex</td>
<td>completely, fully</td>
</tr>
<tr>
<td>in parvo</td>
<td>a little</td>
</tr>
<tr>
<td>in re</td>
<td>concerning</td>
</tr>
<tr>
<td>in situ</td>
<td>in/on the place</td>
</tr>
<tr>
<td>int al (inter alia)</td>
<td>by the way</td>
</tr>
<tr>
<td>in toto</td>
<td>altogether</td>
</tr>
<tr>
<td>in vitro</td>
<td>in the tube</td>
</tr>
<tr>
<td>in vivo</td>
<td>under existing conditions</td>
</tr>
<tr>
<td>ipso facto</td>
<td>from the very fact</td>
</tr>
<tr>
<td>locus, loci</td>
<td>a location</td>
</tr>
<tr>
<td>modus operandi</td>
<td>a way of action</td>
</tr>
<tr>
<td>mutatis mutandis</td>
<td>with the necessary alterations</td>
</tr>
<tr>
<td>N.B. (nota bene)</td>
<td>Note!; Pay attention!</td>
</tr>
<tr>
<td>omnipotent</td>
<td>Possessing infinite power</td>
</tr>
<tr>
<td>omnipresent</td>
<td>being everywhere</td>
</tr>
<tr>
<td>par excellence</td>
<td>primarily, mainly, largely</td>
</tr>
<tr>
<td>p.m. (post meridiem)</td>
<td>in the afternoon</td>
</tr>
<tr>
<td>prima facie</td>
<td>at first sight</td>
</tr>
<tr>
<td>pro et con(trae)</td>
<td>for and against</td>
</tr>
<tr>
<td>pro forma</td>
<td>to observe the form</td>
</tr>
</tbody>
</table>
### Russian –English Vocabulary

<table>
<thead>
<tr>
<th>Russian</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>асурдный</td>
<td>absurd</td>
</tr>
<tr>
<td>а именно (при перечислении)</td>
<td>namely</td>
</tr>
<tr>
<td>автореферат</td>
<td>abstract</td>
</tr>
<tr>
<td>акцент (внимание)</td>
<td>emphasis</td>
</tr>
<tr>
<td>с акцентом/ударением на</td>
<td>with emphasis on</td>
</tr>
<tr>
<td>алфавит</td>
<td>alphabet</td>
</tr>
<tr>
<td>в алфавитном порядке</td>
<td>alphabetically</td>
</tr>
<tr>
<td>анализ</td>
<td>analysis</td>
</tr>
<tr>
<td>анализировать</td>
<td>analyse</td>
</tr>
<tr>
<td>аналогия</td>
<td>analogy</td>
</tr>
<tr>
<td>по аналогии</td>
<td>by analogy, similarly</td>
</tr>
<tr>
<td>а не (в противопоставлениях)</td>
<td>rather than</td>
</tr>
<tr>
<td>аттестат зрелости</td>
<td>test</td>
</tr>
<tr>
<td>аргумент</td>
<td>reasons, convictions (not disagreement)</td>
</tr>
<tr>
<td>в этом направлении</td>
<td>high school diploma, school-leaving certificate</td>
</tr>
<tr>
<td>важнейшей задачей</td>
<td>hopeless</td>
</tr>
<tr>
<td>в этих условиях</td>
<td>safety</td>
</tr>
<tr>
<td>важный</td>
<td>safe</td>
</tr>
<tr>
<td>безопасность</td>
<td>unmistakable</td>
</tr>
<tr>
<td>безопасный</td>
<td>no doubt</td>
</tr>
<tr>
<td>безошибочный</td>
<td>absolutely</td>
</tr>
<tr>
<td>без сомнении</td>
<td>fruitless</td>
</tr>
<tr>
<td>безусловно by</td>
<td>thanks for</td>
</tr>
<tr>
<td>бесплодный</td>
<td>thankful</td>
</tr>
<tr>
<td>благодарить за</td>
<td>favourable</td>
</tr>
<tr>
<td>благодаря за</td>
<td>brilliant</td>
</tr>
<tr>
<td>благоприятный</td>
<td>a sore spot; touchy subject</td>
</tr>
<tr>
<td>блестящий вариант</td>
<td>here or in this field</td>
</tr>
<tr>
<td>больное место, больной вопрос</td>
<td>the most important task</td>
</tr>
<tr>
<td>в этом направлении</td>
<td>in these conditions, therefore</td>
</tr>
<tr>
<td>важнейшей задачей</td>
<td>as a result, in these circumstances</td>
</tr>
<tr>
<td>важный</td>
<td>a vitally important/crucial, important</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latin Terms</th>
<th>English Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>sui generis</td>
<td>particular, special, unique</td>
</tr>
<tr>
<td>terra incognita</td>
<td>an unknown country, region</td>
</tr>
<tr>
<td>vice versa</td>
<td>on the contrary, the other way round</td>
</tr>
<tr>
<td>viz. (videlicet)</td>
<td>namely, that is</td>
</tr>
<tr>
<td>v.s. (versus)</td>
<td>against</td>
</tr>
</tbody>
</table>
важное значение мы придаём и реализации вариант вводить в заблуждение вдаваться в подробности ведущий величина вероятность вести (научную) работу вести (приводить) к весьма взаимодействие взаимодействовать взаимосвязь (взаимоотношение) взглянуть на вклад в апоптум вклад в включать в в конечном счете влияние влиять на вместо внедрять в практику внешний внутренний вовлечать в во всяком случае возникать возобновлять войти в практику (о методе) вообще вообще говоря во-первых восполнить пробел впечатляющий , привлекающий внимание, яркий, значительный вредный (о воздействии) всесторонний всесторонняя деятельность встретить поддержку со стороны встряхнуть вступление/введение выбор сделать выбор

We also deem/find/consider important the implementation variant, version mislend go into detail leading value probability do (research) work lead to quite, most interaction interact relationship look at contribution contribute to include in in the last analysis effect, influence affect, influence instead of introduce into practice external internal involve in in any case arise from, be due to, result from renew come into use generally, in general generally (speaking) first, firstly fill a gap impressive, striking, fascinating dramatic (achievements, colours, etc) harmful comprehensive comprehensive, varied meet with support from shake introduction choice make a choice
вывод
сделать вывод
приходить к выводу
выводить (о формуле)
выглядеть (казаться)
выдающийся
выдвигать (о гипотезе, идее)
выживать
вызывать
вызывать появление
вызываться (обусловливаться)

Г
гипотеза
gипотетичный
глава
главный
главным образом
gласить {о законе}
глубокий (об анализе)
график

Д
далеко идущий (о выводе)
дальнейший
dанные
dать ключ
dать толчок чему-либо
dвигаться
dвижущая сила
dвойной
dвойственный
dвуесмысленность
dвуесмысленный
dейственный (о методе)
dелать (об анализе, сравнении и т.д.)
dелать (о работе)
dелать отступление (в речи) от
dелать скидку на
dеловой {о связях}
dешевый
defect
<table>
<thead>
<tr>
<th>Русский</th>
<th>Английский</th>
</tr>
</thead>
<tbody>
<tr>
<td>дипломная работа</td>
<td>duration dissertation</td>
</tr>
<tr>
<td>длительность</td>
<td>long term</td>
</tr>
<tr>
<td>длительный</td>
<td>long term</td>
</tr>
<tr>
<td>добавление</td>
<td>addition</td>
</tr>
<tr>
<td>добавлять к</td>
<td>add to</td>
</tr>
<tr>
<td>довод</td>
<td>argument</td>
</tr>
<tr>
<td>доводить до конца</td>
<td>bring to conclusion</td>
</tr>
<tr>
<td>довольно (перед прилагательными)</td>
<td>rather, quite, sufficiently</td>
</tr>
<tr>
<td>доказательство</td>
<td>evidence</td>
</tr>
<tr>
<td>1. (свидетельство)</td>
<td>argument</td>
</tr>
<tr>
<td>2. (аргумент)</td>
<td>prove</td>
</tr>
<tr>
<td>доказывать</td>
<td>prove</td>
</tr>
<tr>
<td>дополнительный</td>
<td>additional</td>
</tr>
<tr>
<td>дополнять</td>
<td>supplement</td>
</tr>
<tr>
<td>допустимый</td>
<td>assume</td>
</tr>
<tr>
<td>допущение</td>
<td>permissible</td>
</tr>
<tr>
<td>достаточный</td>
<td>assumption</td>
</tr>
<tr>
<td>достигать/доходить до</td>
<td>sufficient</td>
</tr>
<tr>
<td>1. (увеличиваться)</td>
<td>be as high/large as</td>
</tr>
<tr>
<td>2. (уменьшаться)</td>
<td>be as low/small as</td>
</tr>
<tr>
<td>достижение/достижении</td>
<td>progress, achievements, advances</td>
</tr>
<tr>
<td>достичь успеха</td>
<td>make a progress</td>
</tr>
<tr>
<td>достоверность</td>
<td>validity</td>
</tr>
<tr>
<td>достоверный</td>
<td>valid</td>
</tr>
<tr>
<td>допускаемое предполагать</td>
<td>assume</td>
</tr>
<tr>
<td>допустимый предполагать</td>
<td>assume</td>
</tr>
<tr>
<td>допущение</td>
<td>permissible</td>
</tr>
<tr>
<td>допускать (предполагать)</td>
<td>assume</td>
</tr>
<tr>
<td>достаточный</td>
<td>assumption</td>
</tr>
<tr>
<td>достаточный</td>
<td>sufficient</td>
</tr>
<tr>
<td>доказательство</td>
<td>sufficient</td>
</tr>
<tr>
<td>доказывать</td>
<td>prove</td>
</tr>
<tr>
<td>дополнительный</td>
<td>additional</td>
</tr>
<tr>
<td>дополнительный</td>
<td>additional</td>
</tr>
<tr>
<td>дополняет</td>
<td>supplement</td>
</tr>
<tr>
<td>допустимый</td>
<td>assume</td>
</tr>
<tr>
<td>дополнительный предполагать</td>
<td>assume</td>
</tr>
<tr>
<td>допускать (предполагать)</td>
<td>assume</td>
</tr>
<tr>
<td>допустимый предполагать</td>
<td>assume</td>
</tr>
<tr>
<td>допущение</td>
<td>assumption</td>
</tr>
<tr>
<td>достаточный</td>
<td>sufficient</td>
</tr>
<tr>
<td>достижение/достижении</td>
<td>sufficient</td>
</tr>
<tr>
<td>достичь</td>
<td>progress</td>
</tr>
<tr>
<td>достичь успеха</td>
<td>make a progress</td>
</tr>
<tr>
<td>достоверность</td>
<td>validity</td>
</tr>
<tr>
<td>достоверный</td>
<td>valid</td>
</tr>
<tr>
<td>драматические последствия</td>
<td>tragic</td>
</tr>
<tr>
<td>дублирование</td>
<td>duplication</td>
</tr>
<tr>
<td>дублировать (об исследованиях)</td>
<td>duplicate</td>
</tr>
<tr>
<td>друг</td>
<td>unique, the only</td>
</tr>
<tr>
<td>другой</td>
<td>unified, unifying</td>
</tr>
<tr>
<td>другими словами</td>
<td>other</td>
</tr>
<tr>
<td>другой</td>
<td>another</td>
</tr>
<tr>
<td>другие</td>
<td>other</td>
</tr>
<tr>
<td>другие</td>
<td>other</td>
</tr>
<tr>
<td>дублирование</td>
<td>duplication</td>
</tr>
<tr>
<td>дублировать</td>
<td>duplicate</td>
</tr>
<tr>
<td>Е</td>
<td>unique, the only</td>
</tr>
<tr>
<td>единственный</td>
<td>unified, unifying</td>
</tr>
<tr>
<td>единый</td>
<td>unified, unifying</td>
</tr>
<tr>
<td>Ж</td>
<td>desirable</td>
</tr>
<tr>
<td>желательный</td>
<td>journal</td>
</tr>
<tr>
<td>журнал (научно-технический)</td>
<td>journal</td>
</tr>
<tr>
<td>жалкий, убогий</td>
<td>pathetic (person)</td>
</tr>
</tbody>
</table>
Завершить (о работе)
Зависеть от
Зависимость, от
Задача
1. (проблема)
2. (цель)
Задача поддержания режима
нераспространения остается и будет
оставаться весьма актуальной
заинтересоваться чем-либо get
зайти в тупик
Закладывать данные в ЭВМ
Заключительный
Закон
Закономерность
Закончить
Заманчивый
Заместить
Заменить
Заметный
Заметить
1. (увидеть)
2. (в речи)
Замечание
Замораживать
Занимать время/положение
Заниматься (о проблеме, науке)
Занять свое место среди записывать
(о сигналах)
Запись (о сигналах)
Запускать (о спутнике, программе)
Запутанный
Заседание
Заслуживать
Затраты (о деньгах)
Затруднять
Знакомый с
Знание/знания
Значение
1. (важность)
2. (смысл)
3. (величина, цифра)
Значительный

3

Complete
depend on
dependence on
problem
objective
continues to be highly relevant,
will remain highly relevant

Interested in
come to a standstill
feed data into a computer
concluding
law
regularity
complete, finish
lay the foundation for
tempting
replacement
replace
noticeable, remarkable
notice
remark
remark
freeze
take time/a position
study
take / find one’s place among
record
recording
launch
confused
session, meeting
deserve
expenses
make a difficult
familiar with
knowledge

importance, significance
meaning
value
considerable
<table>
<thead>
<tr>
<th>русский</th>
<th>английский</th>
</tr>
</thead>
<tbody>
<tr>
<td>зона, свободная от ядерного оружия</td>
<td>nuclear weapon-free zone</td>
</tr>
<tr>
<td>зондовый метод</td>
<td>probe technique</td>
</tr>
<tr>
<td>И играть роль</td>
<td>to play in role</td>
</tr>
<tr>
<td>идти (о процессе)</td>
<td>go on, occur</td>
</tr>
<tr>
<td>избегать</td>
<td>avoid</td>
</tr>
<tr>
<td>известный</td>
<td>well-known</td>
</tr>
<tr>
<td>извещать</td>
<td>inform</td>
</tr>
<tr>
<td>извлекать пользу из</td>
<td>make use of, profit from</td>
</tr>
<tr>
<td>излагать (о вопросе, теме)</td>
<td>present, consider</td>
</tr>
<tr>
<td>излагать кратко</td>
<td>outline</td>
</tr>
<tr>
<td>изложение (о вопросе, теме)</td>
<td>presentation</td>
</tr>
<tr>
<td>измельчать в порошок</td>
<td>grind into powder</td>
</tr>
<tr>
<td>изменять/изменяться</td>
<td>change</td>
</tr>
<tr>
<td>изменяться к лучшему</td>
<td>change for the better</td>
</tr>
<tr>
<td>измерение</td>
<td>measurement</td>
</tr>
<tr>
<td>измерять</td>
<td>measure</td>
</tr>
<tr>
<td>измерительный прибор</td>
<td>measuring instrument</td>
</tr>
<tr>
<td>изобретать</td>
<td>invent</td>
</tr>
<tr>
<td>изобретение</td>
<td>invention</td>
</tr>
<tr>
<td>изощренный</td>
<td>sophisticated</td>
</tr>
<tr>
<td>изучать</td>
<td>study, investigate</td>
</tr>
<tr>
<td>изучение</td>
<td>study, investigation</td>
</tr>
<tr>
<td>иллюстрация</td>
<td>illustration</td>
</tr>
<tr>
<td>иллюстрировать</td>
<td>illustrate</td>
</tr>
<tr>
<td>иметь</td>
<td>have</td>
</tr>
<tr>
<td>иметь в виду</td>
<td>have in mind, mean</td>
</tr>
<tr>
<td>иметь в своем распоряжении</td>
<td>have at one’s disposal</td>
</tr>
<tr>
<td>иметь дело с</td>
<td>deal with</td>
</tr>
<tr>
<td>иметь доступ к</td>
<td>have access to</td>
</tr>
<tr>
<td>иметь много/и мало общего с</td>
<td>have much/little in common with</td>
</tr>
<tr>
<td>имеющийся</td>
<td>available, existing</td>
</tr>
<tr>
<td>иначе говоря</td>
<td>in other word</td>
</tr>
<tr>
<td>иной</td>
<td>different</td>
</tr>
<tr>
<td>интенсивный (о развитии)</td>
<td>intensive</td>
</tr>
<tr>
<td>интерес к</td>
<td>interest in</td>
</tr>
<tr>
<td>интересный</td>
<td>interesting</td>
</tr>
<tr>
<td>интерпретация</td>
<td>interpretation</td>
</tr>
<tr>
<td>интерпретировать</td>
<td>interpret</td>
</tr>
<tr>
<td>искать чего-либо</td>
<td>look seek for</td>
</tr>
<tr>
<td>исключать</td>
<td>exclude</td>
</tr>
<tr>
<td>исключение из правила</td>
<td>exception to the rule</td>
</tr>
<tr>
<td>за исключением</td>
<td></td>
</tr>
<tr>
<td>искоренять</td>
<td></td>
</tr>
</tbody>
</table>
использовать
использование
испытывать
1. (апробировать)
2. (о трудностях)
исследование
исследовать
исследовательская работа
исходя из

К
кандидатский минимум
комплексный характер

комплексное развитие
комплексного подхода
конкретный
конференция ознаменуется
успешными результатами

критика
критический
кроме того
круг (о вопросах, исследованиях)
крупногабаритный
крупномасштабный
к сожалению
кстати
к счастью
курсовая работа

Л
лаборант
лаборатория
лежать а основе
ликвидация
ликвидировать
литература по специальности
 лишать оптимизма
любой

М
малейший (незначительный)
1. (a исчисляемыми существительными)
2. (a неисчисляемыми существительными)
маловероятный малогабаритный масса (много) в масштаб мероприятия меры предосторожности метод методика метод проб и ошибок механизм много
1. (с исчисляемыми существительными)
2. (с неисчисляемыми существительными)
многолюдный многообещающий многочисленный моделировать момент
монографии мысль
наблюдать наблюдение наводить на мысль надежность надежный назвывать накапливать наконец на первый взгляд напористый, целеустремленный, критический направление (в исследованиях) направлять например настоящий
1. (современный)
2. (реальный)
slight
few
little
unlikely
of small size
lot, plenty
scale
activities
precautions
technique, method
techniques, methods
the hit and miss technique
mechanism
many
much
crowded
promising
numerous
simulate
period of time, element, point, aspect
monograph
idea, thought
observe
observation
suggest
reliability
reliable
be known as, be referred to as
assumulate
finally, at last
at the first sight
aggressive (person, press)
direction, trend
direct
for instance, for example
наступать (о равновесии)  
натолкнуться на мысль  
наукоемкие технологии  
научная степень  
научный руководитель  
научно-популярная литература  
научная фантастика  
научно-исследовательский институт  
непременный (обязательный)  
непреодолимый (о трудностях)  
не раз  

нереальный  
нерешенный  
несоевременный  
несвязанный с  
несмотря на  
несомненно  
несоответствие чему-либо  
несоответствующий  
несостоятельный (необоснованный)  
Нобелевская премия  
носят глобальный характер  

О  
обеспечивать  
обзор (о публикациях)  
дать обзор  
делать обзор  
обзорный (о статье)  
обладать  
область  
1. (о науке)  
2. (о спектре)  
3. (диапазон)  
область/сфера применения  
обмен  
обмениваться  
обнадеживающий  
обнаруживать  
обновлять 

present  
real  
set in  
hit on an idea  
advanced, state-of-the-art  
academic degree  
supervisor  
popular scientific literature  
science fiction  
research institute  
necessary  
insumountable  
should always be translated with great care, to avoid any, possible confusion with "ни разу," particularly if a speaker is mumbling  
unrealistic  
unsolved  
untimely  
unrelated to  
in spite of  
no doubt  
inconsistency with  
inconsistent with  
groundless, unfounded  
Nobel prize  
the problems are widespread / global  

provide  
review  
give a review  
make a review  
review  
possess  
field, area  
region  
range  
applications
обобщать
1. (делать обобщение)
2. (суммировать)
обрабатывать
1. (о материале)
2. (о данных)
обработка
(о материале)
(о данных)
образец
(о материале)
(о модуль)
обратить (своё) внимание на
обратить (чье-либо) внимание на
обстоятельства (условия)
обсуждать
обсуждение
обусловливать
обусловливаться
общирный
обшепринятый
общий
(единный для всех)
(общный)
объединенный (совместный)
объективный
объяснение
объяснять
1. (словесно)
2. (обусловливать)
это обусловлено
обычный
ограничивать
одинаковый
однако
одобрять
ожидать (предполагать)
ознаменоваться (быть свидетелем)
означать
оказать влияние на
оказаться (перед прилагательным)
окончательный

exchange
exchange
encouraging
find
renew
generalize
sum up, summarize
treat
process
treatment
processing
sample
pattern
pay attention to
draw smb’s attention to
circumstances
discuss
discussion
produce, result in, be responsible
for, cause
result from, be due to, be
produced/caused
extensive
common, generally accepted
common
general
joint
objective
explanation, interpretation
interpret, explain
account for
this is contented (by)
common
restrict to, limit to, confine to
identical, the same
however
approve to
expect
окружать | witness
описательный | mean
описывать | have influence on
описывать в общих чертах | turn out to be
оппонент | final
опускать (не упоминать) | surround
оправданный | descriptive
определять | describe
определяющий (о факторе) | outline
опровергать | opponent at dissertation summary
оптимальный | omit, leave out
оптимальный
1. (по составу, качественно) | justifiable
2. (детерминировать, количественно) | identify
3. (дать словесное определение) | determine
определяющий (о факторе) | define
определяющий
оппозиционный комитет | determining
оправданный | refute
опыт | optimal
провести (поставить) опыт | experiment
провести (поставить) опыт
1. (о специалисте) | experience
2. (о материале) | make do an experiment
организационный комитет | experienced
освещать (в литературе) | experimental
осложнение | organizing committee
осложнение | elucidate
осложнить | complication
осложняющий | complicate
осложняя | complicating
основной | principal, basic, main, chief
в основном | in principle, mainly, largely, basically
основываться на | be based on
основываться на
особый | special, specific
оставить в стороне (опустить) | omit, leave aside
остановить выбор на | decide on
остановиться на (в речи) | discuss in more detail
осторожный | careful, cautious
осуществимый | feasible, practicable
отбирать (выбирать) | select, choose
отбросить (не учитывать) | discard
отводить время на ответ на вопрос | allot time for
отпосить время на ответ на вопрос | answer to a question
отвечать требованиям |
| 1. (индивидуальный) | response to |
| 2. (некоторый) | answer to a question |
| отделять от | meet requirements |
| отличать от | give credit to |

отличаться
отличаться по (признакам)
отличаться на (величину)
отложить (о работе)
отклонение (от траектории)
отклоняться от (о сигнале, луче)
откровенно говоря
открывать
1. (о конференции)
2. (в науке)
открытие
1. (о конференции)
2. (в науке)
относительный
отрицать
отступать от (темы)
отступление (в речи)
делать отступление (в речи)
отчетливый
охарактеризовать
охарактеризовать в общих чертах
охватывать (по тематике)
оценить
оценка
очевидный
самоочевидный
ошибка (в расчетах, эксперименте)
ощутимый вклад

<p>| P |
|  |
|  |
|  |
| первичный | primary |
| первоначальный | initial |
| передавать (о сигналах) |
| передача |
| перейти к (в речи) |
| переносить (распространять) на переоценивать |</p>
<table>
<thead>
<tr>
<th><strong>Русский</strong></th>
<th><strong>Английский</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (преувеличивать)</td>
<td>transmit</td>
</tr>
<tr>
<td>2. (пересматривать)</td>
<td>transmission</td>
</tr>
<tr>
<td>переоценка</td>
<td>go over to, pass over to</td>
</tr>
<tr>
<td>1. (преувеличение)</td>
<td>overestimate</td>
</tr>
<tr>
<td>2. (пересмотр)</td>
<td>revise</td>
</tr>
<tr>
<td>пересматривать</td>
<td>overestimation</td>
</tr>
<tr>
<td>пересмотр</td>
<td>revision</td>
</tr>
<tr>
<td>перечислять</td>
<td>revise</td>
</tr>
<tr>
<td>период</td>
<td>revision</td>
</tr>
<tr>
<td>периодический</td>
<td>list, cite</td>
</tr>
<tr>
<td>периодичность</td>
<td>period</td>
</tr>
<tr>
<td>перспективный</td>
<td>periodic</td>
</tr>
<tr>
<td>пионерский (об исследованиях)</td>
<td>periodicity</td>
</tr>
<tr>
<td>плодотворный</td>
<td>promising, future, long-range</td>
</tr>
<tr>
<td>побочный (об эффекте)</td>
<td>pioneering</td>
</tr>
<tr>
<td>поведение</td>
<td>plenary</td>
</tr>
<tr>
<td>повлечь за собой</td>
<td>fruitful</td>
</tr>
<tr>
<td>поворотный пункт</td>
<td>side</td>
</tr>
<tr>
<td>повторять</td>
<td>behaviour</td>
</tr>
<tr>
<td>повышать</td>
<td>entail</td>
</tr>
<tr>
<td>повышаться</td>
<td>turning point</td>
</tr>
<tr>
<td>пограничный</td>
<td>repeat</td>
</tr>
<tr>
<td>подвергать (воздействию)</td>
<td>increase, raise</td>
</tr>
<tr>
<td>подвергать анализу</td>
<td>rise</td>
</tr>
<tr>
<td>подготовительный</td>
<td>turning point</td>
</tr>
<tr>
<td>подготовить</td>
<td>subject to</td>
</tr>
<tr>
<td>1. (о специалистах)</td>
<td>analyze</td>
</tr>
<tr>
<td>2. (о докладе, работе)</td>
<td>preparation</td>
</tr>
<tr>
<td>подготовка</td>
<td>preparatoty</td>
</tr>
<tr>
<td>1. (по специальности)</td>
<td>train</td>
</tr>
<tr>
<td>2. (к докладу, работе)</td>
<td>prepare</td>
</tr>
<tr>
<td>поддерживать</td>
<td>training</td>
</tr>
<tr>
<td>1. (выступать за)</td>
<td>preparation</td>
</tr>
<tr>
<td>2. (морально)</td>
<td>support</td>
</tr>
<tr>
<td>3. (продолжать, сохранять)</td>
<td>encourage</td>
</tr>
<tr>
<td>поддержка</td>
<td>maintain</td>
</tr>
<tr>
<td>1. (выступление за)</td>
<td>support</td>
</tr>
<tr>
<td>2. (моральная)</td>
<td>encouragement</td>
</tr>
<tr>
<td>3. (продолжение)</td>
<td>maintenance</td>
</tr>
<tr>
<td>поднимать</td>
<td>maintain</td>
</tr>
<tr>
<td>1. (о вопросе)</td>
<td>support</td>
</tr>
<tr>
<td>2. (о грузе)</td>
<td>encouragement</td>
</tr>
<tr>
<td>подпись к рисунку</td>
<td>maintenance</td>
</tr>
<tr>
<td>подробно</td>
<td>maintenance</td>
</tr>
<tr>
<td>Русский</td>
<td>Английский</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>более подробно</td>
<td>raise</td>
</tr>
<tr>
<td>подробность</td>
<td>lift</td>
</tr>
<tr>
<td>подробный</td>
<td>figure caption</td>
</tr>
<tr>
<td>подтверждать (о результатах)</td>
<td>in detail</td>
</tr>
<tr>
<td>подтверждение (о результатах)</td>
<td>in more detail</td>
</tr>
<tr>
<td>подход к</td>
<td>detail</td>
</tr>
<tr>
<td>подходить к вопросу</td>
<td>detailed</td>
</tr>
<tr>
<td>подходить (соответствовать)</td>
<td>confirm, support</td>
</tr>
<tr>
<td>подчеркивать</td>
<td>approach to</td>
</tr>
<tr>
<td>1. (в речи)</td>
<td>approach a question</td>
</tr>
<tr>
<td>2. (проводить линию)</td>
<td>fit, be consistent with</td>
</tr>
<tr>
<td>подчиняться</td>
<td>emphasize, stress</td>
</tr>
<tr>
<td>позволять (давать возможность)</td>
<td>underline</td>
</tr>
<tr>
<td>познавательный</td>
<td>obey</td>
</tr>
<tr>
<td>познакомиться с</td>
<td>permit, allow</td>
</tr>
<tr>
<td>1. (о работе)</td>
<td>informative</td>
</tr>
<tr>
<td>2. (о людях)</td>
<td>get to know, be introduced to</td>
</tr>
<tr>
<td>показания (о приборах)</td>
<td>meet</td>
</tr>
<tr>
<td>показывать</td>
<td>readings</td>
</tr>
<tr>
<td>по крайней мере</td>
<td>show, demonstrate</td>
</tr>
<tr>
<td>полагать (считать)</td>
<td>at least</td>
</tr>
<tr>
<td>полагаться на</td>
<td>think, believe, consider</td>
</tr>
<tr>
<td>полезный</td>
<td>rely on</td>
</tr>
<tr>
<td>положение</td>
<td>useful</td>
</tr>
<tr>
<td>положение</td>
<td>state, condition</td>
</tr>
<tr>
<td>1. (состояние)</td>
<td>position</td>
</tr>
<tr>
<td>2. (место)</td>
<td>concept</td>
</tr>
<tr>
<td>3. (пункт теории)</td>
<td>the state of the art</td>
</tr>
<tr>
<td>положение дел</td>
<td>the present state of things</td>
</tr>
<tr>
<td>современное положение дел</td>
<td>positive</td>
</tr>
<tr>
<td>положительный</td>
<td>put, place</td>
</tr>
<tr>
<td>положить</td>
<td>initiate, lay the foundation for</td>
</tr>
<tr>
<td>положить начало</td>
<td>obtain</td>
</tr>
<tr>
<td>получать</td>
<td>receive, get</td>
</tr>
<tr>
<td>1. (в процессе исследования)</td>
<td>place</td>
</tr>
<tr>
<td>2. (по почте)</td>
<td>assist, help</td>
</tr>
<tr>
<td>помещать (положить)</td>
<td>assistance</td>
</tr>
<tr>
<td>помощь</td>
<td>understanding</td>
</tr>
<tr>
<td>помощь</td>
<td>1. understand</td>
</tr>
<tr>
<td>понимание</td>
<td></td>
</tr>
</tbody>
</table>
попытка
поразительный
последний
последствия
постановка вопроса
постоянный
1. (неизменный)
2. (периодический)
по сути/по существу
постоянное
появиться
1. (возникнуть)
2. (выйти из печати)
правильность
1. (достоверность)
2. (безошибочность)
правильный
1. (достоверный)
2. (безошибочный)
практика
па практике
практический
практически осуществимый
практические шаги в этом направлении
превращать в
превращаться в
превышать
предварительный
предвидеть
предел для
в пределах точности
предлагать
предложение
предназначать для
предполагать
предположение
предпосылка

realize
conception
stimulate, encourage
popular
try
attempt
striking, fascinating
order
conference regulations
be concerned with
recent, the latest
implications, consequences
subsequent
the statement of the problem
constant
regular
constantly
essentially
potential
potentialities
a need for
instructive
arise, appear
come out
validity
correctness
valid
correct
practice
in practice
practical
feasible, practicable
realistic measures
practical steps
turn into
change/turn into
exceed
preliminary
foresee
limit to
within the accuracy
suggest, offer, propose
<table>
<thead>
<tr>
<th>Russian</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>предпочитать чему-либо</td>
<td>suggestion</td>
</tr>
<tr>
<td>предпочтение чему-либо</td>
<td>aim for</td>
</tr>
<tr>
<td>предпринимать (об исследованиях)</td>
<td>suggest, assume</td>
</tr>
<tr>
<td>предпринимать шаги</td>
<td>suggestion, assumption</td>
</tr>
<tr>
<td>предпринимать попытку</td>
<td>prerequisite</td>
</tr>
<tr>
<td>предсказание</td>
<td>prefer to</td>
</tr>
<tr>
<td>предсказывать</td>
<td>preference to</td>
</tr>
<tr>
<td>представить</td>
<td>undertake, initiate</td>
</tr>
<tr>
<td>1. (изложить)</td>
<td>take steps</td>
</tr>
<tr>
<td>2. (в таблице)</td>
<td>make an attempt</td>
</tr>
<tr>
<td>представить себе</td>
<td>prediction</td>
</tr>
<tr>
<td>представление (понятие)</td>
<td>predict</td>
</tr>
<tr>
<td>представлять (большой, особый, небольшой) интерес для кого-либо</td>
<td>present</td>
</tr>
<tr>
<td>представлять ценность для чего-либо</td>
<td>tabulate</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>imagine</td>
</tr>
<tr>
<td>предпочитение чему-либо</td>
<td>conception, idea</td>
</tr>
<tr>
<td>предпринимать (об исследованиях)</td>
<td>be of (great, special, bttle) interest to smb.</td>
</tr>
<tr>
<td>предпринимать шаги</td>
<td>be of value for smth</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>warn against</td>
</tr>
<tr>
<td>предпочитание чему-либо</td>
<td>warning</td>
</tr>
<tr>
<td>предпринимать попытку</td>
<td>previous, last</td>
</tr>
<tr>
<td>предсказание</td>
<td>untimely</td>
</tr>
<tr>
<td>предсказывать</td>
<td>first of all, in the first place</td>
</tr>
<tr>
<td>представить</td>
<td>earlier</td>
</tr>
<tr>
<td>представить себе</td>
<td>president</td>
</tr>
<tr>
<td>представление (понятие)</td>
<td>advantage over</td>
</tr>
<tr>
<td>представлять (большой, особый, небольшой) интерес для кого-либо</td>
<td>stop</td>
</tr>
<tr>
<td>представлять ценность для чего-либо</td>
<td>neglect, ignore</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>negligible</td>
</tr>
<tr>
<td>предпочитание чему-либо</td>
<td>overcome, get over</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>surmountable</td>
</tr>
<tr>
<td>предпочитание чему-либо</td>
<td>claim for</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>exaggeration</td>
</tr>
<tr>
<td>предпочитание чему-либо</td>
<td>exaggerate</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>overcomplicate</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>device, instrument</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>the above</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>attract</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>attract smb's attention to</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>result in, lead to, be responsible for,</td>
</tr>
<tr>
<td>предпочитать чему-либо</td>
<td>produce</td>
</tr>
<tr>
<td>Русский</td>
<td>Английский</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>прием</td>
<td>give rise to</td>
</tr>
<tr>
<td>1. (о посетителях)</td>
<td>bring into agreement with</td>
</tr>
<tr>
<td>(способ)</td>
<td>give an example</td>
</tr>
<tr>
<td>призван</td>
<td>follow</td>
</tr>
<tr>
<td>признавать</td>
<td>acceptable</td>
</tr>
<tr>
<td>признание</td>
<td>reception</td>
</tr>
<tr>
<td>признательность</td>
<td>way</td>
</tr>
<tr>
<td>признательный за</td>
<td>is being called on, must</td>
</tr>
<tr>
<td>прилагать усилия</td>
<td>recognize, acknowledge</td>
</tr>
<tr>
<td>применение</td>
<td>recognition, acknowledgement</td>
</tr>
<tr>
<td>применимый</td>
<td>appreciation, gratitude</td>
</tr>
<tr>
<td>применить</td>
<td>grateful/thankful for</td>
</tr>
<tr>
<td>принадлежать к</td>
<td>make efforts</td>
</tr>
<tr>
<td>принимать</td>
<td>application, use</td>
</tr>
<tr>
<td>1. (о предложении)</td>
<td>applicable</td>
</tr>
<tr>
<td>2. (о людях)</td>
<td>apply, use, employ</td>
</tr>
<tr>
<td>принимать без доказательства/на веру</td>
<td>belong to</td>
</tr>
<tr>
<td>принимать во внимание (читывать)</td>
<td>accept</td>
</tr>
<tr>
<td>принимать меры</td>
<td>receive</td>
</tr>
<tr>
<td>принимать меры предосторожности</td>
<td>take for granted</td>
</tr>
<tr>
<td>принципиально важным</td>
<td>take into account/consideration</td>
</tr>
<tr>
<td>приоритетные направления</td>
<td>take measures</td>
</tr>
<tr>
<td>приписывать чему-либо</td>
<td>take precautions</td>
</tr>
<tr>
<td>природа (о явлении, механизме)</td>
<td>fundamental</td>
</tr>
<tr>
<td>присуждать (о премии)</td>
<td>high priority area</td>
</tr>
<tr>
<td>присутствие</td>
<td>ascribe to</td>
</tr>
<tr>
<td>присутствовать на</td>
<td>nature, character</td>
</tr>
<tr>
<td>проверка</td>
<td>award</td>
</tr>
<tr>
<td>проверять</td>
<td>presence</td>
</tr>
<tr>
<td>проводить (об исследовании, сравнении, анализе и т. д.)</td>
<td>attend, be present at</td>
</tr>
<tr>
<td>проводить большую работу</td>
<td>check, up, test, verification</td>
</tr>
<tr>
<td>проводить/вести научно-исследовательскую работу</td>
<td>test, check, verify</td>
</tr>
<tr>
<td>программа (об исследованиях)</td>
<td>make, carry out, perform</td>
</tr>
<tr>
<td>программа научного обмена</td>
<td>do much work</td>
</tr>
<tr>
<td>программный комитет (о конференции)</td>
<td>do research</td>
</tr>
<tr>
<td>продолжать</td>
<td>project</td>
</tr>
<tr>
<td>продолжаться</td>
<td>scientific exchange program</td>
</tr>
<tr>
<td>продуктивный</td>
<td>program comittee</td>
</tr>
<tr>
<td>проект программы/плана</td>
<td></td>
</tr>
<tr>
<td>производить</td>
<td></td>
</tr>
</tbody>
</table>

182
<table>
<thead>
<tr>
<th>Русский</th>
<th>Английский</th>
</tr>
</thead>
<tbody>
<tr>
<td>производства впечатление на произвольный</td>
<td>continue, go on with</td>
</tr>
<tr>
<td>произойти (иметь место)</td>
<td>continue, go on</td>
</tr>
<tr>
<td>происходить из-за/вследствие/в результате</td>
<td>productive</td>
</tr>
<tr>
<td>происхождение (возникновение)</td>
<td>draft program</td>
</tr>
<tr>
<td>промывать</td>
<td>produce</td>
</tr>
<tr>
<td>промышленное применение</td>
<td>make impression on</td>
</tr>
<tr>
<td>промышленное производство</td>
<td>arbitrary</td>
</tr>
<tr>
<td>промышленность</td>
<td>occur, take place, be</td>
</tr>
<tr>
<td>проследить за</td>
<td>result from, be due to</td>
</tr>
<tr>
<td>простой</td>
<td>be produced</td>
</tr>
<tr>
<td>простота</td>
<td>origin</td>
</tr>
<tr>
<td>для простоты</td>
<td>wash</td>
</tr>
<tr>
<td>противопоставлять</td>
<td>commercial application</td>
</tr>
<tr>
<td>1. (сравнивать)</td>
<td>commercial production</td>
</tr>
<tr>
<td>2. (ставить в оппозицию)</td>
<td>industry</td>
</tr>
<tr>
<td>противоречивый</td>
<td>follow</td>
</tr>
<tr>
<td>противоречие</td>
<td>simple</td>
</tr>
<tr>
<td>противоречить чему-либо</td>
<td>simplicity</td>
</tr>
<tr>
<td>проходить</td>
<td>for simplicity</td>
</tr>
<tr>
<td>1. (о процессе, видении)</td>
<td>compare</td>
</tr>
<tr>
<td>2. (о мероприятии)</td>
<td></td>
</tr>
<tr>
<td>прочитать (о докладе, лекции)</td>
<td></td>
</tr>
<tr>
<td>прошлый/прошедший</td>
<td></td>
</tr>
<tr>
<td>проявлять (о свойствах)</td>
<td></td>
</tr>
<tr>
<td>проявлять интерес к</td>
<td></td>
</tr>
<tr>
<td>проваливаться (об эффекте, изменении)</td>
<td></td>
</tr>
<tr>
<td>прямой</td>
<td></td>
</tr>
<tr>
<td>1. (непосредственный)</td>
<td></td>
</tr>
<tr>
<td>2. (не кривой)</td>
<td></td>
</tr>
<tr>
<td>публикация</td>
<td></td>
</tr>
<tr>
<td>публиковать</td>
<td></td>
</tr>
<tr>
<td>путаница</td>
<td></td>
</tr>
<tr>
<td>путать</td>
<td></td>
</tr>
<tr>
<td>Р</td>
<td></td>
</tr>
<tr>
<td>равняться (о числах)</td>
<td></td>
</tr>
<tr>
<td>разбавить (водой)</td>
<td></td>
</tr>
<tr>
<td>разбор (анализ)</td>
<td></td>
</tr>
<tr>
<td>развивать</td>
<td></td>
</tr>
<tr>
<td>развиваться</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Русский</th>
<th>Английский</th>
</tr>
</thead>
<tbody>
<tr>
<td>промышленное применение</td>
<td>continue, go on</td>
</tr>
<tr>
<td>промышленное производство</td>
<td>productive</td>
</tr>
<tr>
<td>промышленность</td>
<td>draft program</td>
</tr>
<tr>
<td>проследить за</td>
<td>produce</td>
</tr>
<tr>
<td>простой</td>
<td>make impression on</td>
</tr>
<tr>
<td>простота</td>
<td>arbitrary</td>
</tr>
<tr>
<td>для простоты</td>
<td>occur, take place, be</td>
</tr>
<tr>
<td>противопоставлять</td>
<td>result from, be due to</td>
</tr>
<tr>
<td>1. (сравнивать)</td>
<td>be produced</td>
</tr>
<tr>
<td>2. (ставить в оппозицию)</td>
<td>origin</td>
</tr>
<tr>
<td>противоречивый</td>
<td>wash</td>
</tr>
<tr>
<td>противоречие</td>
<td>commercial application</td>
</tr>
<tr>
<td>противоречить чему-либо</td>
<td>commercial production</td>
</tr>
<tr>
<td>проходить</td>
<td>industry</td>
</tr>
<tr>
<td>1. (о процессе, видении)</td>
<td>follow</td>
</tr>
<tr>
<td>2. (о мероприятии)</td>
<td>simple</td>
</tr>
<tr>
<td>прочитать (о докладе, лекции)</td>
<td>simplicity</td>
</tr>
<tr>
<td>прошлый/прошедший</td>
<td>for simplicity</td>
</tr>
<tr>
<td>проявлять (о свойствах)</td>
<td>compare</td>
</tr>
<tr>
<td>проявлять интерес к</td>
<td></td>
</tr>
<tr>
<td>проваливаться (об эффекте, изменении)</td>
<td></td>
</tr>
<tr>
<td>прямой</td>
<td></td>
</tr>
<tr>
<td>1. (непосредственный)</td>
<td></td>
</tr>
<tr>
<td>2. (не кривой)</td>
<td></td>
</tr>
<tr>
<td>публикация</td>
<td></td>
</tr>
<tr>
<td>публиковать</td>
<td></td>
</tr>
<tr>
<td>путаница</td>
<td></td>
</tr>
<tr>
<td>путать</td>
<td></td>
</tr>
<tr>
<td><strong>развитие</strong></td>
<td>be equal to, equal</td>
</tr>
<tr>
<td><strong>разделять</strong></td>
<td>dilute</td>
</tr>
<tr>
<td>1. (разъединять)</td>
<td>analysis</td>
</tr>
<tr>
<td>2. (придерживаться того же, напр., мнения)</td>
<td>develop</td>
</tr>
<tr>
<td>3. (целое на части)</td>
<td>development</td>
</tr>
<tr>
<td>различать (отличать)</td>
<td>separate</td>
</tr>
<tr>
<td>различаться</td>
<td>share</td>
</tr>
<tr>
<td>1. (по признакам)</td>
<td>divide</td>
</tr>
<tr>
<td>2. (на величину)</td>
<td>distinguish, differentiate between</td>
</tr>
<tr>
<td>размер (габариты)</td>
<td>differ in</td>
</tr>
<tr>
<td>разнообразие</td>
<td>differ by</td>
</tr>
<tr>
<td>разнообразные</td>
<td>size, dimensions</td>
</tr>
<tr>
<td>разные</td>
<td>variety, diversity</td>
</tr>
<tr>
<td>разобраться в</td>
<td>various, diverse</td>
</tr>
<tr>
<td>разочаровывать</td>
<td>different</td>
</tr>
<tr>
<td>разработать план проведения (об исследованиях)</td>
<td>sort out, understand</td>
</tr>
<tr>
<td>разработка</td>
<td>disappoint</td>
</tr>
<tr>
<td>разрешать</td>
<td>work-out, design</td>
</tr>
<tr>
<td>1. (о трудностях)</td>
<td>design</td>
</tr>
<tr>
<td>2. (позволять)</td>
<td>development, working out</td>
</tr>
<tr>
<td>разрозненные (неупорядоченные)</td>
<td>resolve</td>
</tr>
<tr>
<td>разумный</td>
<td>permit</td>
</tr>
<tr>
<td>располагать (в определенном порядке)</td>
<td>random, unrelated</td>
</tr>
<tr>
<td>расположение (в определенном порядке)</td>
<td>reasonable</td>
</tr>
<tr>
<td>распространенный</td>
<td>arrange</td>
</tr>
<tr>
<td>распространять на (о принципе, теории)</td>
<td>arrangement</td>
</tr>
<tr>
<td>распространять слишком далеко</td>
<td>common, widespread</td>
</tr>
<tr>
<td>рассматривать (о вопросе)</td>
<td>extend to</td>
</tr>
<tr>
<td>рассмотрение (о вопросе)</td>
<td>extend too far</td>
</tr>
<tr>
<td>рассортировывать</td>
<td>consider, discuss, tackle</td>
</tr>
<tr>
<td>расти</td>
<td>consideration, discussion</td>
</tr>
<tr>
<td>расходиться (не совпадать)</td>
<td>sort out</td>
</tr>
<tr>
<td>расходжение</td>
<td>grow, increase</td>
</tr>
<tr>
<td>расчет</td>
<td>disagree with</td>
</tr>
<tr>
<td>1. (аналитический)</td>
<td>disagreement</td>
</tr>
<tr>
<td>2. (численный, на ЭВМ)</td>
<td></td>
</tr>
<tr>
<td>производить расчет</td>
<td></td>
</tr>
<tr>
<td>2. (о лаборатории)</td>
<td>3. {о знаниях}</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>реальный</td>
<td></td>
</tr>
<tr>
<td>1. (настоящий)</td>
<td></td>
</tr>
<tr>
<td>2. (правдоподобный)</td>
<td></td>
</tr>
<tr>
<td>3. (осуществимый)</td>
<td></td>
</tr>
<tr>
<td>реагировать на</td>
<td></td>
</tr>
<tr>
<td>реальные факты</td>
<td></td>
</tr>
<tr>
<td>регистрация</td>
<td></td>
</tr>
<tr>
<td>регистрировать</td>
<td></td>
</tr>
<tr>
<td>регулировать</td>
<td></td>
</tr>
<tr>
<td>регулярное наблюдение</td>
<td></td>
</tr>
<tr>
<td>резким (условие)</td>
<td></td>
</tr>
<tr>
<td>резкий (об изменениях)</td>
<td></td>
</tr>
<tr>
<td>резолюция</td>
<td></td>
</tr>
<tr>
<td>принять резолюцию</td>
<td></td>
</tr>
<tr>
<td>результат</td>
<td></td>
</tr>
<tr>
<td>в результате</td>
<td></td>
</tr>
<tr>
<td>реферат</td>
<td></td>
</tr>
<tr>
<td>реферативный журнал</td>
<td></td>
</tr>
<tr>
<td>1. (о задаче)</td>
<td></td>
</tr>
<tr>
<td>2. (что-то сделать)</td>
<td></td>
</tr>
<tr>
<td>рисунок</td>
<td></td>
</tr>
<tr>
<td>играть роль</td>
<td></td>
</tr>
<tr>
<td>руководить</td>
<td></td>
</tr>
<tr>
<td>1. (исследованием)</td>
<td></td>
</tr>
<tr>
<td>2. (лабораторией)</td>
<td></td>
</tr>
</tbody>
</table>

С
самостоятельный
сведения
свет
в свете новью данных
свидетель
быть свидетелем
сводить к
сводить к минимуму своевременный
свойство
1. {о материале}
2. (о приборе)
связанный с
1. (относящийся к)
2. (обусловленный)
связь

calculation
computation
compute
extend
enlarge
increase
real
realistic
feasible, practicable
respond to
realities, real fact
registration
register
regulate
monitoring, examination
conditions regime
sharp, radical, dramatic
resolution
adopt a resolution
result
as a result
abstract
abstracting journal
solve
decide
figure
play a role in
supervise
run, head
independent
evidence, information, data
light
in the light of new data
witness
witmess
reduce to
minimize
timely
peculiar, specific
<table>
<thead>
<tr>
<th>1. (прич. –след)</th>
<th>property</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. (логическая)</td>
<td>characteristic, feature</td>
</tr>
<tr>
<td>в связи с</td>
<td>related to, associated with</td>
</tr>
<tr>
<td>в этой связи</td>
<td>due to, accounted for (by)</td>
</tr>
<tr>
<td>1. (прогресс)</td>
<td>relation, relationship</td>
</tr>
<tr>
<td>2. (механический, по фазе, по времени)</td>
<td>connection</td>
</tr>
<tr>
<td>сдвинуть</td>
<td>in connection with</td>
</tr>
<tr>
<td>сделать</td>
<td>in this connection</td>
</tr>
<tr>
<td>1. (о работе)</td>
<td>progress</td>
</tr>
<tr>
<td>2. (об анализе, сравнении, выводе)</td>
<td>shift</td>
</tr>
<tr>
<td>сделать попытку</td>
<td>shift</td>
</tr>
<tr>
<td>семинар</td>
<td>do</td>
</tr>
<tr>
<td>серия (в ед. и мн. числе)</td>
<td>make</td>
</tr>
<tr>
<td>серьезный</td>
<td>make an attempt</td>
</tr>
<tr>
<td>сжатый (краткий)</td>
<td>seminar</td>
</tr>
<tr>
<td>симпозиум</td>
<td>series</td>
</tr>
<tr>
<td>синхронный перевод</td>
<td>serious</td>
</tr>
<tr>
<td>систематизировать</td>
<td>brief, concise</td>
</tr>
<tr>
<td>систематический (регулярный)</td>
<td>symposium</td>
</tr>
<tr>
<td>следовать за (придерживаться)</td>
<td>simultaneous translation</td>
</tr>
<tr>
<td>сложность</td>
<td>systematize</td>
</tr>
<tr>
<td>сложный</td>
<td>regular</td>
</tr>
<tr>
<td>служить в качестве служить основой</td>
<td>follow</td>
</tr>
<tr>
<td>чего-либо</td>
<td>complexity</td>
</tr>
<tr>
<td>случайная ошибка</td>
<td>complex, complicated, sophisticated</td>
</tr>
<tr>
<td>случайно</td>
<td>serve as</td>
</tr>
<tr>
<td>случайный</td>
<td>form/be a basis for</td>
</tr>
<tr>
<td>смежный</td>
<td>random error</td>
</tr>
<tr>
<td>смутный (неясный)</td>
<td>by accident</td>
</tr>
<tr>
<td>снизить (уменьшать)</td>
<td>accidental</td>
</tr>
<tr>
<td>снимать показания прибора</td>
<td>adjacent</td>
</tr>
<tr>
<td>снимать с повестки дня</td>
<td>obscure, vague</td>
</tr>
<tr>
<td>собирать</td>
<td>decrease, reduce</td>
</tr>
<tr>
<td>событие</td>
<td>take the readings</td>
</tr>
<tr>
<td>совершенно</td>
<td>withdraw</td>
</tr>
<tr>
<td>1. (на высоком уровне)</td>
<td>collect, accumulate</td>
</tr>
<tr>
<td>2. (перед прилагательными)</td>
<td>event</td>
</tr>
<tr>
<td>совершенствование</td>
<td>perfectly</td>
</tr>
<tr>
<td>совершенствовать</td>
<td>quite</td>
</tr>
<tr>
<td>Совпадение</td>
<td>Improvement</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>1. (случайное)</td>
<td>improve</td>
</tr>
<tr>
<td>2. (совмещение)</td>
<td>joint</td>
</tr>
<tr>
<td>3. (согласие)</td>
<td>coincide</td>
</tr>
<tr>
<td>1. (текущий)</td>
<td>overlap</td>
</tr>
<tr>
<td>2. (новейший)</td>
<td>agree</td>
</tr>
<tr>
<td>3. (настоящий)</td>
<td>coincidence</td>
</tr>
<tr>
<td>Современное состояние (о науке, вопросе)</td>
<td>Overlapping</td>
</tr>
<tr>
<td>Согласие с (соответствие)</td>
<td>Agreement</td>
</tr>
<tr>
<td>1. согласно чему-либо</td>
<td>current</td>
</tr>
<tr>
<td>2. (о теории, методе)</td>
<td>up-to-date</td>
</tr>
<tr>
<td>Согласовываться с</td>
<td>Present, modern</td>
</tr>
<tr>
<td>Содержательный</td>
<td>The present state</td>
</tr>
<tr>
<td>Создавать</td>
<td>Agreement with</td>
</tr>
<tr>
<td>Сомневаться</td>
<td>According to</td>
</tr>
<tr>
<td>Сомнительный</td>
<td>In agree with, be in agreement with,</td>
</tr>
<tr>
<td>Соблюдать (о правилах, условиях)</td>
<td>Be consistent with</td>
</tr>
<tr>
<td>Сообщение (научное)</td>
<td>Informative</td>
</tr>
<tr>
<td>Соответствовать</td>
<td>Contain, include, have</td>
</tr>
<tr>
<td>1. (согласовываться)</td>
<td>Create, produce, make</td>
</tr>
<tr>
<td>2. (относится к)</td>
<td>Doubt</td>
</tr>
<tr>
<td>Соответствующий (относящийся к делу)</td>
<td>Doubtful</td>
</tr>
<tr>
<td>Сопоставительный</td>
<td>Observe</td>
</tr>
<tr>
<td>Сопоставление</td>
<td>Report (on)</td>
</tr>
<tr>
<td>Сопровождать</td>
<td>Communication, report, presentation</td>
</tr>
<tr>
<td>1. (быть одновременным)</td>
<td>Agree with</td>
</tr>
<tr>
<td>2. (следовать за)</td>
<td>Refer to</td>
</tr>
<tr>
<td>Сосредоточить усилия/внимание на</td>
<td>Appropriate, relevant</td>
</tr>
<tr>
<td>Состав</td>
<td>Comparative</td>
</tr>
<tr>
<td>Сосредоточиться на</td>
<td>Comparison</td>
</tr>
<tr>
<td>Сотрудник</td>
<td>Accompany</td>
</tr>
<tr>
<td>1. (коллега)</td>
<td>Follow</td>
</tr>
<tr>
<td>2. (штатный работник в лаборатории, институте)</td>
<td>Concentrate efforts, attention on</td>
</tr>
<tr>
<td>Сотрудничать</td>
<td>Composition</td>
</tr>
<tr>
<td>Сотрудничество</td>
<td>It must focus on...</td>
</tr>
<tr>
<td>Сочетание</td>
<td>Colleague, co-worker</td>
</tr>
<tr>
<td>В сочетании с</td>
<td>Member, staff member</td>
</tr>
<tr>
<td>Специальный</td>
<td>Cooperate, collaborate</td>
</tr>
<tr>
<td>2. (профессиональный)</td>
<td>cooperation, collaboration</td>
</tr>
<tr>
<td>3. (преднамеренный)</td>
<td>combinaton</td>
</tr>
<tr>
<td>специальность</td>
<td>in combination with</td>
</tr>
<tr>
<td>список</td>
<td>special, special-purpose</td>
</tr>
<tr>
<td>способ</td>
<td>professional</td>
</tr>
<tr>
<td>способный (о специалисте)</td>
<td>intentional</td>
</tr>
<tr>
<td>способный к/на</td>
<td>profession, speciality</td>
</tr>
<tr>
<td>способствовать</td>
<td>list</td>
</tr>
<tr>
<td>справочник</td>
<td>way, means</td>
</tr>
<tr>
<td>сравнимый</td>
<td>capable</td>
</tr>
<tr>
<td>среди них</td>
<td>capable of</td>
</tr>
<tr>
<td>ссылаться на</td>
<td>stimulate, encourage</td>
</tr>
<tr>
<td>ссылка на</td>
<td>reference book</td>
</tr>
<tr>
<td>сталкиваться с (о трудностях)</td>
<td>comparable</td>
</tr>
<tr>
<td>стандартный</td>
<td>among them are..., these include</td>
</tr>
<tr>
<td>становиться</td>
<td>refer to</td>
</tr>
<tr>
<td>статистический</td>
<td>reference to</td>
</tr>
<tr>
<td>статья</td>
<td>be faced with, encounter</td>
</tr>
<tr>
<td>сторона (аспект}</td>
<td>standard</td>
</tr>
<tr>
<td>с одной стороны</td>
<td>become</td>
</tr>
<tr>
<td>с другой стороны</td>
<td>statistical</td>
</tr>
<tr>
<td>с точки зрения</td>
<td>paper</td>
</tr>
<tr>
<td>степень бакалавра</td>
<td>aspect</td>
</tr>
<tr>
<td>степень магистра</td>
<td>on the one hand</td>
</tr>
<tr>
<td>стоять перед проблемой</td>
<td>on the other hand</td>
</tr>
<tr>
<td>строительство (создание)</td>
<td>from the point of view</td>
</tr>
<tr>
<td>строить</td>
<td>B.A. (Bachelor of Arts)</td>
</tr>
<tr>
<td>суть состоит в следующем</td>
<td>M.A. (Master of Arts)</td>
</tr>
<tr>
<td>существенный</td>
<td>face a problem, be faced with a</td>
</tr>
<tr>
<td>существующий</td>
<td>problem</td>
</tr>
<tr>
<td>сформулировать</td>
<td>construction</td>
</tr>
<tr>
<td>сходный</td>
<td>construct</td>
</tr>
<tr>
<td>сходство</td>
<td>the main point/issue is</td>
</tr>
<tr>
<td>схема</td>
<td>essential</td>
</tr>
<tr>
<td>схематический</td>
<td>existing, available</td>
</tr>
<tr>
<td>считать</td>
<td>formulate</td>
</tr>
<tr>
<td>1. (подсчитывать количество)</td>
<td>similar</td>
</tr>
<tr>
<td>2. (полагать)</td>
<td>similarity</td>
</tr>
<tr>
<td>T</td>
<td>scheme</td>
</tr>
<tr>
<td>таблица</td>
<td>schematic</td>
</tr>
<tr>
<td>таинственный</td>
<td>count</td>
</tr>
<tr>
<td>тайна</td>
<td>believe, consider, think</td>
</tr>
<tr>
<td>так или иначе</td>
<td></td>
</tr>
</tbody>
</table>
тема
тематика
тем не менее
теоретик
теоретический
теория
терять
терять силу (о законе)
терять уверенность
тесный {о связях}
то есть
толкование
толковать
точнее говоря
точность
с точностью до одной сотой
точный
традиционный
традиция
тратить напрасно (о времени,
усилях, средствах}
требование к
требовать
трудность
трудный
(о вопросе)
труды конференции

У
убедительный
убеждать
увеличенить
(о лаборатории)
уверенность (определенность)
(с уверенностью}
увлекательный
углублять (о знаниях}
удалять (извлекать)
уделять время / внимание
удивительный
удобный
удобство
удовлетворительный
удовлетворять
удовлетворять требованиям

table
mysterious
mystery
in this way or other
thus, to summarize, to sum up
current
subject
subject matter
nevertheless
theorist, theoretician
theoretical
theory
lose
become invalid
get discouraged
close
that is
treatment, interpretation
treat, interpret
to be more exact
accuracy, precision
in a two digit accuracy
accurate, precise
traditional
tradition
waste

requirement on
require, call for
diculty
difficult
complicated
the conference proceedings

convincing
convince
increase
enlarge
certainty
with certainty
exiting
deepen
remove, eliminate
give time / attention to
| указывать на | surprising, fascinating, amazing |
| 1. (в речи) | convenient |
| улучшать | convenience |
| уместный (своевременный) | satisfactory |
| умозрительный | satisfy, meet |
| универсальный (о приборе) | meet requirements |
| упоминать о | point out |
| управлять | indicate, evidence |
| упрощать | improve |
| излишне упрощать | timely |
| упрощение | speculative |
| излишнее упрощение | versatile, multi-purpose |
| упускать возможность | mention, cite |
| упущение | control, regulate, govern |
| уравнение | simplify |
| уровень | oversimplify |
| усилие | simplification |
| ускорить | oversimplification |
| условное обозначение | miss the opportunity |
| усложнение | oversight |
| излишнее усложнение | equation |
| усложнять | level |
| усложняющий (о факторе) | effort |
| усовершенствовать | speed up, accelerate |
| усовершенствование | symbol, conventional sign |
| успел (и) | complicanon |
| успешный | overcomplicanon |
| устанавливать (о фактах) | complicate |
| устанавливать ограничения | complicating |
| устанавливаться (о равновесии) | improvement |
| установка | improve |
| устаревший | progress |
| уточнять (о данных) | successful |
| участвовать | find, establish |
| 1. (в конференции) | set limitations on |
| 2. (вовлекаться) | set in |
| участник | setup, installation |
| учитывать | out-of-date |
| учреждать | refine |
| у России есть | participate |
| Ф | be involved in |
| фактический (о сведениях) | participant |
| фактор | consider, take into account/ |
фон
на фоне
формула
фундаментальный
характерный для
ход (о работе)
в ходе эксперимента
хранить (о материалах) store, keep
целенаправленный
цель
ценный
цитата
цитировать
цифра
чистота (химическая)
чистый (химически)
читательский билет
чувствительный к
широкий (о знаниях, теории)
широкий круг (о вопросах и т.д.)
штат сотрудников
штат научных сотрудников
экспедиция
эксперимент
экспериментальный
экспериментатор
эра
эффективность
эффективный
ясный (понятный)
| clear |
Wired Hockey Players

No matter where an astronaut goes in space — to the moon — or beyond, he comes back to earth. Now the same technique is giving new insights into the stress of competition. Science reporter Don Herbert has details.

Herbert: You' ve seen astronauts being wired up like this before going on a mission. But this young man is not going into space. He's been wired up so that he can be monitored while he battles opponents on the ice during a hockey game.

There he is right there, No. 27.

You see, not much was known about how an athlete's body reacts under the stress of competition.

To find out, a team at Michigan State University, under the direction of Dr. John Downs, is putting hockey players through a battery of tests.

As he runs on the treadmill, the beating of his heart monitored.
At the same time, the mask collects his exhaled air, which is later analyzed to see how well he' s using oxygen.

Today, No. 27 is wearing a radio transmitter under his uniform. During the entire game, signals from his heart are received and recorded with this equipment.

They' ve found that when he' s at rest, his heart beats a little faster than that of a non-athlete: about 90 beats a minute.

During a fast break or a scuffle, it can shoot up as high as 200 beats a minute.

As the researchers gather more information, they hope to determine the factors that make an exceptional hockey player.

Similar information radioed back to the sidelines may help develop outstanding athletes in many sports.

This is Don Herbert.
"Substitute" implies something that’s not quite as good as the original. But that’s not always true, of course, as scientist reporter Don Herbert explains.

Herbert: Every time you hose off your sidewalk or driveway you're "water blasting." The pressure of the water blasts away dirt and leaves. But if you want to remove paint, water — even under high pressure — is not enough.

You need sandblasting. Fine grains of sand in a high-pressure stream of water can easily remove layers of paint.

The big problem is the sand itself. Cleaning it up is a big job, and there's a health problem. The tiny grains of sand can get into a worker's lungs.

Engineers at Lockheed took the sand out of sandblasting by substituting dry ice. They designed a machine to produce dry ice pellets from carbon dioxide gas. Introduced into a stream of air, the pellets blast away dirt and old paint and then disappear as they change back to carbon dioxide gas again.

Tests have shown that the size of the pellets and the force with which they hit the surface can be adjusted to remove dirt and old paint from many different kinds of surfaces.

And it can be used where you can't sandblast — on delicate circuit boards, for instance.

A new way to sandblast: get rid of the sand and use dry ice.

This is Don Herbert.
Silk produced by the silkworm has largely been replaced by plastic-type fibers, which usually mean something man-made—but not necessarily. Science reporter Don Herbert explains why.

Herbert: When you put a sandwich in a plastic bag, you probably think you're using a fairly modern invention. Actually, a similar technique has been used for millions of years by a bee! Now, you probably think of bees living in man-made hives or nests in a tree. But most of the 20,000 different kinds of bees make their nests underground.

In this Maryland backyard, Dr. Suzanne Batra of the U.S. Department of Agriculture found more than 100,000 nests of a species called Colletes. Each spring is the mating season. The male bees find the females because they give off a powerful chemical scent. Dr. Batra uses a vial of the chemical to collect specimens. In an observation chamber back in the laboratory, the mated female digs a nest. She lines the bottom of the nest with a liquid secreted from her sting gland. Then she deposits an egg in the bag-shaped lining together with food for the larva when it hatches. The sealed bag keeps out moisture and prevents fungus infection. Dr. Batra had these thimble-sized bee "baggies," as she calls them, analyzed. They are identical to the man-made fiber you know as polyester.

The colletes bee is the only known insect that seals its young inside a polyester bag. This is Don Herbert.
If you’re erecting a house and you don’t want it to move, you build the foundation on bedrock—but even bedrock moves, as science reporter Don Herbert explains.

Herbert: The ground I’m standing on—and the land wherever you are—is moving. Normally, the movement is so slow you can’t feel it. When you can feel it move, there’s no doubt about it, because then it’s an earthquake.

During this one, the land moved so much the damage was extensive. During a volcanic eruption, the earth also moves. The lava pouring forth is evidence that below the earth’s upper crust is a deeper layer of hot plastic rock. Scientists believe all the continents, and the land under the seas, are and have been riding on this molten layer for millions of years.

What did the Earth look like way back then? This is a computer trip backward through those millions of years. Watch what happens to South America and Africa. Dr. Chris Scottee of the University of Chicago produced this computer model for Shell Oil Company.

While the continents actually moved apart, in this reconstruction, time is going backwards so they’re coming together—like so many pieces of a giant jigsaw puzzle.

Look where South America and Africa are now. And watch what happens to Florida.

Back some 200 million years ago, the land was one huge continent, not at all the way the earth looks today.

Maps of the distant future will look equally strange because scientific evidence indicates the ground you walk on—all the continents—are moving.

This is Don Herbert.
Unit V

Hot Vents

If you’ve ever ducted plants with an insecticide containing sulphur, you’ve never forgotten its distinctive, unpleasant odor. It’s difficult to imagine a food chain based on sulphur, but there is one … and it’s at the bottom of the ocean. Science reporter. Don Herbert has the details.

Herbert: You may not have visited Yellowstone National Park, but you certainly have seen pictures of it. Water rich in minerals comes to the surface from the earth’s hot interior. Here’s a similar phenomenon seen by very few people because it occurs at the bottom of the ocean more than a mile and a half below the surface. You’re seeing it now because it was recorded for scientific purposes from a special submarine by a team of scientists headed by Dr. Robert Ballard of the Woods Hole Oceanographic Institute. The temperature of the smoking-looking water is 650 degrees Fahrenheit; and it's rich in sulphur, food for the bacteria that grow in dense concentrations around the vents.

The bacteria are the beginning of a food chain for a variety of animals, many of which were seen for the first time by the scientists. A new species of fish, for instance. But perhaps the strangest creatures are these large, tube-like worms which grow their own food inside of themselves. They have no mouths, but take in the water, rich in sulphur, through their gills. Colonies of bacteria in their stomachs thrive on the sulphur and become food for the worms.

A strange environment for the unique forms of life that depend on the heat and minerals coming from the newly discovered hot springs at the bottom of the ocean. This is Don Herbert.
In our nation’s capital, there’s a unique monument to the biology of our planet. It’s gigantic in scope and size. Science reporter Don Herbert has the story.

Herbert: Challenge: Paint the natural history of life on earth over the last 600 million years on a 27 foot tall canvas for the National Museum of Natural History in Washington, D.C. Here's John Gurchee's answer to that challenge.

Anything earlier than 500 million years is a guess, but by then jellyfish and worm-like creatures swarm in the seas.

A few million years later, animals with shells and skeletons develop. Squid and sea scorpions appear about 400 million years ago. Fish are the first creatures with backbones. Some of them venture out of the water and for the first time there’s animal life on land.

Fish evolve into amphibians and into reptiles, including the dinosaurs. Even though some reptiles eventually become birds, and other mammals, for 140 million years the dinosaurs rule the earth.

No one one knows why they disappear, but they do — and mammals prosper. Warm-blooded mammals spread over the earth and evolve into man, who has been on earth for only about 40 thousand years — a short span in the 600 million-year-long mural of time.

This is Don Herbert.
Unit VII
Zooplankton

Obviously not all of the animals in the ocean are as large as a whale or as fearsome as a shark. In fact, the vast majority are tiny, intricate creatures. As science reporter Don Herbert points out, the smallest are, in some ways, the most important. Herbert: As you know, out there in the ocean, plants and animals are part of a very complicated food chain. You can find some of their remains washed up on shore, but you have to go out (here underwater to see the most bizarre specimens alive and in their unique environment.

And That's what Dr. James King of the University of California at Santa Barbara does to photograph some of the spectacular animals at the lower end of the ocean food chain. All the while he's at work, a fellow diver is on the look-out for sharks. Dr. King's subjects are zooplankton, which in Greek means "animals that wander." There are thousands of different species.

Many of them feed on bacteria and decaying matter to become the major source of food for larger animals. The wing-footed snail uses its "foot" as a pair of wings. Rovvs of paddle-like structures propel this one slowly through the water. It measures about an inch and a half across. Another specimen has tentacles with which it captures prey. It's a member of the jellyfish family. Related species can range from a few inches to yards in length.

Scientists appreciate Dr. King's photographs for their intrinsic beauty, but they study his pictures to learn more about the fascinating, tiny animals that are a primary food source for marine life and thus are important links in the food chain and wander about in the ocean — the zooplankton.

This is Don Herbert.
Unit VIII

Chinchillas and Hearing Loss

How loud is too loud? As scientists try to answer that question, they turn to a Tiny-and somewhat expensive-ball of fur. Here’s science reporter Don Herbert with the story.

Herbert: That was a loud noise! But is it a harmful noise? That's the question researchers are asking of many kinds of loud noises. And for test animals, they're using chinchillas whose ear and sense of hearing are very similar to humans.

pr, William Clark at the Central Institute for the Deaf at Washington University in St. Louis has trained chinchillas to press a lever for a reward of food whenever they hear a tone. He exposes them to various levels of noise for different lengths of time.

Dr. Clark has found that after exposure to excessive noise, the chinchillas can no longer hear normally.

Dr. Elizabeth Bohne is correlating the loss of hearing with any changes in the structure of the chinchilla's ear.

These are normal nerve cells in the ear that send the sound information to the brain. After exposure to excessive noise, the cells are damaged, resulting in loss of hearing.

The scientists have found that the continuous sound of many everyday environments above 65 to 75 decibels can result in damage to the inner ear. They believe the noise limits for workers should be lowered because of the evidence they've found by studying hearing loss in chinchillas.

This is Don Herbert.
The largest animal on earth is also one of the most mysterious, because it lives in the depths of the ocean—the whale. One species is now a little less of a mystery because it seems to exhibit one trait of intelligence: curiosity. Science reporter Don Herbert has the details.

Herbert: How would you like to touch a 20 ton whale? Well, That's what these people are doing with the gray whales that migrate along the Pacific Coast. Because the whales seem to be so inquisitive, Dr. Bruce Mate of Oregon State University thought they'd be good subjects for a tagging experiment.

He led an expedition to a lagoon off Baja, California, where the grays spend the winter.

His team built special radio transmitters designed to be attached to the whale's back.

There it is at the end of the pole. A whale has to be in just the right position in order to attach the transmitter.

There! The transmitter is on the whale's back just behind the blow-hole. Every time the whale surfaced, a radio signal was transmitted and recorded.

They also tracked the whales visually. When spring came, the whales began to migrate.

In a radio-equipped plane, Dr. Mate was able to track one whale.

forty-one days after leaving the lagoon, it reached San Diego. After 63 days, Oregon... and finally after 94 days, Alaska... where the gray would spend the summer.

As such tagging continues, scientists will begin to unravel the secrets of the inquisitive gray whale.

This is Don Herbert.
Unit X

Communicating with a Parrot

Work with a dolphins, gorillas, and chimpanzees seems to indicate that they can communicate, after a fashion. Science reporter Don Herbert has a story on a similar study with a bird.
Dr. P.: What is it?
Alex: Banana!
Dr. P.: Right! Good boy! That's right!
Herbert: A talking parrot may not seem unusual. Repeat a phrase over and over again and a parrot may learn to mimic what it hears. But That's not communication.
To really communicate, an animal has to learn to use labels or symbols to identify objects and then request them.
Dt. Irene Pepperberg, a biologist from Purdue University, has trained Alex to use labels in a way that suggests communication.
Dr. P.: One more time, Alex.
Alex: Walnut.
Dr. P.: No, it's not a walnut. What is it?
Alex: Water.
Dr. P.: Water! Good parrot!
Herbert: His repertoire even includes useful phrases. Listen.
Dr, P.: Where do you want to go?
Alex: Wanna go gym.
Dr. P.: OK You can go gym.
Herbert: Communication studies have been done with mammals. Dr. Pepperberg is one of the few scientists working with birds.
Alex: Corn.
Dr. P.: Yeah. You're right. It's corn. Can you tell me the color?
Alex: Yellow.
B, P.: Good boy! It's yellow!
Herbert: Dr. Pepperberg's work seems to indicate that parrots can not only learn to talk, but also to communicate.
This is Don Herbert.
No one is quite sure what triggers to migrate, but the travels of ducks and geese are a familiar sight. One of the least known…and shortest…migrations occurs off the Atlantic coast of Florida. Science reporter Don Herbert has details.  

**Herbert:** The annual migration of the birds is a familiar sight every spring and fall. You may be one of the people who enjoy watching the birds fly by.  

Few people have ever seen the migration of the spiny lobster that marches across the ocean floor. In the beginning it's a tiny larva. If it escapes its predators, it reaches adulthood in three years.  

It can live as long as 30 years and weigh more than 11 pounds.  

During most of the year the adults share underwater dens with other lobsters.  

When the autumn chill reaches the Atlantic coast of Florida, the lobsters may react to the colder water and darkened skies.  

Changes in the currents and water turbulency may also act as triggers for the lobsters to form a line and begin their march toward warmer waters.  

The march of the lobsters was photographed by Dr. William Herrnkind and his associates at Florida State University.  

Each lobster keeps in line by touching its antennae to the tail of the lobster ahead of it. There can be as many as 65 individuals in a line.  

The marches last up to several days and have been tracked for more than 50 miles.  

Why do they migrate? How do they navigate? Some of the questions scientists are asking about the migration of the spiny lobster.  

This is Don Herbert.
False teeth have been the subjects of jokes, but to anyone who needs them, they’re no laughing matter. Science reporter Don Herbert has details on the latest development in artificial teeth.

Herbert: About 40 million Americans wear dentures to take the place of missing teeth. Why not get rid of them entirely by implanting permanent artificial teeth? Well, a promising, new technique has been developed by Battelle Labs for the Government.

Here's one of the subjects, a pig tail monkey, that is part of the tests being conducted by scientists, including Dr. Ian Hamilton, at the University of Washington.

The procedure starts with a base that's made of a special porous metal. The upper piece screws into it. They are inserted into the bone of the jaw like this. Now, to be successful, the insert and the bone must join together.

Here's a cross-section through the middle. The black circle is the screw. The ring is the base. The surrounding bone has been stained purple. After six weeks, it has grown around and into the porous base to form a solid foundation.

Next, the screw is removed and a new screw with a special head inserted in its place.

Finally, on it, an artificial tooth is cemented and the patient has a firmly-anchored, new, artificial tooth. Using the new technique, 70 percent of the implants have been successful.

Next step, tests in humans. Someday your missing teeth could be replaced, thanks to work done on special patients who now have permanent tooth implants. This is Don Herbert.
"Working around the clock" means a 24-hour operation... but not in every case. Science reporter Don Herbert explains. **Herbert:** As you know, the shadow cast by the sun will be back there one full day from now — 24 hours. Most living things on earth respond in some way to this 24-hour daily cycle. There is a surprising exception — chickens! At Cornell University, Dr. Ari van Tienhoven took the chicken's 28-hour day into account as he set out to determine what combination of light and dark would stimulate hens to produce better eggs. As you know, the days average out to be 12 hours of light and 12 hours of dark. After experimenting with various schedules, Dr. van Tienhoven found that two hours of light followed by six hours of darkness, then two more of light, and finally 18 hours of darkness produced unexpected results: The hens that laid small eggs in the normal 24-hour cycle laid bigger eggs! The 28-hour hens also laid eggs with stronger shells, an important improvement. Dr. van Tienhoven suspects that in response to the 28-hour schedule of light and dark, the egg stays in the hen's oviduct longer. This may be why she produced a bigger, stronger egg. In the future, when you buy large eggs, some of them may have come from chickens living their unusual cycle of 28-hour days. This is Don Herbert.
Passenger pigeons, which once were so plentiful, are now extinct. Bison almost met the same fate, but have now recovered with the help of dedicated naturalists. Science reporter Don Herbert has a story that may have a similar ending... but this time it's an elusive animal of the night.

Herbert: You're out on the prairie at night watching that hole just ahead of you. Suddenly, you catch a glimpse of something, and then it's gone. Then, in a few moments, it emerges. You're looking at what is probably the rarest mammal in North America — the black-footed ferret. Experts had feared that this cousin of the weasel had become extinct.

At one time the black-footed ferret could be found throughout the prairies of the West from Canada to Mexico. Their chief source of food was the prairie dog. As they declined, so did the ferrets. In the early 70's, the only ferrets were believed to be in one small area, even though no one had spotted a live ferret in years.

Then, in this Wyoming plain, a rancher found a ferret that had been killed by a dog. This led to these very rare films. Because the ferrets are most active at night, the filming had to be done with spotlights. Scientists have located and observed 22 adults and 38 young ferrets. A U.S. Fish and Wildlife team was able to attach radio collars on six young ferrets, like this one.

Radio tracking will help answer such questions as: How far do ferrets go when they set out on their own? The Fish and Wildlife Service has joined with the state of Wyoming to coordinate the study and protection of these rarest of mammals — the black-footed ferret. This is Don Herbert.
A News Report

Blaze at charity bonfire damages warehouses.

Two firemen were overcome by fumes and several bystanders slightly injured in a fire last night at Paxton, Kent.

The blaze was caused when flames from a Guy Fawkes night 5 bonfire organised in support of local charities spread to nearby warehouses.

Firemen battled against the flames for several hours before getting them under control, and at one time there were ten fire-engines in attendance at the blaze — the largest in this part of Kent for more than five years.

Strong winds hampered operations, and at first there were fears that showers of sparks might reach other warehouses some distance away, one of which — a paint-store — could have exploded.

But firemen succeeded in confining the outbreak to warehouses containing less inflammable materials.

The injured were allowed home after treatment at the local hospital, but one of the firemen was detained for observation.

Early this morning a dense pall of smoke hung over the warehouses while firemen continued to damp down the still-smouldering debris.

Damage

According to the owner of the warehouses, local builders' merchant Mr. Arthur Peel, damage was 'difficult to estimate at this stage'.

'The warehouses worst affected contained a large quantity of timber and building materials,' said Mr. Peel. 'It seems unlikely that much of this can have escaped damage, in which case the cost is likely to run into several thousand pounds.'

Interviewed at the scene last night, the Chief of the Paxton fire-brigade, 42 year old Mr. Fred Banks, who is responsible for bonfire-night safety measures in the district, said that he thought the fire was ‘very unfortunate’.

The organizers had consulted him about the safety of the site, and he had approved it, 'provided the bonfire itself was kept in the centre of the site, and that only wood was burnt on it’

It seemed, however, that someone had thrown paper on to the fire, and the strong wind had carried some of this to the warehouses.

There had also been reports that rival gangs of youths had been seen throwing fireworks at each other near the warehouses, and this might also have had something to do with the fire starting.

Asked about the advisability of allowing a fire at all so near to buildings, Mr. Banks pointed out that there was no other open space available, and that the risk
involved was negligible—given that the safety regulations would be 'strictly observed'.

When told of the fire chief's remarks, the bonfire's organiser, local businessman Mr. Ron Green, denied that any one had put paper on the bonfire.

'Aware of danger'

Mr. Green, 43, said that all the safety precautions suggested by the fire-brigade had been carried out in full — 'We were well aware of the danger to the warehouses if these were not observed,' he added.

The wind, in his opinion, had been the cause of the fire spreading. It had been 'unexpectedly strong', and in spite of efforts by himself and his helpers some sparks had been blown on to the warehouse roofs.

When asked if he thought it was wise to go on using events in which there was an element of danger — such as bonfires — to raise money for charity, Mr. Green said that he could see harm in it provided that the organizers took proper precautions.

Popular

The function was a popular one with the local people and had raised a great deal of money over the years, said Mr. Green, 'This event has become a part of local social life, and the proceeds from it have helped many good causes. It would be a pity to think of banning the bonfire as a result of one accident.'

Referring to the allegations about fireworks being thrown by youths, he said that no such reports had reached him. 'We always have stewards at the gates whose job it is to refuse entry to rowdy elements.' It was not possible to prevent people being high-spirited at an occasion like this, but in past years crowd control had been good and although fireworks had sometimes been thrown it had never got out of hand. He intended to hold the bonfire again next year, he said.
Unit II
A Feature Article

Why does English have no phrase like 'Bon appetit'? Has it ever occurred to you that there is no simple way of expressing your hope that someone will enjoy what he is about to eat? If you are entertaining, and say to your guest as you put his dinner before him 'I hope you like it', then he will probably think one of two things: either that there is an element about the meal, or that there is an element of doubt about him! — that the food is perhaps unusual, and he will not be enough of a gastronomic sophisticate to appreciate it.

You can be certain of one thing — he will not interpret 'I hope you like it' in the same way that the Frenchman interprets 'Bon appetit' — as a wish that focuses itself on the eater, and not on what is to be eaten. Those opposed to English cooking will no doubt explain the lack by pointing to the quality of food in this country; it's so bad, they will say, that no one ever really believes that it could be enjoyed. Hence, no need for a phrase that enjoints enjoyment! But surely not even English food can be as bad as all that.

Anyway, it's not only a matter of fact. Have you never felt the need for a simple, universal and socially neutral expression to use when drinking with someone? The Spaniard has his 'Salud' the German his 'Prosit', Swedes say 'Skaal', and the Frenchman, simply and sincerely 'A votre sante'. But what about the unfortunate English?

For most of them, 'Good health' is impossibly old-fashioned and study. It may be all right for lawyers and stockbrokers, doctors and dons, or for crusty colonels inside the four walls of a club; but in the boozer down the Old Kent Road it just sounds out of place. It is true that there is a whole string of vaguely possible alternatives that range from the mildly jocular through the awkward to the phrase-book bizarre; and if you listen carefully you may just hear people still saying 'Here's mud in your eye', 'Here's the skin off your nose, 'Down the hatch' or 'All the best' as they sink their pints or sip their sherries. But mostly they take refuge nowadays in 'Cheerio' or its truncated version 'Cheers'. And even here, for some people there is a sneaking suspicion that the term is not quite right. That it is somehow a shade too breezy, and comes most easily." from someone addicted to tweeds and the phrase 'Old chap'.

Even when taking our leave it seems we English are victims of some strange deficiencies in our valedictory vocabulary. The standard term 'Goodbye' is both too formal and too final. It may be just the job for ushering someone out of your life; but most leave-takings — for better or worse — are temporary affairs.

Perhaps in an attempt to escape implications of finality, many people now say 'Bye bye' instead; others try to make this particularly nauseating bit of baby-talk more acceptable by shortening it to 'Bye'.

209
And in place of those many leave-takings which so easily accommodate the idea of another meeting — 'Au revoir', 'Auf wiedersehen', 'Arrivederci', and so on, we have, alas, only such sad colloquialisms as 'So long' and I'll be seeing you'.

These examples by no mean.. exhaust the are, in which the English language doesn' t exactly help social contact. They have been called 'linguistic gaps' and tend to turn up in some way, or another in most languages. But according to Mr. Daniel Kane —: lecturer at the University of Chester — there seem to be more of them in English than in other languages — at least other Western European languages. At the moment Mr. Kane is seeking funds to finance a small research project into the problem. He wants first of all to question a large number of people about their feelings on the matter. 'After all, must be certain that the man in the street is aware of these gap in the same way that I think I am’ says Mr. Kane. And then he proposes to compare

English with several other languages in this respect, and look for possible sociological reasons for the differences he finds.
Unit III
A News Bulletin

Thirty five vehicles were involved in a multiple collision on the M. motorway this morning. The accident occurred about three miles south of the Newport Pagnell service area when an articulated lorry carrying a load of steel bars jack-knifed and overturned. A number of lorry drivers and motorists were unable to pull up in time and ran into the overturned vehicle, causing a major pile-up. Some of the steel bars from the load were flung by the impact across the central reserve into the southbound carriageway, which was restricted to single-lane working because of repairs and resurfacing, causing several minor accidents. With both carriageways blocked, police closed the motorway for a time, and diversion signs were posted at the nearest slip roads. Breakdown vehicles and ambulances had considerable difficulty in reaching the scene of the accident because of fog. This was dense in places, and the Aashing amber light signals had been switched on for most of the night. So far there are no reports of anyone seriously injured in the accident.

This accident, the fourth involving a multiple pile-up of vehicles in the last month, comes just as the first National Conference on Motorway Use is getting under way. At the opening meeting in London last night, Sir John Stone, the Metropolitan Area Traffic Adviser, criticised the standard of motorway driving in this country. He said that there was evidence that many of the basic disciplines of motorway use had yet to be learned by British drivers.

Lane discipline was much worse in this country than in America; and the habits of drivers when overtaking were particularly bad. One saw far too much dangerous pulling-out without an adequate signal having been given, and there was a similarly dangerous tendency for drivers to cut in after overtaking. Perhaps the commonest form of misuse however, was the reluctance of private cars to move into the inside lane whenever it was possible to do so. Sir John said that far too many were determined to stay in the middle or even the outside lanes, regardless of traffic conditions, with the result that drivers wishing to overtake became impatient and tried to follow too closely behind the vehicle in front, thus making accidents more likely. The conference is continuing.

Now, the Common Market negotiations. Mr. Geoffrey Rippon, the chief negotiator, flew to Brussels last night. It is thought that the object of his journey is to attempt to reduce the disagreement between this country and the European Economic Community on what Britain’s contribution to the Community budget should be. Britain has put forward the suggestion that a reasonable contribution would be thirteen to fifteen per cent, built up in a series of equal yearly steps over a period of five years. But the Council of Ministers is considering a recommendation that the British share should be twenty one point five per cent throughout the five year period of transition, or,
alternatively, a contribution of between ten and fifteen per cent in the first year rising to between twenty and twenty five per cent in the fifth year. There have been signs that some European leaders are reluctant to take the present British offer seriously, and it is widely felt in Whitehall that Mr. Rippon's main task at the moment is to make it clear to the Six that the offer is viewed in this country as a reasonable and realistic one.

The Common Market issue was also taken up today by officials of the National Farmers' Union, when they commented on a pamphlet issued by the Conservative Central Office. The pamphlet claims that on balance farmers would be better off if Britain joined the Common Market. The National Farmers' Union, however, points out that while farmers in Europe receive more for some products, such as barley, wheat, cattle and sugar, they get less for milk and pigs. In addition, says the Union, the pamphlet fails to mention horticulture, which constitutes an important part of British agriculture, and which is likely to be badly hit in the event of a link-up with the Common Market. The officials said that in their view the pamphlet tended to over-emphasize the benefits of joining the EEC, and to leave out of account many genuine difficulties.
A Letter of Application

Dear Sir,
I should like to be considered for the post of Personnel Manager at your Croydon factory, which was advertised in the Sunday Chronicle on February 15th, 2001.
The relevant information concerning my education and professional experience is as follows.
From 1990 to 1993 I studied Sociology at the University of Harrogate and graduated with a Second Class Honours Degree (Upper Division) in that subject. The main degree course was concerned with basic sociological topics, such as the history and theory of sociology, but there were also a number of optional courses available. From amongst these I selected The History of Industrial Sociology, and The Psychology of Management. In order to satisfy part of the requirements for my Finals Examination I had to submit a short dissertation involving original research. I wrote a paper on Nineteenth Century Industrial Relations in Yorkshire, and for this section of my examination received a mark of distinction.
Whilst at university I took an active part in a number of social activities, and was secretary of both the Drama Society and the Student Sociological Society. On leaving university I was a student for a year at the North Yorkshire Business College, where I was successful in obtaining a Diploma in Industrial Management, Class I. Courses at this college covered a wide field relevant to the management studies in general, and I was able to supplement my theoretical knowledge with a great deal of practical experience of such things as office management, personnel selection and the development and modification of work schedules. But it was in the area of personnel management and control that I found my interests developing most fully, and I took all available opportunities of increasing my knowledge of theory and practice in this field.
From July 1994, when I left business college, until September 1968, I was employed as an Assistant Personnel Officer with Messrs. James Bradley, at their Leeds factory. The company manufactures a wide range of small components for use in the electronics and motor industries, and employed at that time a labour force of approximately five hundred men and women. My duties were concerned mainly with the selection of personnel, for work both in the factory and also on the clerical and administrative side; but I was also largely responsible for liaison between the departments concerned with production, and the welfare department.
I enjoyed the work at Bradley's very much, especially in that it kept me closely in touch with both workers and management, but after four years' experience there, and in the absence of any prospects of promotion I applied for, and was successful...
in obtaining, the post of Deputy Personnel Manager with Yorkshire Engineers, Ltd. of Keighley. I began work there in September 1998, and am still employed in the same post.

My work at Yorkshire Engineers is in many ways similar to that which I was doing previously, but since the factory is engaged in heavy engineering I have been able to gain experience of recruiting and administering a rather different kind of labour. The work, again, I have found absorbing and rewarding, but I feel that at this stage in my career I should like more responsibility and greater scope for putting into effect some of the more up-to-date ideas that are now being developed and applied in the field of personnel management and control. It is for this reason that I am now submitting this application for your consideration.

In your advertisement you asked applicants to provide information on leisure activities which may be considered relevant.

Amongst my numerous out-of-work activities there are two that I should like to mention in this connection. First, I have continued ever since university to read widely in the literature relevant to my occupation, and I find time occasionally to contribute articles to several of the journals in this field. Details of my publications are provided on an attached sheet. Second, I began doing some voluntary social work while at business college, and have gradually extended my commitment in this direction ever since.

I enclose copies of two recent testimonials, and the names and addresses of two people who are prepared to act as my referees.

I hope that the information I have provided in this letter and the enclosures is sufficient for your purposes, but I shall of course be glad to expand it should you wish.

Yours faithfully,

Robert Dean.
Unit V

A Letter of Application

Joe Peatley two seven one.
Bob Hello, is that you, Joe?
Joe Yes.
Bob Bob here. How's things?
Joe Oh, hello, Bob. Fine. How are you?
Bob OK Listen, I've decided to apply for that job I was telling you about. The one I saw in the Chronicle. You remember?
Joe Yes, I remember. Croydon, wasn't it? What was it, a car factory?
Bob No, light engineering. Rather like that place I was at in Leeds.
Joe Oh yes, of course. Light engineering. I remember now. And it was for a manager wasn't it.
Bob Yes. Personnel Manager.
Joe Very nice too. Do you feel optimistic about it?
Bob Well, I Wouldn't say I exactly feel optimistic, but at least my training and experience have put me in with a chance. So perhaps I could say I feel reasonably optimistic about getting short-listed. But the interview — That's different.
Joe Why, for goodness sake? You're not scared of interviews, are you?
Bob No, I'm not scared of them, but I don't feel at my best in interviews. Not when on the receiving end, that is. I suppose I spend so much of my time interviewing other people that I feel off balance when I'm in the hot seat myself.
Joe Oh I shouldn't worry too much about it if I were you. As you say, the job's absolutely made for you. I shouldn't think they'll get many applicants with your qualifications.
Bob Well, we'll see.
Joe Yes. You're bound to get an interview. What's the pay like incidentally?
Bob Oh the pay's good. Nearly twice what I'm getting now.
Joe Mm!
Bob But then it is in London, and the rates tend to be a lot higher there, anyway.
Joe Yes, but even so, it'll make a big difference if you get it.
You'll be loaded!
Bob Well I don't know about loaded. I should need a damned sight more than twice my present wages to be loaded.
Joe Was the money the main reason for applying?
Bob One of the reasons. Probably not the main reason.
Joe What was that then?
Bob Well, I don't know, it's just that I... well, I like working at Yorkshire Engineering, but I'd like more scope for putting a few ideas into practice. You know, old Billings is all right, and he's....
Joe -Who's Billings? Is he-your boss?
Bob Yes. He's the Personnel Manager and he's very understanding and pleasant to work for and all that.
Joe Yes.
Bob And he'd never do anyone a bad turn, but...
Joe He's a stick-in-the-mud.
Bob Well no, not exactly, but he's very slow to respond to new ideas.
He will accept changes, but it takes him so long to come round to a new idea that
by the time he's trying it out it's not new any longer.
Joe And that doesn't suit you.
Bob Well it doesn't really bother me, but, I mean, you've got to move with the
times these days or you're soon left behind.
Joe Too true.
Bob So, anyway, I thought I'd have a bash.
Joe Good for you. I hope you fed them all that guff about your
qualifications and experience in your application.
Bob Oh yes, of course.
Joe But you didn't lay it on too thick did you? They can go off you if you make
yourself sound too good, you know.
Bob Well I don't think I did. I just tried to be factual and emphasise the most
important points.
Joe I bet you'll cake walk it, I'll keep my fingers crossed for you, at any rate.
Bob Thanks, I'll need it.
Joe But what about the prospect of going South? Does that bother you at all?
Bob Well I know it's got its disadvantages. Housing's very expensive
and travelling in the rush hour can be a bit of a bind. But no doubt
it's got its compensations, too, and if you want to get on you've got to be prepared
to move around, haven't you?
Joe Well, That's true. But you've always lived in Yorkshire and you'll find things
very different in London. No more Sunday mornings on the moors.
Bob Hey, steady on! I haven't got the job yet.
Joe No, but if you do get it you won't be able to pop out of the back door and run
up a mountain.
Bob True. That is something that I'd miss. That's one thing about these parts —
you're never very far from some real country. Still, I suppose I could get used to
country lanes in the Home Counties if I
had to.
Joe Ugh! You don't call that walking, do you?
Bob Well, no, not really, but you can't have everything, so I'd have
to amuse myself in other ways. They do have a few more theatres and
museums than we do, you know.
Joe You'll get fat, middle aged and civilised. What a fate. And
the beer's lousy.
Bob What do you mean, lousy? It's at the same these days, wherever
you are.
Joe Don't you believe it. Last time I was in London I tried about ten
pubs before I could find one where the beer wasn't too cold. I think
they put ice in it.
Bob Well if I get the job, I'll invite you down and we'll do a proper
survey of the boozers.
Joe You're on.
Bob But I'll have to ring off now. I've got one or two things to do before I turn in.
Joe OK. But don't forget to let me know if you get an interview.
Bob I will. Cheerio.
Joe Cheerio Bob. Thanks for ringing.

Unit VI
The language of informal conversation: about

A Lecture
Helen What do you think of Potter's course?
Jane Not much.
Helen Why, what's wrong with it?
Jane Oh, I don't know. It's just that he... Well because he overloads it with detail.
He tends to do this kind of thing I think.
That course he gave on town planning last year. It was just the same—just a load of details, which you could have got from a book anyway, and more and more technical terms. There was no... no overall er...
Brian No general overview you mean.
Jane Yes. I suppose you could call it that. I couldn't see the town for the buildings.
Helen But you've got to have detail in this kind of subject Jane, and anyway I think he's good. You take his first lecture for instance — I thought that was very interesting, and not at all over-detailed.
Jane But That's just it, Helen. That's just what I'm getting at.
Helen It starts off all right and engages your interest so that you sit back and think I'm going to enjoy this. I'm going to get a general idea of the important points in this topic'. When bang!
Jane Before you know it you're up to your neck in minute details and he's bombarding you with technical terminology and....
Helen Oh rubbish! Now you're exaggerating.
Now, now, you two. Let's keep this on an impartial academic level. At least you both seem to agree that he starts off on the right foot with his nice interesting introductions. Wouldn't you say that was important for any lecturer, Jane? — to the the audience involved right at the beginning and then gradually increase the pressure.
Jane Oh yes, That's all right. I would expect that. I think anyone would agree about that. But the trouble with you two is....
Brian Here we go again, Helen. She's going to put us all in our places again.
Jane Oh shut up, Brian. What I'm trying to say is you don't see my line of argument. I don't object to an interesting start to a lecture course followed by a speeding up and more difficult material. What;--..
I'm on about is that Potter doesn' t really raise the level at all, after his introduction — he just piles on the detail. You know when he got to the modern bit I was so submerged in curtain walls, modules'. mullions, cantilevered spans and reinforced concrete roof trusses I didn' t know whether I was coming or going.

Helen Well, all right, perhaps he was just a bit disorganised towards the end. But I thought before that he was perfectly easy to follow, and although he didn' t keep pushing his lecture plan under your nose it was there all the same. What about the part where he dealt with the eighteenth century developments?. I thought that was very interesting — the way he dealt with the western developments. And especially the way Bloomsbury developed from the Bedford Estates.

You know, it began to make sense to me for the first time — because he made me see why there's been a feeling of order in that part of London as compared with some of the others. And he brought all the threads together so well, and related the architecture to the ideas on town planning and the leasehold system and so on. I thought it was really good. Sort of enlightening.

Brian Yes, I liked that part the best.

Jane, it wasn't bad, I suppose. Yes, on second thoughts I'm inclined to agree with you about that part. But not as regards the rest. I shall stick to what I said. It was too detailed and too formless.

Brian She has got something there, Helen, you know. Perhaps Potter finds it difficult to lecture to undergraduates. After all, he does do most of his teaching to the postgraduates. He only does the one undergraduate course each year, and I think he tends to forget where he is. He starts off being nice and general and then tries to cram in a bit too much specialized information.

Jane The main thing I object to is this — this lack of direction. I like to feel.... Well, it's a help to know you're getting somewhere.

Brian Talking of getting somewhere, what about going for a coffee?

Helen Yes please. Where, the Union?

Jane Oh no, let's not go to the Union. It'll be so crowded at this time. What about the White Sheep? You know it, do you?

Brian Yes. That place in Ferry Street you mean? Just past Barkers Jane Yes. That's it. The coffee's pretty good there, and it's never too full in the mornings. That all right with you, Helen?

Helen Yes, That's fine. But do you mind if I call in the library first? I've had this book out for ages, and they've been chasing me for it, so if I don't get a move on and take it back I shall really be in the soup. If you like, I'll go the back way and you two can go across the quad. If I don't catch you before you get to the White Sheep I'll see you in there.

Brian OK, fine.

Jane Bye Helen.
1. There are various devices in our lab.
2. There are various journals in our institute's library.
3. There is some information about this question in literature.
4. There are (there is) new data about these processes in our article.
5. There are some theories about the origin of life on Earth.
6. There are many ways to solve this question.
7. There are about 50 people on our lab’s staff.
8. There is a great number of unsolved problems in modern science.
9. There are (there is much) many data about the properties of these materials in literature.
10. There is a wide range of unsolved questions in this field of science.
11. There is a great number of various data about this question in literature.
12. There is a great number of articles and monographs on this problem.
13. There are some journal’s articles about these phenomena.
14. There are 6 people in our group.
15. There are about 100 people in this lab.
16. В книге есть несколько новых идей о методике этих исследований.
17. В этом вопросе существует большая путаница.
18. В этой статье мало интересных результатов.
19. В этой книге мало новых сведений.
20. В настоящее время мало экспериментальных данных об этих явлениях.
21. В настоящее время есть ряд новых сведений о природе этих явлений.
22. В настоящее время нет объяснения этого явления.
23. В настоящее время нет экспериментальных данных по этому вопросу.
24. В этой статье нет обсуждения результатов.
25. В этой статье нет интересных сведений.
26. Между этими результатами нет расхождения.
27. Нет причин менять текст этой статьи.
28. В настоящее время нет хорошей теории для объяснения этого явления.

16. There are some new ideas about the techniques of these investigations in this book.
17. There is a great confusion about this question.
18. There are not many interesting results in this book.
19. There are (there is) little data in this book.
20. There are (there is) little experimental data about these phenomena at present.
21. There is a number of new data about the nature of these phenomena now.
22. There is no or (not any) explanation of this phenomenon at present time.
23. There are (there is) no or (not any) experimental data about this question.
24. There is no or (not any) discussion of these results in this article.
25. There are (there is) no or (not any) interesting data about this question in this article.
26. There is no or (not any) disagreement between these results.
27. There are no or (not any) causes to change the text of this article.
28. There is no (not any) good theory to explain this phenomenon.
1. Это убедительная теория.
2. Это фундаментальные исследования.
3. Это предварительные данные.
4. Это точная методика.
5. Это довольно удобный метод для наших исследований.
6. Это весьма ценные результаты.
7. Это очень своеобразный подход.
8. Это очень важные вопросы.
9. Это совершенно независимый результат.
10. Ваша интерпретация этого эффекта вполне удовлетворительна.
11. Этот результат абсолютно надежен.
12. Такой вывод из наших результатов совершенно неизбежен.
13. Эти сведения неточны.
14. Этот вывод неверен.
15. Эти результаты не совсем надежны.
16. Эта теория неубедительна для объяснения побочных (side) эффектов.
17. Цель наших исследований состоит в том, чтобы понять природу этих явлений.
18. Цель моего сообщения состоит в том, чтобы рассказать о нашей последней работе в этой области.
19. Цель лабораторных семинаров состоит в том, чтобы обсудить текущую (current) работу и последние данные из научной литературы.

To be in the Present Simple
1. It’s a convincing theory.
2. It’s a fundamental investigation.
3. These are preliminary data.
4. It’s an exact technique.
5. It’s a convenient method for our investigation.
6. These are various results.
7. It’s an original approach.
8. These are very important questions.
9. It’s an absolutely independent result.
10. Your interpretation of this effect is rather satisfactory.
11. This result is absolutely reliable (It’s an absolutely reliable result).
12. Such a conclusion from our result is inevitable.
13. These data are not exact.
14. This conclusion is wrong.
15. These results are not quite reliable.
16. This theory is not for the explanation of side effects.
17. The aim of our investigation is to understand the nature of these phenomena.
18. The aim of my report is to tell about the latest work in this field.
19. The aim of laboratory seminars is to discuss the current work and the latest data from scientific literature.
20. The aim of the present article is to describe new experimental data about the cell’s energy balance.
21. The aim of the present seminar is to discuss the latest data about this question.
22. These results are of great value for us.
23. These data are not of great value.
24. We are familiar with the latest investigations of this lab.
25. The description of this technique it is possible to find in periodicals.
26. It’s possible to get these journals in the library.
27. The latest experimental data are in good agreement with our assumption.
28. Similar investigations are carried out in many labs.
29. These changes are due to several causes.
30. This question is outside the scope of my report.
31. These experimental results are in agreement with theoretical calculation.
1. Этот метод дает довольно надежные результаты.
2. Он и его коллеги придерживаются другого подхода к проблеме.
3. Мы полагаем, что эта теория также применима и к нашему случаю.
4. Эта таблица показывает, что наши результаты хорошо согласуются с теоретическими расчетами.
5. Нам известно, что д-р Холл занимается аналогичной проблемой.
6. Ему известно о том, что этот вопрос нас очень интересует.
7. Мы никогда не пользуемся этим методом.
8. Наша группа не занимается этими вопросами.
9. Этот метод не дает удовлетворительных результатов.
10. Он спрашивает: "Все ли ученые понимают значение этих исследований?"
11. Возникает вопрос (The question arises): "Какие факторы управляют этими процессами?"
12. Возникает вопрос: "Чем обусловлены эти изменения?"
13. Возникает вопрос: "Влияют ли какие-либо другие факторы на эти процессы?"

Таблица

1. This method gives quite reliable results.
2. He and his colleagues follow another approach to the problem.
3. We think (consider) that this theory is applied to our case.
4. This table (chart) shows that our results are in good agreement with the theoretical calculation.
5. We know that Dr. Hall deals with a similar problem.
6. He knows that we are interested in this question.
7. We never use this method.
8. Our group does not deal with these questions.
9. This method does not give the satisfactory results.
10. He asks: "Do all scientists understand the significance of these investigations?"
11. The question arises: "Which factors regulate these changes?"
12. The question arises: "What caused these changes?"
13. The question arises: "Do another factors influence these processes?"
1. Ни одно из этих предположений не подтверждается экспериментом.
2. Ни один из этих факторов не участвует (не вовлечен) в данном процессе.
3. Никакой дополнительной проверки этого результата не требуется.
4. Эта идея не подтверждается экспериментальными наблюдениями.
5. Никакого объяснения этих результатов в статье не представлено.
6. Методика проведения эксперимента в статье не описана.
7. Все ли эти изменения связаны с влиянием окружающей среды (environment)?
8. Каким образом к этой проблеме подходят в настоящее время?
9. Какие вопросы обычно обсуждаются на лабораторных семинарах?
10. Возникает вопрос: "Подтверждается ли этот вывод какими-либо экспериментальными данными?".
11. Мы знаем, что этот метод в настоящее время является общепринятым.
12. Мы считаем, что такой метод наилучшим образом подходит для наших исследований.
13. Значение фундаментальных исследований в этой области сейчас широко признано.

The Present Simple Passive

1. None of these hypotheses is confirmed by the experiment.
2. None of these factors is involved in the given process.
3. There is no need for further testing of this result (or No further (additional) testing of this result is needed).
4. This idea is not confirmed by the experimental observations.
5. There is no explanation of these results given in the article or (No explanation is given in the article).
6. The method of conducting the experiment is not described in the article.
7. Are all these changes connected with environmental effects?
8. What is the approach to this problem at the current time? (How is this problem approached?).
9. What problems are usually discussed in the laboratory seminars?
10. The question arises: “Is this conclusion supported by some kind of experimental data?”
11. We know that this method is currently-accepted.
12. We are of the opinion or (consider) that this method is suitable to our research.
13. The significance of fundamental research in this field is widely accepted.
Эта гипотеза основана на результатах последних экспериментальных наблюдений.

Метод, который предлагается в данной статье, отличается простотой и надежностью.

1. Ход этого процесса схематически показан на рис. 1.
2. Этот вывод сделан на основе многочисленных экспериментальных наблюдений.
3. Наша теория приведена в соответствие с новыми экспериментальными данными.
4. Это предположение выдвинуто на основе теоретических расчетов, но оно требует экспериментальной проверки. 
5. Принимаются меры, чтобы свести экспериментальную ошибку до минимума.
6. Все эти факторы учитываются в наших опытах.
7. Семинары нашей лаборатории проводятся каждый вторник.
8. Этот вопрос подробно рассматривается в ряде статей.
9. Никакого сравнения между этими методами в статье не приводится.
10. Научные теории не всегда строятся на результатах прямых экспериментальных наблюдений.

14. This hypothesis is based on the results of the latest experimental observations.

15. The method which is proposed in the article is noted for its simplicity and reliability.

The Present Simple Passive (Irregular Verbs)
1. The course of the process is shown in schematic form in dig. 1.
2. This conclusion is made (has been made) on the basis of many experimental observations.
3. Our theory is in accordance with new experimental data.
4. This proposition is put forward on the basis of theoretical calculations, but it needs experimental testing.
5. Measures are taken (are being taken) to minimize experimental error.
6. All these factors are taken into consideration.
7. Our laboratory seminars take place (are held) every Tuesday.
8. This problem is analyzed in detail in many articles.
9. There is no comparison made between these methods in this article or (No comparison is made...).
10. Scientific theories are not always founded on the results of direct experimental observations.
11. Не все научные идеи принимаются безоговорочно.
12. В статье излагаются результаты опытов, но не дается описание методики.
13. В данной работе ни одно из этих важных требований не удовлетворено.
14. Этот фактор не играет большой роли в данном процессе, поэтому он не учитывается.
15. В этой работе описаны результаты экспериментальных наблюдений, но никакого сопоставления с теоретическими расчетами не сделано.

1. В конце 1940-х годов некоторые исследователи представили доказательства существования связи между этими явлениями.
2. О своих интересных опытах и выводах Ниренберг докладывал на V Биохимическом конгрессе в Москве.
3. В своем сообщении д-р Иванов представил результаты, которые были получены с помощью нового метода, и предложил интересную гипотезу о механизме интеграции.
4. Сотрудники Института полупроводников Академии наук СССР представили на конференцию около двадцати докладов и сообщений.
5. In his speech to the plenary meeting Prof. Zakharov emphasized the significance of international cooperation for the further development of scientific research.

6. The discussions embraced a wide range of questions of a general and practical nature.

7. Almost all the reports and presentations put forward in the plenary and sectional meetings were included in the book entitled *Trudy*.

8. There were about two hundred presentations put forward in the conference.

9. There was synchronous translation into three European languages supplied for this conference.

10. Each report was accompanied by discussion.

11. The congress was attended by about four hundred foreign delegates.

12. There was a wide range of questions of a general and specialized nature discussed at the congress.

13. The resolution of the organizing committee was approved by all the participants in the congress.

14. The work was finished (took place) in 1929, and its results were published a year later.

15. These phenomena were first described in the 1870s, but their active study began somewhat later.
16. This process was observed and described in detail in an experiment in the middle of the last century, but a theory explaining it was not proposed until sixty years afterwards.

17. At that time the work had not been completed, thus only preliminary results and conclusions were given in the journal.

18. This effect was discovered in the 1920s, but it was not explained at that time.

19. Smith’s article did not contain any new experimental data, but included a proposition of how the process works.

20. Only questions of experimental research were talked about at the previous conference, while theoretical problems were not touched upon.

21. No new proofs for this theory were put forward at the International Symposium in 1990.

22. This question was first raised in an international conference in 1986, but it was not talked about (discussed) in detail.

23. In one of the previous conferences the Russian delegation proposed a joint research programme in this field, but then it was not supported.
1. Когда мы начинали эту работу, мы ставили перед собой задачу проследить данный процесс от начала до конца и попытаться понять его природу.
2. Первая наша статья с обсуждением этих результатов была опубликована в 1990 году, а позднее вышла наша монография, в которую эти результаты были включены.
3. В нашей предыдущей статье мы уделили большое внимание влиянию факторов окружающей среды (environmental factors).
4. На прошлой конференции проф. Хилтон прочитал доклад, в котором он подверг тщательному анализу существующие попытки интерпретации этого явления.
5. Эта монография вышла в 1982 году.
6. Описание методики заняло в ней две главы.
7. Интенсивное изучение всей проблемы в целом привело к новым интересным выводам, и теория была приведена в соответствие с экспериментальными фактами.
8. В нашей статье 1989 года был дан подробный обзор существующих представлений о природе этих процессов и подчеркивалось значение комплексных исследований для их дальнейшего изучения.

The Past Simple Active and Passive Voice (Irregular Verbs)
1. When we began this work, we set ourselves the task of following this process through from the beginning to the end, and of trying to understand its nature.
2. Our first article that dealt with these results was published in 1990, and then later our monograph came out in which these results were included.
3. In our preceding (previous) article we paid great attention to the effect of environmental factors on the development of this type of organism.
4. Dr. Hilton read a report at the last conference in which he carried out a thorough analysis of extant attempts to interpret this phenomenon.
5. This monograph came out in 1982.
6. The description of methods took up (occupied) two chapters.
7. An intense study of the problem as a whole led to new interesting conclusions, and a theory was put forward according to facts gained through experiments.
8. In the article of 1989 we supplied (gave) a detailed overview of existing impressions of the nature of these processes and we underlined the significance of the knowledge of complex research for their further study.
9. В ряде докладов большое внимание уделялось идее международного сотрудничества в различных областях теоретической и экспериментальной физики.
10. Доклад проф. Степанова был снят с повестки дня пленарного заседания.
11. На заключительном заседании была зачитана (to read out) резолюция организационного комитета конференции, которая встретила горячую поддержку со стороны всех участников.
12. В то время было сделано немало попыток объяснить этот парадокс, но никакого убедительного решения вопроса не было найдено.
13. В те годы была проведена большая экспериментальная работа; на ее основе позднее была создана общая теория для объяснения этих явлений. 14. В предыдущих исследованиях этого типа не учитывалось влияние внешних факторов, поэтому результат не был достаточно точен.

1. Я начну свое сообщение с небольшого вступления, в котором постараюсь описать в общих чертах современное состояние данного вопроса.

9. In many reports given, most attention was paid to the idea of international cooperation in various fields of theoretical and experimental physics.
10. Prof. Stepanova’s report was struck off (withdrawn from) the plenary meeting’s agenda.
11. The resolution of the conference’s organizing committee was read out at the concluding session, which was met with enthusiastic support from all participants.
12. At that time there were many attempts to explain this paradox, but no convincing solution to the problem was found.
13. Great experimental work was carried out in those years; later, on its basis a general theory explaining these phenomena was founded.
14. In previous experiments of this type the effect of external factors was not taken into consideration, and thus the result was not accurate enough.

The Future Simple Active and Passive Voice
1. I shall begin my report with a short introduction in which I shall try to describe in general terms the contemporary
2. A description of the materials and methods will not take up much time, since we use standard methods.
3. Analysis (consideration) of the results gained, however, will demand close (great) attention.
4. The discussion of this theory will need data at hand (existing) and demand attentive observation.
5. Later I shall introduce some examples for the illustration of this part of our theory.
6. In this report I shall touch upon those aspects of the problem which are of practical interest.
7. This presentation shall represent an attempt to approach the current issue using the most up-to-date information.
8. My report will be an overview of the data available in current literature on the formation and functions of this cell organelle.
9. Here I will only enumerate the most important works of Russian and foreign authors in the last five years.
10. In the current presentation I shall try to prove that there is some disparity between theory and the data about these processes.
11. Our paper (article) will consist of several sections: introduction, analysis of materials and methods and discussion of the results and conclusions.

12. We shall begin our article with setting the question and then move on (pass) to discussing the results of the latest experimental observations.

13. In the third section of this article we shall lay out the programme of our future work and discuss the possible practical and theoretical difficulties.

14. Now we shall try to look at this question from a slightly different point of view.

15. Now I shall move on to a detailed description of the experiment itself and a description of the method which we applied.

16. Data will be presented below which confirm this proposal.

17. There will be a great deal of attention paid to the link between experimental work and theoretical research.

18. The scripts of all the reports and presentations will be published in the book entitled *Trudi* of the conference.

19. The next section will present all the formulas and equations which were used in our work.
20. The next section will present all the formulas and equations which were used in our work.

21. In the following sections attention will be drawn to the unwanted complications which are the results of applying this method and the possible measures to do away with (eliminate) them.

22. The conclusion of the article shall present the basic conclusions from our work and shall recommend some areas where the results gained could be applied.

23. At the end of this article a list of works on this theme shall be given, as well as tables and graphs.

24. In our presentation, some attention shall be paid to the statistical analysis of the data and the application of the corresponding figures.

25. For a better understanding of the history of the issue at hand, all known theories and hypotheses shall be called upon (mentioned).

26. The descriptive part of this presentation shall deal with experimental methods and apparatus.

27. Some results of this kind of analysis shall be omitted, as they are not of great interest to us.
28. В нашей статье не будет вступления, она начнется с описания опыта.
29. В этой статье методика проведения эксперимента рассматриваться не будет, так как она хорошо известна.
30. В данной статье будет сделана попытка дать сравнительный (comparative) анализ этих методов.
31. Позднее будет рассмотрен вопрос достоверности этих данных и некоторые другие проблемы.
32. Подписи к рисункам будут даны на английском языке.
33. Мы не будем здесь описывать все методы, а дадим ссылки на соответствующие работы.
34. Мы не будем подробно останавливаться на этом вопросе, так как он является темой следующего доклада.
35. Подробное рассмотрение нашей работы потребует много времени, поэтому я ограничусь описанием лишь одного опыта и обсуждением основных результатов.
36. В этом разделе мы сосредоточим внимание на преимуществах данного метода и на возможных областях его применения.
37. Будет проведено сравнение с существующей экспериментальной техникой.

28. There will be no introduction to our article, and it will begin with a description of the experiment.
29. In this article the method of conducting the experiment will not be looked at, as it is well known.
30. In this article an attempt will be made to give a comparative analysis of these methods.
31. Later we shall consider the question of the reliability of these data and several other problems.
32. Notes to the diagrams will be (given) in English.
33. We shall not describe all the methods here, as we will give references to corresponding works.
34. We shall not dwell in detail on this question, as it is the theme for the next report.
35. A detailed analysis of our work would demand much time, so I will confine myself to the description of only one experiment and discussion of the primary results.
36. In this section we shall turn our attention to the advantages of this method and on the possible areas of its use.
37. A comparison with existing experimental practice will be conducted.
1. Недавно группа исследователей нашего института предложила другой подход к этой проблеме, который довольно удобен и не требует больших затрат.
2. За последние годы наша лаборатория стала довольно крупным научным центром.
3. За последнее время статистические методы нашли широкое применение в научных исследованиях.
4. За последние двадцать лет отдельные направления в науке развились в самостоятельные отрасли знаний.
5. В последние годы значительно улучшились условия для развития научных контактов.
6. Первая статья по этому вопросу была опубликована в 1950 году.
7. С тех пор появилось большое число работ, в которых он рассматривался с различных точек зрения.
8. Этот вопрос был впервые поднят в статье 1956 года и с тех пор является предметом горячих споров на научных конференциях и в литературе.
9. Этот метод был впервые предложен в 1920-х годах, но с тех пор он подвергся ряду усовершенствований.

The Present Perfect (Active Voice)
1. Not long ago a group of researchers at our institute has proposed a different approach to this problem which is quite suitable and which does not involve (demand) great expenditure.
2. In the past few years our laboratory has become an important scientific centre.
3. In the last few years statistical methods have found a wide range of applications in scientific research.
4. In the last twenty years separate directions in the sciences have developed into independent fields of knowledge.
5. In the past few years the conditions for developing scientific contacts have ameliorated greatly.
6. The first article dealing with this question was published in 1950.
7. A great number of works have appeared since then, in which the question is considered from various points of view.
8. This question was first raised in a 1956 article then has remained a subject of heated discussion in scientific conferences and literature.
9. This method was first proposed in the 1920s, but since then it has undergone a series of corrections/changes.
10. Этим явлением впервые заинтересовались в 1940-х годах, и с тех пор оно является предметом интенсивных исследований во многих лабораториях в нашей стране и за рубежом.

11. Проф. Джонсон уже в течение пяти лет является президентом этого научного общества.

12. До сих пор нам не удалось полностью понять (мы не поняли) механизм этих взаимодействий.

13. Решение этой проблемы потребует еще больших усилий.

14. До сих пор науке не удалось накопить достаточно неопровержимых фактов в подтверждение какой-либо одной из этих теорий.

15. Нам до сих пор не удалось найти убедительного объяснения расхождения между теоретическими расчетами и экспериментальными данными.

16. Нам пока не удалось привести теорию в полное согласие с результатами опыта.

17. В подобных случаях мы до сих пор никогда не пользовались этой методикой, но сейчас мы решили ее испробовать.

18. До сих пор ни у кого из нас не было опыта работы с такой сложной аппаратурой, поэтому наши первые результаты ненадежны.

10. This phenomenon was first noted with interest in the 1940s, and since then it has been the subject of intensive research in many laboratories in our country and abroad.

11. So far Prof. Johnson has been the president of this scientific society for five years.

12. We have still not completely understood the mechanism of these interactions.

13. The solution of this problem still requires much effort.

14. Science still has not managed to collect enough irrefutable evidence for the confirmation of any one of these theories.

15. We have still not found a convincing explanation for the disparity between theoretical calculations and experimental data.

16. We have still not managed to totally accord theory and the results of the experiment.

17. In similar situations we had never used this method before, but now we have decided to try it out.

18. We have never had experience of using such complex apparatus before, and for this reason our first results were unreliable.
19. We have never set ourselves such a hard task before.
20. Its solution demands great effort from us.
21. We still have not finished our research, and our results are still preliminary.
22. It is possible that these data are unreliable and not precise enough: they need additional checking.
23. Not one of the studies conducted in the last few years with the objective of confirming this hypothesis have given encouraging results.
24. In this abstract report, we generalized the results of several research projects and also our work experience with the new methodology.
25. We all came to the conclusion that it has several important advantages over the earlier methodology.

The Present Perfect Passive

1. In the last few years valuable statistical data has been gathered about the regularity of these phenomena.
2. Results have been gained in many laboratories which also are in accordance with our hypothesis.
3. In the last two decades significant successes have been achieved in many scientific fields.
4. Уже делалось немало попыток изучить механизм этих изменений, но они пока остаются безуспешными.

5. До настоящего времени этот вопрос в литературе не поднимался, поэтому данная статья привлечет внимание специалистов.

6. Подобные исследования проводятся уже в течение ряда лет, но никакого убедительного результата пока не получено.

7. Эти факты известны давно, но объяснения им до сих пор не найдено.

8. Метод, который предлагается в данной работе, еще нигде не описывался.

9. Данные, которые я собираюсь здесь представить, еще нигде не публиковались.

10. В течение этого периода времени было решено большое количество научных и технических проблем.

11. До сих пор в этом вопросе была довольно большая путаница, поэтому новые исследования представляют значительный научный интерес.

12. В последнее время в литературе появилась критика такой интерпретации этих результатов, но убедительных данных для ее опровержения еще не получено.

4. There have already been several attempts at studying the mechanism of these changes, but so far they have been unsuccessful.

5. Until the present day this question has not been raised in literature, and for this reason the article in question will attract the attention of specialists.

6. Similar experiments have been conducted for several years, but no convincing results have been gained.

7. These facts have been common knowledge for a long time, but an explanation for them has not found yet.

8. The method which is put forward in this work has not yet been described anywhere else.

9. The facts which I am going to present you with have yet to be published / have still not been published anywhere.

10. In the course of this time a great number of scientific and technical questions have been answered.

11. Until now there has been great confusion regarding this question, and for this reason the new research is of significant scientific interest.

12. In the past few years criticism of the interpretation of these results in literature has appeared, but we have not seen any convincing data for the criticism's substantiation.
13. В течение последних нескольких лет появился ряд статей, в которых обсуждались различные способы усовершенствования этой экспериментальной методики.
14. До последнего времени ситуация в этой области исследований не считалась многообещающей и все усилия улучшить ее оставались бесплодными.
15. В данной работе сделана попытка применить новую модель для этих взаимодействий и проанализировать результаты ее предварительной проверки (testing).
16. В докладах, которые были зачитаны сегодня на нашем заседании, рассматривались вопросы методики эксперимента и анализировались полученные результаты.
17. В данном сообщении основное внимание будет уделено их теоретическому рассмотрению.
18. До сих пор большая часть данных, которые я только что кратко изложил, анализировалась довольно легко исходя из упомянутой модели.
19. Однако были также случаи расхождения с теорией, которые не получили достаточного освещения в специальной литературе.
20. В этом сообщении им будет уделено основное внимание.

13. In the course of the last few years a series of articles has appeared in which various ways of perfecting this experiment were talked about.
14. Until the recent past the situation in this area of research has not looked promising and all efforts to improve it have remained fruitless.
15. An attempt was made to apply a new model to the current work for these interactions and to analyze thoroughly the results of the preliminary testing of the model.
16. In the reports which were read out at our meeting, questions on the experiment's method were considered and the results gained were analyzed.
17. In this presentation most attention will be paid to theoretical consideration on them.
18. So far the greatest part of the data which I have just briefly outlined has been analyzed fairly easily due to the cited model.
19. However, there were also disparities with theory, which did not receive precise clarification in specialized literature.
20. Most attention will be paid to these (disparities) in this presentation.
1. At the current time there are two problems confronting us, which are of significant technical difficulties (we are facing two problems / we are faced with).
2. We are now faced (we are facing) with a dilemma: whether to begin work without the necessary equipment or to postpone it till later.
3. We are now working on the issue of a reliable statistical analysis of the data.
4. Scientific contacts in various spheres of research are widening quickly.
5. New branches of science are now emerging, which nothing was known about even twenty years ago.
6. Great changes in the organization of scientific work are taking place now.
7. Science is increasingly becoming an important factor in the development of society.
8. Not all branches of science are developing with the same speed: some are on the leading edge of science, while others are lagging behind on their development.
9. Scientific problems are (attracting attention of those) of great interest even to those who are not directly involved with scientific research.
10. Ученые сейчас решают большое число проблем, которые непосредственно не связаны с производством (industry).

11. В настоящее время появляются пограничные области в науке, в которых необходимы знания очень разных специальностей.

12. Количество научных публикаций сейчас растет очень быстро.

13. Методы научного исследования подвергаются сейчас коренным изменениям.

14. Мы планируем решить эту проблему в ближайшие три года.

15. Мы планируем закончить экспериментальную часть этой работы в конце будущего года.

16. Мы собираемся апробировать эту методику в ряде наших собственных исследований.

17. В настоящее время научные контакты развиваются очень быстро и количество международных конференций и симпозиумов растет год от года.

18. Так как этот вопрос рассматривался в ряде предыдущих докладов, я его здесь опускаю.

19. Так как этот метод неоднократно описывался в литературе, мы не рассматриваем его в нашей статье.

20. Поскольку мы показали эту зависимость в более ранней работе, здесь мы ее не обсуждаем.

10. Scientists solve a great number of problems which are not directly connected with industry.

11. Boundary (fringe, adjacent) areas of science are appearing now where it is vital to have knowledge from very differing fields.

12. The quantity of scientific publications is growing very quickly.

13. Methods of scientific research are now undergoing radical change.

14. We are planning to solve this problem in the next three years.

15. We are planning to complete the experimental part of this work by the end of next year.

16. We are going to test this method in series of our own studies.

17. Scientific contacts are developing very quickly now and the number of international conferences and symposiums is growing from year to year.

18. Since this question has been discussed in many previous reports, I will omit it here.

19. As this method has been described many times in the literature, we shall not analyze it in our article.

20. Since we have demonstrated this relationship in an earlier work, we shall not discuss it here.
21. Заметные сдвиги сейчас намечаются в организации обмена научной и технической информацией.

22. Сейчас многое делается для улучшения условий научной работы. 23. Все большее число людей сейчас вовлекается в сферу научно-исследовательской работы, и сам характер этой работы меняется.

24. В организации этих исследований сейчас происходят значительные изменения: пересматривается и совершенствуется программа, расширяются научные лаборатории, обновляется оборудование.

25. Относительная ценность этого метода уже обсуждалась сегодня в некоторых сообщениях, поэтому я собираюсь подробнее остановиться на результатах, которые были получены с его помощью в нашей лаборатории. 26. До сих пор мы рассматривали данные, которые были опубликованы в литературе в течение последних трех лет.

27. Теперь я перехожу к обсуждению некоторых результатов недавних наблюдений, которые дают нам несколько иное представление об этих процессах.

28. До сих пор мы имели дело с простой моделью этих взаимодействий.
29. Теперь я перехожу к рассмотрению нескольких усложняющих факторов, которые значительно меняют общую картину.

30. До совсем недавнего времени мы пользовались методикой, которая не давала возможности заглянуть в глубь (to get a deep insight into) этих явлений.

31. Сейчас начинают появляться новые приемы и методы, которые помогут нам в решении некоторых фундаментальных вопросов.

32. В предыдущем докладе было представлено убедительное доказательство важности подобных исследований.

33. В настоящем сообщении я собираюсь кратко изложить предварительную программу.

34. Наука накопила большое количество новых данных, и наши представления о многих фундаментальных явлениях сейчас подвергаются коренному пересмотру.

35. Наши знания о явлениях природы (natural phenomena) расширяются очень быстро, так как объем информации, которую ученые получают с помощью более совершенной методики исследований, также быстро увеличивается.

29. Now I shall move on to the discussion of several complicating factors, which significantly change the general picture.

30. Until the very recent past we have been using a method which deprived us of the possibility of obtaining a deep insight into these phenomena.

31. Now new methods and practices are appearing, which will aid us in the solution of several fundamental problems.

32. In the preceding article convincing proof was given of the importance of similar research.

33. In the current presentation I shall briefly outline a preliminary programme which is currently being discussed at the Presidium of the Russian Academy of Sciences.

34. Science has gathered a great amount of new data, and our opinions of many fundamental phenomena are undergoing radical review.

35. Our knowledge of natural phenomena is growing very quickly, since the amount of information which scientists gain with the aid of more perfected research methods is also increasing rapidly.
1. Environmental factors can affect cell development as a whole and on its separate components.
2. We cannot foresee all the difficulties which will arise in the course of our work, but we can take measures to eliminate the difficulties which are well known to us.
3. This method cannot give good results, as it does not take into account the effect of external environmental factors.
4. This material can undergo special analysis: in this case it can be used for further experiments.
5. It is impossible to follow this process to the end, as at a given stage the effect of side factors makes observation difficult.
6. It is impossible to gain these results on the basis of visual observations, and all the changes can only be recorded with the aid of very sensitive equipment.
7. It is impossible to obtain this result through mere trial and error.
8. We can only draw a preliminary conclusion from the results we have received, as they need thorough examination.

Modal Verbs

1. Факторы среды (environmental factors) могут влиять на развитие клетки в целом и на ее отдельные компоненты.
2. Мы не можем предвидеть все осложнения, которые возникнут в ходе работы, но мы можем принять меры для устранения трудностей, которые нам хорошо известны.
3. Этот метод не может дать хорошего результата, так как он не учитывает влияния факторов внешней среды.
4. Этот материал можно подвергнуть специальной обработке; в этом случае его можно использовать для дальнейших опытов.
5. Этот процесс пока нельзя проследить до конца, так как на определенной стадии влияние побочных (side) факторов делает наблюдение затруднительным.
6. Такие результаты нельзя получить на основе визуального (visual) наблюдения, и все изменения можно зарегистрировать только с помощью очень чувствительного прибора.
7. Такого результата нельзя достичь только методом проб и ошибок.
8. Из полученных данных можно сделать только предварительный вывод, так как они нуждаются в тщательной проверке.
9. The issue of the experimental method should be decided first.
10. The results of our further work should give an answer to the question of the nature of these changes.
11. We can carry on further work in this direction, but it is vital to take into consideration a number of complicating factors.
12. At the current stage of research we should attempt to increase the amount of data we have and to build a theoretical model which will be applied in the majority of cases, if not in all of them.
13. We should now develop our contacts with scientific laboratories which are working on the same problems (as us).
14. We were only able to complete the experiment due to the fact that conditions were favourable.
15. Similar experiments were conducted about fifteen years ago, but they could not give us a clear picture of these processes, as the method was very imprecise.
16. This work will be finished in the near future, and then we can sum up and draw some kind of conclusions based on the results gained.
17. In the past one could only approach this problem with the help of the method of trial and error.
18. Now the solution is becoming easier, as in the last few years a number of new methods have been devised and better apparatus has been built.
19. In the future much attention should be given to comprehensive research of this question, as it involves several different aspects.
20. We hope that future research will give us the key to the solution of this question, and many of our current impressions will have to be reconsidered on the basis of these new facts.
21. If we want to receive a clear impression of the current condition of this question, then we should give a short analysis of existing ideas and theories in the overview of the last few years’ work.

Modal Verbs (to be continued)
3. Сейчас нет надежного метода для проверки этой гипотезы, но в будущем ситуация может измениться к лучшему.
4. Эту работу следует продолжать, так как в ходе ее могут появиться новые идеи и факты.
5. Сейчас существует хорошее согласие между экспериментальными данными и теорией, но в будущем они могут прийти в конфликт.
6. Такой опыт является очень сложным, и мы можем встретиться с трудностями, которых мы сейчас себе не представляем.
7. Мы стараемся предвидеть весь ход эксперимента, но у нас могут возникнуть неожиданные (unexpected) трудности.
8. Статистический анализ имеющихся фактов, возможно, даст ясную картину состояния нашей области исследований и, возможно, облегчит дальнейшую работу.
9. Эта работа в будущем, возможно, послужит основой для новой отрасли науки.
10. В следующих докладах, возможно, будет дан подробный анализ этих результатов, поэтому я их здесь опускаю.
11. Нам придется принять эту модель, так как пока (for the time being) нет других удовлетворительных попыток интерпретации этих явлений.
12. Нам иногда приходится пользоваться ошибками, поскольку мы работаем над совершенно новой проблемой.
13. Мы были вынуждены сделать этот вывод, потому что в то время не было доказательства существования механизма обратной связи.
14. Мне не нужно упоминать здесь все исследования, которые были сделаны в этой области в последние годы, так как они хорошо известны из литературы.
15. В поддержку этой мысли мне придется сослаться на хорошо известную работу Джейкобса, в которой он дает сопоставление этих двух теорий с анализом экспериментальных данных.
16. В данном сообщении мне придется ограничиться описанием основных принципов такой классификации без подробностей или объяснений.
17. Определенные правила приходится соблюдать в любом сравнительном анализе, но в нашем случае они играют особенно важную роль.
18. Возможно, в будущем нам придется отказаться от этой интерпретации, но сейчас она кажется довольно удобной.
19. Эта работа еще только начата; ее, возможно, придется вести в очень трудных условиях, но она кажется многообещающей.
20. According to the plan of the experiment, the following conditions will have to be followed.
21. In accordance with the scientific research programme, the work will have to be completed in the next two years.
22. According to the plan of the conference, reports will have to be made at the plenary meetings, and presentations will be made at the sectional meetings.
23. According to the programme, this research will have to be done by several groups in two directions, and the data received will be processed and compared.
24. In one article we cannot answer all the questions that interest theory, but we shall try to answer some of them.
25. There may be a future confusion in theory, and so we shall give a definition for each term which we shall deal with.
26. The principles described in this article were designed for a simple case, but they can also be applied to complex systems.
27. From the comparison of these results we can conclude that there is no great difference between the nature, duration and intensity of these processes.

28. At the end of my speech I may dwell in more detail on these cases, but at the moment I can only list them.

29. This conclusion may appear premature, as a few of the details of the arrangement of the atoms in this molecule are not clear.

30. According to the resolution passed in the last conference, articles about these issues should be printed in two international journals.

Adverbial Modifiers of Manner (by / without) + Gerund

1. These phenomena have been observed directly and indirectly, and the results of these observations can be considered completely reliable.

2. This kind of experiment is justifiable considered realizable, as it is completely independent of the aforementioned conditions.

3. This correlation was convincingly demonstrated in the original work of Sanger and his colleagues.

4. This issue is occasionally touched upon in earlier works, but it is exhaustively dealt with in A. Voevodin's recent article.
5. Our seminar is dedicated to purely experimental problems, and all questions that are closely linked to theory will have to be omitted.
6. This issue was preliminarily discussed by several research groups in different laboratories.
7. This question has been continually raised in scientific literature lately, but so far no acceptable solution has been found.
8. Theoretically, such demands seem completely justifiable.
9. Such research at the current time is economically unrealizable, as expenses significantly exceed a reasonable figure.
10. Practically, such research can be completed somewhat faster than we supposed earlier.
11. Scientific thought is now developing much faster than fifty years ago.
12. This theory explains much more fully the results of the earlier experiment than the latest data.
13. Against the background of the supplied data such a conclusion seems fairly reasonable, but it should be used somewhat more cautiously and in the least number of cases.
14. Развитие экономики сейчас чрезвычайно тесно связано с научным прогрессом и в значительной степени зависит от него.

15. В этом сообщении я хочу, особенно не вдаваясь в подробности, описать основную работу, которая проводилась в соответствии с ранее предложенной программой.

В целях лучшего изложения материала статья разделена на несколько частей.

Для краткости изложение некоторых методов будет опущено, но будут даны ссылки на соответствующие работы.

В целях улучшения порядка проведения конференций были предложены заседания рабочих групп для узкого круга специалистов.

4. Такой подход очень полезен для уточнения результатов и статистической ошибки.

5. Для приведения теории в соответствие с экспериментальными данными нам придется разрешить ряд практических трудностей.

6. Нам потребуется некоторое время, чтобы разобраться в результатах этих наблюдений.

14. The development of an economy is extremely closely linked to scientific progress and to a significant degree depends on it.

15. In this speech I would like to describe, particularly without going into details, the basic research which was conducted in accordance with the programme proposed earlier.

**Adverbial Modifiers of Purpose and Results**
(for + Gerund)

1. For better presentation of the material the article is divided into several parts.

2. For brevity the description of several methods will be omitted but references to relevant works will be given.

3. For a better system of conducting conferences, meetings of workgroups for a small circle of specialists were proposed.

4. This kind of approach is very good for the analysis of results and statistical error.

5. For bringing theory in line with experimental data we shall have to solve a series of practical difficulties.

6. We need some time for analyzing the results of these observations.
7. Чтобы решить этот вопрос объективно, нам нужно иметь большое количество экспериментальных данных.
8. Чтобы несколько упростить измерения, мы применили следующую модификацию общеизвестного метода.
9. Чтобы повысить точность данных, надо свести до минимума возможность случайной ошибки.
10. План проведения эксперимента, о котором только что говорилось, должен быть разработан очень тщательно, чтобы получить достоверные результаты.
11. Чтобы сделать исчерпывающим анализ этих данных, мы привлечем различного рода интерпретации, которые имеются в литературе, и рассмотрим вопрос с нескольких точек зрения.
12. В последние годы было выдвинуто несколько гипотез для объяснения этих интересных явлений, но ни одна из них не подтверждается вполне достоверными результатами.
13. Вопрос, который мы сейчас обсуждаем, слишком сложен, чтобы на него можно было так быстро найти ответ.
14. Результаты этих измерений выглядят слишком сомнительными, чтобы на них можно было полагаться.
15. Экспериментальная ошибка слишком велика, чтобы этот результат можно было считать хорошим.

7. For an objective solution to this problem, we need to have a large quantity of experimental data.
8. To simplify the measurements somewhat, we made the following modification to a universally known method.
9. To increase the accuracy of the data, the possibility of accidental error will have to be brought to a minimum.
10. A plan on how to conduct the experiment which has just been talked about will have to be devised in detail for obtaining reliable results.
11. For an exhaustive analysis of these data we shall consider various types of interpretations which exist in scientific literature, and we shall look at the question from various points of view.
12. In the last few years several hypotheses for the explanation of these interesting phenomena have been put forward, but not one of them is confirmed by completely reliable results.
13. The question which we are discussing at the moment is too difficult to find an answer to that quickly.
14. The results of these measurements look too dubious to rely on.
15. Experimental error is too great to consider this result a good one.
1. При определенных условиях эксперимента этот эффект проявляется достаточно ясно, но в нормальных условиях он не наблюдается.
2. Метод, который предлагает автор этой статьи, очень эффективен.
3. Несколько лет назад была предложена теория, которая была вполне удовлетворительна при объяснении некоторых из этих случаев.
4. Вопрос о новой научной программе возник вновь при обсуждении последних результатов группы д-ра Новикова.
5. При оценке новых научных результатов нужно глубокое знание предмета и объективный подход.
6. При пересмотре старой программы мы учили многие факторы, которые могут помочь в повышении эффективности наших исследований.
7. Обсуждая эти результаты, мы должны иметь в виду, что нам не удалось проверить их другими методами, и поэтому их следует считать предварительными.

Adverbial Modifiers of Time and Circumstances

1. Under specific conditions of the experiment the phenomena demonstrates itself quite clearly, but it is not observable under normal conditions.
2. The method proposed by the author of this article is very effective.
3. A few years ago, a theory was put forward which was completely satisfactory on explaining some of these cases.
4. The issue of a new scientific programme was raised again on discussing the latest result of Doctor Novikov’s group.
5. On evaluating new scientific results a thorough knowledge of the subject and an objective approach are necessary.
6. While looking through the old programme, we took into account many factors which may help raise the level of the efficiency of our research.
7. While discussing these results, we must keep in mind that we have not been able to check them by other methods, and so they should be considered preliminary.
8. While trying to find an explanation for the disparity between results, we struck upon a very interesting thought.
9. Our current work is to summarize the results of our latest research.
10. While carrying out a comparison between our results and the data in scientific literature, we can come to two basic conclusions.
11. The issue which I shall touch upon in my speech has never been discussed in scientific literature before.
12. Therefore I shall look at it from all possible points of view which are of especial interest to theoretical physics.

**Participle Attribute**

1. A short overview of the data available in scientific literature will be included at the beginning of the article.
2. In this article questions are discussed which are of interest to a wide circle of biologists.
3. In this report facts are presented which are of interest from many different points of view.
4. Experimental data will be presented in this article, which indicates the presence of a definite correlation between elements of this system.
1. Теоретическое рассмотрение полученных результатов не противоречит основной цели данной статьи.
2. Накопившихся сведений вполне достаточно, чтобы сделать некоторые предварительные выводы о природе этих явлений.
3. Предпринятые в последнее время исследования пока не могут дать точный ответ на ваш вопрос, но предварительные результаты являются довольно обнадеживающими.
4. Предлагаемая здесь интерпретация основана на фактической информации и кажется вполне удовлетворительной в пределах точности наших данных.
5. Цель моего выступления состоит в том, чтобы попытаться дать единый анализ кажущихся несвязанными результатов, полученных с помощью разных методов.
6. Основным моментом в нашем подходе к данной проблеме является использование наиболее выгодным образом сведений, полученных в последнее время.
7. Подробный анализ результатов этих двух работ, предпринятый в данной статье, был сделан, с тем чтобы показать несостоятельность вывода, предлагаемого Грином.

The Participle / The Infinitive

1. A theoretical analysis of the results gained does not go against the main aim of this article.  
2. The findings gathered so far are quite sufficient to make some preliminary conclusions about the nature of these phenomena.  
3. The research which was recently undertaken cannot give an exact answer to our question, but the preliminary results are fairly encouraging.  
4. The interpretation suggested here is based on factual information, and seems completely (quite) satisfactory within the limits of the accuracy of our data.  
5. The aim of my speech is to try and present a unified analysis of seemingly unconnected results, gained by various methods.  
6. The basic concept in our approach to the given problem is to use the most advantageous type of findings received lately.  
7. The thorough analysis of the results of these two projects undertaken in this article was done to prove the invalidity of the conclusion proposed by Greene.
8. Доводы, приведенные в статье Старка, хорошо обоснованы и не противоречат основным положениям данной теории.
9. До сих пор самые точные теоретические трактовки, опубликованные в литературе, ограничивались проблемами, представляющими наименьшие практические трудности.
10. Данные, представленные в этой статье, очень интересны с познавательной точки зрения, но они еще нуждаются в проверке.
11. Тезисы докладов, прочитанных на этой конференции, были опубликованы отдельной книгой.
12. За недостатком времени я не могу даже упомянуть о многих исследованиях, проведенных за последние десятилетие в этой области.
13. Исследования, которые будут упоминаться ниже, могут помочь заполнить еще один пробел в наших знаниях о природе этих явлений.
14. Литература, краткий обзор которой будет дан в начале этой статьи, прежде всего посвящена теоретическому рассмотрению процессов.

8. The arguments put forward in Stark’s article are well founded and do not contradict the basic assumptions of the current theory.
9. Until now, even to the most exact theoretical proposals published in scientific literature, are limited by problems which represent the least practical difficulties.
10. The data presented in this article is very interesting from the informational point of view, but they still need to be verified.
11. The abstracts of the reports read in this conference were published in separate book.
12. Due to a lack of time, I cannot even mention how much research has been conducted in the last decade in this area.
13. The research which shall be mentioned below may help to fill in one gap in our knowledge about the nature of these phenomena.
14. The scientific literature, which will be given as an overview at the beginning of this article, is above all dedicated to the theoretical analysis of the processes.
15. The difficulties which have to be solved at first are connected with scientific research as a whole.
16. The abstracting journal which should have been published by this scientific society will encompass the basic research in this area, conducted in member-countries of this society.
17. The conference which should take place next year will touch on a wider range of questions.
18. An abbreviated copy of our report, which will appear in “Nature” magazine, will only contain basic results and conclusions.
19. The results which can be expected from this research will probably clarify this fairly confused question.
20. There is some disparity between these data which are still waiting for explanations.
21. There is still a series of unclear issues in this field which are still awaiting a solution.
22. There is still a great number of questions which will have to be discussed in this meeting.
23. There were more people at this conference than at that one that took place in Moscow in 1996.
24. This kind of approach to the problem seems more well-thought out than the one Smith proposed in this report.
25. The results gained with the aid of a new method seem more encouraging than those which have been recently published.
26. The number of reports at this conference is not as great as the number that is expected next year.
27. The amount of research which has recently been conducted in this field is much less than the amount of research which we expect in the forthcoming years.

ONE + IT in SUBJECT POSITION

1. One normally makes generalizations based on results analysis.
2. When coming up against problems, one sometimes loses confidence in oneself.
3. When writing an article or reading out a report, it is necessary to know how to express one’s idea concisely and clearly.
4. Now everyone admits the strength of the scientific approach to the solution of many problems, even non-scientific ones.
5. While looking at this question one should keep in mind that its excessive simplification may lead to a serious error.
6. Анализируя свои результаты, необходимо оценивать их, исходя их новейших представлений о предмете.
7. Нельзя отрицать тот факт, что объективная оценка полученных результатов является чрезвычайно сложной задачей.
8. Не следует преувеличивать сложность этой проблемы, так как можно легко потерять уверенность в своих силах.
9. В связи с вопросом об эффективности нашего подхода к этой проблеме полезно рассмотреть следующую аналогию.
10. Поскольку эта статья касается в основном экспериментальных наблюдений, здесь уместно привести сопоставление результатов двух серий исследований.
11. Поскольку цели и задачи наших исследований теперь совершенно ясны, желательно приступить к работе как можно скорее.
12. Сейчас нереально говорить о широком практическом применении этих результатов, так как они еще требуют тщательной проверки.
13. Прежде чем приступить к разбору достоинств и недостатков данного метода, полезно дать краткую историческую справку о его появлении.
6. While analyzing one’s results, it is necessary to evaluate them from the point of view of the newest impressions of the subject.
7. It is impossible to refute the fact that an objective evaluation of the results gained will be an extremely difficult task.
8. It is not necessary to exaggerate the difficulty of this problem, as one can easily lose confidence in one’s abilities.
9. In connection with the question of the effectiveness of our approach to this problem it would be useful to consider the following analogy.
10. Since this article deals mostly with experimental observations, it would be suitable to make a comparison between the results of two research projects here.
11. Since the goals and tasks of our research are completely clear now, it is desirable to start work as fast as possible.
12. At the current moment it is unrealistic to talk about widespread practical application of these results, as they still need exhaustive testing.
13. Before discussing the advantages and disadvantages of this method, it would be useful to give a brief description of its historical development.
14. Our first results seem fairly encouraging, but still some time is needed to complete the work.
15. It is useful to sustain business contacts with each other and even to develop them further.
16. It is vital for the modern researcher to know the most important discoveries in other scientific fields.
17. It is difficult for me to answer your question, as I still do not have the results of the analysis of the latest measurements.
18. It will be interesting for us to do this work, as it is very close to our current theme.
19. It is not clear yet whether we can attribute these changes to environmental effect, or whether they are caused by some kind of internal causes.
20. So far there are few reliable facts about these features, and thus it is difficult to decide which position to take in this question.
21. Before continuing work, it is necessary to understand how to work out this issue further and in what way to use the data already available.
22. Для того, чтобы узнать природу этих дефектов, нужно показать, как и при каких обстоятельствах они проявляются.
23. Работа по изучению этих явлений еще только начала, и пока не ясно, к какому результату она может привести.
24. Чтобы понять более сложные процессы и явления, необходимо познакомиться с основными фактами и теоретическими положениями этой науки.
25. Из вышесказанного следует, что открытие связи между этими явлениями дает возможность для их комплексного (complex) изучения.

1. Из фактов, накопившихся к тому времени, был сделан вывод, что эти два понятия определенным образом связаны между собой.
2. Когда стало понятно, что полученные данные сильно расходятся с предсказанными величинами, предположили, что этот процесс, возможно, подвержен влияниям каких-то неизвестных факторов.
3. В то время казалось весьма сомнительным, что эти опыты приведут к каким-либо новым находкам, но для некоторых ученых вскоре стало ясно, что они, возможно, откроют новую эру в этой области.

22. In order to understand the nature of these defects, we need to show how, and under what conditions they appear.
23. Work on the study of these phenomena has just begun, and it is not clear yet what result it may lead to.
24. In order to understand more complex processes and phenomena, it is necessary to become acquainted with the basic facts and theoretical concepts of this science.
25. From what was said above, it follows that the discovery of a link between these two phenomena makes their complex study possible.

SEQUENCE of TENSES

1. From the facts that had been gathered until then, the conclusion was made that these two concepts in some defined way were interconnected
2. When it was understood that the data obtained differed greatly from the predicted values, it was proposed that this process was possibly subject to the effects of some kind of unknown factors.
3. At that time it seemed very doubtful that these experiments would lead to new findings, but for some scientists it soon became clear that they might open up a new era in this field.
4. Иногда казалось, что эта работа зайдет в тупик и мы не сможем найти выход из положения, но этого не произошло.
5. В ходе исследований стало очевидно, что наша гипотеза основывалась на неверных предпосылках.
6. Когда стало ясно, что проблема гораздо сложнее, чем мы предполагали, было решено вести исследования в двух направлениях.
7. Когда оказалось, что полученные цифры значительно расходятся с ожидаемым результатом, был сделан вывод, что при планировании эксперимента была допущена ошибка.
8. На предыдущей конференции ряд докладов был посвящен теоретическим вопросам.
9. Подчеркивалось, что в области теории произошли важные сдвиги.
10. В одной из статей, опубликованных в прошлом году, было показано, что некоторые из этих лекарств (drugs) были известны еще в древности.
11. Судя по количеству статей, публикуемых ежегодно, интерес ученых к этим проблемам, видимо, растет.
12. Объем научной информации растет, и этот процесс, кажется, идет с увеличивающейся скоростью.

4. It sometimes seemed that this work would find a dead end and that we could not find a way out, but this did not happen.
5. In the course of the experiment it became obvious that our hypothesis was founded on false prerequisites.
6. When it became clear that the problem was much more difficult than we had imagined, it was decided to carry on research in two different directions.
7. When it turned out that the numbers obtained differed greatly from the expected results, the conclusion was made that a mistake occurred of the experiment.
8. In the previous conference a series of reports was dedicated to theoretical questions.
9. It was emphasized that great leaps forward had been made in the field of theory.
10. In one of the articles published last year it was demonstrated that some of these drugs were known even in ancient times.
11. Judging by the amount of articles published every year, the interest of scientists in this problem is apparently increasing.
12. The amount of scientific information is rising, and this process seems to be gathering pace.
13. Now science plays an apparently large role in the life of society, as opposed to a few decades ago.

14. When we say that we have solved some scientific problem we are apparently making an inevitable mistake since the solution of one problem, as a rule, is a beginning of more in-depth research.

15. Apparently, at that time the necessary conditions for the solution of this problem did not exist, while the absence of a unified theory for these phenomena made further work difficult.

1. The presence of reliable experimental data permits us to develop and perfect a theory, without which scientific understanding of the phenomena is impossible.

2. The few facts we have in our possession at the moment do not allow us to speak confidently about the causes of the described phenomena.

3. The evidence which now available in scientific literature on this question does not enable us to make a conclusion about a definite correlation between the described phenomena.
4. Since this question raised great interest we proposed exchanging opinions at the next meeting.

5. Since the work has only just begun and the results presented here have not yet been verified, it would be advisable to avoid any far-reaching conclusions.

6. In this communications it is worth mentioning several works in which an attempt was made to analyze the results obtained and even to come to some preliminary conclusions.

7. At the current time one of our basic difficulties consists in isolating this kind of process and studying of it from all possible points of view.

8. This warning will possibly prevent other researchers from repeating the same mistakes.

9. We are now interested in widening of sphere of our work, as only complex study of this question can supply us with enough material to make some definite conclusions.

10. In the current work we will limit ourselves by describing only one side of the studied phenomena, as this demands even more efforts to understand it completely.
11. В этом сообщении я ограничусь рассмотрением только методических вопросов, оставив в стороне многие другие аспекты данной проблемы.
12. Международные конференции способствуют обмену научной информацией по общим и конкретным проблемам исследовательской работы.

1. Вопрос о возможности использования этих данных в нашей работе действительно заслуживает серьезного обсуждения.
2. Этот метод действительно имеет большие преимущества по сравнению с ранее применявшимися методиками.
3. Несмотря на некоторые недостатки, этот подход к проблеме все же обещает дать интересные результаты.
4. Научные конференции действительно способствуют развитию научных исследований, так как они дают ученым возможность обмениваться новейшими данными и наметить пути дальнейшей работы.
5. За последние десятилетия научная информация не только увеличилась в количественном отношении, но и изменилась качественно.
6. Ученые не только исследуют современный мир, но и делают предсказания о его дальнейшем развитии.

11. In this speech I shall limit myself to an analysis of purely methodical issues leaving aside many other aspects of the current problem.
12. International conferences facilitate the exchange of scientific information on general and specific problems of research work.

EMPHATIC SENTENCE STRUCTURE

1. The question of using these data in our work does merit serious discussion.
2. This method does have great advantages in comparison with the method applied before.
3. Regardless of several failings, this approach to the problem does promise to give interesting results.
4. Scientific conferences do aid the development of scientific research, since they give scientists the possibility to exchange the newest data and to show the ways of future work.
5. In the last decade scientific information has not only grown in quantity, but has changed in quality.
6. Scientists do not only research the modern world, but they do make predictions about its future development.
7. Science has not only collected new evidence about natural phenomena, but does make man reconsider many of his earlier impressions of it.
8. Computers do take on an especial value when completing complex calculations.
9. It is exactly this value that can be used as proof of the existence of a direct link between the process described.
10. It is the question about the reliability of the data that is now becoming especially significant.
11. It is precisely the factors that define the course of the current processes that is still unclear.

MODAL VERBS (continued)

1. Could you give some examples to support this idea?
2. Could you explain why you chose this material?
3. Could you tell us how the preparation for such a difficult experiment was carried out?
4. Я мог бы подробнее рассказать о ходе самого опыта, но боюсь, у меня не осталось для этого достаточно времени.
5. Я мог бы привести здесь несколько аналогичных работ, в которых делалась попытка свести все эти данные к какой-то одной теории.
6. Мы полагаем, что в ближайшее время мы могли бы начать экспериментальную работу с целью выяснения причин появления этих странных изменений.
7. Нам кажется, что такие исследования могли бы заинтересовать также и теоретиков.
8. Я не стал бы сейчас даже пытаться оценить все значение, полученных сведений, но мои коллеги просили меня высказаться по этому вопросу.
9. Я хотел бы перечислить здесь имена тех, кто внес основной вклад в разработку этой проблемы.
10. Мне хотелось бы подчеркнуть, что мы не можем надеяться получить надежные результаты до тех пор, пока у нас не будет достаточно точной измерительной аппаратуры.
11. Я бы хотел выразить признательность проф. Хилтону за его помощь в организации этого симпозиума.

4. I could relate in more detail the course of experiment itself, but I am afraid I do not have enough time left for this.
5. I could mention here a few similar works, in which an attempt was made to match all these data to one theory.
6. We believe that in the near future we could start work with the purpose of explaining the causes for the appearance of these strange phenomena.
7. We think that such a research would also be of interest to theoreticians.
8. I would not now try to evaluate all the meanings of the evidence obtained, but my colleagues requested that I talk on this issue.
9. I would like to list the names of all those who made a fundamental contribution to the working out of this problem.
10. I would like to emphasize that we cannot hope to receive reliable results until we have measuring equipment that is precise enough.
11. I would like to express my gratitude to Prof. Hilton for his help in the organization of this symposium.
12. I would also like to thank my Russian colleagues for all their assistance in the preparation period before the symposium.
13. We could have begun this research a year ago, but we did not have suitable conditions for it.
14. We could have completed this work long time ago, but we wanted to collect more experimental information.
15. We could have informed the participants in the congress of the theme of the meetings a long time ago, but this question was finally decided only a week ago.
16. If it were not for the absence of a thoroughly tested method for the research, we could have solved this issue a long time ago.
17. At the beginning of the article I should have supplied an overview of scientific literature for at least the last two years, but I thought that the article would turn out to be too long.
18. I should have included in this overview all the most well-known research carried out in the last two or three years here and abroad, but, unfortunately, I could not do this due to the too short period of time allotted for my report.
19. We should have foreseen obtaining this kind of result, and then we could have taken the necessary measures to avoid errors.
20. This term may have come into use in the 1930’s.
21. The method which we used may not have been precise enough, as there was a great disparity between our data and theoretical calculations.
22. This approach may have given better results if there had been no unforeseen circumstances that impeded the observations.
23. At that time this idea should have seemed absurd: indeed few scientists took it seriously.
24. This hypothesis should have been rejected long ago, but there was not enough convincing evidence against it.
25. Now we understand that these second-rate ideas should have been rejected right from the beginning, although at that time they seemed important.
26. The potential prospects of this method at that time may have not been valued enough, as in the scientific literature of those years we do not find any references to it where there could have been some.
27. Чтобы обзор литературы тех лет был более полным, в него следовало также включить и менее выдающиеся работы, которые, однако, сыграли определенную роль в разработке этого вопроса.
28. В "Труды" конференции следовало также включить тезисы всех докладов, но некоторые из них пришли в адрес программного комитета слишком поздно.

1. Сейчас было бы непростительно упустить эту возможность.
2. Было бы только естественно напомнить здесь о тех исследователях, которые были пионерами в данной области.
3. Здесь было бы полезно вернуться несколько назад и взглянуть на этот вопрос с точки зрения последних данных.
4. В принципе было бы интересно проверить, остается ли это положение теории справедливым для более сложных случаев.
5. Сейчас было бы естественно задать вопрос, является ли данный случай единственным исключением из общего правила.
6. Было бы интересно выяснить, каким образом эти два процесса связаны между собой.

27. In order that the overview of the scientific literature of those years be more complete, it should have also included the less outstanding works, which, however, played a defining role in the solution of this question.
28. The 'Trudy' conference should have included the abstracts of all the reports, but several of them arrived at the programme of committee’s address too late.

**SUBJUNCTIVE MOOD**
1. It would be inexcusable to let this opportunity go now.
2. It would only be natural to recall here the researchers who were pioneers in this field.
3. Here it would be useful to go back a little and to look at this question from the point of view of the latest data.
4. It would be in principle interesting to check if this theoretical concept remains justified for even more complex cases.
5. It would be natural here to ask the question whether the given event is the only exclusion to the general rule.
6. It would be interesting to explain how these two processes are interconnected.
7. Now it would be difficult to decide objectively which of these two methods to favour; we could try both.
8. Without working out new and more precise research methods, scientific progress would simply be impossible.
9. Without a theory these experiments would look like a set of unrelated facts.
10. Without scientific progress further development of technology would become almost impossible.
11. With the application of this method the time span of these observations would be shortened significantly.
12. In order to understand this work which is currently headed in this direction more completely, I would have to read a paper of at least two hours’ length.
13. This method has two advantages: its application would permit the experiment to be simplified, and simultaneously to raise the accuracy of the results obtained.
14. The completion of this task would demand in the next few years a joint effort by specialists in various areas of science, who would work in close cooperation with each other.
15. This problem would be solved in the next few years if there were more accurate diagnostic methods at our disposal.

16. If we were to try to represent this process schematically, we would get the following picture.

17. If we now had at our disposal only half of the facts which are presented here this would be enough to say what the basic difference is between these phenomena.

18. It would be a great oversight if in connection with this question we did not mention the latest work of Antonov and his colleagues.

19. The results of the current research may not deserve much attention here, unless they did not indicate the definite regularity of the appearance of the described changes.

20. If we were to try to collate and order everything which is known about this issue at the current time, then there would not be much data at all.
21. If the explanation proposed in this article were correct, then it would not contradict the results that have been repeatedly verified by experiments.

22. Several authors told that if this idea was to be confirmed in further research, the problem would be almost completely solved.

23. If we had approached the question from this point of view right from the beginning, then we would not have lost so much time in vain.

24. The previous conference would have been much more interesting, if more famous scientists had come to it.

25. If these interesting facts has been known to us then, that would have significantly changed the general direction of our work.

26. The curricula of higher education centres should answer to the growing demands of the level of preparation for scientific workers.

27. It is very important that a novice specialist should have the best understanding of the area for science in which he wants to study.

28. It is completely natural that this issue is now given much attention.
29. Важно, чтобы творческая инициатива научного работника поощрялась руководством лаборатории и института.
30. Нет ничего удивительного в том, что организации научного труда сейчас уделяется столь большое внимание.
31. Странно, что в этой статье обсуждаются второстепенные причины недостатков в существующей системе организации научной работы и не упоминается самый важный фактор.
32. Нет ничего странного в том, что производственные лаборатории заинтересованы в разработке фундаментальных вопросов науки, а не только в развитии практического направления исследований.
33. Уровень современных исследований требует, чтобы ученый обладал глубокими знаниями в своей области, а также был знаком с основными работами в смежных науках.
34. Специфика исследовательской работы требует, чтобы ее планирование проводилось с большой осторожностью.
35. В своей статье, посвященной современной практике присуждения ученых степени, проф. А. рекомендует, чтобы в отдельных случаях степени присуждались без защиты диссертации.

29. It is important that the creative initiative of a scientist be encouraged by the management of the laboratory or institute.
30. There is nothing surprising in the fact that so much attention is being paid to the organization of scientific work.
31. It is strange that this article talks about unimportant causes of faults in the existing scientific work organization system and does not mention the most important factor.
32. There is nothing surprising in that production laboratories are interested in working out fundamental questions of science, and not only in the development of practical research.
33. The level of modern research demands that scientists possess an in-depth knowledge in their fields, and that they also be acquainted with the fundamental work in mixed fields.
34. The specific nature of research work demands that it should be planned with great care.
35. In his article dedicated to the practice of awarding scientific qualifications, Prof. A. recommends that in individual cases qualifications be awarded without defending a thesis.
36. He also proposes that especial attention in this be paid to the quality and scientific level of the work, and not on the quantity.

37. In this article Smith proposes that some of the details of his theory be changed.

38. It is said that Prof. Fowler’s report was very interesting. It is a pity that I missed it. 39. It is such a pity that we did not take advantage of this method: our results might have been much more accurate.

40. In order that the results of the latest research reach the scientist as fast as possible, it is necessary to develop and perfect various forms of direct information exchange.

41. In order that this principle be applied practically, the following condition has to be observed.

42. In order that the researcher has access to extensive information in his field of knowledge which increases every year, a definite reorganization of the existing system of information exchange is needed.

43. This scientific society proposes to begin publishing an abstracting journal with which any one interested in this scientific field can obtain brief news about current research.
44. Этот комитет был учрежден, с тем чтобы можно было лучше наладить координацию научных исследований в этой области.

45. Позвольте мне привести один конкретный пример, чтобы вы смогли лучше понять, что я имею в виду.

46. Позвольте мне дать некоторые пояснения к этому рисунку, чтобы вы смогли убедиться, что дело обстоит именно так.

47. Я начну с небольшого экскурса в историю вопроса, чтобы те из присутствующих, кто непосредственно не связан с данными исследованиями, смогли яснее представить себе основные моменты моего доклада.

48. Какой бы сложной и даже неразрешимой ни казалась нам сейчас наша проблема, браться за нее нужно немедленно.

49. Как бы ни были велики наши достижения в исследовании этого вопроса, он еще далек от своего решения.

50. Какую бы форму ни приняли наши дальнейшие поиски, они несомненно дадут какой-то результат.

1. В последнее время исследования в этом направлении велись чрезвычайно интенсивно.

44. This committee was founded in order that it could better aid and coordinate scientific research in this field.

45. Permit me to bring forward one specific example so that you may understand better what I mean.

46. Allow me to give some explanations for this diagram, so that you may be sure that this is the way it actually is.

47. I shall begin with a short tour into the history of the issue so those attending who are not directly connected with this research can understand more clearly the basic concepts of my report.

48. However complex and insoluble this problem seems to us now, we need to tackle it immediately.

49. However great our achievements are in the research of this question, it is still far from being solved.

50. Whatever form our future searches may take, they will undoubtedly produce some sort of results.

INDEPENDENT ELEMENTS of THE SENTENCE

1. Recently research in this direction has been carrying on extremely intensively.
2. Therefore very interesting evidence was obtained, which explain in a new way the complex interrelations between these phenomena.
3. Currently there are still many unexplained things in this field.
4. Consequently, only intensive research can help us come to a better understanding of separate parts and of the problems as a whole.
5. Without a scientific theory any experimental work can turn into a mere collection of non-interconnected facts.
6. Therefore, so that it really becomes true scientific research, it is vital to develop and perfect theory.
7. Many details of these phenomena received a fairly full explanation in scientific literature, but still the basic question has not been answered.
8. In order to become an experienced researcher, one needs much time and effort. 9. Regardless of this, the number of people directly involved with scientific work is continually rising.
10. The new facts which we have at the present time do not give an impression of the nature of these phenomena.
11. Nevertheless, the author of the article in question attempted to build a fairly interesting argument and argues it logically.

12. On the one hand, the aim of the current article comprises of describing the results of experimental work, and on the other hand it is an attempt at linking these results with extant theory.

13. On the one hand, science calls for discovering laws for man, which are directed by natural phenomena, while on the other its aim is to find a practical application for the knowledge obtained.

14. At the time when these unrelated research project began to form a separate area, there was practically no unified opinion of the tasks of the new science.

15. Moreover, even the subject of research was not clearly conceptualized.

16. The article commented on presents an analysis of ideas and hypothesis, and also the small quantity of evidence which we possess today on this subject.
17. As shown in the prologue, the author does not claim for a new interpretation, but just tries to follow how our understanding of this subject changed due to gathering results of observations.

18. As it was emphasized above, the results presented still cannot lead us to definite conclusion about the nature of these phenomena.

19. Nevertheless it is worth trying to build a working hypothesis on its basis.

20. As mentioned above, the aim of this article is to try and clarify the possible link between these mechanisms on the basis of a comparative analysis of the results at hand.

21. The results obtained by these two groups of researchers, as was said in the previous report, confirm each other to a significant degree.

22. This article is of a general nature.

23. In it there is most importantly a general picture of the condition of research at the current time, and further marks the possible avenues of future work considering practical demands of the developing economy.
24. To make the mentioned programme come to life is necessary above all to improve the existing practice of conducting scientific research.
25. To begin with I would like to make some general notes about the condition of this issue at the current moment in time.
26. The work commented on is of indubitable interest because, firstly, it is a poorly-studied area; secondly, the results which are laid out in it were gained with the aid of a completely new method, devised by the authors, and from this point of view has special value.
27. Conferences are indivisible part of a modern researcher’s scientific activity.
28. Firstly, they act as a medium for exchanging opinions on question of interest to scientists.
29. Secondly, conferences give us the possibility to discuss the latest achievements of science and to mark a road for its future development.
30. Finally, they aid the making of new contacts and therefore widen the sphere of scientific information exchange.
31. В данной статье автор дает исчерпывающий анализ последних данных, опубликованных в литературе по этому вопросу.
32. Этим весьма необычным и таинственным явлениям посвящено очень мало работ, точнее говоря, две-три журнальные статьи.
33. В современной науке идет быстрый процесс специализации.
34. С другой стороны, многие проблемы, стоящие сейчас перед учеными, можно решить только общими усилиями различных специалистов, т.е. наряду с детализацией знаний идет также и процесс их синтеза.
35. Решение одной научной проблемы неизбежно влечет за собой появление десятка новых, не менее сложных вопросов.
36. Точнее говоря, в этом и проявляется диалектика научного прогресса.
37. Метод, предлагаемый в данной работе, позволяет исключить возможность случайной ошибки и повысить точность измерений.
38. На первый взгляд теория, выдвингаемая автором, казалось бы, не содержит ничего нового.

31. In this article the author gives a thorough analysis of the latest data published in scientific literature on this question.
32. Very few works deal with this completely unusual and even mysterious phenomena, and to be more exact, two or three journal articles.
33. In modern science there is a fast process of specialization going on.
34. On the other hand, many problems confronting scientists today can only be solved by a general effort of various specialists, i.e. alongside with the detailing of knowledge in the process of their synthesis.
35. The solution of one scientific problem unavoidably involves the appearance of ten new and just as difficult questions.
36. More exactly, it is in this that the dialectic of scientific progress is contained.
37. The method proposed in this work permits accidental error to be excluded and to raise the accuracy of the measurements.
38. At the first glance the theory put forward by the author seems to contain nothing new.
39. Однако метод доказательства и приведенные результаты заставляют нас убедиться в том, что автору удалось по-новому взглянуть на этот вопрос.
40. По причинам, которые я не могу объяснить, этот вопрос не привлекал до сих пор внимания исследователей, по крайней мере мне неизвестно ни одной работы в этой области.
41. Данная работа является оригинальным исследованием и в некотором смысле может считаться даже открытием.
42. Она, несомненно, представляет большой интерес для специалистов.
43. Мы ожидаем, что в ближайшие годы эта проблема привлечет внимание специалистов.
44. Между прочим, такие исследования уже начаты в одной из лабораторий в нашей стране.
45. Эта статья посвящена проблемам преподавания точных наук в университетах США.
46. В частности, в ней анализируются причины снижения числа молодых людей, желающих посвятить себя чисто научным исследованиям.
47. Наш вывод нельзя считать окончательным, если, вообще говоря, окончательный вывод в данном случае возможен.
48. Результаты, изложенные в предыдущем докладе, откровенно говоря, вызывают некоторые сомнения.
49. Я постараюсь сейчас кратко объяснить почему.
50. Изучение истории развития науки представляет несомненно большой теоретический и практический интерес.
51. К сожалению, исследования такого рода не уделяется достаточно внимания.
52. На первый взгляд эта идея может показаться абсурдной.
53. Но давайте обратимся к результатам одной работы, которая, возможно, известна не всем присутствующим.
54. Всех этих результатов, конечно, недостаточно, чтобы полностью принять эту теорию.
55. Но, несомненно, в ближайшие годы появятся новые данные, и этот вопрос будет так или иначе выяснен.

48. The results given in the last report, frankly speaking give me some doubts.
49. I shall now try to briefly say why.
50. The study of the history of the development of science represents undoubtedly great theoretical and practical interest.
51. Unfortunately, not enough attention is paid to this kind of research.
52. At first glance this idea may seem absurd.
53. But let us turn to the results of one work which may not be known to all those present.
54. All these results are of course not enough to accept this theory completely.
55. But undoubtedly new data will appear in the near future and this question shall be explained one way or another.
1. Аванесов В.С. Формы тестовых заданий.- М.: Центр Тестирования, 2005
10. Родос В.Б. Правила дискуссии и уловки спора. М.; Идея-пресс, 2006. – 232 с.
20. Elina, E., Tibbenham P. X factors of British Socioculture , Krasnoyarsk, 2000
29. Tomalin B., Stemplecki S., Cultural Awareness, OUP, 1993

Электронные ресурсы

http://informationr.net/ir/4-2/isic/anderson.html
http://www.iconbooks.co.uk
http://www.beyondconnectedhome.com
http://www.printdreams.com
NASA
http://www.nasa.gov
Speedera
http://www.speedera.com
Philips News
http://www.philips.com/newscenter/usa
http://www.networkanatomy.com
http://www.m-w.com/dictionary/science
Перечень наглядных и других пособий, методических указаний и материалов к техническим средствам обучения

<table>
<thead>
<tr>
<th>№</th>
<th>Перечень пособий, видеофильмов.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The Blair Witch Project.</td>
<td>Продолжительность: 85 мин.</td>
</tr>
<tr>
<td>4</td>
<td>The OTHERS.</td>
<td>Продолжительность: 104 мин.</td>
</tr>
<tr>
<td>5</td>
<td><a href="http://ru.wikipedia.org">http://ru.wikipedia.org</a></td>
<td>Википедия. Свободная энциклопедия</td>
</tr>
<tr>
<td>6</td>
<td><a href="http://www.lingvo.ru">www.lingvo.ru</a></td>
<td>Электронный словарь Abby Lingvo</td>
</tr>
<tr>
<td>7</td>
<td><a href="http://www.amazon.com">www.amazon.com</a></td>
<td>On line magazine</td>
</tr>
</tbody>
</table>
This guide is aimed at helping postgraduate students to take postgraduate exams in English. It includes introduction to English and American qualifications and degrees, recommendations on how to write academic essays and to read periodicals, translation exercises, grammar tables. All these make it a helpful manual that follows the up-to-date methodology of language teaching.

For post graduates, research workers, teachers of higher educational establishments.

Компьютерная верстка:
Злобина С.А.
Курбачева Г.А.

Издательский центр
Сибирского федерального университета
660041 Красноярск, пр. Свободный, 79.