托福作文背诵 50 篇

01 The Language of Music

A painter hangs his or her finished pictures on a wall, and everyone can see it. A composer writes a work, but no one can hear it until it is performed. Professional singers and players have great responsibilities, for the composer is utterly dependent on them. A student of music needs as long and as arduous a training to become a performer as a medical student needs to become a doctor. Most training is concerned with technique, for musicians have to have the muscular proficiency of an athlete or a ballet dancer. Singers practice breathing every day, as their vocal chords would be inadequate without controlled muscular support. String players practice moving the fingers of the left hand up and down, while drawing the bow to and fro with the right arm—two entirely different movements.

Singers and instruments have to be able to get every note perfectly in tune. Pianists are spared this particular anxiety, for the notes are already there, waiting for them, and it is the piano tuner's responsibility to tune the instrument for them. But they have their own difficulties; the hammers that hit the string have to be coaxed not to sound like percussion, and each overlapping tone has to sound clear.

This problem of getting clear texture is one that confronts student conductors: they have to learn to know every note of the music and how it should sound, and they have to aim at controlling these sound with fanatical but selfless authority.

Technique is of no use unless it is combined with musical knowledge and understanding. Great artists are those who are so thoroughly at home in the language of music that they can enjoy performing works written in any century.

02 Schooling and Education

It is commonly believed in United States that school is where people go to get an education. Nevertheless, it has been said that today children interrupt their education to go to school. The distinction between schooling and education implied by this remark is important.

Education is much more open-ended and all-inclusive than schooling. Education knows no bounds. It can take place anywhere, whether in the shower or in the job, whether in a kitchen or on a tractor. It includes both the formal learning that takes place in schools and the whole universe of informal learning. The agents of education can range from a revered grandparent to the people debating politics on the radio, from a child to a distinguished scientist. Whereas schooling has a certain predictability, education quite often produces surprises. A chance conversation with a stranger may lead a person to discover how little is known of other religions. People are engaged

in education from infancy on. Education, then, is a very broad, inclusive term. It is a lifelong process, a process that starts long before the start of school, and one that should be an integral part of one's entire life.

Schooling, on the other hand, is a specific, formalized process, whose general pattern varies little from one setting to the next. Throughout a country, children arrive at school at approximately the same time, take assigned seats, are taught by an adult, use similar textbooks, do homework, take exams, and so on. The slices of reality that are to be learned, whether they are the alphabet or an understanding of the working of government, have usually been limited by the boundaries of the subject being taught. For example, high school students know that there not likely to find out in their classes the truth about political problems in their communities or what the newest filmmakers are experimenting with. There are definite conditions surrounding the formalized process of schooling.

03 The Definition of "Price"

Prices determine how resources are to be used. They are also the means by which products and services that are in limited supply are rationed among buyers. The price system of the United States is a complex network composed of the prices of all the products bought and sold in the economy as well as those of a myriad of services, including labor, professional, transportation, and public-utility services. The interrelationships of all these prices make up the "system" of prices. The price of any particular product or service is linked to a broad, complicated system of prices in which everything seems to depend more or less upon everything else.

If one were to ask a group of randomly selected individuals to define "price", many would reply that price is an amount of money paid by the buyer to the seller of a product or service or, in other words that price is the money values of a product or service as agreed upon in a market transaction. This definition is, of course, valid as far as it goes. For a complete understanding of a price in any particular transaction, much more than the amount of money involved must be known. Both the buyer and the seller should be familiar with not only the money amount, but with the amount and quality of the product or service to be exchanged, the time and place at which the exchange will take place and payment will be made, the form of money to be used, the credit terms and discounts that apply to the transaction, guarantees on the product or service, delivery terms, return privileges, and other factors. In other words, both buyer and seller should be fully aware of all the factors that comprise the total "package" being exchanged for the asked-for amount of money in order that they may evaluate a given price.

04 Electricity

The modern age is an age of electricity. People are so used to electric lights, radio, televisions, and telephones that it is hard to imagine what life would be like without them. When there is a power failure, people grope about in flickering candlelight, cars hesitate in the streets because there are

no traffic lights to guide them, and food spoils in silent refrigerators.

Yet, people began to understand how electricity works only a little more than two centuries ago. Nature has apparently been experimenting in this field for million of years. Scientists are discovering more and more that the living world may hold many interesting secrets of electricity that could benefit humanity.

All living cell send out tiny pulses of electricity. As the heart beats, it sends out pulses of record; they form an electrocardiogram, which a doctor can study to determine how well the heart is working. The brain, too, sends out brain waves of electricity, which can be recorded in an electroencephalogram. The electric currents generated by most living cells are extremely small – often so small that sensitive instruments are needed to record them. But in some animals, certain muscle cells have become so specialized as electrical generators that they do not work as muscle cells at all. When large numbers of these cell are linked together, the effects can be astonishing.

The electric eel is an amazing storage battery. It can seed a jolt of as much as eight hundred volts of electricity through the water in which it live. (An electric house current is only one hundred twenty volts.) As many as four-fifths of all the cells in the electric eel's body are specialized for generating electricity, and the strength of the shock it can deliver corresponds roughly to length of its body.

05 The Beginning of Drama

There are many theories about the beginning of drama in ancient Greece. The on most widely accepted today is based on the assumption that drama evolved from ritual. The argument for this view goes as follows. In the beginning, human beings viewed the natural forces of the world-even the seasonal changes-as unpredictable, and they sought through various means to control these unknown and feared powers. Those measures which appeared to bring the desired results were then retained and repeated until they hardened into fixed rituals. Eventually stories arose which explained or veiled the mysteries of the rites. As time passed some rituals were abandoned, but the stories, later called myths, persisted and provided material for art and drama.

Those who believe that drama evolved out of ritual also argue that those rites contained the seed of theater because music, dance, masks, and costumes were almost always used, Furthermore, a suitable site had to be provided for performances and when the entire community did not participate, a clear division was usually made between the "acting area" and the "auditorium." In addition, there were performers, and, since considerable importance was attached to avoiding mistakes in the enactment of rites, religious leaders usually assumed that task. Wearing masks and costumes, they often impersonated other people, animals, or supernatural beings, and mimed the desired effect-success in hunt or battle, the coming rain, the revival of the Sun-as an actor might. Eventually such dramatic representations were separated from religious activities.

Another theory traces the theater's origin from the human interest in storytelling. According to this

vies tales (about the hunt, war, or other feats) are gradually elaborated, at first through the use of impersonation, action, and dialogue by a narrator and then through the assumption of each of the roles by a different person. A closely related theory traces theater to those dances that are primarily rhythmical and gymnastic or that are imitations of animal movements and sounds.

06 Television

Television-----the most pervasive and persuasive of modern technologies, marked by rapid change and growth-is moving into a new era, an era of extraordinary sophistication and versatility, which promises to reshape our lives and our world. It is an electronic revolution of sorts, made possible by the marriage of television and computer technologies.

The word "television", derived from its Greek (tele: distant) and Latin (visio: sight) roots, can literally be interpreted as sight from a distance. Very simply put, it works in this way: through a sophisticated system of electronics, television provides the capability of converting an image (focused on a special photoconductive plate within a camera) into electronic impulses, which can be sent through a wire or cable. These impulses, when fed into a receiver (television set), can then be electronically reconstituted into that same image.

Television is more than just an electronic system, however. It is a means of expression, as well as a vehicle for communication, and as such becomes a powerful tool for reaching other human beings.

The field of television can be divided into two categories determined by its means of transmission. First, there is broadcast television, which reaches the masses through broad-based airwave transmission of television signals. Second, there is nonbroadcast television, which provides for the needs of individuals or specific interest groups through controlled transmission techniques.

Traditionally, television has been a medium of the masses. We are most familiar with broadcast television because it has been with us for about thirty-seven years in a form similar to what exists today. During those years, it has been controlled, for the most part, by the broadcast networks, ABC, NBC, and CBS, who have been the major purveyors of news, information, and entertainment. These giants of broadcasting have actually shaped not only television but our perception of it as well. We have come to look upon the picture tube as a source of entertainment, placing our role in this dynamic medium as the passive viewer.

07 Andrew Carnegie

Andrew Carnegie, known as the King of Steel, built the steel industry in the United States, and , in the process, became one of the wealthiest men in America. His success resulted in part from his ability to sell the product and in part from his policy of expanding during periods of economic decline, when most of his competitors were reducing their investments.

Carnegie believed that individuals should progress through hard work, but he also felt strongly that the wealthy should use their fortunes for the benefit of society. He opposed charity, preferring instead to provide educational opportunities that would allow others to help themselves. "He who dies rich, dies disgraced," he often said.

Among his more noteworthy contributions to society are those that bear his name, including the Carnegie Institute of Pittsburgh, which has a library, a museum of fine arts, and a museum of national history. He also founded a school of technology that is now part of Carnegie-Mellon University. Other philanthrophic gifts are the Carnegie Endowment for International Peace to promote understanding between nations, the Carnegie Institute of Washington to fund scientific research, and Carnegie Hall to provide a center for the arts.

Few Americans have been left untouched by Andrew Carnegie's generosity. His contributions of more than five million dollars established 2,500 libraries in small communities throughout the country and formed the nucleus of the public library system that we all enjoy today.

08 American Revolution

The American Revolution was not a sudden and violent overturning of the political and social framework, such as later occurred in France and Russia, when both were already independent nations. Significant changes were ushered in, but they were not breathtaking. What happened was accelerated evolution rather than outright revolution. During the conflict itself people went on working and praying, marrying and playing. Most of them were not seriously disturbed by the actual fighting, and many of the more isolated communities scarcely knew that a war was on.

America's War of Independence heralded the birth of three modern nations. One was Canada, which received its first large influx of English-speaking population from the thousands of loyalists who fled there from the United States. Another was Australia, which became a penal colony now that America was no longer available for prisoners and debtors. The third newcomer-the United States-based itself squarely on republican principles.

Yet even the political overturn was not so revolutionary as one might suppose. In some states, notably Connecticut and Rhode Island, the war largely ratified a colonial self-rule already existing. British officials, everywhere ousted, were replaced by a home-grown governing class, which promptly sought a local substitute for king and Parliament.

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11 Archaeology

Archaeology is a source of history, not just a bumble auxiliary discipline. Archaeological data are historical documents in their own right, not mere illustrations to written texts, Just as much as any

other historian, an archaeologist studies and tries to reconstitute the process that has created the human world in which we live - and us ourselves in so far as we are each creatures of our age and social environment. Archaeological data are all changes in the material world resulting from human action or, more succinctly, the fossilized results of human behavior. The sum total of these constitutes what may be called the archaeological record. This record exhibits certain peculiarities and deficiencies the consequences of which produce a rather superficial contrast between archaeological history and the more familiar kind based upon written records.

Not all human behavior fossilizes. The words I utter and you hear as vibrations in the air are certainly human changes in the material world and may be of great historical significance. Yet they leave no sort of trace in the archaeological records unless they are captured by a dictaphone or written down by a clerk. The movement of troops on the battlefield may "change the course of history," but this is equally ephemeral from the archaeologist's standpoint. What is perhaps worse, most organic materials are perishable. Everything made of wood, hide, wool, linen, grass, hair, and similar materials will decay and vanish in dust in a few years or centuries, save under very exceptional conditions. In a relatively brief period the archaeological record is reduce to mere scraps of stone, bone, glass, metal, and earthenware. Still modern archaeology, by applying appropriate techniques and comparative methods, aided by a few lucky finds from peat-bogs, deserts, and frozen soils, is able to fill up a good deal of the gap.

12 Museums

From Boston to Los Angeles, from New York City to Chicago to Dallas, museums are either planning, building, or wrapping up wholesale expansion programs. These programs already have radically altered facades and floor plans or are expected to do so in the not-too-distant future.

In New York City alone, six major institutions have spread up and out into the air space and neighborhoods around them or are preparing to do so.

The reasons for this confluence of activity are complex, but one factor is a consideration everywhere - space. With collections expanding, with the needs and functions of museums changing, empty space has become a very precious commodity.

Probably nowhere in the country is this more true than at the Philadelphia Museum of Art, which has needed additional space for decades and which received its last significant facelift ten years ago. Because of the space crunch, the Art Museum has become increasingly cautious in considering acquisitions and donations of art, in some cases passing up opportunities to strengthen its collections.

Deaccessing - or selling off - works of art has taken on new importance because of the museum's space problems. And increasingly, curators have been forced to juggle gallery space, rotating one masterpiece into public view while another is sent to storage.

Despite the clear need for additional gallery and storage space, however," the museum has no plan, no plan to break out of its envelope in the next fifteen years," according to Philadelphia Museum of Art's president.

13 Skyscrapers and Environment

In the late 1960's, many people in North America turned their attention to environmental problems, and new steel-and-glass skyscrapers were widely criticized. Ecologists pointed out that a cluster of tall buildings in a city often overburdens public transportation and parking lot capacities.

Skyscrapers are also lavish consumers, and wasters, of electric power. In one recent year, the addition of 17 million square feet of skyscraper office space in New York City raised the peak daily demand for electricity by 120, 000 kilowatts-enough to supply the entire city of Albany, New York, for a day.

Glass-walled skyscrapers can be especially wasteful. The heat loss (or gain)through a wall of half-inch plate glass is more than ten times that through a typical masonry wall filled with insulation board. To lessen the strain on heating and air-conditioning equipment, builders of skyscrapers have begun to use double-glazed panels of glass, and reflective glasses coated with silver or gold mirror films that reduce glare as well as heat gain. However, mirror-walled skyscrapers raise the temperature of the surrounding air and affect neighboring buildings.

Skyscrapers put a severe strain on a city's sanitation facilities, too. If fully occupied, the two World Trade Center towers in New York City would alone generate 2.25 million gallons of raw sewage each year-as much as a city the size of Stanford, Connecticut , which has a population of more than 109, 000.

14 A Rare Fossil Record

The preservation of embryos and juveniles is a rate occurrence in the fossil record. The tiny, delicate skeletons are usually scattered by scavengers or destroyed by weathering before they can be fossilized. Ichthyosaurs had a higher chance of being preserved than did terrestrial creatures because, as marine animals, they tended to live in environments less subject to erosion. Still, their fossilization required a suite of factors: a slow rate of decay of soft tissues, little scavenging by other animals, a lack of swift currents and waves to jumble and carry away small bones, and fairly rapid burial. Given these factors, some areas have become a treasury of well-preserved ichthyosaur fossils.

The deposits at Holzmaden, Germany, present an interesting case for analysis. The ichthyosaur remains are found in black, bituminous marine shales deposited about 190 million years ago. Over the years, thousands of specimens of marine reptiles, fish and invertebrates have been recovered

from these rocks. The quality of preservation is outstanding, but what is even more impressive is the number of ichthyosaur fossils containing preserved embryos. Ichthyosaurs with embryos have been reported from 6 different levels of the shale in a small area around Holzmaden, suggesting that a specific site was used by large numbers of ichthyosaurs repeatedly over time. The embryos are quite advanced in their physical development; their paddles, for example, are already well formed. One specimen is even preserved in the birth canal. In addition, the shale contains the remains of many newborns that are between 20 and 30 inches long.

Why are there so many pregnant females and young at Holzmaden when they are so rare elsewhere? The quality of preservation is almost unmatched and quarry operations have been carried out carefully with an awareness of the value of the fossils. But these factors do not account for the interesting question of how there came to be such a concentration of pregnant ichthyosaurs in a particular place very close to their time of giving birth.

15 The Nobel Academy

For the last 82years, Sweden's Nobel Academy has decided who will receive the Nobel Prize in Literature, thereby determining who will be elevated from the great and the near great to the immortal. But today the Academy is coming under heavy criticism both from the without and from within. Critics contend that the selection of the winners often has less to do with true writing ability than with the peculiar internal politics of the Academy and of Sweden itself. According to Ingmar Bjorksten , the cultural editor for one of the country's two major newspapers, the prize continues to represent "what people call a very Swedish exercise: reflecting Swedish tastes."

The Academy has defended itself against such charges of provincialism in its selection by asserting that its physical distance from the great literary capitals of the world actually serves to protect the Academy from outside influences. This may well be true, but critics respond that this very distance may also be responsible for the Academy's inability to perceive accurately authentic trends in the literary world.

Regardless of concerns over the selection process, however, it seems that the prize will continue to survive both as an indicator of the literature that we most highly praise, and as an elusive goal that writers seek. If for no other reason, the prize will continue to be desirable for the financial rewards that accompany it; not only is the cash prize itself considerable, but it also dramatically increases sales of an author's books.

16. the war between Britain and France

In the late eighteenth century, battles raged in almost every corner of Europe, as well as in the Middle East, south Africa ,the West Indies, and Latin America. In reality, however, there was only one major war during this time, the war between Britain and France. All other battles were ancillary to this larger conflict, and were often at least partially related to its antagonist' goals and

strategies. France sought total domination of Europe . this goal was obstructed by British independence and Britain's efforts throughout the continent to thwart Napoleon; through treaties. Britain built coalitions (not dissimilar in concept to today's NATO) guaranteeing British participation in all major European conflicts. These two antagonists were poorly matched, insofar as they had very unequal strengths; France was predominant on land, Britain at sea. The French knew that, short of defeating the British navy, their only hope of victory was to close all the ports of Europe to British ships. Accordingly, France set out to overcome Britain by extending its military domination from Moscow t Lisbon, from Jutland to Calabria. All of this entailed tremendous risk, because France did not have the military resources to control this much territory and still protect itself and maintain order at home.

French strategists calculated that a navy of 150 ships would provide the force necessary to defeat the British navy. Such a force would give France a three-to-two advantage over Britain. This advantage was deemed necessary because of Britain's superior sea skills and technology because of Britain's superior sea skills and technology, and also because Britain would be fighting a defensive war, allowing it to win with fewer forces. Napoleon never lost substantial impediment to his control of Europe. As his force neared that goal, Napoleon grew increasingly impatient and began planning an immediate attack.

17.Evolution of sleep

Sleep is very ancient. In the electroencephalographic sense we share it with all the primates and almost all the other mammals and birds: it may extend back as far as the reptiles.

There is some evidence that the two types of sleep, dreaming and dreamless, depend on the life-style of the animal, and that predators are statistically much more likely to dream than prey, which are in turn much more likely to experience dreamless sleep. In dream sleep, the animal is powerfully immobilized and remarkably unresponsive to external stimuli. Dreamless sleep is much shallower, and we have all witnessed cats or dogs cocking their ears to a sound when apparently fast asleep. The fact that deep dream sleep is rare among pray today seems clearly to be a product of natural selection, and it makes sense that today, when sleep is highly evolved, the stupid animals are less frequently immobilized by deep sleep than the smart ones. But why should they sleep deeply at all? Why should a state of such deep immobilization ever have evolved?

Perhaps one useful hint about the original function of sleep is to be found in the fact that dolphins and whales and aquatic mammals in genera seem to sleep very little. There is, by and large, no place to hide in the ocean. Could it be that, rather than increasing an animal's vulnerability, the University of Florida and Ray Meddis of London University have suggested this to be the case. It is conceivable that animals who are too stupid to be quite on their own initiative are, during periods of high risk, immobilized by the implacable arm of sleep. The point seems particularly clear for the young of predatory animals. This is an interesting notion and probably at least partly true.

18.Modern American Universities

Before the 1850's, the United States had a number of small colleges, most of them dating from colonial days. They were small, church connected institutions whose primary concern was to shape the moral character of their students.

Throughout Europe, institutions of higher learning had developed, bearing the ancient name of university. In German university was concerned primarily with creating and spreading knowledge, not morals. Between mid-century and the end of the 1800's, more than nine thousand young Americans, dissatisfied with their training at home, went to Germany for advanced study. Some of them return to become presidents of venerable colleges-----Harvard, Yale, Columbia---and transform them into modern universities. The new presidents broke all ties with the churches and brought in a new kind of faculty. Professors were hired for their knowledge of a subject, not because they were of the proper faith and had a strong arm for disciplining students. The new principle was that a university was to create knowledge as well as pass it on, and this called for a faculty composed of teacher-scholars. Drilling and learning by rote were replaced by the German method of lecturing, in which the professor's own research was presented in class. Graduate training leading to the Ph.D., an ancient German degree signifying the highest level of advanced scholarly attainment, was introduced. With the establishment of the seminar system, graduate student learned to question, analyze, and conduct their own research.

At the same time, the new university greatly expanded in size and course offerings, breaking completely out of the old, constricted curriculum of mathematics, classics, rhetoric, and music. The president of Harvard pioneered the elective system, by which students were able to choose their own course of study. The notion of major fields of study emerged. The new goal was to make the university relevant to the real pursuits of the world. Paying close heed to the practical needs of society, the new universities trained men and women to work at its tasks, with engineering students being the most characteristic of the new regime. Students were also trained as economists, architects, agriculturalists, social welfare workers, and teachers.

19.children's numerical skills

people appear to born to compute. The numerical skills of children develop so early and so inexorably that it is easy to imagine an internal clock of mathematical maturity guiding their growth. Not long after learning to walk and talk, they can set the table with impress accuracy---one knife, one spoon, one fork, for each of the five chairs. Soon they are capable of nothing that they have placed five knives, spoons and forks on the table and, a bit later, that this amounts to fifteen pieces of silverware. Having thus mastered addition, they move on to subtraction. It seems almost reasonable to expect that if a child were secluded on a desert island at birth and retrieved seven years later, he or she could enter a second enter a second-grade mathematics class without any serious problems of intellectual adjustment.

Of course, the truth is not so simple. This century, the work of cognitive psychologists has illuminated the subtle forms of daily learning on which intellectual progress depends. Children were observed as they slowly grasped-----or, as the case might be, bumped into-----concepts that adults take for quantity is unchanged as water pours from a short glass into a tall thin one. Psychologists have since demonstrated that young children, asked to count the pencils in a pile, readily report the number of blue or red pencils, but must be coaxed into finding the total. Such studies have suggested that the rudiments of mathematics are mastered gradually, and with effort. They have also suggested that the very concept of abstract numbers------the idea of a oneness, a twoness, a threeness that applies to any class of objects and is a prerequisite for doing anything more mathematically demanding than setting a table-----is itself far from innate

20 The Historical Significance of American Revolution

The ways of history are so intricate and the motivations of human actions so complex that it is always hazardous to attempt to represent events covering a number of years, a multiplicity of persons, and distant localities as the expression of one intellectual or social movement; yet the historical process which culminated in the ascent of Thomas Jefferson to the presidency can be regarded as the outstanding example not only of the birth of a new way of life but of nationalism as a new way of life. The American Revolution represents the link between the seventeenth century, in which modern England became conscious of itself, and the awakening of modern Europe at the end of the eighteenth century. It may seem strange that the march of history should have had to cross the Atlantic Ocean, but only in the North American colonies could a struggle for civic liberty lead also to the foundation of a new nation. Here, in the popular rising against a "tyrannical" government, the fruits were more than the securing of a freer constitution. They included the growth of a nation born in liberty by the will of the people, not from the roots of common descent, a geographic entity, or the ambitions of king or dynasty. With the American nation, for the first time, a nation was born, not in the dim past of history but before the eyes of the whole world.

21 The Origin of Sports

When did sport begin? If sport is, in essence, play, the claim might be made that sport is much older than humankind, for , as we all have observed, the beasts play. Dogs and cats wrestle and play ball games. Fishes and birds dance. The apes have simple, pleasurable games. Frolicking infants, school children playing tag, and adult arm wrestlers are demonstrating strong, transgenerational and transspecies bonds with the universe of animals – past, present, and future. Young animals, particularly, tumble, chase, run wrestle, mock, imitate, and laugh (or so it seems) to the point of delighted exhaustion. Their play, and ours, appears to serve no other purpose than to give pleasure to the players, and apparently, to remove us temporarily from the anguish of life in earnest.

Some philosophers have claimed that our playfulness is the most noble part of our basic nature. In

their generous conceptions, play harmlessly and experimentally permits us to put our creative forces, fantasy, and imagination into action. Play is release from the tedious battles against scarcity and decline which are the incessant, and inevitable, tragedies of life. This is a grand conception that excites and provokes. The holders of this view claim that the origins of our highest accomplishments ---- liturgy, literature, and law ---- can be traced to a play impulse which, paradoxically, we see most purely enjoyed by young beasts and children. Our sports, in this rather happy, nonfatalistic view of human nature, are more splendid creations of the nondatable, transspecies play impulse.

22. Collectibles

Collectibles have been a part of almost every culture since ancient times. Whereas some objects have been collected for their usefulness, others have been selected for their aesthetic beauty alone. In the United States, the kinds of collectibles currently popular range from traditional objects such as stamps, coins, rare books, and art to more recent items of interest like dolls, bottles, baseball cards, and comic books.

Interest in collectibles has increased enormously during the past decade, in part because some collectibles have demonstrated their value as investments. Especially during cycles of high inflation, investors try to purchase tangibles that will at least retain their current market values. In general, the most traditional collectibles will be sought because they have preserved their value over the years, there is an organized auction market for them, and they are most easily sold in the event that cash is needed. Some examples of the most stable collectibles are old masters, Chinese ceramics, stamps, coins, rare books, antique jewelry, silver, porcelain, art by well-known artists, autographs, and period furniture. Other items of more recent interest include old photograph records, old magazines, post cards, baseball cards, art glass, dolls, classic cars, old bottles, and comic books. These relatively new kinds of collectibles may actually appreciate faster as short-term investments, but may not hold their value as long-term investments. Once a collectible has had its initial play, it appreciates at a fairly steady rate, supported by an increasing number of enthusiastic collectors competing for the limited supply of collectibles that become increasingly more difficult to locate.

23 Ford

Although Henry Ford’s name is closely associated with the concept of mass production, he should receive equal credit for introducing labor practices as early as 1913 that would be considered advanced even by today’s standards. Safety measures were improved, and the work day was reduced to eight hours, compared with the ten-or twelve-hour day common at the time. In order to accommodate the shorter work day, the entire factory was converted from two to three shifts.

In addition, sick leaves as well as improved medical care for those injured on the job were instituted. The Ford Motor Company was one of the first factories to develop a technical school to

train specialized skilled laborers and an English language school for immigrants. Some efforts were even made to hire the handicapped and provide jobs for former convicts.

The most widely acclaimed innovation was the five-dollar-a-day minimum wage that was offered in order to recruit and retain the best mechanics and to discourage the growth of labor unions. Ford explained the new wage policy in terms of efficiency and profit sharing. He also mentioned the fact that his employees would be able to purchase the automobiles that they produced – in effect creating a market for the product. In order to qualify for the minimum wage, an employee had to establish a decent home and demonstrate good personal habits, including sobriety, thriftiness, industriousness, and dependability. Although some criticism was directed at Ford for involving himself too much in the personal lives of his employees, there can be no doubt that, at a time when immigrants were being taken advantage of in frightful ways, Henry Ford was helping many people to establish themselves in America.

24．Piano

The ancestry of the piano can be traced to the early keyboard instruments of the fifteenth and sixteenth centuries --- the spinet, the dulcimer, and the virginal. In the seventeenth century the organ, the clavichord, and the harpsichord became the chief instruments of the keyboard group, a supremacy they maintained until the piano supplanted them at the end of the eighteenth century. The clavichord's tone was metallic and never powerful; nevertheless, because of the variety of tone possible to it, many composers found the clavichord a sympathetic instrument for intimate chamber music. The harpsichord with its bright, vigorous tone was the favorite instrument for supporting the bass of the small orchestra of the period and for concert use, but the character of the tone could not be varied save by mechanical or structural devices.

The piano was perfected in the early eighteenth century by a harpsichord maker in Italy (though musicologists point out several previous instances of the instrument). This instrument was called a piano e forte (sort and loud), to indicate its dynamic versatility; its strings were struck by a recoiling hammer with a felt-padded head. The wires were much heavier in the earlier instruments. A series of mechanical improvements continuing well into the nineteenth century, including the introduction of pedals to sustain tone or to soften it, the perfection of a metal frame, and steel wire of the finest quality, finally produced an instrument capable of myriad tonal effects from the most delicate harmonies to an almost orchestral fullness of sound, from a liquid, singing tone to a sharp, percussive brilliance.

NOTE:
Musical Instruments
1.The strings (弦乐)
1) plectrum: harp, lute, guitar, mandolin;
2) keyboard: clavichord, harpsichord, piano;

3) bow: violin, viola, cello, double bass.
2. The Wood（木管）—winds : piccolo, flute, oboe, clarinet, bassoon, English horn;
3. the brass（铜管）: French horn, trumpet, trombone, cornet, tuba, bugle, saxophone;
4.the percussion（打击组）: kettle drum, bass drum, snare drum, castanet, xylophone, celesta, cymbal, tambourine.

25. Movie Music

Accustomed though we are to speaking of the films made before 1927 as "silent", the film has never been, in the full sense of the word, silent. From the very beginning, music was regarded as an indispensable accompaniment; when the Lumiere films were shown at the first public film exhibition in the United States in February 1896, they were accompanied by piano improvisations on popular tunes. At first, the music played bore no special relationship to the films; an accompaniment of any kind was sufficient. Within a very short time, however, the incongruity of playing lively music to a solemn film became apparent, and film pianists began to take some care in matching their pieces to the mood of the film.

As movie theaters grew in number and importance, a violinist, and perhaps a cellist, would be added to the pianist in certain cases, and in the larger movie theaters small orchestras were formed. For a number of years the selection of music for each film program rested entirely in the hands of the conductor or leader of the orchestra, and very often the principal qualification for holding such a position was not skill or taste so much as the ownership of a large personal library of musical pieces. Since the conductor seldom saw the films until the night before they were to be shown(if indeed, the conductor was lucky enough to see them then), the musical arrangement was normally improvised in the greatest hurry.

To help meet this difficulty, film distributing companies started the practice of publishing suggestions for musical accompaniments. In 1909, for example, the Edison Company began issuing with their films such indications of mood as " pleasant", "sad", "lively". The suggestions became more explicit, and so emerged the musical cue sheet containing indications of mood, the titles of suitable pieces of music, and precise directions to show where one piece led into the next.

Certain films had music especially composed for them. The most famous of these early special scores was that composed and arranged for D.W Griffith's film Birth

of a Nation, which was released in 1915.

Note:
美国通俗音乐分类：
1．Jazz;
1) traditional jazz---- a) blues, 代表人物：Billy Holiday
b)ragtime(切分乐曲): 代表人物：Scott Joplin
c)New Orleans jazz (= Dixieland jazz) eg: Louis Armstron
d)swing eg: Glenn Miller, Duke Ellington, etc.
e)bop (=bebop, rebop) eg: Lester Young, Charlie Parker etc.
2)modern jazz ------ a) cool jazz(=progressive jazz)高雅爵士乐。Eg: Kenny G.
b)third-stream jazz. Eg: Charles Mingus, John Lewis.
c) main stream jazz.
d)avant-garde jazz.
e) soul jazz. Eg: Sarah Vaughn, Ella Fitzgerald
f) Latin jazz.
2.gospel music 福音音乐， 主要源于 Nero spirituals. Eg. Dolly Parker, Mahalia Jackson
3.Country and Western music. Eg. John Denver, Tammy Wynette, Kenny Rogers, etc.
4. Rock music----------a) rock and roll eg: Elvis Prestley(US) , the Beatles(UK.)
b)folk rock Eg: Bob Dylon, Michael Jackson, Mariah Carey, Bruce Springsteen, Lionel Riche etc.
c)punk rock
d)acid rock
e)rock jazz eg: M.J. McLaughlin
f) Jurassic rock
5.Music for easy listening (i.e. light music)

26. International Business and Cross-cultural Communication

The increase in international business and in foreign investment has created a need for executives with knowledge of foreign languages and skills in cross-cultural communication. Americans, however, have not been well trained in either area and, consequently, have not enjoyed the same level of success in

negotiation in an international arena as have their foreign counterparts.

Negotiating is the process of communicating back and forth for the purpose of reaching an agreement. It involves persuasion and compromise, but in order to participate in either one, the negotiators must understand the ways in which people are persuaded and how compromise is reached within the culture of the negotiation.

In many international business negotiations abroad, Americans are perceived as wealthy and impersonal. It often appears to the foreign negotiator that the American represents a large multi-million-dollar corporation that can afford to pay the price without bargaining further. The American negotiator's role becomes that of an impersonal purveyor of information and cash.

In studies of American negotiators abroad, several traits have been identified that may serve to confirm this stereotypical perception, while undermining the negotiator's position. Two traits in particular that cause cross-cultural misunderstanding are directness and impatience on the part of the American negotiator. Furthermore, American negotiators often insist on realizing short-term goals. Foreign negotiators, on the other hand, may value the relationship established between negotiators and may be willing to invest time in it for long-term benefits. In order to solidify the relationship, they may opt for indirect interactions without regard for the time involved in getting to know the other negotiator.

27. Scientific Theories

In science, a theory is a reasonable explanation of observed events that are related. A theory often involves an imaginary model that helps scientists picture the way an observed event could be produced. A good example of this is found in the kinetic molecular theory, in which gases are pictured as being made up of many small particles that are in constant motion.

A useful theory, in addition to explaining past observations, helps to predict events that have not as yet been observed. After a theory has been publicized, scientists design experiments to test the theory. If observations confirm the scientist's predictions, the theory is supported. If observations do not confirm the predictions, the scientists must search further. There may be a fault in the experiment, or the theory may have to be revised or rejected.

Science involves imagination and creative thinking as well as collecting information and performing experiments. Facts by themselves are not science. As the mathematician Jules Henri Poincare said, "Science is built with facts just as a house is built with bricks, but a collection of

facts cannot be called science any more than a pile of bricks can be called a house."

Most scientists start an investigation by finding out what other scientists have learned about a particular problem. After known facts have been gathered, the scientist comes to the part of the investigation that requires considerable imagination. Possible solutions to the problem are formulated. These possible solutions are called hypotheses.

In a way, any hypothesis is a leap into the unknown. It extends the scientist's thinking beyond the known facts. The scientist plans experiments, performs calculations, and makes observations to test hypotheses. Without hypothesis, further investigation lacks purpose and direction. When hypotheses are confirmed, they are incorporated into theories.

28.Changing Roles of Public Education

One of the most important social developments that helped to make possible a shift in thinking about the role of public education was the effect of the baby boom of the 1950's and 1960's on the schools. In the 1920's, but especially in the Depression conditions of the 1930's, the United States experienced a declining birth rate --- every thousand women aged fifteen to forty-four gave birth to about 118 live children in 1920, 89.2 in 1930, 75.8 in 1936, and 80 in 1940. With the growing prosperity brought on by the Second World War and the economic boom that followed it young people married and established households earlier and began to raise larger families than had their predecessors during the Depression. Birth rates rose to 102 per thousand in 1946,106.2 in 1950, and 118 in 1955. Although economics was probably the most important determinant, it is not the only explanation for the baby boom. The increased value placed on the idea of the family also helps to explain this rise in birth rates. The baby boomers began streaming into the first grade by the mid 1940's and became a flood by 1950. The public school system suddenly found itself overtaxed. While the number of schoolchildren rose because of wartime and postwar conditions, these same conditions made the schools even less prepared to cope with the food. The wartime economy meant that few new schools were built between 1940 and 1945. Moreover, during the war and in the boom times that followed, large numbers of teachers left their profession for better-paying jobs elsewhere in the economy.

Therefore in the 1950's and 1960's, the baby boom hit an antiquated and inadequate school system. Consequently, the " custodial rhetoric" of the 1930's and early 1940's no longer made sense that is, keeping youths aged sixteen and older out of the labor market by keeping them in school could no longer be a high priority for an institution unable to find space and staff to teach younger children aged five to sixteen. With the baby boom, the focus of educators and of laymen interested in education inevitably turned toward the lower grades and back to basic academic skills and discipline. The system no longer had much interest in offering nontraditional, new, and extra services to older youths.

29 Telecommuting

Telecommuting-- substituting the computer for the trip to the job ----has been hailed as a solution to all kinds of problems related to office work.

For workers it promises freedom from the office, less time wasted in traffic, and help with child-care conflicts. For management, telecommuting helps keep high performers on board, minimizes tardiness and absenteeism by eliminating commutes, allows periods of solitude for high-concentration tasks, and provides scheduling flexibility. In some areas, such as Southern California and Seattle, Washington, local governments are encouraging companies to start telecommuting programs in order to reduce rush-hour congestion and improve air quality.

But these benefits do not come easily. Making a telecommuting program work requires careful planning and an understanding of the differences between telecommuting realities and popular images.

Many workers are seduced by rosy illusions of life as a telecommuter. A computer programmer from New York City moves to the tranquil Adirondack Mountains and stays in contact with her office via computer. A manager comes in to his office three days a week and works at home the other two. An accountant stays home to care for her sick child; she hooks up her telephone modern connections and does office work between calls to the doctor.

These are powerful images, but they are a limited reflection of reality. Telecommuting workers soon learn that it is almost impossible to concentrate on work and care for a young child at the same time. Before a certain age, young children cannot recognize, much less respect, the necessary boundaries between work and family. Additional child support is necessary if the parent is to get any work done.

Management too must separate the myth from the reality. Although the media has paid a great deal of attention to telecommuting in most cases it is the employee's situation, not the availability of technology that precipitates a telecommuting arrangement.

That is partly why, despite the widespread press coverage, the number of companies with work-at-home programs or policy guidelines remains small.

30 The origin of Refrigerators

By the mid-nineteenth century, the term "icebox" had entered the American language, but ice was still only beginning to affect the diet of ordinary citizens in the United States. The ice trade grew with the growth of cities. Ice was used in hotels, taverns, and hospitals, and by some forward-looking city dealers in fresh meat, fresh fish, and butter. After the Civil War(1861-1865),as ice was used to refrigerate freight cars, it also came into household use. Even before 1880,half of the ice sold in New York, Philadelphia, and Baltimore, and one-third of that sold in Boston and Chicago, went to families for their own use. This had become possible because a new household convenience, the icebox, a precursor of the modern refrigerator, had been invented.

Making an efficient icebox was not as easy as we might now suppose. In the early nineteenth century, the knowledge of the physics of heat, which was essential to a science of refrigeration, was rudimentary. The commonsense notion that the best icebox was one that prevented the ice from melting was of course mistaken, for it was the melting of the ice that performed the cooling. Nevertheless, early efforts to economize ice included wrapping up the ice in blankets, which kept the ice from doing its job. Not until near the end of the nineteenth century did inventors achieve the delicate balance of insulation and circulation needed for an efficient icebox.

But as early as 1803, and ingenious Maryland farmer, Thomas Moore, had been on the right track. He owned a farm about twenty miles outside the city of Washington, for which the village of Georgetown was the market center. When he used an icebox of his own design to transport his butter to market, he found that customers would pass up the rapidly melting stuff in the tubs of his competitors to pay a premium price for his butter, still fresh and hard in neat, one-pound bricks. One advantage of his icebox, Moore explained, was that farmers would no longer have to travel to market at night in order to keep their produce cool.

31 British Columbia

British Columbia is the third largest Canadian provinces, both in area and population. It is nearly 1.5 times as large as Texas, and extends 800 miles(1,280km) north from the United States border. It includes Canada's entire west coast and the islands just off the coast.

Most of British Columbia is mountainous, with long rugged ranges running north and south. Even the coastal islands are the remains of a mountain range that existed thousands of years ago. During

the last Ice Age, this range was scoured by glaciers until most of it was beneath the sea. Its peaks now show as islands scattered along the coast.

The southwestern coastal region has a humid mild marine climate. Sea winds that blow inland from the west are warmed by a current of warm water that flows through the Pacific Ocean. As a result, winter temperatures average above freezing and summers are mild. These warm western winds also carry moisture from the ocean.

Inland from the coast, the winds from the Pacific meet the mountain barriers of the coastal ranges and the Rocky Mountains. As they rise to cross the mountains, the winds are cooled, and their moisture begins to fall as rain. On some of the western slopes almost 200 inches (500cm) of rain fall each year.

More than half of British Columbia is heavily forested. On mountain slopes that receive plentiful rainfall, huge Douglas firs rise in towering columns. These forest giants often grow to be as much as 300 feet(90m) tall, with diameters up to 10 feet(3m). More lumber is produced from these trees than from any other kind of tree in North America. Hemlock, red cedar, and balsam fir are among the other trees found in British Columbia.

32 Botany

Botany, the study of plants, occupies a peculiar position in the history of human knowledge. For many thousands of years it was the one field of awareness about which humans had anything more than the vaguest of insights. It is impossible to know today just what our Stone Age ancestors knew about plants, but form what we can observe of pre-industrial societies that still exist a detailed learning of plants and their properties must be extremely ancient. This is logical. Plants are the basis of the food pyramid for all living things even for other plants. They have always been enormously important to the welfare of people not only for food, but also for clothing, weapons, tools, dyes, medicines, shelter, and a great many other purposes. Tribes living today in the jungles of the Amazon recognize literally hundreds of plants and know many properties of each. To them, botany, as such, has no name and is probably not even recognized as a special branch of " knowledge" at all.

Unfortunately, the more industrialized we become the farther away we move from direct contact with plants, and the less distinct our knowledge of botany grows. Yet everyone comes unconsciously on an amazing amount of botanical knowledge, and few people will fail to recognize a rose, an apple, or an orchid. When our Neolithic ancestors, living in the Middle East about 10,000 years ago, discovered that certain grasses could be harvested and their seeds planted for richer yields the next season the first great step in a new association of plants and humans was taken. Grains were discovered and from them flowed the marvel of agriculture: cultivated crops. From then on, humans would increasingly take their living from the controlled production of a few plants, rather than getting a little here and a little there from many varieties that grew wild- and the

accumulated knowledge of tens of thousands of years of experience and intimacy with plants in the wild would begin to fade away.

33 Plankton 浮游生物. / 'plɔkŋktən; `plɔkŋktən/

Scattered through the seas of the world are billions of tons of small plants and animals called plankton. Most of these plants and animals are too small for the human eye to see. They drift about lazily with the currents, providing a basic food for many larger animals.

Plankton has been described as the equivalent of the grasses that grow on the dry land continents, and the comparison is an appropriate one. In potential food value, however, plankton far outweighs that of the land grasses. One scientist has estimated that while grasses of the world produce about 49 billion tons of valuable carbohydrates each year, the sea's plankton generates more than twice as much.

Despite its enormous food potential, little effect was made until recently to farm plankton as we farm grasses on land. Now marine scientists have at last begun to study this possibility, especially as the sea's resources loom even more important as a means of feeding an expanding world population.

No one yet has seriously suggested that " plankton-burgers" may soon become popular around the world. As a possible farmed supplementary food source, however, plankton is gaining considerable interest among marine scientists.

One type of plankton that seems to have great harvest possibilities is a tiny shrimp-like creature called krill. Growing to two or three inches long, krill provides the major food for the great blue whale, the largest animal to ever inhabit the Earth. Realizing that this whale may grow to 100 feet and weigh 150 tons at maturity, it is not surprising that each one devours more than one ton of krill daily.

34 Raising Oysters

In the oysters were raised in much the same way as dirt farmers raised tomatoes- by transplanting them. First, farmers selected the oyster bed, cleared the bottom of old shells and other debris, then scattered clean shells about. Next, they "planted" fertilized oyster eggs, which within two or three weeks hatched into larvae. The larvae drifted until they attached themselves to the clean shells on the bottom. There they remained and in time grew into baby oysters called seed or spat. The spat grew larger by drawing in seawater from which they derived microscopic particles of food. Before long, farmers gathered the baby oysters, transplanted them once more into another body of water to fatten them up.

Until recently the supply of wild oysters and those crudely farmed were more than enough to

satisfy people's needs. But today the delectable seafood is no longer available in abundance. The problem has become so serious that some oyster beds have vanished entirely.

Fortunately, as far back as the early 1900's marine biologists realized that if new measures were not taken, oysters would become extinct or at best a luxury food. So they set up well-equipped hatcheries and went to work. But they did not have the proper equipment or the skill to handle the eggs. They did not know when, what, and how to feed the larvae. And they knew little about the predators that attack and eat baby oysters by the millions. They failed, but they doggedly kept at it. Finally, in the 1940's a significant breakthrough was made.

The marine biologists discovered that by raising the temperature of the water, they could induce oysters to spawn not only in the summer but also in the fall, winter, and spring. Later they developed a technique for feeding the larvae and rearing them to spat. Going still further, they succeeded in breeding new strains that were resistant to diseases, grew faster and larger, and flourished in water of different salinities and temperatures. In addition, the cultivated oysters tasted better!

35.Oil Refining

An important new industry, oil refining, grew after the Civil war. Crude oil, or petroleum – a dark, thick ooze from the earth – had been known for hundreds of years, but little use had ever been made of it. In the 1850's Samuel M. Kier, a manufacturer in western Pennsylvania, began collecting the oil from local seepages and refining it into kerosene. Refining, like smelting, is a process of removing impurities from a raw material.

Kerosene was used to light lamps. It was a cheap substitute for whale oil, which was becoming harder to get. Soon there was a large demand for kerosene. People began to search for new supplies of petroleum.

The first oil well was drilled by E.L. Drake, a retired railroad conductor. In 1859 he began drilling in Titusville, Pennsylvania. The whole venture seemed so impractical and foolish that onlookers called it " Drake's Folly". But when he had drilled down about 70 feet(21 meters), Drake struck oil. His well began to yield 20 barrels of crude oil a day.

News of Drake's success brought oil prospectors to the scene. By the early 1860's these wildcatters were drilling for " black gold" all over western Pennsylvania. The boom rivaled the California gold rush of 1848 in its excitement and Wild West atmosphere. And it brought far more wealth to the prospectors than any gold rush.

Crude oil could be refined into many products. For some years kerosene continued to be the principal one. It was sold in grocery stores and door-to-door. In the 1880's refiners learned how to make other petroleum products such as waxes and lubricating oils. Petroleum was not then used to make gasoline or heating oil.

36.Plate Tectonics and Sea-floor Spreading

The theory of plate tectonics describes the motions of the lithosphere, the comparatively rigid outer layer of the Earth that includes all the crust and part of the underlying mantle. The lithosphere(n.[地]岩石圈)is divided into a few dozen plates of various sizes and shapes, in general the plates are in motion with respect to one another. A mid-ocean ridge is a boundary between plates where new lithospheric material is injected from below. As the plates diverge from a mid-ocean ridge they slide on a more yielding layer at the base of the lithosphere.

Since the size of the Earth is essentially constant, new lithosphere can be created at the mid-ocean ridges only if an equal amount of lithospheric material is consumed elsewhere. The site of this destruction is another kind of plate boundary: a subduction zone. There one plate dives under the edge of another and is reincorporated into the mantle. Both kinds of plate boundary are associated with fault systems, earthquakes and volcanism, but the kinds of geologic activity observed at the two boundaries are quite different.

The idea of sea-floor spreading actually preceded the theory of plate tectonics. In its original version, in the early 1960's, it described the creation and destruction of the ocean floor, but it did not specify rigid lithospheric plates. The hypothesis was substantiated soon afterward by the discovery that periodic reversals of the Earth's magnetic field are recorded in the oceanic crust. As magma rises under the mid-ocean ridge, ferromagnetic minerals in the magma become magnetized in the direction of the magma become magnetized in the direction of the geomagnetic field. When the magma cools and solidifies, the direction and the polarity of the field are preserved in the magnetized volcanic rock. Reversals of the field give rise to a series of magnetic stripes running parallel to the axis of the rift. The oceanic crust thus serves as a magnetic tape recording of the history of the geomagnetic field that can be dated independently; the width of the stripes indicates the rate of the sea-floor spreading.

37 Icebergs

Icebergs are among nature's most spectacular creations, and yet most people have never seen one. A vague air of mystery envelops them. They come into being ----- somewhere ------in faraway, frigid waters, amid thunderous noise and splashing turbulence, which in most cases no one hears or sees. They exist only a short time and then slowly waste away just as unnoticed.

Objects of sheerest beauty they have been called. Appearing in an endless variety of shapes, they may be dazzlingly white, or they may be glassy blue, green or purple, tinted faintly of in darker hues. They are graceful, stately, inspiring ----- in calm, sunlight seas.

But they are also called frightening and dangerous, and that they are ---- in the night, in the fog, and in storms. Even in clear weather one is wise to stay a safe distance away from them. Most of

their bulk is hidden below the water, so their underwater parts may extend out far beyond the visible top. Also, they may roll over unexpectedly, churning the waters around them.

Icebergs are parts of glaciers that break off, drift into the water, float about awhile, and finally melt. Icebergs afloat today are made of snowflakes that have fallen over long ages of time. They embody snows that drifted down hundreds, or many thousands, or in some cases maybe a million years ago. The snows fell in polar regions and on cold mountains, where they melted only a little or not at all, and so collected to great depths over the years and centuries.

As each year's snow accumulation lay on the surface, evaporation and melting caused the snowflakes slowly to lose their feathery points and become tiny grains of ice. When new snow fell on top of the old, it too turned to icy grains. So blankets of snow and ice grains mounted layer upon layer and were of such great thickness that the weight of the upper layers compressed the lower ones. With time and pressure from above, the many small ice grains joined and changed to larger crystals, and eventually the deeper crystals merged into a solid mass of ice.

38 Topaz

Topaz is a hard, transparent mineral. It is a compound of aluminum, silica, and fluorine. Gem topaz is valuable. Jewelers call this variety of the stone "precious topaz". The best-known precious topaz gems range in color from rich yellow to light brown or pinkish red. Topaz is one of the hardest gem minerals. In the mineral table of hardness, it has a rating of 8, which means that a knife cannot cut it, and that topaz will scratch quartz.

The golden variety of precious topaz is quite uncommon. Most of the world's topaz is white or blue. The white and blue crystals of topaz are large, often weighing thousands of carats. For this reason, the value of topaz does not depend so much on its size as it does with diamonds and many other precious stones, where the value increases about four times with each doubling of weight. The value of a topaz is largely determined by its quality. But color is also important: blue topaz, for instance, is often irradiated to deepen and improve its color.

Blue topaz is often sold as aquamarine and a variety of brown quartz is widely sold as topaz. The quartz is much less brilliant and more plentiful than true topaz. Most of it is variety of amethyst: that heat has turned brown.

NOTE:
topaz / 'tэuржz; `topжz/ n (a) [U] transparent yellow mineral 黄玉（矿物）.
(b) [C] semi-precious gem cut from this 黄玉; 黄宝石.

39 The Salinity of Ocean Waters

If the salinity of ocean waters is analyzed, it is found to vary only slightly from place to place.

Nevertheless, some of these small changes are important. There are three basic processes that cause a change in oceanic salinity. One of these is the subtraction of water from the ocean by means of evaporation--- conversion of liquid water to water vapor. In this manner the salinity is increased, since the salts stay behind. If this is carried to the extreme, of course, white crystals of salt would be left behind.

The opposite of evaporation is precipitation, such as rain, by which water is added to the ocean. Here the ocean is being diluted so that the salinity is decreased. This may occur in areas of high rainfall or in coastal regions where rivers flow into the ocean. Thus salinity may be increased by the subtraction of water by evaporation, or decreased by the addition of fresh water by precipitation or runoff.

Normally, in tropical regions where the sun is very strong, the ocean salinity is somewhat higher than it is in other parts of the world where there is not as much evaporation. Similarly, in coastal regions where rivers dilute the sea, salinity is somewhat lower than in other oceanic areas.

A third process by which salinity may be altered is associated with the formation and melting of sea ice. When sea water is frozen, the dissolved materials are left behind. In this manner, sea water directly materials are left behind. In this manner, sea water directly beneath freshly formed sea ice has a higher salinity than it did before the ice appeared. Of course, when this ice melts, it will tend to decrease the salinity of the surrounding water.

In the Weddell Sea Antarctica, the densest water in the oceans is formed as a result of this freezing process, which increases the salinity of cold water. This heavy water sinks and is found in the deeper portions of the oceans of the world.

NOTE：
salinity / sə'linəti; sə`linəti/
n [U] the high salinity of sea water 海水的高含盐量.
-à >>saline / 'seilain; US -li:n; `selin/
1.adj [attrib 作定语] (fml 文) containing salt; salty 含盐的; 咸的:
* a saline lake 盐湖 * saline springs 盐泉
* saline solution, eg as used for gargling, storing contact lenses, etc 盐溶液（如用于漱喉、存放隐形眼镜等）.
2. n [U] (medical 医) solution of salt and water 盐水.

40 Cohesion-tension Theory

Atmospheric pressure can support a column of water up to 10 meters high. But plants can move water much higher; the sequoia tree can pump water to its very top more than 100 meters above the ground. Until the end of the nineteenth century, the movement of water in trees and other tall plants was a mystery. Some botanists hypothesized that the living cells of plants acted as pumps.

But many experiments demonstrated that the stems of plants in which all the cells are killed can still move water to appreciable heights. Other explanations for the movement of water in plants have been based on root pressure, a push on the water from the roots at the bottom of the plant. But root pressure is not nearly great enough to push water to the tops of tall trees. Furthermore, the conifers, which are among the tallest trees, have unusually low root pressures.

If water is not pumped to the top of a tall tree, and if it is not pushed to the top of a tall tree, then we may ask: how does it get there? According to the currently accepted cohesion-tension theory, water is pulled there. The pull on a rising column of water in a plant results from the evaporation of water at the top of the plant. As water is lost from the surface of the leaves, a negative pressure, or tension, is created. The evaporated water is replaced by water moving from inside the plant in unbroken columns that extend from the top of a plant to its roots. The same forces that create surface tension in any sample of water are responsible for the maintenance of these unbroken columns of water. When water is confined in tubes of very small bore, the forces of cohesion (the attraction between water molecules) are so great that the strength of a column of water compares with the strength of a steel wire of the same diameter. This cohesive strength permits columns of water to be pulled to great heights without being broken.

41.American black bears

American black bears appear in a variety of colors despite their name. In the eastern part of their range, most of these brown, red, or even yellow coats. To the north, the black bear is actually gray or white in color. Even in the same litter, both brown and black furred bears may be born.

Black bears are the smallest of all American bears, ranging in length from five to six feet, weighing from three hundred to five hundred pounds Their eyes and ears are small and their eyesight and hearing are not as good as their sense of smell.

Like all bears, the black bear is timid, clumsy, and rarely dangerous , but if attacked, most can climb trees and cover ground at great speeds. When angry or frightened, it is a formidable enemy.

Black bears feed on leaves, herbs. Fruit, berries, insects, fish, and even larger animals. One of the most interesting characteristics of bears, including the black bear, is their winter sleep. Unlike squirrels, woodchucks, and many other woodland animals, bears do not actually hibernate. Although the bear does not during the winter moths, sustaining itself from body fat, its temperature remains almost normal, and it breathes regularly four or five times per minute.

Most black bears live alone, except during mating season. They prefer to live in caves, hollow logs, or dense thickets. A little of one to four cubs is born in January or February after a gestation period of six to nine months, and they remain with their mother until they are fully grown or about one and a half years old. Black bears can live as long as thirty years in the wild , and even longer in game preserves set aside for them.

42.Coal-fired power plants

The invention of the incandescent light bulb by Thomas A. Edison in 1879 created a demand for a cheap, readily available fuel with which to generate large amounts of electric power. Coal seemed to fit the bill, and it fueled the earliest power stations. (which were set up at the end of the nineteenth century by Edison himself). As more power plants were constructed throughout the country, the reliance on coal increased throughout the country, the reliance on coal increased. Since the First World War, coal-fired power plants had a combined in the United States each year. In 1986 such plants had a combined generating capacity of 289,000 megawatts and consumed 83 percent of the nearly 900 million tons of coal mined in the country that year. Given the uncertainty in the future growth of the nearly 900 million tons of coal mined in the country that year. Given the uncertainty in the future growth of nuclear power and in the supply of oil and natural gas, coal-fired power plants could well provide up to 70 percent of the electric power in the United States by the end of the century.

Yet, in spite of the fact that coal has long been a source of electricity and may remain on for many years(coal represents about 80 percent of United States fossil-fuel reserves), it has actually never been the most desirable fossil fuel for power plants. Coal contains less energy per unit of weight than weight than natural gas or oil; it is difficult to transport, and it is associated with a host of environmental issues, among them acid rain. Since the late 1960's problems of emission control and waste disposal have sharply reduced the appeal of coal-fired power plants. The cost of ameliorating these environment problems along with the rising cost of building a facility as large and complex as a coal-fired power plant, have also made such plants less attractive from a purely economic perspective.

Changes in the technological base of coal-fired power plants could restore their attractiveness, however. Whereas some of these changes are intended mainly to increase the productivity of existing plants, completely new technologies for burning coal cleanly are also being developed.

43.Statistics

There were two widely divergent influences on the early development of statistical methods. Statistics had a mother who was dedicated to keeping orderly records of government units (states and statistics come from the same Latin root status) and a gentlemanly gambling father who relied on mathematics to increase his skill at playing the odds in games of chance. The influence of the mother on the offspring, statistics, is represented by counting, measuring, describing, tabulating, ordering, and the taking of censuses—all of which led to modern descriptive statistics. From the influence of the father came modern inferential statistics, which is based squarely on theories of probability.

Describing collections involves tabulating, depicting and describing collections of data. These data may be quantitative such as measures of height, intelligence or grade level------variables that

are characterized by an underlying continuum---or the data may represent qualitative variables, such as sex, college major or personality type. Large masses of data must generally undergo a process of summarization or reduction before they are comprehensible. Descriptive statistics is a tool for describing or summarizing or reducing to comprehensible form the properties of an otherwise unwieldy mass of data.

Inferential statistics is a formalized body of methods for solving another class of problems that present great of problems characteristically involves attempts to make predictions using a sample of observations. For example, a school superintendent wishes to determine the proportion of children in a large school system who come to school without breakfast, have been vaccinated for flu, or whatever. Having a little knowledge of statistics, the superintendent would know that it is unnecessary and inefficient to question each child: the proportion for the sample of as few as 100 children. Thus , the purpose of inferential statistics is to predict or estimate characteristics of a population from a knowledge of the characteristics of only a sample of the population.

44.Obtaining Fresh water from icebergs

The concept of obtaining fresh water from icebergs that are towed to populated areas and arid regions of the world was once treated as a joke more appropriate to cartoons than real life. But now it is being considered quite seriously by many nations, especially since scientists have warned that the human race will outgrow its fresh water supply faster than it runs out of food.

Glaciers are a possible source of fresh water that has been overlooked until recently. Three-quarters of the Earth's fresh water supply is still tied up in glacial ice, a reservoir of untapped fresh water so immense that it could sustain all the rivers of the world for 1,000 years. Floating on the oceans every year are 7,659 trillion metric tons of ice encased in 10000 icebergs that break away from the polar ice caps, more than ninety percent of them from Antarctica.

Huge glaciers that stretch over the shallow continental shelf give birth to icebergs throughout the year. Icebergs are not like sea ice, which is formed when the sea itself freezes, rather, they are formed entirely on land, breaking off when glaciers spread over the sea. As they drift away from the polar region, icebergs sometimes move mysteriously in a direction opposite to the wind, pulled by subsurface currents. Because they melt more slowly than smaller pieces of ice, icebergs have been known to drift as far north as 35 degrees south of the equator in the Atlantic Ocean. To corral them and steer them to parts of the world where they are needed would not be too difficult.

The difficulty arises in other technical matters, such as the prevention of rapid melting in warmer climates and the funneling of fresh water to shore in great volume. But even if the icebergs lost half of their volume in towing, the water they could provide would be far cheaper than that produced by desalinization, or removing salt from water.

45.The source of Energy

A summary of the physical and chemical nature of life must begin, not on the Earth, but in the Sun; in fact, at the Sun's very center. It is here that is to be found the source of the energy that the Sun constantly pours out into space as light and heat. This energy is librated at the center of the Sun as billions upon billions of nuclei of hydrogen atoms collide with each other and fuse together to form nuclei of helium, and in doing so, release some of the energy that is stored in the nuclei of atoms. The output of light and heat of the Sun requires that some 600 million tons of hydrogen be converted into helium in the Sun every second. This the Sun has been doing for several thousands of millions of year.

The nuclear energy is released at the Sun's center as high-energy gamma radiation, a form of electromagnetic radiation like light and radio waves, only of very much shorter wavelength. This gamma radiation is absorbed by atoms inside the Sun to be reemitted at slightly longer wavelengths. This radiation , in its turn is absorbed and reemitted. As the energy filters through the layers of the solar interior, it passes through the X-ray part of the spectrum eventually becoming light. At this stage, it has reached what we call the solar surface, and can escape into space without being absorbed further by solar atoms. A very small fraction of the Sun's light and heat is emitted in such directions that after passing unhindered through interplanetary space, it hits the Earth.

46.Vision by

Human vision like that of other primates has evolved in an arboreal environment. In the dense complex world of a tropical forest, it is more important to see well that to develop an acute sense of smell. In the course of evolution members of the primate line have acquired large eyes while the snout has shrunk to give the eye an unimpeded view. Of mammals only humans and some primates enjoy color vision. The red flag is black to the bull. Horses live in a monochrome world .light visible to human eyes however occupies only a very narrow band in the whole electromagnetic spectrum. Ultraviolet rays are invisible to humans though ants and honeybees are sensitive to them. Humans though ants and honeybees are sensitive to them. Humans have no direct perception of infrared rays unlike the rattlesnake which has receptors tuned into wavelengths longer than 0.7 micron. The world would look eerily different if human eyes were sensitive to infrared radiation. Then instead of the darkness of night, we would be able to move easily in a strange shadowless world where objects glowed with varying degrees of intensity. But human eyes excel in other ways. They are in fact remarkably discerning in color gradation. The color sensitivity of normal human vision is rarely surpassed even by sophisticated technical devices.

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49 Sleep

Sleep is part of a person's daily activity cycle. There are several different stages of sleep, and they too occur in cycles. If you are an average sleeper, your sleep cycle is as follows. When you fist drift off into slumber, your eyes will roll about a bit, you temperature will drop slightly, your muscles will relax, and your breathing well slow and become quite regular. Your brain waves slow and become quite regular. Your brain waves slow down a bit too, with the alpha rhythm of

rather fast waves 1 sleep. For the next half hour or so, as you relax more and more, you will drift down through stage 2 and stage 3 sleep. The lower your stage of sleep. slower your brain waves will be. Then about 40to 69 minutes after you lose consciousness you will have reached the deepest sleep of all. Your brain will show the large slow waves that are known as the delta rhythm. This is stage 4 sleep.

You do not remain at this deep fourth stage all night long, but instead about 80 minutes after you fall into slumber, your brain activity level will increase again slightly. The delta rhythm will disappear, to be replaced by the activity pattern of brain waves. Your eyes will begin to dart around under your closed eyelids as if you were looking at something occurring in front of you. This period of rapid eye movement lasts for some 8 to 15 minutes and is called REM sleep. It is during REM sleep period, your body will soon relax again, your breathing will slip gently back from stage 1 to stage 4 sleep----only to rise once again to the surface of near consciousness some 80 minutes later.

50. Cells and Temperature

Cells cannot remain alive outside certain limits of temperature and much narrower limits mark the boundaries of effective functioning. Enzyme systems of mammals and birds are most efficient only within a narrow range around 37C;a departure of a few degrees from this value seriously impairs their functioning. Even though cells can survive wider fluctuations the integrated actions of bodily systems are impaired. Other animals have a wider tolerance for changes of bodily temperature.

For centuries it has been recognized that mammals and birds differ from other animals in the way they regulate body temperature. Ways of characterizing the difference have become more accurate and meaningful over time, but popular terminology still reflects the old division into “warm-blooded” and “cold-blooded” species; warm-blooded included mammals and birds whereas all other creatures were considered cold-blooded. As more species were studied, it became evident that this classification was inadequate. A fence lizard or a desert iguana—each cold-blooded----usually has a body temperature only a degree or two below that of humans and so is not cold. Therefore the next distinction was made between animals that maintain a constant body temperature, called home0therms, and those whose body temperature varies with their environments, called poikilotherms. But this classification also proved inadequate, because among

mammals there are many that vary their body temperatures during hibernation. Furthermore, many invertebrates that live in the depths of the ocean never experience change in the depths of the ocean never experience change in the chill of the deep water, and their body temperatures remain constant.