Государственный комитет РСФСР по делам науки и высшей школы

ЛЕНИНГРАДСКИЙ ГИДРОМЕТЕОРОЛОГИЧЕСКИЙ ИНСТИТУТ

П О С О Б И Е

по развитию навыков перевода для студентов, изучающих английский язык

/ на материале текстов гидрометеорологических специальностей /

Курс II, III

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Пособие по развитию навыков перевода для студентов, изучающих английский язык. Л., ЛГМИ, 1991 , 94.

Пособие имеет целью развитие навыков перевода часто встречающихся в английской научно-технической литературе трудностей лексико-грамматического характера. Предназначено для студентов и аспирантов гидрометеорологических вузов.

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В В Е Д Е Н И Е

Настоящее пособие имеет целью повторение некоторых наиболее сложных разделов грамматики английского языка, а также ряда часто встречающихся в английской научно - технической литературе трудностей лексического характера. Каждый раздел сопровождается примерами, отобранными из оригинальной литературы гидрометеорологических специальностей. В конце пособия приводится значительное количество примеров, содержащих рассмотренные выше трудности грамматического и лексического характера.

ОСНОВНЫЕ ФОРМЫ ГЛАГОЛА

Основные формы английского глагола - инфинитив, прошедшее время группы Indefinite, причастие II и причастие I - могут быть представлены следующей таблицей:

Таблица I

Infinitive	Past Infinitive	Participle II	Participle I
to ask - спрашивать	asked - спросил	asked - спрошенный	asking - спрашивающий
to write - писать	wrote - написала	written - написанный	writing - пишущий

употребление

Present Indefinite	Future Indefinite	Perfect	Passive Voice	Continuous
I ask	I shall ask	I have asked	I was	I am asking
She writes	He will write	He has written	asked	She is writing

СИСТЕМА ВРЕМЁН АНГЛИЙСКОГО ГЛАГОЛА

ДЕЙСТВИТЕЛЬНЫЙ ЗАЛОГ

Как известно, английский глагол, как и глагол в русском языке, имеет три наклонения - изъявительное, сослагательное, повелительное - и два залога - действительный, страдательный, а также, в отличие от русского языка, 4 видо-временных формы - Indefinite, Continuous, Perfect и Perfect Continuous.

В данном пособии основное внимание уделяется изъявительному и сослагательному наклонению английского глагола, а также трём первым из его видо-временных форм, поскольку именно они обладают наибольшей встречаемостью в научно-технической литературе.

Изъявительное наклонение - это форма глагола, которая указывает на реальные факты, т.е. обозначает действия, которые происходят,

произошли или произойдут в будущем. Например, We shall graduate from the Institute this year - Мы закончим институт в этом году.

Действительный залог. Формы действительного залога (Indefinite, Continuous, Perfect, Perfect Continuous) выражают действия, совершаемые лицом или предметом, которые обозначены подлежащим предложения. Например, They obtained very interesting data - Они получили очень интересные данные.

СИСТЕМА ВРЕМЁН АНГЛИЙСКОГО ГЛАГОЛА

В ДЕЙСТВИТЕЛЬНОМ ЗАЛОГЕ

Таблица 2

Tense время	Aspect вид		Перевод	Образование	Примеры
Present	Indefinite (общий)	действие обычное, регулярное, повторяющееся	"хожу"	V_0 / V_s(3	I(you,we,they) go / He(she,it) goes
Past			"ходил"	Ved(правильные гл-лы) V2(неправильные гл.)	lived, went
Future			"буду ходить"	shal will + V_0	shall will + go/live
Present	Continuous (продолженный)	действие длительное, происходящее в определённый момент	"иду"	am / is / are + V_{ing}	am / is / are + going/living
Past			"шёл"	was / were + V_{ing}	was / were + going/living
Future			"буду идти"	shall / will + be + V_{ing}	shall / will + be + going/living

Present	Perfect (завершённый)	действие завершённое к какому-либо определённому моменту	пришёл	has / have $+V_3$	has / have +gone/lived
Past			пришёл	had $+V_3$	had+gone/lived
Future			приду	shall / will $+V_3$	shall / will +have+gone/lived

Условные обозначения:
- V_o – глагол без окончания
- V_s – форма 3 лица, ед. числа смыслового глагола
- Ved – 2-ая форма правильного глагола
- V2 – 2-ая форма неправильного глагола
- V_{ing} – причастие I смыслового глагола
- V_3 – 3-я форма смыслового глагола = = причастие II

ПРАВИЛО СОГЛАСОВАНИЯ ВРЕМЁН

В том случае, если глагол-сказуемое главного предложения выражено формой прошедшего времени, в придаточном предложении следует также употреблять только одну из форм прошедшего времени. В русском языке такой взаимосвязи главного и придаточного предложений не существует.

He said / Он сказал — that / что:
- he knew the subject well – знает предмет хорошо
- he was trying to solve the problem – пытается решить проблему
- he had made a mistake – сделал ошибку
- he would solve the problem – решит проблему

Переведите на русский язык следующие предложения:

1. Distribution and physical condition of the air are continually changing.
2. The most extensive study of sea fogs has been made by G.I. Taylor.
3. In China and India the failure of the expected rains has often led to extensive famines.
4. The air is moving from higher to lower latitudes, its temperature is rising, and therefore its relative humidity remains moderate even when it moves over a warm water surface.
5. Where mountains rise athwart the trades, the windward sides often have almost continuous rain, and the lee sides approach desert conditions.
6. The greatest desert of all, the Sahara, has the trade winds across its entire length.
7. The forced ascent of warm air is producing a small area of cloudiness or rain.
8. The wind that is blowing at that time largely governs the weather at a given time and place.
9. In terms of decades, there are warm and cold periods, dry and wet periods.
10. In terms of geological epochs, the climate is always changing.

11. The Phoenicians as long ago as 2 000 B.C. were investigating the Mediterranean Sea, the Red Sea, and the Indian Ocean.
12. The Greeks believed that the oceans represented a margin of water that surrounded all three of the continents.
13. Pytheas, the Greek astronomer - geographer, proposed that the tides were a product of lunar influence.
14. The Arabs were trading extensively with Southeast Asia and India and had learned the secrets of the monsoons.
15. It was assumed that the journey would take a period of approximately three years.

16. The earliest of the Greek philosophers and scientists was Thales of Miletus who believed water could be the original substance of the universe.
17. Although the earth's surface had become relatively cool by this stage in its development there was still much molten activity on its surface.
18. Sir Francis Bacon commented in his Novanum organum that the geometrical simularities between the western coastline of Africa and the eastern coastline of South America could hardly be coincidental.
19. Along the fracture zone where the plates are moving in the same direction on either side of the fracture, earthquakes are relatively rare.
20. During the Pleistocence epoch, when the previously mentioned glacial advances were occuring, the amount of water in the ocean basin fluctuated considerably.

21. The water-table elevation is more or less continuously changing.
22. Statisticians are only now developing an adequate treatment of this problem.
23. Actually all phases of the hydrologic cycle are occurring simultaneously.
24. Many rivers downstream from cities have become open sewers, dangerous to public health.
25. Some investigators in other regions have found that their data did not yield a family of parallel curves and hence have derived an individual equation for each of several different frequencies.
26. The life of a reservoir is fixed, to a great extent, by the rate at which erosion is taking place in the tributary drainage area.
27. The water table normally coincides with the free surface of lakes and streams.

28. Such studies will reveal the conditions under which it is possible to have damaging floods from the melting of excessive snow accumulations.

СТРАДАТЕЛЬНЫЙ ЗАЛОГ.

Формы глагола страдательного залога выражают действие, совершаемое над подлежащим (лицом или предметом), в то время как формы глагола действительного залога выражают действие, производимое самим подлежащим. Ср. Он написал статью (действительный залог). Статья была написана (страдательнвй залог). Формы страдательного залога образуются по следующей модели: to be + Participle

Таблица 3

	Indefinite	Continuous	Perfect
Present	I am asked/sent	A am being asked/sent	I have been asked/sent
Past	I was asked /sent	I was being asked/sent	A had been asked/sent
Future	I shall be asked/sent	Вместо этой формы используется Future, Indefinite Passive	I shall have been asked/sent

Особенности перевода некоторых типов глаголов в страдательном залоге:

I. В ряде случаев при сказуемом в страдательном залоге, выраженном глаголами типа to show, to give, to tell, to offer, to permit, подлежащее английского предложения может быть переведено на русский язык только косвенным дополнением в форме дательного или винительного падежа:
He was shown a new instrument. Ему показали новый прибор.

* См. табл. I

They will be asked ...	Их спросят ...
He was told ...	Ему сказали ...

2. В случаях, когда после сказуемого, выраженного глаголом в страдательном залоге, стоит отделяемый предлог, то при переводе соответствующий русский предлог обычно ставится в начале предложения, и подлежащее английского предложения переводится предложным дополнением:

This article is often referred to ...	На эту статью часто ссылаются
Water is acted upon by the force of gravity and molecular attraction.	На воду действует сила гравитации и молекулярного притяжения.
This phenomenon is accounted for ...	Это явление объясняется...

3. При переводе форм страдательного залога от английских переходных глаголов, которым в русском языке соответствуют глаголы, принимающие предложное дополнение, предлог ставится перед словом, являющимся в английском языке подлежащим:

The lecture was followed by an experiment.	За лекцией последовал эксперимент.
The experiment was watched with great interest	За экспериментом наблюдали с большим интересом.
The results are greately influenced by changes in temperature.	На результаты большое влияние оказывают температурные изменения.

Запомните значение следующих глаголов:

to affect	-	влиять на что-либо
to attend	-	присутствовать на
to follow	-	следовать за...; следить за...
to join	-	присоединиться к...
to influence	-	влиять на...
to watch	-	наблюдать за...

4. В английском языке существует ряд глагольных сочетаний, которые не поддаются дословному переводу, а передаются на русский

язык или одним словом - эквивалентом или аналогичными сочетаниями русского языка:

Care must be taken to lower the temperature -

Надо попытаться понизить температуру.Следует принять меры, чтобы понизить температуру.

This phenomenon must be taken into account. -

Неоходимо принять во внимание это явление.

Переведите на русский язык следующие предложения:

1. Some solar radiation is absorbed on its way through the air.
2. Some insolation is reflected into space by the air.
3. The temperature of the air is not much affected,directly,by sunshine.
4. Fog is caused by the cooling of a surface layer of air to its dew point.
5. The cold front is usually followed after a few hours by clear and cool or cold weather.
6. Solar radiation is affected by the number and area of sunspots, and there is a considerable evidence of a relation between weather cycles and sunspot cycles.
7. Fronts occur in most years,and freezing temperatures have been observed from November to March.
8. The amount of direct insolation reaching the earth is also affected by the amount intercepted by the atmosphere.
9. Descending air is compressed at the same rate.This is the adiabatic rate and applies to rising or descending air that is not being affected by other heating or cooling processes.
10. To certain extent plants summarize the climatic influences to which they have been subjected.
11. Density is affected by temperature and with most substances we observe that a decreased temperature produces an increase in the density of the substance.

12. Meanwhile the cold protoplanets were being warmed by the solar radiation and their atmosphere began to boil away.
13. Occasionally a body of grounwater will be found above a bed of impervious or relatively impervious material.
14. The heat energy is being used to break all the bonds required to complete the change of state. While the bonds are being broken, a mixture of the substance in both states exists.
15. Where sediments are being deposited on the continental shelf, the rate at which they accumulate is generally greater than 10 cm per thousand years.
16. Many contributions from a number of nations have been made to the understanding of the oceans subsequent to the voyage of the Meteor.
17. The continents of North and South America were discovered, circumnavigation of the globe was achieved, and it was learned that human populations were not restricted to the area from which the explorers came.
18. As the earth cooled to the point at which it could retain these gases that were being produced from the earth's interior, a vast envelope of clouds surrounded the planet.
19. The North Equatorial Current moves parallel to the equator in the Northern Hemisphere where it is joined by that portion of the South Equatorial Current that has been shunted toward the north along the South American coast.
20. The trade winds blowing out of the southeast in the Southern Hemisphere and northeast in the Northern Hemisphere may be thought of as providing the backbone of the system of ocean surface currents.

21. It has been found that water losses vary rather gradually over extensive regions.
22. The standard errors of the various methods can be computed statistically.
23. Certain refinements have been used to increase the accuracy of the method.

24. On June 30,5812 gaging stations for measuring the stage and flow of lakes were being maintained by the Geological Survey.
25. Flood control may be effected by reservoirs,levees,channel improvements,etc.
26. In times of high water the forecasts are relied upon in planning the evacuation of threatened areas.
27. The hydrologist is called upon to evaluate new projects in areas where the margin of safety is already low.
28. The infiltration capacity is affected by several soil qualities.
29. The moisture evaporated is lifted,carried and temporarily stored in the atmosphere until it finally precipitates.
30. Flood control studies are complicated by the fact that any type of flood control project modifies the natural regimen of the stream.

МОДАЛЬНЫЕ ГЛАГОЛЫ И ИХ ЭКВИВАЛЕНТЫ

Модальные глаголы,такие как,например, can,may,must выражают не действие,а только отношение к действию,т. е. возможность,вероятность или необходимость совершения действия.

Таблица 4 Модальные глаголы

Глагол	Форма прош-го времени	Эквивалент мод-го глагола	Значение	Перевод	Примеры
can	could	be able to	Физическая возможность умение,способность совершить дейст.	Могу,умею способен, можно	They can operate this device.A computer can store information.Any moving object is able to work
may	might	be allowed to	1)предположение	Может быть,возможно	He may change his opinion.
may			2)разрешение,позволение сов. дейст.	Могу,можно,разрешено	You may use this instrument.The students were allowed to test a new device

must		-	Необходимость, обязанность	Должен, нужно, надо, необходимо	The experiment must be carried out as soon as possible.
		to have (to)	Необходимость, вытекающая из вынужденных обстоятельств	—//—	They will have to verify the data.
	-	to be (to)	Необходимость, вытекающая из предварительного плана (договорённости)		We are to study this phenomenon carefully. It is to be noted
must		-	Вероятность совершения действия	Вероятно, должно быть	That must be difficult
should	-	-	Необходимость, обусловленная моральным долгом, советом	Должен, следует	It should be noted that the results are quite unexpected.

Переведите следующие предложения на русский язык:

1. Climate may be defined as the summation of weather conditions in historical times.
2. The importance of climate in the affairs of man cannot be doubted.
3. Temperature records could not be obtained until the invention of the thermometer, about 400 years ago.
4. The fluctuations of short duration are evidently to be regarded as characteristic behavior and not as climate changes.
5. Evidences of secular trends in climate are also to be found in actual instrumental records in some parts of the world.
6. It is to be noted that these figures represent not the actual temperatures, but the temperatures reduced to sea level.
7. Unfortunately we are not able to use as short a period as the past few thousand years to determine the climate of a region.

8. It must be remembered that the value of rainfall to plant growth is not accurately measured by the total annual fall.
9. Because the lower layers of the atmosphere are the most dense,they are best able to absorb the longwave radiation from the Earth.

10. Mariners could determine the latitude of any point on the surface of the earth using the method introduced by Pytheas
11. Due to deterioration in climate the Vikings were unable to exploit their newly discovered territories.
12. Shortly after leaving port,the ships,had to put back to repair a top mast.
13. Baffin Bay in Canada was explored by Sir John Ross in 1817 and 1818,and he was able to measure the depth of the sea.
14. Nansen and Johanse were not able to see the Fram again until they returned home.
15. In order that we may understand the reason for water's great importance in these resfects,we must first consider it at the atomic level so that we can take a close look at make up of water molecule which determines many of these unique properties.
16. If we are to underatand why water has the properties that it does,we must take a look at the atom itself.
17. We must be able to find for the total mass of each chemical element,that is taken from primary crystalline rock.
18. This submergence must have been caused by a subsidence of the continent,a rise in a sea level,or a combination of the two.
19. Contraction of the ocean water may have lowered sea level by about 10 m.

20. The particle may be held in the belt of soil moisture for weeks or months.

21. The hydrologist must evaluate not only the probability of floods of various magnitudes but also the effect of the reservoir upon the distribution of the flood volume.
22. Methods must therefore be available for deriving acceptable unitgraphs from portions of the hydrograph that contain surface runoff from more than one storm period.
23. It is to be expected, that the study of relationships between precipitation and runoff for shorter periods must become increasingly complex.
24. The need became apparent for investigating something more than precipitation if we are to develop useful concepts dealing with short - time runoff patterns.
25. It is to be noted that this convention in plotting mean daily flows may be misleading.
26. "Total surficial outflow" is to be taken as meaning all water moving out of the drainage area in surface streams.
27. ... the additional low-flow data permit an estimate of the amount of power that will have to be obtained from other sources.

ОБОРОТ THERE+BE

Оборот there+be (there is, there are) употребляется для выражения наличия или существования какого-нибудь лица или предмета, факта или явления, ещё неизвестного читателю.

There are only three methods of transmitting heat: radiation, conduction, and convection.

Существует лишь 3 способа передачи тепла: излучение, проводимость и конвекция.

На русский язык такие предложения обычно переводятся предложениями, начинающимися с обстоятельства места (там где они есть):

There is a low pressure over interior Asia.

Над внутренними районами Азии существует область низкого давления.

В обороте there+be вместо глагола be могут употребляться

и другие глаголы, которые по своему содержанию связаны с представлением о пребывании или существовании, например,

There exist different sources of energy.
Существуют различные источники энергии.

Рассматриваемый оборот может употребляться и с модальными глаголами, например,

There may be some mistakes in these calculations.
В этих вычислениях могут быть ошибки

Переведите следующие предложения на русский язык:

1. There is a limit to the amount of water vapour that will exist in a given space at a given temperature.
2. There is another aspect called physical climatology, which is concerned with the physical processes that produce climate.
3. There is a peculiar march of temperature at Bombay, with a maximum in May and with a secondary maximum in October.
4. There are various combinations of these processes, and the actual type of rain in any given instance depends much on the temperature and moisture conditions existing at various levels in the air.
5. There are variations in the styles of instruments used and in the definition of terms.
6. There is an absence of storms, the same gentle breezes blow day after day, and temperatures are mild both day and night, both winter and summer.
7. At every free water surface there is a continuous interchange of molecules of water.
8. From the geographical point of view there is thus a general and regional oceanography both using statistical and descriptive methods.
9. Men penetrated out into the vast stretches of the seas and there gradually developed a conception of the ocean.
10. Along some coasts there are flat platforms backed by cliffs.

11. In addition to the light which is so obviously emitted by the sun, there is an intense emission of ionized particles.
12. There is no trench off the North American coast, because there is no oceanic rise producing new crust to the west of the continent.
13. There are latitudinal regions where surface water masses converge and may cause sinking.
14. Since the greatest amount of solar energy is absorbed in the low latitudes, the greatest amount of heating of the atmosphere occurs there also.

15. There is a linear relation between velocity and hydraulic head.
16. Under artesian conditions there may be no water table.
17. There must be available some method of estimating the net effective rainfall for unitgraph theory of itself does not provide any clue to this factor.
18. There is quite general agreement that the rivers and underground discharge areas return to the oceans roughly one fourth of the total precipitation that falls on continental areas.
19. There remains to be mentioned one point designated by Sherman as the "extended duration" principle.
20. Between the precipitation which causes no runoff and that which causes floods, there are all gradations in intensity and duration that produce the ordinary variations in stage and discharge.
21. If there is no relatively impervious stratum above the water table, there may be no surface runoff, and the flow will be well sustained.

ПРИЧАСТИЕ

В английском языке имеется 2 вида причастия: причастие I и причастие II, каждое из которых обладает формой относительного

времени и залога:

Таблица 5

Причастие	Действ. залог	Функция, перевод	Страдат. залог	Функция, перевод
Причастие I (выражает одновременность действия и действия, выраженного глаголом-сказуемым)	using	I) Определение "использующий" "использовавший" 2) Обстоятельство "используя" "использовав"	being used	I) Определение "используемый" "который используется" 2) Обстоятельство "будучи использован" "когда используют"
Причастие I (выражает предшествование действию, выраженному глаголом-сказуемым)	having used	I) Обстоятельство "использовав" "когда (он) использовал"	having been used	I) Обстоятельство "когда его использовали"
Причастие II	—	— —	used	I) Определение "используемый", "использованный" 2) Обстоятельство "когда его использовали"

Причастие в функции определения.

Причастие в этой функции может стоять до или после определяемого существительного; на русский язык переводится соответствующими формами русских причастий или придаточным определительным предложением. Время действия, выраженного английским причастием, определяется по времени сказуемого.

The problem being studied is of great importance. - Изучаемая проблема очень важна.

The problem being studied was very difficult. - Изучавшаяся проблема была очень трудной.

The results obtained were very useful. - Полученные результаты были очень полезны.

The problem being mentioned should be solved. - Упоминаемая проблема должна быть решена.

Причастие в функции обстоятельства.
(Обстоятельственные причастные обороты)

Причастие в фунуции обстоятельства может переводиться на русский язык следующим образом:

Passing through the atmosphere the sun's rays are partly absorbed by it.

1) Деепричастным оборотом: Проходя через атмосферу, ...
2) Обстоятельственным придаточным предложением: Когда солнечные лучи проходят ...
3) Отглагольным существительным с предлогом: При прохождении через атмосферу ...

Приведём ещё несколько примеров перевода обстоятельственных причастных оборотов:

Having been warmed to 0° ice began to melt. -Когда лёд нагрелся до 0 ,он начал таять.

Having reached the earth, the precipitated water begins to acoumulate additional impurities.- Достигнув земли, вода, выпав-

шая с осадками,начинает накапливать дополнительные примеси.

Обстоятельственные причастные обороты могут вводиться союзами:when,while(когда),whenever (всякий раз,untill (пока), though (хотя),once (когда), if (если). Например,

Unless heated the substance does not melt.-Если это вещество не нагреть,оно не будет плавиться.

Переведите следующие предложения на русский язык:

1. The length of records actually used in determining averages differ greately.
2. When the air is dry and not dusty,the amount absorbed is not great.
3. Diffused radiation gives us light in the shade and on cloudy days.
4. The climatically important factors governing the amount of heat received from the sun are the elevation of the sun, the duration of sunshine,and the moisture content of the air.
5. Similarly,descending air is compressed and warmed at the same rate.
6. Lines connecting points of equal rainfall are called isohyets.
7. A mercury barometer is the instrument used in weather observations for the accurate measurement of the air pressure.
8. Nitrogen and oxygen constitute about 99% of the volume of air,excluding the water vapour.
9. Climate,involving the combination and integration of the ceaselessly changing weather conditions,is a much more complex and difficult concept.
10. The various forms of radiation are essentially the same, differing only in length of the waves.
11. Having examined individually the more important components of climate,we may now investigate the general factors which determine their distribution over the earth.
12. Hot and dry air having tropical continental characteristics

sometimes moves northeastwards from dry regions of Arizona and New Mexico.

13. Late in the ninth century aided by a period of climatic warming, the Vikings conqured Iceland.
14. The material found in a beach deposit will depend on the source of the sediment that is transported by the longshore drift.
15. Other minerals found on the ocean bottom are secondary zeolites and clays commonly associated with red day deposites of the deep ocean basin.
16. The Arabs took advantage of the monsoons, making their trade voyages easier.
17. In the Pacific Ocean these fracture zones are thousands of kilometers long, being composed of parallel ridges separated by troughs that may be very steep-sided and deep.
18. Let us consider the life history of a theoretical volcano that originates near the axis of a mid - ocean ridge and progressively moves away from this ridge, being carried by the crustal layer.
19. The two main currents in that region are the Norwegian Current, representing a continuation of the North Atlantic Current, and the East Greenland Current.
20. Moving east to the Florida coastline, we encounter a highly stable area with a very low relief.
21. The Challenger returned in May 1976 after having traversed large portions of the Atlantic and Pacific Oceans.
22. Hydrology is the science treating of water, its properties, phenomena, and distribution.
23. The water required to fill depressions is called "depression storage"
24. The hydrologic cycle is often considered as consisting of three phases namely rainfall, runoff, evaporation.
25. The difficulties involved in making accurate determinations of interception losses are apparent.

26. Streams carrying silt post much more complex problems.
27. The effects of changing discharges present great difficulties to stream-gaging on many of the larger rivers.
28. Rainfall,considered apart from temperature,gives no clue to climate.
29. S. Bleich,studying rainfall in New York City,developed a set of six equations.
30. Continued development of both the basic theory and the technique of floodrouting studies is essential to intelligent,economical planning of flood control projects.
31. The weather records obtained by the Weather Bureau do not contain all the necessary information on snow,largely because the snow density may change rapidly.

НЕЗАВИСИМЫЙ ПРИЧАСТНЫЙ ОБОРОТ

Независимый причастный оборот представляет собой обстоятельственный причастный оборот,в состав которого входит своё собственное,самостоятельное подлежащее.Независимый причастный оборот обычно отделяется от главного предложения запятой.

The speed of light being extremely great,we can't measure it by ordinary methods.- Так как скорость света чрезвычайно велика,мы не можем её измерить с помощью обычных методов.

В данном предложении рассматриваемый оборот находится в начале предложения,его собственное подлежащее выражено существительным the speed, от остального предложения оборот отделяется запятой.

Способы перевода:

I) В начале предложения - переводится обстоятельственным придаточным предложением с союзами:"так как","после того как",

"когда","если" и др. Например, The temperature of the object being raised,the velocity will increase. -Если температура предмета повысится,скорость возрастёт.

2) В конце предложения - переводится самостоятельным предложением с союзами "причём","и","а".

Velocity of the tidal current decreases from the surface to the bottom,the velocity near the bottom being about two thirds that at the surface. -Скорость приливного течения уменьшится от поверхности ко дну,причём вблизи дна она составляет 2/3 скорости на поверхности.

Переведите следующие предложения на русский язык:

1. On clear days a large portion of the insolation reaches the surface of the earth where some is reflected and some absorbed,the relative amounts depending on the nature of the surface and the angle of incidence.
2. Other things being equal,it is evident that the amount of heat received by the earth varies with the amount emitted by the sun.
3. The orbit of the earth around the sun is slightly elliptical,the sun being a little off center.
4. Affer the formation of clouds,continued rapid cooling produces precipitation,the rate and amount of fall being related to the rate and amount of cooling and to the absolute humidity of the rising air.
5. The cooled air collects in mountain valleys and results in temperature inversions,the valley bottoms becoming colder than the mountain sides.
6. In these areas the rainfall averages between fifty and 140 inches for the most part,the amount varying with the slope and elevation of the interior highlands.
7. At night the earth and all solid objects cool more rapidly than the air,this being especially true when the sky is clear.

8. The early part of the drifting journey was accomplished at a slow rate,an increasing rate of speed being attained during the latter two years of the voyage.
9. This means that each deposit that is laid down has coarser material at its base,decreasing particle size being observed toward the top of the deposit.
10. Temperature distribution with regard to latitude in the Pacific Ocean is similar to that observed in the Atlantic Ocean,but surface salinity in the Pasific is less than in the Atlantic with the South Pacific water being slightly more saline than that in the North Pacific.
11. The major surface flow of water into the Bering Sea occurs between the Komandorski Islands of Russia and Attu Island, the most westerly of the Aleutian Islands belonging to Alaska.
12. After passing through the Yucatan Strait,the surface water characteristies may be identified down to a depth of 90 m during the winter and 125 m during the summer months,this being the depth through which seasonal temperature changes extend.
13. The velocity of the tidal current decreases from the surface to the bottom,the velocity near the bottom being about two thirds that at the surface
14. The semidaily type of rotary current is one which exhibits two full cycles within a tidal day,morning and afternoon currents differing but little.

15. Under artesian conditions there may be no water table,the water flowing under pressure as in a pipe.
16. Other things being equal,the size and arragement of soil interstices determines to a large extent the infiltration capacity.
17. The number of observations should be increased where the bottom is uneven the necessity for additional observations depending on their effect on the accuracy of the total discharge measured.

18. Many gaging stations are operated without a second gage, the measurements being adjusted to a normal curve, which is used to determine discharges from the gage - height record.
19. Experience has shown that the discharge is seldom as great as that given by the preceding equation, the difference being due to local losses of energy at the contraction.
20. In this method a standard block of gypsum is buried in the soil at the desired horizon, the soil being disturbed as little as possible in the process.
21. In the present case, three trials were sufficient to define the distribution graph, the criterion being that the residual percentage in the peak period should be within 1 per cent of the corresponding trial percentage.
22. A high-water wave in a river being progressive, some idea can be formed in advance, as to the stages of water that will occur along the lower course of a river, when the stages at points along the upper course are known.

ГЕРУНДИЙ

Герундий представляет собой неличную форму глагола, сочетающую в себе свойства глагола и существительного. Соответствующая форма в русском языке отсутствует.

Таблица 6 Формы герундия

	Active	Passive
Indefinite	using	being used
	making	being made

Perfect	having used	having been used
	having made	having been made

Определённые сложности при переводе герундия на русский язык могут возникать в тех случаях, когда он выполняет в предложении функцию обстоятельства, в частности, когда ему предшествуют предлоги.

I) Герундий с предлогом "in" выражает действие, одновременное с действием, выраженным глаголом-сказуемым:

In measuring the current velocity they used this device

Измеряя (при измерении, когда они измеряли) скорость течения, они использовали этот прибор.

2) Герундий с предлогом "on","upon","after" выражает действие, предшествующее действию, выраженному глаголом-сказуемым и обычно употребляется в форме Indefinite:

On measuring the current velocity they out down the results.

Измерив (после измерения, когда они измеряли) скорость течения, они записали результаты.

3) В функции обстоятельства образа действия герундий употребляется с предлогом "by" (путём, при помощи):

They achieved good results by experimenting

Они получили хорошие результаты путём экспериментирования.

4) В функции сопутствующего обстоятельства герундий употребляется с предлогом "without" и переводится на русский язык отрицательной формой деепричастия:

They could not start a new experiment without veryfying the previous data.

Они не смогли начать новый эксперимент, не проверив ранее полученные данные.

Переведите следующие предложения и их части.

In solving the problem ...
In carrying on the research ...
On comparing these phenomena ...
On obtaining some important data ...
Upon calculating the velocity ...
Upon considering some properties ...
By applying this method ...
By using this device ...
We can't compare the results without making necessary calculations.
They can't stop the experiment without getting the necessary results.

Переведите следующие предложения на русский язык:

1. The amount of the precipitation from snow-that is, its water equivalent - is obtained by weighing a reoresentative section, or by melting it and measuring the depth of the water.
2. In obtaining temperature readings it is important to maintain a free movement of air across the thermometers.
3. A land surface cools at night by sending out waves of radiant energy.
4. The relative humidity of a day is usually obtained by averaging the percentages observed in the early morning and in the late afternoon.
5. The depth of snow is obtained by taking the average of several measurements in representative places.
6. A highly important factor in modifying the effect of latitude as a control of climate is the existing distribution of land and water areas over the earth.
7. Mountains are very effective in causing or aiding the upward movement of air.
8. The coming of spring is delayed by the presence of snow on the ground and of ice on lakes.
9. Differences in elevation of the sun is therefore a very important cause of differences in the heating of the earth's

surface.

10. Cook charted the eastern coast of Australia,nearly losing his ship in crossing the Great Barrier,before returning home from his first major voyage into the Pacific.
11. After reaching the coast of North America,Cook sailed along it and through the Bering Strait as far as 70°44' N latitude before being stopped by pack ice.
12. The density of water in its various states and at different temperatures is of great importance in considering the movement of water in the ocean.
13. This anomalous behavior can be explained only by considering the molecular structure of water and hydrogen bonds.
14. Before considering the development of the earth's oceans and the origin of life in those oceans,we should attempt to gain an understanding of what is known of the relationship of the earth to the cosmos.
15. In winter the surface layers are cooled,but before reaching freezing point the waters attain a higher density than that of the deeper waters and therefore sink to the bottom.
16. By comparing three marginal regions throughout the Pacific, we may develop a somewhat oversimplified picture of conditions that can develop as plates carrying continental crustal blocks converge with plates of purely oceanic crustal material.
17. In considering the distribution of marine sediment,we will be using some terms that need to be defined.

18. By placing a current meter at a point in moving water the speed of the water at that point can be determined.
19. Generally,in areas where more than 10 per cent of the annual precipitation falls as snow,special methods of measuring snow precipitation and storage are desirable.
20. In looking for the equivalent mass of an element in the products of chemical weathering,we must estimate the total

mass of sediments in the earth.

21. Though many methods are available for determining discharges in open channels, the velocity-area method, using a current meter to measure velocity, is generally used in stream-gaging.
22. The process of measuring the cross-sectional area and of determining the average velocity in the section are combined in making a current-meter measurement.
23. In comparing annual precipitation with annual runoff, it is desirable to fix the year's end at a time when stream flow is at its lowest.
24. After entering the soil a water particle moves downward.
25. Such estimates can often be improved, however, by taking into account factors that do produce appreciable differences in the losses of adjacent basins.

ИНФИНИТИВ

Инфинитив, или неопределённая форма глагола, является неличной формой глагола, которая сочетает в себе свойства глагола и существительного.

Таблица 7 Формы инфинитива

Формы	Действ. залог	Страдат. залог
Indefinite Infinitive	To ask	To be asked
Continuous Infinitive	To be asking	-
Perfect Infinitive	To have asked	To have been asked
Perfect Continuous Infinitive	To have been asking	-

Следует помнить,что Perfect Indefinite обозначает действие, предшествующее по времени в отношении к действию,выраженному глаголом в личной форме.

Функции инфинитива

I. В начале предложения инфинитив употребляется:

а) в функции подлежащего (переводится на русский язык инфинитивом или отглагольным существительным):
To start the experiment on time was very important
Начать эксперимент вовремя было очень важно.

б) в функции обстоятельства (переводится инфинитивом с союзом "для того,чтобы" или отглагольным существительным с предлогом "для")
To explain this phenomenon you must study its properties.
Чтобы объяснить это явление вы должны знать его свойства.

II.Инфинитив в функции определения стоит после определяемого существительного и выражает действие ещё не реализованное, возможное или необходимое,которое будет осуществлено в будущем.На русский язык обычно переводится придаточным предложением,сказуемое которого имеет значение долженствования,будущего времени или возможности.
The question to be discussed at the conference is of great importance for us.
Вопрос,который будет (должен) обсуждаться на конференции,очень важен для нас.
It is necessary to know the temperature to be expected under different conditions.
Необходимо знать температуры,которые можно ожидать при различных условиях.

В этой же функции инфинитив может определять предмет со стороны его назначения или выполняемого им действия.Следует отметить,что в этом значении обычно выступает инфинитив в

форме действительного залога.

A thermometer is an instrument to show the temperature of the air.

Термометр-это прибор для определения (который определяет) температуры воздуха.

III. Инфинитив может также функционировать как часть составного именного сказуемого, следуя за глаголом связкой. В таких случаях инфинитив на русский язык также переводится инфинитивом, а глагол-связка передаётся с помощью таких сочетаний, как "заключается в том, чтобы", "состоит в том, чтобы" или совсем не переводится:

Their aim is to improve the results - Их цель состоит в том, чтобы улучшить результаты. (Их цель-улучшить результаты)

Следует помнить, что глагол to be в сочетании с инфинитивом может иметь модальное значение долженствования. Сравните:

а) глагол-связка. The aim of the research is to find the nessary data - Цель исследования-найти необходимые данные;

б) словосочетание с модальным значением. In our research we are to find the necessary data. - В нашем эксперименте мы должны получить необходимые данные.

Переведите следующие предложения на русский язык:

1. In order to describe and record the weather, we need instruments for the accurate measurement of the physical properties of the air.
2. Weather records are summarized in various ways to express climatic characteristics.
3. No definite rule can be given relative to the number of years required to establish a satisfactory average.
4. A calorie is the amount of heat necessary to raise the temperature of one cubic centimeter of water from 15° to 16°C.

5. A climatic factor of practical importance is the amount of fuel required to maintain a comfortable temperature in homes and offices.
6. In order to form a picture of the climate we must known the distribution of rain throughout the year.
7. A "rain factor" sometimes used to express rainfall effectiveness is obtained by dividing the amount of rain by the mean temperature.
8. In order to obtain an understanding of climatic differences, it is necessary to compare such tables for different parts of the world not only with each other,but with tables for a climate with which one is familiar by personal experience.
9. The amount of precipitation is important,because less heat is required to remove a shallow covering of snow than a deep cover.
10. Through geologic ages various factors may combine in various ways to produce considerable changes in the relative amounts of insolation received in different parts of the earth.

11. To aid Nansen in his planning,the results of earlier attempts to explore the Arctic area during the latter part of the 19-th century were compiled.
12. To convert liquid water to water vapour,we must free every molecule from the attraction of other water molecules.
13. For some problems in oceanography and air-sea interaction, the surface area and the average depth of adjacent seas are important factors to be considered.
14. Accurate measurements of precipitation over the ocean are difficult to obtain.
15. At some stage in the development of civilization,vessels were built to move upon the ocean's surface.
16. Magellan had attempted to measure the depth of the Pacific Ocean by a weighted line,but was unable to reach bottom.

17. Cook determined the outline of the world's largest ocean and was the first man to cross the Atlantic Circle.
18. The voyage allowed the young naturalist, Charles Darwin, the opportunity to study plants and animals throughout the world.
19. The expedition had attempted to sail through the Bering Strait to Wrangell Island, from which it planned to go overland to the pole.
20. This German expedition was first to use an echo sounder, making it possible to obtain a continuous depth recording as a vessel proceeded along its course.
21. It is necessary to measure the concentration of only one of the major constituents in order to determine the salinity of a given water sample.
22. Sediment is sorted by current and wave action which generally leave the sand to be transported along the shore to form beach deposits.
23. Attempts to determine the causes of the change in relative level of the ocean and the continent have not met with great success.

24. The term "flood" is used to denote both the discharge of a river under conditions of excessive rainfall and also the inundation of low-lying land which may result therefrom.
25. To construct an isohyetal map, a number of more or less arbitrary rules of procedure are needed.
26. To estimate a hypothetical major flood it is customary to begin by selecting some great storm which has occurred somewhere in the vicinity of the drainage area in question.
27. Pollution control is largely a sanitary engineering problem to be solved by strict laws.
28. For small areas it is often possible to compute a time interval known as "concentration time".
29. Generally, current-meter measurements are far too costly and time-consuming to be repeated at anything like daily intervals.

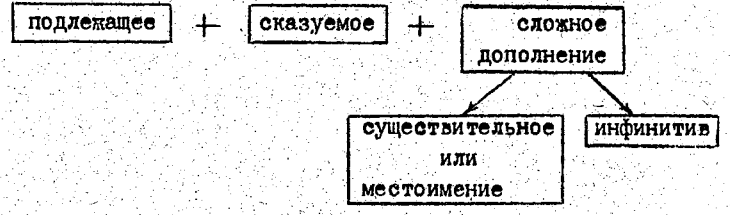
30. The problem is to find a relationship between the observed data and the effect of changing stage.
31. The process of evaporation is complex, and various factors affecting it are difficult to estimate and correlate with the evaporation.
32. It is not unusual for the entire summer precipitation to be held in the upper layers of soil as capillary water, or to run off into the streams over the surface of the ground.
33. Utilization of acquifers continues to accelerate to meet the needs of irrigation, industrial, and urban expansion.
34. These data may be used to synthesize the hydrograph from rainfall data for other periods on the same stream.
35. When the precipitation is insufficient to keep the ground continually moist the character and rate of precipitation are the factors which most largely influence seepage flow.

ИНФИНИТИВНЫЕ ОБОРОТЫ

I. Объектный инфинитивный оборот (Инфинитив в составе сложного дополнения)

Предложение с инфинитивом в составе сложного дополнения имеет следующую структуру:

Таблица 8



На русский язык сложное дополнение переводится дополнительным придаточным предложением, вводимым союзами "что", "как",

"чтобы", причём простой инфинитив (Indefinite Infinitive) передаётся личной формой глагола в настоящем или будущем времени, а перфектный инфинитив (Perfect Infinitive) -глаголом в прошедшем времени. Например,

Observations show the current to change its direction.

Наблюдения показывают, что течение изменяет своё напрвление.

Observations show the current to have changed its direction.-

Наблюдения показывают, что течение изменило своё направление.

Приведём ещё несколько примеров рассматриваемой конструкций:

We know this instrument to function properly.-
Мы знаем, что этот прибор хорошо работает.
We expected the conference to take place in September.-
Мы ожидали, что конференция состоится в сентябре.
We know them to have completed the job.-
Мы знаем, что они закончили эту работу.
They expect this invention to be of great importance.-
Ожидается, что изобретение будет очень важным.

2. Субъектный инфинитивный оборот

(Инфинитив в составе сложного подлежащего)

Предложение с инфинитивом в составе сложного подлежащего имеет следующую структуру:

Существительное в общем падеже или местоимение в имен. падеже	+	Сказуемое	+	Инфинитив
именная часть				глагольная часть

В роли сказуемого таких оборотов выступают глаголы, выражающие мнение, суждение или предположение:

I) В страдательном залоге:

is said — Известно ...

	is supposed		Предполагают ...
	is expected		Ожидается ...
	is assumed		Допускают ...
This value	is reported	to change	Сообщают ...
	is considered		Считается ...
	*is proved		Доказано ...
	is found		Обнаружено ...
	is believed		Полагают ...

2) В действительном залоге:

	seems		По-видимому ...
	appears	*proves	Оказывается ...
	turns out		
This value	is likely	to change	Вероятно ...
	is unlikely		Маловероятно ...
	is certain		Непременно ...

* Следует обратить внимание на смысловое различие глагола "to prove" в зависимости от того, в какой форме он употребляется -действительного и страдательного залога.

Предложение, содержащее субъективный инфинитивный оборот, переводится сложноподчинённым предложением. Перевод следует начинать со сказуемого и переводить неопределённо-личным предложением типа "известно", "ожидается", "вероятно" и т.д., за которым следует придаточное предложение с союзом "что".

Подлежащее английского предложения (напр., "value" в предложении (I) This value is said to change) становится подлежащим такого русского предложения -"Известно, что эта величина (value) ...", а инфинитив (to change) - его сказуемым - "Известно, что эта величина изменяется". Приведём, в качестве примера, перевод 2-го и II-го предложений: (2) Предполагают, что эта величина изменяется" и (II) "Оказывается, что эта величина изменяется".

Необходимо помнить, что форма инфинитива находит своё отражение в форме и времени сказуемого русского предложения:

They are believed to work (to be working, to have worked) at this problem.

Полагают, что они работают (работают в данное время; работали) над этой проблемой.

Приведём ещё несколько примеров рассматриваемой конструкции:

This method does not seem to be of any interest.

По-видимому, это метод не представляет какого-либо интереса

Mars is likely to have lost most of its atmosphere.
Вероятно, Марс лишился большей части своей атмосферы.
This method did not prove to be useful.
Этот метод оказался неудачным.

Переведите следующие предложения на русский язык:

1. A considerable depth of cloud, containing cloud particles of different sizes, appears to be necessary for copious rainfall.
2. Physically, a hail stone appears to be formed by collision and coalescence of undercooled water drops with some kind of ice pellet.
3. These areas are anticyclones, or highs, and the circulation around them is said to be anticyclonic.
4. Highs and lows often follow each other in regular succession, but the highs are more likely to become stationary or to spread slowly.
5. Anything which causes this warm moist air to rise results in condensation and precipitation.
6. Great temperature ranges are found to be characteristic of broad plateaus except near the equator.
7. These temperature changes appear to be in general accordance with accompanying changes in pressure distribution and winds.
8. Average temperatures of about 64°, 50° and 43°C appear to be natural limiting values in relation to plant growth.
9. The advance of the warm front eastward, causing the warm air to rise over colder air, is frequently, attended by rain.
10. Local thunderstorms of marine origin are known to be most frequent in early morning hours.

11. Ptolemy's map showed the Indian Ocean to be surrounded by a partly unknown land mass.
12. The design of the Fram proved to be succesful.
13. During the morning of Friday,October 12,1492 land which is generally believed to have been Watling Island was again sighted.
14. The solar system seems to be an enormous structure,but we find that it represents a very minute portion of the total universe.
15. Such deposits are called turbidites and are thought to have been deposited by turbidity currents.
16. Alfred Wegener is considered by most scientists to be the pioneer of the modern continental drift theory.
17. The volcanic activity on Midway Iseland appears to have ceased 20 million years ago.
18. The age of the seamounts in this region is thought to be between 30 and 40 million years.
19. For these sediments to be deposited,preserved,and overlain by younger sediment required at least a low rate of subsidence.
20. The relative propertions of major dissolved constituents in ocean water are found to be very nearly that of the relative proportions of these salts as found in the body fluids of all animals.

21. A control is said to be "permanent" if there is a fixed stage-discharge relation.
22. Infiltration of water into sands may be expeoted to be greater than infiltration into clays.
23. In all the above discussion the precipitation has been considered to be rain falling on unfrozen ground.
24. Although these pans are generally considered to give the best estimates of lake evaporation,their use has not been widespread.
25. Soil lysimeters have been used extensively and,if the soil arrangement is not too much disturbed,appear to give good results.

26. If discharge measurements are made at a considerable disbance from the control, measurements may appear to be affected by variable slopes.
27. Even on steep slopes, deep, sandy soil and subsoil will permit a large amount of percolation and will quickly carry the percolating water to depths from which it is not likely to return by capillary action.
28. It follows that drainage areas containing reservoirs or their natural equivalent - lakes - are especially likely to depart from unitgraph theory.
29. The errors in estimating tributory inflow are likely to be considerable, so that it is usually necessary to consider the first composite inflow hydrograph as an approximation.
30. If we find the runoff volumes, we cannot say definitely whether unitgraph theory is confirmed.

СОСЛАГАТЕЛЬНОЕ НАКЛОНЕНИЕ

Наклонение - это грамматическая категория глагола, выражающая устанавливаемое говорящим отношение действия или состояния к действительности: представляется ли действие реальным или желательным, возможным или необходимым и т. д. В английском языке, также как и в русском различают следующие наклонения:

- изъявительное - действие мыслится говорящим как утверждаемое или отрицаемое, вполне реальное, например: Завтра мы закончим работу; We shall complete the work tomorrow
- повелительное - выражает просьбу, приказание говорящего или побуждение к совершению действия, например: Пусть идёт; Let him go.
- сослагательное - служит для выражения действия предполагаемого, возможного, желаемого, например: Я не сказал бы того, если бы не знал точно.

Формы сослагательного наклонения в английском языке(Subjunctive) переводятся на русский язык формами русского сослагательного наклонения-сочетанием глагола в форме прошедшего времени с частицей "бы" - "я сделал бы","я написал бы" и т.п. или без частицы "бы",если эта частица уже имеется в составе союза "чтобы","если бы",например: Необходимо, чтобы экспедиция завершила свою работу.

Формы Subjunctive:

В современном английском языке для выражения сослагательного наклонения употребляются формы простого (Indefinite Subjunctive) и перфектного (Perfect Subjunctive) сослагательного наклонения.В свою очередь,в каждой из этих двух форм различаются синтетические и аналитические формы Subjunctive.

Indefinite Subjunctive

а) Синтетические формы. Например:

- be work - внешне совпадают с формой инфинитива без частицы "to";
- asked,wrote - внешне совпадают с Past Indefinite изъявительного наклонения;
- were- форма,единая для всех лиц единственного и множественного числа.

I wish he were present at the conference.

Я хочу,чтобы он присутствовал на конференции

It is necessary that the type of the cloud be determined correctly.

Необходимо,чтобы этот тип облака был определён правильно.

б) Аналитические формы представляют собой сочетания глаголов с инфинитивом смыслового глагола без частицы "to" например,

It would require much time to verify the results

Потребовалось бы много времени,чтобы проверить результаты

I should like to join the research group

Я хотел бы присоединиться к этой исследовательской группе.

Perfect Subjunctive Данная форма используется для выражения предполагаемого, но нереального, не реализованного действия в прошлом.

а) синтетическая форма

- had been asked/written — внешне совпадает с формой Past Perfect изъявительного наклонения.
  had read/written

I wish I had read my paper at the seminar

Я хотел бы сделать доклад на этом семинаре (но сделать это не удалось)

б) аналитические формы:

should
would
may + have been asked/written
maight (Perfect Infinitive)
could

The temperature does not decrease as might have been expected

Температура не уменьшается, как этого можно было бы ожидать.

Употребление сослагательного наклонения

В современном английском языке сослагательное наклонение употребляется главным образом в следующих случаях:

I) В придаточных предложениях после безличных оборотов типа it is necessary (необходимо), выражающих необходимость или желательность выполнения данного действия. Употребляются как аналитическая, так и синтетическая формы.

It is necessary that you(should) inform us regularly about the results obtained.

Необходимо, чтобы Вы регулярно информировали нас о полученных результатах.

It is likely that they should complete the research this year. - Вероятно,что они закончат эту исследовательскую работу в этом году.

2) В придаточных предложениях,если в главном предложении содержатся глаголы,выражающие приказание,предложение, желание: to requie ,to demand (требовать),to suggest/ to propose(предлагать),to insist (настаивать),to wish/ to desire(хотеть,желать) или отглагольные существительные со схожими значениями:requirement/demand (требование) предложение) и т.п. Употребляются аналитические и синтетические формы.

The demand is that the device be reliable.

Необходимо,чтобы этот прибор был надёжным.

They suggest that the experiment should be continued

Они предложили,чтобы эксперимент был продолжен.

3) В предложениях,где сам контекст выражает условие,которое делает возможным или вероятным совершения действия,употребляются аналитические формы с should,would и модальными глаголами.

Without gravitation there would be no pressure in liquids

Без гравитации не было бы давления в жидкостях.

All necessary calculations might have been done.

Все необходимые расчёты могли бы быть сделаны.

ЗНАЧЕНИЯ СЛОВ SHOULD,WOULD

В научно-технической литературе глаголы should и would чаще всего употребляются в следующих значениях.

Таблица 9

should	would
I. В качестве вспомогательных глаголов для выражения будущего действия в дополнительных придаточных предложениях (Future in the past),когда глагол главного	

предложения стоит в прошедшем времени.

- с местоимениями I-го лица
I said that I should finish this job today. Я сказал, что закончу эту работу сегодня.

- с местоимениями 2-го и 3-го лица He said that he would finish this job today. Он сказал, что закончит эту работу сегодня

2. Для образования сослагательного наклонения в главной части условных придаточных предложений 2-го и 3-го типа.

- с местоимениями I-го лица
We should introduce this method of investigation if it were efficient.
Мы бы ввели этот метод исследования, если бы он был эффективным.

- с местоимениями 2-го и 3-го лица
They would introduce this method of investigation if it were efficient.
Они бы ввели этот метод исследования, если бы он был эффективным.

3. Для образования сослагательного наклонения со всеми лицами ед. и мн. числа в придаточных предложениях после союза that (чтобы)
It is necessary that he (I, you) should be ready with the report on time. - Необходимо, чтобы он подготовил свой отчёт во-время.

3. Would со всеми лицами, ед. и мн. числа часто употребляется для выражения обычного, повторного действия в наст., прош. и буд. В научно-технической литературе в данном значении would не переводится.
The device eas tested several times and it would always proved exact.
Прибор испытывали несколько раз, и он всегда оказывался точным.

4. В качестве модального глагола со значением должествo-

вания со всеми лицами ед. и мн. числа. В научно-технической литературе should часто употребляется в инструкциях, выражая наставление или выражает предположение вероятность совершения действия These instruments should be handled with the care. Обращайтесь с этими приборами осторожно	

Переведите следующие предложения на русский язык:

1. In all these charts pressure is reduced to sea level; otherwise the distorting effects of elevation would mask the general conditions.
2. A slope facing to the south in the Northern Hemisphere receives more insolation than would a level surface in the same position.
3. It should not be forgotten that the relations of the vegetative processes to temperature are extremely complex.
4. We should expect two periods of maximum temperature in Central Amerioa.
5. Productive research in these difficult areas would be vertually imposible without radar.
6. Many additional details could be given for an intensive study of the local climate - for example, the duration of the snow cover and the number of days with thunderstorms and with hail.
7. Cotton should not be planted until the daily normal is 62°F.
8. The cooling of the air by a large ice sheet and the drainage of the cold air into lower levels would reduce the mean temperature of the globe, and might result in the extension of glaciers into lower lands farther south.

9. Apparently the only way in which changes in CO_2 could materially affect the climate of the world would be by affecting the upper air above the water vapor.
10. Changes in the composition of the air might result in important changes in the absorption of incoming and outgoing radiation. Increased absorption of insolation would result in a decreased amount of heat received at the earth's surface, and increased absorption of outgoing earth radiation would result in increased temperature in the lower air.
11. Forbes followers concluded that no life existed in the deep ocean, as life would be impossible under the conditions of high pressure and absence of light and air in this enviroment.
12. The course of the Fram deviated somewhat from what would have been expected as the result of this phenomenon called the Coriolis effect.
13. During the summer seasons when the monsoon winds blew from the southwest, ships laden with goods for trade would leave the Arabian ports and sail eastward across the Indian Ocean.
14. Many insects use the surface of water as if it were a solid surface, moving around on it.
15. We should begin our discussion with those aspects of the universe which we can readily observe and describe.
16. Since it was impossible to present evidence that would support a mechanism for the transportation of the various continental masses, the theory of Wegener did not receive wide acceptance.
17. Before we look at the bulk of scientific evidence that has been gathered in relation to plate tectonics, we should consider how well the continents do fit together.
18. Since the climate was colder during ice advances we might account for some of the lowering of the shoreline by the contraction of the ocean volume as its temperature decreased.
19. We should first define a few terms before we go further in our discussion.

20. The coarser material would settle out first while the finer material would stay in suspension longer.

21. The hydrologist should be familiar with the principles and methods involved in such studies.
22. If should be noted that a current meter actually measures speed rather than velocity.
23. Wells should be equipped with water-stage recorders similar to those used in stream-gaging.
24. It should be recognized that soils and ground-water conditions are seldom,if ever,homogeneous.
25. In general,the Thiessen method should give a closer approximation to the true value than would either of the other methods.
26. As might be expected,the moisture content of soils,the rates of movement and the height of capillary movements vary between wide limits.
27. One might assume that a clear-cut division takes place at the soil surface between soil moisture accretion and surface runoff.
28. The reader should note the distinction between hydrologic design and hydraulic design.
29. Locations which might require special treatment for variable slopes should be avoided wherever possible in selecting gage sites.
30. The small Price current meter has high accuracy from about 0,5 to 15 fps; velocities outside this range should be avoided.
31. The number of observations should be increased where the bottom is uneven or the velocities are irregular.

УСЛОВНЫЕ ПРЕДЛОЖЕНИЯ

В современном английском языке выделяются 3 этапа условных придаточных предложений,которые схематически могут быть представлены следующим образом:

Таблица 10

Условные предложения

Тип предложения	Придаточные условные предложения	Главное предложение
Условное реальное		
Изъявительное наклонение I тип Переводится будущим временем	Present Indefinite If I see him Если я его увижу	Future Indefinite I shall speak to him то поговорю с ним
Условное нереальное		
Сослагательное наклонение II тип Переводится глаголом в прошедшем времени с частицей бы	Past Indefinite If I were free Если бы я был свободен If I had time Если бы у меня было время If I lived near, Если бы я жил рядом	should(would,could might)+Indefinite Indefinite без to I should come Я бы пришёл
Сослагательное наклонение III тип Переводится так же, как II тип	Past Perfect If I had been free Если бы я был свободен If I had time Если бы у меня было время If I lived near Если бы я жил рядом	should(would,could, might)+Perfect Indefinite без to I should have come Я бы пришёл

Примечание: помимо союза "if" (если), условные предложения могут вводиться союзами supposing , in case ("в случае"), unless ("если не"), provided ("при условии").

Инверсия в условных предложениях

Если в состав сказуемого условного придаточного предложения входят глагольные формы were, had, could, should они могут занимать место перед подлежащим, и союзы в таких предложениях не употребляются:

Were I free I should come.	Если бы я был свободен, я бы пришёл
Had I had time I should have come.	Если бы у меня было время, я бы пришёл
Should any repair be required if will be made immediately.	Если потребуется ремонт, он будет произведён немедленно

Переведите следующие предложения на русский язык:

1. If the air is warmer than the soil, it is cooled by conduction of some of its heat to the earth.
2. If a given mass of air is heated to a higher temperature than the surrounding air, it expands and becomes less dense and, therefore, lighter than the air around it.
3. Rising air tends to cool about 5,3° F for each 1,000 feet of ascent, unless condensation occurs in it.
4. The dry-bulb thermometer indicates the temperature of the air; the wet-bulb, cooled by evaporation, has a lower reading unless the air is saturated.
5. If rising and condensation continue rapidly, they develop into anvil-shaped cumulonimbus clouds.
6. Without a heat source, equilibrium would soon be reached and evaporation would cease.
7. A reason for reducing to sea level is that the temperature differences due to altitude, if entered, would conceal the influence of other factors.
8. But for the turbulent diffusion, the air near the ground would become saturated and evaporation would stop.
9. Water and life have existed on this planet for long ages, which they could not have done if temperatures had been

markedly higher or lower than at present.

10. If factors capable of producing the coding are not present, precipitation cannot occur.
11. If we add different sized particles to a sediment, we will reduce the porosity.
12. Cook established that if any continent existed in the southern oceans, it must be beyond the ice fields and possibly covered by them.
13. The maximum porosity that could be expected in a sand deposit would be about 47 % if all the sand grains were perfect spheres of the same size.
14. If the ship had followed this pattern of movement relative to the wind, it would have passed the North Pole on the Alaskan side and the men would have reached the shores of Canada.
15. If we consider the change in the density of water below 4°C, we encouter considerations that must include the hydrogen bond.
16. If the continents were at one time united, this should be indicated in the rocks that were formed prior to the breakup.
17. If we take a regularly shaped prism of ice with a density of 0,92 and float it on water with a density of 1.0, the ice will sink into the water until 92 % of its mass is submerged.
18. Should the salinity within the cells of an organism be less than that of the external medium, water from the cells will pass through the cell membranes into the external medium.
19. If north-south and east-west axes are established and an arrow pointing from the intersection is used to demonstrate the magnitude and direction of the tidal forces at any time, it can be seen that the tidal forces are restricted to an east-west direction at the equator.

20. If the stream is nonalluvial, the hydrologic studies are relatively simple and consist mainly of hydraulic computa-

tions.

21. If a stream passes through a contracted opening there is a sharp drop in the water surface at the entrance to the opening.
22. If no forces other than gravity were effective within the soil, then there would be a sharp line dividing dry soil from saturated soil.
23. If the stream is above the level of the water table, there may be influent seapage into the water table.
24. If flowing water reaches the floor system of a bridge, disaster may result.
25. If an accumulation of snow melts rapidly as a result of continued high temperatures, the potentialities of a flood are present.
26. If all losses from the ground-water reservoir were to stream flow, then one depletion curve would govern throughout the year.
27. Even if stream-gaging stations were a hundred times more numerous than they are, their records could still tell only what has happened at particular locations.
28. If the runoff coefficient of a given area were constant the frequency curve for rainfall intensities for a period equal to its concentration time could then be converted directly into a frequency curve of runoff from the area.

ПЕРЕВОД СУЩЕСТВИТЕЛЬНЫХ В ФУНКЦИИ ОПРЕДЕЛЕНИЯ

В английском языке, особенно в научно-технической литературе часто встречаются определения, стоящие перед существительными и выраженные также существительными. Единственным формальным признаком определений такого типа является их место между артиклем и определяемым словом.

an ocean current, a river bed, a rain drop

Перевод таких словосочетаний следует начинать, как правило, с последнего слова в группе, а определения следует

переводить в обратном порядке существительными в косвенных падежах

Океанское течение (течение океана); речное русло, дождевая капля.

Цепочка слов в английском языке может состоять более, чем из 2-х существительных; обычно их перевод выполняется последовательно, "справа налево"

the[1] sea level[2] fluctuations[3]
моря (3) уровня (2) колебания (1)

Переведите следующие предложения на русский язык:

1. Rainfall distribution is less systematic than temperature distribution.
2. Temperature data for climatic purposes are usually obtained by daily readings of registering maximum and minimum thermometers.
3. The true probability of rain on any given day is related to the weather of the preceding day, since weather conditions tend to persist.
4. In trade winds latitudes the eastern coasts of land masses are subject to marine influences.
5. Marine climates are moderate in their temperature changes, with small diurnal and annual ranges of temperature.
6. Climate directly influences soil formation in several ways.
7. The summer rains are due to moist inflowing, monsoonal winds moving up-slope, aided by convectional rising over the heated interior.
8. One of the most notable features of urban climates is that they are generally warmer than the surrounding countryside producing a heat island effect.
9. Temperature and moisture control the distribution of many plant and animal pests and diseases.
10. Water vapour released from the surface of the earth was

captured in the thick envelope.

11. Sediment that reaches the continental shelf is sorted by current and wave action.
12. This condition has produced severe coastal erosion problems.
13. The energy conditions associated with these coastal areas are greater than we saw in the Gulf of Mexico since the area is exposed to the moderate wave action of the Atlantic Ocean.
14. Due to the rapid coastal uplift, it is difficult to determine the effect of sea level fluctuation due to the melting and forming of glaciers.
15. Following this high slack water, the lowering of the tide begins, and the ebb current velocity increases.
16. Very high temperature surface water may form a relatively thin layer.
17. Surface water characteristics extend to a depth between 25 and 50 m where the salinity increases rapidly with increasing depth.
18. Surface winds control the surface circulation which has a seasonal pattern.

19. Flood control projects range from small improvements to gigantic, basin-wide developments.
20. Pollution control is largely a sanitary engineering problem.
21. A complete stream pollution control study must include an investigation of stream flow.
22. Snow survey sites must be carefully selected, so that the results are representative of the average conditions over the surrounding area.
23. The snow survey determinations are compared with the normal or average for previous years.
24. The rain supply rate may exceed the infiltration capacity initially or at any time during a storm.

25. In general,however,the unitgraph is inadequate for the complete solution of a flood control problem.
26. Closely akin to flood control is flood prediction.
27. Flood control studies are complicated by the fact that any type of flood control project modifies the natural regimen of the stream.

МНОГОФУНКЦИОНАЛЬНОСТЬ СЛОВ

Таблица II

ONE

Функция;Способы перевода	Пример	Перевод
one- числительное; переводится на русский язык словом "один", "одно"	Climate is one of the most important factors of our in-vironment.	Климат - один из наиболее важных факторов нашей окружающей среды.
one- слово-заместитель; переводится на русский язык тем существительным,которое оно заменяет,либо вообще не переводится.	This method is more reliable than that one	Этот метод более надёжен,чем тот (метод)
one- подлежащее в английском предложении, соответствующем русскому неопределённо-личному предложению.На русский язык не переводится.	One should remember that..	Следует помнить,что ..

IT

Функция; Способы перевода	Пример	Перевод
It- личное местоимение. Переводится на русский язык как "он","она", "оно" в качестве подлежащего и "его","её" в качестве дополнения.	Take that book. It is very useful. Read it.	Возьмите эту книгу. Она очень полезна. Прочитайте её.
It- подлежащее безличного предложения. На русский язык не переводится.	It is cold today. It often snows in winter.	Сегодня холодно. Зимой часто идёт снег.
It- в неопределённо-личных предложениях. На русский язык не переводится.	It was necessary to verify the data obtained.	Было необходимо проверить полученные данные.
It- в качестве указательного местоимения. Переводится на русский язык словом "это"	What is this? It is a weather map	Что это? Это - карта погоды.
It+is(was)...that(who, which) It-служит для оформления грамматической конструкции с помощью которой подчёркивается, выделяется какой-либо член предложения(кроме сказуемого). It (также как и that, who, which)	It is the presence of water on the planet Earth that makes life possible.	Именно присутствие воды на планете Земля делает жизнь возможной.

при переводе опускается, а усиление выражается с помощью слов: "именно", "только","лишь".		

THAT (THOSE)

Функции, способы перевода	Пример	Перевод
That- указательное местоимение. Обычно находится перед существительным. Переводится местоимениями "тот","этот","та", "то".	Give me that map	Дайте мне эту карту
That of (those of)- -слова-заместители. Заменяют уже упомянутое существительное. Переводятся или существительным, которое замещают, или не переводится вообще.	This drawing is better than that of you friends	Этот чертёж лучше, чем чертёж Вашего друга.
That- относительное местоимение. Стоит после существительного, переводится словами "который"(-ая)(-ое), вводит определительное придаточное предложение,	The book that you gave me last week was very interesting.	Книга, которую ты дал мне на прошлой неделе, очень интересны.
That- союз. Стоит после глагола, переводится союзом "что", вводит дополнительное придаточное	I know that you have done the job already.	Я знаю, что Вы уже закончили эту работу.

Переведите следующие предложения на русский язык:

1. It is impossible to separate climatology and meteorology completely.
2. It takes more water to raise a crop in Arizona than in Minnesota.
3. But the sun varies in its activity and in the amount of radiation it emits,and hence the so-called solar constant is not in fact entirely constant,It probably changes from time to time by as much as 3% of its aversge value.
4. It is unfortunately true,that different countries still use different methods of obtaining,tabulating and summarizing weather observations and climatic data.
5. The temperature of the air is not much affected,directly, by sunshine.It is more affected by earth radiation, because the longer waves sent out by the earth are partly absorbed by the air.
6. It is not even possible to state with much accuracy how much evaporation from a known reservoir or lake will occur under given weather conditions.
7. It is true that severity and effects of long dry periods depend not only on their duration,but also on the attending temperature and wind.
8. It is the severe winters and hot summers of continental interiors in middle and higher latitudes that make the most important difference between continental and marine climates.
9. It is evident that the frequency of the occurrence of different air masses at a given locality is an important characteristic of its climate.
10. It has been noted that climates may be grouped as continental,marine,or coastal.
11. It is here,at Greenland Ranch,that a temperature of 134°, the highest of record in the United States,was recorded under standard Weather Bureau conditions.
12. One reading each 24 hours gives the highest and lowest temperatures occurring within that period.

13. The two stations in each pair have about the same latitude,but one is continental and one maritime.
14. The distribution of cloudiness and humidity follows that of rainfall in a general way,especially in summer.
15. By day,especially on clear quiet days,the air over the land becomes much warmer than that over the ocean.
16. As the air over the land becomes cooler than that over the water,a movement of air from the land to the ocean occurs.
17. Note that the centers of highest pressure are over the oceans in both hemispheres in July.
18. The average velocity of highs is less than that of the lows,and their average size is greater.
19. In mountain regions there is a large contrast between the temperature one feels in the shade and that which one feels in the sun.
20. When one moves from one climate to another of different characteristics,the process of acclimatization is largely a physiological adaptation to new levels of heat production.
21. The one factor whose influence is best known and which comes nearest to accounting for the known variations of the larger kind is the one having to do with the changing surface features of the earth.
22. The tropical highlands of Central America have a rainfall regime similar to that of the adjacent lowlands of the savanna type.
23. It is during this condensation that heat is released into the surrounding air.

24. Darwin's interest,investigating the whole of nature, led him to make one of the most outstanding contributions to the field of biology.
25. So that we can measure the amount of energy that is being added to or removed from molecules,we must introduce the term calorie as a unit for measuring quantity of heat.

26. In humid coastal areas abundant rainfall releases heat into the atmosphere,producing winter temperature which are much higher,than those found in the drier regions of the continental interior.
27. Probably the most widely supported theory concerning the origin of submarine canyons is that which explains the erosion by turbidity currents,flows of sediment--laden water that move down the canyon periodically.
28. In other areas one may find beneath the water overlying the continental shelf relict beaches and submerged dune topography.
29. As the oceanic crust descends into the mantle,it is heated to its melting point which is several hundred degree below that of the mantle material.
30. In the Palos Verdes Hills in the Los Angeles area 13 uplifted wave-cut terraces can be counted,and the highest one is approximately 400m above sea level.
31. The Meteor gathered data for 25 months.The data included some 70,000 soundings of ocean depth,and it was this expedition that first revealed the true ruggedness of the ocean floor.
32. It was not until later in the 19th century that the United States bacame active in organizing voyages for the purpose of increasing man's knowledge of the ocean.
33. The laying of transatlantic cables was one of the practical reasons for exploring the third dimension of the oceans.
34. Oceanography uses methods essentially similar to those of the other geographical sciences and its aim is the same as that of general geography.
35. The regular navigation has lead to the oceanographic expeditions that have contributed so much to the science of the seas.
36. It is obvious that the internal circulation of the ocean must be related to the oceanic structure.
37. In the development of oceanographic research during the last one hundred years,three eras seem to stand out.

38. In the Norwegian Sea, Atlantic water is found off the west coast of Norway, where it flows to the north, losing some of its heat content to the atmosphere and being somewhat diluted by excess precipitation.
39. It is apparent that the careful selection of a gaging station site is important.
40. It is necesary, first, to analyze statistically the probable frequency of floods of various magnitudes.
41. It has been said, that alluvial streams have strong "personalities".
42. The "frequency curve" is an elemantary statistical device that may be found useful for a number of purposes. It is based on a simple array of numerical data in order of magnitude.
43. The water that is intercepted by vegetation, buildings and other objects and does not reach.
44. It is never possible to determine exactly the equivalent uniform depth of precipitation over a given area.
45. The isohyetal map makes still better use of the gage data than does the Thiessen method, because it takes into account the actual spatial relationship of the gages.
46. It is the number of large pores in a soil rather than the total porosity that is of major significance in determining permeability.
47. Complete prevention of stream pollution is not economically feasible. It is here that the hydrologist comes to the assistance of the sanitary engineer.
48. It is the meteorologist rather than the the hydrologist who has at his disposal the observational equipment and the analytical techniques that will ultimately give the best answer.
49. Some rivers develop a delta deposit as sediment settles out at the river mouth. One of the largest of such features is that produced by the Mississipi River.
50. The hydrologic problems in irrigation are similar to those in water supply.

51. One should look on such empirical equation as a mathematical description of the original chart.
52. However there is one important difference in the basic data.
53. An ideal location for a gage is one in which the velocity is uniquely defined by stage.
54. In the second case-that of unsteady flow or changing discharge - the stage-discharge relation may be affected by variable slopes.
55. Experience has shown that the discharge is seldom as great as that given by the preceding equation.
56. Some of the conditions that may cause variations of infiltration capacity for a given soil are: soil moisture content, temperature changes, etc.
57. There is but one direct method of measuring soil moisture - that of soil sampling.
58. It will be seen that evaporation losses from the soil depend not only on the same factors that influence evaporation from water surfaces but also on "evaporation opportunity" - that is, on the amount of water available for evaporation.
59. It is not to be inferred that this method is the best, although it is a satisfactory one for some purposes and soils.
60. In practice one soon finds that the "ideal" case of the isolated storm is all too rarely encountered.

СТЕПЕНИ СРАВНЕНИЯ ПРИЛАГАТЕЛЬНЫХ И НАРЕЧИЙ

Таблица 12

Прилагательные и наречия	Положительная степень	Сравнительная степень	Превосходная степень
I. Односложные (некоторые двусложные)	big easy	bigger easier	biggest easiest

2. Многослож-ные	difficult carefully	more / less difficult more / less carefully	most / least difficult most / least carefully
3. Исключения	good -хороший well -хорошо bad -плохой badly -плохо much / many - много little- маленький; мало	better- лучший лучше worse- худший хуже more- больше less- меньший меньше	best- наилучший worst- наихудший most- наиболее least- наименьший наименее

Сравнительные конотрукции.

Конструкция	Перевод	Пример
as+ причастие в полож. +as степени	такой же + прилаг.+ как и	Winter is as long as any season. Зима такая же длинная как и другие времена года.
not so + as	не такой + прилаг. + как	Maroh is not so cold as Februrty. Март не такой холодный как февраль.
прилаг. в сравнительной степени +than	прилаг. в сравнительной степени + чем	The weather is warmer in May than in April. В мае погода теплее, чем в апреле.

Конструкция	Перевод	Пример
прилаг. в превосходной степени + of among	прилаг. в превосходной степени "из","среди","в" и др.	July is the warmest month in this region. Июль-самый тёплый месяц в этом районе.
The прилаг./наречие + the прилаг./наречие	чем ... тем	The sooner the better. Чем скорее,тем лучше.

Примечание. Сравнительная степень прилагательных может быть усилена с помощью наречий much,far, still которые переводятся на русский язык словами "значительно","гораздо","ещё".
The Dniper is much longer than the Thames.
Днепр гораздо длиннее Темзы.

Обратите внимание на перевод следующих словосочетаний:

twice as much as	- в 2 раза больше
four times as long as	- в 4 раза длиннее
four times as high as	- в 4 раза выше
ten times as much as	- в 10 раз больше
half as much as	- в полтора раза больше
half the size	- в 2 раза меньше по размеру
half the weight	- в 2 раза меньше по весу

Переведите следующие предложения на русский язык:

1. Radiation can penetrate all kinds of matter to a greater or lesser extent.

2. Between the tropics and the poles the noon sun is 47° higher at midsummer than at midwinter.
3. The higher the sun the greater the amount of heat a given horizontal surface will receive.
4. Conduction is always from the warmer to the colder substance.
5. Pressure and movement of the air as such, are generally of lesser significance in determining the characteristics of a climate.
6. Air tends to move from the higher to the lower pressure at a speed proportional to the pressure difference.
7. The warmed air expands, becomes less dense and is displaced by the cooler and therefore denser air from the ocean.
8. Usually, the larger the continent the more pronounced is the continental character of the climate of its interior.
9. In July the temperature differences between land and water are less than in January, the belt is more nearly uniform, and the pressure is not as low as in winter.
10. Relative humidity is highest during the cooler parts of the day and lowest when the temperature is high, as is the rule.

11. Sir James Ross extended the soundings to a greater depths on voyages to the Antarctic from 1839-43.
12. One of the most unusual voyages was initiated by Fridtjof Nansen, who developed a great interest in exploring the North Atlantic and the Arctic area.
13. Generally, the heavier the molecule the greater the van der Waals attraction between individual molecules of the compound.
14. The higher the temperature, the greater the velocity of the molecules of the substance for which the temperature is being measured.
15. Next to mercury, water has the highest surface tension of all commonly occurring liquids.
16. The constituent that occurs in the greatest abundance is the chloride ion, Cl^-.

17. The oceans were probably somewhat less saline than the present oceans.
18. The greatest concentration of wave energy is in the foreshore region.
19. Such beaches are usually much less firm than beaches composed of finer materials.
20. The pattern is a little more complicated than that which occurs during spring and neap tides, but it can still be seen that the net tide curve which shows a tidal range that of spring tides and greater than that of neap tides is still determined by the combined effect of the solar and lunar tide-generating forces.
21. The greater the mass of the objects and the closer they are together, the greater will be the gravitational attraction.
22. The steeper the slope, the higher the velosity of the geostrophic current flowing in a direction generally parallel to the topography contours.

23. Chemical gaging has greatest application on steep, rocky, swift streams.
24. Interception losses may be much greater if the precipitation is snow.
25. The spillway structure is often the most expensive portion of the dam.
26. On the Ohio and the upper Mississippi and on many smaller streams, navigation is made possible by canalization.
27. Iterception losses probably are greatest for areas of coniferous forest in winter.
28. The highest point on the rise is called the "peak".
29. The simplest graphical form for presenting runoff data is the hydrograph.
30. Perhaps the most reliable method of estimating flood discharges after the flood has passed is by computing the flow over a dam.
31. It will be seen that runoff from a drainage area may be either greater or less than the discharge of the effluent stream.

32. Of many items, the soil moisture content probably is the most important.
33. The most extensive lakes resulting from glacial action, both in number and distribution, are those formed by glacial debris.

ЛЕКСИКА

При переводе научно-технической литературы встречаются не только рассмотренные выше трудности грамматического характера, определённые лексические особенности английской специальной литературы также могут быть причиной осложнений при переводе. Рассмотрим некоторые из них.

Конверсия

Конверсия - это способ образования новых слов другой части речи без изменения формы слова, без помощи словообразовательных элементов. Например, от существительного work (работа) образовался глагол to work (работать), а от прилагательного wet (влажный) - глагол to wet (увлажнять). Если такого рода слова - - конверсивы встречаются в тексте и сразу нельзя определить их принадлежность к той или иной части речи, то необходимо определить функциональные особенности данного конверсива, другими словами - выяснить, каким членом предложения оно является. Следует также обратить внимание на сопутствующие данным словам предлоги, артикли и т. д.

Valley breezes result from the heating of the valley floor by sunshine.

Mountain breezes occur at night as a result of the rapid cooling of the air near the mountains.

В первом случае слово result занимает позицию после подлежащего, имеет после себя дополнение (the heating) и, следовательно, является глаголом-сказуемым. Во втором предложении слову result предшествует неопределённый артикль, что свидетельствует о принадлежности этого слова к существительным. Приведённые примеры могут быть переведены следующим образом:

Долинные бризы образуются вследствие нагревания солнечным светом дна долины.

Горные бризы отмечаются ночью как результат быстрого охлаждения воздуха вблизи гор.

Образование слов посредством изменения ударения. В ряде случаев различное ударение в слове говорит о его принадлежности к разным частям речи, чаще всего к существительному или глаголу (причём у существительных ударение падает на первый слог, у глагола - на второй.

Существительные	Глаголы
increase-увеличение	increase-увеличивать
decrease-уменьшение	decrease-уменьшать
object - предмет	object- возражать
subject- предмет, тема	subject-подвергать

Определение принадлежности таких слов к той или иной части речи в текстах аналогично описанному выше. Сравните:

As the temperature of water decreases, the density increases as long as this temperature decrease occurs above 4°C.

В первых двух случаях decrease и increase - глаголы, в последнем - decrease - существительное:

По мере того, как температура воды уменьшается, плотность увеличивается до тех пор, пока происходит это повышение температуры свыше 4 С.

Многозначность слов

При переводе английской научно-технической литературы следует обратить внимание на многозначность следующих слов:

Таблица I3

	Предлог	Союз, вводящий придаточные предложения.	Наречие
SINCE	The observations have been carried on since 8 o'clock Наблюдения ведутся с 8 часов	Since the observations have confirmed our expectations we can stop the experiment. Так как наблюдения подтвердили наши предположения, мы можем прекратить опыт.	The explorer went to the North and we have not met him since. Изыскатель уехал на север, и мы с ним с тех пор не встречались.
FOR	For low flows the meter is mounted on a rod. Для меженного стока вертушка монтируется на штанге. Observation lasted for 3 months. Наблюдения длились в течение трёх месяцев.	The analysis was exact, for it was made by an expert. Анализ был точен, так как он был сделан специалистом.	
AS	As the air rises, it cools adiabatically. По мере того, как воздух поднимается, он адиабатически охлаждается.	Wind velocities increases rapidly with altitude as the effect of friction with the ground disappears. С высотой скорость ветра быстро увеличивается, так как исчезает эффект трения о поверхность земли.	Heat is defined as the total energy of molecular motion within a body. Тепло определяется как общая энергия молекулярного движения в каком-либо физическом теле.

Следует также запомнить значения следующих парных и составных союзов:

as ... as	-так (же) ... как и;
both ... and	-как ...,так и;
either ... or	-или ... или; либо ... либо;
neither ... nor	-ни ..., ни;
not only ... but also	-не только ..., но и;
whether or ...	-ли ... или;
as if	-как будто;
as soon as	-как только;
as far as ...	-ещё в;
as well as	-также,как (и),а также;
as long as	-до тех пор,пока;
in order that, in order to	-(для того) чтобы;
no sooner than	-не раньше чем,как только.

Переведите на русский язык следующие предложения:

1. The air is subject to varying influences from the sun and the earth.
2. Meteorology,as the science of the weather,attempts to apply physical principles to an explanation and interpretation of all the varied weather phenomena.
3. We must know what the average condition of the atmosphere is - how hot in summer,how cold in winter,whether, the air is moist or dry,and innumerable other questions of this kind.
4. Since climate has so many far reaching,practical,and direct applications to the activities of man,climatology emphasizes human relations and is largely descriptive in character.
5. Most of the standartization of instruments and organization have been done by governmental agencies since 1860.
6. Since 1879 a gradual approach toward uniformity of instruments used has been made under the leadership of the International Meteorological Organization.

7. Radiation travels in the form of waves with the speed of light.
8. The higher the sun,the greater the amount of heat a given horizontal surface will receive; for,as the rays become more oblique,they are spread out over a larger area.
9. Since air absorbs only a small percentage of solar radiation, it is not much warmed by sunshine.Since it is also a poor radiator,air losses its heat to space slowly.
10. Changes in temperature may also be brought about by the absorption of radiation and by changes in latent heat.
11. From a long series of hourly temperature readings at a given place, the characteristic temperature changes during the 24 hours may be obtained.
12. The curve results from the interaction of two influences, the incoming solar radiation and the outgoing earth radiation.
13. Changes in wind direction and in cloudiness often cause such irregularities and may even result in rising temperatures at night and in falling temperatures during the day.
14. Neither the changes in pressure at a given locality nor the differences in various parts of the world at low or moderate elevations have appreciable effects on animal or plant life.
15. The"hot winds"of the Great Plains cause a wilting of the corn fields by overtaxing the moisture - carrying capacity of the plants, as well as by removing moisture from the soil.
16. The water vapour,like the other gases of the air,exerts a pressure proportional to its density - that is to the number of molecules present in a given volume.
17. Further cooling results in the accumulation of liquid or frozen water.
18. The effect of insolation upon the soil is also modified by the amount of evaporation,since evaporation has a cooling effect.
19. When a stream of cold air moves rapidly against a mass of warmer air,the latter is forced up quickly,and dark,towering clouds develop.

20. The variability in the amount of rainfall from year to year,either in annual totals or growing-season totals, is a climatic element of importance.
21. Whether light or heavy rains are more valuable depends on many conditions.
22. In both cases the air is naturally dry because of increasing temperature.
23. A direct result of the decrease of pressure is a decrease in the boiling point of water and an increase in the rate of evaporation at air temperatures.
24. The energy of the sun's rays increases with elevation. The increase is rapid in the first 4,000 feet and slow at greater elevations.
25. Wichita and San Francisco have the same mean annual temperature,but the former has a 40 % greater number of degree days.
26. Areas receiving twenty to forty inches annually border the regions of heavy rainfall.
27. Climate determines whether the general character of the occupations of a region will be farming,forestry,hunting, or fishing.
28. Grasses spring up rapidly after a rain.

29. As we will later see in some detail,chemical properties of atoms are determined by the electron arrangement that surrounds the nucleus.
30. Water controls the distribution of heat over the earth's surface as well as other conditions for life.
31. As the temperature of water is lowered from 4° to 0°C, we observe that its density decreases.
32. Accumulations of water were the initial oceans on planet earth,and it is assumed that they have been permanently in existence since their formation.
33. We will first direct our attention to the composition of sediments derived from rock either from the continental masses or from volcanic activity in the open ocean.
34. Since the source of lithogenous sediment is the rock of the earth's crust,we will be interested in identifying.

those compounds that are most abundant in these rocks.

35. Since ocean water is essentially saturated with calcium, the only thing preventing precipitation of calcium carbonate is the presence of the carbonate ions.

36. Superimposed on this large stability is a marked variability of the nature of waves, i. e. of fluctuations back and forth about a mean.

37. The need here is to identify rocks of the same type and age on the continents along their common margin.

38. Since that time, the Pacific Ocean has been decreasing in size as the Atlantic Ocean increases its dimensions.

39. Let us consider the life history of a theoretical volcano that originates near the axis of a mid-ocean ridge.

40. As the plate moves across a hot spot beneath the Pacific Plate, volcanic eruptions produce islands.

41. As the waves concentrate their energy on the headlands, erosion occurs and the shoreline retreats.

42. Due to refraction, the wave energy is concentrated on headlands.

43. Regardless of the rate of erosion, all coastal regions follow the same developmental paths.

44. The coastal erosion as well as erosion being carried on by running water inland, produces large amounts of sediment that must be distributed along the continental margin.

45. Whether the shoreline has become submerged because of a rising sea level or a subsiding continent in a particular region cannot be determined by examining the coastal features in that area, since both processes produce the same end results.

46. This results from the fact that the condition responsible for the intensity of the Coriolis effect is the different rates at which points at different degrees of latitude rotate about the earth's axis.

47. This explains the fact the Coriolis effect increases with increased latitude. Water vapor content of the atmosphere increases much more rapidly than the ocean temperature increases.

48. This high rate of evaporation in the tropics results from the descending dry air masses previously descussed.
49. This greater salinity tends to lower the freezing point of the remaining water.
50. There is also a slight decrease in salinity and dissolved oxygen content from south to north.
51. Most waves that are generated in the sea area by the force of winds move across the ocean as swell and release their energy at the margins of the continents in the surf zone.
52. The reader should note the distinction between hydrologic design and hydraulic design. The former is concerned with determining the quantities of water that must be handled, the latter proceeds from there to determine the form of structure best suited for the job.
53. The hydrologic problems in irrigation are similar to those in water supply but on a grander scale, for it takes as much water to irrigate fifty medium-sized farms as to supply a city of 100,000 people.
54. Hydrologic problems in some projects center on such questions as how the structure will affect flood stages, how much water will be required for lockages and so on.
55. Widespread dust storms in the early 1930's focused attention dramatically on the fact that the soil is not an inexhaustible resource and provided the impetus for intensive study and development of soil conservation practices.
56. When the concentration time and the runoff coefficient are known, it becomes a simple matter to compute the runoff rate corresponding to any given rainfall rate, provided that the, rainfall continues for a period at least equal to the concentration time.
57. From the standpoint of hydrology, the problems of erosion control center about the phenomena of overland flow and infiltration.
58. The growth and industrialization of American cities has brought about many public health problems.
59. S.D. Bluch developed a set of six equations applicable to 1-2-5 yr frequencies, respectively.

60. An isohyetal map resembles a topographic map in form and in method of construction.
61. The storage of appreciable quantities of water on the ground in the form of snow complicates hydrologic studies.
62. The necessery for additional readings depends on whether or not the inclusion of these readings will affect appreciably the total discharge figure.
63. Let us consider a small drainage area on which there has been no precipitation for so long a period that the effluent stream is dry.
64. Thus the mean value computed for one drainage area may be applied to a neighboring area with some degree of confidence. This provides a means for estimating the annual runoff of an ungaged area, over the entire period for which precipitation data are available.
65. The amount of evaporation from either land or water surface during a storm is negligible because of high relative humidity.
66. As a rain continues, plant surfaces becomes saturated.
67. The rain supply rate may exceed the infiltration capacity initially or at any time during a storm or not at all; in the latter case there is no surface runoff.
68. Flow of water in the zone of aeration, as well as in the zone of saturation, is usually laminar.
69. Since the objective of the study is to estimate a hypothetical major flood, it is logical to choose the largest runoff coefficient that may be expected of the given drainage area.
70. The unitgraph provides a means for predicting the time distribution of flow during flood periods.
71. Reservoirs may be either of the uncontrolled type, or equipped with gates or valves to permit regulation of flow.
72. Loss of topsoil to the streams means deposition of that soil in other areas.
73. Studies of long rainfall records indicate that for many stations east of the Missisipi River the minimum year of record is of the order of 60 per cent of the mean.

74. Measurements of precipitation is far from as simple as it may at first appear.
75. It is by means easy to predict the effect of levels on the shape of the hydrograph or height of the flood crest.

СИНТАКСИС

Следует помнить, что в английском языке, в отличие от русского, существует фиксированный порядок слов в предложении:

О	П	С	Д	О
обстоятельство	подлежащее	сказуемое	дополнение	обстоятельство
Last year	we	had	many lectures	at the Institute
Now	my friend	studies	-	at the Institute

Ядром английского предложения является комплекс, состоящий из группы подлежащего и сказуемого, поэтому, как правило, предложения без подлежащего в английском языке, в отличие от русского, невозможны.

Порядок слов английского предложения - это один из формальных признаков, который может оказаться полезным при переводе с английского языка на русский. Таким образом, очень важно найти сказуемое и подлежащее английского предложения, а по их окружению легко раскрыть всю структуру предложения.

Признаки подлежащего: а) отсутствие предлога, б) расположение в начале предложения, обычно перед сказуемым. Подлежащее может быть выражено:

1) существительным: Energy is the ability to do work.
Энергия-способность выполнять работу.
2) инфинитивом: To read is necessary. Читать-необходимо.
3) герундием: Reading is necessary. Чтение-необходимо.
4) местоимением: One can easily understand this rule.
Можно легко понять это правило.
It is cold - Холодно
It is said that ... - Говорят, что...
5) числительным: Two and two make four. Дважды два-четыре.
6) символом: a equals b a равно b

Признаки сказуемого: а) как правило, стоит после подлежащего и занимает второе место в предложении, б) за ним может следовать дополнение или обстоятельство.

The sun	gives	us	light	Солнце даёт нам свет.
подлежащ.	сказуемое	косвенное дополнение	прямое дополн.	

He	went	to the Institute	Он ушёл в институт.
подл.	сказуем.	обстоятельство	

в) Перед сказуемым часто стоит наречие, которое является признаком сказуемого-глагола.

He usually works in the evening. Вечером он обычно работает.

Следует помнить, что простое сказуемое может состоять как из одного (напр., works в последнем примере), так и из нескольких элементов (вспомогательный глагол+смысловой), например, is asking, has asked, will be asked, has been asked.

Сложное предложение отличается от простого тем, что оно состоит из двух или, нескольких предложений, каждое из которых имеет своё ядро, т.е. своё подлежащее и сказуемое. Поэтому перевод на русский язык следует всегда начинать с нахождения ядра главного предложения, после чего определяется тип придаточного предложения и его ядро.

If the weather is favourable	we shall start our observations.
придаточное предложение	главное предложение
Если погода будет благоприятной	мы начнём наши наблюдения.

Любой член простого предложения может быть выражен придаточным предложением, которое занимает в сложном предложении то же место, что и выражаемый им член предложения.

Наиболее часто в технической литературе употребляются дополнительные, определительные и обстоятельственные придаточные предложения.

Определённую сложность представляет перевод бессоюзных дополнительных и определительных придаточных предложений. В такого рода предложениях союз that (в дополнительном придаточном) и союзные слова that и which (в определительном придаточном) часто опускаются:

I know that he is in the laboratory now
I know he is in the laboratory now — Я знаю, что он в лаборатории.

The problem which they solved was very difficult one
The problem they solved was very intersting — Проблема, которую они решили, была очень трудной.

При переводе на русский язык, как это видно из приведённых примеров, пропущенные союзы и союзные слова восстанавливаются ("что", "которую").

Переведите следующие предложения на русский язык:

1. The air in which we live and move and have our being, as one of the fundamental elements of our environment is in its major constituents in all parts of the earth, of practically the same composition, but its influences on plant, animal, and human life vary widely from place to place.
2. The temperature of land and water surfaces is closely related to the temperature of the overlying air; there is a mutual interchange of heat between them, but in discussing weather and climate, temperature means the temperature of the air.
3. The revolution of the earth around the sun and its rotation on an axis having a nearly constant direction in space not only result in the changing elevation of the sun just described, but also produce seasonal and latitudinal variations in the daily duration.
4. When the air is dry and not dusty, the amount absorbed is not great, but water vapour always absorbs a certain part of the solar beam, and other things being equal, the greater the amount of moisture in the air, the less will be the amount of insolation penetrating to the earth's surface.
5. When the vapor pressure reaches a certain value, depending on its temperature, as much water returns to the liquid state as that which evaporates.
6. It is equally evident, however, that insolation does not exercise complete control over either the temperature or the rainfall of an area.
7. Between the depressions formed by the meeting of air masses, there are areas of higher pressure, consisting of a single

polar air mass,and the weather is therefore generally clear and cold.

8. Coming to a consideration of still briefer time intervals,we find climate showing the same oscillating nature.Bruckner, using data on the changing level of the Caspian Sea and the changing front of Alpine glaciers,covering the years from 1020 to 1890,found evidence of a weather cycle averaging about thirty-five years in length,during which a series of cool and wet years alternated with a series of warm and dry years.

9. On the plateaus of Mexico and Central America the surface becomes heated in summer,resulting in inflowing air mainly from the Gulf of Mexico,and in convectional rising,producing a moderate summer rainfall which occurs chiefly in the afternoon or evening in the form of thunder-storms.The cooling of these plateaus in the winter months results in a tendency to out-flowing and down-flowing air and very little rain.

10. Since the rainfall occurs largely during the hot part of the year,and since the dry season is moderately cool,the moisture is sufficient to maintain a cover of short grasses which support a considerable number of cattle.

11. We should expect a more pronounced tendency toward an autumn maximum,for in mountain climates in higher latitudes the time of maximum is usually delayed.

12. While anchored in one of the channels of Tierra del Fuego, Darwin first observed the Fuegan Indians,who impressed him greatly with the mode of life they followed.

13. Let us return now to the van der Waales force which causes molecules of a given substance to be attracted to one another. We can see that if this attraction is to be broken,energy must be given to the molecules so that they can move more rapidly to overcome this force.It is this attraction that must be broken if we are going to produce a change of state in any substance from solid to liquid or liquid to gas.

14. The greater rate of increase of ice crystals as the temperature approaches the freezing point accounts for the decreased density of water below 4°C.

15. Geologists once believed if they could examine the entire sedimentary column in the deep ocean basin, which had been assumed to have been permanently in existence since the initial formation of the earth's oceans, a very great portion of the history of the earth must well be recorded in these sediments.

16. Although it seems unlikely that wave action and ocean current systems could carry coarse material beyond the continental shelf into the deep ocean basin, there is evidence that much terrigenous sediment has been deposited at the base of the continental slope as part of the continental rise.

17. As long as there is no change in the elevation of the landmass relative to the ocean surface, the cliffs will continue to retreat, the benches will widen, and the eroded material will be carried from the high energy areas to be deposited in the low energy areas.

18. Although some rise in the continent may well have occurred along the coast from New York through Maine as a result of the melting of the continental glacier that once covered this region there is little evidence of significant change during the recent past.

19. The evidence indicated new ocean crust was being formed at the mid-ocean ridges and moving off down the flanks on both sides of the ridge.

20. Moving from the oceans onto the continent, one encounters the shore which is the zone that lies between low tide and the highest elevation on the continent that are affected by storm waves. The coast extends from the landward limit of the shore in land as far as land features which seem to be related to marine processes can be found. The width of the coast may vary from less than one kilometer to many tens of kilometers. As the waves beat against the shore they cause erosion which produces sediment that will be transported along the shore and deposited in the low energy areas. The beach is the waveworked sediment that moves along the wave-cut bench of the shore area. It may continue from the coastline across the nearshore region to the line of breakers.

21. Surface conditions as reflected in the amount of water stored in shallow depressions, and topography, which determines the length of time that the water is in contact with the soil in overland flow, are also important factors.
22. Factors which affect evaporation are temperature of the air and water, differences in vapor pressure, humidity of the air, etc.
23. The greatest future for river navigation will apparently be found in these tidal rivers that may be improved as to permit ocean-going craft to enter inland ports.
24. The retardation of snow melting is another service that forests perform in the regulation of stream-flow and the protection of watersheds.
25. It has been assumed that forests reduce the magnitude of ordinary seasonal floods, tend to maintain stream flow in dry weather, and prevent erosion of the land which they occupy, and thereby reduce the amount of silt, carried by streams and lessen the damage done by flood waters to fertile fields.
26. The place on a stream at which gage heights are observed and where usually meter measurements are also made is known as a "gaging station".
27. Though this lake drains about half a million square miles its larger watercourses run only seldom and then only briefly, for this basin is one of low and erratic rainfall.
28. When the relation of the high-water stages at two places is known, the observed stage at the upper one can be used to predict the stage that will occur at the lower one.
29. If, however, the upper gauge is close to the lower one, a prediction loses in value, the interval of time between the prediction of a stage and its occurence being very small.
30. Although it obviously is not possible to determine, the source of any particular water vapour or the relative proportions of ocean-derived and land-derived water that is in the air at any time or place or that may be precipitated in any storm, it is evident that each of these proportions may have significant value, especially in the interior of continents.
31. Where there are heavy accumulations of snow, therefore, the regimen of the spring runoff is controlled largely by temperature.

32. In the high mountains daily thawing and freezing occur during the spring, and the resulting runoff varying widely within each 24 hour period but not greatly from day to day, continues into the summer and is of great economic importance for irrigation and for the development of hydraulic power.

В данном разделе собраны предложения, содержащие различные грамматические лексические и синтаксические трудности. Переведите эти предложения на русский язык:

1. In order to eliminate from these observations the effects of the atmosphere and of the varying distance of the earth from the sun, calculations are made of the amount of energy received at the outer limit of the atmosphere at the average distance of earth from sun.
2. A given locality may have 15 inches of rain one year and be semiarid.
3. The temperature most favorable for vegetative growth is often considerably lower than that which is most favorable for the formation of flowers.
4. Since there are great local topographical variations of temperature in mountain regions, it is hardly possible to describe all the types of climate existing even within a small area.
5. In some parts of the world there are more or less regular daily changes of wind direction or of cloudiness, resulting in mean daily temperature cycles differing considerably from the typical curve.
6. The reason for the relatively cold winters is to be found partly in the elevation and partly in the fact that this region is open to the invasion of cold "northers".
7. After detailed daily records have been maintained continuously over a long period the monthly averages become climatic data of great value.

8. When the climate of a considerable area or region is being considered as a unit, even greater simplification and omission of detail become necessary.
9. Rising air tends to cool about 5.3°F. for each 1,000 feet of ascent, unless condensation occurs in it.
10. Fog is condensed moisture in very fine droplets in a layer of air at or near the surface of the earth.
11. The annual distribution of pressure belts is modified by the changing seasons, especially by the apparent movement of the sun as the seasons change, and by the different temperatures assumed by land and water surfaces under the influence of incoming and outgoing radiation.
12. Centered at about latitude 35°N. and 30°S there are belts of high pressure with dry, slowly descending air.
13. These areas also have light and variable winds for the most part, but in winter they are occasionally invaded by storms from higher latitudes, resulting in a moderate winter rainfall.
14. The daily mean may also be obtained by using the mean of the 24 hourly values shown by a thermograph trace, but it has been found by experience that the much simple method used in the table gives a sufficiently accurate value for climatic purposes.
15. The moisture of the air is continually changing in amount and in physical state.
16. In terms of decades, there are warm and cold periods, dry and wet periods.
17. In regions of large variability, the monthly, seasonable, and yearly amounts are more likely to be below the mean value than above it.
18. The lower denser clouds make the days cooler and the nights warmer than they would otherwise be.
19. It is evident that the amount of heat received by the earth varies with the amount emitted by the sun that large changes in solar output, if they occur, will be reflected in climatic changes on the earth.
20. The basic statistical facts of climate are derived for the most part from climatic data that is, from compilations of long continued weather-records.

21. Because the earth is nearer to the sun in December than it is in June, mid summer insolation is greater at the South Pole than at the North Pole.
22. Since the sun has a temperature of approximately 10,000°F, there is an enormous stream of energy radiating from it in all directions.
23. Three major physical causes unite to produce and maintain the general system of pressure distribution and air movement.
24. In January there are two strongly developed centers of low pressure in this belt, one is known as the Alentian, Low, the other is known as the Iceland Low and covers much of the northern Atlantic.
25. Over extensive plateaus, cold air may accumulate for several days or more, and then, as a result of changing pressure distribution, it may descend over the adjacent lowlands either by day or by night as cold catabatic winds.
26. This type of climate extends northward through Durango and the southern half of Chihuahua on the western side of the plateau - that is on the eastern slope of the Sierra Madre Occidental.
27. The greater elevation of the sun and the greater duration of sunshine combine to give much greater insolation in summer than in winter outside the tropics.
28. If one is to make the best use of the land, the crops one grows in the different regions should be well adapted to the climates of those areas.
29. These processes of absorption and radiation are usually less important in changing the temperature of the lower air than are the two other processes, conduction and convection.
30. A drought is a period of dryness of sufficient length and severity to cause partial or complete crop failure.
31. Sunshine is essential to man, as well as to plants, and it is generally reconized that an abundance of insolation is an element of healthful climate.
32. Small amounts of rain followed by warm and sunny weather are quickly lost by evaporation and do not penetrate to sufficient depths to be of value.

33. Attention has already been called to the fact that clouds and water vapour intercept both the incoming radiation by day and the earth radiation by night.
34. Although the gaseous constituents of the air sum to be practically constant, there may have been changes in past geological periods.
35. A change of, say, 10% in the solar output would cause a greater actual change in the amount of heat received where the total insolation is great, as in equatorial regions, than where it is small, as in polar regions. This would result in different temperature contrasts between high and low latitudes, causing changes in the position of pressure belts, wind systems, and paths of cyclones and anticyclones. Such a redistribution of pressure would result in different responses in different parts of the would; one region would be wetter and another drier or one warmer and another colder.
36. It is probable that a general increase in elevation would accompany any large increase in land area. If these changes took place poleward of latitude 40°, the two influences would combine to reduce the temperature of the world. If, for example, the great plain of Russia and Siberia, now of moderate elevation, were raised a few thousand feet and became a high plateau, much of it might well be covered with glaciers.
37. Cloudiness and rainfall, as well as temperature, are directly affected by continents and oceans.
38. The cold front is usually followed after a few hours by clear and cool or cold weather.
39. The temperature is also influenced by the fact that there are no mountains ranges to interfere with the free movement of tropical maritime air from the north.
40. In contract to the seasonal variations the total insolation in a year is greatest at the equator and decreases regularly toward the poles, as is expressed below in percentages of the amount at the equator.
41. Volcanoes frequently throw great quantities of fine dust high in the air, and Humphreys has shown that the effect of such dust in the stratosphere is to cause a lowering

of the surface temperature.

42. Forbes was interested in determining the vertical distribution of life in the ocean, and after repeated observations, he divided the sea into specific life-death zones.
43. This characteristic of being electrically neutral has made neutron one of the particles most utilized by physicists.
44. Benjamin Franklin found that there was a significant current moving in a northerly path along the eastern coast of the United States.
45. A ship capable of drilling the ocean bottom while floating 6 000m above at the ocean's surface had to be designed specifically to carry on the Deep Sea Drilling Project.
46. The molecules must have enough freedom to move relative to one another.
47. Considering the history of ocean salinity, we might certainly ask if the oceans have possessed a relatively uniform salinity throughout their history or if they are getting more or less saline.
48. After reaching the coast of North America, Cook Sailed along it and through the Bering Strait as far as 70°44'N latitude before being stopped by pack ice.
49. Before we consider the differences that exist between water and the other compounds that are similar to water in makeup, we should consider the nature of the forces that must be dealt with in order to change the state of a compound.
50. When changing the state of any substance at that point where a change of state occurs you will observe that there will be no increase of temperature, although heat is continuonsly being added.
51. The ocean bottom on the southern side of the Mendocino Fracture Zone is more than 1000m deeper than that to the north. Therefore this feature is sometimes referred to as the Mendocino Escarpment.
52. It is in these regions that the older oceanic crust is being ingested as new crustal material is produced along

75. If, in fact, the Darwin Rise represnts the remnant of an ancient midocean rise, it may be logical to assume that all rises pass through a life cycle of various lingths and are not permanent features.
76. Although the islands at the southern end of the Line Islands seem to be slightly younger, the difference in age is not nearly as great as would be expected had the hot spot theory accounted for this alignment.
77. The results of studies gave the planners of the Deep Sea Drilling Project clues as to where the drilling should be concentrated in order to gain the greatest amount of new knowledge.
78. The drift of the Fram proved that no continent existed in the northern ocean and that the ice that covered the polar area throughout the year was not of glacial origin but a freely moving pack ice accumulation that had been formed directly upon the ocean surface.
79. Old cliffs wave-cut terraces that have been elevated above the present sea level during the past million years or so are manifested as terraces that are well developed in the Polos Hills in the Los Angeles area.
80. By observing light energy that radiates from distant galaxies, astronomers have been able to determine that most are moving away from us.
81. It appears that there is a significant relationship between the formation of the continental masses and the surrounding ocean basins.
82. Having considered the evidence indicating the general nature of the plate tectonics we will now take a closer look at the three major ocean basins considering additional features of the plate tectonics process and the rate at which these basins appear to have developed.
83. The temperature scale called Celsius (centigrade) was constructed on the basis of the characteristics of water with the freezing point of water, the temperature at which it changes from a liquid to a solid representing 0° and the boiling point of water the temperature at which it changes from a liquid to a gas, representing 100°.

84. These estuaries are in the process of being filled by sidiment carried to the coastal region by the rivers that drain the inland areas.

85. Sinoe iron and manganese both ooour in hydrogenous deposits in concentrations greater than those they reach in igneous rocks, there exists a problem of explaining the concentration of these elements in the marine deposits.

86. The little ship passed the pole on the Greenland side, however leading Nansen to conclude that not only the wind but also a current was affecting the flow of the pack ice in the polar sea.

87. The ability of these humans to exist and thrive in such an inhospitable climate, where temperatures average only 10° above freezing seemed remarkable to Darwin, demonstrating to him the great range of environmental conditions under which human beings could live.

88. The term used to describe this condition of solid substances being dissolved in the ocean salinity.

89. Geologic processes responsible for the ever - changing landscape of the continents are believed to require long periods of geologic time to build such features as mountains.

90. It would seem improbable that there would have been much of an atmosphere surrounding the earth at this time if we consider the tremendous amount of energy that was being radiated into space from the earth as it cooled from its molten condition. All of this heat energy was made available to the molecules of the atmosphere and they undoubtedly would have been able to achieve a velocity well above that which would have been required to escape the earth's gravitational field.

91. It appears that galaxies are exceedingly numerous and there are at least 100 million galaxies large enough to be recorded by our telescopes.

92. Investigations show quite clearly that it is the base of the continental slope that marks the boundary of the continents.

92. One may be left with the impression that all the galaxies are being repelled by our solar system but a more reasonable consideration would be that galaxies are moving away from one another as would fragments that result from an explosion. The universe appears to be rapidly expanding, its component galaxies moving ever farther apart. If all of these galaxies are moving away from one another in a manner similar to that of fragments created by an explosion, we might ask if they all belonged to one large mass? We, of course do not know. But if that was the case the time required for them to have reached their present distribution would have been about 13 million years.

93. Hydrologic studies are essential to the planning of any water - power development and for many existing plants the operating shedule is dependent upon hydrologic inventory and prediction system.
94. The percentage figure obtained is applied to the normal spring runoff to give the expected of forecasted runoff.
95. The student should recognize that such a set of rules is not to be applied indisoriminately.
96. Unitgraph techniques are often employed to develop tributary hydrographs.
97. Many of the quantitative problems of hydrology are solved by discovering and applying relationships between precipitation and runoff.
98. Since the infiltration capacity is affected by several soil qualities that cannot be duplicated in the laboratory, it is usually necessary to measure it on soils in place.
99. It was believed that curves for the 25 and the 50-yr frequencies could be constructed more properly from this equation than from the actual first - and second - magnitude points, the latter being in question for the reason already stated.

100. Though lewes to shut out the flood are almost as old as oivilization it was not untial early in the present century that much thought was given to other methods of reducing the likelihood of flood damage. Such methods include reservoirs to hold back floodwaters, channel improvementd to speed them on their way, and diversions to transfer them to channels hot available to them in nature.

101. In some instances the augmentation of low flows, by means of reservoirs, has proved to be at least as important to the control of pollution as have investments in additional sewage - treatment olanats.

102. Since the estimation of missing recoords for summer months could easily intriduce errors larger than 3in. in the total annual precipitation for a gage, it appeared that the maps would be at least as accurate without the use of estimated records as they would be with them.

103. If we assume that all channel storage is of the reservoir type, then the computations of channel storage corrections are much simplified.

104. Flood control projects range from small improvements to gigantic, basinwide developments.

105. One should look on such an empirical equation as a mathematical description of the original chart. No greater significance should be attached to it than that; it is purely empirical.

106. It is generally impossible to find conditions that approach the ideal, but the best site available should be chosen.

107. Sometimes oulverts are so located that one need not expect them to be destroyed by a flood that exceeds their design capacity.

108. The simplest approximation to the equivalent uniform depth of precipitation over an area is given by the unweighted mean of the records of all gages within the area. If the gages are not too irregularly spaced, this method probably gives results that are not enough worse than the results of the other methods.

109. It is customary to plot hydrographs of mean daily discharges by points joined by straight lines.

110. It is frequently desirable to estimate peak flows that have passed without being measured.

111. Flood control studies are complicated by the fact that any type of flood control project modifies the natural regimen of the stream, and thus, in the process of protecting one area, may increase flood damage in another.

112. It should also be noted that in some localities streams have the habit of disappearing below the surface.

113. It is almost always desirable to have curves for these frequencies, and if they are to be derived without mathematical analysis it is necessary to begin the study somewhat differently.

114. The rate of melting after the snow is ripe depends on the heat absorbed, or, in other words, the runoff from melting snow is roughly proportional to degree days above 32°F.

115. The process of deriving the unitgraph is purely mechanical. Several methods are available, one of the simplest being the one described by W.T. Collins.

116. Before a unitgraph analysis is made of any given stream, the hydrograph of that stream should be examined to determine whether it conforms reasonably well to theory.

117. Over a fairly wide range of annual precipitation amounts in a given area, there should still be a fairly equal opportunity for evaporation, one year with another moreover, barring protracted drought or extreme variations in average annual temperature, one may expect plants to transpire more or less the same amount each year.

118. As an alternative, the records of the two gages could have been averaged. This would have given the isohyetals a smoother appearance, and probably without much sacrifice of accuracy.

119. In a state of nature a rough long-time balance of values possibly exists between loss and gain; one needs only consider the building-up of alluvial plains and delta lands to see that this may be so.

120. The examination of the hydrograph may consist of noting the lenth of time from oessation of rainfall to apparent cessation of surface runoff for a number of floods of various magnitudee,and comoaring these lengths.If they increase consistently and notably with the size of the flood,theu it may be suspected that particular stream does not behave in aecordance with unitgraph theory.

121. It is likely that a large part of the plant cover would sucoumb to such a drough and therefore,that the portion of the annual loss chargeable to transpiration would be considerably reduced.

122. The gradual development of civilazation has meant increased uses of water at every step forward.

123. Certainly there has been a steady increase in the use of rivers for all purposes exoept navigation,which has declined in some regions during the last century because transporation by railroads highways and,more recently, airplanes is faster.

124. It is a common misconception that almoat all of the rain which falls on the land oomes from moisture evaporated from the ocean.

125. The combined effect of heavy rains,both distant and local, was to fill the lake right out to its geograohical boundaries - to cover all that area so naively coloured blue on many maps.

126. The prediction is belived to be the more accurate,the nearer the two gages are together.

127. If the upper gage is close to the lower one,a prediction loses in value,the interval of time between the prediction of a stage and its occurence being very small.

С О Д Е Р Ж А Н И Е

П О С О Б И Е

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